BUILDING AMERICA®

July 10, 2019

Ms. Karen Scott
Industrial & Hazardous Waste Permits Section
Texas Commission on Environmental Quality
P.O. Box 13087, MC-130
Austin, Texas 78711-3087

Re: Response to 4th Technical Notice of Deficiency Letter Dated April 11, 2019
Permit Renewal/Compliance Plan with Major Amendment
Union Pacific Railroad Company – Houston Wood Preserving Works
Houston, Harris County, Texas
Hazardous Waste Permit/Compliance Plan No.: 50343, ISWR No. 31547
Tracking No. 18836453; CN600131098/RN100674613

Dear Ms. Scott:

Please find attached with this cover letter Union Pacific Railroad's (UPRR's) Response to the 4th Technical Notice of Deficiency (TNOD) on the RCRA Permit Renewal/Compliance Plan with Major Amendments for the facility listed above (the Site). UPRR prepared this response to address the deficiencies listed in the Texas Commission on Environmental Quality (TCEQ) letter to UPRR dated April 11, 2017. The Technical NOD listed several technical deficiencies in the renewal application and requested that UPRR provide certain additional information to complete the application. The attached table lists each deficiency identified in the April 2019 TCEQ letter as well as UPRR's response indicating how each deficiency has been or will be addressed.

As the TCEQ and UPRR discussed and agreed upon during the meeting on June 12, 2019, the attached responses to the 4th TNOD focus on the development of a Conceptual Response Action Plan (RAP) as the next step for providing a roadmap for Site remediation. UPRR prepared the Conceptual RAP to detail the proposed additional investigations that the TCEQ requested in the 4th TNOD letter for UPRR to conduct at the Site, and how the information obtained from those pre-design assessment activities will be used to refine and finalize Site response action plans. Responses to many of the technical deficiencies listed in the 4th TNOD are predicated on the completion of those additional assessment activities. Therefore, following the pre-design assessment activities, UPRR will submit a Revised RAP to the TCEQ with the proposed response actions to address the remedial objectives for the Site required under the Texas Risk Reduction Program (TRRP).

In addition, as UPRR and the TCEQ discussed during a meeting on April 24, 2019, we would like to propose a process that would allow us to expedite work at the Site. We believe that is what the community wants. However, the reality is that under the slow and cumbersome RCRA permit renewal program that currently governs the work to be accomplished, the work is unlikely to be done quickly under

UNION PACIFIC RAILROAD
4823 N 119th Street, Room 108
Milwaukee, Wisconsin 53225

Kevin Peterburs
Manager
Environmental Site Remediation

P 414-267-4164
E kjpeterb@up.com

this regulatory scheme. However, the community's desire to have the site addressed more quickly could be accomplished by doing the work under a streamlined consent order between UPRR and the TCEQ. To do this, UPRR proposes to suspend the current RCRA permit renewal process and incorporate the additional pre-design assessment activities and potential response actions into a consent order[1] that could be readily prepared, finalized and implemented.

The USEPA recognizes that streamlined consent orders provide stakeholders (in this case the TCEQ, UPRR and the public) a results-based approach with performance standards that must be met by specific dates, thereby allowing a much shorter timeframe for corrective action implementation and the achievement of response action objectives desired by both UPRR and public stakeholders, relative to the current ponderous and inefficient RCRA Permit renewal process.

Toward that end, UPRR would like to meet with you and your team to further discuss opportunities to address the public's requests by expediting the corrective action process for the Site using this streamlined approach.

If you have any questions or need additional information, please feel free to call me at 414-267-4164.

Sincerely,

Kevin Peterburs
Manager, Environmental Site Remediation

[1] UPRR believes the TCEQ can base this Consent Order on a modified version of EPA's Model RCRA Section 3008(h) Consent Order (issued in September 2016) streamlined pursuant to EPA guidance "Enforcement Approaches for Expediting RCRA Corrective Action" (EPA, 2001).

Application Deficiencies – Technical NOD #4

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
General T35(4) T42(4) T44(4) T45(4)	B	XI.	XI.A. through XI.D.	30 TAC 335.167 & 350	Inconsistent/ Incomplete	Based on our review of the following documents: • UPRR's June 21, 2017 Response to TCEQ's April 10, 2017 3rd Technical Notice of Deficiency (NOD) – Permit Renewal Application which includes the June 2017 Response Action Plan (RAP), Rev. 3; • UPRR's August 13, 2018 Response to TCEQ's November 29, 2017 letter (Monitoring Report); • UPRR's October 31, 2018 and January 9, 2019 Monthly Status Updates - Cap Repairs; • UPRR's December 18, 2018 "DNAPL Recovery Activities Quarterly Report – 3rd Quarter 2018" and March 12, 2019 "DNAPL Recovery Activities Quarterly Report – 4th Quarter 2018"; and, • UPRR's December 3, 2018 and February 12, 2019 " Off-site Notification Updates" The TCEQ notes the following concerns: Review of the August 13, 2018 Monitoring Report indicates that the groundwater plume has migrated approximately 200 feet to the north/northeast affecting additional off-site properties. • Review of the December 3, 2018 and February 12, 2019, " Off-site Notification Updates" indicate the number of off-site properties impacted by the groundwater plume migration increased from 101 to 110 properties. • UPPR's current monitoring well system fails to monitor groundwater protective concentration level exceedance (PCLE) and dense non-aqueous phase liquid (DNAPL) zones throughout each of the four transmission zones, therefore, further assessment is needed which includes the installation of additional wells and monitoring data. Additional assessment is discussed in more detail in comment nos. T35(4), T42(4), T43(3), T44(4), T45(4) and T48(3). • The current assessment of the total petroleum hydrocarbon – non-aqueous phase liquid (TPH-NAPL) seep source(s) and extent is insufficient because only a limited soil assessment was performed. Additional soil and groundwater assessments is needed which shall include additional soil borings, well installation and monitoring. Additional assessment is discussed in more detail in comment nos. T35(4), T42(4), T43(3), T44(4), T45(4) and T48(3). • The RAP does not include the implemented TPH-NAPL interim response actions for the Englewood Intermodal Yard cap area. The RAP needs to be revised to include the installed system design, procedures and a schedule for evaluation of the effectiveness of the response action as outlined in comment nos. T35(4), T42(4), T43(3), T44(4), T45(4) and T48(3). • Evaluation of potential Vapor Intrusion (VI) is needed. • Since the plume has migrated, the proposed corrective action program consisting of plume management zones (PMZs) with monitored natural attenuation (MNA), and monthly DNAPL recovery contained in the RAP Rev. 3 is inadequate and does not control nor adequately monitor the extent of the plume. The corrective action program in RAP Rev.3 requires revision as outlined in comment nos. T35(4), T42(4), T43(3), T44(4), T45(4) and T48(3).	Specific responses provided below
General Cont. T35(4) T42(4) T44(4) T45(4)						• UPPR has failed to obtain the necessary consent from off-site affected property owners for an off-site PMZ. In the April 10, 2017 3rd NOD, the TCEQ denied UPRR's request for the Technical Impracticability (TI) for DNAPL removal because UPRR did not make an adequate demonstration in accordance with 30 TAC §350.33(f)(3)(E) requirements of TRRP. Therefore, for the proposed PMZ boundary to extend off-site, UPRR must obtain written consent from all off-site affected property owners to file a restrictive covenant (RC) prohibiting the use of groundwater on their property. However, some off-site property owners have declined consent or cannot be located to obtain consent. Without the consent of the off- site property owner's the TCEQ cannot approve an off-site PMZ. There are other avenues which would allow an off-site PMZ without the consent of property owners, but UPPR has not satisfied those requirements as specified in 30 TAC 350.111(c)(2) and TCEQ Guidance TRRP-16 (TCEQ RG-366/TRRP-16 May 2010).	Per our meeting on June 12, 2019, UPRR proposes the Off-Site Plume Management Zone (PMZ) to include only the City of Houston right of way (ROW) and off-site properties bounded by Liberty Rd, Erastus St, Wylie St., and Cushing St. Signed restrictive covenants provided in Appendix 5 of the attached Conceptual RAP.
Specific T35(4) T42(4) T43(3) T44(4) T45(4) T48(3)	B	XI.A. - XI.D.	XI.A. - XI.D.2. & XI.D.6.	30 TAC 335.167 & §350	Inconsistent/ Incomplete	Based on the above concerns, UPRR will need to revise and resubmit a complete RAP that includes updated RAP worksheets, associated figures, tables, and appendices as outlined below to address any newly identified historical TPH-NAPL release to soils and groundwater, prevent contaminant migration, and remediate groundwater: • Remove all references to TI from the RAP and institutional controls.	References to the technical impracticability (TI) have been removed from the Conceptual RAP.
						• If UPRR intends to pursue a PMZ in accordance with 30 TAC §350.33(f)(4) then the proposed West and Main PMZs should be limited to only the UPRR owned property, and the City of Houston owned property (which contains only the capped-sidewalk just north of the site).	Per our meeting on June 12, 2019, the attached Conceptual RAP presents the preliminary Off-Site PMZ to include the City of Houston ROW and off-site properties bounded by Liberty Rd, Erastus St, Wylie St., and Cushing St., of which signed restrictive covenants (Appendix 5) have been acquired in accordance with TRRP Rules and Regulations.

Application Deficiencies – Technical NOD #4

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
						• UPRR's current response actions include the utilization of a cover/cap system to block exposure to surface soils and reduce rainwater infiltration, a Monitored Natural Attenuation (MNA) for dissolved phase constituent(s) of concern (COCs) within the PMZ, and removal of readily recoverable DNAPL from 13 selected monitoring wells to control the DNAPL source zone. As previously stated, the TCEQ does not concur with UPRR that the plume is stable nor has reached steady state condition. Therefore, the MNA, PMZ, and limited DNAPL recovery is insufficient and response actions should be reevaluated. Evaluation of plume stability should occur after active remediation systems (e.g. removing readily recoverable NAPL, pump and treat, etc.) have been discontinued. There are several factors the TCEQ evaluates to determine plume stability. These factors include: the groundwater PCLE zone is not expanding laterally and vertically, the presence of NAPL will not increase, and readily recoverable NAPL has been removed.	As discussed in the Conceptual RAP, UPRR plans to re-evaluate the proposed response actions for the groundwater PCL exceedance (PCLE) Zones following the pre-design assessment activities (i.e., Additional Non-aqueous Phase Liquid (NAPL) Assessment and Groundwater Assessment activities discussed in Worksheet 2.0 of the attached Conceptual RAP). Once the pre-design assessment activities have been completed, UPRR will submit a Revised RAP detailing the proposed response activities, including a feasibility study. This may include recommendations for pilot studies or treatability studies to evaluate the feasibility of a selected response action or actions.
						Based on review of the RAP, one of UPRR's groundwater model scenarios (current conditions with constant DNAPL source throughout time) predicted a minor degree of naphthalene migration, approximately 250 feet after 100 years. UPRR provided another modeled scenario which showed source reduction assuming the naphthalene decay rate at one-half every five years. UPRR explained that the model also indicated some migration, but UPRR did not specify the rate of migration although the naphthalene concentrations within the PCLE zone were greatly reduced. Despite models indicating minimal migration of the plume, the monitoring data indicates that the groundwater plume has not reached steady-state conditions and has migrated approximately 200 feet affecting additional off- site properties to the north/northeast. A comparison of the groundwater monitoring data from the July/August 2014 sampling event to the most recent May/June 2018 sampling event shows an indication of increasing concentrations of Dimethylphenol, Benzene, Naphthalene, 2-Methylnapthalene and other COCs in monitoring wells MW-20A, MW-77A, MW-79A, MW-35B, MW-40B, MW-49B, MW-70B, MW-68B, MW-74B, MW-83B, MW-17C, and MW-18C. Benzo(a)pyrene was detected in DTZ monitoring well MW-36D above the Tier 1 residential protective concentration level (PCL) in the June 2018 sampling event. The plume migration is further confirmed by the installation of two more monitoring wells in the B-TZ/B-CZ (MW-89B and MW-90B) in June 2018, in addition to the three wells previously installed in the B-TZ/B-CZ (MW-82B, MW-83B and MW-84B) in January 2018 per RAP Rev. 3. The results of the 2018 groundwater monitoring events indicate repeated fluctuations of Benzene and Naphthalene concentrations above residential Tier 1 PCLs in MW-82B and MW-83B located on the leading edge of the plume. The plume now impacts 110 offsite properties.	Following the pre-design additional assessments detailed on Worksheet 2.0, UPRR will prepare a groundwater chemicals of concern (COC) concentration trend analysis to be used as part of the remedial alternative evaluation. The trend analysis will be provided in the Revised RAP. Per our meeting on June 12, 2019 and the follow-up email from Golder to the TCEQ dated June 18, 2019, the reference to monitoring well MW-82B having "repeated fluctuations of benzene and naphthalene concentrations above the residential Tier 1 PCLs" does not appear to be correct. After a review of the groundwater data from monitoring well MW-82B, there have been no detections of benzene or naphthalene concentration above the residential Tier 1 PCLs. The TCEQ provided a clarification of the deficiency in an email dated July 3, 2019 stating that the reference should be for monitoring wells MW83B and MW-84B, not MW-82B.
						Even though UPRR continues to remove readily recoverable creosote DNAPL monthly and DNAPL thickness has decreased in certain wells, the creosote DNAPL may be migrating away from the current recovery wells laterally to the north/northeast and vertically downward. Review of current well construction diagrams indicate the current DNAPL recovery system only consists of monitoring wells and are not designed as extraction wells to effectively and efficiently remove DNAPL. The monthly recovery frequency is also inadequate to capture and remove DNAPL. Secondly, based on review of boring logs, CPT logs, cross-sections and well construction details, an insufficient number of wells were installed at appropriate locations and screened at appropriate depths to remove and monitor where DNAPL has been observed. UPPR recently observed TPH-NAPL migrating upward into the Englewood Intermodal Yard cap area (the TPH-NAPL has not been fully delineated). Furthermore, the TCEQ reviewed the cross-sections, boring logs, and well construction specifications provided in the application, the 13 DNAPL pilot test recovery wells that are not provided in the application, the November 2014 Vadose Zone DNAPL Observations, and the ROST map provided in the January 9, 2019 Monthly Status Updates - Cap Repairs which indicate that additional wells should have been installed at locations where DNAPL is present or has been observed in the A-TZ, and B-TZ and C-TZ zones. For example; the TCEQ notes that no wells were installed at locations CPT-09R-95, CPT-28R-1, CPT-38-97/SB04, CPT-26R-95, nor CPT-33R-95 where NAPL is present in the A-TZ, B-TZ, and C-ZT. UPPR observed DNAPL which was noted in the boring logs and CPT logs at well locations MW-72B and MW-73B in the B-TZ/B-CZ zones, but UPRR did not install any wells to monitor or remove DNAPL in the A-TZ and CTZ where DNAPL was also observed.	As discussed in the response below and in the attached Conceptual RAP (Worksheet 2.0), UPRR plans to conduct a pre-design additional NAPL Assessment at the Site to evaluate the current NAPL nature and extent using optical screening techniques (i.e. TarGost). Following the additional NAPL Assessment activities, UPRR will evaluate potential alternatives for improving the effectiveness and efficiency of DNAPL recovery activities at the Site. Per our meeting on June 12, 2019, UPRR discussed the difficulty of installing recovery wells that are able to be used for DNAPL recovery. UPRR installed two large diameter wells for the purpose of recovering DNAPL in areas where DNAPL had been noted in boring logs, CPT-ROST logs, and nearby monitoring wells. Test well TW-56A was installed in 2009 within one of the significant source areas at the Site, SWMU 8 – AST Area. The field geologist observed the lower portion of the A-TZ sand as being "saturated with NAPL from 29.5 to 30.6'." Photographs of this interval of the A-TZ show the saturated portion of the sand. However, through 2016 (seven years), no DNAPL was been observed in TW-56A. This phenomenon has been observed at numerous wells at the Site (MW-30A, MW-31A, MW-52A, MW-55A, MW-79A) where significant NAPL was noted in the boring log when the wells were installed, but no NAPL has been observed in the wells. This indicates that areas may have residual saturation of DNAPL in the sand matrix that is not mobile, especially given the high viscosity of the DNAPL material. Another example of the difficulty of encountering DNAPL at the Site, wells MW-12B and MW-41B on the west side of the Site have had DNAPL in-well thicknesses as thick as 15 feet (MW-12B) and 22.8 feet (MW-41B). In 2009, test well TW-41B was installed about 40 feet north of MW-41B between MW-41B and MW-12B to serve as a possible DNAPL recovery well given the relatively thick DNAPL noted in the two nearby wells. The well was constructed to the same general elevations and screen interval as MW-41B. However, no DNAPL has been detected in TW-41B.

Application Deficiencies – Technical NOD #4

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
						Since the TCEQ is requiring UPRR to conduct further assessment of TPH-NAPL in the Englewood Intermodal Yard cap area as directed in the TCEQ February 6, 2019 letter and a VI assessment as directed in Comment T59 of this NOD, the additional assessment should include a re-assessment of creosote DNAPL using cone penetrometer/ rapid optical screening tool (CPT/ROST). The assessment should also include further evaluation of the dissolved phase plume for benzene and naphthalene to the east, west, and south in the A- TZ, B-TZ/BCZ and CTZ. For arsenic, additional assessment is needed to the west and north of the site in the A-TZ and B-TZ/BCZ. Regarding Benzo(a)pyrene detected in the June 2018 sampling event, if results of the January 2019 sampling event indicate Benzo(a)pyrene continues to be detected in any of the D-TZ monitoring wells, then further assessment may be required in the D-TZ and deeper zone(s). Update the RAP implementation schedule to include the additional assessments requested above.	The following proposed assessments to address this deficiency include (and discussed on Worksheet 2.0 of the Revised RAP): • Additional NAPL Assessment, • Additional Groundwater Assessment, • TPH-NAPL Assessment Englewood Intermodal Yard, and • Pentachlorophenol (PCP) Assessment in soils (per the June 12, 2019 meeting). The groundwater VI Assessment near MW-68B per Comment T59 (completed, a summary letter submitted on July 3, 2019) is provided in Appendix 3 of the Conceptual RAP.
						• Based on results of the assessment as described above, UPRR must re-evaluate the current DNAPL recovery system and defer proposed MNA until the plume reaches steady-state conditions and readily recoverable DNAPL removal is completed. At that time, UPRR may propose designating new attenuation monitoring point (AMP) wells and attenuation action levels (AALs). Until the assessments are completed, the existing proposed designated AMP wells and their respective AALs should be removed from current RAP (Rev. 3) and re- designated as corrective action observation (CAO) wells. Furthermore, the TCEQ does not concur with the proposed AALs; the AALs are excessively high and would not be protective of the downgradient alternate point of exposure (APOE).	UPRR will re-evaluate the current DNAPL recovery system following the pre-design NAPL Assessment activities discussed in Worksheet 2.0 in the Conceptual RAP. In addition, the location of proposed AMPs, AALs, and CAO wells will be evaluated following the additional Groundwater Assessment activities also discussed in Worksheet 2.0.
						• UPRR shall reevaluate the DNAPL recovery system configuration and consider the following factors to improve its effectiveness and efficiency. o UPRR needs to consider installing additional recovery wells in the A-TZ, B-TZ/B- CZ, C-TZ and, if necessary, any lower affected transmissive zones. This may include modifications in well design to optimize DNAPL recovery such as utilizing preferred larger diameter wells and deeper sumps where in-well DNAPL separation can be achieved. The existing wells that UPRR installed were designed as monitoring wells, not as extraction wells with associated engineered systems. o Re-evaluate removal optimization frequency by collecting more frequent DNAPL measurements and alternative removal methods. o Re-evaluate the current integrity of the recovery wells. o As an interim measure, UPRR must gauge for DNAPL in all the existing on-site and off-site monitoring wells, continue DNAPL recovery at the existing 13 wells and any other wells where measurable DNAPL is encountered. UPRR should consider more frequent removal of DNAPL from those wells continuing to have consistent DNAPL thicknesses including: MW- 78A, MW-32B, MW-41B, MW-23C, MW44C and MW-46 C. o UPRR must submit quarterly progress reports until the system is re-evaluated and all improvements are implemented.	UPRR will evaluate DNAPL recovery options after completion of the pre-design additional NAPL Assessment activities discussed on Worksheet 2.0 of the Conceptual RAP. Data collected from this pre-design assessment will be used to optimize DNAPL recovery through an assessment of remedial alternatives to improve effectiveness and efficiency. In the interim, UPRR will gauge for DNAPL in all the existing on-site and off-site monitoring wells, continue DNAPL recovery from the 13 wells where measurable DNAPL has been encountered, and increase the frequency to twice per month for the manual recovery activities. NAPL recovery methods, frequency, and wells included in the DNAPL Recovery Activities will be re-evaluated following the additional NAPL assessment activities. UPRR will continue to provide quarterly DNAPL recovery reports to the TCEQ (see Worksheet 6.0).
						The recovery system needs to be expanded to include a pump and treat system, or alternative method, to remove the dissolved phase COCs in the groundwater plume, to reduce concentrations, and address hot spots. As an interim measure, UPRR shall add the following monitoring wells to the groundwater recovery program (e.g. designated as corrective action system (CAS) wells): MW-17A, MW-18A, MW-20A MW-79A, NW-57B, MW- 68B, MW-72B, MW-74B, MW-17C and MW-18C. These wells were chosen based on the most recent May/June 2018 sampling. UPRR needs to further evaluate which wells continue to be utilized as CAS wells or if additional CAS wells need to be proposed based on assessment results.	As detailed on Worksheet 2.0 of the Conceptual RAP, UPRR will evaluate and develop remedial alternatives after completion of the additional Groundwater and NAPL Assessment activities with the goal of achieving the specific groundwater response objectives for the different Remedy Standard areas at the Site.
						The revised RAP shall include engineering designs for remediation system(s) to address both NAPL and dissolved phase groundwater plumes and collection, storage, and final disposition of recovered NAPL and dissolved phase COCs groundwater.	See previous response. The potential design of any system components for groundwater treatment and/or NAPL recovery will be generally described within the Revised RAP following completion of the additional assessment activities. This may include recommendations for pilot studies or treatability studies to evaluate the feasibility of a selected response action or actions prior to full scale implementation.
						The revised RAP shall include the installed interim revised response action system design detailed in the January 9, 2019 Monthly Status Update – Soil Cap and Concrete Repairs that address future seeping of the NAPL-TPH in the Englewood Intermodal Yard area. The revised RAP shall also include the monitoring system schedule and outlined procedures for evaluating the efficiency/effectiveness of the system in reducing NAPL-TPH seeps. UPRR is required to submit monthly status updates, until such a time an alternate schedule is approved by the TCEQ. The monitoring schedule should also be provided in CP Table VIII of the Permit Renewal application. Secondly, UPRR should also include a contingency plan for implementing additional measures to further prevent the seeping of NAPL such as in-situ chemical oxidation, thermal treatment, and/or other appropriate response actions. Be advised that if the proposed response action design is not effective as interim measure, the TCEQ may require that UPRR evaluate and implement additional response actions as necessary including future revisions to the Response Action Plan.	The NAPL Collection System design drawings that were submitted to the TCEQ in the January 9, 2019 Monthly Status Update are provided under Attachment 2A of this Conceptual RAP. The operation and maintenance of the NAPL Collection System is discussed on Worksheet 5.0. UPRR will develop a contingency plan for implementing additional measures to prevent seeps in the Englewood Intermodal Yard following the additional NAPL assessment and TPH-NAPL Assessment activities discussed on Worksheet 2.0 of the Conceptual RAP. The additional data collected from those assessments will be used to evaluate potential remedial actions in that area. The contingency plan and potential other remedial actions will be provided in the Revised RAP.

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
						The revised RAP shall include modified Appendix 4 - institutional control (ICs) for the UPRR owned property to include TPH-NAPL area, TPH-NAPL interim measures, and update the maintenance and monitoring to include the on-site PMZ, groundwater monitoring, and remediation measures. Also, revise Appendix 5 to include removal of the ICs for the off- site affected residential properties. Modifications of the existing monitoring well system configuration and designation are needed to reflect changes in the PMZs, to include: background wells, APOE wells, CAO wells, and CAS wells. This includes continued monitoring of the four wells screened in the D-TZ. Specific revisions to the CP Tables and CP Attachment A maps are noted in the following comments below.	UPRR will revise the institutional controls for the UPRR-owned property to include the TPH-NAPL area and NAPL Collection System following the additional assessment activities detailed on Worksheet 2.0. Appendix 5 of the Conceptual RAP includes the signed institutional controls for the off-site City of Houston ROW and the private landowners bounded by Liberty Rd., Wylie St., Erastus St., and Cushing St.
Specific T23(3)	B	XI.A.	XI.A.1, XI.A.2, & XI.A.3	30 TAC 335.167 & 350	Inconsistent/ Incomplete	Since the proposed PMZ shall be limited to the on-site UPRR owned property, revise the CP Attachment A Figures to include the following: CP Attachment A, Sheet 1 of 7, "*Facility Site Map*" is not legible. Provide a new map that clearly labels the facility name, facility property boundary, and nearby local roadway (e.g. interstate, highway, etc.,) with respect to the City of Houston. CP Attachment A, Sheet 2 of 7, *Solid Waste Management Units (SWMUs)/ Areas of Concern (AOC) Location Map*. Revise this figure and legend by deleting <u>all</u> references to proposed on-site and off-site TI Zones, and the off-site PMZ boundary. The PMZ boundary should be limited to only the UPPR property. Also, the text in the legend and name of the specific SWMUs/AOCs is not legible. CP Attachment 3 of 7, *Compliance Monitoring Well Network.* The point-of compliance (POC) wells and background wells should have different symbols so the wells are easily distinguished from one another. Also, the name of the RCRA Permitted Unit which is identified as "*SWUM 1*" needs to remain as *"RCRA-Regulated Waste Management Unit 001"* to be consistent with the facility Notice of Registration (NOR).	Per the meeting on June 12, 2019, the required Compliance Plan (CP) figures depicting the final PMZs will be prepared following completion of the additional Groundwater and NAPL Assessment activities detailed on Worksheet 2.0 and preparation of the Revised RAP. Per the TCEQ request, UPRR will not include the corrective action observation (CAO) wells, corrective action system (CAS) wells, and any future attenuation monitoring point (AMP) wells on the CP Tables. UPRR will revise the Part B Permit Renewal Application including the Compliance Plan as part of the Revised RAP submittal to the TCEQ.
						CP Attachment A, Sheet 4 of 7, PMZ Boundary Map, A-TZ. Remove all references to the off-site PMZ and TI. The title should be re-labeled to state, "PMZ Boundary and Well Location Map, A-TZ." Remove references to AMP wells in the figure. Revise the figure to reflect the following list of wells as designated below: On-site Main PMZ: o Alternate point of exposure (APOE) wells: MW-15A, MW-17, MW-18A, MW-49A, MW-50A. MW-57A, MW-58A, MW-60A, MW-69A. o Corrective Action Observation (CAO) wells: MW-18A, MW-20A, MW-51A, MW-77A, MW-78A, MW-79A. On-site West PMZ: o APOE wells: MW-38A. o CAO wells: MW-9, MW-12A, MW-13. Off-site CAO wells: MW-25A, MW-26A, MW-32AR, MW-33A, MW-35A, MW-36A, MW-44A, MW-59A, MW-61A. Background well: MW-51A. Corrective Action System wells: MW-17A, MW-18A, MW-20A, and MW-79A. CP Attachment A, Sheet 5 of 7, PMZ Boundary Map, B-CZ/B-TZ. Remove all references to the off-site PMZ and TI. The title should be re-labeled to state, "PMZ Boundary and Well Location Map, B-CZ/B-TZ." Remove references to AMP wells in the figure. Revise the figure to reflect the following list of wells as designated below: On-site Main PMZ: o APOE wells: MW-15B, MW-47B, MW-49B, MW-57B, MW-72B, MW-80B, MW-81B. o CAO wells: MW-14, MW-74B, MW-75B. On-site West PMZ: o APOE wells: MW-38B, MW-39B, MW-42B, MW-62B. o CAO wells: MW-12B, MW-40B. Off-site CAO wells: PMW-28BA, MW-26A, MW-32B, MW-33BR, MW-35B, MW-36B, MW-44A, MW-59B, MW-63B, MW-67B MW-68B, MW-70B, MW-71B, MW-82B, MW-83B, MW-84B, MW-89B, MW-90B	See previous response.

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
						Corrective Action System wells: MW-57B, MW-68B, MW-72B, and MW-74B. CP Attachment A, Sheet 6 of 7, *PMZ Boundary Map, C-TZ.* Remove all references to the off-site PMZ and TI. The title should be re-labeled to state, "*PMZ Boundary and Well Location Map, C-TZ.*" Remove references to AMP wells in the figure. Revise the figure to reflect the following list of wells as designated below: On-site Main PMZ: o APOE wells: MW-15C, MW-17C, MW-18C, MW-47C, MW-48C, o CAO wells: MW-19C, MW-23C, MW-45C, MW-51C, MW-76C, MW-75B. On-site West PMZ: o APOE wells: MW-12C Off-site CAO wells: MW-25C, MW-27C, MW-34CR, MW-44C, MW-45C, MW-46C, and MW-54C MW-68C, MW-83C, MW-87C, Corrective Action System wells: MW-17C, and MW-18C CP Attachment A, Sheet 7 of 7, *Post-Response Action Care Well Location Map.* Remove all references to off-site PMZ and TI. The title should be re-labeled to state, "*Well Location Map, D-TZ*" because the TCEQ shall require UPRR to continue monitoring the deeper transmissive zone to verify the groundwater PCLE zone is not migrating vertically. Include D-TZ wells MW-36D, MW-59D MW-65D and MW-66 D as CAO wells. Since all the above CP Attachment A figures will be included in the Final Draft Permit (FDP) as a black and white copies, each well designation (i.e., APOE, background well, CAO well, etc.) should have a separate symbol that is easily distinguished. The font may need to be enlarged and/or darkened on all the maps. For future reference, please note that CAO wells, CAS wells, and any future AMP wells should not be listed in CP Tables. These wells are only depicted in the CP Attachment A maps so that once wells meet their respective PCLs, UPRR may propose to discontinue monitoring for those wells in future Groundwater Monitoring Report submittals to account for changing environmental conditions and/or plume morphology without modification to the Permit.	See previous response.
Specific T27(3) T41(4)	B	XI.A. & XI.D.	XI.A.3 & CP Tables I & II and XI.D. RACR	30 TAC §335.167 , §350, & §305.45 (a) (8)(C)3	Incomplete/ Inconsistent	On June 21, 2017, UPRR submitted revisions to the July 18, 2016, Response Action Completion Report (RACR) in response to the TCEQ April 10, 2017 3rd NOD. The RACR documents the completion of response action for the soil PCLE zones for SWMUs 2, 4, 5, 6, 7, 8, 9, 10, and 11; and AOCs 1, 4, 6, and 7. The response actions included soil excavation, consolidation, and capping. On September 27, 2017, UPRR submitted the first Post Response Action Report (PRACR) indicating several deficiencies were observed during the cap inspection which required necessary repairs to maintain the cap integrity. Many of the deficiencies were corrected by UPRR and verified by follow-up inspections documented in the PRACR - Monthly Status Reports, except for the seeps in the Englewood Intermodal Yard concrete cap. The TCEQ noted in the October 31, 2018; December 6, 2018; and February 6, 2019 letters that UPRR needed to implement interim response actions to address the TPH-NAPL seeps in Englewood Intermodal Yard cap. Furthermore, in the February 6, 2019 letter, the TCEQ directed UPRR to conduct additional assessment of the TPH-NAPL source(s) and extent of contamination. Since additional assessment and interim response action(s) are needed to address the TPH-NAPL, the TCEQ considers UPRR's July 18, 2016 RACR as an interim response action report. Based on the outcome of the TPH-NAPL assessment and implemented interim response action(s), UPRR may need to submit a revised RACR. Any interim response actions implemented for the UPRR HWPW facility can be incorporated as part of the final response action. Therefore, please revise the Permit application as follows: Modify Section XI.D. with a revised RACR to include the following: o Retitle the document as, "*Interim - Response Action Completion Report.*" o Either remove reference to groundwater in the Executive Summary since the interim response action only addresses soils or clarify that response actions for groundwater will be addressed in the revised RAP that will include alternative remedies for decontamination and removal in addition to the proposed on-site plume management zone and ICs. o Remove the ICs language from Appendix 3. Appendix 3 should be marked "reserved" and serve as a place holder. The TCEQ shall require revisions to the ICs to include the TPH-NAPL area and its associated response action(s). The revised ICs shall then be resubmitted with the final RACR. Revise CP Table I, Item C. Remove the comment in right hand column. CP Table I is only for listing those units that are subject to groundwater monitoring. Revise CP Table II as follows: o Add TPH-NAPL area as a new AOC because additional assessment and implementation of necessary interim response action(s). o For SWMUs 2, 4, 5, 6, 7 8, 9, 10 and 11; and AOCs 1, 4, 6, and 7, UPRR may add a Foot Note # 4 at the bottom of the table to reflect implementation/completion of the soil interim response action.	UPRR will evaluate additional response actions to address the TPH-NAPL in the Englewood Intermodal Yard after completion of the additional NAPL Assessment and TPH-NAPL Assessment detailed on Worksheet 2.0 of the Conceptual RAP. If necessary, the Revised RAP will include possible additional response actions and engineering designs. UPRR will submit the revised RACR as "Interim" per this deficiency with the Revised RAP and will revise CP tables as requested.

Application Deficiencies – Technical NOD #4

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
Specific T31(3) T34(4), T55(4) T56(4)	B	XI.B & XI.D.	XI.B CP Tables III & IIIA, XI.D.6	30 TAC §335.167 & §350	Inconsistent/ incomplete	Include the following revisions to CP Tables III and IIIA. Revise the groundwater protection standard (GWPS) in CP Tables III and IIIA based on updated TRRP 2018 Tier 1 PCLs. Since there are two proposed on-site PMZs (west and main-plant) CP Tables III and IIIA should include separate lists of COCs and GWPS to be achieved for each PMZ. Since both PMZ boundaries shall be limited to the on-site UPRR HWPW property, remove all references to off-site PMZ in both CP Tables III and IIIA. Revise column B. Remove reference to all attenuation monitoring point (AMP) wells and attenuation action levels (AALs) in CP Tables III and IIIA. The Permit application directions specify that any proposed AMP and their respective AALs only need to be depicted in the CP Attachment A maps. Each AMP well should be depicted in CP Attachment A Maps with their respective AAL for each contaminate in the text box next the AMP well. To verify the contaminant plume does not migrate off the UPRR owned property at levels exceeding residential PCLs, revise Column B in CP Tables III and IIIA so the GWPS for each COC is based on commercial/industrial PCLs within the PMZ; and revise Column C in CP Tables III and IIIA to include the GWPS for each COC based on residential PCLs to be achieved at the POE. Revise Column A in CP Tables III and IIIA to include the same. list of COCs for each groundwater transmissive zone. Add Arsenic as a COC and its GWPS to both CP Tables III and IIIA, since the COC was reported above residential and commercial/industrial Tier 1 PCLs in the UPRR August 13, 2018 Monitoring Report. Add the D-TZ transmissive unit with a proposed list of COCs and GWPS to CP Tables III and IIIA. The D-TZ should be part of the monitoring program since Benzo(a)pyrene has been detected in MW-36D during the March and June 2018 sampling events above residential and commercial/industrial Tier 1 PCLs as reported in the UPRR August 13, 2018 Monitoring Report. The list of COC for the D-TZ should include the same list of all COCs associated with the above transmissive zones. Benzo(a)pyrene, Fluorene, Pyrene, and Phenanthrene should be added to CP Table IIIA because the March and June 2018 sampling events indicate concentrations in certain wells above residential and commercial/industrial Tier 1 PCLs in the UPRR August 13, 2018 Monitoring Report.	Per the meeting on June 12, 2019, UPRR will update the required CP tables following completion of the additional Groundwater and NAPL Assessment activities detailed on Worksheet 2.0. UPRR will revise the Part B Permit Renewal Application including the Compliance Plan as part of the Revised RAP submittal to the TCEQ.
Specific T30(3) T38(3)	B	XI.C	CP Tables IV & IVA	30 TAC §335.165	Inconsistent	Revise Columns A and B in CP Tables IV and IVA so the list of COCs and their respective concentration levels or GWPS are the same for each groundwater transmissive zone.	See previous response.
Specific T30(3)	B	XI.A & XI.C	CP Tables I, II, IV, IVA, V and VI	30 TAC §335.165	Inconsistent	Remove reference to *"SWMU-1"* and replace it with "*RCRA- Regulated Waste Management Unit 001*"	See previous response.
Specific T47(3)	B	XI.D.	XI.D.3.a.(2). D. and CP Table V	30 TAC §335.165 & §350	Inconsistent/ Incomplete	Please revise CP Table V to reflect the following list of wells as designated below: Alternate Point of Exposure (APOE) wells On-site Main PMZ: A-TZ: MW-15A, MW-17A, MW-18A, MW-49A, MW-50A. MW-57A, MW-58A, MW-60A, and MW-69A. B-TZ/B-CZ MW-15B, MW-47B, MW-49B, MW-57B, MW-72B, MW-80B, MW-81B C-TZ: MW-15C, MW-17C, MW-18C, MW-47C, MW-48C On-site West PMZ: A-TZ: MW-38A B-TZ: MW-38B, MW-39B, MW-42B, MW-62B C-TZ: MW-12C Add the following well to the current list of Background Wells: On-site Main PMZ: A-TZ: MW-51A Since there is no off-site PMZ, remove the two (2) asterisks at the bottom of the page.	See previous response. This deficiency refers to MW-47B, however, monitoring well MW-47B does not exist at the Site.

Application Deficiencies – Technical NOD #4

ID[1]	App Prt	App. Section	Location[2]	Citation	Error Type	Deficiency Description/Resolution	Responses/Comments
Specific T58					Incomplete/ Inconsistent	In the current RAP (Rev. 3), UPRR explains that the groundwater-to-air (^{Air}GWIhn-V) PCL was evaluated for each COC and concluded that the potential for vapor migration from groundwater is low. For clarification, the TCEQ points out that the comparison of groundwater monitoring data to the $^{Air}GW_{Ihn\text{-}V}$ PCL is an evaluation of only the outdoor air exposure to vapors from affected groundwater. The Permit application failed to consider the on-site vapor intrusion (VI) exposure pathway completely by not including an evaluation for potential indoor-air VI pathway. Since there are no structures currently on the affected UPRR owned property currently, the TCEQ is not requiring that UPRR evaluate the potential for indoor-air VI pathway on-site. If UPRR intends to install any structure(s) on the UPRR-owned property, then the VI pathway may need to be evaluated prior to development. UPRR should evaluate the potential indoor-air VI pathway for the off-site affected properties for the reasons included in comment T59 of this NOD. Be advised that if assessment results indicate there is a VI concern for the off-site affected properties, then UPRR must evaluate and implement additional response actions as necessary which may require future revisions to the RAP.	See response to Specific T59 below.
Specific T59	B	XI.D	XI.D.6.	30 TAC 335.167 & 350	Incomplete/I nconsistent	Based on review of the August 13, 2018 Monitoring Report, UPRR needs to conduct further assessment to evaluate the potential in-door air VI pathways into structures located north of the HWPW Facility near the intersection of Clementine and Wylie Street. The highest concentration of naphthalene in off-site wells screened in the second transmissive unit, B- CZ/B-TZ, was reported in monitoring well MW-68B (23 mg/l). Concentrations of COCs in off- site monitoring wells screened in the uppermost transmissive unit, A-TZ, were either non- detect or less than the residential Tier 1 PCLs for Class 1 groundwater. However, there are no wells near MW-68B that are screened in the ATZ to determine if the ATZ has been affected in this area. Considering that naphthalene is a petroleum hydrocarbon and the vertical separation distance between the ground surface and observed water table at well location MW-68B, if the uppermost transmissive zone (A-TZ) at MW-68B is not impacted, the VI pathway would be incomplete for the off-site affected properties. However, there are no wells near MW-68B that are screened in the A-TZ to determine if the groundwater in Zone A-TZ has been affected in this area. Therefore, UPRR should install additional monitoring wells screened in the ATZ at well location MW-68B. Please submit an interim assessment work plan and schedule that describes a proposed assessment strategy for the VI pathway.	UPRR prepared a response to Deficiency No. Specific T59 in a letter dated July 3, 2019 detailing the investigation activities to address the TCEQ comment. A copy of the letter is provided in Appendix 3 of the attached Conceptual RAP.
Specific T52(3)	B	XI.D.	XI.D.8. CP Table VIII	30 TAC §335.167 and §350	Incomplete	The activities outlined in the revised RAP Implementation Schedule and as outlined in this 4th NOD should be included in a revised CP Table VIII. Include activities for completing assessment for off-site VI, TPH-NAPL and creosote DNAPL and dissolved phase COCs as explained above. Include a schedule and outline the activities for completing evaluation of NAPL and dissolved phase plume recovery system, and possible implementation of other measures and engineered response action system design. Include a revised schedule for providing proof of filing of ICs for the proposed West and Main PMZs (shall be limited to only the UPRR owned property and the City of Houston owned property which contains only the capped-sidewalk just north of the site).	Per the meeting on June 12, 2019, UPRR will update the required CP tables following completion of the additional Groundwater and NAPL Assessment activities detailed on Worksheet 2.0. UPRR will revise the Part B Permit Renewal Application including the Compliance Plan as part of the Revised RAP submittal to the TCEQ. The schedule for the additional assessment activities outlined in the attached Conceptual RAP is provided on Worksheet 6.0.
Specific T60	B	XI.E	Tables XI.E.1- XI.E.3	30 TAC §335.167	Incomplete	Please revise the Financial Assurance calculations in Tables XI.E.1- XI.E.3 to include cost for changes to the corrective action monitoring as addressed in comments of this table.	The Financial Assurance calculations will be updated as part of the Revised RAP submittal after the additional investigation activities are completed.

[1]Deficiency ID – Key: A#=Administrative deficiency (ex. A12); T#=Technical deficiency (ex. T10); C#=Comment only (ex. C1); Number in parenthesis (n) = nth instance of same deficiency (ex. T1(2) is the second instance of deficiency T1 originally identified in previous NOD).

[2]Location of deficiency in submittal/application. Items in square brackets [ ] refer to applicant's supplemental information submitted as attachments to the application form.

CONCEPTUAL RESPONSE ACTION PLAN – Revision No. 4

UNION PACIFIC RAILROAD
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
SWR NO. 31547 / IHW NO. 50343

JULY 9, 2019

Prepared for:

Mr. Kevin Peterburs.
UNION PACIFIC RAILROAD COMPANY

4823 N 119th Street
Milwaukee, WI 53225

Prepared by:

GOLDER ASSOCIATES INC.

2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
(512) 671-3434

Texas Geoscience Firm No. 50369

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/2/19

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Plan

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc.) SWR No. 31547
check one: ___Initial submittal for this on-site property X Subsequent submittal for this on-site property
Report date: July 9, 2019 – Rev 4 TCEQ Region No.: 12

TCEQ Program (check one)

- [X] Corrective Action (Mail Code 127)
- [ ] Voluntary Cleanup Program (Mail Code 221)
- [ ] RPR Section (Mail Code 137)
- [ ] Superfund PRP Lead (Mail Code 143)
- [ ] Municipal Solid Waste Permits (Mail Code 124)

On-Site Property Information

On-Site Property Name: Union Pacific Railroad Houston Wood Preserving Works Site
Street no. 4910 Pre dir: ___ Street name Liberty Street type: Road Post dir: ___
City: Houston County: Harris County Code: 101 Zip: 77007
Nearest street intersection or location description: Site is located south of Liberty Rd. between Kashmere St. and Lockwood St, and north of Lee St.

Latitude: Decimal Degrees (circle one) North 29.787413
Longitude: Decimal Degrees (circle one) West 95.321062

Off-Site Affected Property Information

Off-Site Affected Property Name: See Appendix 5 for Off-Site Affected Property information
Physical Address: NA
Street no. ___ Pre dir: ___ Street name ___ Street type: ___ Post dir: ___
City: ___ County: ___ County Code: ___ Zip: ___

[ ] Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Union Pacific Railroad
Contact Person: Kevin Peterburs Title: Manager, Site Remediation
Mailing Address: 4823 N 119th Street
City: Milwaukee State: WI Zip: 53225 E-mail address kjpeterb@up.com
Phone: 414-267-4164 Fax: ___

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person Kevin Peterburs Name, print: Kevin Peterburs Date: 7/9/19

RAP Executive Summary	ID No.: SWR No. 31547
	Report Date: July 9, 2019 – Rev 4

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

This Conceptual Response Action Plan (RAP) is being submitted with revisions based on the Texas Commission on Environmental Quality (TCEQ) 4th Technical Notice of Deficiency (TNOD) dated April 11, 2019 on the Union Pacific Railroad (UPRR) Houston Wood Preserving Works Permit Renewal/Compliance Plan with Major Amendment, Permit/Compliance Number 50343, ISWR 31547. Following the additional assessment activities as required per the 4th TNOD and discussed in this Conceptual RAP, UPRR will prepare the Revised RAP.

Property Location, Land Use, and Operations

The Union Pacific Railroad (UPRR) Houston Wood Preserving Works (HWPW) Facility at 4910 Liberty Road, Houston, Harris County, Texas (the Site) is located within unoccupied industrial land and also includes the Englewood Intermodal Yard, which is to the south of the former HWPW facilities. The Englewood Intermodal Yard is used for the transfer of box containers from rail cars to truck trailers and vice-versa. UPRR mainline rail and siding rails lie between the former HWPW and the Englewood Intermodal Yard. The Site will remain commercial/industrial for the foreseeable future. The Site was first developed for creosoting operations in 1899 and operated various creosoting operations until 1984 when operations ceased. The facility was dismantled in the early 1990s. Details of the history and previous operations at the Site have been discussed in detail in the previously submitted Affected Property Assessment Report (APAR) (ERM, 2000) and Revised APAR (ERM, 2004), as well as the RCRA Facility Assessment (RFA) Report (PRC, 1993).

The surrounding properties within a 500-foot radius of the Site, including the Englewood Intermodal Yard, consist of residential to the northwest, north, southeast, and south. The UPRR Englewood Classification Yard, commercial/industrial property, is located to the east of the Site. An area of undeveloped land and abandoned houses are located west of the Site. The 500-foot radius field survey did not identify any current potential groundwater receptors within the residential neighborhood. No water wells, water tanks, cisterns, or windmills, or surface water bodies were encountered. The nearest surface water body is Buffalo Bayou, located approximately 1.6 miles southwest of the Site. The potential for lateral migration of groundwater from the Site to the southwest approximately 8,500 feet to Buffalo Bayou is not likely.

Assessment Results

The initial APAR prepared for the Site was submitted to the TCEQ dated June10, 2000 (ERM, 2000). A revised APAR was submitted to the TCEQ dated June 10, 2004. Pastor, Behling & Wheeler, LLC (PBW) prepared an APAR Addendum dated July 2009 (PBW, 2009). Following comments from the TCEQ, PBW submitted an Updated APAR Addendum dated October 2010, with response to comments dated March 29, 2011. The TCEQ approved the APAR in a letter dated April 13, 2011.

As detailed in the APARs and subsequent submittals, the Affected Property consists of surface soils, subsurface soils, and groundwater affected by chemicals of concern (COC) at the Site. The soil and groundwater exposure pathways were evaluated as part of the Site assessments are considered to be complete and/or anticipated to be complete.

Site stratigraphy from the ground surface to a depth of approximately 135 feet is separated into the following units: Fill Material (0 to 5 feet thick), A-Cohesive Zone (A-CZ) (8 to 15 feet thick); A-Transmissive Zone (A-TZ) (4 to 21 feet thick); B-Cohesive Zone (B-CZ) (6 to 19 feet thick); B-Transmissive Zone (B-TZ) (discontinuous, where present, 3 to 10 feet thick); C-Cohesive Zone (C-CZ) (8 to 20 feet thick); C-Transmissive Zone (C-TZ) (10 to 13 feet thick); D-Cohesive Zone (D-CZ) (17 to 36 feet thick); and D-Transmissive Zone (D-TZ).

As detailed in the Updated APAR Addendum (PBW, 2010), target COCs in soil and groundwater media were evaluated using the March 2010 TCEQ TRRP Residential Protective Concentration Levels (PCLs), or Residential Assessment Levels (RALs) to establish the Affected Property. Surface and subsurface soil data collected from 1997 through June 2010, with subsequent sampling in 2013 and 2014, were evaluated to assess the Affected Property and PCL Exceedance (PCLE) Zone in surface and subsurface soils. Groundwater data from the most recent sampling event (January 2019) were evaluated to assess COC exceedances in groundwater.

PCLE Zones

Soils

The soil critical PCLs (cPCLs) were established for the Site by using the lower of the commercial/industrial PCLs for on-site soils and residential PCLs for off-site soils for the following pathways:

- ${}^{Tot}Soil_{Comb}$ (Tier 1);
- ${}^{Air}Soil_{Inh\text{-}V}$ (Tier 1); and
- ${}^{GW}Soil_{Ing}$ (Tier 1 or 2).

Although the former wood preserving works portion of the Site is partially covered with crushed gravel and soil, the ${}^{Tot}Soil_{Comb}$ pathway was evaluated as potentially complete since potential future construction activities could occur at the Site. Most of the Englewood Intermodal Yard has a concrete pavement cover, and the rail area between the HWPW and the Englewood Intermodal Yard is covered with railroad ballast, which both prevents exposure to surface and subsurface soils in the area.

Comparing the surface and subsurface soil analytical data to the appropriate critical PCLs, concentrations of 16 COCs exceeded their respective critical PCLs:

Surface Soils

- 1,2-Diphenylhydrazine
- 2,4-Dinitrotoluene
- 2-Methylnaphthalene
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Dibenzofuran
- Naphthalene
- Pentachlorophenol
- Arsenic
- Lead
- TPH

Subsurface Soils

- 2-Methylnaphthalene
- Benzene
- Naphthalene
- Pentachlorophenol

The surface soil PCLE zone extends across the Original Process Area (SWMU 5) and Recent Process Area (SWMU 4), down the South Drainage Ditch (SDD) (SWMU 2), and across the Former Inactive Wastewater Lagoon (AOC 6). The PCLE zone was primarily defined by the concentrations of benzo(a)anthracene, benzo(a)pyrene, naphthalene, and pentachlorophenol in surface soils. Additional soil sampling conducted in 2013 indicates that the surface soil PCLE Zone extends into the Englewood Intermodal Yard. Additional soil sampling in 2014 indicated that the surface soil PCLE Zone (benzo(a)pyrene and pentachlorophenol) extended north beyond the fence to the edge of Liberty Road, but was delineated along the northeast side of the Site. Arsenic and lead were detected at concentrations greater than cPCLs in surface soil in the Englewood Intermodal Yard.

For subsurface soils, the PCLE zones for 2-methylnaphthalene, naphthalene (more mobile COCs in soils), and pentachlorophenol were extrapolated using available subsurface soil data and projecting the surface PCLE zone for those two COCs to the subsurface. By using the surface PCLE zone, this projection assumes the PCLE zone extends from the ground surface to the top of the uppermost GWBU (i.e. A-TZ). However, except for one sample in MW-18A, none of the groundwater samples analyzed for pentachlorophenol from A-TZ wells collected during the 2018 and 2019 groundwater monitoring events had detected pentachlorophenol concentrations above the RAL, suggesting the pentachlorophenol concentrations in surface and subsurface soils are protective of groundwater. Pentachlorophenol was detected in MW-18A during the January 2019 sampling event, which was the first detection in the well since 2002. The detection will be confirmed during the July 2019 site-wide groundwater sampling event. The subsurface PCLE zone is confined to the area around the Original and Recent Process Areas (SWMUs 4 and 5), with a small area of naphthalene subsoil PCLE Zone in the Englewood Intermodal Yard area.

The surface soil and subsurface soil PCLE Zones will be re-evaluated following a proposed assessment for total petroleum hydrocarbons (TPH) in surface and subsurface soils. In response to the TCEQ 4th TNOD stating that "the current assessment of the total petroleum hydrocarbon – non-aqueous phase liquid (TPH-NAPL) seep source(s) and extent is insufficient because only a limited soil assessment was performed" and the TCEQ letter dated February 6, 2019 requesting additional TPH delineation in soils, UPRR proposes to conduct a TPH-NAPL Assessment primarily within the Englewood Intermodal Yard area consisting of rapid optical screening technology approaches (i.e. TarGOST) and soil sampling for TPH to evaluate the affected soils laterally and vertically pursuant to 30 TAC §350.51(d). Details of the additional assessment are provided on Worksheet 2.0.

Groundwater

A total of 109 groundwater monitoring wells have been installed on and off-site in the GWBUs A-TZ, B-CZ/B-TZ, C-TZ, and D-TZ. Groundwater in A-TZ generally flows to the northeast; groundwater in B-CZ/B-TZ generally flows across the Site to the east; groundwater in the C-TZ flows from northeast to southwest, and groundwater in the D-TZ appears to flow to the northwest.

Based on the recent groundwater analytical data from the 2018 and January 2019 groundwater sampling events, concentrations of the following 23 target COCs exceeded their respective RALs where detected or had a SDL greater than the cPCL (>SDL) for COCs with no detections:

VOCs

- 1,2-Dichloroethane (B-TZ, one well)
- Benzene (A-TZ, B-TZ, C-TZ)
- Toluene (C-TZ only)
- Vinyl Chloride (A-TZ and C-TZ)

SVOCs

- 1,2-Diphenylhydrazine (B-TZ & C-TZ)
- 2,4-Dimethylphenol (A-TZ, B-TZ, C-TZ)
- 2,6-Dinitrotoluene (B-CZ/B-TZ & C-TZ)
- 2-Methylnaphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)

Metals

- Arsenic (A-TZ, B-CZ/B-TZ, C-TZ)
- Lead (A-TZ, C-TZ, & D-TZ)

- 4,6-Dinitro-2-methylphenol (B-TZ, one well)
- Benzo(a)anthracene (B-CZ/B-TZ)
- Benzo(a)pyrene (B-CZ/B-TZ, C-TZ, and D-TZ)
- bis(2-Chloroethoxy)methane (B-TZ, one well)
- bis(2-Ethylhexyl)phthalate (A-TZ, one well)
- Dibenzofuran (A-TZ, B-CZ/B-TZ, & C-TZ)
- Fluoranthene (B-TZ only, one well)
- Fluorene (B-TZ only, one well)
- Naphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)
- Pentachlorophenol (A-TZ, B-CZ/B-TZ, & C-TZ)
- Phenanthrene (B-TZ only, one well)
- Phenol (A-TZ & B-TZ)
- Pyrene (B-TZ, one well)

As noted above, semi-volatile organic compounds (SVOCs) fluoranthene, fluorene, phenanthrene, and pyrene were detected above cPCLs in only one well, MW-74B, during the March 2018 sampling event. During the other three sampling events in 2018 and 2019, the concentrations of fluoranthene, fluorene, phenanthrene, and pyrene were detected below cPCLs.

SVOCs 4,6-dinitro-2-methylphenol (MW-84B, June 2018), bis(2-Chloroethoxy)methane (MW-68B, January 2019), and bis(2-Ethylhexyl)phthalate (MW-15A, May 2018) were detected above cPCLs in one well during one sampling event. During the other three sampling events in 2018 and 2019, the concentrations of 4,6-dinitro-2-methylphenol, bis(2-Chloroethoxy)methane, and bis(2-Ethylhexyl) phthalate were detected below cPCLs.

Lead was detected above cPCL in MW-36A and MW-36D during the March/April 2018 sampling event and in MW-27C during the January/February 2018 sampling event. All other lead concentrations were below cPCL during all other sampling events in 2018 and 2019, indicating that the detections were not verified.

The location and extent of the groundwater PCLE zones were identified as areas where COCs are present in groundwater at concentrations that exceed the critical PCL ($^{GW}GW_{ing}$) using the most recent groundwater data (January 2019). Groundwater PCLE Zones were mapped for the three upper GWBUs: A-TZ, B-CZ/B-TZ, and C-TZ. One COC, benzo(a)pyrene, has been detected in the D-TZ GWBU during two groundwater sampling events in 2018. The benzo(a)pyrene concentration detected during the January 2019 sampling event was below the RAL and J-flagged (estimated). UPRR will evaluate further investigation of the D-TZ following the next sampling event in July 2019.

Based on groundwater data collected in 2018 and 2019, arsenic concentrations have been detected above the residential PCL in some of the monitoring wells at the Site, but have varied between sampling events in 2018 and 2019. The January 2019 groundwater data indicate that arsenic concentrations have not been delineated to residential PCLs in the A-TZ and B-CZ/B-TZ GWBUs. As discussed on Worksheet 2.0, UPRR plans to install additional monitoring wells in response to the TCEQ 4th TNOD dated April 11, 2019 requesting additional assessment for arsenic in groundwater to the west and north of the Site in the A-TZ and B-CZ/B-TZ.

The TCEQ 4th TNOD Deficiency No. Specific T59 requested that UPRR evaluate the A-TZ groundwater near monitoring well MW-68B as a possible source for potential vapor intrusion (VI) exposure. UPRR conducted the interim assessment of the A-TZ groundwater with the installation and

sampling of monitoring well MW-68A in May 2019. The analytical results for the groundwater sample indicated that the COC concentrations detected in MW-68A were well below the conservative Environmental Protection Agency's (EPA's) vapor intrusion screening level (VISL) calculator (EPA, 2015a, EPA, 2019) screening levels. Details of the assessment were provided to the TCEQ in a letter dated July 3, 2019 (Golder, 2019).

No affected or threatened receptors are associated with the groundwater PCLE zones. Groundwater supply wells are not located in the affected area and drinking water in the area is provided by a municipal water supply (City of Houston).

Dense Non-Aqueous Phase Liquids (DNAPL)
Creosote DNAPL has been detected in the GWBUs A-TZ, B-CZ, B-TZ, and C-TZ as noted in soil borings and monitoring wells. The sources of DNAPL observed at the Site are likely from spills and drippings at the Site over the 80+ years of wood treating operations, with most of the releases likely occurring prior to 1984. The wood treating facility was shut down and dismantled in the early 1990s; thus, the DNAPL sources were removed over 20 years ago. Over the past 25 years, UPRR has conducted numerous DNAPL investigations at the Site, including 98 cone-penetrometer testing (CPT) with rapid optical screening tool (ROST) borings.

However, in response to the TCEQ 4th TNOD requesting a re-assessment of creosote DNAPL using CPT/ROST, UPRR proposes to conduct an additional NAPL assessment in areas where NAPL has been observed in previous borings to evaluate the potential for migration and assess additional NAPL recovery responses. Details of the pre-design additional NAPL Assessment are provided on Worksheet 2.0.

Response Action Plan
The objective of this RAP is to develop responses to protect current and future pathways from exposure to the PCLE Zones in surface soil, subsurface soil, and groundwater. The following response actions are either proposed or have been completed at the Site to achieve this objective:

- Surface/subsurface soil – The surface/subsurface soil PCLE Zones at the Site have been/will be addressed as follows:
    1) Former HWPW Area: Remedy Standard B closure through consolidating impacted soils within the Area of Contamination (AOC) and implementing Physical Control through an engineered soil cap and asphalt roadway. This response was completed in 2016 as detailed in the Response Action Completion Report (RACR) dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Pursuant to the RACR, quarterly inspections and maintenance of the cap and roadway have been implemented;
    2) Englewood Intermodal Yard: Remedy Standard B closure by implementing Physical Control using the existing concrete pavement as a cap as detailed in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). In 2019, a NAPL Collection System was constructed as part of an interim response action consisting of two shallow collection trenches to address tar-like substance seeps identified in the Englewood Intermodal Yard. Details of the construction activities were provided in the RACR dated March 29, 2019 (Golder, 2019). Additional responses may be necessary in this area once the TPH-NAPL Assessment is conducted, as discussed on Worksheet 2.0. Pursuant to the RACR, quarterly inspections and maintenance of the cap have been implemented;
    3) Railroad mainlines and siding tracks: The response action for the operational area between the Former HWPW area and the Englewood Intermodal Yard has followed a

Remedy Standard B closure using the existing railroad ballast as a protective barrier as detailed in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Quarterly inspections and maintenance of the ballast area have been implemented.

4) City of Houston ROW along Liberty Road: Remedy Standard B closure through limited excavation of surface soils, consolidating impacted soils within the AOC, and implementing Physical Control through an engineered concrete sidewalk as detailed in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Quarterly inspections and maintenance of the cap and roadway have been implemented.

- Groundwater – A combination of Remedy Standard A and Remedy Standard B closure using a Plume Management Zone (PMZ) is proposed to address the groundwater PCLE Zones at the Site. The groundwater PCLE Zones that extend off-site outside of the proposed PMZs will be addressed under Remedy Standard A with the response action objective of groundwater decontamination. The groundwater PCLE Zones within the proposed PMZs will have the response action objective of control. For the purposes of this RAP submittal, there are three proposed preliminary PMZ areas:
    1) On-Site PMZ (Main) - The on-site PMZ (Main) will include the cumulative groundwater PCLE Zone within the UPRR-owned property from the center to the east portion of the Site.
    2) On-Site PMZ (West) - The on-site PMZ (West) will include the B-CZ/B-TZ PCLE Zone on the west side of the Site within the UPRR-owned property.
    3) Off-Site PMZ - The off-site PMZ includes the cumulative groundwater PCLE Zone that extends off-site to the north and east of the Site within the City of Houston ROW, including the privately-owned properties bound by Liberty Rd, Erastus St., Wylie St., and Cushing St.

For the Off-Site PMZ, UPRR has acquired the six signed restrictive covenants from private landowners throughout the proposed Off-Site PMZ and the signed restrictive covenant from the City of Houston for the Off-Site PMZ City of Houston ROW (Appendix 5). UPRR will continue to pursue institutional controls for the properties within the groundwater PCLE Zones and outside the proposed PMZs.

Prior to finalizing the boundaries of the proposed PMZs and to address the TCEQ 4th TNOD deficiency that requested UPRR further assess the "dissolved phase plume for benzene and naphthalene to the east, west, and south in the A-TZ, B-TZ/B-CZ and C-TZ", UPRR will conduct the pre-design Additional Groundwater Assessment as discussed on Worksheet 2.0.

Following the Additional Groundwater and NAPL Assessment activities, a Revised RAP summarizing the additional assessment activities will be submitted to the TCEQ with the proposed final PMZs and associated proposed response actions. UPRR will evaluate and develop remedial alternatives with the goal of achieving the specific response objectives for the different Remedy Standard areas at the Site. A feasibility study and potential design of any system components for groundwater treatment and/or NAPL recovery will be generally described within the Revised RAP. This may include recommendations for pilot studies or treatability studies to evaluate the feasibility of a selected response action or actions. UPRR proposes to utilize the Interstate Technology Regulatory Council (ITRC) Integrated DNAPL Site Strategy (IDSS) Technical/Regulatory Guidance Document dated November 2011 (ITRC, 2011) as a guide for developing the framework for response actions to achieve the project

goals. As detailed in the IDSS Document, establishing realistic remedial objectives (functional objectives) that are specific, measurable, attainable, relevant, and time-bound ('SMART' acronym) are key in achieving those objectives. Specifics of potential groundwater remedial actions to achieve the response objectives following the IDSS will be submitted in the Revised RAP. In the interim, UPRR proposes to monitor groundwater in the site-wide wells as part of the corrective action groundwater monitoring program. Data collected from the monitoring wells will be used to evaluate possible response actions to address the groundwater PCLE Zone pending approval of the Off-Site PMZ.

What is the selected remedy standard for this affected property? **X** A **X** B

List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Surface Soil	**Benzene, SVOCs, metals**			**X**			
Subsurface Soil	**SVOCs**			**X**			
Groundwater (within PMZ)	**Benzene, SVOCs**				**X**		
Groundwater (within PMZ)	**Arsenic**				**X**		
Groundwater (outside PMZ)	**Benzene, SVOCs**		**X**				
Groundwater (outside PMZ)	**Arsenic**		**X**				

Is there a media that contains a PCLE zone that is not addressed in this RAP? ____ yes **X** no

If yes, provide justification for not addressing the PCLE zone in this RAP.

On-site land use: [ ] Residential [X] Commercial/Industrial
Off-site land use: [X] Residential [X] Commercial/Industrial (check all that apply)

Is this a re-submittal or revision of a previous RAP? **X** Yes ____ No
If yes, explain why the RAP is being revised or resubmitted.

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).
[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

RAP Executive Summary	ID No.: SWR No. 31547
	Report Date: July 9, 2019 – Rev 4

This conceptual RAP is being submitted with revisions based on the TCEQ 4th Technical Notice of Deficiency (NOD) dated April 11, 2019 on the UPRR Houston Wood Preserving Works Permit Renewal/Compliance Plan with Major Amendment, Permit/Compliance Number 50343, ISWR 31547.

Were all the appropriate notifications made in accordance with §350.55? __X__ Yes ____ No

If no, explain why notifications were not made:

CHRONOLOGY

Below is a summary of the site investigation and regulatory chronology at the UPRR Former Houston Wood Preserving Works facility (listed in reverse order).

Date	Description
June 2019	Union Pacific Railroad (UPRR) receives letter granting extension to July 10, 2019 for submittal of response to 4th Technical Notice of Deficiency (NOD) Letter dated April 11, 2019 from the Texas Commission on Environmental Quality (TCEQ); Meeting with UPRR, Golder Associates (Golder), and TCEQ to discuss 4th Technical NOD on June 12, 2019; Golder submits the 1st Quarter 2019 Dense Non-Aqueous Phase Liquid (DNAPL) Recovery Activities Quarterly Report to the TCEQ; and Golder submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (June 28, 2019).
May 2019	UPRR submits an Extension Request for response to 4th Technical NOD Letter dated April 11, 2019 to TCEQ; UPRR installs additional well as requested in 4th Technical NOD letter; and Golder submits the PRACR Monthly Update to the TCEQ (May 31, 2019).
April 2019	UPRR receives 4th Technical NOD; Meeting with UPRR, Golder Associates (formerly Pastor, Behling & Wheeler, LLC (PBW)), and TCEQ to discuss 4th Technical NOD on April 24, 2019; and Golder submits the PRACR Monthly Update to the TCEQ (April 30, 2019).
March 2019	UPRR submits Response Action Completion Report (RACR) summarizing the NAPL Collection System installation in the Englewood Intermodal Yard with the HWPW Site; and Golder submits the PRACR Monthly Update to the TCEQ (March 29, 2019).
February 2019	TCEQ issues a comment letter dated February 6, 2019 on the Response to Comments dated January 9, 2019; Golder completes the interim remedial activities by installing the non-aqueous phase liquid (NAPL) collection system; and Golder submits the PRACR Monthly Update to the TCEQ (February 28, 2019) that includes a response to TCEQ comment letter dated February 6, 2019. The response includes details on the proposed additional total petroleum hydrocarbon (TPH) assessment in soils at the Englewood Intermodal Yard.
January 2019	Golder begins the interim remedial excavation activities for the installation of the NAPL collection system at the Englewood Intermodal Yard; Golder submits to the TCEQ the response to comments dated January 9, 2019 responding to TCEQ comment letter dated December 6, 2018 on the October 2018 PRACR Monthly Update; and Golder submits the PRACR Monthly Update to the TCEQ (February 4, 2019). Golder submits to the TCEQ the Corrective Action Monitoring Report: 2018 Second Semi-Annual Event dated January 4, 2019; Golder conducts 2019 first semi-annual groundwater monitoring event for the SWMU No. 1 and site-wide groundwater sampling event.

Date	Description
December 2018	TCEQ issues a comment letter dated December 6, 2018 on the October 2018 PRACR Monthly Update; and Golder submits the PRACR Monthly Update to the TCEQ (December 31, 2018).
November 2018	Golder submits the PRACR Monthly Update to the TCEQ (November 30, 2018).
October 2018	Golder conducts test pits in the Englewood Intermodal Yard to evaluate the NAPL seeps observed in the primary area (slots B100-B109) and other areas (parking slots B13 and B54). Golder submits the PRACR Monthly Update to the TCEQ (October 31, 2018) detailing the results of a test pit evaluation at the Englewood Intermodal Yard.
September 2018	Golder submits the PRACR Monthly Update to the TCEQ (September 28, 2018).
August 2018	UPRR submits the response to TCEQ comment and request for groundwater information letter dated November 29, 2017 – UPRR Groundwater Monitoring Data (included groundwater data from the three site-wide sampling events conducted from January – July 2018) , August 13, 2018; TCEQ issues a comment letter dated August 22, 2018 on the June 2018 PRACR Monthly Update; and Golder submits the PRACR Monthly Update to the TCEQ (August 31, 2018), including a response to the TCEQ August 22, 2018 comment letter. Response includes preliminary design for the NAPL collection system.
July 2018	Golder installs two additional wells to evaluate the lateral extent of chemicals of concern (COCs). Golder submits to the TCEQ the Corrective Action Monitoring Report: 2018 First Semi-Annual Event dated July 20, 2018; Golder conducts 2018 second semi-annual groundwater monitoring event for the SWMU No. 1; Golder submits the PRACR Monthly Update to the TCEQ (July 20, 2018).
June 2018	Golder conducts repairs to the soil cap and submits PRACR Monthly Update to the TCEQ.
May 2018	Golder conducts site-wide groundwater sampling event (through June 2018). Golder submits PRACR Monthly Update to the TCEQ (May 21, 2018).
April 2018	PBW submits the PRACR Monthly Update to the TCEQ (April 20, 2018).
March 2018	TCEQ issues comment letter on the Updated PRACR requesting monthly updates on the soil and concrete cap repairs (March 20, 2018). Golder conducts site-wide groundwater sampling event (through April 2018).
January 2018	PBW submits to the TCEQ the Corrective Action Monitoring Report: 2017 Second Semi-Annual Event dated January 18, 2018; PBW conducts 2018 first semi-annual groundwater monitoring event for the SWMU No. 1. PBW also submits the Updated PRACR (post-Hurricane Harvey) and response to TCEQ comment letter dated October 20, 2017 on January 17, 2018. PBW installed the additional alternate point of exposure (APOE) wells and monitoring/replacement wells (MW-22AR, MW-22BR, MW-82B, MW-83B,

Date	Description
	MW-83C, MW-84B, MW-85C, MW-86C, MW-87C, and MW-88C) as requested November 28, 2017. The site-wide groundwater sampling event was also conducted (through February 2018).
November 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) at the TCEQ offices in Austin on November 29, 2017. TCEQ issues letter dated November 28, 2017 requesting UPRR to install additional APOE wells and conduct additional groundwater sampling of the site-wide wells.
October 2017	TCEQ issues a comment letter dated October 20, 2017 on the post- Hurricane Harvey assessment of the capped areas PRACR.
July 2017	PBW submits to the TCEQ the Corrective Action Monitoring Report: 2017 First Semi-Annual Event dated July 7, 2017; PBW conducts 2017 second semi-annual groundwater monitoring event for the SWMU No. 1.
June 2017	UPRR submits the RCRA Part A and B Permit Renewal Application (Revision No. 4) with Response Action Plan (RAP) (Revision No. 3) to the TCEQ dated June 2017 in response to the 3rd Technical Notice of Deficiency (NOD) Letter dated April 10, 2017. This includes submitting the Response Action Completion Report (RACR) (Revision No.1), June 24, 2017.
May 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) on May 31, 2017 discussing the 3rd Technical NOD Letter dated April 10, 2017 on the RCRA Part A and B Permit Renewal Application and Response Action Plan (RAP), specifically for issues regarding the restrictive covenants/deed notices for the off-site properties.
April 2017	UPRR receives the 3rd Technical NOD Letter dated April 10, 2017 on the RCRA Part A and B Permit Renewal Application (Revision No. 3) and RAP (Revision 2) from the TCEQ.
February 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) on February 16, 2017 discussing the draft comments on the RAP (Revision No. 2) and restrictive covenants for the off-site properties.
January 2017	PBW submits to the TCEQ the Corrective Action Monitoring Report: 2016 Second Semi-Annual Event dated January 17, 2017; PBW conducts 2017 first semi-annual groundwater monitoring event for the SWMU No. 1
July 2016	UPRR submits the RCRA Part A and B Permit Renewal Application (Revision No. 3) with RAP (Revision No. 2) to the TCEQ dated July 2016 in response to the Technical NOD Letter dated June 2, 2016. This includes submitting a Response Action Completion Report (RACR). PBW submits to the TCEQ the Corrective Action Monitoring Report: 2016 First Semi-Annual Event dated July 12, 2016; PBW conducts 2016 second semi-annual groundwater monitoring event for the SWMU No. 1

Date	Description
June 2016	UPRR receives Technical NOD Letter dated June 2, 2016 on the RCRA Part A and B Permit Renewal Application and Response Action Plan from the TCEQ.
May 2016	UPRR completes the response actions authorized under the Area of Contamination to address the surface and subsurface soil Protective Concentration Level Exceedance (PCLE) Zones as detailed in the updated RAP (Revision No. 1) dated December 7, 2015.
February 2016	TCEQ approves the request to extend the termination date for the Area of Contamination from February 15, 2016 to March 7, 2016 in a letter dated February 22, 2016
January 2016	Begin response actions (excavation/placement and cap constriction) activities to address surface soil PCLE Zones. PBW conducts 2016 first semi-annual groundwater monitoring event for the Solid Waste Management Unit (SWMU) 1. PBW submits on behalf of UPRR a request to extend the termination date from February 15, 2015 to March 7, 2016 for the Area of Contamination set by the TCEQ.
December 2015	Union Pacific Railroad (UPRR) submits the RCRA Part A and B Permit Renewal Application (Revision No. 2) with Response Action Plan (RAP) (Revision No. 1) to the TCEQ dated December 7, 2015. Remediation contractor begins site preparation for response actions under the Area of Contamination.
November 2015	Union Pacific Railroad (UPRR) receives the Texas Commission on Environmental Quality (TCEQ) letter dated November 5, 2015 detailing the agency's review of the September 18, 2015 submittal titled Additional Information for Clean Closure Equivalence Demonstration. The TCEQ Industrial and Hazardous Waste (I&HW) Permits Section was unable to accept the request for discontinuing post-closure care of the former surface impoundment, Solid Waste Management Unit (SWMU) 1.
November 2015	Meeting with UPRR, Pastor, Behling & Wheeler (PBW), and the TCEQ on November 4, 2015 discussing the October 23, 2015 technical comment letter from the TCEQ.
October 2015	UPRR receives additional technical comments from the TCEQ in a letter dated October 23, 2015 on the Response Action Plan (RAP) regarding the Plume Management Zones and Technical Impracticability Demonstration provided in the Response Action Plan.
September 2015	PBW submits to the TCEQ the Additional Information for Clean Closure Equivalence Demonstration dated September 18, 2015 that included historical data and letters from 1983, 1984, and 1991 to demonstrate clean closure of the soils under the former surface impoundment (SWMU 1). The letter also included a request to cease the post-closure care for SWMU 1.

Date	Description
August 2015	UPRR receives Technical Notice of Deficiency (NOD) Letter dated August 5, 2015 on the RCRA Part A and B Permit Renewal Application and Response Action Plan from the TCEQ.
July 2015	PBW submits to the TCEQ the Corrective Action Monitoring Report: 2015 First Semi-Annual Event dated July 16, 2015; PBW conducts 2015 second semi-annual groundwater monitoring event for the SWMU No. 1.
April 2015	PBW submits to the TCEQ newspaper tear sheets and affidavits that public notice was published in English and Spanish in the *Houston Chronicle* on April 2 and *La Subasta* on March 31, respectively as required once the RCRA Permit Renewal/Compliance Plan with Major Amendment was administratively complete.
March 2015	TCEQ issues a letter dated March 13, 2015 declaring the RCRA Permit Renewal/Compliance Plan with Major Amendment was administratively complete on March 13, 2015.
February 2015	PBW submits a response letter to the TCEQ dated February 13, 2015 for the TCEQ Administrative NOD on the RCRA Part A and B Permit Renewal Application.
January 2015	PBW submits to the TCEQ the Corrective Action Monitoring Report: 2014 Second Semi-Annual Event dated January 15, 2015; PBW conducts 2015 first semi-annual groundwater monitoring event for the SWMU No. 1.
December 2014	UPRR submits the RCRA Part A and B Permit Renewal Application with Response Action Plan (RAP) to the TCEQ dated December 10, 2014. UPRR receives the TCEQ Administrative NOD Letter dated December 17, 2014.
November 2014	RCRA Permit Pre-Application Meeting with UPRR, PBW, and TCEQ dated November 6, 2014.
September 2014	UPRR holds public meeting with residents near the Site to detail institutional controls for off-site groundwater Plume Management Zone (PMZ).
July/August 2014	PBW conducts site-wide groundwater sampling event.
May 2014	PBW oversees installation of seven new monitoring wells (MW-51C, MW-76C, MW-77A, MW-78A, MW-79A, MW-80B, and MW-81B) in the Englewood Intermodal Yard to evaluate DNAPL extent and extent of chemicals of concern (COCs) in the B-CZ unit to the southeast, and one replacement well MW-34CR to replace MW-34C. Soil samples also collected from City of Houston right of way (ROW) along north perimeter of the Site.
January 2014	PBW conducts site-wide groundwater sampling event.
July 2013	PBW conducts site-wide groundwater sampling event.

Date	Description
February/March 2013	PBW conducts cone penetrometer testing (CPT)/rapid optical screening tool (ROST) and soil investigation at the Englewood Intermodal Yard adjacent to the UPRR Houston Wood Preserving Works (HWPW) site.
January/February 2013	PBW conducts site-wide groundwater sampling event (95 wells). PBW submits Proposed DNAPL Recovery Pilot Test letter to TCEQ dated February 5, 2013, and initiates monthly DNAPL recovery from on-site and off-site wells (10-12 wells) (planned for 24 months).
November 2012	Meet with TCEQ regarding proposed CPT/ROST investigation of Englewood Intermodal Yard based on DNAPL detected from the December 2011 investigation.
July 2012	PBW conducts site-wide groundwater sampling event.
January 2012	PBW conducts site-wide groundwater sampling event.
July 2012	PBW conducts site-wide groundwater sampling event.
December 2011	PBW installs additional monitoring wells in the cohesive zone B-CZ to evaluate extent of DNAPL in the B-CZ.
July 2011	PBW conducts site-wide groundwater sampling event.
April 2011	TCEQ approves the Affected Property Assessment Report (APAR) (including updates and addendums).
March 2011	PBW submits the Revised Updated APAR Addendum to the TCEQ. UPRR repairs fence around site.
January 2011	PBW conducts site-wide groundwater sampling event.
December 2010/ January 2011	UPRR/PBW submits Off-Site Notification Letters to off-site properties indicating Notice of Information Availability for the site, as required with the submittal of the Updated APAR Addendum (Oct 2012).
October 22, 2010	PBW submits the Updated APAR Addendum to the TCEQ.
June/July 2010	PBW conducts additional soil (along northeast portion of Site) and groundwater investigation (A-TZ, B-CZ, C-TZ and D-TZ wells); including site-wide groundwater monitoring event.
February 16, 2010	UPRR Response to TCEQ Comment Letter dated November 18, 2009.
January 2010	PBW conducts site-wide groundwater sampling event; selected wells are analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8620.
November 18, 2009	TCEQ Comment Letter on Revised APAR.
July 2009	PBW submits APAR Addendum to TCEQ.

Date	Description
January 2009	PBW conducts additional soil and groundwater investigation.
July 2008	PBW conducts additional CPT-ROST and groundwater investigation
January 2007	PBW conducts additional soil and groundwater investigation
August 2006	ERM-Southwest, Inc. (ERM) conducted additional soil and groundwater investigation
April 2006	ERM conducted additional soil and groundwater investigation
September 6, 2005	UPRR Response to TCEQ Response Letter dated August 1, 2005
August 2005	TCEQ Response to UPRR Response Letter dated June 9, 2005
June 9, 2005	UPRR Response to TCEQ Letter dated April 15, 2005
April 15, 2005	TCEQ Response to UPRR Response Letter dated November 19, 2004
November 19, 2004	UPRR Response to October 8, 2004 TCEQ Letter
October 8, 2004	TCEQ Comment Letter on Revised APAR
June 10, 2004	Revised APAR submitted to the TCEQ by ERM, Inc. on behalf of UPRR
November 7, 2001	Texas Natural Resources Conservation Commission (TNRCC) provides comments to July 5, 2001 response letter.
July 5, 2001	Follow-up response to November 6, 2000 TNRCC comment letter on the On-Site APAR submitted to TNRCC on behalf of UPRR.
January 9, 2001	Initial response to November 6, 2000 TNRCC comments.
November 6, 2000	TNRCC provides comments to On-Site APAR.
July 10, 2000	Affected Property Assessment Report for On-Site Property (On-Site APAR) submitted to TNRCC on behalf of UPRR by ERM.
February 20, 2000	Letter submitted to the TNRCC regarding proposed Phase 2-C investigation for further delineation of off-site areas
September 10, 1999	Phase 2-B RFI/EOC Investigation Report submitted to TNRCC on behalf of UPRR by ERM
April 27, 1998	Interim Stabilization Measures Report – Southern Drainage Ditch, submitted to TNRCC on behalf of UPRR by ERM.
February 13, 1998	Phase 2-A RFI/EOC Investigation Report submitted to TNRCC on behalf of UPRR by ERM.
January 13, 1997	RFI portion of the Phase 1 RFI/EOC Investigation Report approved by TNRCC
November 26, 1996	EOC portion of the Phase 1 RFI/EOC Investigation Report approved by TNRCC
May 23, 1996	Phase 1 RFI/EOC Report submitted on behalf of Southern Pacific Transportation Company (SPTCo) by Terranext
October 16, 1995	RFI Work Plan approved by TNRCC
September 29, 1995	EOC Work Plan approved by TNRCC
January 10, 1995	Operation and Maintenance Plan approved by TNRCC
November 3, 1994	Revised Compliance Schedule approved by TNRCC
October 14, 1994	RCRA Facility Investigation (RFI) Work Plan submitted on behalf of SPTCo
September 16, 1994	Extent of Contamination (EOC) Work Plan submitted on behalf of SPTCo
September 7, 1994	Revised Compliance Schedule submitted on behalf of SPTCo
August 19, 1994	Operation and Maintenance Plan and Compliance Schedule submitted on behalf of SPTCo

Date	Description
June 20, 1994	Permit No. HW-50343-000 and Compliance Plan CP-50343-000 issued by TNRCC.
October 1993	RCRA Facility Assessment completed on behalf of U.S. EPA by PRC Environmental Management, Inc.
May 13, 1991	RCRA Permit Application submitted by SPTCo

Note: Not all groundwater sampling events are listed in the chronology

Checklist for Report Completeness	ID No.: SWR ID 31547
	Report Date: July 9, 2019 – Rev 4

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

				Report Contents
		Required	**Cover Page**	☒
		Required	**Executive Summary**	☒
		Required	**Checklist for Report Completeness**	☒
		Required	**Worksheet 1.0** Response Action Objectives	☒
No ☐	Have new data been collected that was not previously submitted?	☒ Yes	**Attachment 1A*** Maps and Cross Sections	☒
			Attachment 1B* Graphs of Concentration versus Time	☒
		Required	**Worksheet 2.0** Response Action Design	☒
		Required	**Attachment 2A*** Response Action Diagrams and Component/Equipment Descriptions	☒
		Required	**Attachment 2B*** Proposed Well Design	☒
No ☒	Is an ecological services analysis or compensatory restoration plan part of the proposed response action?	☐ Yes	**Attachment 2C*** ESA and Compensatory Restoration Plan	☐
No ☐	Is a plume management zone proposed as part of the response action?	☒ Yes	**Worksheet 2.1** Plume Management Zone	☒
	Preliminary PMZ Maps, will be updated in the Revised RAP		**Attachment 2D*** Plume Management Zone Map	☒
	Will be updated in the Revised RAP		**Attachment 2E*** Attenuation Action Levels Determination	☐
No ☒	Is a waste control unit proposed as part of the response action?	☐ Yes	**Worksheet 2.2** Waste Control Unit	☐
			Attachment 2F* Map of Waste Control Unit	☐
No ☒	Is a technical impracticability area proposed as part of the response action?	☐ Yes	**Worksheet 2.3** Technical Impracticability	☐
			Attachment 2G* Map of Technical Impracticability Area	☐

Checklist for Report Completeness	ID No.: SWR ID 31547
	Report Date: July 9, 2019 – Rev 4

				Report Contents
No ☐	Is the response action a remedy standard B?	☒ Yes	**Worksheet 2.4** Institutional Controls	☒
	Will be updated in the Revised RAP	Required	**Worksheet 3.0** Performance Measures and Potential Problems	☐
		Required	**Worksheet 3.1** Monitoring and Sampling	☒
	Will be updated in the Revised RAP	Required	**Attachment 3A*** Map of Monitoring and Sampling Points	☐
	Will be updated in the Revised RAP	Required	**Worksheet 3.2** Operation and Maintenance	☐
	Will be updated in the Revised RAP	Required	**Worksheet 4.0** Confirmation Sampling Plan	☐
	Will be updated in the Revised RAP	Required	**Attachment 4A*** Map of Confirmation Sampling Points	☐
No ☐	Is the response action a Remedy Standard B?	☒ Yes	**Worksheet 5.0** Post Response Action Care	☒
	Will be updated in the Revised RAP		**Attachment 5A*** Map of PRAC Monitoring and Sampling Points	☐
	Will be updated in the Revised RAP		**Attachment 5B*** PRAC Costs	☐
No ☒	Does the person, who is a small business, desire to modify the financial assurance requirement?	☐ Yes	**Attachment 5C*** Small Business Affidavit	☐
		Required	**Worksheet 6.0** Implementation Schedule	☒
		Required	**Appendix 1*** References	☒
No ☐	Was any data collected that was not previously reported?	☒ Yes	**Appendix 2*** Data Tables and Boring Logs	☒
No ☐	Were any studies or tests conducted?	☒ Yes	**Appendix 3*** Studies and Tests Documentation	☒
No ☐	Is the response action a Remedy Standard B?	☒ Yes	**Appendix 4*** Proposed Institutional Controls	☐
No ☐	Are any institutional controls proposed/required on property not owned by the person?	☒ Yes	**Appendix 5*** Landowner Concurrence	☒
No ☒	Are any of the sample collection or handling procedures different from those reporting in the APAR or other previously submitted report?	☐ Yes	**Appendix 6*** Sampling Procedures	☐
No ☒	Are statistics or geostatistics proposed to be used as part of the response action?	☐ Yes	**Appendix 7*** Statistical Methodology	☐
No ☒	Was approval received from the TCEQ regarding the use of different rules to address a media?	☐ Yes	**Appendix 8*** Split Media Approval	☐

Form contents marked with an asterisk (*) are not included in the blank form.

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies	**Surface Soils (0 – 5 feet bgs)/Subsurface Soils (>5 feet bgs)**

Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

The Response Action Objectives (RAO) for the surface and subsurface soil PCLE Zones is to control exposure through physical barriers such that commercial/industrial workers will not be exposed to concentrations of COCs in excess of the critical human health PCLs (§350.33(a)(1)).

Three key approaches have been/will be implemented to protect commercial/industrial workers from exposure to COCs in surface and subsurface soils. The following approaches were detailed in the Response Action Completion Report (RACR) dated July 18, 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017):

- Former HWPW area: The response actions (soil relocation, soil capping) were completed to address the surface and subsurface soil PCLE zones at the former HWPW area. Repairs to the soil cap are periodically conducted to ensure the prevention of human exposure to the impacted soils.

- Englewood Intermodal Yard area: Most of the Englewood Intermodal Yard, which is used for the temporary parking of trailer-mounted intermodal container boxes, has a concrete pavement cover, which prevents exposure to surface and subsurface soils in the area. As part of the post-response action care, the concrete pavement in the area of the surface and subsurface soil PCLE Zone is inspected quarterly to ensure continued on-site worker protection.

  During the July 2017 quarterly inspection of the capped areas, a tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces within the Englewood Intermodal Yard (in the area of parking slots B100 to B109). The response action implemented to address the tar-like material seeps was to install a NAPL collection system by removing a section of asphalt or concrete cover, excavating the underlying soils, backfilling with high permeability fill, installing slotted pipe to allow the accumulation of NAPL and backfilling the remaining few feet with compacted selected fill and reinforced concrete. The NAPL collection system was installed in January 2019 (see Attachment 2A for details). The Interim RACR for the NAPL Collection System dated March 26, 2019 (Golder, 2019) summarizing the response actions completed was submitted to the TCEQ. The interim response action was appropriate to capture the tar-like material in the shallow subsurface prior to the material reaching the surface. UPRR continues to conduct weekly inspections of the area as part of the operation and maintenance of the NAPL Collection System.

- UPRR Main Lines Ballast Area: UPRR proposes to use the existing railroad ballast as an engineering control for preventing on-site worker exposure to impacted surface soils in this area.

To address potential exposure to surface soil PCLE Zone off-Site, the following was implemented to protect occasional trespassers from exposure to COCs in surface and subsurface soils:

- City of Houston Right of Way (ROW): The area immediately north of the AST Area (SWMU No. 8) within the City of Houston right of way (ROW) between the UPRR property boundary and Liberty Road (approximately 6 feet wide and 550 feet long) was addressed through a combination of soil excavation (placed within the capped area) and construction of a concrete sidewalk to restrict exposure to the surface soil PCLE zone.

The Affected Property (including the entire Site (HWPW and Englewood Intermodal Yard)) will also be deed restricted for commercial-industrial land use, for the use of physical controls on surface and subsurface soil, and restrictions on soil excavation within the surface and subsurface soil PCLE Zone in accordance with §350.31(g).

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

Unless otherwise noted, the response actions to address the surface soils are detailed in the RACR dated July 18, 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Soil responses across the Site were implemented differently depending on the area within the Site, with controls placed in the following areas:

Former Houston Wood Preserving Works (HWPW) Operational Areas: Surface soils with cPCL exceedances from the following Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) were excavated and consolidated within the Recent Process Area (SWMU 4), Original Process Area (SWMU 5) and AST Area (SWMU 8) under the Area of Contamination policy (RACR, PBW, 2016):

- Inactive Wastewater Lagoon (AOC 6),
- Location of the Former Incinerator (AOC 4),
- Surrounding the Tank Car Storage Area (SWMU 7),
- Oil/Water Separator (SWMU 11),
- Areas north of the Recent Process Area (SWMU 4),
- Areas north of the Original Process Area (SWMU 5) and
- Areas north of the AST Area (SWMU 8)

Confirmation samples collected along the walls and base of the excavations verified that surface soil PCLE Zones were removed to cPCLs assuming commercial/industrial land use. In these areas where surface soils were excavated, the base of excavation confirmation samples also confirmed that the subsurface soils do not appear to be impacted above cPCLs. The areas excavated were backfilled with clean fill.

Two Remedy Standard B physical controls were constructed within the Former HWPW operational areas: 1) a Soil Cap and 2) an Asphalt Cap (roadway improvement). The Soil Cap construction includes installation of a vapor barrier, with geotextile fabric and placement of an engineered soil cap (12 inches

of clayey soil and 6 inches of topsoil) to cover the consolidated soil and remaining surface soil PCLE zone on the former operational areas. The Soil Cap is vegetated and sloped to minimize infiltration to control potential leachate migration from the surface and subsurface soils to the GWBUs. The Soil Cap serves to contain and prevent exposure to COCs above cPCLs within the surface and subsurface soil PCLE Zones at the Site.

The surface soil PCLE zone along the Southern Drainage Ditch (SDD) (SWMU No. 2), including the oil/water separator (SWMU 11) east of the former AST Area (SWMU 8), was capped in place using an asphalt cover (2.5-in thick over gravel road base) as part of a roadway improvement. The Soil Cap and Asphalt Cap will be maintained under the post-response action care period.

Englewood Intermodal Yard area: The surface soil PCLE zone in the Intermodal Yard area is currently covered with a physical barrier (concrete pavement), preventing contact with the soil PCLE Zone and infiltration. As part of the post-response action care, the concrete pavement in the area of the surface and subsurface soil PCLE Zone is inspected quarterly to ensure continued on-site worker protection.

During the July 2017 quarterly inspection of the capped areas, a tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area of parking slots B100 to B109. When significant amounts of the tar-like substance surfaced, a remediation contractor (United States Environmental Services (USES)) was notified to mobilize to the Site to remove and properly dispose of the material. A NAPL collection system was installed in January 2019 to address the tar-like material seeps and to recover NAPL sufficiently to eliminate NAPL discharge. The installation included removing a section of asphalt or concrete cover, excavating the underlying soils, backfilling with high permeability fill, installing slotted pipe to allow the accumulation of NAPL and backfilling the remaining few feet with compacted selected fill and reinforced concrete (see Attachment 2A for the design details). The Interim RACR for the NAPL Collection System dated March 26, 2019 (Golder, 2019) describes the response actions that were completed. Impacted soils and NAPL excavated as part of the construction were placed in roll-off bins or drums and property disposed of in accordance with state and federal regulations. The NAPL and recovered fluids from the NAPL Collection System will be disposed of in accordance with state and federal regulations and requirements. UPRR is currently assessing the effectiveness of the NAPL Collection System. Weekly inspections and monthly updates are submitted to the TCEQ.

UPRR Main Lines Ballast Area: The area between the former HWPW operational areas and the Englewood Intermodal Yard (approximately 100 feet width) is covered with railroad ballast, ties, and rail. The existing railroad ballast serves as an engineering control for preventing onsite worker exposure to impacted surface soils in this area.

City of Houston Right-of-Way (ROW): The area immediately north of the Recent Process Area (SWMU 4), Original Process Area (SWMU 5), and AST Area (SWMU No. 8) within the City of Houston right of way (ROW) between the UPRR property boundary and Liberty Road (approximately 8 feet wide and 550 feet long) was addressed through a combination of soil excavation of the top 9-inches (consolidated within the on-site soil-capped area) and construction of a physical barrier (concrete sidewalk) preventing contact with remaining surface soils and limiting infiltration. After the soils were excavated, UPRR constructed a concrete sidewalk approximately 8 feet wide and 690 feet long serving as the physical barrier covering the remaining surface soil PCLE zone within the City of Houston ROW. As part of the post-response action care, the concrete sidewalk is inspected to ensure the physical barrier provides protection for residential receptors against exposure to the COCs above

cPCLs in surface soils in this area.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

The response actions to address potential exposures to soil PCLE Zones have been completed.

List the environmental media to which this applies **Groundwater**

Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

The RAOs to address the PCLE Zones in groundwater will be through a combination of Remedy Standard A and Remedy Standard B using a modified groundwater response objective through a PMZ. The groundwater PCLE Zones that extend off-site outside of the proposed preliminary PMZs will be addressed under Remedy Standard A with the response action objective of groundwater decontamination. UPRR will develop appropriate remedial alternatives to address the groundwater PCLE Zone that extends outside of the proposed PMZs discussed below. The groundwater remedial alternatives will be submitted in a Revised RAP following completion of the Additional Groundwater Assessment and NAPL Assessment activities discussed on Worksheet 2.0.

Per §350.33, a preliminary PMZ is proposed for the Site for the three GWBUs: A-TZ, B-CZ/B-TZ, and C-TZ. For the purposes of this RAP submittal, the overall preliminary PMZ consists of the following three separate PMZs:

1. On-Site PMZ (Main) – The on-site PMZ (Main) will include the cumulative groundwater PCLE Zone within the UPRR-owned property from the center to the east portion of the Site.
2. On-Site PMZ (West) – The on-site PMZ (West) will include the B-CZ/B-TZ PCLE Zone on the west side of the Site within the UPRR-owned property.
3. Off-Site PMZ - The off-site PMZ includes the cumulative groundwater PCLE Zone that extends off-site to the north and east of the Site within the City of Houston ROW, including the privately-owned properties bound by Liberty Rd, Erastus St., Wylie St., and Cushing St.

The exact boundaries of the preliminary PMZs will be revised following the pre-design assessments to be conducted at the Site (see Worksheet 2.0). Once the pre-design additional Groundwater Assessment and NAPL Assessment activities are completed, the Revised RAP will have the proposed final PMZ boundaries established.

The on-site PMZs (Main and West), including the former HWPW and Englewood Intermodal Yard will be deed restricted to commercial-industrial land use and to restrict future use of groundwater on-site, as well as restrictions on soil excavation activities within the surface soil PCLE Zone on the UPRR-owned property. UPRR has posted signs at the Site indicating restrictions on soil excavation at the Site. For the Off-Site PMZ, UPRR has acquired the six signed restrictive covenants from private landowners (Appendix 5) throughout the proposed Off-Site PMZ and the signed restrictive covenant from the City of Houston for the Off-Site PMZ City of Houston ROW. UPRR will continue to pursue institutional controls for the properties within the groundwater PCLE Zones and outside the proposed PMZs.

The current response triggers for NAPL in accordance with the TCEQ Risk-Based NAPL Management Guidance (TRRP-32, TCEQ, 2013) is the NAPL in contact with groundwater trigger. The response actions for that trigger include the following:

1. For areas outside of the preliminary PMZ, the Remedy Standard A NAPL response objective will be to recover soluble NAPL fraction sufficient to eliminate source contributions to the groundwater PCLE Zones; and
2. Once the final PMZs are established, the NAPL response objectives will include compliance with PMZ performance criteria at the NAPL zone through recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) and institutional controls (UPRR-owned property and six off-site properties/City of Houston ROW) on groundwater use to protect exposure to residual NAPL and COCs in the GWBUs.

As detailed in the TCEQ 4th TNOD dated April 11, 2019, the TCEQ requested UPRR to conduct a "re-assessment of creosote DNAPL" at the Site as part of the overall re-evaluation of a DNAPL recovery system. UPRR plans to conduct the pre-design NAPL Assessment (see Worksheet 2.0) to evaluate the Site and reassess the NAPL triggers detailed in the TCEQ Risk-Based NAPL Management Guidance (TRRP-32, TCEQ, 2013). UPRR will re-evaluate the DNAPL recovery activities and potential improvements to the recovery approach for the Site following that assessment in response to the TCEQ 4th TNOD deficiency. In the interim, UPRR will continue the DNAPL recovery activities from wells with NAPL present on a twice a month basis and will prepare quarterly status reports to the TCEQ.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

During the additional assessments, groundwater will be sampled from site-wide monitoring wells on a semi-annual basis, and purge water from sampling events will be drummed for proper disposal (waste stream currently on the Notice of Registration (NOR)), stored within the Container Storage Area (CSA) (Unit 007 on the NOR), and disposed of in accordance with state and federal regulations and requirements.

Recovered creosote DNAPL will be managed at the Site in containers (i.e. drums) within the CSA. In accordance with the RCRA Permit and Compliance Plan, recovered DNAPL will be stored in the CSA, then profiled, transported and disposed of in accordance with state and federal requirements within the required timeframes.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

For the groundwater PCLE Zones that will be addressed under Remedy Standard A, the reasonable timeframe to achieve Remedy Standard A response objectives will be evaluated and discussed in the Revised RAP after the proposed additional Groundwater Assessment (discussed on Worksheet 2.0) is completed and potential response actions have been evaluated.

For the groundwater being addressed under Remedy Standard B (PMZ areas), the response action will be implemented once the final PMZ boundaries are established and institutional controls are in place. Institutional controls through deed recordation (UPRR-owned property – on-site PMZs) and restrictive covenants/deed notices (Off-Site PMZ City of Houston ROW and six contiguous off-site properties) within the PMZ and restricting the use of groundwater will be used at the Site to prevent future exposure risk until groundwater concentrations achieve critical PCLs. The deed notice for the UPRR-owned property and restrictive covenants for off-site properties will be filed with the Harris County Clerk upon approval of the RAP. The signed deed restriction and restrictive covenants are included in Appendix 5. In accordance with the TCEQ regulatory guidance document *Institutional Controls Under TRRP* (RG-366/TRRP-16), proof of filing for the on-site PMZ will be submitted to the TCEQ within 120 days of approval of the RAP.

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

See Response Action Objects for surface and subsurface soils in above section.

The affected property will also be deed restricted to commercial-industrial land use and for the use of a physical control on surface soils in accordance with §350.31(g), including the City of Houston ROW.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

In the areas where surface soils were excavated, confirmation samples were collected to confirm that the COC concentrations in the remaining soils were below critical soil PCLs. Excavated surface soils were consolidated under the Area of Contamination policy, and an engineered soil cap was constructed to cover the area to prevent exposure to and migration of COCs beyond the soil PCLE Zone.

Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies **A-TZ, B-TZ/B-CZ, C-TZ – Uppermost Groundwater-Bearing Units**

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification 1 ____ **X** A-TZ, B-TZ, C-TZ 2 ____ **X** B-CZ 3 ____

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? **X** Yes ___ No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? **X** Yes ___ No

If yes, complete the appropriate portions of this report.
If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

Response actions for the groundwater PCLE zones will be evaluated following the additional Groundwater and NAPL Assessments as part of the remedial pre-design activities discussed on Worksheet 2.0. The groundwater response action objective for the PCLE Zones outside of the preliminary PMZs will be to decontaminate the groundwater by reducing the concentration of COCs to the critical PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical PCL from migrating beyond the existing boundary of the groundwater PCLE zone. Specifics of potential groundwater remedial actions to achieve the response objectives will be submitted in the Revised RAP.

For the areas within the preliminary PMZ, the NAPL response action objective using TCEQ Guidance TRRP-32 (Risk-Based NAPL Management) will be to "ensure compliance of NAPL zone in the PMZ" to address the NAPL within the A-TZ, B-CZ/B-TZ, and C-TZ PMZs. Methods to meet the response action objective for the creosote DNAPL will include recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) at the NAPL source zone so that the dissolved-phase groundwater PCLE zone is stable (or shrinking) and the PCLE performance objectives for the PMZ can be met, including no cPCL exceedances at alternate POE wells (to be specified in the Final RAP). As previously discussed, UPRR will conduct an additional NAPL assessment (using CPT/TarGOST or similar method) and evaluate potential locations for additional DNAPL recovery activities. In the interim, UPRR will continue the DNAPL recovery activities on a twice a month basis and will evaluate the effectiveness annually.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) is exceeded.

The groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) were not exceeded in any representative groundwater samples collected at the Site. Groundwater samples from wells with DNAPL present have had naphthalene concentrations detected at concentrations greater than the $^{Air}GW_{Inh-V}$ PCL; however, the samples were collected in the deeper GWBUs (i.e., B-TZ/B-CZ) where the overlying groundwater in

the A-TZ had naphthalene concentrations below the $^{Air}GW_{Inh-V}$ PCL. Therefore, potential for vapor migration from groundwater in these deeper GWBUs is low.

Regarding potential indoor vapor intrusion related to the Site, the TCEQ issued the following Deficiency No. Specific T59 in the 4th TNOD dated April 11, 2019:

Based on review of the August 13, 2018 Monitoring Report, UPRR needs to conduct further assessment to evaluate the potential in-door air VI pathways into structures located north of the HWPW Facility near the intersection of Clementine and Wylie Street. The highest concentration of naphthalene in off-site wells screened in the second transmissive unit, B- CZ/B-TZ, was reported in monitoring well MW-68B (23 mg/l). Concentrations of COCs in off- site monitoring wells screened in the uppermost transmissive unit, A-TZ, were either non- detect or less than the residential Tier 1 PCLs for Class 1 groundwater. However, there are no wells near MW-68B that are screened in the ATZ to determine if the ATZ has been affected in this area.

Considering that naphthalene is a petroleum hydrocarbon and the vertical separation distance between the ground surface and observed water table at well location MW-68B, if the uppermost transmissive zone (A-TZ) at MW-68B is not impacted, the VI pathway would be incomplete for the off-site affected properties. However, there are no wells near MW-68B that are screened in the A-TZ to determine if the groundwater in Zone A-TZ has been affected in this area. Therefore, UPRR should install additional monitoring wells screened in the ATZ at well location MW-68B. Please submit an interim assessment work plan and schedule that describes a proposed assessment strategy for the VI pathway.

UPRR prepared a response to the Deficiency No. Specific T59 in a letter dated July 3, 2019 detailing the investigation activities completed to address the TCEQ comment. A copy of the letter is provided in Appendix 3. Below is a summary of the investigation and findings:

- Monitoring well MW-68A was installed in the uppermost water-bearing zone A-TZ near monitoring well MW-68B on May 21, 2019 to evaluate potential petroleum vapor intrusion (PVI) impacts from the A-TZ. The monitoring well was completed to the base of the A-TZ and constructed with a 10-foot screened interval. Following the well installation and development activities, a groundwater sample and field duplicate groundwater sample were collected at MW-68A on May 29, 2019 and analyzed for site-specific COCs.

- The U.S. Environmental Protection Agency's (EPA's) vapor intrusion screening level (VISL) calculator (EPA, 2015, EPA, 2019) was used to calculate conservative, non-site specific, risk-based potential VI screening values for the identified COCs. The EPA tool calculates the COC concentration in groundwater, based on certain default conditions, at which the COC is not expected to pose an unacceptable VI risk and, as such, can be eliminated from further consideration.

- EPA's VISL calculator uses a conservative default attenuation factor of 0.001 for the attenuation of vapors between the groundwater source and the overlying receptor. This attenuation factor is not adjusted for the more rapid attenuation observed in petroleum hydrocarbon vapors and is therefore likely overly conservative for these compounds.

- Groundwater COC concentrations at monitoring well MW-68A from the May 2019 sampling event are below the conservative screening values estimated by EPA's VISL calculator (EPA, 2019) and indicate that VI pathway is not complete.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Groundwater discharges to surface water are not a concern at the Site and no further action is required.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

There are no potential or unprotective human health exposures at the Site from groundwater ingestion since none of the properties in the area use groundwater for drinking; and the properties are provided drinking water by the City of Houston.

As previously discussed, potential vapor intrusion (VI) from the A-TZ was evaluated per the TCEQ 4th TNOD Deficiency No. Specific T59 where the TCEQ requested UPRR evaluate the A-TZ groundwater near monitoring well MW-68B for potential VI exposure pathways. The analytical results for the groundwater sample indicated that the COC concentrations detected in MW-68A during the May 2019 sampling event were well below the conservative EPA's VISL calculator (EPA, 2015a, EPA, 2019) screening levels.

For the proposed response action of implementing the PMZ and associated application of institutional controls will also limit future use of shallow groundwater found within the PMZ. Following the additional groundwater and NAPL assessments, remediation systems will be evaluated for the areas outside the preliminary PMZ to reduce COC concentrations to below the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

In regard to ecological receptors, groundwater does not discharge to ground surface nor discharges to surface water. Therefore, there is not a complete or potentially complete pathway for ecological receptors.

ATTACHMENT 1A

MAPS AND CROSS SECTIONS

(SEE APPENDIX 2 FOR THE JANUARY 2019 GROUNDWATER MONITORING REPORT FIGURES)

ATTACHMENT 1B

GRAPHS OF CONCENTRATION VERSUS TIME

(SEE APPENDIX 2 FOR THE JANUARY 2019 GROUNDWATER MONITORING REPORT GRAPHS)

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **Groundwater – A-TZ, B-CZ/B-TZ, C-TZ GWBU**

List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

As previously discussed, the remedial objectives to address the PCLE Zones in groundwater will be through a combination of the following remedy standards:

1. Remedy Standard A - The groundwater response action objective for the PCLE Zones outside of the preliminary PMZs will be to decontaminate the groundwater by reducing the concentration of COCs to the critical PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical PCL from migrating beyond the existing boundary of the groundwater PCLE zone. UPRR will develop a response action design by evaluating appropriate remedial alternatives to address the groundwater PCLE Zone that extends outside of the proposed PMZs. As requested in the TCEQ 4th TNOD dated April 11, 2019, UPRR will conduct an additional groundwater assessment to evaluate the dissolved phase plume for benzene and naphthalene in the A-TZ, B-TZ/B-CZ, and C-TZ units and arsenic in the A-TZ and B-TZ/B-CZ. Following that pre-design assessment, groundwater remedial alternatives will be submitted in the Revised RAP, and

2. Remedy Standard B - The response action design for the groundwater PCLE Zones will be to implement the modified Remedy Standard B groundwater response action by establishing PMZs (On-Site (Main and West), and Off-Site City of Houston ROW) for the groundwater PCLE Zones in the A-TZ, B-CZ, B-TZ, and C-TZ.

For the purposes of this RAP submittal, there are three preliminary PMZ areas:

1. On-Site PMZ (Main) – The on-site PMZ (Main) will include the cumulative groundwater PCLE Zone within the UPRR-owned property from the center to the east portion of the Site.
2. On-Site PMZ (West) – The on-site PMZ (West) will include the B-CZ/B-TZ PCLE Zone on the west side of the Site within the UPRR-owned property.
3. Off-Site PMZ– The off-site PMZ includes the cumulative groundwater PCLE Zone that is a continuation of the On-Site PMZ (Main) and extends off-site to the north and west of the Site within the land designated as City of Houston ROW and one block of contiguous properties for which UPRR has obtained signed restrictive covenants/deeds.

The On-Site PMZs (Main and West, including the former HWPW, Englewood Intermodal Yard) will be deed restricted to commercial-industrial land use and to restrict future use of groundwater on-site, as well as restrictions on soil excavation activities within the surface soil PCLE Zone on the UPRR-owned

property. The Off-Site PMZ City of Houston ROW will be deed restricted to restrict future use of groundwater on-site, as well as restrictions on soil excavation activities within the surface soil PCLE Zone along a portion of the northern boundary of the Site. UPRR has obtained signed restrictive covenants from six private landowners whose properties are adjacent to the City of Houston ROW property.

For both groundwater remedial objectives, response actions for the groundwater PCLE Zones will be evaluated following the Additional Groundwater and NAPL Assessments as part of the remedial pre-design activities discussed on this Worksheet 2.0. UPRR proposes to utilize the Interstate Technology Regulatory Council (ITRC) Integrated DNAPL Site Strategy (IDSS) Technical/Regulatory Guidance Document dated November 2011 (ITRC, 2011) as a guide for developing the framework for response actions to achieve the project goals. As detailed in the IDSS Document, establishing realistic remedial objectives (functional objectives) that are specific, measurable, attainable, relevant, and time-bound ('SMART' acronym) are key in achieving those objectives. Specifics of potential groundwater remedial actions to achieve the response objectives following the IDSS will be submitted in the Revised RAP. In the interim, UPRR proposes to monitor groundwater in the site-wide wells as part of the corrective action groundwater monitoring program. Data collected from the monitoring wells will be used to evaluate possible response actions to address the groundwater PCLE Zone pending approval of the Off-Site PMZ.

DNAPL in Contact with Groundwater
To address the NAPL present in the GWBUs, the NAPL response action objectives and endpoints using TCEQ Guidance TRRP-32 (Risk-Based NAPL Management) will include the following:

1. Outside of the preliminary PMZ, the Remedy Standard A NAPL response objective will be to recover soluble NAPL fraction sufficient to eliminate source contributions to the groundwater PCLE Zones; and
2. Within the PMZ - the NAPL response objective will include compliance with PMZ performance criteria at the NAPL zone through recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) and institutional controls (UPRR-owned property and six off-site properties/City of Houston ROW) on groundwater use to protect exposure to residual NAPL and COCs in the GWBUs.

As detailed in the TCEQ 4th TNOD dated April 11, 2019, the TCEQ requested UPRR to conduct a "re-assessment of creosote DNAPL" at the Site as part of the overall re-evaluation of the nature and extent of DNAPL at the Site and assist in developing a more efficient recovery system. UPRR plans to conduct the pre-design NAPL Assessment to evaluate the Site and reassess the NAPL triggers detailed in the TCEQ Risk-Based NAPL Management Guidance (TRRP-32, TCEQ, 2013). This assessment will include conducting reconnaissance investigation activities such as CPT/TarGOST borings. Following that pre-design assessment, UPRR will develop remedial alternatives through pilot testing or treatability studies to address additional NAPL recovery at the Site. The DNAPL remedial alternatives will be included in the Revised RAP.

UPRR is currently conducting bi-monthly (twice a month) DNAPL Recovery Activities to evaluate the recoverability of the DNAPL at the Site. The DNAPL recovery consists of pumping events from wells with sufficient volumes of DNAPL that can be recovered. DNAPL recovery will continue on a bi-

monthly basis, but the recovery methods, frequency, and wells included in the DNAPL Recovery Activities will be re-evaluated following the additional NAPL assessment activities.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

Following the additional Groundwater and NAPL Assessments, UPRR will evaluate and develop remedial alternatives with the goal of achieving the specific response objectives for the different Remedy Standard areas at the Site. Feasibility studies and potential designs of any system components for groundwater treatment and/or NAPL recovery will be generally described within the Revised RAP. This may include recommendations for pilot studies or treatability studies to evaluate the feasibility of a selected response action or actions. In the interim, UPRR will continue to recover creosote DNAPL from selected wells using manual pumping (or equivalent) methods, stored on-site at the Container Storage Area (NOR 007), and disposed of in accordance with state and federal regulations within the required timeframes.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
Harris County Clerk	Deed restriction of property to commercial-industrial use and groundwater use restriction (On-Site PMZs and Off-Site PMZ (including City of Houston ROW))	NA	Within 120 days of RAP approval
TCEQ	TCEQ Hazardous Waste (HW) Permit/Compliance Plan	SWR 31547 HW Permit: 50343 Expires June 10, 2015	HW Permit Renewal/Revision submitted December 10, 2014

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

Based on the TCEQ 4th TNOD dated April 11, 2019, additional assessment activities were requested by the TCEQ to further assess the nature and extent of DNAPL at the Site and better define the extent of the groundwater PCLs at the Site. Specifically, the TCEQ stated that:

"Since the TCEQ is requiring UPRR to conduct further assessment of TPH-NAPL in the Englewood Intermodal Yard cap area as directed in the TCEQ February 6, 2019 letter and a VI assessment as directed in Comment T59 of this NOD, the additional assessment should include a re-assessment of creosote DNAPL using cone penetrometer/ rapid optical screening tool (CPT/ROST). The assessment

should also include further evaluation of the dissolved phase plume for benzene and naphthalene to the east, west, and south in the A- TZ, B-TZ/BCZ and CTZ. For arsenic, additional assessment is needed to the west and north of the site in the A-TZ and B-TZ/BCZ. Regarding Benzo(a)pyrene detected in the June 2018 sampling event, if results of the January 2019 sampling event indicate Benzo(a)pyrene continues to be detected in any of the D-TZ monitoring wells, then further assessment may be required in the D-TZ and deeper zone(s). Update the RAP implementation schedule to include the additional assessments requested above.

The following pre-design studies will be conducted at the Site to address specific deficiencies raised by the TCEQ:

1. Additional NAPL Assessment.
2. Additional Groundwater Assessment
3. TPH-NAPL Assessment Englewood Intermodal Yard
4. Pentachlorophenol (PCP) Assessment in soils

Additional NAPL Assessment

In response to the TCEQ's request for re-assessment of DNAPL and to refine the observed subsurface distribution of DNAPL at the Site, the pre-design additional DNAPL assessment activities will be implemented. The assessment is intended to ultimately support the development of the Revised RAP that will address both DNAPL and associated dissolved-phase COCs present in affected groundwater at the Site. A brief summary of the primary objectives of the assessment activities are presented below:

- Refine previous assessments of the lateral and vertical extent of DNAPL in the subsurface;
- Further update the historical DNAPL/subsurface migration conceptual site model (CSM) by integrating results from previous investigations (over 90 previous CPT/ROST borings) with the activities proposed as part of this investigation;
- Support design of potential DNAPL recovery activities (e.g., additional recovery wells) or systems, as appropriate;
- Update the subsurface DNAPL CSM to support the risk-based DNAPL management plan to be developed in accordance with TCEQ guidance provided in RG-366 (Risk-Based NAPL Management; TRRP-32).

A direct push drilling rig or CPT rig equipped with a Tar-specific Green Optical Screening Tool™ (TarGOST) will be used to conduct the additional NAPL assessment for the Site. TarGOST is a proprietary site characterization tool designed by Dakota Technologies for delineating NAPL, including DNAPL commonly encountered at wood treatment sites that used creosote-based preservation. Creosote DNAPLs typically contain large amounts of naturally fluorescent PAHs and TarGOST was specifically designed to precisely log the NAPL versus depth (Dakota Technologies, 2015). The subsurface will be logged with the CPT probe simultaneously with the TarGOST. The data obtained from the TarGOST borings will be compared to the field observations of NAPL and observed lithology in the soil borings to evaluate correlation of the observed TarGOST responses. In addition, TarGOST borings will be installed immediately adjacent to both an existing monitoring well where DNAPL has historically been observed and near a well historically affected by only dissolved-phase COCs. The TarGOST results will be compared to observed DNAPL apparent thickness and available analytical data obtained from the wells to confirm that elevated fluorescence for TarGOST borings corresponds with areas where DNAPL and higher dissolved-phase groundwater impacts are known to exist in the shallow alluvium. TarGOST borings will also be advanced near previous CPT-ROST borings to compare the fluorescence signals between the two optical screening methods.

The NAPL Assessment will be conducted to evaluate three areas of the Site (see Attachment 2A-1a):

1. Englewood Intermodal Yard – Up to 20 CPT-TarGOST borings are proposed within the Englewood Intermodal Yard area to evaluate the distribution of NAPL in the subsurface in the areas of the former Above Ground Storage Tanks (ASTs) and the former lagoons identified on historical aerials and maps;
2. Perimeter of the HWPW Site – CPT-TarGOST borings are proposed along the perimeter of the Site, including the west side of the Site (four locations near MW-41B and MW-12B), along the north northeast side of the Site (10 locations from MW-17 to MW-18C), and along the east side of the Site (four location between MW-49B and MW-80B).
3. Off-Site – Up to eight CPT-TarGOST borings are proposed north of the UPRR property within the City of Houston ROW in the residential area.

The proposed CPT-TarGOST locations shown on Attachment 2A-1a are approximate and may be adjusted in the field due to field observations and/or conflicts such as underground or overhead utilities. Data collected from this pre-design assessment will be used to evaluate the current nature and extent of NAPL in the subsurface, evaluate additional NAPL recovery methods, and optimize DNAPL recovery activities through an assessment of potential remedial alternatives to improve effectiveness and efficiency.

Additional Groundwater Assessment

UPRR proposed to install additional monitoring wells to address the 4th TNOD deficiency and to refine the lateral and vertical extent of the dissolved phase plume in the A-TZ, B-TZ/B-CZ, and C-TZ (Attachment 2B-1). This will include further assessment of the benzene and naphthalene concentrations detected in the A-TZ, B-CZ/B-TZ, and C-TZ, and of arsenic detected in the A-TZ and B-CZ/B-TZ. UPRR will also evaluate the groundwater geochemistry to assess possible sources for the dissolved arsenic detected at the Site. Proposed monitoring wells will be installed in the following GWBUs:

- A-TZ – Seven monitoring wells are proposed to be installed on-site (three) and off-site (four);
- B-CZ/B-TZ – Six monitoring wells are proposed to be installed on-site (two) and off-site (four);
- C-TZ – Two monitoring well is proposed to be installed off-site.

Proposed locations shown on Attachment 2B-1 are based on the June 12, 2019 meeting with the TCEQ and from COC concentrations in groundwater during the January 2019 sampling event (Appendix 2). Proposed monitoring well locations are approximate and may be adjusted in the field due to utility and/or other conflicts. The monitoring well will be constructed to evaluate the potential presence of DNAPL in each of the GWBUs. Following installation, wells will be developed and sampled for the Site-specific COCs, including arsenic. The site-wide groundwater dissolved phase dataset will be used to develop a remediation plan to be included in the Revised RAP.

TPH-NAPL Assessment Englewood Intermodal Yard

To address the horizontal and vertical assessment for TPH concentrations in soils, UPRR proposes to drill and sample 23 soil boring locations. The proposed sample locations are presented on Attachment 2A-1a, but may be adjusted based on field conditions and underground utilities. Soil borings will be drilled to the top of the uppermost GWBU (A-TZ) to assess the surface and subsurface soils. Soil samples will be collected continuously for the total depth of each boring and logged by field personnel and field screened using an organic vapor meter (OVM). At each boring location, up to two soil samples will be submitted for laboratory analyses for TPH by Method TX1005. Soil samples will be collected from the following intervals:

- A soil sample from the 0 to 5-foot interval (Surface Soil) where the highest OVM reading or visual hydrocarbon staining is observed; or, if no OVM readings or staining observed,

a sample from the 2 to 5-foot interval will be collected (below the existing asphalt/concrete); and

- A soil sample from a depth below 5 feet to the top of the A-TZ (Subsurface Soil) where the highest OVM reading or visual hydrocarbon staining is observed; or, if no OVM readings or staining observed, a sample from the top of A-TZ.

Following review of the TX1005 analytical results, up to 10 soil samples will be further analyzed for TPH fractions by Method TX1006 to develop a site-specific TPH mixture PCL.

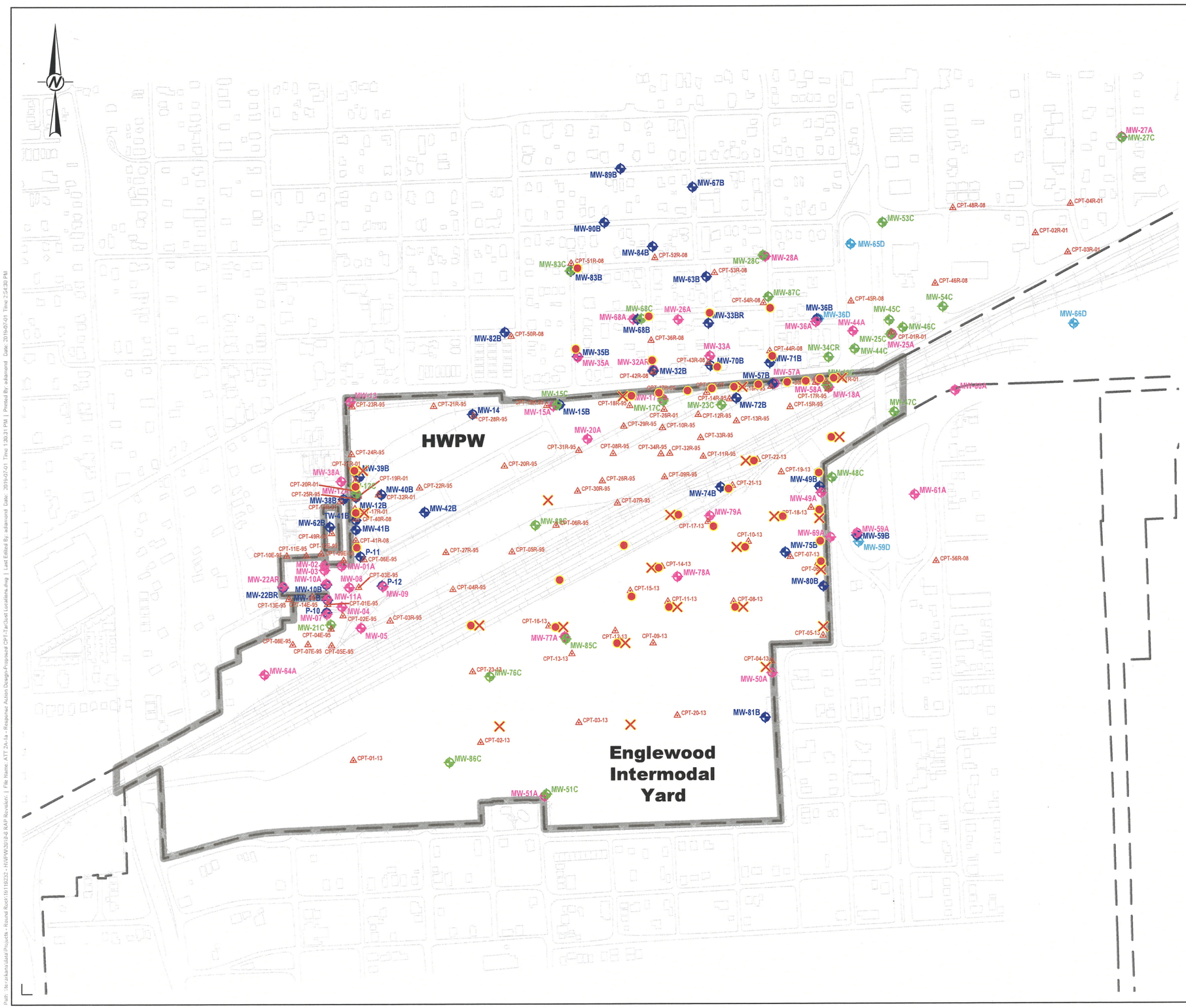
The soil investigation will follow a "focused on-site soil assessment" as detailed in the TCEQ Guidance Document Affected Property Assessment Requirements under TRRP, RG-366/TRRP12, Revised May 2010 and 30 Texas Administrative Code (TAC) §350.51(c), which states "*for soils only, the person can focus the horizontal on-site assessment to define the area exceeding the applicable critical PCL (i.e., residential or commercial/industrial).*" Therefore, the soil TPH data will be initially compared to the critical PCL (i.e., Tier 2, Commercial/Industrial, 30-acre source area PCLs, except for the locations along the perimeter of the Site that will be compared to Tier 2, Residential, 30-acre source area PCLs). Following the initial review of the soil data, UPRR will assess if additional sampling is necessary to satisfy the horizontal and vertical delineation requirements detailed in 30 TAC §350.51. The sampling activities and analytical data will be submitted to the TCEQ in the Revised RAP.

Pentachlorophenol (PCP) Assessment in soils
As discussed during the meeting with the TCEQ on June 12, 2019, the TCEQ requested additional surface soil sampling for pentachlorophenol (PCP) along the western and northern boundary of the former HWPW area to confirm the delineation of PCP to the critical PCL in surface soil samples. The method detection limit for PCP in some of the surface soil samples collected during previous investigations was higher than the critical PCL. UPRR will collect surface samples in the vicinity of the previous locations for PCP analysis, as shown on Attachment 2A-1b.

ATTACHMENT 2A

RESPONSE ACTION DIAGRAMS AND COMPONENT/EQUIPMENT DESCRIPTIONS

Attachment 2A-1a – Response Action Design – Proposed CPT/TarGOST Locations
Attachment 2A-1b – Response Action Design – Proposed Surface Soil Sample Locations – Pentachlorophenol
Attachment 2A-2 – Response Action Design – Proposed Groundwater Monitoring Well Locations
Attachment 2A-3 – Response Action Design – NAPL Collection System Figures (As-Builts)



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CPT/ROST LOCATION
- PROPOSED CPT/TarGOST LOCATION
- PROPOSED TPH SOIL SAMPLE LOCATION

NOTE(S)

1. PROPOSED LOCATIONS ARE APPROXIMATE AND SUBJECT TO CHANGE, CONTINGENT UPON FIELD CONDITIONS.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 225 450
1" = 450' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION DESIGN:
PROPOSED CPT/TarGOST LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-01
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2A-1a

Path: /ter/ankara/data/Projects - Round Rock/19119232 - HWPW 2019-6 RAP Revision. | File Name: ATT 2A-1a - Response Action Design-Proposed CPT-TarGost Locations.dwg | Last Edited By: ajdamond Date: 2019-07-01 Time: 1:30:31 PM | Printed By: ajdamond Date: 2019-07-01 Time: 2:54:30 PM

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

LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORICAL STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- MONITORING WELL LOCATION
- TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION
- 0.078 — PENTACHLOROPHENOL CONCENTRATION IN mg/Kg
- (NS) — NOT SAMPLED
- PROPOSED SURFACE SOIL SAMPLE LOCATION FOR PENTACHLOROPHENOL

PCL EVALUATION

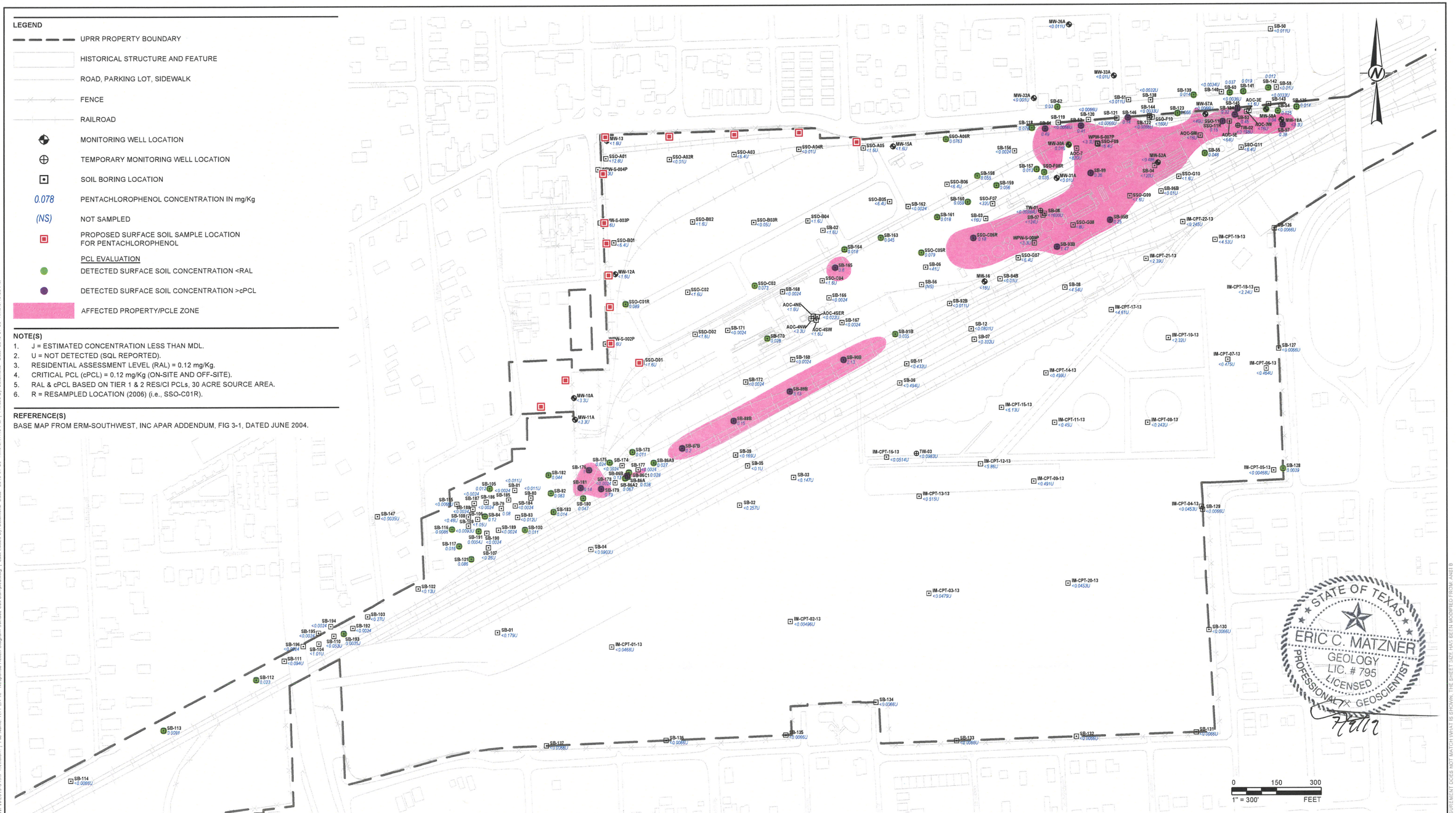
- DETECTED SURFACE SOIL CONCENTRATION <RAL
- DETECTED SURFACE SOIL CONCENTRATION >cPCL
- AFFECTED PROPERTY/PCLE ZONE

NOTE(S)

1. J = ESTIMATED CONCENTRATION LESS THAN MDL.
2. U = NOT DETECTED (SQL REPORTED).
3. RESIDENTIAL ASSESSMENT LEVEL (RAL) = 0.12 mg/Kg.
4. CRITICAL PCL (cPCL) = 0.12 mg/Kg (ON-SITE AND OFF-SITE).
5. RAL & cPCL BASED ON TIER 1 & 2 RES/CI PCLs, 30 ACRE SOURCE AREA.
6. R = RESAMPLED LOCATION (2006) (i.e., SSO-C01R).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.



CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

TITLE
RESPONSE ACTION DESIGN - PROPOSED SURFACE SOIL SAMPLE LOCATION PENTACHLOROPHENOL

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2A-1b

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

1 in

Path: \\canamsd\data\Projects - Round Rock\19119232 - HWPW\0019-6 RAP Revision\ | File Name: ATT 2A-1b - Response Action Diagram-Surface Soil Samples.dwg | Last Edited By: adamond Date: 2019-07-09 Time: 5:17:13 PM | Printed By: adamond Date: 2019-07-09 Time: 5:19:55 PM

LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (DNAPL RECOVERY)
- PLUGGED AND ABANDONED
- GROUNDWATER PCLE ZONES (A-TZ, B-CZ/B-TZ AND C-TZ)
- GROUNDWATER PCLE ZONE - ARSENIC (A-TZ, B-CZ/B-TZ AND C-TZ)
- MW-10A RCRA UNIT NO. 1 POINT OF COMPLIANCE (POC) WELL
- PROPOSED MONITORING WELL
- PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)
- PRELIMINARY ON-SITE PMZ (PENDING ADDITIONAL GROUNDWATER ASSESSMENT)
- PRELIMINARY OFF-SITE PMZ
- PRELIMINARY OFF-SITE PMZ CITY OF HOUSTON ROW
- PRELIMINARY OFF-SITE PMZ - PRIVATE PROPERTY (SIGNED RESTRICTIVE COVENANT/DEED)
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
3. ** - CORRECTIVE ACTION OBSERVATION WELL.
4. (B) - BACKGROUND WELL.

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

7/9/19

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION DESIGN - GROUNDWATER

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2A-2

Path: \\ca1vsfs01\data\Projects - Round Rock\19119232 - HWPW\3918-6 RAP Revision | File Name: ATT 2A-2 - Response Action Design - Groundwater.dwg | Last Edited By: julamond Date: 2019-07-09 Time: 11:50:42 AM | Printed By: julamond Date: 2019-07-09 Time: 11:51:30 AM
IF THIS MEASURE MEASURE DOES NOT MATCH WHAT THIS SHOWS, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

LEGEND

- TEST PIT LOCATIONS (6'L x 2.5'W x 5'D)
- ENVIRONMENTAL SAMPLE BORING LOCATIONS (PBW, 2018)
- AFFECTED AREA (NAPL SURFACING THROUGH SOME CRACKS AND JOINTS)

R Bryan Luper
3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83983
LICENSED
PROFESSIONAL ENGINEER

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGE DATED 01-23-2017.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

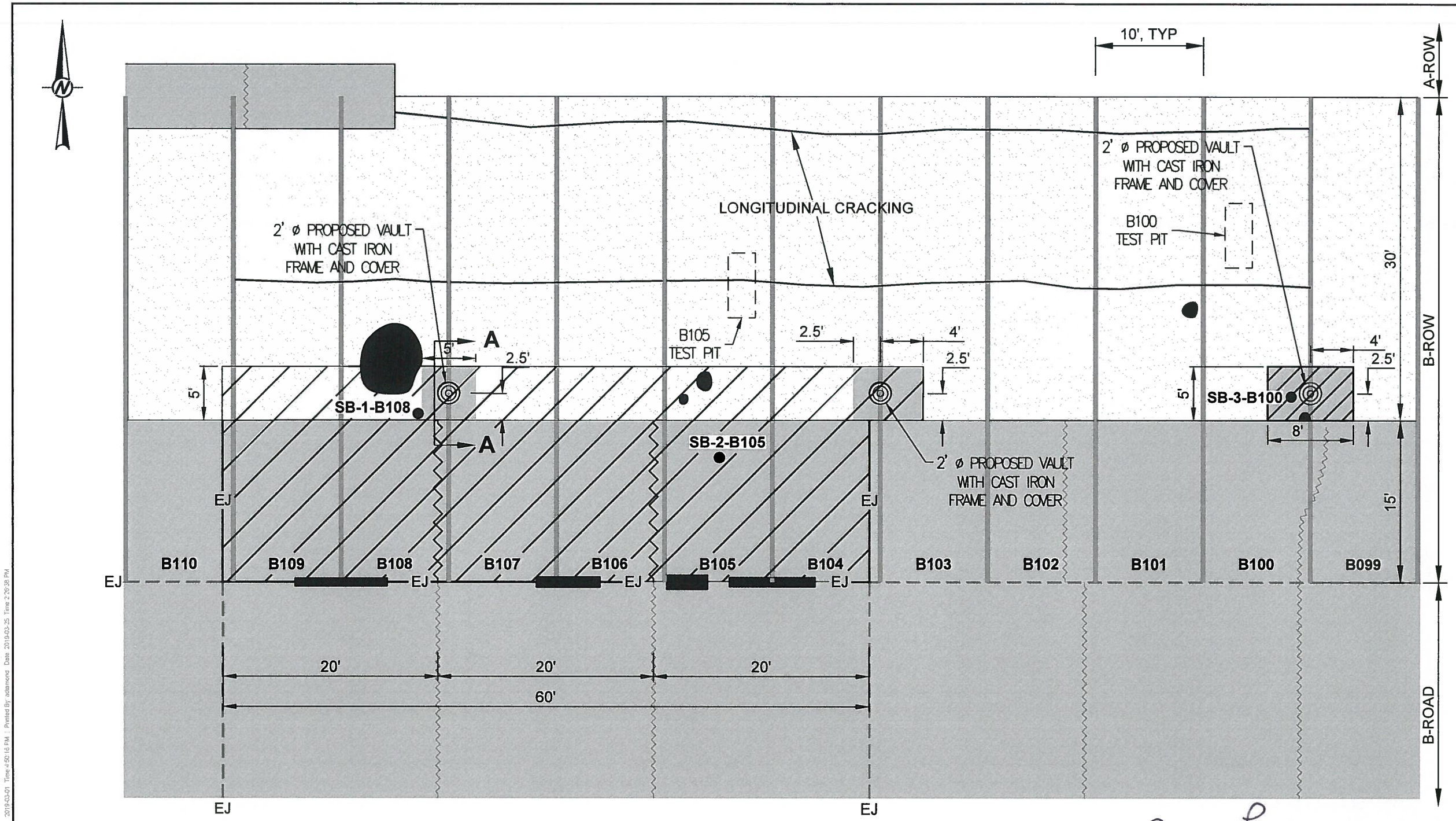
TITLE
SITE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
30401358-640	0	1

Path: \\ex.xikama.ctxta\Projects - Round Rock\1353-UPRR Wood Preserving Works\1358-6\9\2018-11 November | File Name: FIG 1 - Site Map.dwg | Last Edited By: adiamond Date: 2019-03-25 Time: 2:25:30 PM | Printed By: adiamond Date: 2019-03-25 Time: 2:25:50 PM
1 in IF THIS MEASUREMENT DOES NOT APPEAR AS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



AS-BUILT

0 5 10
1" = 10' FEET

LEGEND

- REINFORCED CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT/ROAD BASE
- PARKING STALL YELLOW LINE (4" WIDE)
- EXISTING SEEP LOCATION
- PROPOSED AREA OF EXCAVATION
- == EJ == EXISTING EXPANSION JOINT
- = EJ = PROPOSED EXPANSION JOINT
- EXISTING CONTROL JOINT
- PROPOSED CONTROL JOINT
- PROPOSED NAPL COLLECTION VAULT (2' Ø)
- SOIL BORING LOCATION
- [ ] TEST PIT (6' L x 2.5' W x 5' D)

R Bryan Luper
3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83983
LICENSED
PROFESSIONAL ENGINEER

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PROPOSED REMEDIAL EXCAVATION

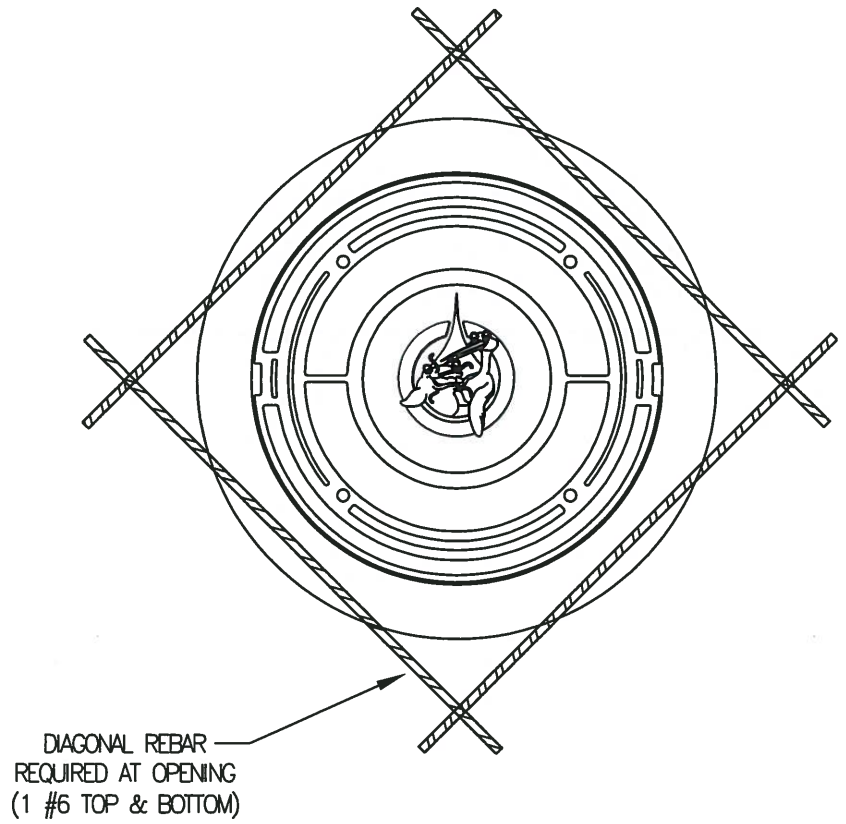
CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

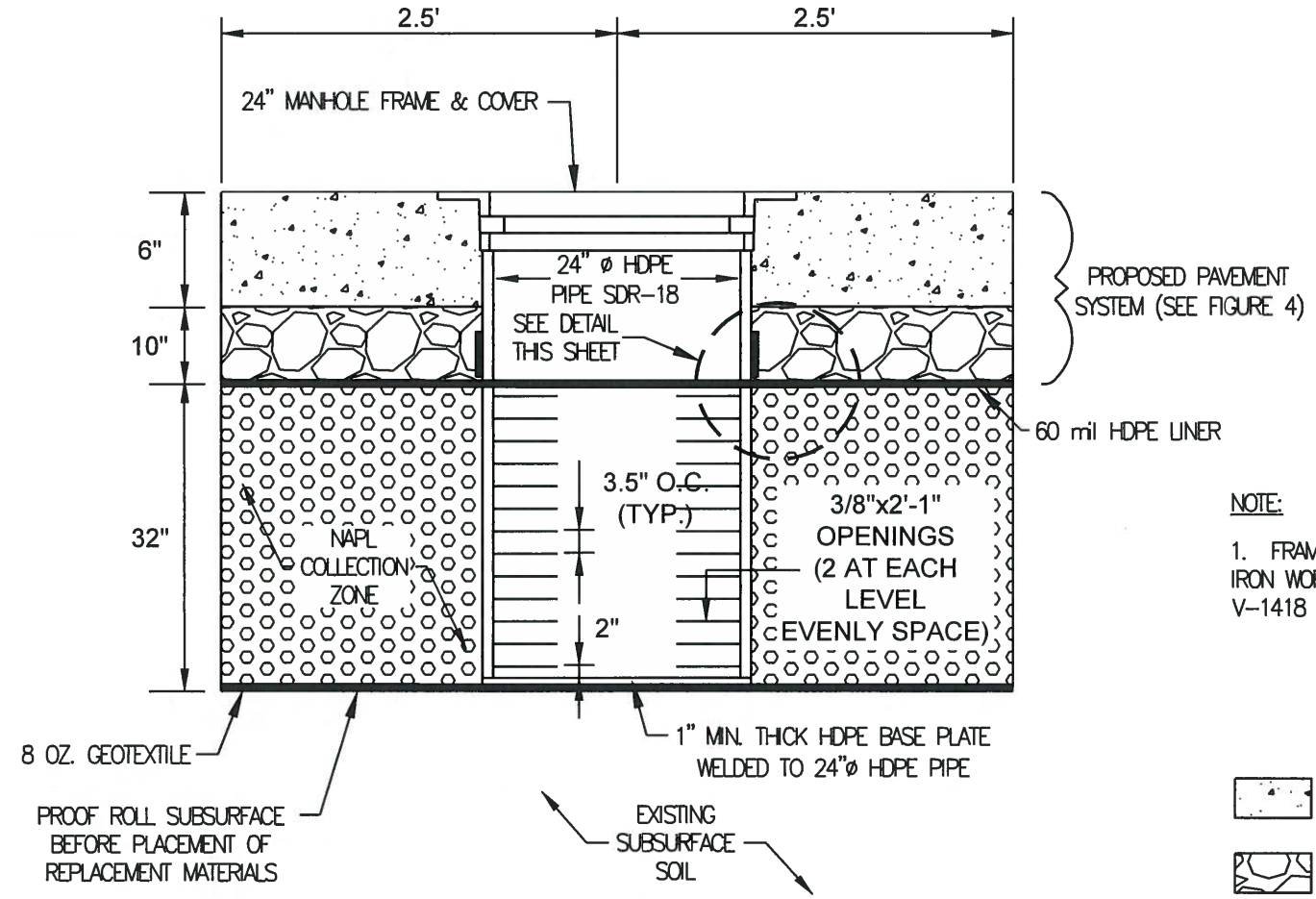
PROJECT NO	REV	FIGURE
30401358-640	0	2

Path: C:\Autodesk\Temp-Dwg\Ac-Publish_17520\ | File Name: FIG 2,3,4,5.dwg | Last Edited By: aldiamond Date: 2019-03-01 Time: 4:50:16 PM | Printed By: aldiamond Date: 2019-03-25 Time: 2:39:38 PM

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



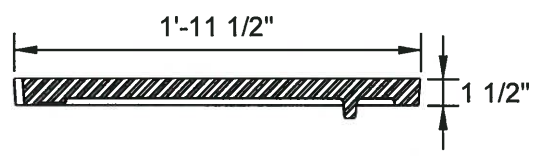
COVER AND FRAME PLAN VIEW



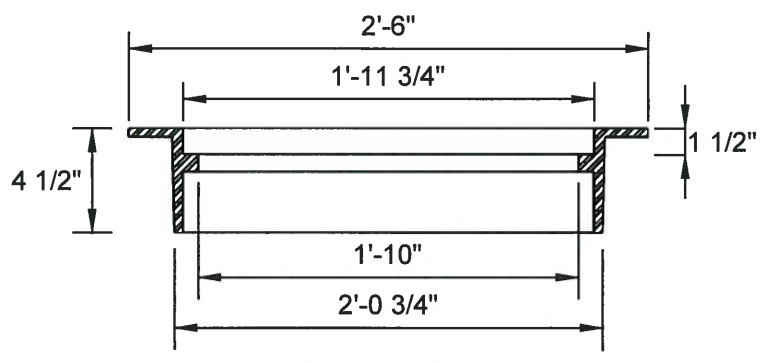
SECTION A-A
N.T.S.

NOTE:

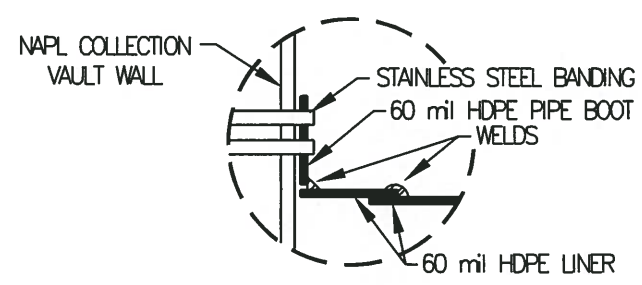
1. FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL V-1814 FRAME AND V-1418 COVER OR APPROVED EQUAL.



COVER SECTION A-A



FRAME SECTION A-A



LINER/VAULT TIE-IN
N.T.S.

- REINFORCED CONCRETE
- COMPACTED BASE MATERIAL (TXDOT GRADE 1 AGGREGATE)
- COMPACTED SELECT FILL
- COMPACTED HIGH PERMEABILITY FILL 2" BUNKER ROCK FROM GULFCOAST MATERIAL, INC. (PRODUCT 122002-2 INCH BUNKER)

AS-BUILT

RBryanLuper
3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83963
LICENSED
PROFESSIONAL ENGINEER

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

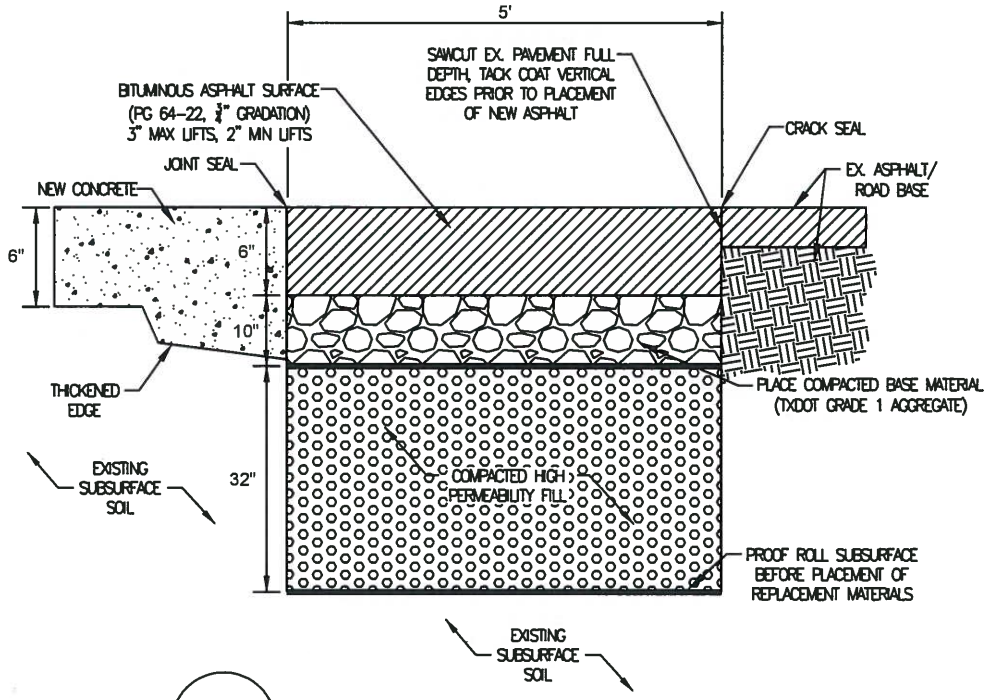
TITLE
PROPOSED NAPL COLLECTION SYSTEM

CONSULTANT
GOLDER

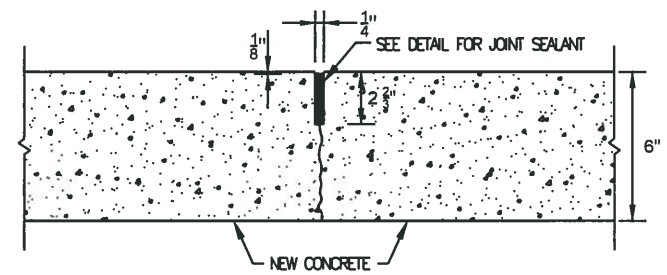
YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO	REV	FIGURE
30401358-640	0	3

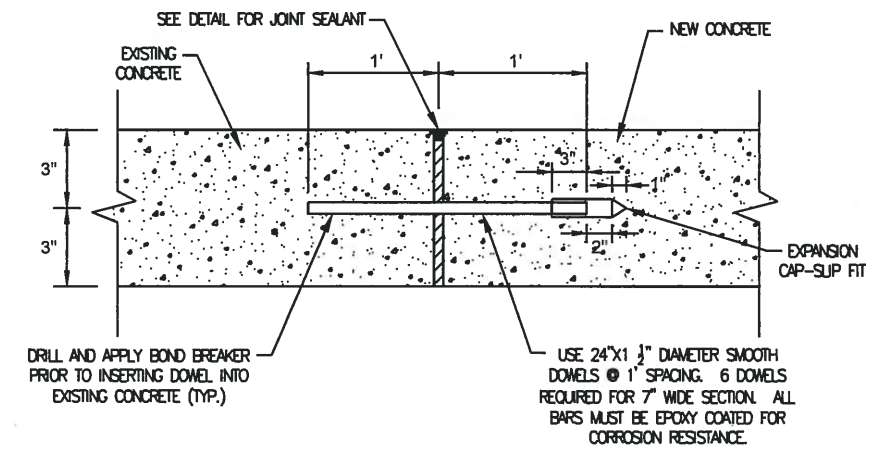
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
Path: \\erakata\data\Projects - Round Rock\1358\IPRR Wood Preserving Works\359-640\2019\3 March | File Name: FIG 2 3 4 5.dwg | Last Edited By: ajdiamond Date: 2019-03-25 Time: 2:30:15 PM | Printed By: ajdiamond Date: 2019-03-25 Time: 2:30:37 PM



A **ASPHALT PAVEMENT CROSS SECTION**
N.T.S.



C **CONTROL JOINT DETAIL**
N.T.S.

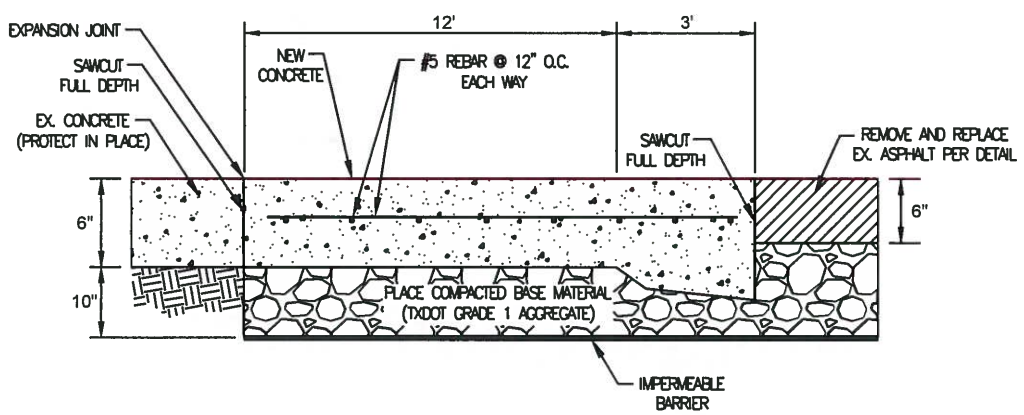


D **EXPANSION JOINT DETAIL**
N.T.S.

R Bryan Luper
3-25-19

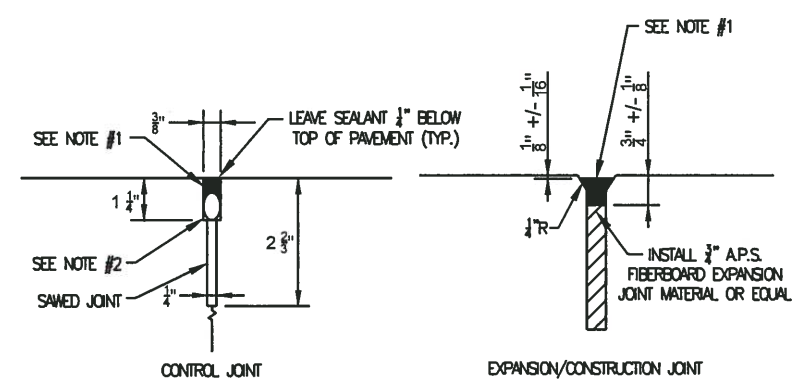
STATE OF TEXAS
R. BRYAN LUPER
83963
LICENSED
PROFESSIONAL ENGINEER

AS-BUILT



NOTES:
1. See joint spacing plan in Figure 2.
2. Min. 3 day compression strength = 4,500 psi (high early strength).
3. Dowel into existing concrete pavement per Expansion/Construction joint detail.
4. Thickened edge to be used on all outer edges of new concrete pavement except where doweled into existing concrete pavement (minimum 14" thick).

B **CONCRETE PAVEMENT CROSS SECTION**
N.T.S.



NOTES:
1. Use DOW Corning 890-SL Silicone Sealant or equal.
2. Round closed cell polyethylene backer rod. Use backer rod sized 1/4" greater than joint width.
3. Sawcut and clean out existing joints before applying joint seal.

E **TYPICAL JOINT SEALING DETAIL**
N.T.S.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PAVEMENT DETAILS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO 30401358-640 | REV. 0 | FIGURE 4

Path: \\texas\data\Projects - Round Rock\1358 UPRR Wood Preserving Works\1353-640\2019 3 March\ | File Name: FIG 2 3 4 5.dwg | Last Edited By: adiamond Date: 2019-03-25 Time: 2:33:18 PM | Printed By: adiamond Date: 2019-03-25 Time: 2:33:33 PM

IF THIS MEASURES 1" THEN THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

SCOPE OF WORK:

1. THE CONTRACTOR SHALL REMOVE AT LEAST THE TOP 4' OF THE EXISTING REINFORCED CONCRETE PAVEMENT, ASPHALT, ROAD BASE AND SUBGRADE MATERIAL UNDER THE AREAS OF EXCAVATION SHOWN IN FIGURE 2. THE OWNER OR HIS ON-SITE REPRESENTATIVE SHALL BE GIVEN ADEQUATE NOTICE BEFORE THE CONTRACTOR REACHES THE EXTENTS OF THE REQUIRED EXCAVATION TO ALLOW FOR ADEQUATE INSPECTION BY THE OWNER. THE CONTRACTOR SHALL CONTINUE TO CONDUCT ADDITIONAL SAW CUTTING, DEMOLITION AND EXCAVATION AS REQUIRED BY THE OWNER, BEFORE BEGINNING REFILLING OPERATIONS.

2. EXCAVATED REINFORCED CONCRETE AND ASPHALT PAVEMENT MATERIAL SHALL BE ASSUMED TO BE CLEAN AND APPROPRIATE FOR OFF-SITE RECYCLING OR DISPOSAL. BEFORE OFF-SITE DISPOSAL, THE CONTRACTOR SHALL ALLOW THE OWNER TO INSPECT THE MATERIAL TO CONFIRM THIS ASSUMPTION.

3. EXCAVATED ROAD BASE AND SUBGRADE MATERIAL SHALL BE ASSUMED TO BE NON-HAZARDOUS CLASS I INDUSTRIAL MATERIAL AND SHALL BE TRANSPORTED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

4. AS EXCAVATION ACTIVITIES ARE ON-GOING, THERE IS A SIGNIFICANT POSSIBLITY THAT POOLS OR SEEPS OF LNAPL AND/OR LNAPL IMPACTED WATER WILL BE ENCOUNTERED. THE LIQUIDS ENTERING THE EXCAVATIONS MUST BE CAPTURED AND COLLECTED BY THE CONTRACTOR. THE COLLECTED LIQUIDS SHALL BE PLACED INTO APPROPRIATE CONTAINERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANALYZING, CHARACTERIZING AND PROFILING THE MATERIAL FOR PROPER OFF-SITE TRANSPORTATION AND DISPOSAL.

5. AFTER THE COMPLETION OF EXCAVATION OPERATIONS, THE CONTRACTOR SHALL INSTALL THE SUBSURFACE NAPL COLLECTION SYSTEM DESCRIBED IN FIGURE 3 AND THEN REPLACE THE PAVEMENT AND MARKING SYSTEM IN ACCORDANCE WITH THE DETAILS SHOWN IN FIGURE 2 AND FIGURE 4.

GENERAL NOTES:

THE CONTRACTOR SHALL CAREFULLY READ ALL OF THESE NOTES AND SPECIFICATIONS. THE CONTRACTOR SHALL BE SATISFIED AS TO THEIR MEANING AND INTENT AND SHALL BE RESPONSIBLE FOR COMPLYING WITH EACH.

1. THE CONTRACTOR SHALL INSPECT THE SITE OF THE WORK PRIOR TO BIDDING TO SATISFY THEMSELVES BY PERSONAL EXAMINATION OR BY SUCH OTHER MEANS AS THEY MAY PREFER, OF THE LOCATION OF THE PROPOSED WORK, AND OF THE ACTUAL CONDITIONS OF THE PROJECT SITE. IF, DURING THE COURSE OF THEIR EXAMINATION, A BIDDER FINDS CONDITIONS WHICH APPEAR TO BE IN CONFLICT WITH THE PROJECT PLANS AND SPECIFICATIONS, THEY SHALL CONTACT THE ENGINEER AND/OR OWNER FOR ADDITIONAL INFORMATION AND EXPLANATION BEFORE SUBMITTING THEIR BID. ANY OBSERVABLE CONDITIONS IN CONFLICT WITH PLANS AND SPECIFICATIONS THAT ARE NOT REPORTED IN BID WILL NOT RESULT IN A CHANGE ORDER.

2. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY THE ENGINEER AND FACILITY MANAGER WITH AT LEAST 2 WEEKS NOTICE PRIOR TO MOBILIZATION. CONTRACTOR IS OBLIGATED TO FACILITATE FACILITY SCHEDULES AND BUSINESS OPERATIONS.

3. CONTRACTOR SHALL COORDINATE ALL WORK SCHEDULES AND CONSTRUCTION LIMITS WITH THE FACILITY OPERATIONS MANAGER AND ENGINEER PRIOR TO COMMENCING ANY WORK.

4. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, COUNTY, AND CITY LAWS AND ORDINANCES AND OF ALL REGULATIONS, OF THE DEPARTMENT OF INDUSTRIAL RELATIONS, OSHA, NPDES, AND INDUSTRIAL ACCIDENT COMMISSION RELATED TO THE SAFETY AND CHARACTER OF THE WORK, EQUIPMENT, AND LABOR PERSONNEL.

5. ALL CONSTRUCTION SHALL CONFORM WITH LOCAL DEPARTMENT OF TRANSPORTATION SPECIFICATIONS UNLESS OTHERWISE NOTED.

6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS, BONDS, INSURANCE, ETC. AND PAYING ALL FEES AND FOR OTHERWISE COMPLYING WITH ALL REGULATIONS GOVERNING THE WORK.

7. CONTRACTOR SHALL COORDINATE WORK HOURS TO THE TIMES PERMITTED BY FIELD MANAGER. TWENTY-FOUR HOUR WORK IS PERMISSIBLE, CONTINGENT UPON APPROVAL BY THE FACILITY MANAGER.

8. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY AND AS REQUIRED BY UPRR. CONTRACTOR SHALL COORDINATE WITH UPRR FOR SCHEDULING FLAGGERS. CONTRACTOR SHALL COMPLY WITH THE ACCOMPANYING REQUIREMENTS FOR FLAGGING, INSURANCE, AND SAFETY.

9. THESE PLANS DO NOT GUARANTEE THE EXISTENCE OR NONEXISTENCE, SIZE, TYPE, DEPTH, MATERIAL OR LOCATION OF ANY UNDERGROUND UTILITIES, CONTRACTOR SHALL VERIFY ALL UTILITIES VIA POTHOLING OR OTHER MEANS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY UPRR FIBER OPTICS HOTLINE 1-800-336-9193, 48 HOURS PRIOR TO ANY EXCAVATION.

10. THE CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PROJECT PLANS AND SPECIFICATIONS. THEREFORE, THE OWNER IS RELYING UPON THE EXPERIENCE AND EXPERTISE OF THE CONTRACTOR. IT SHALL BE EXPECTED THAT PRICES PROVIDED WITHIN THE CONTRACT DOCUMENTS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR THE WORK TO BE COMPLETED IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTION AND COMPLETION OF THE PROJECT AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE SAID PERMITS AND LICENSES. THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY RIGHTS-OF-WAY, EASEMENTS, AND/OR PERMITS ARE SECURED PRIOR TO CONSTRUCTION WHERE NECESSARY.

12. THE CONTRACTOR SHALL BE LICENSED IN THE STATE WHERE THIS PROJECT IS LOCATED AND SHALL BE BONDABLE FOR AN AMOUNT EQUAL TO OR GREATER THAN THE BID AMOUNT.

13. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.

14. THE CONTRACTOR SHALL PROVIDE AND PAY FOR AND/OR OBTAIN ALL ELECTRIC POWER NECESSARY TO ACCOMPLISH THE WORK.

15. THE CONTRACTOR SHALL PROVIDE AND PAY FOR AN ADEQUATE SUPPLY OF WATER AS REQUIRED TO PROPERLY CARRY OUT THE WORK AND AN ADEQUATE SUPPLY OF UNCONTAMINATED WATER AS REQUIRED FOR DOMESTIC CONSUMPTION AND SHALL INSTALL AND MAINTAIN NECESSARY SUPPLY CONNECTIONS AND PIPING FOR SUCH WATER SUPPLY, BUT ONLY AT SUCH LOCATIONS AND IN SUCH MANNER AS MAY BE APPROVED BY THE UPRR REPRESENTATIVE.

16. NO FIELD CHANGES WILL BE PERMITTED WITHOUT DIRECT WRITTEN AUTHORIZATION FROM THE OWNER, ENGINEER, AND UPRR ENGINEER OR HIS REPRESENTATIVE.

17. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER.

18. ANY EXISTING CONDITIONS FOUND TO BE A VARIANCE WITH THESE DRAWINGS MUST BE IMMEDIATELY REPORTED TO THE ENGINEER.

19. THE CONTRACTOR SHALL GUARANTEE ALL WORK UNDER THIS AGREEMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE RAILROAD, UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL LEAVE THE WORK IN PERFECT ORDER AT COMPLETION, AND THE FINAL CERTIFICATE OF PAYMENT SHALL NOT RELIEVE HIM OF THE RESPONSIBILITY FOR NEGLIGENCE, FAULTY MATERIALS, OR WORKMANSHIP. UPON WRITTEN NOTICE, HE SHALL REMEDY ANY DEFECTS OR WORKMANSHIP THAT MAY APPEAR DURING THE TIME HEREINBEFORE MENTIONED AND PAY ALL EXPENSES DUE THERE FROM TO THE ENTIRE SATISFACTION OF THE UPRR REPRESENTATIVE.

20. THE CONTRACTOR AGREES THAT:

    A) THEY SHALL BE RESPONSIBLE TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.

    B) THEY SHALL BE RESPONSIBLE TO CLEAN THE JOB SITE AT THE END OF EACH PHASE OF WORK.

    C) THEY SHALL BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL AT THEIR OWN EXPENSE IN A TIMELY MANNER.

    D) THEY SHALL BE RESPONSIBLE TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OPERATIONS SO AS NOT TO DELAY THEIR WORK. FAILURE TO DO SO WILL RESULT IN A DEDUCTION FOR THE COST OF CLEAN UP FROM THE FINAL PAYMENT.

    E) THEY SHALL BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, RETESTING AND REINSPECTIONS AT THEIR OWN EXPENSE.

21. UPON COMPLETIONS OF THE WORK INVOLVED, THE CONTRACTOR SHALL CLEAN THE LOCATION OF THE WORK AND SHALL REMOVE ALL RUBBISH, EXCESS MATERIALS, FALSEWORK, TEMPORARY STRUCTURES, AND EQUIPMENT, LEAVING THE LOCATION OF THE WORK CLEANED TO THE SASTISFACTION OF THE UPRR REPRESENTATIVE.

22. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS FOR THE DURATION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

23. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

24. DUST CONTROL SHALL BE PROVIDED AT ALL TIMES, AT THE CONTRACTOR'S EXPENSE, TO MINIMIZE ANY DUST NUISANCE. SPILLAGE OF EARTH, DUSTY MATERIALS, BOULDERS AND MUD ON ROADS LOCATED ON THE RAILROAD'S PROPERTY WILL NOT BE PERMITTED. IF SPILLAGE CANNOT BE PREVENTED, THE CONTRACTOR SHALL PROVIDE AN HOURLY PATROL, OR MORE FREQUENTLY IF NEEDED, TO POLICE AND SWEEP SUCH AREAS THROUGHOUT THE WORK DAY, AND AT THE CONCLUSION OF EACH WORK DAY. ANY PAVEMENT LOCATED ON THE RAILROAD'S PROPERTY WHICH HAVE BEEN USED BY THE CONTRACTOR SHALL BE BROOM CLEANED AND LEFT TO THE SATISFACTION OF THE UPRR REPRESENTATIVE. ANY EXPENSE INCURRED IN THE USE OF RAILROAD ACCESS ROADS SHALL BE BORNE BY THE CONTRACTOR.

25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING REQUIRED INSPECTION AND TESTING OF ALL FACILITES CONSTRUCTED UNDER THIS CONTRACT.

26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FEATURES FROM DAMAGE. THERE WILL BE NO EXTRA PAYMENT TO THE CONTRACTOR FOR REPLACING EXISTING FEATURES NOT SPECIFICALLY STATED ON THE PLANS.

27. IF ANY EXISTING STRUCTURES OR UTILITIES TO REMAIN ARE DAMAGED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE OR UTILITIES AS NECESSARY TO RETURN THEM TO EXISTING CONDITIONS OR BETTER, AS APPROVED BY THE OWNER.

28. CONTRACTOR SHALL CHECK THE LEAD TIMES OF ALL MATERIAL AND ENSURE THAT ALL MATERIALS ARE ON HAND IN SUFFICIENT TIME SO AS TO NOT DELAY CONSTRUCTION ACTIVITIES OR CAUSE DELAY TO PROJECT SCHEDULE.

29. THE CONTRACTOR IS TO OBEY FACILITY SPEED LIMITS AND ALL OTHER FACILITY SAFETY REGULATIONS.

30. ANY UNDERGROUND STRUCTURES SUCH AS CESSPOOLS, CISTERNS, MINING SHAFTS, TUNNELS, SEPTICE TANKS, WELLS, AND PIPELINES NOT LOCATED PRIOR TO CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION OF APPROPRIATE ACTIONS SUCH AS REMOVAL OR TREATMENT IN A MANNER JUDGED SUITABLE TO THE ENGINEER.

31. THE CONTRACTOR SHALL PROVIDE ERECT AND MAINTAIN ADEQUATE TEMPORARY FENCES AND BARRICADES TO PREVENT DAMAGE AND/OR TRESPASSING UPON THE RIGHT-OF-WAY, DAMAGE OF ADJOINING PROPERTY, AND REASONS OF SAFETY.

32. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL TEMPRARY PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH THE PROPOSED WORK.

33. THE CONTRACTOR SHALL ENSURE ALL ROADS, WHETHER PAVEMENT OR GRAVEL, USED DURING CONSTRUCTION ARE MAINTAINED AND LEFT IN PRE-CONSTRUCTION CONDITION WHEN PROJECT IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR ALL BONDS REQUIRED BY LOCAL OR STATE AGENCIES TO ENSURE PUBLIC ROADS ARE MAINTAINED OR REPAIRED. ANY TEMPORARY BARRICADES OR TRAFFIC CONTROL, IF NOT INCLUDED AS A BID ITEM, ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCIDENTAL.

34. IF UNSUITABLE SUBGRADE MATERIALS ARE ENCOUNTERED, THEY MUST BE REMOVED AND REPLACED WITH SUITABLE MATERIALS TO COMPLY WITH UPRR SPECIFICATIONS.

35. THE CONTRACTOR IS TO STAGE CONSTRUCTION ACTIVITIES SO THAT UPRR IS STILL 100% OPERATIONAL. A PLAN PRIOR TO COMMENCING WORK SHALL BE PRESENTED TO AND APPROVED BY UPRR TO ASSURE CONTINUED OPERATION OF THE FACILITY DURING CONSTRUCTION.

36. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE DOCUMENTATION ESTABLISHING THAT ALL ONSITE EMPLOYEES ARE OSHA HAZWOPER TRAINED TO HANDLE HAZARDOUS MATERIALS. ONLY CONTRACTORS WITH PROPER OSHA HAZWOPER TRAINING SHALL BE CONSIDERED.

DESIGN CRITERIA:

1. ALL MATERIALS AND WORK SHALL CONFORM TO THE ATTACHED SPECIFICATIONS AND TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES NOVEMBER 1, 2014.

2. AREAS TO BE FILLED SHOULD BE RAISED TO THE DESIRED ELEVATION WITH CONTROLLED EARTH FILL. CONTROLLED EARTH FILL AND REWORKED SUBGRADE SOILS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR AT A MOISTURE CONTENT OF +/-2% OF OPTIMUM.

3. ALL MANHOLE RIMS, VALVES, MONUMENT BOXES, ETC. SHALL BE ADJUSTED TO FINISH GRADE AFTER PAVING, UNLESS OTHERWISE NOTED. COST FOR THIS WORK SHALL BE IN THE UNIT PRICES FOR SID PAVEMENT.

4. ALL PAVEMENT TO BE REMOVED AND REPLACED SHALL BE SAWCUT FULL DEPTH PRIOR TO REMOVAL.

5. WHERE NEW IMPROVEMENTS ABUT EXISTING FEATURES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING THE ELEVATIONS OF THE EXISTING FEATURES.

WASTE MANAGEMENT:

1. THE ANALYTICAL RESULTS FOR THE IMPACTED SOILS TO BE EXCAVATED ARE INCLUDED WITH THESE BID DOCUMENTS AS ATTACHMENT B. EXCAVATED SOILS WILL BE RESTRICTED TO DISPOSAL AT AN AUTHORIZED PERMITTED LANDFILL. OFF-SITE REUSE OF THESE SOILS IS NOT PERMITTED. IT IS ANTICIPATED THAT APPROXIMATELY 117 CY (IN-PLACE) WILL BE EXCAVATED.

2. THE LANDFILL SELECTED FOR DISPOSAL SHALL BE APPROVED BY UPRR PRIOR TO CONSTRUCTION. LANDFILLS IN THE AREA INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   a. REPUBLIC SERVICES-MCCARTY ROAD LANDFILL, HOUSTON, TEXAS
   b. WASTE MANAGEMENT-COASTAL PLAINS SECURITY LANDFILL, ALVIN, TEXAS.

3. CONTRACTOR SHALL COMPLY WITH OFF-SITE WASTE SHIPMENT REQUIREMENTS INCLUDING, U.S. DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS CONTAINED IN 49 C.F.R. 173, AND 179 AND PLACARDED REGULATIONS IN 49 C.F.R. AND SHALL USE ONLY PERMITTED WASTE HAULERS, AS APPLICABLE. IF CONTRACTOR IS NOT TCEQ APPROVED, THE BELOW COMPANIES ARE UPRR APPROVED REMEDIATION CONTRACTORS THAT CAN ASSIST IN HANDLING THE SOILS:
   a. STERICYCLE ENVIRONMENTAL SOLUTIONS (713) 672-6100
   b. UNITED PROFESSIONAL SERVICE (817) 306-7892
   c. OIL MOP (281) 470-2016

4. CONTRACTOR SHALL PROVIDE ALL RECORDS DOCUMENTING THE WASTE CHARACTERISTICS, CLASSIFICATIONS, QUANTITIES, AND FINAL MANAGEMENT LOCATION TO UPRR REPRESENTATIVES.
   a. AS OF AUGUST 2016, UPRR HAS IMPLEMENTED A WASTE MANAGEMENT PROGRAM FOR TRACKING WASTE DOCUMENTATION. PRIOR TO WASTE PROFILING, A WASTE DETERMINATION FORM (WDF) MUST BE COMPLETED AND SUBMITTED TO OBTAIN THE WASTE REQUEST NUMBER REQUIRED FOR PROFILING, TRANSPORTATION, AND DISPOSAL. RESOURCES (CONTRACTED BY UPRR) ARE AVAILABLE FOR ASSISTANCE WITH THE WASTE MANAGEMENT PROGRAM:
      i. GHD - UPRR-WM@ghd.com
      ii. GOLDER - Robert Luper@golder.com (IF EPro SUPPORT IS REQUESTED BY UPRR).
   b. THE CONTRACTOR SHALL PROVIDE THE ENGINEER HAUL TICKETS FOR ALL SOIL HAULED OFF THE RAILROAD RIGHT OF WAY. COSTS FOR TRANSPORTATION AND DISPOSAL OF SOILS FROM THE PROJECT AREA AT THE APPROVED DEPOSIT SITE, INCLUDING SOIL TESTING, HANDLING DOCUMENTATION, AND FEES CHARGED BY THE DEPOSIT SITE SHALL BE PAID WITH THE FOLLOWING BID ITEMS:
      i. BID ITEM 12-OFF-SITE TRANSPORT AND DISPOSAL OF EXCAVATED MATERIAL - NON-HAZARDOUS CLASS 1 INDUSTRIAL WASTE - TONS

R Bryan Luper
3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83963
LICENSED
PROFESSIONAL ENGINEER

PROJECT CONTACTS:

KEVIN PETERBURS	(402) 544-8901	KJPETERB@UP.COM	OWNERS REPRESENTATIVE UPRR 4823 N 119th ST. MILWAUKEE, WI 53225
R. BRYAN LUPER	(832) 930-9955 (979) 665-8182	BRYAN.LUPER@PBWLLC.COM	CIVIL ENGINEER PASTOR, BEHLING & WHEELER 11231 RICHMOND, SUITE D104 HOUSTON, TX 77082
DAN RIALS SCOTT GREEN	(713) 678-5297 (214) 621-8841	DTRIALS@UP.COM SGREEN@UP.COM	ENGLEWOOD FACILITY OPERATIONS MANAGER
UPRR FIBER OPTICS	(800) 336-9193		UPRR FIBER OPTICS HOTLINE
UPRR RMCC	(888) 877-7267		UPRR RESPONSE MANAGEMENT COMMUNICATIONS CENTER
(800) DIG-TESS	(800) 344-8377		TEXAS EXCAVATION SAFETY SYSTEM (TESS)
TEXAS ONE CALL	(800) 245-4545		CALL BEFORE YOU DIG - 811
LSNC	(800) 669-8344		LONE STAR NOTIFICATION CENTER
JEREMY LEVINE	(281) 763-4802		ITS TECHNOLOGIES & LOGISTICS ENGLEWOOD FACILITY SITE CONTACT

AS-BUILT

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PROJECT NOTES

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO. 30401358-640 | REV. 0 | FIGURE 5

Path: C:\Autodesk\Temp-Dwg\AcPublish_17520\ | File Name: FIG 2 3 4 5.dwg | Last Edited By: adjohnson Date: 2019-03-25 Time 2:33:13 PM | Printed By: adjohnson Date: 2019-03-25 Time 2:36:24 PM
© THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
1 in
Attachment 2A-3 - NAPL Collection System (As-Builts)

ATTACHMENT 2B

PROPOSED WELL DESIGN

Introduction

As detailed in RAP Worksheet 2.1, the following wells are proposed (designated with a "P") to be installed:

1. A-TZ: PMW-76A, PMW-84A, PMW-91A, PMW-93A, PMW-94A, PMW-97A, and PMW-99A.
2. B-TZ/B-CZ: PMW-54B, PMW-61B, PMW-76B, PMW-92B, PMW-95B, and PMW-96B.
3. C-TZ: PMW-70C and PMW-98C.

The proposed new wells and replacement wells are shown on Attachment 2B-1. Details of the well installation are discussed below.

Permanent Monitoring Well Installation

Soil borings for monitoring wells will be advanced using hollow stem auger, mud rotary, or sonic drilling methods. Soil samples will be collected continuously from each boring and will be logged in the field for lithology and sedimentary structure. Soil headspace samples will be collected every two feet and screened in the field for total organic vapor concentrations. In addition, soil core samples will be visually inspected for contamination and non-aqueous phase liquid (NAPL) presence.

Soil borings that will be used for monitoring well installation will be advanced as necessary to identify the top and base of the targeted groundwater bearing-unit (GWBU) (i.e., A-TZ, B-TZ, C-TZ). Based on the boring logs for previous monitoring wells drilled at the Site, it is anticipated that these borings will be advanced to the following maximum depths (subject to field conditions):

- A-TZ: approximately 30 feet below ground surface (bgs)
- B-TZ/B-CZ: approximately 34 feet to 44 feet bgs
- C-TZ: approximately 70 feet bgs.

Although the proposed borings for wells below the A-TZ will be located away from areas where NAPL has been identified, surface or isolation casing (permanent isolation casing or temporary isolation casing using sonic drilling techniques) may be installed prior to penetration of any low permeability confining unit.

Permanent monitoring wells will be constructed after the total depth of the borehole is reached. Monitoring wells will be constructed using 2-inch or larger diameter, flush-joint-threaded Schedule 40 PVC casing and 0.010-inch slotted PVC screen. Other well casing and screen materials (i.e., stainless steel) may be used instead of PVC depending on the potential for exposure to NAPL. The specific well design will be determined in the field based on the observed lithology with the goal of screening the well at the base of the targeted GWBU. It is anticipated that each well screen will be approximately 10 feet in length, but shorter screen intervals may be installed for the B-CZ wells. After the boring is completed to the total depth, the casing and screen will be lowered into the borehole through the augers or sonic isolation casing.

Once the casing and screen are in place, the remaining well materials (filter sand, bentonite pellets, and cement/bentonite grout) will be added to the hole as the augers/sonic casings are slowly removed. Depths to the top of the annular materials will be measured with a weighted, calibrated tape and recorded on the Well Completion Log. A bentonite seal layer will be installed on top of the filter sand and will be a minimum of 2 feet in thickness. The remainder of the borehole annulus will be filled with a Portland/bentonite grout (or bentonite pellets). Each well will be completed with either a flush-grade surface completion with a 2-foot by 2-foot pad or above grade within a protective casing on a 4-foot-by-

4-foot concrete pad. If an above grade completion is constructed, bollards or bumper guards should be installed around the surface completion. Typical monitoring well completion details are shown on Attachment 2B-2. After construction, the position and elevation of each monitoring well will be surveyed by a licensed, professional surveyor relative to Texas State Plane Coordinates and mean sea level.

Monitoring Well Development

A minimum of 24 hours shall elapse after well construction and before well development to allow for bentonite hydration and grout set. Development will consist initially of surging and bailing or pumping; however, the specific development method will ultimately be decided by the field personnel based on the specific conditions encountered. Temperature, pH, specific conductivity, and turbidity will be monitored during purging. Development will continue until the well produces water with stable field parameter readings (i.e., temperature, pH, conductivity) and turbidity is below 10 NTU. At least five casing volumes of water will be removed from the well during development unless the well pumps dry. If the turbidity is not below 10 NTU after 10 casing volumes of water are removed from the well, then the final turbidity will be recorded and more aggressive development procedures such as air lifting may be considered.

Monitoring Well Documentation

Documentation of well installation and development will include field boring logs, monitoring well installation forms, well development forms, and any photographs. For wells installed within the City of Houston right of way (ROW), city permits will be required prior to installing the wells. Investigation-derived wastes (IDW), such as soil cuttings, decontamination fluids, or development water, generated from the drilling activities will be stored and disposed of in accordance with state and federal requirements. Documentation of the wastes disposed of as part of the well installation will be maintained.

Following installation, a certification report will be submitted to the Texas Commission on Environmental Quality (TCEQ) detailing the well installation and related documentation.

LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- PROPOSED MONITORING WELL

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PROPOSED MONITORING WELL LOCATION MAP

CONSULTANT
GOLDER

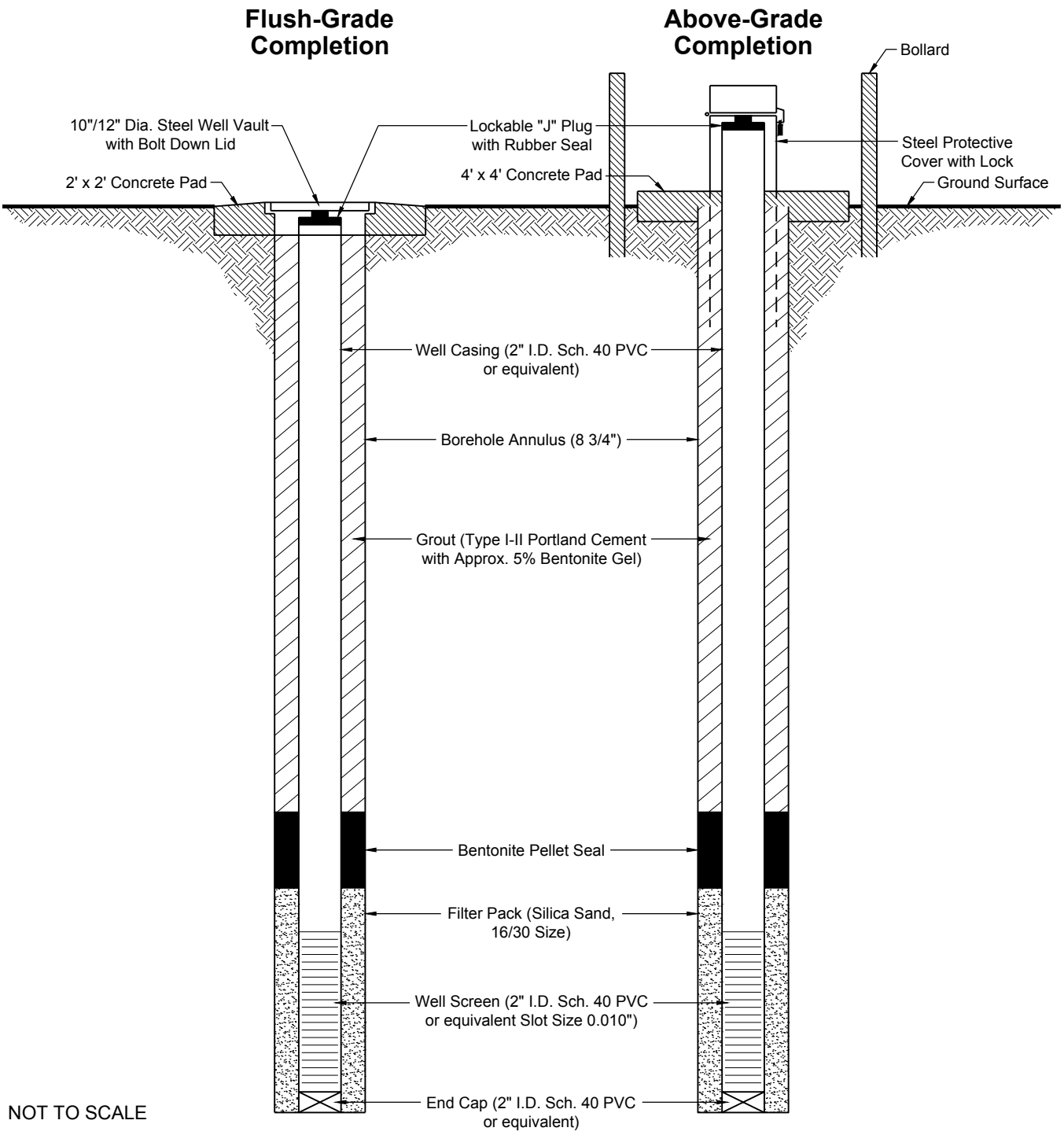
YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2B-1

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

1 in

Path: \\ca-ala-fs-sta01\Projects - Round Rock\19119232 - HWPW 2019-6 RAP Revision\ | File Name: ATT 2B-1 - Proposed MW Location Map.dwg | Last Edited By: ajdamico| Date: 2019-07-09| Time: 11:53:07 AM | Printed By: ajdamico| Date: 2019-07-09| Time: 5:07:18 PM



NOT TO SCALE

Notes:
Wells completed below the A-TZ will be installed with isolation casings (PVC or sonic casing, if drilled with sonic methods) isolating the shallow zone.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TYPICAL MONITORING WELL CONSTRUCTION

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2B-2

Last Edited By: adiamond Date: 2019-07-10 Time:9:35:11 AM | Printed By: adiamond Date: 2019-07-10 Time:9:41:12 AM
Path: \\texarkanadata\Projects - Round Rock\19119232 - HWPW\2019-6 RAP Revision\ | File Name: ATT 2B-2 - Typical Monitoring Well Construction.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0

Complete this worksheet when a PMZ is proposed as part of the response action. Include in Attachment 2D a map of the proposed PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone. If a PMZ is not proposed, do not submit this worksheet.

Groundwater-bearing unit **A-TZ, B-CZ//B-TZ, C-TZ**

Repeat this worksheet for each groundwater-bearing unit for which a PMZ is proposed.

Groundwater classification **X** (A-TZ, B-TZ, C-TZ) 2 **X** (B-CZ) 3

Provide justification as to why the PMZ is appropriate in accordance with §350.33(f)(4)(A). Include supporting documentation in Attachment 2E.

As discussed on Worksheet 2.0, UPRR will conduct the pre-design additional Groundwater Assessment investigation to assess COC concentrations in the A-TZ, B-CZ/B-TZ, and C-TZ. Data collected from the additional Groundwater Assessment will be used to update the boundaries of the proposed final PMZ and evaluate possible response actions to address the groundwater PCLE Zone outside the proposed final PMZs. The proposed PMZs discussed on this worksheet are considered preliminary and will be revised as necessary following the assessment activities.

The preliminary on-site and off-site PMZs proposed as a response action for the A-TZ, B-CZ/B-TZ, and C-TZ PCLE Zones (Attachments 2D-1, 2D-2, and 2D-3, respectively) ensures that COCs will not pose a potential unacceptable risk to human health or the environment as long as COC concentrations are less than cPCLs at the proposed Alternate POE wells or at the edge of the proposed preliminary PMZs. The groundwater PCLE Zones outside of the PMZs will be addressed under Remedy Standard A. PMZs are appropriate for this PCLE zone based on a relatively low groundwater velocity, the proposed institutional controls (deed recordation (on-site PMZs) and restrictive covenants/deed notices (off-site PMZs)) on use of groundwater within the PCLE Zone, and the absence of any existing water supply wells within ½-mile of the Site. In addition, there are no surface water bodies at the Site or near the proposed PMZ; therefore, there is no potential for affecting surface waters that would be hydraulically connected to groundwater. The City of Houston provides municipal water services for all properties within the Affected Property, so there is no human health complete pathway associated with this GWBU. The Site is also within the jurisdiction of the Harris-Galveston Subsidence District (HGSD), which restricts groundwater use in the area and requires a permit application prior to drilling a groundwater well. There are permitting exemptions, but only in areas that do not have an alternative water supply. The HGSD rules are not a complete prohibition on the use of groundwater in the area, but rather the fees associated with the rules are "intended to operate as an economic disincentive to groundwater withdrawal" (HGSD, 2013).

The preliminary on-site and off-site PMZs proposed for the A-TZ PCLE zones consists of two components: 1) filing of institutional controls including deed recordation (UPRR-Owned properties) and restrictive covenants/deed notices (contiguous block of off-site properties, City of Houston ROW) prohibiting the use of groundwater within the PMZs; and 2) performance of ongoing groundwater monitoring. The proposed deed recordation and restrictive covenants that have been signed by the landowners, and will be filed in the Harris County deed records once executed by the TCEQ, are included in Appendix 5.

Groundwater PCLE Zones based on the January 2019 groundwater data (Appendix 2) collected from the Site with the properties with signed institutional controls were used to establish the preliminary PMZs for the GWBUs. Data collected from the additional Groundwater Assessment (Worksheet 2.0) will be used to adjust the boundaries of the proposed final PMZ and evaluate possible response actions to address the groundwater PCLE Zone outside the proposed final PMZs. The proposed final PMZs for the A-TZ, B-

CZ/B-TZ, and C-TZ will be provided in the Revised RAP following completion of the additional assessment activities.

Is the alternate POE proposed to be beyond the current limits of the PCLE zone? __*__ Yes ___ No
If yes, how far? *_____ (§350.37(l) or (m) as applicable)
Is it to be off-site? * Yes _____ No _____

On an off-site property that currently does not contain a residential-based groundwater PCLE zone?
____*____ Yes ____No -

Alternate POEs for the GWBUs will be established following the additional assessment activities discussed on Worksheet 2.0.

If yes and this is a Class 2 groundwater, provide the basis for concluding that this groundwater does not have a reasonably anticipated future beneficial use (§350.37(l)(3)).

As previously discussed, the City of Houston provides municipal water services for all properties within the Affected Property, so there is no current beneficial use for the GWBU. The Site is also within the jurisdiction of the HGSD, which restricts groundwater use in the area and requires a permit application prior to drilling a groundwater well. There are permitting exemptions for small domestic wells, but only in areas that do not have an alternative water supply. The HGSD rules are not a complete prohibition on the use of groundwater in the area, but rather the fees associated with the rules are "intended to operate as an economic disincentive to groundwater withdrawal" (HGSD, 2013).

Therefore, with the City of Houston providing water for the area, and financial disincentives placed on shallow groundwater use by the HGSD (which the Texas Supreme Court ruled in favor of the HGSD in 1977 to protect public welfare by limiting harmful pumping, which was causing ground subsidence of the land resulting in flooding (*Beckendorff v. Harris-Galveston Coastal Subsidence District (1977)*), the shallow GWBUs (A-TZ, B-CZ/B-TZ, C-TZ and D-TZ) do not have a reasonably anticipated future beneficial use in the area.

For the B-CZ (Attachment 2D-2), the residential-based PCLE zone (Class 2 and 3 groundwater PCLs) extends onto the off-site properties (to the north and to the east in the residential area), and on to the City of Houston ROW. For the Off-Site PMZ, the B-TZ (Class 2 groundwater) is only present on the west portion of the Off-Site PMZ with the B-CZ present across the rest of the Off-Site PMZ. As detailed in previously submitted RAP (PBW, 2017), wells completed in the B-CZ unit have an average hydraulic conductivity of 2×10^{-7} cm/sec, which is considerably less than the 1×10^{-5} cm/sec threshold for saturated soils. This finding, which is supported by the well yield test results, indicates B-CZ should be classified as saturated soils rather than a GWBU. The TCEQ agreed that the B-CZ groundwater classification can be considered a Class 3 groundwater per the TCEQ April 10, 2017 TNOD letter. With the low yield found in the B-CZ, groundwater in this unit would not have a reasonably anticipated future beneficial use.

Is NAPL present? __**X**__ Yes _____ No
If so, describe how the response action will achieve the performance criteria in §350.33(f)(4)(E).

§350.33(f)(4)(E) The person is required to reduce NAPLs which contain COCs in excess of PCLs within a plume management zone to the extent practicable. In the determination of adequate NAPL reduction, the executive director may consider conformance with the following criteria and other relevant factors:

(i) readily recoverable NAPLs have been recovered;

(ii) the NAPLs will not generate explosive conditions as defined in §350.31(c) of this title (relating to General Requirements for Remedy Standards);

(iii) the NAPLs will not discharge to the ground surface, to surface waters, to structures, or to other groundwater-bearing units;

(iv) the vertical and lateral extent of NAPLs will not increase under natural conditions, or sufficient NAPLs have been recovered such that an active recovery system can be demonstrated to effectively control or contain migration of NAPLs (i.e., no increased NAPL extent); and

(v) the NAPLs will not result in the critical groundwater PCLs being exceeded at the downgradient boundary of the plume management zone or in the critical PCLs for other environmental media being exceeded at the applicable POE.

The NAPL response action objective using TCEQ Guidance TRRP-32 (Risk-Based NAPL Management) will include two approaches:

1. For the PMZ area, the NAPL response action objective will be to "ensure compliance of NAPL zone in the PMZ" to address the NAPL within the PMZs for each GWBU. Methods to meet the response action objective for the creosote DNAPL will include recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) at the NAPL source zone so that the dissolved-phase groundwater PCLE zone is stable (or shrinking) and the PCLE performance objectives for the PMZ can be met, including no cPCL exceedances at the alternate POE wells; and
2. For areas outside the PMZ, the NAPL response action will be to recover the soluble NAPL fraction that acts as the source of a dissolved-phase groundwater PCLE zone to the extent that the groundwater PCLE zone is restored.

As discussed on Worksheet 2.0, UPRR plans to conduct a pre-design NAPL Assessment to further evaluate the extent of NAPL occurrences in the vadose zone and GWBUs at the Site. Following that additional assessment, NAPL response actions will be developed in order to achieve the performance criteria in §350.33(f)(4)(E). UPRR will evaluate feasible alternatives and develop remedial approaches with the goal of achieving the specific response objectives and performance criteria in §350.33(f)(4)(E) for the different Remedy Standard areas at the Site. The feasibility study and potential design of any system components for NAPL recovery will be generally described within the Revised RAP. This may include recommendations for pilot studies or treatability studies to evaluate the feasibility of a selected response action or actions.

If this is a Class 2 groundwater, explain how the response action will ensure that leachate from the surface soil and subsurface soil PCLE zones will not increase concentration of COCs greater than the current measured concentrations (at time of RAP submittal). (§350.33(a)(2))

Groundwater monitoring has been on-going at the Site since 1997. Current and historical groundwater data from the A-TZ source areas (SWMU 4, 5, 8) (Appendix 2), especially wells with data going back to 1997, suggest that the COC concentrations in the A-TZ groundwater plume were historically higher compared to present day data. The current CSM assumes that the COCs in the vadose zone (surface and subsurface soil) have reached a point where the mass loading to the A-TZ has reached a state of equilibrium and continued leachate migration to groundwater from surface or subsurface soil will not cause expansion of the groundwater PCLE Zone for the A-TZ. In addition, with the proposed PMZ for the A-TZ Unit on-Site, groundwater monitoring as part of the PMZ will be used to confirm that any potential leachate in the surface and subsurface soils will not cause an increase in COC concentrations in groundwater at the A-TZ POE (once established following the additional assessment activities) in excess

of the groundwater PCL. However, to confirm the CSM, pre-design assessment activities (including the Englewood Intermodal Yard area where NAPL has been confirmed in the vadose zone) are proposed (see Worksheet 2.0). Data collected from the pre-design assessment activities will be evaluated to address the potential for leachate from the surface and subsurface PCLE zones to increase concentrations of COCs in the A-TZ.

As part of the response action for the surface and subsurface soils in the former HWPW area, the response included the construction of a capped area over the surface soil PCLE Zone. Even though the cap is not designed for hydraulic control, the cap was constructed with compacted clay and vegetation and sloped to drain storm water. The design of the cap (sloped and vegetated) minimizes infiltration across the surface soil PCLE Zone and potentially reduces leachate migration from the vadose zone to the A-TZ.

Provide the basis that the COCs will not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachment 2E.

As requested by the TCEQ in the 4th TNOD dated April 11, 2019, UPRR will conduct the pre-design Additional Groundwater Assessment (see Worksheet 2.0) to confirm the boundaries of the groundwater PCLE Zones. Following the pre-design Additional Groundwater Assessment activities, the preliminary PMZ presented in this document will be revised accordingly. The proposed final PMZs will be submitted to the TCEQ for review in the Revised RAP.

Describe the methods used to determine that there are no artificial penetrations which can allow COCs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units. Include supporting documentation in Attachment 2E.

An on-site field survey and water-well data search was conducted and did not indicate any potential vertical artificial penetrations that would act as a conduit for migration of shallow groundwater into the underlying groundwater formation. However, as discussed in the APAR Addendum (PBW, 2009), two sets of fiber optic lines, Level 3 Communications and Qwest, run along the north side of the rail main lines across the entire length of the Site. Based on conversations with both Level 3 Communications and Qwest representatives, the fiber lines run underneath SWMUs 2, 5, 4, 8, and 10/11. The fiber lines run directly underneath the drainage ditch southwest of the Site and under the SDD about 3 to 5 feet bgs. The Level 3 Communications line reportedly was directionally bored to a depth of 40 to 45 feet bgs underneath the Original and Recent Process Areas (SWMU Nos. 5 and 4, respectively) and under the AST Area (SWMU No. 8). The Qwest fiber line reportedly runs 10 to 15 feet northwest and parallel of the main rail line, and is about 5 to 10 feet bgs through the Site. Just east of SWMU No. 8, both fiber lines return to approximately 4 to 6 feet below grade an continue running northeast parallel to the rail main line. The Level 3 Communications line may act as an artificial penetration since the reported depths of the line go through both the A-TZ and into the B-CZ immediately below the primary source areas. Given the depth of the fiber optic line is below the A-TZ and likely below the B-TZ (or carbonate seams within the B-CZ), monitoring well MW-19C will continue to be monitored to evaluate if the directional bored fiber optic lines may be creating a preferential pathway for COCs to migrate to the C-TZ GWBU.

In addition to the fiber lines, three City of Houston utilities were identified in the previous APAR (PBW, 2009) that cut across the Site oriented north-south just west of the Lockwood Street Bridge: 1) 60-in wastewater line, 2) 84-in water line, and 3) a 42-in storm sewer line (PBW, 2009). Through a review of

the utility drawing files obtained from the City of Houston Public Works Survey Department, two of the underground utility lines (the 60-in sanitary sewer line and the 84-in water line) appear to be at depths that potentially intersect the uppermost GWBU A-TZ. The estimated depths of the utilities based on the city drawings are shown on the Geologic Cross Sections A-A', B-B', and C-C' (RAP, PBW, 2014). The estimated base depth of the 60-in wastewater line and the 84-in water line where Cross Section B-B' crosses the utility lines is approximately 23 feet bgs (approximate elevation of 26 feet HVD). It is highly unlikely that A-TZ groundwater is seeping into the 84-in water line, given the line is under pressure (flow is south to north), constructed with welded steel pipe, and is relatively new (constructed in 2000).

List the attenuation action level determined for each attenuation monitoring point. Illustrate the proposed attenuation monitoring points and the groundwater PCLE zone on the map in Attachment 2D. Include all calculations and other methods of determining the attenuation action levels in Attachment 2E.

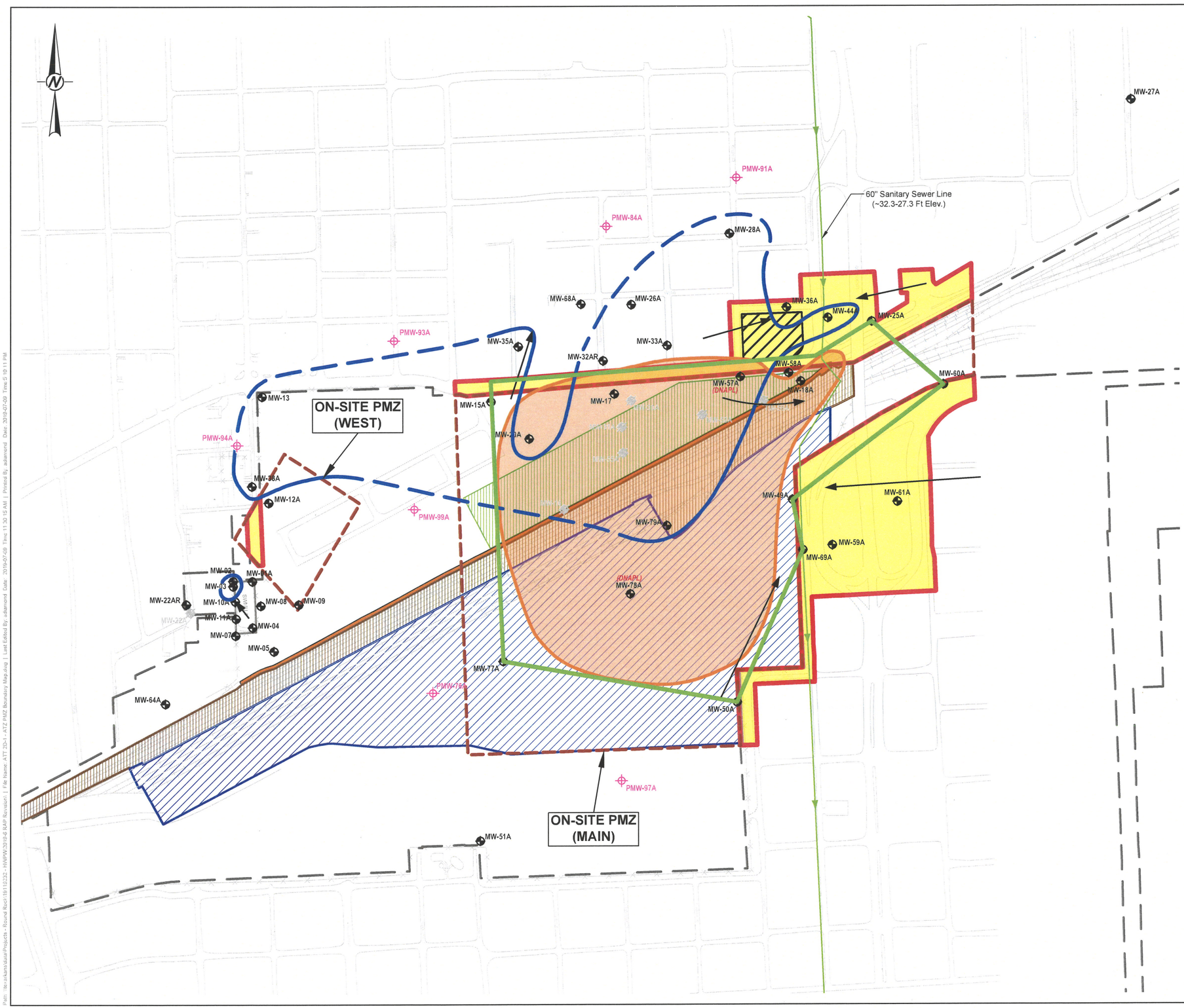
COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (mg/L)	Attenuation Action Level limited by $^{Air}GW_{Inh-V}$ or existing COC concentration? Y/N
Benzene	TBD	TBD	TBD
2,4-Dimethylphenol	TBD	TBD	TBD
2 Methylnaphthalene	TBD	TBD	TBD
Dibenzofuran	TBD	TBD	TBD
Naphthalene	TBD	TBD	TBD
Other COCs TBD			

Note: TBD – to be determined following the Additional Groundwater Assessment activities (Worksheet 2.0).

ATTACHMENT 2D

PLUME MANAGEMENT ZONE MAPS

Attachment 2D-1 – Preliminary PMZ Boundary Map – A-TZ
Attachment 2D-2 – Preliminary PMZ Boundary Map – B-CZ/B-TZ
Attachment 2D-3 – Preliminary PMZ Boundary Map – C-TZ



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PRELIMINARY A-TZ PMZ BOUNDARY
- PRELIMINARY ON-SITE PMZ (PENDING ADDITIONAL GROUNDWATER ASSESSMENT)
- PRELIMINARY OFF-SITE PMZ
- PRELIMINARY OFF-SITE PMZ - PRIVATE PROPERTY (SIGNED RESTRICTIVE COVENANT/DEED)
- PRELIMINARY OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED MONITORING WELL
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2019 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ BOUNDARY MAP - A-TZ

CONSULTANT

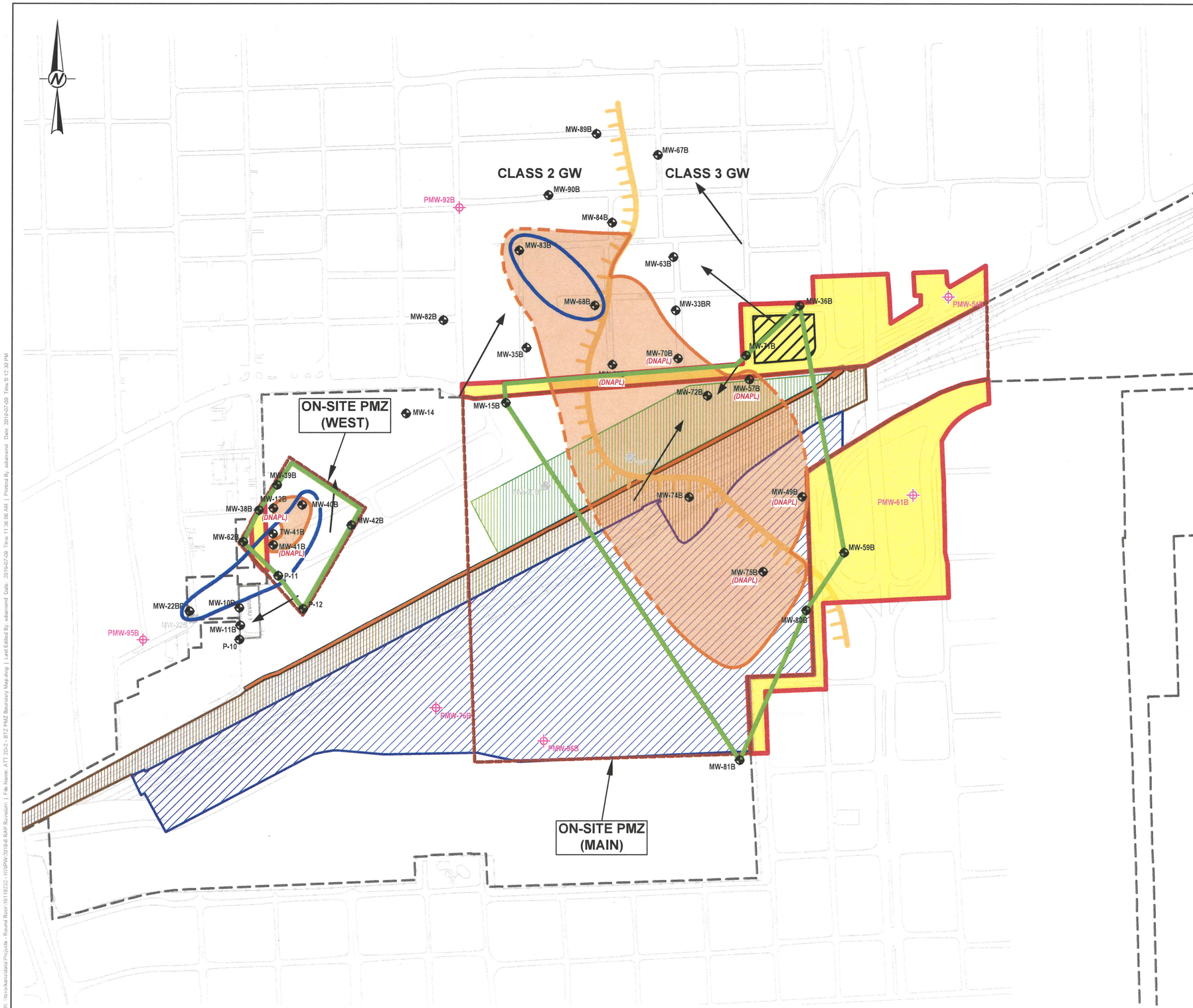
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	ATTACHMENT
19119232	0	2D-1

Path: \\ca-ala-fs-sh01\Projects - Proj\19119232 - HWPW 2019\5 RAP Revision | File Name: ATT 2D-1 ATZ PMZ Boundary Map.dwg | Last Edited By: ajdiamond Date: 2019-07-09 Time: 11:30:15 AM | Printed By: ajdiamond Date: 2019-07-09 Time: 5:10:11 PM

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



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PRELIMINARY B-TZ/B-CZ PMZ BOUNDARY
- PRELIMINARY ON-SITE PMZ (PENDING ADDITIONAL GROUNDWATER ASSESSMENT)
- PRELIMINARY OFF-SITE PMZ
- PRELIMINARY OFF-SITE PMZ - PRIVATE PROPERTY (SIGNED RESTRICTIVE COVENANT/DEED)
- PRELIMINARY OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED MONITORING WELL
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2019 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/1/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

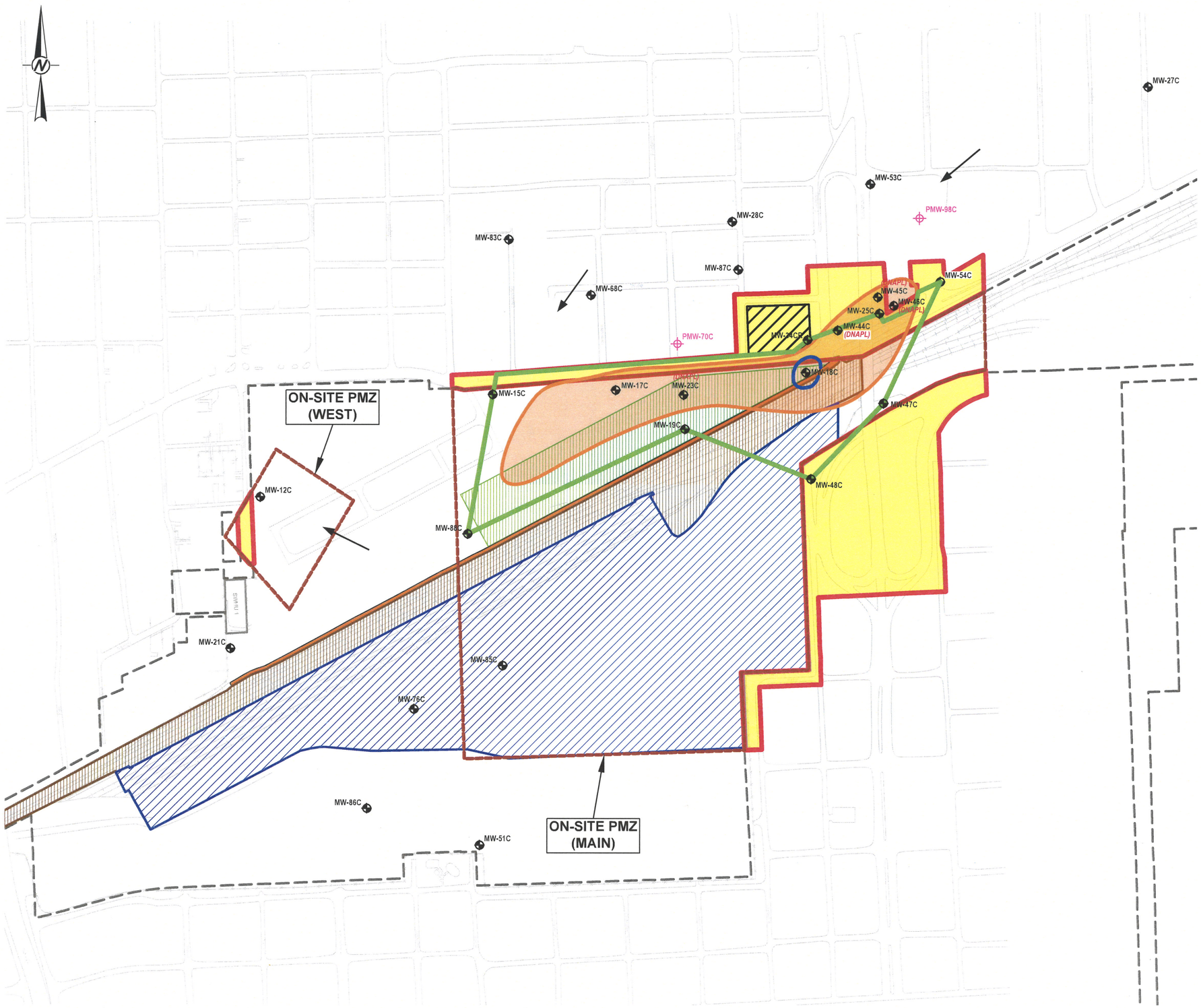
TITLE
PMZ BOUNDARY MAP - B-CZ/B-TZ

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 ATTACHMENT 2D-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
Path: \\texas\kansas\data\Projects - Round Rock\19119232 - HWPW\2019-6 RAP Revision\ | File Name: ATT 2D-2 - BTZ PMZ Boundary Map.dwg | Last Edited By: adiamond Date: 2019-07-09 Time: 11:36:06 AM | Printed By: adiamond Date: 2019-07-09 Time: 5:12:30 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PRELIMINARY C-TZ PMZ BOUNDARY
- PRELIMINARY ON-SITE PMZ (PENDING ADDITIONAL GROUNDWATER ASSESSMENT)
- PRELIMINARY OFF-SITE PMZ
- PRELIMINARY OFF-SITE PMZ - PRIVATE PROPERTY (SIGNED RESTRICTIVE COVENANT/DEED)
- PRELIMINARY OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED MONITORING WELL
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2019 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ BOUNDARY MAP - C-TZ

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2D-3

Path: \\erasrkns\data\Projects - Round Rock\19119232 - HWPW 2019-6 RAP Revision\ | File Name: ATT 2D-3 - CTZ PMZ Boundary Map.dwg | Last Edited By: adiamond Date: 2019-07-09 Time: 11:39:53 AM | Printed By: adiamond Date: 2019-07-09 Time: 5:14:06 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in

Institutional Control	RAP Worksheet 2.4 Page 1 of 1	
Associated Information: Appendices 4, 5	ID No.: SWR ID 31547	Report Date: July 9, 2019 – Rev 4

Complete this worksheet if an institutional control will be used as part of the response action. Include a draft of the proposed institutional controls in Appendix 4. Provide a list of landowners from whom landowner concurrence will be requested, as necessary, in Appendix 5.

Specify the property for which this applies. **Union Pacific (on-site Deed Notice) and 6 properties (plus the City of Houston right of way) (Restrictive Covenants) falling within the proposed PMZs**

Repeat this worksheet for each different property for which an institutional control will be used. ***(*See Appendix 5 for full list of Worksheet 2.4 for each off-site property, map of properties, and summary table)***

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))	**X**				**X**		**Within 120 days of RAP approval**
Document use of physical or institutional control under Remedy Standard B §350.31(g))	**X**	**X***			**X**	**X***	**Within 120 days of RAP approval (off-site IC)**
Document notice of on-going long-term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))	**X**	**X***			**X**	**X***	**Within 120 days of RAP approval (off-site PMZ)**
Document the demonstration of technical impracticability (§350.33(f)(3)(F))	**X**	**X***			**X**	**X***	**Within 120 days of RAP approval**
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.
[2] Specify date or amount of time after RAP approval.

Monitoring and Sampling Associated Information: Attachment 3A	RAP Worksheet 3.1 Page 1 of 1	
	ID No.: SWR ID 31547	Report Date: July 9, 2019 – Rev 4

List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	TPH Pentachlorophenol		Bulk sampling	TPH – see Attachment 2A-1a PCP – see Attachment 2A-1b	See Worksheet 2.0	TX1005, TX1006 US EPA 8270	One time
Subsurface Soil	TPH		Bulk sampling	TPH – see Attachment 2A-1a	See Worksheet 2.0	TX1005, TX1006	One time
Groundwater	Site-Specific VOCs		Same as APAR (low-flow sampling)	See Attachment 2B-1 for well locations	Middle of screened interval of monitoring well	US EPA 8260	Semi-Annual
	Site-Specific SVOCs		Same as APAR (low-flow sampling)	See Attachment 2B-1 for well locations	Middle of screened interval of monitoring well	US EPA 8270	Semi-Annual
	Arsenic		Same as APAR (low-flow sampling)	See Attachment 2B-1 for well locations	Middle of screened interval of monitoring well	US EPA 6010/6020	Semi-Annual.

Explain the reasons for the above-listed monitoring and sampling plan.

Pending completion of the Revised RAP, UPRR will conduct semi-annual monitoring of the site-wide groundwater monitoring wells. The long-term monitoring plan will be developed after the additional assessments and potential response actions have been selected.

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Complete this worksheet only if Remedy Standard B will be used.

What is the proposed initial post-response action care period? (default 30 yr.) **30** years

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

Soil Response Action
The initial post-response action care period for the clay cap (HWPW), asphalt roadway (HWPW), concrete sidewalk (off-site City of Houston ROW), concrete pavement (Englewood Intermodal Yard), and railroad ballast area is 30 years. Inspections and maintenance of the caps will be performed for an initial period of 30 years.

Groundwater Response Action
The post-response action care period for groundwater monitoring will be 30 years. However, if groundwater concentrations decrease to levels below cPCLs, or groundwater COC trends confirm stable or decreasing concentrations, a shorter post-response action care period may be proposed.

What is the foreseeable land use during the post-response action care period? Commercial/Industrial and Residential (off-site properties)

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

For the four soil response areas within the Site:
(1) the former HWPW area is inactive and UPRR restricts access to the HWPW soil capped area to those performing inspections, monitoring or maintenance. Access to the HWPW area is limited by fencing. The asphalt roadway is intended to only be used by UPRR employees and contractors for the servicing of rail and signal communications in the area. Signs are posted stating that digging is prohibited on the capped area and asphalt roadway.

(2) For the concrete cap area within the Englewood Intermodal Yard, this area will continue to be used for the commercial/industrial intermodal operations. The Englewood Intermodal Yard is secured by fencing and security guards that limit access to the area to UPRR employees, contractors, and vendors to the yard. The concrete pavement that makes up the cap was designed for its current use (i.e., allow loading, unloading, transportation, and storage of container boxes). UPRR recently constructed the NAPL Collection System in the areas where the tar-like material was seeping. UPRR will continue to monitor the conditions at the Englewood Intermodal Yard as part of the operation and maintenance of the concrete cap and NAPL Collection System.

(3) The railroad ballast area will continue to be used for railroad operations and will be maintained for those operations. UPRR Engineering Standards for Roadbase Section for Wood Tie Track Construction (UPRR, 2006) indicates that the recommended minimum ballast thickness is 15 inches, which will serve as the protective barrier for on-site workers from exposure to surface soils.

(4) For the proposed concrete sidewalk within the City of Houston ROW to address the surface soil PCL zone, the concrete cap will protect the occasional trespasser that may walk along the sidewalk. The addition of the sidewalk in the area provides additional benefit of allowing all access to mass-transportation bus stop. Signs will be posted stating that digging is prohibited within the concrete capped area.

Institutional controls will be placed on all properties within the groundwater PLCE Zones to prohibit installation of groundwater wells and use of the shallow groundwater. This extends from the UPRR property (will be deed recorded commercial/industrial use only) to the off-site residential and City of Houston right of ways (ROWs) (Attachment 5A). The future use of the off-site properties will not affect the proposed response.

Briefly describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

The cap inspection and maintenance program will be developed to ensure the integrity of the cap and vegetative cover. The maintenance program will consist of the following:

I. Soil Cap Area - HWPW

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis and after all major storms. The inspections will focus on the following major issues:

1) Erosion of the cap (gullies, rills, or other erosional features on the cap surface or in drainages)
2) Sideslope sloughing (slippage)
3) Settling/subsidence
4) Vegetation deterioration
5) Damage from animals (i.e., rodents)
6) Groundwater monitoring equipment (wells) (semi-annual basis)

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE COVER AND VEGETATION

The cover and vegetation will be maintained by:

1) Preventing ponding
2) Maintaining design slopes and grades
3) Fertilizing, as necessary
4) Mowing, as necessary
5) Replanting, as necessary
6) Controlling animals (rodents, hogs) and insects

Routine repairs of the cover and maintenance of the slopes and grades will be performed to prevent ponding and drainage problems. Vegetation may require periodic application of fertilizer, mulch or seed. Vegetation will target pollinator seed mixes to attract pollinator species. Mowing will be performed as needed but less frequently than a grass covered cap and only periodically to promote the growth of desired vegetation and to block the growth of trees or shrubs which could penetrate the cover soil with their roots.

EROSION CONTROL
Maintenance of the drainage and diversion portions of the cap will be performed. Erosion of soil by water and/or wind will be repaired as soon as practicable.

II. Asphalt Roadway Area – HWPW

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Erosion of the asphalt roadway (potholes, exposed soils)
2) Settling/subsidence
3) Cracks in asphalt roadway

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE ASPHALT ROADWAY
The asphalt cover will be maintained by:

1) Crack repair/sealing;
2) Pothole patching; and
3) Controlling vegetation.

III. Concrete Sidewalk – City Of Houston ROW along Liberty Road (Off-Site)

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Step separation in the concrete;
2) Settling/subsidence;
3) Cracks in the concrete; and
4) Openings in the sidewalk.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE CONCRETE SIDEWALK/PAVEMENT
The concrete sidewalk will be maintained by:

1) Crack repair/sealing;
2) Replacing panels as needed; and
3) Controlling vegetation growing through cracks/along edges of sidewalk.

IV. Concrete Pavement – Englewood Intermodal Yard (On-Site)

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Step separation in the concrete;
2) Settling/subsidence;
3) Cracks in the concrete; and
4) Seeps in the concrete/asphalt pavement.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE CONCRETE PAVEMENT
The concrete pavement will be maintained by:
1) Crack repair/sealing when underlying soils are exposed;
2) Replacing broken concrete as needed; and
3) Controlling vegetation growing through cracks/along edges of pavement.

The following inspections and maintenance will be conducted for the NAPL Collection System constructed within the Englewood Intermodal Yard:

OPERATION/MAINTENANCE OF THE NAPL COLLECTION SYSTEM

1. Inspections will be conducted weekly to monitor the performance of the NAPL Collection System. The inspections will focus on the following major issues:
   - Tar-like material seeps in the vicinity of the NAPL Collection System;
   - Inspecting the NAPL collection sumps for NAPL accumulation;
   - Settling/subsidence;
   - Cracks in the concrete;
   - Locations where deficiencies are found shall be marked and repaired as soon as practicable.

2. If NAPL or fluids accumulate in the sumps, the NAPL and fluids will be recovered and disposed of at a permitted facility.

V. Railroad Ballast Area – (HWPW/Englewood Intermodal Yard)

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:
1) Ballast removed with exposed soil.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE RAILROAD BALLAST
The railroad ballast will be maintained by:
1) Adding railroad ballast where areas of soil are exposed;
2) Controlling vegetation.

The ballast areas will be maintained in accordance with UPRR Engineering Standards for Roadbase Section for Wood Tie Track Construction (UPRR, 2006).

GROUNDWATER MONITORING
Groundwater monitoring will be conducted per the Groundwater Monitoring Plan following the additional Groundwater Investigation and NAPL Assessment activities (discussed in Worksheet 2.0) have been completed

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? X Yes ___ No

If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

Cost Estimate

Complete this portion of the form only if a physical control is proposed (installed hydraulic control system, slurry wall, cap, etc.). Provide in Attachment 5B a detailed cost estimate for a third party to operate and maintain the physical control during the PRAC period, based on current dollar amount.

Specify the physical control to which this information applies	HWPW Vegetated Clay Cap, Asphalt Roadway, City of Houston ROW Sidewalk, Englewood Intermodal Yard Concrete Pavement, and Railroad Ballast (shown on Attachment 5A)

Complete this worksheet for each physical control that will be used as part of the response action.

What is the total estimated annual cost of O&M for the PRAC period?	***To be determined following additional assessment activities***
What is the total estimated cost for a third party to perform PRAC activities?	***To be determined following additional assessment activities***

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

UPRR will submit an appropriate financial assurance mechanism to TCEQ within 90 days of the Revised RAP approval.

Does the person meet the criteria and definition of a small business? (see §350.33(n)) ___ Yes **X** No

If yes and the person desires to pursue the reduced amount of financial assurance, provide a legally binding affidavit as Attachment 5C. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n). An example affidavit is attached in the instructions.

Implementation Schedule	RAP Worksheet 6.0 Page 1 of 3	
	ID No.: SWR ID 31547	Report Date: July 9, 2019 – Rev 4

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	**Start**	**Finish**	**Duration**
Filing of deed recordation for UPRR-owned properties requiring commercial/industrial land use and prohibiting groundwater use. Deed recordation will also restrict excavation activities over capped areas.	Upon Revised RAP approval	Within 120 days from RAP approval	120 days
Filing of restrictive covenants prohibiting groundwater use for off-site PMZ. . Filing of deed recordation for City of Houston ROW for prohibiting groundwater use and restriction of excavation where concrete sidewalk will be installed.	Upon Revised RAP approval	Within 120 days from RAP approval	120 days
Plugging of monitoring wells within the capped area, installation of additional monitoring wells at the POEs	Completed	Completed	Completed
Excavation of Surface Soil PCLE Zone, relocation under the AOC Policy, and construction of the soil cap, asphalt roadway, and concrete sidewalk	Completed	Completed	Completed
Semi-Annual groundwater monitoring (submitted to TCEQ under the Annual Groundwater Monitoring Report)	Ongoing	Uncertain-subject to monitoring results	Uncertain – subject to monitoring results
DNAPL Recovery Activities (with annual evaluation of effectiveness), quarterly status reports to be submitted to the TCEQ.	Ongoing	Uncertain – to be evaluated annually	Uncertain – to be evaluated annually
Physical Barrier (Cap/Sidewalk/Pavement/Ballast) Inspection and Maintenance	Ongoing	30 years	30 yr O&M
Annual Groundwater Corrective Action Monitoring Report, documenting all remediation and post-response action activities at the Site including the Post-Response Action Care Reports (PRACR)	See the following Submittal table	See the following Submittal table	See the following Submittal table
Pre-Design Assessments/Schedule			
Pre-Design Assessment: Conduct NAPL Assessment (CPT-TarGOST) (proposed locations discussed on Worksheet 2.0), schedule may be impacted pending contractor availability and city permits.	Within 60 days of Conceptual RAP Approval	Within 90 days of Conceptual RAP Approval	30 Days
Pre-Design Assessment: Review NAPL Assessment field results and evaluate feasible alternatives and response actions to improve effectiveness and efficiency of the DNAPL recovery activities at the Site.	Within 5 days of completing NAPL Assessment	Within 65 days of completing NAPL Assessment	60 Days
Pre-Design Assessment: Conduct Additional Groundwater Assessment (proposed locations discussed on Worksheet 2.0) to evaluate nature and extent of the COCs in the three GWBUs, schedule may be impacted pending contractor availability and city permits.	Within 90 days of Conceptual RAP Approval	Within 135 days of Conceptual RAP Approval	45 Days

Pre-Design Assessment: Conduct TPH-NAPL Assessment in the Englewood Intermodal Yard (proposed locations discussed on Worksheet 2.0).	Within 60 days of Conceptual RAP Approval	Within 90 days of Conceptual RAP Approval	30 Days
Pre-Design Assessment: Conduct PCP Soil Assessment in the HWPW Yard (proposed locations discussed on Worksheet 2.0).	Within 60 days of Conceptual RAP Approval	Within 90 days of Conceptual RAP Approval	30 Days
Prepare the Revised RAP to develop remedial alternatives based on the pre-design assessment results from the NAPL Assessment and Additional Groundwater Assessment Results.	Within 30 days of completion of all Pre-Design Assessment Activities	Within 120 days of completion of all Pre-Design Assessment Activities	90 Days

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	Submittal date
Response Action Effectiveness Report (RAER)	
RAER submittal number 1 -	
RAER submittal number 2	
RAER submittal number 3	
Subsequent RAER submittals	
Response Action Completion Report (RACR) (Soil Response Action, Additional MW Install for PMZ)	**60 days following soil Response Action**
Post-Response Action Care Report (PRACR) (to be submitted with the Annual Groundwater Monitoring Report as an attachment:	
PRACR submittal number 1	March 31, 2017
PRACR submittal number 2	March 31, 2018
PRACR submittal number 3	March 31, 2019
PRACR submittal number 4	March 31, 2020
PRACR submittal number 5	March 31, 2021
PRACR submittal number 6	March 31, 2022
PRACR submittal number 7	March 31, 2023
PRACR submittal number 8	March 31, 2024
PRACR submittal number 9	March 31, 2025
PRACR submittal number 10	March 31, 2026
PRACR submittal number 11	March 31, 2027
PRACR submittal number 12	March 31, 2028
PRACR submittal number 13	March 31, 2029
PRACR submittal number 14	March 31, 2030
PRACR submittal number 15	March 31, 2031
PRACR submittal number 16	March 31, 2032
PRACR submittal number 17	March 31, 2033
PRACR submittal number 18	March 31, 2034
PRACR submittal number 19	March 31, 2035
PRACR submittal number 20	March 31, 2036
PRACR submittal number 21	March 31, 2037
PRACR submittal number 22	March 31, 2038

PRACR submittal number 23	March 31, 2039
PRACR submittal number 24	March 31, 2040
PRACR submittal number 25	March 31, 2041
PRACR submittal number 26	March 31, 2042
PRACR submittal number 27	March 31, 2043
PRACR submittal number 28	March 31, 2044
PRACR submittal number 29	March 31, 2045
PRACR submittal number 30	March 31, 2046

***This schedule assumes RAP approval by March 31, 2016 and PMZ implementation (i.e., filing of required restrictive covenants) by September 30, 2016.**

LIST OF APPENDICES

APPENDIX	TITLE
1	REFERENCES
2	DATA TABLES AND BORING LOGS - *JANUARY 2019 GROUNDWATER MONITORING REPORT*
3	STUDIES AND TESTS DOCUMENTATION
5	LANDOWNER CONCURRENCE

APPENDIX 1

REFERENCES

References

Dakota Technologies, 2015. *Tar-specific Green Optical Screening Tool (TarGOST),* http://www.dakotatechnologies.com/services/targost, Fargo, North Dakota.

ERM, 2000. *Affected Property Assessment Report (APAR)*, Houston Wood Preserving Works, Houston, Texas, June 10, 2000.

ERM, 2004. *Revised Affected Property Assessment Report (APAR)*, Houston Wood Preserving Works, Houston, Texas, June 10, 2004.

Golder Associates Inc (Golder), 2019. *Response to 4th Technical Notice of Deficiency – Deficiency No. Specific T59*, Houston Wood Preserving Works, Houston, Texas, July 3, 2019.

Golder Associates Inc (Golder), 2019. *Response Action Completion Report (RACR),* Houston Wood Preserving Works, Houston, Texas, March 29, 2019.

Harris-Galveston Subsidence District (HGSD), 2013. *Regulatory Plan*, Friendswood, Texas, Amended May 8, 2013.

Interstate Technology Regulatory Council (ITRC), 2011, *Integrated DNAPL Site Strategy (IDSS) Technical/ Regulatory Guidance Document,* ITRC IDSS Team, November 2011.

Pastor, Behling & Wheeler, LLC (PBW), 2009. *Affected Property Assessment Addendum and Responses to Comments,* Houston Wood Preserving Works, Houston, Texas, July 2009.

Pastor, Behling & Wheeler, LLC (PBW), 2010. *Affected Property Assessment Addendum, Wood Preserving Works, Houston, Texas*.

Pastor, Behling & Wheeler, LLC (PBW), 2016. *Response Action Completion Report (RACR),* Houston Wood Preserving Works, Houston, Texas, July 2016.

Pastor, Behling & Wheeler, LLC (PBW), 2017. *Revised Response Action Completion Report (RACR),* Houston Wood Preserving Works, Houston, Texas, June 2017.

PRC Environmental Management, Inc. (PRC EMI, 1993). *RCRA Facility Assessment Report*, Southern Pacific Transportation Company, Houston, Texas, October 1993.

Texas Commission on Environmental Quality (TCEQ), 2010, *Affected Property Assessment Requirements under TRRP, TRRP-12*, Remediation Division, Austin, TX, Revised May 2010.

Texas Commission on Environmental Quality (TCEQ), 2010, *Institutional Controls under TRRP, TRRP-16*, Remediation Division, Austin, TX, Revised May 2010.

Texas Commission on Environmental Quality (TCEQ), 2013, *Risk-Based NAPL Management TRRP-32*, Remediation Division, Austin, TX, July 2013.

Union Pacific Railroad (UPRR), 2006. *UPRR Engineering Standards for Roadbase Section of Wood Tie Track Construction*, 2006.

United States Environmental Protection Agency (EPA), 2019. *Vapor Intrusion Screening Level (VISL) calculator*, https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator. Accessed April 2019.

United States Environmental Protection Agency (EPA), 2015. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. OSWER 9200.2-154,* Office of Solid Waste and Emergency Response, Environmental Protection Agency, Washington, D.C. June.

APPENDIX 2

DATA TABLES AND BORING LOGS

JANUARY 2019 GROUNDWATER MONITORING REPORT

January 2019 Groundwater Monitoring Report

Former Houston Wood Preserving Works Facility

Post-Closure Care Permit No HW-50343

Industrial SWR No. 31547

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

Prepared for:

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

Prepared by:

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004
Round Rock, Texas, USA 78664
Texas Geoscience Firm No. 50369

+1 512 671-3434

Table of Contents

1.0 INTRODUCTION 3

2.0 GROUNDWATER MONITORING ACTIVITIES 3

3.0 GROUNDWATER ELEVATION DATA 4

3.1 A-TZ Wells 4

3.2 B-CZ/B-TZ Wells 4

3.3 C-TZ Wells 4

3.4 D-TZ Wells 4

4.0 ANALYTICAL RESULTS 4

4.1 2019 COC Concentrations 5

4.1.1 A-TZ Wells 5

4.1.2 B-CZ/B-TZ Wells 6

4.1.3 C-TZ Wells 6

4.1.4 D-TZ Wells 7

4.2 COC Concentration Graphs 7

TABLES

Table 5B-1 – Summary of Groundwater Sampling Results - A-TZ Monitoring Wells

Table 5B-2a – Summary of Groundwater Sampling Results – B-CZ Monitoring Wells

Table 5B-2b – Summary of Groundwater Sampling Results – B-TZ Monitoring Wells

Table 5B-3 – Summary of Groundwater Sampling Results - C-TZ Monitoring Wells

Table 5B-4 – Summary of Groundwater Sampling Results - D-TZ Monitoring Wells

Table 5B-5 – Summary of Groundwater Arsenic and Lead Results – A-TZ Monitoring Wells

Table 5B-6 – Summary of Groundwater Arsenic and Lead Results – B-CZ/B-TZ Monitoring Wells

Table 5B-7 – Summary of Groundwater Arsenic and Lead Results – C-TZ Monitoring Wells

Table 5B-8 – Summary of Groundwater Arsenic and Lead Results – D-TZ Monitoring Wells

Table 5D – Groundwater Measurements

FIGURES

Figure 1 – Monitoring Well Location Map

Figure 5A-1 – Groundwater Gradient Map A-TZ - January 2019

Figure 5A-2 – Groundwater Gradient Map B-CZ/B-TZ - January 2019

Figure 5A-3 – Groundwater Gradient Map C-TZ - January 2019

Figure 5A-4 – Groundwater Gradient Map D-TZ - January 2019

Figure 5A-5 – A-TZ Groundwater COC Concentration Map Benzene – January 2019

Figure 5A-6 – A-TZ Groundwater COC Concentration Map 2,4-Dimethylphenol – January 2019

Figure 5A-7 – A-TZ Groundwater COC Concentration Map 2-Methylnaphthalane – January 2019

Figure 5A-8 – A-TZ Groundwater COC Concentration Map Dibenzofuran – January 2019

Figure 5A-9 – A-TZ Groundwater COC Concentration Map Naphthalene – January 2019

Figure 5A-10 – B-CZ/B-TZ Groundwater COC Concentration Map Benzene – January 2019

Figure 5A-11 – B-CZ/B-TZ Groundwater COC Concentration Map 2,4-Dimethylphenol – January 2019

Figure 5A-12 – B-CZ/B-TZ Groundwater COC Concentration Map 2-Methylnaphthalane – January 2019

Figure 5A-13 – B-CZ/B-TZ Groundwater COC Concentration Map Dibenzofuran – January 2019

Figure 5A-14 – B-CZ/B-TZ Groundwater COC Concentration Map Naphthalene – January 2019

Figure 5A-15 – C-TZ Groundwater COC Concentration Map Benzene – January 2019

Figure 5A-16 – C-TZ Groundwater COC Concentration Map 2,4-Dimethylphenol – January 2019

Figure 5A-17 – C-TZ Groundwater COC Concentration Map 2-Methylnaphthalane – January 2019

Figure 5A-18 – C-TZ Groundwater COC Concentration Map Dibenzofuran – January 2019

Figure 5A-19 – C-TZ Groundwater COC Concentration Map Naphthalene – January 2019

Figure 5A-20 – A-TZ Groundwater COC Concentration Map Arsenic – January 2019

Figure 5A-21 – B-CZ/B-TZ Groundwater COC Concentration Map Arsenic – January 2019

Figure 5A-22 – C-TZ Groundwater COC Concentration Map Arsenic – January 2019

ATTACHMENTS

Attachment A – Data Usability Summary and Analytical Reports from January 2019 Site-Wide Sampling Event

Attachment B – COC Concentration Graphs

1.0 INTRODUCTION

This groundwater monitoring report documents sampling activities conducted between January 8 and January 24, 2019 at the Union Pacific Railroad (UPRR) Houston Wood Preserving Works Facility (the Site). Golder Associates Inc. (Golder) conducted the sampling event on behalf of UPRR. Sampling activities included gauging water levels and collecting samples from groundwater monitoring wells at and near the Site. Monitoring well locations are presented on Figure 1.

Groundwater analytical data collected from the Site collected in January 2019 were compared to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Residential Groundwater Protective Concentration Levels (PCLs) dated April 2018, assuming the source area is greater than 0.5 acres (30-acre size), to evaluate target COCs that exceeded the groundwater residential assessment levels (RALs). RALs were established as the lesser value of the Residential $^{GW}GW_{Ing}$ and $^{Air}GW_{Inh\text{-}V}$ PCLs. Even though most of the monitoring wells are within the boundaries of the Site, and the assumed land use for the Site is commercial/industrial land use, RALs were conservatively used to evaluate the COCs detected at the Site.

Groundwater flow direction and concentrations of the primary chemicals of concern (COCs) that exceed the appropriate RAL in each groundwater-bearing zone (A-TZ, B-TZ/B-CZ, C-TZ, and D-TZ) during the January 2019 groundwater monitoring event are described in Section 3.0 and Section 4.0 of this report.

This report serves as a supporting document to the responses to the Texas Commission on Environmental Quality (TCEQ) 4th Technical Notice of Deficiency (TNOD) dated April 11, 2019.

2.0 GROUNDWATER MONITORING ACTIVITIES

Golder conducted groundwater monitoring activities following the Sampling & Analysis Plan provided in the Response Action Plan (RAP) (Rev. 3) dated June 24, 2017.

During the sampling event, 84 groundwater monitoring wells were sampled from the following groundwater bearing units (GWBUs):

- Thirty-one (31) A-Transmissive Zone (A-TZ) monitoring wells;
- Twenty-seven (27) B-Cohesive Zone/ B-Transmissive Zone (B-TZ/B-CZ) monitoring wells;
- Twenty-two (22) C-Transmissive Zone (C-TZ) monitoring wells; and
- Four (4) D-Transmissive Zone (D-TZ) monitoring wells.

Monitoring wells MW-27A, MW-49B, and MW-57B were not sampled in January 2019 due to: (1) MW-27A was blocked by a vehicle on concrete blocks and (2) dense non-aqueous phase liquid (DNAPL) was observed during purging of MW-49B and MW-57B. Other monitoring wells with DNAPL detected were not sampled during this monitoring event.

Groundwater samples were submitted to ALS Environmental in Houston, Texas. Analytical laboratory reports and data validation documentation for the sampling event are provided in Attachment A.

3.0 GROUNDWATER ELEVATION DATA

Prior to purging and sampling, static depth to groundwater in wells was measured from the designated surveyed measuring point with an interface probe to the nearest one hundredth of one foot (0.01 ft). Groundwater elevations for the monitoring wells measured in January 2019 are summarized on Table 5D[1]. Potentiometric surface maps for each groundwater-bearing unit (GWBU) are included as Figures 5A-1 through 5A-4. Groundwater flow directions are described below.

3.1 A-TZ Wells

The A-TZ is a continuous silty sand and sand layer beneath the Site, and is considered a Class 2 groundwater resource. Groundwater generally flows to the northwest, north and northeast in the western and center portion of the Site. On the east side of the Site, groundwater generally flows toward the east or west relative to the 60" sanitary sewer line as shown on Figure 5A-1.

3.2 B-CZ/B-TZ Wells

The B-CZ is a layer of cohesive soils of mostly clays, silty clays, sandy clays, and clayey silts containing thin seams of silty sand and carbonate nodules, and is classified as a Class 3 groundwater resource through aquifer testing. The B-TZ is a discontinuous sand layer in the western portion of the Site and western portion of the off-site area (north of the Site), and is considered a Class 2 groundwater resource. Groundwater generally flows to the northeast in the western and center portion of the Site and off-site area to the north where the B-TZ is present. On the east side of the divide between the B-TZ and B-CZ, groundwater flow in the B-CZ is variable with the flow gradient to the northwest in the eastern portion of the off-site area north of the Site and to the east-northeast on the east side of the Site within the Englewood Intermodal Yard (Figure 5A-2).

3.3 C-TZ Wells

The C-TZ is a silt and silty sand layer, and is a Class 2 groundwater resource. Groundwater in the C-TZ generally flows to the southwest across the Site. Groundwater elevations in wells where current DNAPL recovery efforts are being conducted (i.e., monthly recovery events) were lower than in surrounding wells (Figure 5A-3).

3.4 D-TZ Wells

The D-TZ is a series of silty sand layers with minor amounts of thin clay intervals. Groundwater in the D-TZ is considered a Class 2 groundwater resource and generally flows to the northeast (Figure 5A-4).

4.0 ANALYTICAL RESULTS

Groundwater samples were collected from monitoring wells installed in the four units of the uppermost GWBUs at the Site. Laboratory data packages for the data collected in January 2019 are provided in Attachment A. A complete summary of groundwater analytical data for the Site from 2009 through 2019 is presented on the following tables:

- Table 5B-1 (A-TZ wells)
- Table 5B-2a (B-CZ wells)
- Table 5B-2b (B-TZ wells)

[1] The table numbers follow the same labeling format used for submittal in the Response Action Plan (RAP) Revision 3.

- Table 5B-3 (C-TZ wells)
- Table 5B-4 (D-TZ wells
- Table 5B-5 (Arsenic and Lead data – A-TZ wells)
- Table 5B-6 (Arsenic and Lead data – B-CZ/B-TZ wells)
- Table 5B-7 (Arsenic and Lead data – C-TZ wells); and
- Table 5B-8 (Arsenic and Lead data – D-TZ wells).

4.1 2019 COC Concentrations

COC concentration isopleth maps of the January 2019 data were prepared for the primary COCs at the Site (Figure 5B-1 through 5B-19) as shown below:

COC	A-TZ	B-CZ/B-TZ	C-TZ
Benzene	Figure 5B-5	Figure 5B-10	Figure 5B-15
2,4 – Dimethylphenol	Figure 5B-6	Figure 5B-11	Figure 5B-16
2-Methylnaphthalene	Figure 5B-7	Figure 5B-12	Figure 5B-17
Dibenzofuran	Figure 5B-8	Figure 5B-13	Figure 5B-18
Naphthalene	Figure 5B-9	Figure 5B-14	Figure 5B-19

Monitoring wells in the four GWBUs were also sampled and analyzed for arsenic and lead as required under the RAP (PBW, November 21, 2014). Arsenic concentrations from the January 2019 sampling event were detected above the TCEQ TRRP Tier 1 PCLs in the A-TZ and B-CZ/B-CZ zones (Table 5B-5 and 5B-6). Arsenic isopleth maps were generated for the A-TZ, B-CZ/B-TZ, and C-TZ based on the 2019 data (Figure 5B-20 through Figure 5B-22). No lead concentrations were detected above the RAL during the January 2019 sampling event.

4.1.1 A-TZ Wells

Primary COCs

As shown on Figure 5B-5 through 5B-9, benzene, 2,4-dimethylphenol, 2-methynaphthalene, and naphthalene concentrations from the January 2019 sampling event were detected above RALs in A-TZ monitoring wells in the eastern portion of the Site extending into the Englewood Intermodal Yard. Concentrations of the primary COCs in A-TZ wells located off-site were all below RALs. Dibenzofuran concentrations were not detected above the RAL in A-TZ wells in January 2019.

Other COCs

Most concentrations of other COCs were either detected below RALs or below the sample detection limit (SDL) in the A-TZ wells from the January 2019 sampling event. One exception was pentachlorophenol that had a concentration detected in MW-18A (0.014 mg/L) above its RAL (0.001 mg/L). Pentachlorophenol had not been detected above the SDL over the past 10 years. The detection will be verified as part of the next sampling event planned for July 2019. Vinyl chloride concentrations in MW-18A had been detected above the RAL during previous sampling events but was below the RAL and was below the detection limit in the January 2019 sampling results.

Arsenic

Arsenic concentrations have generally fluctuated in A-TZ wells between sampling events (Table 5B-5). Of the A-TZ wells sampled, arsenic concentrations in six wells exceeded the RAL during all four sampling events in 2018 and 2019 (MW-15A, MW-17, MW-26A, MW-35A, and MW-44A). The January 2019 analytical results show arsenic concentrations in A-TZ wells exceeding the RAL in the northern and eastern portion of the Site, offsite to the north, and at one well in the western portion of the Site. Arsenic concentrations in the A-TZ wells do not appear correlate with the elevated concentrations of the primary COCs. Many wells with elevated arsenic concentrations (exceeding RAL) do not have exceedances in other COC concentrations, especially off-site to the north of the Site. For example, arsenic concentrations were highest at MW-26A and MW-13 in January 2019, but all other COC concentrations were below RALs at MW-26A and below detection limits at MW-13 in January 2019 (Table 5B-1).

4.1.2 B-CZ/B-TZ Wells

Primary COCs

Since groundwater in the B-CZ is classified as Class 3 and groundwater in the B-TZ is classified as Class 2, the groundwater COC concentrations detected were compared to the applicable RAL. In January 2019, benzene, 2-methylnaphthalene, and naphthalene concentrations were detected above RALs in the eastern portion of the Site and off-site north of the Site. Benzene and naphthalene concentrations were detected above their RALs on the west side of the Site in MW-40B. Dibenzofuran was detected above RALs in one monitoring well (MW-68B (B-TZ)) in January 2019. The concentration of 2,4-dimethylphenol at MW-74B (eastern side of the Englewood Intermodal Yard (B-CZ)) was above its RAL; concentrations of 2,4-dimethylphenol at all other B-CZ/B-TZ wells were below corresponding Class 2 and Class 3 RALs during the January 2019 sampling event.

Other COCs

Except for arsenic (discussed below) no other COCs were detected above the applicable RALs in the B-CZ or B-TZ wells during the January 2019 sampling event.

Arsenic

Similar to the A-TZ, arsenic concentrations have also fluctuated in B-CZ/B-TZ wells. Groundwater samples from six wells exceeded the arsenic RAL during the 2018 and 2019 sampling events (MW-22BR, MW-40B, MW-68B, MW-83B, P-11, and TW-41B). As with the A-TZ monitoring wells, arsenic levels in B-CZ/B-TZ wells do not appear correlate with the elevated concentrations of the primary COCs. Concentrations of primary COCs were above RALs in January 2019 in the eastern portion of the Site, where arsenic concentrations were below the arsenic RAL in that same area.

4.1.3 C-TZ Wells

Primary COCs

Benzene, 2-methylnaphthalene, dibenzofuran, and naphthalene concentrations were above RALs in C-TZ wells in the eastern portion of the Site and offsite to the northeast where DNAPL has been observed in the C-TZ. Concentrations of 2,4-dimethylphenol were below RALs for all C-TZ wells.

Other COCs

Benzo(a)pyrene was detected above the RAL at well MW-25C in January 2019. Benzo(a)pyrene concentrations at MW-25C have varied during previous sampling events (below detection limit or above RAL). Monitoring well

MW-25C is located between wells MW-44C and MW-46C; DNAPL has been detected in MW-44C and MW-46C since 2013.

Arsenic

Arsenic concentrations were detected in the C-TZ above the RAL in only one well, MW-18C at 0.0257 mg/L (Table 5B-7). This is the first RAL exceedance for arsenic in MW-18C. The detection will be verified as part of the next sampling event planned for July 2019. Arsenic concentrations in all other wells in the C-TZ were below the RAL (Table 5B-7).

4.1.4 D-TZ Wells

In January 2019, no COCs were detected above RALs in D-TZ wells. COC concentrations were below detection limits or J-flagged estimates except for 2-methylnaphthalene concentrations in MW-65D that were detected at 0.00016 mg/L, which is below the RAL (0.098 mg/L). 2-Mehtylnaphthalene results during previous events were below detection limit or estimates (J-flagged).

Benzo(a)pyrene at MW-36D was detected above its RAL (0.0002 mg/L) in March (0.0003 mg/L) and June 2018 (0.00024 mg/L). However, benzo(a)pyrene concentrations in MW-38D (0.000027J mg/L) from the January 2019 sampling event were below the RAL.

Groundwater samples from the four D-TZ wells were also analyzed for arsenic and lead. Arsenic and lead concentrations detected in D-TZ wells were all below RALs.

4.2 COC Concentration Graphs

Graphs of primary COC concentrations over time at each well are provided in Attachment B.

TABLES

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-03				MW-04			
					1/24/2018	3/27/2018	5/1/2018	1/9/2019	1/24/2018	3/23/2018	5/25/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds												
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds												
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<0.000021	<0.000021	<0.000021	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.00004	0.0000051J	<0.00004	<4.1E-05	<0.00004	<0.00011	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.8E-05	<0.000058	<0.000058	<0.000058	<5.9E-05	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<0.000042	<0.000042	<0.000042	<4.3E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<0.000021	<0.000021	<0.000021	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	<1.9E-05	<0.000019	<0.000019	<0.000019	0.00008 J	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<4.7E-05	<0.000047	<0.000047	<0.000047	<4.8E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<2.7E-05	<0.000027	0.00021	<0.000027	0.00013	<0.000027	0.00031	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	<0.000015	<0.000015	<0.000015	<1.5E-05	<0.000015	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<1.4E-05	<0.000014	<0.000014	<0.000014	<1.4E-05	<0.000014	0.000054 J	0.000079 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.00005	<0.00005	<0.00005	<5.1E-05	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.00003	<0.00003	<0.00003	<3.1E-05	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	8.3E-05 J	<0.000037	<0.000037	<0.000037	0.00008 J	<0.000037	<0.000037	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<2.1E-05	<0.000021	<0.000021	<0.000021	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00002	<0.00002	<0.00002	<0.00002	7.2E-05 J	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00002	<0.00002	<0.00002	<0.00002	0.00003 J	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00003	<0.00003	<0.00003	<0.00003	7.5E-05 J	<0.00003	0.000059 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.00002	<0.00002	<0.00002	<0.00002	0.0013	0.00055	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<0.000024	<0.000024	<0.000024	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<0.000025	<0.000025	<0.000025	<2.6E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<7.9E-05	<0.000079	<0.000079	<0.000079	<8.1E-05	<0.000079	<0.00008	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<2.1E-05	<0.000021	<0.000021	<0.000021	<2.1E-05	0.000099J	<0.000021	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<0.000035	<0.000035	<0.000035	<3.6E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<1.9E-05	<0.000019	<0.000019	<0.000019	0.00003 J	<0.000019	0.00011	<0.000019

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-05										
					7/27/2011	2/2/2012	7/25/2012	2/5/2013	8/1/2013	1/15/2014	07/29/2014	1/24/2018	3/20/2018	5/24/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds															
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0011	<0.0011	<0.0005	0.00011J	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	0.0013J	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				<0.00011							
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds															
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00029	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	<0.00005	0.000085J	<0.00005	0.000468J	<0.00007	0.000187J	<0.00007	<1.9E-05	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0053	0.00034	<0.00005	<0.00008	0.000521	0.000194J	<0.00008	<2.7E-05	<0.000027	0.00023	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00005	0.00005J	<0.00005	0.000621	0.000427J	0.000411J	0.000153J	3.7E-05 J	<0.000014	0.000045 J	<0.000014
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<5.1E-05	<0.000051	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00047	<0.0001	0.00019J	<0.00037	<0.00037	<0.00037	<0.00037	0.00011 J	<0.000037	<0.00013	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.0022	0.00011J	<0.00005	<0.00008	8.28E-05J	0.000162J	<0.00008	<0.00002	<0.00002	0.000024 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.00005	0.000065J	<0.00011	<0.00011	<0.00011	<0.00011	3.3E-05 J	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00011J	<0.00005	<0.00005	<0.00007	7.61E-05J	<0.00007	<0.00007	5.1E-05 J	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0012	0.00012J	<0.00005	<0.00007	0.000166J	0.000176J	<0.00007	<0.00003	<0.00003	0.000039 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.00005	0.00087	<0.00005	0.00133	0.000573J	0.000969J	<0.00013	0.0001	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00005	0.00011J	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00008	<0.00008	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00013J	<0.00005	<0.00005	0.000143J	<0.00006	0.00051	<0.00006	5.4E-05 J	<0.000021	<0.000021	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00005	<0.00005	<0.00005	0.000193J	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00014J	<0.00005	<0.00005	<0.00011	0.000154J	<0.00011	<0.00011	4.7E-05 J	<0.000019	0.00019	<0.000019

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-09							
					7/27/2011	2/2/2012	7/25/2012	4/1/2013	1/24/2018	3/23/2018	5/24/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds												
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.0005	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.001	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	0.0041
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0011	<0.0011	<0.0005	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	<0.0013	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.001	<0.001	<0.0005	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0031	<0.0031	<0.0015	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds												
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00005	<0.00005	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00005	<0.00005	<0.00005	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00005	<0.00005	<0.00013	<5.9E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.00006	<0.00006	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00005	<0.00005	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	<0.00005	<0.00005	<0.00005	0.000115J	<1.9E-05	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00005	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00005	<0.00005	0.00005J	0.000188J	<2.7E-05	<0.000027	<0.000027	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00005	<0.00005	<0.00005	<0.00006	<1.5E-05	<0.000015	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00036	<0.00005	<0.00005	0.000471J	<1.4E-05	0.00013	0.0001	0.000093 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.00005	<0.00005	<0.00008	<5.1E-05	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	<0.00005	<0.00005	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00005	<0.00005	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00018J	0.00032	0.00022	<0.00037	8.2E-05 J	<0.000037	<0.00011	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00005	<0.00005	<0.00005	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00005	<0.00005	<0.00005	0.000126J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.00005	0.000074J	0.000123J	<0.00002	<0.00002	<0.000031	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00005	<0.00005	<0.00005	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00005	<0.00005	<0.00005	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.00005	<0.00005	<0.00005	0.00431J	<0.00002	0.00039	<0.00008	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00005	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.00005	<0.00005	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00005	<0.00005	<0.00061	<0.00008	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00005	<0.00005	<0.00005	<0.00006	<2.1E-05	<0.000021	<0.000021	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00005	0.000098J	<0.00005	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00005	<0.00005	<0.00005	<0.00011	<1.9E-05	<0.000019	0.00004 J	<0.000019

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-12A														
					2/4/2009	1/19/2010	6/22/2010	1/18/2011	7/26/2011	2/1/2012	7/19/2012	2/5/2013	7/31/2013	1/14/2014	07/25/2014	1/23/2018	3/19/2018	5/16/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.00073J	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0025	0.000237J	9.57E-05J	0.00048J	0.000122J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0025	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.0059	0.0029J	0.00056J	0.0014J	0.0015J	0.0042J	<0.0025	0.000521J	0.000774J	0.000257J	0.000403J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	**0.0087J**	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.00079J	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0025	<0.00015	0.00017J	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.012J	0.0056J	0.0026J	0.0025J	<0.0031	0.0048J	<0.0075	0.00197J	0.00217J	0.00145J	0.00165J	0.0023	0.00076J	0.00076 J	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	**<0.00529**	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	0.0001J	<0.00005	<0.00005	0.000056J	<0.00031	<0.00031	<0.0149	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	**<0.00625**	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	**<0.00385**	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00385	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	**0.22**	**0.15**	**0.15**	0.03300	0.014	0.061	**0.17**	0.0477	**0.306**	0.0386	**0.121**	0.067	0.008	0.005	<0.000019
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	**<0.0399**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.0369	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.25	0.19	0.21	0.19	0.038	0.13	0.2	0.253	0.428	0.342	0.292	0.26	0.23	0.17	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00360	0.00260	0.00190	0.00160	<0.00005	0.00150	0.00150	<0.00006	<0.00006	<0.00288	0.00225	<1.5E-05	0.0017	0.0015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00990	0.00930	0.01100	0.01200	0.00170	0.02800	0.02300	0.01790	0.02220	0.03250	0.0179	0.016	0.019	0.014	<0.000014
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	0.00082	<0.00005	<0.00005	0.00011J	0.000221J	0.000226J	<0.00385	0.000268J	0.00016	0.00026	0.00011	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	**<0.0003**	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	**<0.00385**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	**<0.00625**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.00031	<0.0006	<0.0002	0.00036	0.00017J	0.00027	0.0001J	<0.00037	<0.00037	**<0.0178**	0.000679	<0.00011	0.0002J	<0.00013	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	0.00074	<0.00005	<0.00005	0.00013J	0.000186J	0.000231J	<0.00385	0.000241J	0.00015	0.00022	0.00011	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.18**	**0.14**	**0.18**	**0.15**	0.025	**0.13**	**0.16**	**0.17**	**0.317**	**0.22**	**0.193**	**0.2**	**0.15**	**0.11**	0.000031 J
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.00024J	<0.00529	0.000797	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.0061	<0.0059	0.0064	0.0086	0.0017	0.0031	0.007	0.0111	0.0181	0.018J	0.0132	0.013	0.0097	0.0084	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.15	<0.13	0.16	0.14	0.025	0.067	0.15	0.17	0.316	0.245	0.202	0.21	0.17	0.13	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**2.6**	**1.7**	**0.6**	0.22	0.05	**1.5**	0.36	0.0828J	**0.661**	0.0338J	0.075	0.012	0.0014	<0.0021	<0.00026
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00529	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.00481	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	**<0.0293**	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.10000	0.08700	0.09100	0.06100	0.01500	0.07800	0.12000	0.13	0.23400	0.19200	0.162	0.13	0.13	0.093	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000101J	<0.00004	<0.00192	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0025	0.0029	0.0025	0.0044	0.00068	0.0026	0.0036	0.00515	0.00818	0.00759J	0.00649	0.0064	0.0049	0.0042	<0.000019

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-13														
					2/4/2009	1/19/2010	6/22/2010	1/18/2011	7/26/2011	2/2/2012	7/16/2012	2/5/2013	7/31/2013	1/14/2014	07/25/2014	1/23/2018	3/18/2018	5/15/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	0.000401J	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00021	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.0006	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00025	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	0.00066	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00015	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	<0.00007	0.00076	<0.00007	0.000075J	0.00026	<0.00005	0.000063J	<0.00007	<0.00007	0.000141J	0.00007	<1.9E-05	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.0016	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00108	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.00011J	<0.00009	<0.00009	0.00033	<0.00005	<0.00005	<0.00008	<0.00008	<0.00015	0.00008J	<2.7E-05	<0.000027	<0.000027	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	7.15E-05J	<0.00012	<0.00006	0.00003 J	<0.000015	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.0002	0.00043	<0.00007	<0.00007	0.00037	0.000068J	0.00011J	0.0011	0.000878	9.62E-05J	0.00005	0.00047	0.000039J	0.000085 J	0.00039
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00014J	0.00005	<0.00008	<0.00008	<0.00154	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000073J	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00025	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00035	0.0016	0.00044	<0.0002	0.00027	0.00043	<0.0001	<0.00037	<0.00037	<0.00071	<0.00037	<0.00011	0.000078J	<0.00011	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00017J	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	0.00019J	<0.00008	<0.00008	<0.00034	0.000063J	0.00019J	<0.00008	<0.00008	<0.00015	0.00008J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	0.0001J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00021	<0.00021	0.000122J	<0.00002	<0.00002	0.000029 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	0.000067J	0.00015J	0.00013J	<0.00007	<0.00007	<0.00014	<0.00007	<0.00001	<0.00001	0.000015 J	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	0.000072J	0.00035	<0.00005	0.00012J	<0.00007	<0.00007	<0.00014	0.00007J	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.0001	0.007	<0.0001	0.0005	0.00087	<0.00005	<0.00023	<0.00008	<0.00023	<0.00126	0.0039	0.00014	<0.000083	<0.00002	<0.00022
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00021	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.00019	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	**<0.00117**	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00014J	0.00020	<0.00007	0.00029	0.00015J	0.00049	<0.00006	<0.00006	<0.00012	0.00006J	<2.1E-05	<0.000021	<0.000021	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<7.7E-05	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	0.00011J	0.0002J	0.000089J	<0.00011	<0.00011	<0.00021	<0.00011	<1.9E-05	<0.000019	0.00002 J	<0.000019

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-15A														
					2/4/2009	1/18/2010	6/23/2010	1/17/2011	7/13/2011	2/2/2012	7/19/2012	1/30/2013	7/30/2013	1/14/2014	07/17/2014	1/23/2018	3/18/2018	5/15/2018	1/8/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.0018J	0.0016J	0.0017J	0.00074J	0.0016J	0.0012J	0.0016J	0.0016	0.0013	0.00106	0.00161	<0.0002	0.00051J	0.0006 J	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.000121J	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.0019J	0.0015J	0.0017J	<0.0005	0.0019J	0.0024J	0.0012J	0.00066J	0.000799J	0.000627J	0.00101	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	0.00055J	<0.0005	<0.001	<0.001	<0.0005	0.000221J	0.000199J	0.00034J	0.000595J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0039J	0.0015J	0.0047J	<0.001	0.0038J	0.0073J	0.0097J	0.00417	0.00527	0.00337	0.00854	0.0018	<0.0003	<0.0003	0.0008 J
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	**<0.00529**	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00059	0.00056	0.00200	<0.00031	<0.0149	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	**<0.00625**	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	**<0.00385**	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00385	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	0.04400	0.03300	0.04200	0.03800	**0.14**	0.001	0.046	0.00997	**0.124**	0.0475	0.059	0.0076	0.0016	0.0034	0.0098
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	**<0.0399**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.0269	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.17000	0.17	0.16	0.27	0.2	0.13	0.13	0.141	0.332	0.3	0.205	0.13	0.099	0.1	0.1
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00170	0.00150	0.00097	0.00110	0.00097	0.00071	0.00120	<0.00006	<0.00006	<0.00288	<0.00006	0.002	0.0007	0.00069	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00300	0.00360	0.00490	0.00630	0.00530	0.00280	0.00460	0.00313	0.00850	0.0111J	0.00642	0.0026	0.0024	0.0032	0.0025
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00385	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	**<0.00385**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	0.00005	<0.00005	<0.00005	<0.00013	<0.00013	**<0.00625**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.0026	0.00073	0.00084	0.0016	0.0001J	<0.0001	<0.0001	<0.00037	<0.00037	**<0.0178**	<0.00037	<3.7E-05	<0.000037	**0.0093**	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00007	0.00007	0.00007	0.00007	0.00005	0.00005	0.00005	0.00008	0.00008	<0.00385	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.047	0.043	0.048	0.05	0.078	0.028	0.046	0.0416	**0.104**	0.0693	0.0572	0.029	0.024	0.018	0.023
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00029	0.00011J	0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.000187J	<0.00529	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0011	0.0015	0.002	0.0023	0.0021	0.00094	0.0015	0.000885	0.00361	<0.00337	0.00257	0.002	0.0012	0.0016	0.0012
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.059	0.06	0.062	0.076	0.092	0.043	0.063	0.05600	0.13900	0.11400	0.0822	0.041	0.036	0.029	0.038
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.048	0.00180	0.036	0.0023	0.087	0.008	0.27	0.0501J	**0.526**	0.326	0.248	0.0005	<0.00034	<0.00037	<0.00032
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00529	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.00032
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00055	<0.00005	<0.00005	<0.0001	<0.0001	<0.00481	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	**<0.0293**	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00950	0.00740	0.01200	0.01900	0.03600	0.00560	0.01400	0.00792	0.05200	0.03750	0.0203	0.0046	0.0054	0.0074	0.009
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.0002	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00192	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00042	0.00062	0.00076	0.00095	0.00089	0.00053	0.00084	0.000496	0.00154	<0.00529	0.00101	0.0009	0.00063	0.00078	0.00051

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-17														
					2/4/2009	1/18/2010	6/23/2010	1/17/2011	7/13/2011	2/1/2012	7/12/2012	4/1/2013	7/30/2013	1/13/2014	07/17/2014	1/30/2018	3/18/2018	5/16/2018	1/9/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0025	<0.0025	<0.001	<0.005	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.65**	**0.59**	**0.65**	**0.31**	**0.45**	**0.24**	**0.46**	**0.435**	**0.174**	**0.324**	**0.576**	**0.47**	**0.55**	**0.61**	**0.35**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.0005	<0.0025	<0.001	<0.005	<0.005	<0.006	<0.012	<0.006	<0.0024	<0.0003	<0.0003	<0.003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.26	0.26	0.2	0.21	0.21	0.23	0.21	0.217	0.279	0.251	0.209	0.26	0.19	0.23	0.21
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	**0.0056J**	<0.0025	<0.0013	**<0.0065**	**<0.01**	**<0.0075**	**0.11500**	**<0.0075**	**0.0187J**	<0.001	<0.001	**<0.01**	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	**1.1**	1	0.88	0.97	0.85	0.74	0.81	0.878	0.68	0.931	0.93	0.97	0.83	0.82	0.68
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.55000	0.72000	0.61000	0.64000	0.54000	0.63000	0.69000	0.70200	0.69800	0.72400	0.641	0.81	0.47	0.77	0.66
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.0423**	**<0.00534**	**<0.0529**	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**2.6**	**3.7**	**13.0**	**3.9**	**2.7**	**3.0**	**4.0**	**11.3**	**3.19**	**6.75**	**13.9**	**4.3**	**7.7**	**4.2**	**1.9**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	0.00009	0.00005	<0.00005	0.00005J	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.00058	<0.00058	<0.00059	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	0.00007	0.00006	<0.00006	<0.00006	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	**0.27**	**0.56**	**0.39**	**0.97**	**0.75**	**0.29**	**0.51000**	**1.24**	**1.04**	**0.857**	**0.636**	**0.3**	**0.38**	**0.34**	**0.23**
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.319**	**<0.0403**	**<0.399**	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.215**	<0.0272	**<0.269**	<0.0264	<0.00047	<0.00047	0.0076 J	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.094	0.17	0.071	0.52	0.22	0.13	0.14	0.36	0.353	0.315	0.195	0.084	0.13	0.11	0.091
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00410	0.00670	0.00300	0.00800	0.00690	0.00560	0.00500	<0.0231	0.0147J	<0.0288	<0.00283	0.0029	<0.00015	0.0041	0.0029
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00990	0.01300	0.00750	0.12000	0.01400	0.00960	0.01400	<0.0192	0.0233J	0.0278J	0.0202J	0.0065	0.011	0.0094	0.0057
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00040	<0.00007	<0.00007	**0.033**	0.00047	<0.00005	0.00018J	**<0.0308**	<0.00388	**<0.0385**	<0.00377	<0.0005	<0.0005	<0.00051	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	0.00014J	<0.00008	<0.00008	**<0.0097**	**<0.00027**	<0.00005	<0.00005	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	<0.0002	<0.0002	0.0022	0.00044	<0.001	0.00027	**<0.142**	**<0.018**	**<0.178**	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00032	<0.00007	<0.00007	0.02500	0.00047	<0.0005	0.00011J	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.07900	**0.15000**	0.06500	**0.470**	**0.19000**	0.09300	**0.13000**	**0.275**	**0.253**	**0.211J**	**0.148**	0.071	0.092	0.082	0.072
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00005	<0.0423	<0.00534	<0.0529	<0.00519	<0.0002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0035	0.0037	0.0022	0.17	0.0039	0.0026	0.0034	<0.0269	0.00667	<0.0337	<0.00429	0.0022	0.003	0.0022	0.0015
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.04700	0.07600	0.03900	0.42000	0.12000	0.05900	0.08200	0.146J	0.16500	0.16J	0.0943	0.04	0.057	0.051	0.043
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**9.7**	**16**	**15**	**16**	**19**	**10**	**14**	**25.2**	**25.8**	**21.3**	**15.4**	**7.4**	**12**	**8.1**	**5.5**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0423	<0.00534	**<0.0529**	<0.00519	<0.00024	<0.00024	<0.00024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0385	<0.00485	<0.0481	<0.00472	<0.00025	<0.00025	<0.00025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.235**	**<0.0296**	**<0.293**	**<0.0288**	<0.00079	<0.00079	<0.0008	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.03800	0.06000	0.03300	**0.91000**	0.07800	0.04200	0.06300	0.124J	0.12300	0.0993J	0.0725	0.034	0.044	0.044	0.028
Phenol	108-95-2	8270	7.30E+00	2.20E+01	5.50000	**7.7**	**19.0**	3.60000	3.10000	3.70000	6.10000	**22.2**	1.54	6.46	**18.1**	7.1	**18**	6.5	2.2
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.002	0.0021	0.0012J	0.12	0.0019	0.0018J	0.0018	<0.0423	<0.00534	<0.0529	<0.00519	0.0011	0.0015	0.0014	0.00081 J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-18A														
					2/5/2009	1/18/2010	6/24/2010	1/17/2011	7/13/2011	2/1/2012	7/11/2012	1/31/2013	7/29/2013	1/13/2014	07/16/2014	1/25/2018	3/19/2018	5/16/2018	1/10/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0025	<0.0005	<0.0005	<0.0025	<0.001	<0.005	<0.005	**<0.007**	0.00405J	**<0.014**	0.00482J	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.48**	**0.51**	**0.47**	**0.55**	**0.59**	**0.28**	**0.68**	**0.636**	**0.491**	**0.239**	**0.483**	**0.19**	**0.22**	**0.17**	**1.2**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	0.017J	<0.0005	<0.0005	<0.0025	<0.001	<0.005	<0.005	<0.006	<0.0012	<0.012	<0.0024	0.0062	0.006	0.0066	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.52	0.48	0.54	0.55	0.39	0.55	0.3	0.316	0.398	0.637	0.692	0.36	0.36	0.43	0.34
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0025	<0.0005	<0.00035	<0.0025	<0.0013	**<0.0065**	**<0.01**	**<0.0075**	**0.00976J**	**<0.015**	**0.0138J**	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.23	0.32	0.45	0.35	0.23	0.21	0.21	0.154	0.239	0.0731J	0.416	0.074	0.068	0.042	0.92
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03		**0.059**		**0.07**	**0.028**	**0.047**	**<0.005**	**0.0181J**	**0.029**	**<0.011**	**0.02J**	**0.0023**	0.002	**0.0021**	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.98000	1.20000	1.20000	1.00000	0.73000	1.10000	0.51	0.51900	0.99100	1.27000	1.3	0.97	0.79	0.91	1
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005	<0.00005	<0.00005	<0.0011	**<0.0214**	**<0.0106**	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**1.9**	**4.50**	**7.90**	**9.6J**	**11.00**	**5.80**	**9.4J**	**11.80**	**6.29**	**2.95**	**8.01**	0.023	0.12	**0.5**	0.0054
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.0004	<0.00009	<0.00005	<0.00005	<0.00005	<0.0013	**<0.0252**	**<0.0125**	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.00006	<0.00006	<0.0008	**<0.0155**	**<0.00769**	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.00035	<0.0001	<0.00005	<0.00005	<0.00005	<0.0008	<0.0155	<0.00769	<0.00377	<0.00021	<0.00021	<0.00021	<0.000021
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	**0.42**	**0.36**	**0.4**	**0.44**	**0.7**	**0.23**	**0.64J**	**0.745**	**0.819**	**0.996**	**0.589**	**0.33**	**0.34**	**0.22**	**0.1**
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00035	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0083**	**<0.161**	**<0.0798**	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005	<0.00005	0.00560	**<0.109**	**<0.0538**	<0.0264	<0.00047	<0.00047	<0.00047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.19	0.23	0.25	0.24	0.36	0.15	0.3J	0.464	0.493	0.553	0.352	0.25	0.23	0.24	0.048
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00920	0.00620	0.00950	0.00720	0.01500	0.007	0.00670	0.0151	<0.0117	<0.00577	0.0155J	0.0074	0.0092	0.009	0.0016
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00900	0.00690	0.00750	0.00730	0.01300	0.00460	0.00900	0.02040	0.0204J	0.0226J	0.0192J	0.0061	0.0079	0.0077	0.0064
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.0025	<0.00007	<0.00005	<0.00005	<0.00005	<0.0008	**<0.0155**	<0.00769	<0.00377	<0.0005	<0.0005	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	**<0.0004**	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0008**	**<0.0155**	**<0.00769**	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0013**	**<0.0252**	**<0.0125**	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00033	<0.0002	<0.001	<0.0002	<0.0001	0.0011J	<0.0001	<0.0037	**<0.0718**	**<0.0356**	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.0025	<0.00007	<0.00005	<0.00005	<0.00005	<0.0008	<0.0155	<0.00769	<0.00377	<0.00021	<0.00021	<0.00021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.12000**	**0.15000**	**0.16000**	**0.15000**	**0.230**	0.07500	**0.21J**	**0.188**	**0.279**	**0.326**	**0.204**	**0.16**	**0.15**	**0.14**	0.047
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005	<0.00005	<0.0011	<0.0214	<0.0106	<0.00519	<0.0002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0026	0.0013	0.0013	0.0014	0.0018	0.0013J	0.0016J	<0.0007	<0.0136	<0.00673	<0.0033	0.0021	0.0023	0.0017	0.002
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.08900	0.09600	0.11000	0.09400	0.18000	0.05700	0.14J	0.13600	0.21400	0.26800	0.163	0.087	0.12	0.098	0.021
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**3.3**	**4.3**	**6.1**	**5.9**	**7.3**	**3.6**	**7.8J**	**9.29**	**11.8**	**11.4**	**5.27**	**4.4**	**4.9**	**6.1**	**3.2**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.00005	<0.00005	<0.0011	<0.0214	<0.0106	<0.00519	<0.00024	<0.00024	<0.00024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.0025	<0.00009	<0.00005	<0.00005	<0.00005	<0.001	<0.0194	<0.00962	<0.00472	<0.00025	<0.00025	<0.00025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	**<0.0025**	<0.00008	<0.00005	<0.00005	<0.00005	**0.00610**	**<0.118**	**<0.0587**	**<0.0288**	<0.00079	<0.00079	<0.00079	**0.014**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.07800	0.06700	0.08200	0.06300	0.09800	0.04200	0.083J	0.101	0.14400	0.19	0.114	0.066	0.08	0.082	0.024
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00500	0.04300	0.00540	0.02000	0.06100	0.01100	0.12J	<0.0004	<0.00777	<0.00385	<0.00189	0.0019 J	<0.00035	<0.00035	0.0032
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0013	0.00075	0.00063J	0.00085	0.0011	0.00077J	0.00081J	<0.0011	<0.0214	<0.0106	<0.00519	0.0011	0.0012	0.0008 J	0.0012

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-20A								MW-22A								
					7/14/2011	2/1/2012	7/16/2012	1/30/2013	1/23/2018	3/19/2018	5/18/1/8	1/8/2019	2/3/2009	1/15/2010	6/29/2010	1/25/2011	7/21/2011	2/15/2012	7/18/2012	1/23/2014	07/30/2014
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																					
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.005	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.098**	**0.057**	**0.089**	**0.0746**	**0.053**	**0.05**	**0.062**	**0.024**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	0.00296
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.005	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00018	<0.00012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.077	0.046	0.1	0.0619	0.05	0.027	0.045	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000549	0.0403
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	0.0013	**0.0065**	0.001	0.00015	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00022	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.001	<0.005	<0.022	<0.0028	0.0038	<0.0002	0.0055	0.00077 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000307J	0.00925
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03																	
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.057J	0.028J	0.08800	0.05490	0.05	0.033	0.048	0.022	<0.001	<0.001	<0.001	0.001J	<0.0031	<0.0031	<0.0015	0.000834J	0.0569
Semi-Volatile Organic Compounds																					
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00005	<0.00005	**<0.00519**	<0.00021	<0.00021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.30000	0.07600	0.10000	0.119	0.049	0.072	0.06	0.0076	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.0005	<0.00005	**<0.00613**	<0.00058	<0.00059	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.0006	<0.00006	**<0.00377**	<0.00042	<0.00042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	**0.42**	0.064	**0.36**	**0.191**	**0.15**	**0.15**	**0.17**	0.069	<0.00007	<0.00007	<0.00007	0.00072	0.00005	<0.00005	0.00059	<0.00007	0.00603
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00008	<0.0008	<0.00008	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.0005	<0.00005	<0.0264	<0.00047	<0.00047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.2	0.15	0.19	0.12	0.14	0.18	0.15	0.1	<0.00009	<0.00009	<0.00009	0.00015J	<0.00005	0.00009J	0.00031	0.00557	0.0783
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00170	0.0015J	0.00150	<0.00283	0.0014	<0.00015	0.0013	0.00057	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000742	0.000943
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00580	0.00440	0.00420	0.00589J	0.021	0.022	0.0081	0.0058	0.0002	<0.00007	<0.00007	0.00011J	<0.00005	0.000058J	0.00040	0.000939	0.00265
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.0005	<0.00005	<0.00377	<0.0005	<0.00051	<0.00005	<0.00005	0.00015J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00011J	<0.00008	<0.00008
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	**<0.0005**	<0.00005	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.0005	<0.00005	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00033	<0.001	<0.0001	**<0.0175**	<0.00037	<0.00037	<0.000037	<0.000037	0.00033	0.0013	0.0012	<0.0002	0.0015	0.0011	0.00011J	<0.00037	0.000703
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00005	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	0.00014J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001J	<0.00008	<0.00008
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.14**	0.073	**0.15**	0.0799	0.097	**0.13**	0.081	0.067	<0.00008	<0.00008	<0.00008	0.00015J	<0.00005	0.000074J	0.00048	0.001	0.0224
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.0005	<0.00005	<0.00519	<0.0002	<0.0002	<0.00002	<0.00002	0.00017J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000866J	<0.00011
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0007	0.00082J	0.00061	<0.0033	0.00078 J	0.00095J	0.00074	0.00041	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000086J	0.00041	0.000362J	0.00247
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.11000	0.06000	0.11000	0.06610	0.16	0.16	0.076	0.062	<0.00007	<0.00007	<0.00007	0.0001J	<0.00005	0.00008J	0.00029	0.000468J	0.0175
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**7.7**	**0.96**	**6.1**	**43.9**	**2.7**	**2.9**	**2.8**	**1.4**	<0.0001	<0.0001	<0.0001	0.0035	0.0001J	0.00024	0.0018	0.0034J	**0.792**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.0005	<0.00005	<0.00519	<0.00024	<0.00024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.0005	<0.00005	<0.00472	<0.00025	<0.00025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.0005	<0.00005	**<0.0288**	<0.00079	<0.0008	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.03900	0.03000	0.04300	0.0217J	0.032	0.037	0.034	0.025	<0.00007	<0.00007	<0.00007	0.00028	<0.00005	0.0002J	0.00150	0.000478J	0.000604
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00005	<0.0005	<0.00005	<0.00189	<0.00035	<0.00035	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	0.00017J	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0004	0.00056J	0.0003	0.00519	<0.00019	0.0005J	0.00048	0.00025	0.00013J	<0.00007	<0.00007	<0.00007	<0.00005	0.000055J	0.00033	<0.00011	0.00106

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-22AR				MW-24AR									
					2/8/2018	3/25/2018	5/31/2018	1/22/2019	2/5/2009	1/14/2010	6/29/2010	1/25/2011	7/21/2011	2/9/2012	7/25/2012	2/12/2013	8/8/2013	1/23/2014
Constituent	CAS	Method	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																		
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000201J	<0.00012	<0.00018
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00050	<0.0005	0.0005J	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	0.00022J
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03													<0.00011	
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	0.00058J
Semi-Volatile Organic Compounds																		
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<0.000021	<2.1E-05	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.000041	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00013J	<0.00005	<0.00031	<0.00031	<0.00031
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.9E-05	<0.000059	<5.8E-05	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<0.000043	<4.2E-05	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<0.000021	<2.1E-05	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
2-Methylnaphthalene	91-57-6	8270	9.80E-02	2.90E-01	<1.9E-05	<0.000019	<1.9E-05	<0.000019	<0.00007	0.00023	<0.00007	0.00018J	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	9.24E-05J
4,6-Dinitro-2-methylphenol	534-52-1	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<4.7E-05	<0.000048	<4.7E-05	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	0.00056J
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<2.7E-05	<0.000028	<2.7E-05	0.00071	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000146J
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	<0.000015	<1.5E-05	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<1.4E-05	<0.000014	0.00017	0.000028 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<5.1E-05	<0.000051	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.000031	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.0033	<0.000038	<0.0001	0.000065 J	0.00031	0.00029	0.0024	<0.0002	0.00089	0.00048	<0.0001	<0.00037	<0.00037	0.000767J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<2.1E-05	<0.000021	<2.1E-05	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00002	<0.00002	<0.00002	0.000029 J	<0.00008	0.000084J	0.00011J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000164J
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00002	<0.00002	<0.00002	0.00051	<0.0019	0.0001J	<0.00007	<0.00007	<0.00005	0.00017J	0.000071J	<0.00011	0.000168J	0.00011J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00001	<0.00001	<0.00001	0.000079 J	<0.00007	0.00011J	<0.00007	<0.00007	<0.00005	0.000069J	<0.00005	<0.00007	<0.00007	0.000224J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00003	<0.000031	<0.00003	0.00014	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000137J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.00017	0.00012	<0.00002	<0.00002	<0.0001	0.0023	0.00036	0.00081	<0.00005	<0.00005	<0.00005	0.000139J	<0.00008	0.00008J
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<0.000024	<2.4E-05	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<0.000026	<2.5E-05	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.000081	<7.9E-05	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<2.1E-05	0.00012	<2.1E-05	0.000068 J	<0.00007	0.00018J	<0.00007	0.0001J	<0.00005	<0.00005	<0.00005	0.000089J	<0.00006	0.00006
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<0.000036	<3.5E-05	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005J	<0.00005	<0.00004	<0.00004	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<1.9E-05	<0.000019	<1.9E-05	0.000084 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000067J	<0.00005	<0.00011	<0.00011	0.000172J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-25A														
					2/3/2009	1/15/2010	6/30/2010	1/26/2011	7/20/2011	2/8/2012	7/18/2012	2/6/2013	8/6/2013	1/22/2014	07/29/2014	1/31/2018	3/26/2018	5/31/2018	1/15/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.0005J	0.00012J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.0029J	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.00074J	<0.0005	0.00050	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0047J	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<4.1E-05	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	0.00066	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.02400	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<6.1E-05	<0.00007	<0.00007	<0.00007	<0.00007	0.00014	<1.9E-05	5.2E-05 J	<5.1E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	0.00026	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.034	0.0014	0.0012	0.00054	0.0042	0.00053	<0.00005	0.00017J	0.00035J	0.00356	9.1E-05J	0.062	0.054	<2.7E-05	3.6E-05 J
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00040	<0.00007	0.00034	<0.00007	5.3E-05J	<0.00005	<0.00005	<0.00006	<0.00006	0.00054	<0.00006	0.00044	0.00053	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00050	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00057	0.00068	<1.4E-05	1.5E-05 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	0.00012J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<3.1E-05	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00033	<0.0002	0.00056	<0.0002	0.00023	<0.0001	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	<0.00008	<3.8E-05	<0.0001	<7.8E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.018	<0.00008	0.00034	<0.00008	0.0013	0.0005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	0.00017	0.00011	3.3E-05 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	0.00002 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00057	8.4E-05J	9.2E-05J	<0.00007	0.00014J	<0.00005	<0.00005	<0.00007	<0.00007	0.00106	<0.00007	0.0062	0.0066	<0.00001	1.5E-05 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0049	<0.00007	<0.00007	<0.00007	0.00016J	0.00011J	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	0.026	0.022	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.45	<0.0001	0.00024	0.00027	<0.00005	0.00017J	<0.00038	<0.0007	<0.00008	0.00008J	0.000817	<0.00029	0.0002	0.0006	<0.00029
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	0.00033	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00340	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	0.00015	0.00015	<2.1E-05	2.9E-05 J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.6E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00036	0.00047	0.00015J	<0.00007	0.0009	<0.00005	<0.00005	<0.00011	0.00012J	0.000585	0.00018J	0.0033	0.0049	<1.9E-05	2.7E-05 J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-26A																	
					2/3/2009	1/13/2010	6/25/2010	1/24/2011	7/19/2011	8/25/2011	########	2/15/2012	7/17/2012	2/6/2013	8/7/2013	########	1/22/2014	07/24/2014	1/28/2018	3/21/2018	6/5/2018	1/15/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																						
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001			<0.001	<0.0005	<0.00014	<0.00014		<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	**0.031**	**0.04200**	0.004J	<0.001	<0.0005	0.00118	**0.0097**	0.00391	0.00043J	0.00019J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001			<0.001	<0.0005	0.00018J	0.0003J		<0.00018	0.00021J	<0.0003	<0.0003	<0.0003	0.00056 J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011			<0.0011	<0.0005	<0.00011	0.00082J		<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013			<0.0013	<0.001	<0.00015	<0.00015		<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001			<0.001	<0.0005	<0.00015	0.00029J		<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03														<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	0.0045J			<0.0031	<0.0015	<0.00026	0.00239J		<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																						
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005			<0.00005	<0.00005	**<0.00529**	<0.00011		<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00054	<0.00008	<0.00008	<0.00008	<0.00005			<0.00005	<0.00005	<0.0149	<0.00031		<0.00031	<0.00031	5.6E-05 J	<0.000041	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005			<0.00005	0.0001J	**<0.00625**	<0.00013		<0.00013	<0.00013	<5.8E-05	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006			<0.00006	<0.00006	**<0.00385**	<0.00008		<0.00008	<0.00008	<4.2E-05	<0.000043	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005			<0.00005	<0.00005	<0.00385	<0.00008		<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00240	<0.00007	<0.00007	0.00031	0.00039			<0.00005	5.6E-05J	<0.00337	0.00041J		<0.00007	<0.00007	5.3E-05 J	<0.000019	<0.000019	<0.00009
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	0.00008J	<0.00008	<0.00008	<0.00008	<0.00008			<0.00008	<0.00008	**<0.0399**	<0.00083		<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005			<0.00005	<0.00005	<0.0269	0.00056		<0.00056	<0.00056	<4.7E-05	<0.000048	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.015	0.0097	0.005	0.0039	0.12			0.0095	0.0087	0.0481	0.141		0.0699	0.0663	0.0073	<0.000028	0.019	0.042
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.00014J	<0.00007	<0.00007	0.00047			0.00013J	<0.00005	<0.00288	<0.00006		<0.00006	0.000486	0.00007 J	<0.000015	0.000082 J	0.00027
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00079	<0.00007	0.00020	9.9E-05J	0.00260			0.00025	0.00027	<0.0024	0.00228		0.00136	0.00141	0.00012	0.00015	0.00025	0.00087
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00016J	<0.00007	<0.00007	<0.00007	<0.00005			<0.00005	<0.00005	<0.00385	<0.00008		<0.00008	<0.00008	<0.00005	<0.000051	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005			<0.00005	<0.00005	**<0.00385**	<0.00008		<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005			<0.00005	<0.00005	**<0.00625**	<0.00013		<0.00013	<0.00013	<0.00003	<0.000031	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00042	0.00026	0.00045	0.00043	0.00031			<0.0001	0.0002J	**<0.0178**	<0.00037		<0.00037	<0.00037	7.6E-05 J	<0.000038	<0.000037	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00018J	<0.00007	0.0003	<0.00007	<0.00005			<0.00005	<0.00005	<0.00385	<0.00008		<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.0026	0.00078	0.00033	0.00038	0.021			0.0014	0.00084	0.00416J	0.0151		<0.00008	0.00154	<0.00016	0.000086J	0.0001	0.0005
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005			<0.00005	<0.00005	<0.00529	<0.00011		<0.00011	<0.00011	<0.00002	0.000052J	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00091	0.0003	0.0004	0.00036	0.0048			0.00049	0.00092	<0.00337	0.0062		0.00306	0.00465	0.00084	0.0011	0.0014	0.0044
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0016	0.00028	0.00034	0.00017J	0.00570			0.0006	0.00041	<0.00337	0.00611		0.0031	0.00245	0.00044	0.00051	0.00084	0.0039
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0074	<0.00051	<0.0001	0.0043	0.0019			0.0001J	0.00027	<0.00385	0.0066		0.00008J	0.00042J	<0.00014	<0.00002	<0.00002	<0.00049
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005			<0.00005	<0.00005	<0.00529	<0.00011		<0.00011	0.00394	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	0.00023			<0.00005	<0.00005	<0.00481	<0.0001		<0.0001	<0.0001	<2.5E-05	<0.000026	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005			<0.00005	<0.00005	**<0.0293**	<0.00061		<0.00061	<0.00061	<7.9E-05	<0.000081	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00300	0.00021	0.00017J	0.00011J	0.00029			<0.00005	<0.00005	<0.00288	<0.00006		0.00015J	0.00016J	<3.8E-05	<0.000021	<0.000021	0.00012
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005			<0.00005	<0.00005	<0.00192	<0.00004		<0.00004	<0.00004	<3.5E-05	<0.000036	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00069	9.2E-05J	0.0002J	0.00013J	0.0031			0.00024	0.00051	<0.00529	0.00322		0.00159	0.0022	0.00043	0.00042	0.00094	0.0025

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-27A			MW-28A														
					2/9/2018	3/26/2018	6/1/2018	2/3/2009	1/13/2010	6/30/2010	1/25/2011	7/19/2011	2/16/2012	7/17/2012	2/7/2013	8/7/2013	1/22/2014	07/25/2014	1/25/2018	3/21/2018	5/17/2018	1/14/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																						
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03														<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	0.00100	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																						
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.00021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	0.012	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.9E-05	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0013	<0.00013	<0.00013	<0.00013	<5.9E-05	<0.000059	<0.00058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.00042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.00021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<1.9E-05	<0.000019	<0.000019	<0.00007	<0.00007	<0.00007	0.00064	<0.00005	<6.6E-05	0.00015J	<0.0007	<0.00007	<0.00007	<0.00007	<1.9E-05	<0.000019	0.001	<0.000055
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0083**	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<4.7E-05	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.00047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<2.7E-05	<0.000027	<0.000027	<0.00009	<0.00009	<0.00009	0.0002	<0.00005	0.00098	<0.00005	<0.0008	0.00037J	<0.00008	<0.00008	<2.7E-05	<0.000027	0.00031 J	0.000092 J
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.00015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<1.4E-05	<0.000014	<0.000014	<0.00007	<0.00007	<0.00007	0.00036	<0.00005	<0.00005	<0.00005	<0.0005	<0.00005	<0.00005	<0.00005	1.6E-05J	0.000021J	<0.00014	<0.000014
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<5.1E-05	<0.00005	<0.00005	0.00013J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00005	<0.0008	<0.00008	<0.00008	<0.00008	<5.1E-05	<0.000051	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	0.00011J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0008**	<0.00008	<0.00008	<0.00008	4.5E-05J	<0.00002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0013**	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.0002	<0.000037	0.0005	0.0037	0.00022	0.00190	<0.0002	0.00032	<0.0001	0.00043	<0.0037	<0.00037	<0.00037	<0.00037	0.00018J	0.000062J	0.00084 J	0.000061 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00005J	<0.000021	<0.000021	0.00013J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0008	<0.00008	<0.00008	<0.00008	5.3E-05J	<0.000021	<0.00021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	0.0005	<0.00005	<0.00005	<0.00005	<0.0008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	0.00031 J	<0.00011
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00002	<0.00002	<0.00002	0.00016J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0011	<0.00011	<0.00011	<0.00011	0.00003J	<0.00002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	5.8E-05J	<0.00001	<0.00001	0.00012J	<0.00007	<0.00007	0.00021	<0.00005	<0.00005	<0.00005	<0.0007	<0.00007	<0.00007	<0.00007	6.2E-05J	0.000055J	<0.0001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00003	<0.00003	<0.00003	<0.00007	<0.00007	<0.00007	0.0003	<0.00005	<0.00005	<0.00005	<0.0007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.0003	0.000056 J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.00002	<0.00002	<0.00002	0.00017J	<0.0001	<0.0001	0.0023	<0.00005	0.00093	0.0013	<0.0008	<0.00017	<0.00008	<0.00008	<0.00002	<0.00002	0.024	<0.0024
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.00024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.00025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.000079	<0.000079	<0.00008	<0.00008	0.00032	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0061**	<0.00061	<0.00061	<0.00061	<0.00008	<0.00008	<0.00079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<2.1E-05	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	0.00097	<0.00005	<0.00005	<0.00005	<0.0006	<0.00006	<0.00006	<0.00006	3.2E-05J	0.00003J	0.00022 J	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0004	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	0.018	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	7.8E-05J	<0.000019	<0.000019	0.00016J	<0.00007	<0.00007	0.00013J	<0.00005	0.00011J	<0.00005	<0.0011	0.00025J	0.00011J	<0.00011	8.1E-05J	0.000079J	<0.00019	0.000065 J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-30A				MW-31A				MW-32A				
					7/14/2011	2/3/2012	7/12/2012	2/1/2013	7/14/2011	2/3/2012	7/12/2012	2/1/2013	2/3/2009	1/14/2010	7/1/2010	1/25/2011	7/19/2011
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.0025	<0.0028	<0.001	**<0.025**	<0.0005	<0.0014	<0.0005	<0.0005	<0.0005	<0.0025	**0.03000**
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.14**	**0.13**	**0.14**	**0.117**	**0.14**	**0.14**	**0.11**	**0.135**	**0.69**	**0.34**	**1.5**	**0.61**	**1.4**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.001	<0.0025	<0.0024	<0.001	<0.025	<0.0005	<0.0012	<0.0005	<0.0005	<0.0005	<0.0025	<0.001
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.12	0.11	0.13	0.119	0.19	0.17	0.18	0.171	0.34	0.076	0.45	0.41	0.31
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	**<0.013**	<0.005	**0.02110**	<0.0013	**<0.032**	**<0.01**	**0.00971J**	<0.0005	<0.0005	0.0032J	<0.0025	<0.0013
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.51	0.49	0.54	0.443	0.37	0.36	0.31	0.346	0.74	0.36	**1.5**	1	**1.2**
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03													
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.32000	0.32000	0.32000	0.30200	0.63000	0.71000	0.63000	0.58300	0.88000	0.35000	1.30000	1.10000	0.87000
mi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.0005	<0.00005	**<0.0524**	<0.00005	<0.0005	<0.00005	**<0.055**	<0.0001	<0.0001	<0.0001	<0.001	<0.00005
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**2.90000**	**3.00000**	**2.70000**	**2.94**	**5.30000**	**5.10000**	**3.40000**	**4.45**	**2.2**	**2.1**	**15.0**	**2.3**	**31.0**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.0005	<0.00005	**<0.0619**	<0.00005	<0.0005	<0.00005	**<0.065**	<0.00009	<0.00009	<0.00009	<0.0009	<0.00005
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.0006	<0.00006	**<0.0381**	<0.00006	<0.0006	<0.00006	**<0.04**	<0.00007	<0.00007	<0.00007	<0.0007	<0.00006
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.0005	<0.00005	<0.0381	<0.00005	<0.0005	<0.00005	<0.04	<0.00012	<0.0001	<0.0001	<0.001	<0.00005
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.85**	**0.42**	**0.67**	**1.01**	**1**	**0.65**	**0.83**	**1.17**	**1.20**	**0.30**	**0.48**	**6.90**	**0.95**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.0008	<0.00008	**<0.395**	<0.00008	<0.0008	<0.00008	**<0.415**	<0.00008	<0.00008	<0.00008	<0.0008	<0.00008
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.0005	<0.00005	**0.26700**	<0.00005	<0.0005	<0.00005	**0.28000**	<0.00007	<0.00007	<0.00007	<0.0007	<0.00005
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.31	0.23	0.24000	0.436	0.37	0.3	0.28	0.488	0.34	0.13	0.19	**3.1**	0.25
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00750	0.00640	0.00740	<0.0286	0.00760	0.00440	0.00320	<0.03	0.00600	0.00190	0.00790	0.02700	0.00500
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.01800	0.01300	0.01800	0.0391J	0.03200	0.02600	0.02600	<0.056	0.07700	0.05100	0.09300	0.91000	0.09000
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.0005	<0.00005	**<0.0381**	0.00380	<0.0005	0.00023	**<0.04**	**0.0096**	0.0067	**0.0100**	**0.3000**	**0.0380**
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	**<0.0005**	<0.00005	**<0.0381**	**0.00089**	**<0.0005**	<0.00005	**<0.04**	**0.003**	**0.0023**	**0.0067**	**0.078**	**0.019**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.0005	<0.00005	**<0.0619**	<0.00005	<0.0005	<0.00005	**<0.065**	<0.00009	<0.00009	<0.00009	**<0.0009**	<0.00005
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.0001	<0.001	<0.0001	**<0.176**	<0.0001	<0.001	<0.0001	**<0.185**	0.00042	0.0018	0.0041	0.0046	0.0013J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00005	<0.0005	<0.00005	<0.0381	0.00310	<0.0005	0.00017J	<0.04	0.00870	0.00640	0.00990	0.28000	0.03300
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.25000**	**0.21000**	**0.20000**	**0.308**	**0.33000**	**0.26000**	**0.26000**	**0.36700**	**0.32000**	**0.14000**	**0.21000**	**3.20000**	**0.27000**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.0005	0.0002	<0.0524	<0.00005	<0.0005	<0.00005	<0.055	<0.00007	<0.00007	<0.00007	<0.0007	<0.00005
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0041	0.0031	0.0038	<0.0333	0.031	0.0029	0.0052	<0.035	0.098	0.07	0.09	**2.5**	0.11000
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.18000	0.13000	0.14000	0.24700	0.24000	0.17000	0.17000	0.27300	0.22000	0.08700	0.13000	**2.50000**	0.18000
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**15**	**7.8**	**12**	**16.8J**	**21**	**18**	**17**	**19.3J**	**16**	**3.5**	**11**	**31**	**21**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.0005	<0.00005	**0.05240**	<0.00005	<0.0005	<0.00005	**<0.055**	<0.00009	<0.00009	<0.00009	<0.0009	<0.00005
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.0005	<0.00005	0.04760	<0.00005	<0.0005	<0.00005	<0.05	<0.00009	<0.00009	0.014J	<0.0009	<0.00005
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	0.00033	<0.0005	<0.00005	**<0.29**	**0.07600**	**0.11000**	**0.09400**	**<0.305**	<0.00008	<0.00008	<0.00008	<0.0008	<0.00005
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.12000	0.06400	0.10000	0.162J	0.24000	0.14000	0.13000	0.26800	0.45000	0.25000	0.19000	**8.90000**	0.35000
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.14000	0.01500	0.02000	0.0781J	0.60000	0.76000	0.29000	0.57900	1.40000	1.30000	**14.00000**	1.20000	**21**
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0022	0.0021	0.0018	<0.0524	0.018	0.0025	0.002	<0.055	0.062	0.043	0.047	**1.5**	0.072

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-32AR									
					2/9/2012	7/16/2012	2/6/2013	8/7/2013	1/21/2014	07/24/2014	1/28/2018	3/27/2018	6/4/2018	1/23/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds														
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.001	<0.0005	**0.023**	0.00048J	<0.0002	**0.0404**	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0011	<0.0005	0.0082	0.0003J	<0.00019	0.0208	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.001	<0.0005	0.00338	0.00023J	<0.00017	0.000849J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0031	<0.0015	0.0176	0.00087J	<0.00058	0.0336	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds														
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00005	**<0.00529**	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00120	6.1E-05J	0.0172J	<0.00031	<0.00031	0.0722	<0.00004	<0.00004	<0.00004	0.00013 J
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00005	**<0.00625**	<0.00013	<0.00013	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.00006	**<0.00385**	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00005	<0.00385	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	8.8E-05J	0.00019J	0.011J	<0.00007	0.00021J	**0.206**	7.9E-05J	0.0068	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	**<0.0399**	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.0269	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0046	0.0029	0.0232J	0.00625	0.0105	0.111	0.0013	0.0043	0.002	0.0001
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00032	<0.00005	<0.00288	0.00026J	0.00006J	0.00226	5.4E-05J	0.000054J	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00041	0.00026	<0.0024	0.00022J	0.00044J	0.00332	8.2E-05J	0.00021	0.000064 J	0.00002 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00012J	0.00015J	<0.00385	<0.00008	<0.00008	0.000218J	0.00006J	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	<0.00005	**<0.00385**	<0.00008	<0.00008	<0.00008	2.7E-05J	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00005	**<0.00625**	<0.00013	<0.00013	0.000452J	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00054	0.00014J	**<0.0178**	<0.00037	<0.00037	0.000621	0.00011J	<0.000037	<0.00014	<0.000044
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	9.3E-05J	0.00023	<0.00385	<0.00008	7.7E-05J	0.00016J	5.8E-05J	<0.000021	0.000037 J	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00096	0.00170	0.00936J	0.000515	0.000664	0.05	<5.3E-05	0.0024	0.00007 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	5.6E-05J	<0.00529	0.00012J	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	0.00002 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.002	0.003	0.00508J	0.00102	0.00124	0.00656	0.00048	0.00023	0.00031	0.000051 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0017	0.0016	0.00932J	0.00105	0.00317	0.0516	0.00012	0.00093	0.000058 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00044	0.0036	0.406	<0.00297	0.0087	**3.83**	<0.00058	0.026	0.000043 J	0.000067 J
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00529	<0.00011	<0.00011	<0.00011	0.00035	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.00005	<0.00481	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00005	**<0.0293**	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00033	5.5E-05J	0.00768J	0.00011J	0.0001J	0.0111	0.00022	0.0013	<0.000021	0.000034 J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00012J	0.00029	<0.00192	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0041	0.0046	<0.00529	0.000617	0.000625	0.00474	0.00031	0.00018	0.00049	0.000036 J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-33A														
					2/3/2009	1/13/2010	6/29/2010	1/24/2011	7/19/2011	2/15/2012	7/17/2012	2/12/2013	8/7/2013	1/23/2014	08/28/2014	1/30/2018	3/27/2018	6/5/2018	1/22/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	0.00020	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.00071J	0.0025J	0.0018J	**0.0056**	**0.009**	**0.054**	0.0023J	**0.00782**	**0.165**	**0.223**	0.00236	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.00019J	0.00021J	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	0.0015J	0.0033J	0.075	<0.0005	0.0022	0.109	<0.135	0.0014	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.019	<0.0005	<0.00015	0.00639	<0.23	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011				<0.0002		
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	0.0016J	<0.0031	<0.11	<0.0015	0.00223J	0.17200	0.188	0.00063J	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	**<0.00519**	**<0.104**	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	0.00270	0.00340	0.02900	<0.00005	0.00623	**0.888**	**1.44**	0.0212	<0.0002	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	**<0.00613**	**<0.123**	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	0.00006J	<0.00008	**<0.00377**	**<0.0755**	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00377	<0.0755	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00066	0.00090	0.00092	0.00670	0.02200	0.03000	0.0015	0.00345	**0.195**	**0.263J**	0.0216	<1.9E-05	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	**<0.0392**	**<0.783**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.0264	**<0.528**	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.013	0.028	0.012	0.014	0.037	0.048	0.019	0.0279	0.157	0.288J	0.046	0.0005	<0.000027	0.00097 J	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.00015J	<0.00007	0.00014J	0.00018J	0.00030	<0.00005	<0.00006	<0.00283	0.0566J	0.00041J	2.2E-05J	<0.000015	<0.000015	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.0002J	0.00028	0.00021	0.00072	0.00130	0.00082	0.00260	<0.00075	0.0049J	<0.0472	0.00132	<1.4E-05	<0.000014	0.000021 J	<0.000014
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.0002J	0.00017J	0.00014J	0.00025	0.00019J	0.0001J	0.00043	0.00017J	<0.00377	**<0.0755**	0.00029J	7.7E-05J	<0.00005	0.000077 J	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00011J	<0.00008	**<0.00377**	**<0.0755**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	**<0.00613**	**<0.123**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00033	0.0003	0.00035	0.00031	0.00056	0.0013	0.00014J	<0.00037	**<0.0175**	**<0.349**	<0.00037	<3.7E-05	<0.000037	<0.000078	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00012J	0.00012J	0.00009J	0.00016J	0.0001J	6.1E-05J	0.00033	0.00011J	<0.00377	<0.0755	0.00017J	<2.1E-05	0.000047J	0.00005 J	0.000025 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00078	0.0019	0.0014	0.0027	0.0088	0.019	0.0049	0.00262	0.0728	**0.148J**	0.0164	4.2E-05J	<0.00002	0.00002 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00519	<0.104	<0.00011	<0.00002	<0.00002	0.000039 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0022	0.0013	0.0012	0.003	0.0021	0.0012	0.0036	0.00212	0.00385J	0.0703J	0.00395	0.0006	0.00052	0.0006 J	0.00033
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00067J	0.0015J	0.0012J	0.00270	0.00880	0.01500	0.0056J	0.00641	0.06680	0.145J	0.0146	<0.00003	<0.00003	0.00017 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0028	0.02	0.0082	0.095	0.31	**0.96**	0.017	0.112	**4.98**	**5.82**	0.489	<0.00033	0.00013	<0.00019	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00519	**<0.104**	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.00472	<0.0943	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	**<0.0288**	**<0.575**	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00037	0.00032	0.00065	0.00480	0.00460	0.00380	0.00580	0.00049	0.0232J	0.18J	0.00427	<2.1E-05	<0.000021	0.000085 J	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00189	0.203J	<0.00004	<0.0002	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0024	0.0019	0.0016	0.0035	0.0025	0.0021	0.0035	0.00283	<0.00519	<0.104	0.0043	0.00028	0.00057	0.00073	0.00015

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-35A														
					2/3/2009	1/14/2010	6/30/2010	1/27/2011	7/20/2011	2/15/2012	7/18/2012	2/7/2013	8/8/2013	1/24/2014	07/24/2014	1/25/2018	3/22/2018	6/5/2018	1/15/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.00037J	0.00021J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	0.00015J	<0.0003	0.00042J	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	0.0015J	<0.0005	<0.0005	<0.0011	<0.0011	0.0015J	<0.00011	<0.00011	<0.00019	0.00047J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	0.00022J	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	0.00031J	0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	0.0003	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	0.0021
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.00061	<0.00007	<0.00007	<0.00005	<0.00005	0.0063	0.00024J	<0.00007	0.00035J	0.00015J	0.0019	0.000092J	0.00032	0.016
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0035	0.017	0.0077	0.00069	0.00091	0.00041	0.0072	0.0196	0.0181	0.0551	0.0294	0.0076	0.0064	0.006	0.0039
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.00011J	<0.00007	<0.00007	<0.00005	0.00005J	<0.00005	<0.00006	<0.00006	0.00075	<0.00006	<1.5E-05	0.000088J	0.000066 J	0.000068 J
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	0.00043	0.00035	<0.00007	<0.00005	<0.00005	0.00130	0.00039J	<0.00005	0.00111	0.000601	0.00038	0.00028	0.00022	0.00044
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005	0.00030	<0.00008	<0.00008	<0.00008	<0.00008	5.4E-05J	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00024	0.00045	0.00048	0.0004	0.00099	0.00013J	0.00014J	<0.00037	<0.00037	<0.00037	<0.00037	0.00011J	<0.000037	<0.00018	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.00008	<0.00008	<0.00008	<0.00008	0.00005J	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.0014	0.005	0.0026	0.00011J	0.00013J	0.00008J	0.0043	0.00043J	0.00014J	0.00177	0.00115	0.0047	0.0011	0.00072	0.0041
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	9.2E-05J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00034	0.0011	0.00048	0.00021	0.00053	0.00007J	0.0027	0.00011J	0.00037J	0.000484	0.000782	0.00065	0.00039	0.00024	0.00015
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00062	0.0028	0.0014	9.5E-05J	0.00012J	<0.00005	0.0029	<0.00007	0.002	0.0149	0.0071	0.0024	0.00061	0.00086	0.0022
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.0001	0.19	0.0017	0.00028	<0.00005	0.00027	0.05	0.00286J	0.00056J	0.00968	0.00293	0.13	0.013	0.0075	0.22
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	0.00009J	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	0.00680	0.0001J	<0.00006	0.00006	0.00045J	0.0016	0.00028	<0.000021	0.0025
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00025	0.00092	0.00031	<0.00007	0.00029	<0.00005	0.0016	0.00031J	0.00025J	0.00038J	0.000548	0.00055	0.00026	0.00027	0.00007 J

Notes:

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-36A														
					2/3/2009	1/13/2010	6/29/2010	1/20/2011	7/19/2011	2/7/2012	7/17/2012	1/31/2013	8/6/2013	1/16/2014	07/28/2014	1/25/2018	3/21/2018	5/31/2018	1/14/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	0.00050	0.00050	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	0.00100	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<4.1E-05	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.3E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.00030	0.00023	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	0.000177J	<1.9E-05	0.000022J	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.8E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.00036	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00008J	<0.00008	<2.8E-05	0.00059	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<1.4E-05	0.000066J	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00005	0.00008J	<0.00008	<0.00008	<0.00008	<5.1E-05	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	0.000064J	0.00003 J	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<3.1E-05	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00045	0.00033	0.00061	0.00048	0.0004	0.0025	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	0.000089J	0.00015J	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	2.7E-05 J	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	0.0003	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	0.00061	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.000391J	<0.00011	<0.00011	<0.00002	<0.00002	2.8E-05 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	0.00012	3.3E-05 J	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	0.00024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<3.1E-05	0.00034	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0006	0.0013	0.0023	<0.0001	<0.00005	<0.00005	0.0003	0.000211J	<0.00008	<0.00008	0.00101	<0.00002	<0.00002	<0.00002	<6.2E-05
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.6E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<8.1E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	8.61E-05J	0.00006J	<0.00006	<2.1E-05	0.00011	2.6E-05 J	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.6E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00015J	0.00021	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.000155J	<0.00011	<1.9E-05	0.000076J	3.2E-05 J	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-38A															
					2/3/2009	1/14/2010	6/29/2010	1/25/2011	7/19/2011	8/25/2011	2/15/2012	7/18/2012	2/7/2013	8/8/2013	1/21/2014	07/25/2014	1/26/2018	3/25/2018	6/5/2018	1/22/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011		<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013		<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03										<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031		<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006		<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00044	<0.00007	0.00016J	0.000085J	<0.00005		<0.00005	0.00031	<0.00007	0.000115J	<0.00007	<0.00007	<1.9E-05	0.00014	<1.9E-05	5.5E-05 J
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008		<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.00024	<0.00009	<0.00009	0.00043		<0.00005	0.00025	<0.00008	0.00064	<0.00008	<0.00008	<2.7E-05	0.0039	0.00061	0.014
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	0.000053J	<1.5E-05	0.0002
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	0.00023	0.0001J		<0.00005	0.00013J	7.12E-05J	<0.00005	0.000103J	8.16E-05J	<1.4E-05	0.00026	0.00015	0.00017
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	0.00025		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	**0.00052**	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00042	0.00049	0.00044	0.00064	0.00094		0.00160	0.00023	<0.00037	<0.00037	<0.00037	<0.00037	<3.7E-05	<3.7E-05	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	0.00022		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	0.000083J	<0.00008	<0.00005	0.000055J	<0.00005	0.00014J	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	0.00006 J	0.00014
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	0.00017J		<0.00005	0.000052J	<0.00011	0.000145J	<0.00011	<0.00011	<0.00002	<0.00002	0.00017 J	6.8E-05 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	0.00012J	<0.00007	0.00034	0.00014J		<0.00005	0.00017J	<0.00007	0.000164J	<0.00007	<0.00007	<0.00001	0.00023	3.2E-05 J	0.0013
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	0.00015J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	0.0003	0.00016	0.0024
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00600	<0.0001	<0.0001	0.00059	0.00026		<0.00005	0.00100	<0.00008	0.00192J	0.00008J	<0.00008	<0.00002	<0.00002	0.00071	0.00015
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	0.000067J		<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	0.0001J	<0.00005		0.00011J	0.00032	<0.00006	<0.00006	<0.00006	<0.00006	<2.1E-05	0.00033	<2.1E-05	0.00058
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.0001J	<0.00007	0.00021	0.00018J		<0.00005	0.00016J	<0.00011	0.000176J	<0.00011	<0.00011	<1.9E-05	0.00021	5.6E-05 J	0.0011

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-44A														
					2/3/2009	1/13/2010	6/30/2010	1/26/2011	7/20/2011	2/15/2012	7/25/2012	2/12/2013	8/5/2013	1/17/2014	08/28/2014	1/31/2018	3/26/2018	6/1/2018	1/22/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.003J	<0.0005	0.0026J	<0.0005	0.002J	0.0042J	0.0044J	0.00206	**0.00849**	**0.00727**	0.0042	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000624J	0.00172	0.00067	0.000344J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000252J	0.000705J	0.000418J	0.000329J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005		<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0013J	<0.001	0.0026J	<0.001	<0.0031	0.0052J	0.0033J	0.00469	0.02070	0.00805	0.00561	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.0011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	0.00081	<0.00005	<0.00005	<0.00005	<0.00031	<0.0031	<0.00031	<0.00031	<0.00004	<4.1E-05	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.0013	<0.00013	<0.00013	0.00017J	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.0008	<0.00008	<0.00008	<4.2E-05	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.0008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00097	0.00012J	0.00400	<0.00007	0.00230	0.00480	0.00950	<0.00007	**0.10900**	0.01060	0.00902	<9.3E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	**<0.0083**	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.0056	<0.00056	<0.00056	<4.7E-05	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.12000	0.13000	0.20000	0.02300	0.23000	0.21000	0.22000	0.07000	0.54600	0.39400	0.197	0.062	0.064	0.09	0.037
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00120	0.00079	0.00096	0.00140	0.00130	0.00100	0.00130	0.00276J	<0.0006	<0.00006	0.0014	0.00078	0.0006	<1.5E-05	0.00036
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00460	0.00770	0.00670	0.00055	0.00580	0.00680	0.00400	<0.0005	0.01700	0.01700	0.00868	0.00066	0.0024	0.0022	0.00044
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0008	<0.0008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0008**	**<0.0008**	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0013**	**<0.0013**	<0.00013	0.00014J	<0.00003	<3.1E-05	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00043	0.00031	0.00028	0.00048	0.00075	0.00011J	<0.0001	<0.0037	<0.0037	<0.00037	<0.00037	<0.0001	<3.8E-05	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0008	<0.0008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	2.6E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.05400	0.00870	0.00430	0.00072	0.00140	0.00100	0.00310	<0.0008	**0.13500**	**0.10700**	0.0159	0.00019	0.00029	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0011	<0.0011	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00320	0.00560	0.00600	0.00140	0.00950	0.00940	0.00650	0.00257J	0.01370	0.01540	0.00749	0.0067	0.0095	0.012	0.0058
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.05600	0.06900	0.09700	0.00027	0.09400	0.11000	0.09100	0.00495	0.17200	0.17800	0.0987	0.024	0.03	0.039	0.0097
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.02100	0.00110	0.16000	0.00035	0.04200	0.32000	0.39000	0.000941J	**1.72000**	0.235J	0.0163	<0.00028	0.00036	0.00038	0.00011
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0011	<0.0011	<0.00011	0.0012	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00065	<0.00005	<0.001	<0.001	<0.0001	<0.0001	<2.5E-05	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0061**	**<0.0061**	<0.00061	<0.00061	<7.9E-05	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.02000	0.00550	0.00250	<0.00007	0.00470	0.00730	0.00640	<0.0006	0.04160	0.04380	0.0217	0.00012	0.00018	0.0002	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000062J	<0.0004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.6E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00160	0.00320	0.00300	0.00100	0.00460	0.00540	0.00380	0.00139J	0.00732	0.00830	0.0041	0.0037	0.0069	0.0073	0.0033

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-49A														
					2/4/2009	1/21/2010	6/25/2010	1/20/2011	7/22/2011	2/7/2012	7/26/2012	2/7/2013	8/1/2013	1/16/2014	07/16/2014	1/29/2018	4/1/2018	5/31/2018	1/23/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.005	<0.001	**<0.05**	<0.0005	<0.00014	<0.0014	<0.0002	<0.00014	<0.0002	<0.001	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.24000**	**0.20000**	**0.29000**	**0.05700**	**0.20000**	**<0.05**	**0.04200**	**0.11400**	**0.09400**	**0.05650**	**0.108**	**0.013**	**0.016**	**0.01**	0.004
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	0.00530	0.0024J	<0.0005	0.0084J	<0.001	<0.05	0.0037J	**0.29900**	**0.47600**	**0.30400**	**0.211**	<0.0003	<0.0015	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.08400	0.08500	0.14000	0.04J	0.09400	<0.055	0.03700	0.03210	0.04990	0.03310	0.0701	0.01	0.01	0.0067	0.0031
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.005	<0.0013	**<0.065**	<0.001	<0.00015	<0.0015	<0.00022	**0.0212**	<0.001	<0.005	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.07700	0.08300	0.13000	0.021J	0.11000	<0.05	0.03100	0.03430	0.03470	0.02960	0.0593	0.003	0.0075	0.0065	0.0023
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				**<0.005**	<0.001	**<0.05**	<0.0005	<0.00011	<0.0011	<0.00018	**<0.0022**	<0.0002		<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.20000	0.21000	0.34000	0.079J	0.20000	<0.16	0.08200	0.07770	0.10600	0.06990	0.157	0.023	0.023	0.015	0.0087
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.00524**	**<0.0105**	**<0.00519**	**<0.011**	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**6.80**	**0.86**	**3.70**	0.18	**3.00**	<0.00005	0.03700	**1.420**	**0.903**	**2.100**	**1.23**	0.097	0.033	0.097	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00619**	**<0.0124**	**<0.00613**	**<0.013**	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00381**	**<0.00762**	**<0.00377**	**<0.008**	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.60000**	**0.35000**	**0.44000**	**0.13000**	**0.27000**	<0.00005	<0.00005	**0.21800**	**0.21600**	**0.26700**	**0.293**	0.000078J	0.000067J	0.0079	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0395**	**<0.079**	**<0.0392**	**<0.083**	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0267	**<0.0533**	<0.0264	**<0.056**	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.32000	0.20000	0.21000	0.13000	0.13000	<0.00005	0.03300	0.13400	0.12600	0.18000	0.126	0.0036	0.0049	0.007	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00390	0.00320	0.00520	0.00180	0.00290	<0.00005	0.00062	<0.00286	<0.00571	0.00528J	<0.006	0.00012	0.00012	0.00015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.01000	0.00710	0.00990	0.00960	0.01100	<0.00005	0.00076	0.00824J	0.0119J	0.0132J	<0.005	0.00028	0.00035	0.00062	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00066	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.00024**	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00381**	**<0.00762**	**<0.00377**	**<0.008**	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00691**	**<0.0124**	**<0.00613**	**<0.013**	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00090	0.00150	<0.0002	0.00029	<0.0001	<0.0001	0.0001J	**<0.0176**	**<0.0352**	**<0.0175**	**<0.037**	0.00013J	0.00014J	<0.0002	<5.5E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00060	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.210**	**0.140**	**0.160**	0.07500	0.09000	<0.00005	0.00990	0.08510	0.08120	0.09020	0.0941	0.0021	0.0029	0.0049	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00524	<0.0105	<0.00519	<0.011	0.000069J	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00580	0.00250	0.00340	0.00380	0.00330	<0.00005	0.00180	<0.00333	<0.00667	0.00521J	<0.007	0.00035	0.00039	0.00049	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.15000	0.11000	0.13000	0.07300	0.09200	<0.00005	0.01500	0.07170	0.06620	0.08640	0.0651	0.0025	0.0027	0.0039	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**9.00000**	**5.10000**	**10.00000**	**1.80000**	**7.40000**	<0.00005	<0.00005	**2.88000**	**3.30000**	**5.86000**	**5.13**	<0.00016	0.0002	0.046	8.9E-05 J
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00524	<0.0105	<0.00519	<0.011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00476	<0.00952	<0.00472	<0.01	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.029**	**<0.0581**	**<0.0288**	**<0.061**	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.09600	0.07200	0.08600	0.06200	0.07000	<0.00005	0.00200	0.04550	0.06840	0.05640	0.0519	0.00066	0.00055	0.0034	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	0.00077	0.00110	0.00580	0.00950	<0.00005	0.00005	<0.0019	<0.00381	<0.00189	<0.004	<3.5E-05	<3.5E-05	0.0001 J	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00460	0.00170	0.00180	0.00200	0.00160	<0.00005	0.00095	<0.00524	<0.0105	<0.00519	<0.011	0.00018	0.00029	0.00034	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-50A														
					2/4/2009	1/20/2010	6/25/2010	1/27/2011	7/28/2011	2/9/2012	7/24/2012	4/2/2013	8/9/2013	1/29/2014	8/28/2014	1/30/2018	3/28/2018	5/24/2018	1/10/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011						
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.000083J	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	0.00019J	<0.00005	<0.00005	0.00390	0.000107J	<0.00007	0.000264J	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.00290	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00011J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00060	<0.00005	<0.00005	<0.00005	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	9.72E-05J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.00015J	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00350	<0.0002	0.00030	0.00029	0.00077	0.00032	0.00012J	0.00051	0.000409J	<0.00037	<0.00037	<3.7E-05	<3.7E-05	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000157J	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00025	<0.00008	<0.00008	0.00011J	<0.00005	<0.00005	0.00240	<0.00008	<0.00008	0.000134J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000086J	0.000194J	0.000147J	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00061	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00220	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00030	<0.0001	0.00040	0.00260	<0.00005	<0.00005	0.02000	<0.00008	0.000265J	0.00129	0.00071	<4.6E-05	<0.00002	0.00018	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000921J	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00031	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00450	0.000164J	<0.00006	7.03E-05J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00038	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00031	0.000138J	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-51A														
					2/4/2009	1/20/2010	6/24/2010	1/20/2011	7/28/2011	2/15/2012	7/24/2012	4/2/2013	8/9/2013	1/29/2014	07/24/2014	1/30/2018	3/28/2018	5/24/2018	1/10/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03							<0.0005		<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	**0.00292**	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	0.00013J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	0.000069J	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	0.00013J	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.00017J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	0.00014J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	2.2E-05 J	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00034	0.00190	0.00035	0.00029	0.00180	<0.0001	0.00033	<0.00037	<0.00037	0.00121	0.000804	<3.7E-05	0.000069J	<6.9E-05	7.8E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	0.00013J	<0.00007	<0.00005	<0.00005	0.00011J	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	0.00012J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000051J	<0.00011	0.00011J	<0.00011	<0.00011	<0.00002	<0.00002	<2.5E-05	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00072	<0.00007	<0.00005	<0.00005	0.00012J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00011J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00029	<0.0001	0.00087	0.0001J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000118J	0.000162J	<0.00018	<0.00023	<8.7E-05	0.00012
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00068	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	6.99E-05J	<0.00006	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00037	<0.00007	<0.00005	<0.00005	0.000088J	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-52A				
					1/18/2010	7/14/2011	2/3/2012	7/12/2012	2/1/2013
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds									
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.001	<0.001	<0.0005	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.0047J	0.0025J	0.0017J	**0.00530**	0.00461
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01		<0.001	<0.001	<0.0005	<0.00012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.014J	0.01100	0.00530	0.00990	0.00677
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0013	<0.0013	<0.001	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.012J	0.00890	0.0034J	0.00840	0.00679
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03		<0.001		<0.0005	0.000661J
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.044J	0.02500	0.011J	0.02100	0.01470
mi-Volatile Organic Compounds									
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.00005	<0.00005	<0.00005	**<0.00524**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00460	0.00450	0.00340	0.02900	0.04790
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00005	<0.00005	<0.00005	
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00381**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.00005	<0.00005	<0.00005	<0.00381
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.54000**	**0.33000**	0.09600	**0.16000**	**0.16500**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0395**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00005	<0.00005	<0.00005	<0.0267
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.36000	0.26000	0.19000	0.15000	0.27100
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00450	0.00400	0.00240	0.00250	<0.00286
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.02200	0.04100	0.03600	0.02100	0.0231J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00047	0.00063	0.00031	0.00022	<0.00381
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	0.00013J	0.00017J	0.000066J	<0.00005	**<0.00381**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00619**
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00032	0.00042	0.00043	<0.0001	**<0.0176**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00041	0.00060	0.00033	0.00028	<0.00381
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.28000**	**0.20000**	**0.14000**	**0.13000**	**0.17800**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00005	<0.00005	<0.00005	<0.00524
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.01500	0.02400	0.01300	0.01700	0.02450
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.23000	0.18000	0.12000	0.11000	0.16700
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**3.90**	**1.90**	**0.77**	**0.83**	**0.88**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.00524
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.00476
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00005	<0.00005	<0.00005	**<0.029**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.24000	0.22000	0.08100	0.12000	0.22600
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	0.000066J	0.000052J	0.00015J	<0.0019
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00660	0.01100	0.00540	0.00710	0.0124J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-55A								
					2/4/2009	1/18/2010	7/14/2011	2/3/2012	7/12/2012	1/30/2013	7/30/2013	1/14/2014	07/17/2014
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds													
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	**<0.01**	**<0.05**	<0.0028	**<0.014**	**<0.007**	<0.0028
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.19000**	**0.07200**	**0.07000**	**0.15000**	**0.17000**	**0.13300**	**0.14500**	**0.07150**	**0.0881**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.001	<0.01	<0.005	<0.0024	<0.012	<0.006	<0.0024
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.15000	0.20000	0.17000	0.20000	0.24000	0.22800	0.26000	0.20000	0.368
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0013	**<0.013**	**<0.01**	<0.003	**0.0894J**	**<0.0075**	**0.0179J**
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.44000	0.29000	0.24000	0.41000	0.39000	0.38500	0.43100	0.31100	0.409
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03							**<0.011**		
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.35000	0.47000	0.42000	0.48000	0.62000	0.57500	0.58400	0.48600	0.869
mi-Volatile Organic Compounds													
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.00005	<0.0005	<0.00005	<0.00011	**<0.00534**	**<0.0529**	**<0.00519**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**1.20000**	0.28000	0.48000	**1.80000**	**0.96000**	<0.00031	**0.95600**	**0.51900**	0.463
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.00013	**<0.00631**	**<0.0625**	**<0.00613**
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00006	<0.0006	<0.00006	<0.00008	**<0.00388**	**<0.0385**	**<0.00377**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.00005	<0.0005	<0.00005	<0.00008	<0.00388	<0.0385	<0.00377
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.63000**	**0.39000**	**0.33000**	**0.25000**	**0.31000**	<0.00007	**0.46800**	**0.46300**	**0.486**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.0008	<0.00008	<0.00083	**<0.0403**	**<0.399**	**<0.0392**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00005	<0.0005	<0.00005	<0.00056	<0.0272	**<0.269**	<0.0264
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.28000	0.19000	0.16000	0.14000	0.11000	0.05730	0.20700	0.25100	0.219
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00370	0.00280	0.00300	0.0019J	0.00170	0.00210	<0.00291	<0.0288	<0.00283
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.04700	0.02100	0.01600	0.01600	0.00750	0.00062	0.03360	0.083J	0.032
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	**0.01000**	0.00180	0.00140	<0.0005	0.00034	<0.00008	<0.00388	**<0.0385**	<0.00377
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.00690**	**0.00081**	**0.00062**	**<0.0005**	0.000081J	<0.00008	**<0.00388**	**<0.0385**	**<0.00377**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.00013	**<0.00631**	**<0.0625**	**<0.00613**
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00073	0.00310	<0.0001	<0.001	<0.0001	<0.00037	**<0.018**	**<0.178**	**<0.0175**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00990	0.00170	0.00140	<0.0005	0.00025	<0.00008	<0.00388	<0.0385	<0.00377
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.20000**	**0.13000**	**0.12000**	0.08400	0.07800	0.02650	<0.00388	**0.15J**	**0.14**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00005	<0.0005	<0.00005	<0.00011	<0.00534	<0.0529	<0.00519
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.05200	0.00810	0.00900	0.00440	0.00420	0.000459J	0.0148J	0.0595J	0.0175J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.16000	0.08300	0.08000	0.05700	0.04800	0.00213	0.09960	0.172J	0.1
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**17.00**	**11.00**	**8.60**	**9.90**	**9.70**	0.00227J	**13.8**	**11.7**	**11.6**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.00011	<0.00534	**<0.0529**	<0.00519
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.0001	<0.00485	<0.0481	<0.00472
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	0.00053	<0.00008	<0.00005	<0.0005	<0.00005	<0.00061	**<0.0296**	**<0.293**	**<0.0288**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.20000	0.08400	0.08300	0.04700	0.04500	<0.00006	0.07800	0.174J	0.0893
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.15000	0.02500	0.00380	0.07900	0.04600	<0.00004	<0.00194	<0.0192	<0.00189
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.03200	0.00520	0.00610	0.00410	0.00210	0.000223J	0.00729J	<0.0529	0.0101J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-57A*										
					2/5/2009	1/20/2010	6/23/2010	1/18/2011	7/22/2011	2/2/2012	7/24/2012	2/11/2013	7/31/2013	1/15/2014	07/29/2014
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds															
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.005	<0.001	**<0.01**	<0.0005	<0.0014	**<0.007**	<0.0002	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.26000**	**0.17000**	**0.47000**	**0.23000**	**0.08400**	**0.14000**	**0.06400**	**0.13800**	**0.13700**	**0.10900**	**0.0412**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.005	<0.001	<0.01	<0.0005	<0.0012	<0.006	0.000465J	0.000625J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.34000	0.32000	0.45000	0.29000	0.13000	0.22000	0.17000	0.24000	0.28300	0.19800	0.274
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	**0.014J**	<0.005	<0.0013	**<0.013**	<0.001	0.00367J	**<0.0075**	<0.00022	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.63000	0.13000	0.86000	0.38000	0.05500	0.23000	0.10000	0.24400	0.30800	0.19800	0.0355
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03		<0.0005		<0.0005	<0.001	**<0.01**	0.0016J	<0.0011	**<0.0055**	0.00154	
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.92000	0.60000	1.20000	0.68000	0.19000	0.40000	0.33000	0.59100	0.57200	0.45400	0.455
mi-Volatile Organic Compounds															
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	**<0.005**	<0.0001	<0.00005	<0.0005	<0.0005	**<0.075**	**<0.0267**	**<0.0259**	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**1.80000**	**3.00000**	**2.7J**	**2.00000**	**1.00000**	**1.70000**	0.20000	**1.62000**	**0.99400**	**7.91000**	0.0443J
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.0006	<0.0006	**<0.0545**	**<0.194**	**<0.0189**	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	<0.0005	<0.0545	<0.0194	<0.0189	<0.00008
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.73**	**0.89**	**3.5J**	**3.50**	**13.00**	**1.90**	**3.10**	**13.90**	**1.50**	**8.24**	**0.616**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.0008	<0.0008	**<0.566**	**<0.201**	**<0.196**	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	<0.0005	**<0.382**	**<0.136**	**<0.132**	<0.00056
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.24000	0.31000	**2J**	**1.90000**	**8.60000**	1.20000	**1.80000**	**8.56000**	0.99700	**5.69000**	0.335
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00560	0.00610	0.02J	0.02200	0.09100	0.01400	0.02400	<0.0409	<0.0146	<0.0142	0.00779
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.04400	0.02200	0.9J	0.62000	**8.40000**	0.34000	0.55000	3.09000	0.33700	2.02000	0.0557
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	**0.01100**	0.00051	**0.15J**	**0.120**	**0.450**	**0.047**	**0.074**	**0.60500**	**0.0521J**	**0.36100**	0.0072
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.00450**	0.00012J	**0.037J**	**0.028**	**0.160**	**0.014**	**0.024**	**0.165J**	**<0.0194**	**0.0962J**	**0.00385**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	**0.0021**
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00200	0.00040	<0.0004	<0.0002	<0.0001	0.0016J	<0.001	**<0.252**	**<0.0898**	**<0.0873**	0.00037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00940	0.00034	0.14J	0.11000	0.53000	0.04600	0.08900	0.60200	0.0482J	0.360	0.00625
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.21**	**0.17**	**1.9J**	**1.70**	**8.60**	**0.86**	**1.70**	**7.28**	**0.80**	**4.69**	**0.257**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00045	<0.00007	<0.00005	<0.0005	<0.0005	<0.075	<0.0267	<0.0259	<0.00011
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0540	0.0063	**1.4J**	**1.0**	**6.0**	0.48	0.74	**4.98**	0.4120	**3.190**	0.0561
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0830	0.1100	**1.6J**	**1.4**	**7.9**	0.72	**1.40**	**6.54**	0.7130	**4.160**	0.21
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**16.0**	**7.4**	**20J**	**18.0**	**71.0**	**9.2**	**22.0**	**60.7**	**13.5**	**56.900**	**7.27**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.0005	<0.0005	**<0.075**	<0.0267	<0.0259	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.001	<0.00009	<0.00005	<0.0005	<0.0005	<0.0682	<0.0243	<0.0236	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00045	<0.00008	<0.00005	<0.0005	<0.0005	**<0.416**	**<0.148**	**<0.144**	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.22000	0.08800	**4J**	**3.50000**	**13.00000**	**2.00000**	**3.00000**	**17.00000**	**1.61000**	**13.10000**	0.271
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.05200	0.00990	0.042J	0.02000	<0.00005	0.00890	<0.0005	<0.0273	<0.00971	<0.00943	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.03800	0.00370	**0.84J**	0.67000	**3.30000**	0.34000	0.42000	**3.12000**	0.26400	**2.29000**	0.0308J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-58A														
					2/5/2009	1/20/2010	6/23/2010	1/19/2011	7/27/2011	2/3/2012	7/24/2012	2/11/2013	8/6/2013	1/29/2014	08/28/2014	1/31/2018	3/19/2018	5/16/2018	1/23/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0025	<0.0005	<0.0025	<0.0025	<0.001	**<0.01**	<0.0005	<0.00014	<0.00014	<0.00014	<0.0014	<0.0002	<0.0002	<0.001	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.05200**	**0.03800**	**0.07500**	**0.03400**	<0.001	**0.12000**	**0.16000**	**0.09430**	8.07E-05J	<0.00008	**0.259**	0.0048	**0.012**	**0.012**	0.0011
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0025	0.0093J	0.01J	0.0029J	<0.001	<0.01	0.0018J	0.00295	<0.00012	<0.00012	<0.0012	<0.0003	0.00054J	<0.0015	0.00046 J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.07900	0.06300	0.11000	0.03000	<0.0011	0.08500	0.09900	0.06480	<0.00011	<0.00011	0.167	0.0066	0.038	0.035	0.0032
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0025	<0.0005	0.005J	<0.0025	<0.0013	**<0.013**	<0.001	<0.00015	<0.00015	<0.00015	<0.0015	<0.001	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.022J	0.02J	0.04500	0.0059J	<0.001	0.043J	0.04100	0.01760	<0.00015	<0.00015	0.135	0.00091J	0.00063J	0.0027 J	0.0014
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03		<0.0005		**<0.0025**	<0.001		**0.01100**	**0.00281**	<0.00011	<0.00011	**0.0101J**	<0.0002	<0.0002	<0.001	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.10000	0.04J	0.15000	0.029J	<0.0031	0.23000	0.31000	0.12200	<0.00026	<0.00026	0.352	0.012	0.068	0.015	0.005
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.01**	<0.00011	<0.00011	**<0.00539**	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.047	0.097	**0.610**	**0.680**	<0.00005	**1.10**	**2.40**	**0.95**	<0.00031	<0.00031	**9.19**	0.0015J	0.00053	<0.00004	0.0001 J
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0118**	<0.00013	<0.00013	**<0.00637**	<0.00058	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00727**	<0.00008	<0.00008	**<0.00392**	<0.00042	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00727	<0.00008	<0.00008	<0.00392	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.220**	**0.100**	**0.210**	0.057	<0.00005	0.08200	0.00760	**0.24300**	<0.00007	<0.00007	**0.373**	0.038	0.045	**0.14**	7.2E-05 J
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0755**	<0.00083	<0.00083	**<0.0407**	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0509**	<0.00056	<0.00056	<0.0275	<0.00047	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.31000	0.18000	0.28000	0.12000	<0.00005	0.16000	0.05700	0.20500	<0.00008	<0.00008	0.221	0.1	0.17	0.19	0.023
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00120	0.00130	0.00150	0.00072	<0.00005	0.00110	0.00110	<0.00545	<0.00006	<0.00006	0.00996J	0.0012	0.001	0.0017	0.00038
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00450	0.00980	0.01700	0.00510	0.00039	0.00550	0.00690	0.0245J	<0.00005	<0.00005	0.0126J	0.0055	0.008	0.011	0.002
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00072	<0.00727	<0.00008	<0.00008	<0.00392	<0.0005	0.000083J	8.3E-05 J	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	**0.00027**	**<0.00727**	<0.00008	<0.00008	**<0.00392**	<0.0002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**0.0321J**	<0.00013	<0.00013	**<0.00637**	<0.0003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00030	<0.0002	0.00046	0.00035	0.00071	<0.0001	0.00010	**<0.0336**	<0.00037	<0.00037	**<0.0181**	<0.00037	<3.7E-05	<9.8E-05	<0.00007
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00110	<0.00727	<0.00008	<0.00008	<0.00392	<0.00021	0.000083J	8.2E-05 J	0.00003 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.23000**	**0.14000**	**0.23000**	0.07900	0.00170	**0.13000**	0.00880	**0.12800**	<0.00008	<0.00008	**0.136**	0.036	0.08	0.091	0.013
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00120	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.00011	<0.00539	<0.0002	<0.00002	<0.00002	3.2E-05 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00250	0.00580	0.00900	0.00490	0.00100	0.00360	0.00990	0.0102J	<0.00007	<0.00007	<0.00343	0.0065	0.0074	0.0067	0.002
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.15000	0.12000	0.16000	0.06500	<0.00005	0.08000	0.02700	0.12000	<0.00007	<0.00007	0.109	0.084	0.096	0.12	0.015
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**2.40000**	**0.67000**	**1.50000**	0.45000	<0.00005	**2.20000**	0.06800	**2.96J**	0.00036J	<0.00008	**4.05**	0.0037	**0.95**	0.32	0.00042
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.00011	<0.00539	<0.00024	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00909	<0.0001	<0.0001	<0.0049	<0.00025	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00017J	**<0.0555**	<0.00061	<0.00061	**<0.0299**	<0.00079	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.04100	0.04900	0.06100	0.03700	<0.00005	0.03900	0.03600	0.05630	<0.00006	<0.00006	0.0702	0.024	0.042	0.038	0.0038
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00029	0.00740	0.00650	0.00037	0.000077J	0.00380	0.00074	<0.00364	<0.00004	<0.00004	<0.00196	0.00054J	<3.5E-05	<3.5E-05	7.4E-05 J
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00120	0.00340	0.00420	0.00220	0.00073	0.00220	0.00690	<0.01	<0.00011	<0.00011	<0.00539	0.0031	0.0039	0.0036	0.00088

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-59A														
					2/5/2009	1/20/2010	6/24/2010	1/20/2011	7/18/2011	2/6/2012	7/27/2012	1/31/2013	8/1/2013	1/16/2014	07/30/2014	1/29/2018	3/20/2018	5/24/2018	1/23/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	0.000066J	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<4.1E-05	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	0.00020	0.00180	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.00007J	<0.00007	0.00011	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	0.00030	0.00079	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00008J	<0.00008	0.0001	<2.8E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.00026	0.00040	<0.00005	<0.00005	<0.00005	<0.00005	5.19E-05J	0.000119J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	0.00015J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<3.1E-05	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00060	0.00065	0.00023	0.00031	0.00054	0.00015J	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	0.000094J	<3.8E-05	<3.7E-05	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	0.00014J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	0.00070	0.00099	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00008J	<0.00008	0.00017	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00077	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000075J	<0.00011	0.000169J	0.000178J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00050	0.00120	0.00012J	<0.00005	<0.00005	<0.00007	<0.00007	0.000199J	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00045	0.00084	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000176J	<0.00007	0.00011	<3.1E-05	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.0001	<0.0001	0.00047	0.00660	<0.00005	<0.00005	0.000051J	<0.00008	<0.00008	0.00008J	0.000219J	0.00068	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00170	0.00240	0.00018J	<0.00005	<0.00005	<0.00006	0.000075J	0.00006	<0.00006	0.00018	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000065J	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.6E-05	8.9E-05 J	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00029	0.00059	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.00012J	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-60A															
					2/4/2009	1/20/2010	6/24/2010	1/19/2011	7/18/2011	2/7/2012	7/23/2012	2/14/2013	4/2/2013	8/2/2013	1/15/2014	07/16/2014	2/8/2018	3/20/2018	5/25/2018	1/11/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005		<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005		<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005		<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005		<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001		<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005		<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				<0.0005	<0.001	<0.001	<0.0005		<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015		<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00038	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00100	<0.00018	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<4.1E-05	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00032	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00028	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00210	0.000146J	<0.00007	<0.00007	0.000143J	0.000516	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00016	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00033	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00045	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.00120	<0.00016	<0.00008	<0.00008	0.000157J	0.000167J	<2.7E-05	<2.8E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00016	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00034	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.00044	<0.00005	8.83E-05J	0.000158J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00025	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00013	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00019	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<3.1E-05	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00200	0.00250	<0.0002	0.00310	0.00017J	0.00023	0.0001J	<0.00059	<0.00037	<0.00037	<0.00037	<0.00037	<3.7E-05	<3.8E-05	<7.6E-05	<9.2E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00024	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00035	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00099	<0.00016	<0.00008	<0.00008	0.000145J	0.000116J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00230	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000076J	<0.00187	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	6.4E-05 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00039	<0.00007	0.00030	0.00029	<0.00005	0.00028	0.00030	<0.00031	<0.00007	<0.00007	8.94E-05J	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00044	<0.00007	<0.00007	<0.00007	<0.00005	0.00016J	0.00089	<0.00012	<0.00007	<0.00007	0.000162J	<0.00007	<0.00003	0.000054J	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00950	<0.0001	0.00150	<0.0001	<0.00005	<0.00005	0.02500	0.00043J	<0.00008	<0.00008	0.000668J	0.00653	<0.00002	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0002	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00033	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00096	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00110	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00150	<0.00029	<0.00006	<0.00006	0.000345J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000275J	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.6E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00029	<0.00007	0.0002J	0.00079	<0.00005	0.00130	0.00033	<0.00033	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-61A														
					2/3/2009	1/20/2010	7/1/2010	1/27/2011	7/21/2011	2/7/2012	7/27/2012	4/2/2013	8/1/2013	1/23/2014	08/28/2014	2/8/2018	3/20/2018	5/25/2018	1/23/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00041	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00017J	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00170	0.00200	0.00210	<0.0002	0.00023	0.00038	0.00027	<0.00037	<0.00037	0.00163J	0.000536	<3.7E-05	<3.7E-05	<5.4E-05	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.01100	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	8.06E-05J	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00011J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00660	<0.0001	0.00018J	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	0.00012J	0.00008J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	0.00015 J	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	0.00032	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00021	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00016J	<0.00006	5.86E-05J	0.00006J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-64A															MW-68A
					2/4/2009	1/21/2010	7/14/2010	1/27/2011	7/27/2011	2/8/2012	7/25/2012	4/1/2013	8/6/2013	1/29/2014	07/29/2014	1/31/2018	3/25/2018	5/31/2018	1/23/2019	5/29/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000154J	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03																
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00014J	<0.00007	<0.00007	<0.00007	<0.00005	0.000053J	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	0.000026J
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00029	<0.00009	<0.00009	<0.00009	<0.00005	0.00960	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	0.035	<2.7E-05	<2.7E-05	0.0012
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	0.00050	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	0.00086	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00016J	<0.00007	<0.00007	<0.00007	0.00036	<0.00005	<0.00005	0.000158J	<0.00005	<0.00005	0.000127J	<1.4E-05	0.00056	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<5.1E-05
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00040	0.00160	0.00200	0.00049	0.00076	0.00013J	0.00021	<0.00037	<0.00037	<0.00037	<0.00037	<0.0001	<3.7E-05	0.00023	<3.7E-05	0.00015J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00012J	<0.00008	<0.00008	<0.00008	0.00130	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	0.00003J	0.00038	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.02000	<0.00007	<0.00007	<0.00007	0.000079J	<0.00005	0.000084J	<0.00011	<0.00011	0.000117J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	0.00087
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00076	<0.00007	<0.00007	<0.00007	0.00057	0.00021	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	0.00095	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00018J	<0.00007	<0.00007	<0.00007	<0.00005	0.00012J	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	0.0013	<0.00003	<0.00003	0.000044J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00092	<0.0001	<0.0001	<0.0001	<0.00005	0.00063	<0.00005	<0.00008	<0.00008	<0.00008	0.000317J	<9.4E-05	0.00058	<0.00002	<0.00002	0.00025
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00055	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	0.000032J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	0.000077J	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	0.00051	<3.5E-05	0.000041J
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00063	<0.00007	<0.00007	<0.00007	0.00042	0.00013J	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	0.00059	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-69A												
					7/15/2010	1/19/2011	7/21/2011	2/8/2012	7/24/2012	2/7/2013	8/6/2013	1/24/2014	07/16/2014	1/28/2018	3/20/2018	5/24/2018	1/10/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03			<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002		<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
mi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00360	<0.00008	<0.00005	<0.00005	0.000078J	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00380	0.000074J	<0.00005	<0.00005	0.00090	<0.00007	<0.00007	<0.00007	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00370	0.00025	<0.00005	<0.00005	0.00082	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00039	0.00024	<0.00005	<0.00005	0.00047	<0.00005	<0.00005	0.00050	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00049	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	0.00013J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00590	0.00081	0.00086	0.00018J	0.00030	<0.00037	<0.00037	<0.00037	<0.00037	0.00028	0.00038	0.00025	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00032	0.00011J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00300	0.00022	<0.00005	<0.00005	0.00071	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	0.000069J	<0.00005	<0.00005	<0.00011	<0.00011	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00250	0.00057	0.000059J	<0.00005	0.00045	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00330	0.00036	<0.00005	<0.00005	0.00085	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.02600	0.00011J	<0.00005	0.00029	0.00400	0.000142J	<0.00008	0.00008J	0.000155J	<0.00019	<0.00002	<0.00008	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00830	0.00120	<0.00005	<0.00005	0.00220	<0.00006	<0.00006	0.00006J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00690	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00220	0.00037	<0.00005	<0.00005	0.00033	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	0.000055J	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-1
Summary of Groundwater Sampling Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-77A					MW-78A*	MW-79A					TW-56A				
					07/24/2014	1/30/2018	3/28/2018	5/24/2018	2/1/2019	07/24/2014	08/28/2014	1/30/2018	3/28/2018	5/25/2018	1/23/2019	1/20/2010	7/14/2011	2/2/2012	7/11/2012	1/31/2013
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0007	<0.0007	<0.0002	<0.0002	<0.0002	<0.0002	**0.023J**	<0.001	**<0.01**	<0.0025	<0.0014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.00008	**0.054**	**0.063**	**0.053**	<0.0002	**0.0571**	**0.0485**	**1**	**0.3**	**0.36**	**0.45**	**0.26000**	**0.27000**	**0.15000**	**0.26000**	**0.23800**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0006	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.001	<0.01	<0.0025	0.00412J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.00011	0.059	0.063	0.044	<0.0003	0.0637	0.0215	0.18	0.12	0.14	0.19	0.36000	0.16000	0.06800	0.14000	0.20200
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.00075	0.00075	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0013	**<0.013**	<0.005	<0.0015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.00015	0.011	0.011	0.006	<0.0002	0.1	0.076	0.99	0.44	0.48	0.55	0.32000	0.14000	0.028J	0.06900	0.03140
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03	<0.00011					<0.00055						<0.0005	**0.0069J**	**0.01J**	**0.01600**	**0.0126J**
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.00026	0.1	0.11	0.058	<0.0003	0.158	0.0763	0.48	0.31	0.41	0.54	0.98000	0.61000	0.53000	0.43000	0.50000
mi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	**<0.00519**	<0.00021	<0.00021	<0.00021	<2.1E-05	**<0.0259**	**<0.00539**	<0.00021	<0.00021	<0.00021	<2.1E-05	<0.0001	<0.00005	<0.0005	<0.00005	**<0.055**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.0146	0.014	0.015	0.007	<0.00004	**6.66**	**6.11**	**11**	**11**	**20**	**2.5**	**2.9**	**6.8**	**4.2**	**3.8**	**4.8**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	**<0.00613**	<0.00058	<0.00058	<0.00058	<5.8E-05	**<0.0307**	**<0.00637**	<0.00058	<0.00058	<0.00058	<5.8E-05	<0.00009	<0.00005	<0.0005	<0.00005	**<0.065**
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	**<0.00377**	<0.00042	<0.00042	<0.00042	<4.2E-05	**<0.0189**	**<0.00392**	<0.00042	<0.00042	<0.00042	<4.2E-05	<0.00007	<0.00006	<0.0006	<0.00006	**<0.04**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00377	<0.00021	<0.00021	<0.00021	<2.1E-05	<0.0189	<0.00392	<0.00021	<0.00021	<0.00021	<2.1E-05	<0.0001	<0.00005	<0.0005	<0.00005	<0.04
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.0571	**0.2**	**0.28**	0.085	<1.9E-05	**0.879**	**0.654**	**0.17**	**0.42**	**0.44**	**0.1**	**0.15**	**0.16**	**0.11**	0.05	**0.123J**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.00002	**<0.196**	**<0.0407**	<0.0002	<0.0002	<0.0002	<0.00002	<0.00008	<0.00008	<0.0008	<0.00008	**<0.415**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.0264	0.0044J	<0.00047	<0.00047	<4.7E-05	**<0.132**	<0.0275	<0.00047	<0.00047	0.016 J	<4.7E-05	<0.00007	<0.00005	<0.0005	<0.00005	**<0.28**
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0456	0.2	0.23	0.079	<2.7E-05	0.497	0.427	0.13	0.17	0.16	0.039	0.07700	0.18000	0.19000	0.09500	0.25000
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00283	0.0032	0.0035	0.0012	<1.5E-05	<0.0142	0.0112J	0.0045	<0.00015	0.0056	0.0015	0.00240	0.00400	0.00380	0.00280	<0.03
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00236	0.0034	0.0052	0.0025	<1.4E-05	0.105J	0.0673	0.0057	0.0092	0.0084	0.0021	0.00350	0.02100	0.02000	0.00830	0.0338J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00377	<0.0005	<0.0005	<0.0005	<0.00005	**0.0336J**	**0.00985J**	<0.0005	<0.0005	<0.0005	<0.00005	0.00099	0.00140	0.0016J	0.00240	**<0.04**
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.00002	**<0.0189**	**<0.00392**	<0.0002	<0.0002	<0.0002	<0.00002	**0.00031**	**0.00047**	**0.00051J**	**0.00080**	**<0.04**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.00003	**<0.0307**	**<0.00637**	<0.0003	<0.0003	<0.0003	<0.00003	<0.00009	<0.00005	<0.0005	<0.00005	**<0.065**
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	**<0.0175**	<0.00037	<0.00037	<0.00037	0.0001 J	**<0.0873**	**<0.0181**	<0.00037	<0.00037	<0.00037	<3.7E-05	0.00020	0.00010	<0.001	<0.0001	**<0.185**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00377	<0.00021	<0.00021	<0.00021	<2.1E-05	0.0248J	0.00948J	<0.00021	<0.00021	<0.00021	<2.1E-05	0.00084	0.00140	0.0018J	0.00220	<0.04
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.0229J	0.086	0.09	0.04	<0.00002	**0.411**	**0.342**	0.097	**0.14**	0.092	0.037	0.04300	0.09000	0.04900	0.03800	**0.108J**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00519	<0.0002	<0.0002	<0.0002	8.1E-05 J	<0.0259	<0.00539	<0.0002	<0.0002	<0.0002	<0.00002	0.00045	<0.00005	<0.0005	<0.00005	<0.055
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.0033	0.0014	0.0013	0.00067 J	<0.00001	0.165	0.0713	0.0036	0.0051	0.0023	0.001	0.01000	0.02100	0.02000	0.02700	<0.035
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.024	0.076	0.083	0.037	<0.00003	0.382	0.291	0.063	0.081	0.056	0.022	0.03300	0.09000	0.05800	0.04700	0.12J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**0.884**	**7.8**	**6**	**1.5**	<0.00002	**7.18**	**6.89**	**7.9**	**8.5**	**15**	**1.9**	**2.50**	**2.30**	**2.20**	**0.81**	**1.75**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00519	<0.00024	<0.00024	<0.00024	<2.4E-05	<0.0259	<0.00539	<0.00024	<0.00024	<0.00024	<2.4E-05	<0.00009	<0.00005	<0.0005	<0.00005	**<0.055**
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00472	<0.00025	<0.00025	<0.00025	<2.5E-05	<0.0236	<0.0049	<0.00025	<0.00025	<0.00025	<2.5E-05	<0.00009	<0.00005	<0.0005	<0.00005	<0.05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	**<0.0288**	<0.00079	<0.00079	<0.00079	<7.9E-05	**<0.144**	**<0.0299**	<0.00079	<0.00079	<0.00079	<7.9E-05	0.00013J	0.00076	<0.0005	0.00091	**<0.305**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.0262	0.026	0.035	0.019	<2.1E-05	0.604	0.355	0.038	0.049	0.039	0.012	0.06000	0.17000	0.20000	0.07300	0.217J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00189	<0.00035	<0.00035	<0.00035	<3.5E-05	0.192	1.13	2.6	4	4.2	0.51	0.01400	<0.00005	0.00630	<0.00005	<0.02
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00519	0.00068J	0.001	0.00037 J	<1.9E-05	0.0967J	0.0434	0.0022	0.0038	0.0022	0.00063 J	0.00670	0.01200	0.01500	0.01800	<0.055

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-32B*				MW-33B				
					2/9/2012	7/16/2012	2/6/2013	1/21/2014	2/3/2009	1/13/2010	6/29/2010	1/24/2011	7/19/2011
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds													
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.025	<0.0005	<0.00014	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	71-43-2	8260	5.00E-01	5.00E-01	**2.6**	<0.0005	0.00428	0.23900	**2.4**	**1.2**	**2**	**1**	**1.6**
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.025	<0.0005	0.000343J	<0.00018	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.53000	<0.0005	0.00561	0.25400	0.47000	0.41000	0.62000	0.36000	0.40000
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.032	<0.001	<0.00015	<0.00022	0.0096J	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	108-88-3	8260	1.00E+02	1.00E+02	2.20000	<0.0005	0.00261	0.54100	0.08400	0.019J	0.016J	0.0067J	<0.001
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01									<0.001
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	1.50000	<0.0015	0.02030	0.74900	1.40000	1.20000	1.50000	0.85000	1.20000
emi-Volatile Organic Compounds													
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0005	<0.00005	<0.00011	<0.0011	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	46.00000	0.00140	<0.00031	0.17800	<0.00008	0.00350	<0.00008	0.00290	0.00340
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.0005	<0.00005	<0.00013	<0.0013	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.0006	<0.00006	<0.00008	<0.0008	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0005	<0.00005	<0.00008	<0.0008	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.53000	0.00019J	<0.00007	0.13700	1.90	0.71	0.51	0.52	1.60
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.0008	<0.00008	<0.00083	<0.0083	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.0005	<0.00005	<0.00056	<0.0056	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.28000	0.01400	0.0416J	0.04270	0.41000	0.17000	0.09600	0.15000	0.41000
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.00590	0.00085	<0.00006	<0.0006	0.00370	0.00160	0.00110	0.00150	0.00330
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.05900	0.00480	<0.00005	0.14400	0.14000	0.01500	0.01100	0.02700	0.16000
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	0.00330	0.00330	<0.00008	0.01950	0.02200	0.00019J	0.000073J	0.00190	0.03200
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.0005	0.00089	<0.00008	0.00649	0.00450	<0.00008	<0.00008	0.00073	0.00770
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.0005	<0.00005	<0.00013	<0.0013	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	<0.001	0.00079	<0.00037	<0.0037	0.00031	0.00800	0.00054	0.00091	0.00046
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	0.00420	0.00230	<0.00008	0.01800	0.02000	0.00018J	0.000092J	0.00180	0.02600
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.28000	0.00120	<0.00008	0.04280	0.46000	0.18000	0.13000	0.17000	0.53000
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.0005	<0.00005	<0.00011	<0.0011	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.03000	0.03100	<0.00007	0.12100	0.20000	0.00330	0.00180	0.03300	0.28000
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.15000	0.00210	<0.00007	0.02820	0.26000	0.06800	0.04800	0.06900	0.31000
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	26	0.00057	<0.00008	2.2	20.0	10.0	2.2	7.0	13.0
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.0005	<0.00005	<0.00011	<0.0011	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.0005	<0.00005	<0.0001	<0.001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.0005	<0.00005	<0.00061	<0.0061	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.25000	0.00120	<0.00006	0.05480	0.72000	0.06600	0.04100	0.09000	0.79000
Phenol	108-95-2	8270	7.30E+02	2.20E+03	38.00000	0.000066J	<0.00004	0.03570	0.00300	<0.00007	0.00320	<0.00007	0.00100
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.02000	0.04000	<0.00011	0.08410	0.13000	0.00160	0.00092	0.00700	0.17000

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-33BR									
					2/15/2012	7/17/2012	2/6/2013	8/7/2013	1/21/2014	07/28/2014	1/28/2018	3/29/2018	5/31/2018	1/22/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds														
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.001	<0.0005	<0.007	<0.0007	<0.0002	<0.0007	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	**2**	0.3	**1.61**	**1.62**	**0.837**	**1.41**	<0.0002	<0.0002	0.12	0.0025
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.001	<0.0005	<0.006	<0.0006	0.000349J	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.46000	0.07000	0.47100	0.38900	0.12800	0.348	<0.0003	<0.0003	0.0058	0.013
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0013	<0.001	0.011J	<0.00075	<0.00022	<0.00075	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	0.12000	0.02300	0.15700	0.06450	0.00942	0.00638	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01	<0.001	<0.0005	<0.0055	<0.00055	<0.00018	<0.00055	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.82000	0.15000	0.92400	0.18200	0.12800	0.0649	<0.0003	<0.0003	0.0058	<0.0003
emi-Volatile Organic Compounds														
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.00005	<0.00005	**<0.529**	<0.00519	<0.00053	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	<0.00005	0.00740	<1.49	<0.0146	<0.00149	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00005	<0.00005	**<0.625**	<0.00613	<0.00063	<0.00013	<5.8E-05	<0.000058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00006	<0.00006	**<0.385**	<0.00377	<0.00039	<0.00008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.00005	<0.00005	<0.385	<0.00377	<0.00039	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.81000	0.55000	0.993J	0.19800	0.05580	0.277	<1.9E-05	<0.000019	0.0029	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	**<3.99**	<0.0392	<0.00399	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00005	<0.00005	<2.69	<0.0264	<0.00269	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.23000	0.09900	<0.385	0.04550	0.06250	0.0711	<2.7E-05	<0.000027	0.0019	0.0013
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	<0.00005	0.0014J	<0.288	<0.00283	0.000288J	0.00087	<1.5E-05	<0.000015	0.000068 J	<1.5E-05
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.05400	0.01100	<0.24	<0.00236	0.00450	0.00564	<1.4E-05	<0.000014	0.00018	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	0.000074J	<0.00005	<0.385	<0.00377	<0.00039	0.000119J	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00005	<0.00005	**<0.385**	<0.00377	<0.00039	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00005	<0.00005	**<0.625**	<0.00613	<0.00063	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.0001J	<0.0001	**<1.78**	<0.0175	<0.00178	0.000722	0.000062J	<0.000037	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	0.000073J	<0.00005	<0.385	<0.00377	<0.00039	0.000132J	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.38000	0.15000	<0.385	0.04980	0.07690	0.0868	<2.1E-05	<0.00002	0.0019	7.9E-05 J
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.00005	<0.00005	<0.529	<0.00519	<0.00053	0.000384J	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.00490	0.01000	<0.337	<0.0033	0.00107J	0.00265	0.000049J	<0.00001	0.0003	5.3E-05 J
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.12000	0.05100	<0.337	0.0181J	0.02870	0.035J	<0.00003	<0.00003	0.00058	<0.00003
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	21.0	7.3	14.9J	6.54000	1.68J	6.59	<0.00018	<0.00002	0.069	0.00004 J
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00005	<0.00005	<0.529	<0.00519	<0.00053	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	0.00081	<0.00005	<0.481	<0.00472	<0.00048	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00005	<0.00005	**<2.93**	<0.0288	<0.00293	<0.00061	<7.9E-05	<0.000079	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.17000	0.09100	<0.288	0.0141J	0.02380	0.0313J	<4.7E-05	<0.000021	0.0008	<2.1E-05
Phenol	108-95-2	8270	7.30E+02	2.20E+03	0.00430	0.0014J	<0.192	<0.00189	<0.00019	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.00250	0.00540	<0.529	<0.00519	0.000734J	0.00126	<1.9E-05	<0.000019	0.00019	0.00003 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-36B												
					7/15/2010	1/20/2011	7/19/2011	2/8/2012	7/17/2012	1/31/2013	8/6/2013	1/16/2014	07/28/2014	1/25/2018	3/21/2018	5/31/2018	1/14/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	<0.0005	0.0018J	0.0014J	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01			<0.001		<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
emi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<0.000058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	0.0073	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.00076	<0.00007	0.00007J	<0.00007	<1.9E-05	<0.000019	<0.000019	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	<0.00009	0.00023	0.00014J	0.00023	0.00016J	<0.00008	<0.00008	0.000463J	<0.00008	0.00014	<0.000027	0.00014	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.000015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00035J	<0.00005	<1.4E-05	<0.000014	<0.000014	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00012J	<0.00008	<5.1E-05	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.010	0.00048	0.00068	0.00033	0.00021	<0.00037	<0.00037	0.00044J	<0.00037	0.00015J	<0.000037	<0.00017	0.00022
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000146J	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	<0.00008	<0.00008	<0.00005	<0.00005	0.00011J	0.000118J	<0.00008	0.00008J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.00076	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	0.00011J	<0.00005	<0.00007	<0.00007	0.000434J	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	<0.0001	<0.0001	<0.00005	0.00024	<0.00005	0.00094	8.95E-05J	0.000825J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00008	<0.000079	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.00006	<0.00006	0.00183	<0.00006	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Phenol	108-95-2	8270	7.30E+02	2.20E+03	<0.00007	0.000089J	<0.00005	0.00026	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.00046J	<0.00011	<1.9E-05	<0.000019	<0.000019	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-49B*													
					2/4/2009	1/20/2010	6/24/2010	1/20/2011	7/22/2011	2/7/2012	7/23/2012	2/7/2013	8/1/2013	1/16/2014	07/16/2014	1/29/2018	3/21/2018	5/25/2018
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																		
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.0028	<0.0002	<0.0028	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	0.00950	0.01300	0.10000	0.00570	0.05600	0.00560	0.11000	0.06310	0.46900	0.06910	0.346	0.0073	0.026	0.26
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.0103J	<0.00018	<0.0024	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.00810	0.02400	0.01900	0.004J	0.00910	0.0042J	0.02300	0.01820	0.08250	0.04250	0.0847	<0.0003	<0.0003	0.048
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.003	<0.00022	0.0212	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	0.01600	0.04500	0.07100	0.00720	0.03800	0.00570	0.08900	0.06330	0.34500	0.09100	0.31	0.0058	0.014	0.23
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01					<0.001	<0.001	<0.0005	<0.00011	<0.0022	<0.00018	<0.0022	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.02400	0.07000	0.04700	0.0066J	0.02000	0.008J	0.06000	0.05270	0.22200	0.11200	0.249	0.0095	0.012	0.14
emi-Volatile Organic Compounds																		
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0001	<0.0001	<0.00045	<0.0001	<0.00005	<0.00005	<0.00005	<0.00524	<0.011	<0.0259	<0.00208	<2.1E-05	<0.00021	<0.00021
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	0.03100	0.01300	1.20000	0.18000	0.59000	0.19000	6.30	1.09	21.40	4.96	13.6	0.2	0.34	3.4
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.00005	<0.00005	<0.00619	<0.013	<0.0307	<0.00245	<5.8E-05	<0.00058	<0.00058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00007	<0.00007	<0.0005	<0.00007	<0.00006	<0.00006	<0.00006	<0.00381	<0.008	<0.0189	<0.00151	0.002	<0.00042	<0.00042
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.00012	<0.0001	<0.00035	<0.0001	<0.00005	<0.00005	<0.00005	<0.00381	<0.008	<0.0189	<0.00151	<2.1E-05	<0.00021	<0.00021
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.14000	<0.00007	0.00160	<0.00007	0.00290	0.00950	0.18000	0.29700	0.22300	0.69100	0.276	0.00011	0.00084J	0.072
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00008	<0.00008	<0.0395	<0.083	<0.196	<0.0157	<0.00002	<0.0002	<0.0002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005	<0.00005	<0.0267	<0.056	<0.132	<0.0106	<4.7E-05	<0.00047	<0.00047
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.09400	0.01700	0.01400	0.00067	0.00510	0.03400	0.14000	0.24800	0.09640	0.62200	0.117	0.071	0.066	0.071
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.00160	0.00070	0.00063J	<0.00007	0.00019J	0.00070	0.00130	<0.00286	<0.006	<0.0142	0.00432J	0.0017	0.003	0.0026
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.01900	0.00015J	<0.00045	0.00031	0.00093	0.00290	0.05600	0.08760	<0.005	0.22100	0.013	0.003	0.0038	0.0073
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	0.00035	<0.00007	<0.00035	<0.00007	0.00018J	<0.00005	0.01300	0.0228J	<0.008	0.0671J	<0.00151	0.000088J	<0.0005	<0.0005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00008	<0.00008	<0.00035	<0.00008	0.000057J	<0.00005	0.00380	<0.00381	<0.008	<0.0189	<0.00151	<0.00002	<0.0002	<0.0002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.00005	<0.00005	<0.00619	<0.013	<0.0307	<0.00245	<0.00003	<0.0003	<0.0003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.00029	0.00053	<0.0004	0.00055	0.00024	0.00069	0.00055	<0.0176	<0.037	<0.0873	<0.00698	0.00011J	<0.00037	<0.00037
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	0.00038	<0.00007	<0.00045	<0.00007	0.00016J	<0.00005	0.01500	0.0207J	<0.008	0.0737J	<0.00151	0.00012	<0.00021	<0.00021
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.07100	0.00240	0.00260	0.00018J	0.00180	0.01900	0.12000	0.20000	<0.008	0.48400	0.08	0.0028	0.009	0.03
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	0.00130	0.000083J	<0.001	<0.00007	<0.00005	<0.00005	<0.00005	<0.00524	<0.011	<0.0259	<0.00208	<0.00002	<0.0002	<0.0002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.01400	0.00023	<0.00035	0.00019J	0.00110	0.00150	0.09300	0.16700	<0.007	0.41500	0.00456J	0.0027	0.0038	0.0036
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.07100	0.00360	0.00160	0.00018J	0.00140	0.01900	0.13000	0.21700	0.04900	0.46400	0.0633	0.0087	0.018	0.031
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	1.40000	0.00044	0.23000	0.00010	0.13000	0.04700	2.30	2.88	9.38	6.75	5.57	0.00042	0.0075	2.5
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00005	<0.00005	<0.00005	<0.00524	<0.011	<0.0259	<0.00208	<2.4E-05	<0.00024	<0.00024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.00009	<0.00009	<0.0004	<0.00009	<0.00005	<0.00005	<0.00005	<0.00476	<0.01	<0.0236	<0.00189	<2.5E-05	<0.00025	<0.00025
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00008	<0.00008	<0.00035	<0.00008	<0.00005	<0.00005	<0.00005	<0.029	<0.061	**<0.144**	<0.0115	<7.9E-05	<0.00079	<0.00079
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.11000	0.00017J	<0.00035	0.00007	0.00250	0.00980	0.35000	0.46600	0.039J	1.29000	0.0458	0.0073	0.011	0.028
Phenol	108-95-2	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	0.00530	0.00044	0.00021	<0.00005	0.00630	<0.0019	<0.004	0.0445J	0.0145	<3.5E-05	<0.00035	<0.00035
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.00740	0.00020	<0.00045	0.00024	0.00066	0.00083	0.06200	0.10100	<0.011	0.26200	<0.00208	0.0014	0.002	0.0021

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-57B*								
					2/15/2012	7/24/2012	1/31/2013	7/31/2013	1/15/2014	07/29/2014	1/31/2018	4/1/2018	5/25/2018
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds													
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.01	<0.005	<0.0035	<0.014	<0.0002	<0.0007	<0.0002	<0.001	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	**1.40000**	**1.50000**	**0.73300**	**1.49000**	**0.71600**	**1.25**	0.012	0.01	**0.82**
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.01	<0.005	<0.003	<0.012	<0.00018	<0.0006	<0.0003	<0.0015	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.39000	0.42000	0.19300	0.50100	0.17400	0.371	0.026	0.032	0.3
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.013	0.017J	<0.00375	0.0405J	<0.00022	<0.00075	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	1.30000	1.40000	0.69200	1.62000	0.63000	1.33	0.0043	0.0019J	0.84
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01						0.00299J			
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	1.20000	1.10000	0.58900	1.40000	0.57400	1.16	0.057	0.055	0.84
emi-Volatile Organic Compounds													
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0005	<0.0005	<0.055	<0.0267	<0.0519	<0.011	<0.00021	<0.000021	<0.00021
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	6.30000	16.00000	13.80000	9.67000	19.80000	15	0.01	<0.00004	3.7
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.0005	<0.0005	<0.065	<0.0316	<0.0613	<0.013	<0.00058	<0.000058	<0.00058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.0006	<0.0006	<0.04	<0.0194	<0.0377	<0.008	<0.00042	<0.000042	<0.00042
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0005	<0.0005	<0.04	<0.0194	<0.0377	<0.008	<0.00021	<0.000021	<0.00021
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.92000	1.60000	1.75000	1.07000	0.89200	0.945	0.17	0.029	0.61
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.0008	<0.0008	**<0.415**	<0.201	**<0.392**	<0.083	<0.0002	<0.00002	<0.0002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.0005	<0.0005	<0.28	<0.136	<0.264	<0.056	<0.00047	<0.000047	<0.00047
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.35000	0.44000	0.93000	0.42300	0.52400	0.267	0.13	0.13	0.3
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.00600	0.00870	<0.03	<0.0146	<0.0283	<0.006	0.0029	0.0011	0.0063
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.02300	0.05000	0.29200	0.0493J	0.0844J	0.0355J	0.014	0.005	0.44
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	0.0011J	0.0012J	0.0543J	<0.0194	<0.0377	<0.008	0.001	<0.00005	0.03
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.0005	<0.0005	**<0.04**	<0.0194	**<0.0377**	<0.008	0.00058J	<0.00002	0.0094
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.0005	<0.0005	<0.065	<0.0316	<0.0613	<0.013	<0.0003	<0.00003	<0.0003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.0019J	<0.001	<0.185	<0.0898	<0.175	<0.037	0.00043J	0.000095J	<0.00037
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	0.00099J	0.0016J	0.0561J	<0.0194	<0.0377	<0.008	0.00091J	<0.000021	0.024
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.28000	0.38000	0.81400	0.32200	0.39200	0.226	0.11	0.081	0.29
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.0005	<0.0005	<0.055	<0.0267	<0.0519	<0.011	<0.0002	<0.00002	<0.0002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.00810	0.01600	0.38700	0.0301J	0.0752J	0.0109J	0.012	0.0044	0.19
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.09500	0.23000	0.65000	0.20800	0.29800	0.138	0.081	0.096	0.27
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	24	27	19	18	11	17	1.8	0.39	12
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.0005	<0.0005	<0.055	<0.0267	<0.0519	<0.011	<0.00024	<0.000024	<0.00024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.0005	<0.0005	<0.05	<0.0243	<0.0472	<0.01	<0.00025	<0.000025	<0.00025
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.0005	<0.0005	**<0.305**	**<0.148**	**<0.288**	<0.061	<0.00079	<0.000079	<0.00079
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.16000	0.24000	1.39000	0.24200	0.45600	0.127	0.094	0.033	0.63
Phenol	108-95-2	8270	7.30E+02	2.20E+03	0.45000	1.00000	1.00000	0.64500	1.00000	0.495	<0.00035	<0.000035	0.22
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.00750	0.01100	0.245J	<0.0267	<0.0519	<0.011	0.0068	0.003	0.13

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-59B												
					7/15/2010	1/20/2011	7/18/2011	2/6/2012	7/27/2012	1/31/2013	8/1/2013	1/16/2014	07/30/2014	1/29/2018	3/20/2018	5/25/2018	1/23/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	9.81E-05J	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01			<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
emi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	<0.00008	<0.00008	<0.00005	0.25000	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<0.000059	<0.000059	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<1.9E-05	<0.000019	<0.000019	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	<0.00009	<0.00009	<0.00005	0.00170	<0.00005	<0.00008	<0.00008	<0.00008	0.000621	<2.7E-05	<0.000027	<0.000027	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	<0.00007	<0.00007	<0.00005	0.00014J	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.000015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	<0.00005	0.000054J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<1.4E-05	<0.000014	<0.000014	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.000051	<0.000051	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	3.3E-05 J
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.00200	0.00021	0.00031	0.00068	0.00018J	<0.00037	<0.00037	<0.00037	<0.00037	0.000058J	<0.000037	<0.000037	<5.6E-05
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	3.6E-05 J
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	0.000201J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.000115J	0.000105J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	5.1E-05 J
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	0.000189J	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	0.00014J	0.0001J	<0.00005	0.00012J	0.00006J	0.000269J	0.000166J	7.55E-05J	0.00627	<0.00002	<0.00002	<0.00002	7.2E-05 J
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00008	<0.00008	<0.00005	0.00011J	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	0.00025	<0.00005	<0.00006	<0.00006	5.66E-05J	<0.00006	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Phenol	108-95-2	8270	7.30E+02	2.20E+03	0.00020	<0.00007	<0.00005	0.00033	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	0.000062J	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<0.000019	<0.000019	5.3E-05 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-63B													
					1/13/2010	6/30/2010	1/27/2011	7/19/2011	2/9/2012	7/18/2012	2/7/2013	8/7/2013	1/22/2014	07/24/2014	1/28/2018	3/26/2018	6/6/2018	1/14/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																		
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	0.21000	0.01500	0.01900	0.01900	<0.001	0.0015J	0.00952	0.08690	0.07620	0.108	0.0033	0.0026	0.048	0.35
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	0.000216J	<0.0003	<0.0003	<0.0003	0.00073 J
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.20000	0.07200	0.07100	0.04000	0.0012J	0.0014J	0.01650	0.03410	0.04180	0.151	0.012	0.0059	0.048	0.48
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	0.01500	0.0016J	0.0018J	0.0017J	<0.001	0.0038J	0.00241	0.000434J	0.000399J	0.00257	<0.0002	<0.0002	0.00093 J	0.0071
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01										<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.08200	0.02000	0.01600	0.013J	<0.0031	<0.0015	0.00629	0.01130	0.01560	0.0535	0.0048	0.0016	0.011	0.11
emi-Volatile Organic Compounds																		
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00524	<0.00011	<0.0011	<0.0011	<2.1E-05	<2.1E-05	<0.00021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	<0.00008	<0.00008	<0.00008	0.000056J	<0.00005	<0.00005	<0.0148	<0.00031	<0.0031	<0.0031	<0.00004	<0.00004	<0.0004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00619	<0.00013	<0.0013	<0.0013	<5.8E-05	<5.8E-05	<0.00058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00381	<0.00008	<0.0008	<0.0008	<4.2E-05	<4.2E-05	<0.00042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00381	<0.00008	<0.0008	<0.0008	<2.1E-05	<2.1E-05	<0.00021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.11000	0.03100	0.02500	0.01400	0.00290	0.00340	0.0104J	0.00242	0.00756	0.0302	0.000059J	<1.9E-05	0.0016	0.042
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.0395	<0.00083	<0.0083	<0.0083	<0.00002	<0.00002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0267	<0.00056	<0.0056	<0.0056	<4.7E-05	<4.7E-05	<0.00047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.02800	0.01300	0.01700	0.00530	0.00200	0.00230	0.00952J	0.00083	0.00274J	0.00754	0.00066	<2.7E-05	0.0027	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.00051	0.00018J	<0.00007	0.000066J	0.00012J	<0.00005	<0.00286	<0.00006	<0.0006	<0.0006	<1.5E-05	<1.5E-05	<0.00015	0.0029
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.00068	0.00039	0.00110	0.00011J	0.00015J	0.00005J	<0.00238	<0.00005	<0.0005	<0.0005	0.00011	0.00022	<0.00014	0.00017 J
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	0.00087	<0.00005	<0.00005	<0.00005	<0.00381	<0.00008	<0.0008	<0.0008	<0.00005	<0.00005	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00008	<0.00008	0.00027	<0.00005	<0.00005	<0.00005	<0.00381	<0.00008	<0.0008	<0.0008	<0.00002	<0.00002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00619	<0.00013	<0.0013	<0.0013	<0.00003	<0.00003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.00036	0.00036	0.00060	0.00051	0.00096	0.00096	<0.0176	0.000381J	<0.0037	<0.0037	<3.7E-05	<3.7E-05	<0.00037	<3.7E-05
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00381	<0.00008	<0.0008	<0.0008	<2.1E-05	<2.1E-05	<0.00021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.02200	0.00800	0.01300	0.00410	0.00240	0.00260	0.00576J	0.00104	0.002J	0.00663	0.00065	<0.00002	0.002	0.0087
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	0.00019J	<0.00007	<0.00007	<0.00005	0.00014J	<0.00005	<0.00524	0.000104J	<0.0011	<0.0011	<0.00002	<0.00002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	0.00420	<0.00005	0.000091J	0.00013J	<0.00333	<0.00007	<0.0007	<0.0007	0.0001	<0.00001	<0.0001	<0.00001
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.00780	0.00410	0.00540	0.00190	0.00093	0.00110	<0.00333	0.000349J	0.00102J	0.00248J	0.00033	<0.00003	0.00099 J	0.0029
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	3.10000	0.67000	0.76000	0.36000	0.02700	0.04400	0.25100	0.14600	0.37400	1.69	<0.00066	<0.00002	0.29	2.1
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00524	<0.00011	<0.0011	<0.0011	<2.4E-05	<2.4E-05	<0.00024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00476	<0.0001	<0.001	<0.001	<2.5E-05	<2.5E-05	<0.00025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00008	<0.00008	<0.00008	<0.00005	0.00018J	<0.00005	<0.029	<0.00061	<0.0061	<0.0061	<7.9E-05	<7.9E-05	<0.00079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.00340	0.00076	0.00440	0.00075	0.00072	0.00100	<0.00286	<0.00006	0.00133J	<0.0006	<7.5E-05	<2.1E-05	<0.00021	0.00094 J
Phenol	108-95-2	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	<0.00007	<0.00005	0.00057	<0.00005	<0.0019	<0.00004	0.000889J	<0.0004	<3.5E-05	<3.5E-05	<0.00035	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	0.00290	<0.00005	0.000063J	<0.00005	<0.00524	<0.00011	<0.0011	<0.0011	<1.9E-05	<1.9E-05	<0.00019	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-67B												
					7/15/2010	1/27/2011	7/20/2011	2/9/2012	7/17/2012	2/12/2013	8/8/2013	1/23/2014	07/24/2014	1/31/2018	3/27/2018	6/6/2018	1/24/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.0015J	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01							<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.0012J	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
emi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	<0.00008	<0.00008	<0.00005	0.00050	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.00007	<0.00007	<0.00006	<0.00006	0.00220	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	<0.00007	<0.00007	<0.00005	0.00023	0.000062J	<0.00007	<0.00007	<0.00007	<0.00007	<3.1E-05	<1.9E-05	6.1E-05 J	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.00011J	<0.00009	<0.00005	0.00012J	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.00160	0.00220	0.00094	0.00042	0.00012J	<0.00037	<0.00037	<0.00037	0.00184	<5.6E-05	<3.7E-05	<0.00056	5.1E-05 J
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	<0.00008	<0.00008	<0.00005	0.00013J	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	6.9E-05 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.00007	0.000083J	<0.00005	<0.00005	<0.00005	<0.00011	0.000119J	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	<0.00007	<0.00007	<0.00005	0.0001J	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	<0.0001	0.00062	<0.00005	0.00190	0.00049	<0.00008	0.000433J	0.00008J	0.000275J	<0.00045	0.00013	0.00047 J	<0.00002
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	0.00011J	<0.00005	<0.00006	<0.00006	0.00006J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+02	2.20E+03	<0.00007	<0.00007	<0.00005	0.000089J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	0.00018J	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-70B*				MW-71B									
					7/17/2012	2/7/2013	1/22/2014	07/28/2014	2/8/2012	7/18/2012	2/7/2013	8/7/2013	1/24/2014	07/28/2014	1/25/2018	3/26/2018	6/6/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																		
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.0025	<0.007	<0.0002	<0.0014	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-01	5.00E-01	0.21	**2.01**	**2.39**	**2.55**	0.01200	0.0014J	0.01240	0.10300	0.03900	0.00155	<0.0002	0.0042	0.027	0.0024
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.0025	0.0317J	0.00072	<0.0012	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.058	0.524	0.621	0.742	0.0045J	0.00750	0.00541	0.03540	0.00793	<0.00011	<0.0003	0.00065J	0.0055	0.00093 J
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.005	<0.0075	<0.00022	<0.0015	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	0.22	1.65	2.31	2.76	0.00770	0.00780	0.01040	0.03550	0.00918	0.00423	<0.0002	0.00094J	0.0033	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01								<0.00011						
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.19	1.51	1.68	2.11	0.01600	0.03300	0.01430	0.06150	0.02020	0.0126	<0.0003	0.0044	0.013	0.00084 J
emi-Volatile Organic Compounds																		
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0005	<0.075	<0.0157	<0.011	<0.00005	<0.00005	<0.00011	<0.00519	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	2.60000	<2.11	**72**	**50.8**	0.00340	<0.00005	<0.00031	<0.0146	0.02250	<0.00031	<4.1E-05	<4.1E-05	0.00044	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.0005	<0.0886	<0.0186	<0.013	<0.00005	<0.00005	<0.00013	<0.00613	<0.00013	<0.00013	<5.9E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.0006	<0.0545	<0.0114	<0.008	<0.00006	<0.00006	<0.00008	<0.00377	<0.00008	<0.00008	<4.3E-05	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0005	<0.0545	<0.0114	<0.008	<0.00005	<0.00005	<0.00008	<0.00377	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.94000	1.21000	1.40000	1.31	0.00760	0.00040	0.000377J	0.11400	0.04760	<0.00007	<1.9E-05	0.0017	0.00031	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.0008	**<0.566**	<0.119	<0.083	<0.00008	<0.00008	<0.00083	<0.0392	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.0005	<0.382	<0.08	<0.056	<0.00005	<0.00005	<0.00056	<0.0264	<0.00056	<0.00056	<4.8E-05	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.91000	0.51500	0.45400	0.374	0.00390	0.00017J	0.00440	0.03460	0.02120	0.000785	<2.8E-05	0.0043	0.0023	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.01100	0.0424J	<0.00857	0.0114J	0.00019J	<0.00005	0.000135J	<0.00283	0.00122	<0.00006	<1.5E-05	0.000066J	0.00011	<1.5E-05
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.09600	0.051J	0.0423J	0.0387J	0.00056	0.00005J	0.000452J	0.00383J	0.00198	<0.00005	0.000064J	0.0022	0.00041	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	0.01600	<0.0545	<0.0114	<0.008	0.000081J	0.00011J	<0.00008	<0.00377	<0.00008	<0.00008	0.00015	0.00067	0.00013	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	0.00410	**<0.0545**	<0.0114	<0.008	0.00012J	0.00014J	<0.00008	<0.00377	<0.00008	<0.00008	0.0002	0.00029	0.00018	2.1E-05 J
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.0005	**<0.0886**	<0.0186	<0.013	<0.00005	<0.00005	<0.00013	<0.00613	<0.00013	<0.00013	<3.1E-05	<3.1E-05	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	0.00680	<0.252	<0.0529	<0.037	0.00130	0.00012J	<0.00037	<0.0175	<0.00037	<0.00037	0.00018J	0.000081J	<0.00056	<3.7E-05
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	0.01300	<0.0545	<0.0114	<0.008	0.000089J	0.00015J	<0.00008	<0.00377	<0.00008	<0.00008	0.00023	0.00077	0.00025	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.69000	0.34500	0.35500	0.278	0.00310	0.00016J	0.00244	0.02920	0.01750	<0.00008	<0.00002	0.004	0.0019	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.0005	<0.075	<0.0157	<0.011	<0.00005	<0.00005	<0.00011	<0.00519	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	2.2E-05 J
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.28000	<0.0477	0.0105J	0.013J	0.00053	0.00026	0.000387J	<0.0033	0.00071	0.000149J	0.00033	0.0045	0.0005	3.9E-05 J
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.66000	0.211J	0.21700	0.186	0.00200	0.00023	0.00168	0.0127J	0.01040	<0.00007	<3.1E-05	0.0032	0.0013	<0.00003
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	5.30	17.30	30.1	18.1	0.05100	0.00190	9.37E-05J	2.07000	0.50400	0.000471J	<0.00002	0.00048	0.00011	<0.00002
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.0005	<0.075	<0.0157	<0.011	<0.00005	<0.00005	<0.00011	<0.00519	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.0005	<0.0682	<0.0143	<0.01	<0.00005	<0.00005	<0.0001	<0.00472	<0.0001	<0.0001	<2.6E-05	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.0005	**<0.416**	<0.0871	<0.061	0.00022	<0.00005	<0.00061	<0.0288	<0.00061	<0.00061	<8.1E-05	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.93000	0.227J	0.17500	0.162	0.00250	0.00034	0.00127	0.0124J	0.00677	<0.00006	0.00012	0.012	0.0016	<2.1E-05
Phenol	108-95-2	8270	7.30E+02	2.20E+03	0.07700	2.87000	3.86000	1.69	0.00037	<0.00005	<0.00004	<0.00189	<0.00004	<0.00004	<3.6E-05	<3.6E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.09400	<0.075	<0.0157	<0.011	0.00057	0.00026	0.000253J	<0.00519	0.000353J	<0.00011	0.00031	0.0028	0.00064	3.7E-05 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2a
Summary of Groundwater Sampling Results - B-CZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-72B							
					7/12/2012	2/1/2013	7/29/2013	1/15/2014	2/8/2018	3/19/2018	5/16/2018	1/24/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds												
1,2-Dichloroethane	107-06-2	8260	5.00E-01	5.00E-01	<0.005	<0.007	<0.014	<0.0002	0.018	<0.0002	<0.001	0.011
Benzene	71-43-2	8260	5.00E-01	5.00E-01	**1.40**	**1.45**	**1.23**	**0.93**	**0.8**	**1.1**	**1.2**	**0.63**
Chlorobenzene	108-90-7	8260	1.00E+01	1.00E+01	<0.005	<0.006	<0.012	0.00029J	0.00033J	<0.0003	<0.0015	<0.0003
Ethylbenzene	100-41-4	8260	7.00E+01	7.00E+01	0.31000	0.32100	0.33200	0.22400	0.26	0.31	0.34	0.2
Methylene chloride	75-09-2	8260	5.00E-01	5.00E-01	<0.01	<0.0075	0.291	<0.00022	<0.001	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+02	1.00E+02	1.10	1.18	1.12	0.72400	0.72	0.99	0.95	0.58
Vinyl chloride	75-01-4	8260	2.00E-01	2.00E-01								
Xylenes (total)	1330-20-7	8260	1.00E+03	1.00E+03	0.88000	0.96000	0.92800	0.66100	0.87	0.94	1.1	0.63
emi-Volatile Organic Compounds												
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-01	2.60E-01	<0.0005	<0.0524	<0.0267	**<0.156**	<0.00021	<0.00021	<0.00021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E+01	1.50E+02	20.0	**98.1**	29.9	**182.0**	10	16	14	2
2,4-Dinitrotoluene	121-14-2	8270	1.30E-01	3.00E-01	<0.0005	<0.0619	<0.0316	**<0.184**	<0.00058	<0.00058	<0.00058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-01	3.00E-01	<0.0006	<0.0381	<0.0194	<0.113	<0.00042	<0.00042	<0.00042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+02	5.80E+02	<0.0005	<0.0381	<0.0194	<0.113	<0.00021	<0.00021	<0.00021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E+00	2.90E+01	0.74	1.39	1.19	3.37	0.33	0.42	0.23	0.071
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-01	7.30E-01	<0.0008	**<0.395**	<0.201	**<1.17**	<0.0002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E+00	1.50E+01	<0.0005	<0.267	<0.136	<0.792	<0.00047	<0.00047	<0.00047	0.0073 J
Acenaphthene	83-32-9	8270	1.50E+02	4.40E+02	0.23000	0.58400	0.47600	1.60000	0.07	0.15	0.12	0.019
Acenaphthylene	208-96-8	8270	1.50E+02	4.40E+02	0.00730	<0.0286	<0.0146	<0.0849	0.0021	<0.00015	0.003	0.00069 J
Anthracene	120-12-7	8270	7.30E+02	2.20E+03	0.01700	0.0646J	0.033J	0.179J	0.0085	0.02	<0.00014	0.0015
Benzo(a)anthracene	56-55-3	8270	9.10E-01	2.00E+00	<0.0005	<0.0381	<0.0194	<0.113	<0.0005	<0.0005	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-02	2.00E-02	<0.0005	**<0.0381**	<0.0194	**<0.113**	<0.0002	<0.0002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-02	1.90E-01	<0.0005	<0.0619	<0.0316	**<0.184**	<0.0003	<0.0003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-01	6.00E-01	<0.001	<0.176	<0.0898	<0.524	<0.00037	<0.00037	<0.00037	<3.7E-05
Chrysene	218-01-9	8270	9.10E+01	2.00E+02	<0.0005	<0.0381	<0.0194	<0.113	<0.00021	<0.00021	<0.00021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E+00	2.90E+01	0.18	0.36	0.35	1.21	0.06	0.13	0.082	0.017
Di-n-butylphthalate	84-74-2	8270	2.40E+02	7.30E+02	<0.0005	<0.0524	<0.0267	<0.156	<0.0002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E+01	2.90E+02	0.00340	<0.0333	<0.017	<0.0991	<0.0001	0.0015	0.00095 J	<0.00001
Fluorene	86-73-7	8270	9.80E+01	2.90E+02	0.11000	0.25300	0.22400	0.7J	0.032	0.069	0.051	0.0091
Naphthalene	91-20-3	8270	4.90E+01	1.50E+02	16.0	**88.5**	25.0	**82.8**	7.5	13	12	1.2
Nitrobenzene	98-95-3	8270	4.90E+00	1.50E+01	<0.0005	<0.0524	<0.0267	<0.156	<0.00024	<0.00024	<0.00024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E+01	4.20E+01	<0.0005	<0.0476	<0.0243	<0.142	<0.00025	<0.00025	<0.00025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-01	1.00E-01	<0.0005	**<0.29**	**<0.148**	**<0.863**	<0.00079	<0.00079	<0.00079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E+01	2.20E+02	0.079	0.264	0.182	0.760	0.02	0.084	0.045	0.0042
Phenol	108-95-2	8270	7.30E+02	2.20E+03	3.400	7.510	6.310	31.4	4.2	4.2	2.3	0.58
Pyrene	129-00-0	8270	7.30E+01	2.20E+02	0.0019J	<0.0524	<0.0267	<0.156	<0.00019	0.0012	0.00074 J	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Table 3), Class 3, last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-14														
					2/4/2009	1/19/2010	6/22/2010	1/17/2011	7/26/2011	2/2/2012	7/16/2012	2/5/2013	7/31/2013	1/14/2014	07/18/2014	1/23/2018	3/18/2018	5/15/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	0.00012J	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<0.000058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	**0.0788**	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00075	0.00064	0.00049	0.00039	0.00034	6.4E-05J	0.00030	0.0004J	0.0003J	0.00032J	0.00034J	0.00019	<0.00014	<0.000019	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00047	0.00043	0.00041	0.00033	0.00032	<0.00005	0.00030	0.00060	0.00055	0.00094	0.000619	0.00019	0.00027	<0.000027	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.000015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	6.9E-05J	0.00028J	0.0002J	0.00005J	0.00014J	6.7E-05J	0.000052J	<0.000014	5.2E-05 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00081	0.00540	0.00077	0.00029	0.00047	<0.0001	0.00011J	<0.00037	<0.00037	<0.00037	0.000615	<9.1E-05	<0.000037	<0.00014	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00045	0.00040	0.00037	0.00030	0.00031	0.00012J	0.00032	0.00047J	0.00037J	0.00044J	0.00044J	0.00024	<0.00025	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.00018J	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	2.2E-05 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00024	5.5E-05J	7.9E-05J	0.00027J	7.4E-05J	<0.00007	2.8E-05J	0.000025J	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	0.00013J	<0.00007	7.9E-05J	<0.00005	<0.00005	7.6E-05J	<0.00007	<0.00007	0.00008J	9E-05J	<0.00003	0.000094J	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00320	0.00300	0.00220	0.00240	0.00140	0.00035	0.00150	0.00211	0.00216J	0.00008J	0.00143	0.00067	<0.00057	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.000079	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00035	0.00041	0.00044	0.00030	0.00033	0.00011J	0.00038	0.00048	0.00066	0.00006	0.000506	0.00035	0.00032	<0.000021	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	0.0004J	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00029	<0.00005	<0.00011	0.00016J	<0.00011	<0.00011	<1.9E-05	<0.000019	<0.000019	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-15B									
					2/2/2012	7/19/2012	1/30/2013	7/30/2013	1/14/2014	07/17/2014	1/23/2018	3/18/2018	5/15/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds														
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.005	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.005	**0.0053J**	0.00220	0.00484	0.00101	0.00292	<0.0002	<0.0002	0.00071 J	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.005	<0.0025	<0.00012	0.00012J	<0.00012	0.00014J	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.02J	0.014J	0.00159	0.00399	0.00019J	0.00903	<0.0003	<0.0003	0.001	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	**<0.0065**	<0.005	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.005	<0.0025	<0.00015	0.00016J	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03										
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.016	<0.0075	0.00036J	0.00876	0.00088J	0.00464	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds														
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00005	<0.00011	<0.00011	<0.0011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00043	<0.00005	<0.00031	<0.00031	<0.0031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00005	<0.00013	<0.00013	<0.0013	<0.00013	<5.9E-05	<0.000058	<0.000059	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.00006	<0.00008	<0.00008	<0.0008	<0.00008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00005	<0.00008	<0.00008	<0.0008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.290**	0.023	0.00074	0.00327	0.00325J	0.00622	<1.9E-05	<0.000019	0.00015	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00083	<0.00083	**<0.0083**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00056	<0.00056	<0.0056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.17000	0.07500	0.04130	0.11400	0.13400	0.0653	<2.7E-05	<0.000027	0.012	0.0026
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00110	0.00080	0.00099	<0.00006	0.00148J	<0.00006	5.9E-05J	<0.000015	0.00027	0.00015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.03900	0.00710	0.00179	0.00581	0.00665	0.00517	0.00034	0.00016	0.00058	0.00023
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00016J	0.00017J	<0.00008	0.00022J	0.00087J	0.00031J	0.00017	<0.00005	0.00011	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	<0.00005	<0.00008	<0.00008	**<0.0008**	<0.00008	0.00007J	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00005	<0.00013	<0.00013	**<0.0013**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.0001	0.00018J	<0.00037	<0.00037	<0.0037	0.000548	<0.00007	<0.000037	0.0001 J	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00019J	0.00013J	<0.00008	0.00017J	<0.0008	0.00023J	0.00014	<0.000021	0.000098 J	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.15000**	0.05200	0.01270	0.05890	0.05090	0.0272	0.0005	<0.00002	0.0025	0.00014
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.00005	<0.00011	0.00019J	<0.0011	<0.00011	<0.00002	<0.00002	0.000042 J	2.2E-05 J
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.01200	0.00620	0.00101	0.00615	0.01310	0.00736	0.0027	<0.00001	0.0031	0.00045
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.08400	0.03600	0.01100	0.04590	0.04430	0.0231	0.00017	<0.00003	0.0028	5.5E-05 J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**2.50**	**0.82**	0.0569J	**0.94300**	0.24800	0.452	<0.00002	<0.00002	0.02	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00005	<0.00011	<0.00011	<0.0011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.00005	<0.0001	<0.0001	<0.001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00005	<0.00061	<0.00061	**<0.0061**	<0.00061	<0.00008	<0.000079	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.08000	0.05200	0.00199	0.03760	0.02570	0.0204	0.00033	<0.000021	0.00016	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00012J	<0.00005	<0.00004	<0.00004	0.00141J	0.00112	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00500	0.00310	0.00051	0.00291	0.00569	0.00406	0.0016	<0.000019	0.0017	0.00027

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-22B									
					2/3/2009	1/15/2010	6/29/2010	1/25/2011	7/21/2011	2/15/2012	7/18/2012	1/23/2014	07/30/2014	08/28/2014
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds														
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	<0.00014	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	0.0042J	0.0003J	0.00185	0.00238
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00018	<0.00012	<0.00012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	0.00880	0.00220	0.0255	0.0275
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00022	<0.00015	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	0.00053J	<0.0005	<0.001	<0.001	0.0033J	0.00133	0.00584	0.00752
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03										<0.00011
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	0.0057J	0.00409	0.0362	0.0383
Semi-Volatile Organic Compounds														
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00014J	<0.00005	<0.00031	0.00107	<0.00031
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044	0.00063	0.00041J	0.00721	0.00663
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.02200	0.00016J	0.00930	0.00022	0.00300	0.06800	0.18000	0.02440	0.0762	0.123
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00034	<0.00007	0.00012J	<0.00007	<0.00005	0.00046	0.00180	0.00089	0.000641	0.00132
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00071	<0.00007	0.00031	<0.00007	0.00011J	0.00170	0.00670	0.00005	0.00292	0.00404
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00053	0.00022	0.00061	<0.0002	0.00041	0.00051	<0.0001	<0.00037	0.000672	<0.00037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00510	0.00026	0.00190	<0.00008	0.00068	0.00790	0.04600	0.00784	0.0238	0.0409
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00018J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.00011J	<0.00011	<0.00011
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00110	0.00011J	0.00061	<0.00007	0.00019J	0.00220	0.00650	0.00187	0.00304	0.00282
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00180	<0.00007	0.00180	<0.00007	0.00049	0.00350	0.01900	0.00521	0.0198	0.0355
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00017J	0.00012J	0.00036	<0.0001	<0.00005	0.00320	0.03200	0.13J	**0.832**	**0.977**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00029	<0.00005	<0.0001	<0.0001	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00015J	<0.00007	<0.00007	<0.00005	0.00026	0.00270	0.00006	0.00053	<0.00006
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001J	<0.00004	<0.00004	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00047	<0.00007	0.00027	<0.00007	0.00012J	0.00100	0.00330	0.00088	0.00123	0.0023

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-22BR				MW-24B								
					2/8/2018	3/25/2018	5/31/2018	1/22/2019	2/3/2009	1/14/2010	6/29/2010	1/25/2011	7/21/2011	2/9/2012	7/25/2012	2/12/2013	8/8/2013
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.00034J	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	0.02090
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03													<0.00011
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.00082J	<0.0003	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<0.000021	<0.000021	<2.1E-05	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.000041	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.9E-05	<0.000059	<0.000058	<5.8E-05	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<0.000043	<0.000042	<4.2E-05	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<0.000021	<0.000021	<2.1E-05	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00056	0.000067J	0.000071 J	<1.9E-05	<0.00007	<0.00007	9.9E-05J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<4.7E-05	<0.000048	<0.000047	<4.7E-05	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.034	0.044	0.047	0.022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	0.00096	0.00041	<1.5E-05	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00039	0.00062	0.0013	0.00048	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<5.1E-05	<0.000051	<0.00005	<0.00005	0.00015J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.000031	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<3.7E-05	<0.000038	<0.000037	<3.7E-05	0.00046	0.00210	0.00074	<0.0002	0.00014J	0.00011J	0.00015J	<0.00037	<0.00037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<2.1E-05	<0.000021	<0.000021	<2.1E-05	0.00015J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00066	0.00049	0.0011	0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00013J	<0.00011	<0.00011
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00098	0.0011	0.0028	0.0011	0.00011J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.002	0.0017	0.0046	0.0025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0038	0.0008	0.00044	0.00017	<0.0001	<0.0001	0.00083	<0.0001	<0.00005	<0.00005	0.00015J	<0.00008	<0.00008
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<0.000024	<0.000024	<2.4E-05	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<0.000026	<0.000025	<2.5E-05	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.000081	<0.000079	<7.9E-05	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00081	0.00018	0.00039	<2.1E-05	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<0.000036	<0.000035	<3.5E-05	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00062	0.00077	0.0015	0.00046	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-35B														
					2/3/2009	1/14/2010	7/1/2010	1/27/2011	7/20/2011	2/15/2012	7/18/2012	2/7/2013	8/8/2013	1/24/2014	07/24/2014	1/25/2018	3/22/2015	6/5/2018	1/15/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.005	<0.0007	<0.0028	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.06200**	**0.06400**	**0.06800**	**0.06400**	**0.05600**	**0.07700**	**0.06400**	**0.06620**	**0.08550**	**0.06640**	**0.0539**	**0.078**	**0.088**	**0.044**	0.0033
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.005	<0.0006	<0.0024	0.00024J	0.00023J	0.0009J	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.20000	0.20000	0.21000	0.22000	0.17000	0.19000	0.19000	0.22500	0.25800	0.18700	0.176	0.15	0.15	0.12	0.0094
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	**0.02J**	<0.00075	**0.02340**	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.0057J	<0.0005	0.00500	0.0045J	<0.001	0.0042J	<0.005	0.00437J	0.00584J	0.00429	0.00377	0.0057	0.0041	0.0031	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									**<0.0022**		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.15000	0.15J	0.17000	0.16000	0.12000	0.13000	0.13J	0.15300	0.17400	0.13200	0.114	0.064	0.066	0.056	0.004
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	**0.00120**	<0.0001	<0.00005	<0.00005	<0.00005	**<0.105**	**<0.00539**	**<0.106**	<0.0011	<0.00021	<0.00021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.295	<0.0152	<0.298	<0.0031	<0.0004	<0.0004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.124**	**<0.00637**	**<0.125**	<0.0013	<0.00059	<0.00058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.0762**	**<0.00392**	**<0.0769**	<0.0008	<0.00042	<0.00042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0762	<0.00392	<0.0769	<0.0008	<0.00021	<0.00021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.40**	**0.47**	**0.36**	**0.41**	**0.48**	**0.18**	**0.26**	**0.295J**	**0.43100**	**0.53400**	**0.376**	**0.13**	**0.22**	**0.25**	0.011
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.798**	**<0.0407**	**<0.798**	**<0.0083**	<0.0002	0.00078J	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.533**	<0.0275	**<0.538**	<0.0056	<0.00047	<0.00047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.17000	0.22000	0.20000	0.19000	0.20000	0.08000	0.15000	0.173J	0.25800	0.305J	0.139	0.094	0.18	0.17	0.013
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00088	0.00130	0.00110	0.00120	0.00097	0.00063	0.00078	<0.0571	<0.00294	<0.0577	0.0015J	<0.00015	0.0014	0.00076	0.00018
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00560	0.00800	0.01500	0.01400	0.01600	0.00480	0.00640	<0.0476	0.0202J	<0.0481	0.0111	0.011	0.014	0.0072	0.0011
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00017J	0.00032	0.00022	0.00031	0.00021	0.00011J	0.00020	**<0.0762**	<0.00392	**<0.0769**	<0.0008	<0.00051	<0.0005	0.000075 J	7.7E-05 J
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	0.00014J	0.00012J	0.00014J	6.9E-05J	<0.00005	<0.00005	**<0.0762**	**<0.00392**	**<0.0769**	**<0.0008**	<0.0002	<0.0002	<0.00002	5.8E-05 J
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.124**	**<0.00637**	**<0.125**	**<0.0013**	<0.0003	<0.0003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00052	0.00029	0.00097	0.00041	0.00056	0.00088	0.00018J	**<0.352**	**<0.0181**	**<0.356**	<0.0037	<0.00037	<0.00037	<0.000037	<0.00014
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00015J	0.00028	0.00017J	0.00037	0.00025	0.0001J	0.00023	<0.0762	<0.00392	<0.0769	<0.0008	0.00051J	<0.00021	0.000086 J	9.8E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.160**	**0.230**	**0.220**	**0.200**	**0.210**	0.097	**0.14000**	**0.161J**	**0.25200**	**0.256J**	**0.138**	**0.13**	**0.22**	**0.18**	0.015
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.105	<0.00539	<0.106	<0.0011	<0.0002	<0.0002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00310	0.00530	0.00600	0.00650	0.00560	0.00260	0.00390	<0.0667	0.00756J	0.0698J	0.00692	0.0081	0.0098	0.0031	0.0013
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.06300	0.09200	0.11000	0.09000	0.09700	0.04800	0.06900	<0.0667	0.13800	0.167J	0.076	0.057	0.092	0.095	0.0066
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**12.00**	**14.00**	**11.00**	**4.80**	**12.00**	**7.40**	**7.60**	**8.83**	**14.10**	**13.10**	**9.36**	**5**	**13**	**15**	0.079
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.105**	<0.00539	**<0.106**	<0.0011	<0.00024	<0.00024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0952	<0.0049	<0.0962	<0.001	<0.00025	<0.00025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.581**	**<0.0299**	**<0.587**	**<0.0061**	<0.0008	<0.00079	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.06100	0.08600	0.12000	0.07800	0.12000	0.05200	0.06600	0.0936J	0.14200	0.27J	0.0891	0.088	0.18	0.11	0.0086
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00014J	<0.0381	<0.00196	0.129J	<0.0004	<0.00035	<0.00035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00170	0.00270	0.00250	0.00320	0.00270	0.00160	0.00190	<0.105	<0.00539	<0.106	0.00327J	0.0057	0.0053	0.0018	0.00075

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-38B														
					2/3/2009	1/14/2010	6/29/2010	1/25/2011	7/18/2011	2/15/2012	7/18/2012	2/7/2013	8/8/2013	1/21/2014	07/25/2014	1/26/2018	3/25/2018	6/5/2018	1/22/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<4.1E-05	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<0.000059	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.3E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00037	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00030	<0.00007	<0.00007	0.00014J	9.9E-05J	9.6E-05J	<0.000019	<0.000019	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.8E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0001J	<0.00009	0.00047	<0.00009	<0.00005	0.0001J	0.00096	0.00023J	<0.00008	7.9E-05J	0.00034J	<2.8E-05	0.000095J	0.048	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	0.00036	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00013J	<0.00007	<0.00007	0.00011J	0.00013J	0.00021	0.00023	0.00031J	<0.00005	0.00014J	0.0004J	4.7E-05J	<0.000014	0.0018	0.0001
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<5.1E-05	<0.000051	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	7.2E-05J	<0.00013	<0.00013	<0.00013	<0.00013	<3.1E-05	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00041	0.00039	0.00074	<0.0002	0.00100	<0.0001	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	6.1E-05J	0.00012J	<0.000037	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00028	<0.00008	<0.00008	9.2E-05J	0.00041J	5.3E-05J	<0.00002	0.008	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	0.000027J	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00017J	<0.00007	<0.00005	<0.00005	0.00032	<0.00007	<0.00007	0.0001J	0.00058	<0.00001	0.000022J	0.0014	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00015J	<0.00007	<0.00005	<0.00005	0.00027	<0.00007	<0.00007	7.8E-05J	0.00022J	4.6E-05J	<0.00003	0.019	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00450	0.00014J	<0.0001	0.00031	<0.00005	0.00037	0.00150	<0.00008	<0.00008	0.00047J	0.0016	0.00084	0.00016	0.00099	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.6E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<8.1E-05	<0.00008	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00037	<0.00006	<0.00006	0.0003J	0.00016J	6.1E-05J	0.000052J	<0.000021	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.6E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00027	<0.00007	<0.00005	<0.00005	0.00037	<0.00011	<0.00011	<0.00011	0.00047J	<1.9E-05	0.000035J	0.00086	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-39B														
					2/4/2009	1/19/2010	6/22/2010	1/18/2011	7/26/2011	2/1/2012	7/19/2012	2/5/2013	7/31/2013	1/14/2014	07/25/2014	1/23/2018	3/19/2018	5/16/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.0011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.0031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.0013	<0.00013	<5.8E-05	<0.000059	<0.000059	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.0008	<0.00008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.0008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	8.6E-05J	<0.00005	<0.00005	6.9E-05J	<0.00007	<0.00007	<0.0007	0.00007J	8.1E-05J	<0.000019	<0.00008	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	**<0.0083**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.0056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00022	0.00014J	0.00340	0.00039	0.00028	0.00110	0.00040	0.00076	0.00070	0.00115J	0.0012	0.00093	0.001	0.00054	0.00062
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	5.3E-05J	<0.00005	<0.00005	0.00011J	6.8E-05J	<0.0006	6.2E-05J	<1.5E-05	<0.000015	<0.000015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00028	<0.00007	<0.00007	<0.00007	0.00040	<0.00005	0.0001J	0.00090	0.00077	0.00048J	0.000615	5.3E-05J	<0.000014	0.0002	0.00016
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005J	<0.00005	<0.00008	<0.00008	<0.0008	<0.00008	<0.00005	<0.000051	<0.000051	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	**<0.0008**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	**<0.0013**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00046	0.00070	<0.0002	0.00024	0.00092	0.00015J	0.00015J	<0.00037	<0.00037	<0.0037	<0.00037	0.0018	0.00013J	<0.00011	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.0008	<0.00008	5.7E-05J	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00040	6.7E-05J	<0.00008	<0.00008	<0.0008	0.00008J	0.0001	<0.00002	<0.000054	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.00012J	<0.0011	<0.00011	8.2E-05J	<0.00002	<0.000035	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00140	<0.00007	0.00190	0.00013J	7.9E-05J	0.00110	0.00036	0.00011J	0.00042J	<0.0007	6.05E-05	0.00015	0.000075J	0.000053 J	6.7E-05 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00025	0.00021	0.00048	0.00013J	0.00011J	0.00032	0.00019J	<0.00007	0.00022J	<0.0007	0.00031J	0.00011	<0.00003	0.000061 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00052	0.00018J	0.00015J	0.00076	<0.00005	0.00034	0.00018J	0.00043J	<0.00008	<0.0008	<0.00008	0.00082	<0.00002	<0.0013	<9.2E-05
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.0011	0.000853	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	5.4E-05J	<0.00005	<0.00005	<0.0001	0.00016J	<0.001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	**<0.0061**	<0.00061	<7.9E-05	<0.00008	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00025	<0.00007	0.00018J	<0.00005	<0.00005	0.00016J	<0.00006	9.1E-05J	<0.0006	0.0001J	<2.1E-05	<0.000021	0.000056 J	3.9E-05 J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.0004	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00130	0.00018J	0.00200	<0.00007	0.00017J	0.00130	0.00052	0.00013J	0.00066	<0.0011	0.000818	0.00015	0.000074J	0.000064 J	5.2E-05 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-40B														
					2/4/2009	1/19/2010	6/22/2010	1/18/2011	7/14/2011	2/3/2012	7/19/2012	2/5/2013	7/31/2013	1/14/2014	07/18/2014	1/24/2018	3/19/2018	5/16/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	**<0.01**	<0.005	<0.00014	<0.0014	<0.0007	<0.00014	<0.0002	<0.0002	<0.001	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.02600**	**0.02800**	**0.02600**	**0.01900**	**0.016J**	**0.013J**	**0.013J**	**0.01080**	**0.01150**	**0.01090**	**0.0103**	**0.0091**	**0.0066**	**0.014**	**0.0063**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	0.001J	<0.0005	<0.0005	<0.0005	<0.001	<0.01	<0.005	<0.00012	<0.0012	<0.0006	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.10000	0.12000	0.12000	0.13000	0.08100	0.08000	0.08200	0.08170	0.07980	0.08400	0.0825	0.049	0.039	0.08	0.041
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	**<0.013**	**<0.01**	<0.00015	<0.0015	<0.00075	<0.00015	<0.001	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.05000	0.05400	0.05000	0.04500	0.019J	0.028J	0.022J	0.01180	0.01730	0.01470	0.0154	0.0081	0.0049	0.019	0.0048
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.20000	0.22000	0.22000	0.21000	0.12J	0.13J	0.14J	0.11600	0.12700	0.12000	0.126	0.066	0.044	0.11	0.052
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.011**	**<0.00524**	**<0.0212**	<0.0011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.01100	0.01400	0.00440	0.00033	0.00340	0.00400	0.00390	<0.031	<0.0148	<0.0596	<0.0031	<0.00004	0.00034	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.013**	**<0.00619**	**<0.025**	<0.0013	<5.9E-05	<0.000058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.008**	**<0.00381**	**<0.0154**	<0.0008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.008	<0.00381	<0.0154	<0.0008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.58**	**0.49**	**0.41**	**0.27**	**0.24**	**0.20**	**0.28**	**0.30**	**0.31**	**0.35**	**0.263**	**0.13**	0.056	0.091	0.077
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.083**	**<0.0395**	**<0.16**	**<0.0083**	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.056**	<0.0267	**<0.108**	<0.0056	<4.7E-05	<0.000047	0.0015	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.35000	0.33000	0.27000	0.25000	0.17000	0.20000	0.23000	0.31500	0.35000	0.40200	0.236	0.26	0.16	0.14	0.12
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00270	0.00250	0.00310	0.00250	0.00190	0.00220	0.00210	<0.006	<0.00286	<0.0115	0.00335J	<1.5E-05	<0.000015	0.0014	0.00083
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.01600	0.00950	0.01700	0.01700	0.00970	0.01900	0.00700	0.0183J	0.019J	0.0247J	0.0142	0.016	0.0082	0.0087	0.007
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00028	0.0001J	<0.00007	0.00016J	<0.00005	9.5E-05J	<0.00005	<0.008	<0.00381	**<0.0154**	<0.0008	<5.1E-05	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	0.0002J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.008**	**<0.00381**	**<0.0154**	**<0.0008**	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.013**	**<0.00619**	**<0.025**	**<0.0013**	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00047	0.00350	<0.0002	0.00075	0.00053	0.00033	0.00016J	**<0.037**	**<0.0176**	**<0.0712**	<0.0037	0.00038	<0.000037	<0.00012	7.9E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00023	0.00011J	<0.00007	0.00013J	<0.00005	0.00011J	<0.00005	<0.008	<0.00381	<0.0154	<0.0008	<2.1E-05	<0.000021	<0.000021	4.5E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.250**	**0.170**	**0.220**	0.092	**0.130**	**0.150**	**0.170**	**0.206**	**0.242**	**0.252**	**0.178**	**0.16**	0.085	0.086	0.069
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.011	<0.00524	<0.0212	<0.0011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00820	0.00670	0.00640	0.00680	0.00490	0.00420	0.00310	<0.007	0.0104J	<0.0135	0.00562	0.0081	0.0037	0.0034	0.0041
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.20000	0.15000	0.17000	0.09300	0.13000	0.13000	0.15000	0.17500	0.21200	0.21700	0.183	0.18	0.096	0.1	0.087
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**9.70**	**8.00**	**6.80**	**6.10**	**4.00**	**4.20**	**6.00**	**6.78**	**7.73**	**6.07**	**4.24**	**1.5**	**0.97**	**1.8**	**1.3**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.011	<0.00524	<0.0212	<0.0011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.01	<0.00476	<0.0192	<0.001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.061**	**<0.029**	**<0.117**	**<0.0061**	<0.00008	<0.000079	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.16000	0.12000	0.15000	0.08300	0.11000	0.08000	0.10000	0.13700	0.15800	0.19700	0.111	0.14	0.078	0.1	0.068
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.004	<0.0019	<0.00769	<0.0004	<3.5E-05	<0.000035	0.00065	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00430	0.00330	0.00350	0.00390	0.00210	0.00330	0.00190	<0.011	<0.00524	<0.0212	0.00242J	0.0036	0.0019	0.0016	0.002

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-42B											
					1/19/2010	7/14/2011	2/3/2012	7/19/2012	2/5/2013	8/1/2013	1/15/2014	07/18/2014	1/24/2018	3/19/2018	5/16/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.001	<0.001	<0.0025	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.001	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.001	<0.001	<0.0025	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.001	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.001	<0.001	<0.0025	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0011	<0.0011	<0.0025	0.00011J	<0.00011	<0.00019	0.00021J	<0.0003	<0.0003	<0.0015	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0013	<0.0013	**0.0097J**	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.001	<0.001	<0.0025	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.001	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.0031	<0.0031	<0.0075	<0.00026	<0.00026	<0.00058	0.00035J	<0.0003	<0.0003	<0.0015	<0.0003
Semi-Volatile Organic Compounds																
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	0.00013J	<0.00005	<0.00005	<0.00031	<0.00031	0.00092	0.000577	<0.00004	<0.00004	<0.00041	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<0.000058	<0.000059	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	**0.012**	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00005	8.9E-05J	0.00015J	0.0002J	0.00014J	0.00032J	<0.00007	<1.9E-05	<0.000019	<0.000019	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00021	0.00024	0.00170	0.00081	0.00036J	<0.00008	0.00036J	<0.00008	<2.7E-05	<0.000027	<0.000067	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<0.000015	<0.000015	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	0.00036	<0.00005	<0.00005	0.00019J	0.00012J	0.00047J	<0.00005	2.5E-05J	<0.000014	0.000019 J	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<5.1E-05	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00028	0.00080	<0.0001	0.00022	<0.00037	<0.00037	<0.00037	0.000513	0.00025	0.00015J	0.00021	6.1E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	3.8E-05J	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00037	0.00005J	0.00016J	6.6E-05J	0.00022J	0.00013J	0.00021J	<0.00008	<0.00002	<0.00002	<0.000039	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00005	<0.00005	6.2E-05J	<0.00011	0.00011J	<0.00011	<0.00011	0.00006J	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00059	0.00024	0.00085	0.00041	0.00064	0.00029J	0.00034J	<0.00007	0.00024	0.00014	0.000016 J	0.00011
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00016J	0.00026	0.00050	0.00016J	<0.00007	0.00013J	0.0002J	<0.00007	<0.00003	<0.00003	<0.000047	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00035	0.00048	0.00063	0.00190	0.00048	0.00288J	0.00242J	0.00043J	<0.00002	0.00049	<0.00061	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00008	<0.000079	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00016J	0.00012J	<0.00005	0.00036J	0.00012J	0.00050	<0.00006	7.7E-05J	<0.000021	0.000039 J	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	0.000801	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00035	0.00014J	0.00044	0.00023	0.00037J	0.00013J	0.00023J	<0.00011	0.00023	0.00014	<0.000019	0.0001

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-55B					
					2/2/2012	7/12/2012	1/30/2013	7/30/2013	1/14/2014	07/17/2014
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds										
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	**<0.01**	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.78000**	**0.89000**	**0.88100**	**0.80900**	**0.64800**	**0.846**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.01	<0.005	<0.006	<0.012	<0.006	<0.0024
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.13000	0.21000	0.16200	0.17300	0.13400	0.126
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	**<0.013**	**<0.01**	**0.0213J**	**0.0517J**	**<0.0075**	**0.0155J**
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.65000	0.90000	0.76000	0.78200	0.59700	0.591
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				**<0.011**		
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.39000	0.68000	0.62300	0.62400	0.48100	0.443
Semi-Volatile Organic Compounds										
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0005	<0.0005	**<0.0208**	**<0.0534**	**<0.529**	**<0.013**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	**35.00000**	**30.00000**	**2.06000**	**25.20000**	**44.20000**	**35.6**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.0006	<0.0006	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0005	<0.0005	<0.0151	<0.0388	<0.385	<0.00943
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.28000**	**0.64000**	**0.75700**	**0.86800**	**0.901J**	**0.512**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.0008	<0.0008	**<0.157**	**<0.403**	**<3.99**	**<0.0979**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.0005	<0.0005	**<0.106**	**<0.272**	**<2.69**	**<0.066**
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.19000	0.26000	0.34700	<0.0388	<0.385	0.19
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00570	0.01000	<0.0113	<0.0291	<0.288	<0.00708
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.01600	0.03000	0.0492J	0.0437J	<0.24	0.027J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.0011J	0.0012J	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**<0.0005**	**<0.0005**	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.001	<0.001	**<0.0698**	**<0.18**	**<1.78**	**<0.0436**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.0005	0.0009J	<0.0151	<0.012	<0.385	<0.00943
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.15000**	**0.23000**	<0.0151	**0.30900**	**<0.385**	**0.138**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.0005	<0.0005	<0.0208	<0.0534	<0.529	<0.013
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00470	0.01400	0.0153J	<0.034	<0.337	0.0119J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.09000	0.15000	0.16600	0.195J	<0.337	0.0816
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**21.00000**	**24.00000**	**2.30000**	**21.90000**	**24.30000**	**13.5**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.0005	<0.0005	<0.0208	**<0.0534**	**<0.529**	<0.013
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.0005	<0.0005	<0.0189	<0.0485	**<0.481**	<0.0118
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.0005	0.00069J	**<0.115**	**<0.296**	**<2.93**	**<0.0719**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.05700	0.13000	0.13000	0.228J	<0.288	0.1
Phenol	108-95-2	8270	7.30E+00	2.20E+01	**150**	**130**	0.09990	**103**	**454**	**127**
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00420	0.00760	<0.0208	<0.0534	<0.529	<0.013

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-62B															
					2/4/2009	1/21/2010	7/14/2010	1/27/2011	7/27/2011	8/25/2011	2/8/2012	7/26/2012	2/11/2013	8/2/2013	1/29/2014	07/29/2014	1/24/2018	3/20/2018	5/24/2018	1/23/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	0.0043J		<0.001	0.002J	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	0.0021	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.00071J	<0.0005	<0.0005	<0.0005	0.04100		<0.0011	0.0021J	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	0.013	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013		<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	0.00950		<0.001	0.0012J	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	0.003	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03																
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	0.02500		<0.0031	0.0053J	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	0.014	<0.0003
Semi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<0.000058	<0.000058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006		<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<0.000042	<0.000042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00012J	0.00160	0.00064	<0.00007	<0.00005		<0.00005	0.00006J	0.00017J	<0.00007	<0.00007	<0.00007	<1.9E-05	<0.000019	0.00011	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008		<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<0.000047	<0.000047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00780	0.03900	0.00041	<0.00009	0.21000		0.02600	0.08500	0.00024J	<0.00008	<0.00008	0.00024J	0.00006J	0.023	0.11	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.00066	<0.00007	<0.00007	0.00260		0.00130	0.00084	0.00011J	<0.00006	<0.00006	<0.00006	6.1E-05J	0.00063	0.0013	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00024	0.00110	<0.00007	<0.00007	0.01300		<0.00005	0.00320	0.00072	<0.00005	<0.00005	7E-05J	0.00036	0.00051	0.0044	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00041	0.00098	0.00160	0.00022	0.00042		0.00029	0.00013J	<0.00037	<0.00037	<0.00037	<0.00037	0.00026	0.00018J	<0.00013	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<0.000021	<0.000021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00240	0.01300	0.00034	<0.00008	**0.15**	**0.23**	0.00012J	0.03800	0.00017J	<0.00008	<0.00008	9.2E-05J	<0.00002	0.0031	0.048	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00065	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	7.8E-05J	<0.00011	0.00011J	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00012J	0.00110	<0.00007	0.00014J	0.00790		0.00053	0.00400	0.00033J	<0.00007	<0.00007	<0.00007	0.00052	0.0015	0.0041	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00120	0.01500	0.00016J	<0.00007	0.05800		0.00020	0.00870	<0.00007	<0.00007	<0.00007	0.00013J	0.00015	0.0047	0.034	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00270	0.00028	0.00960	<0.0001	0.03500		0.00021	0.00560	0.00129J	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	0.038	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<0.000024	<0.000024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<0.000025	<0.000025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	0.00033	<0.000079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00087	0.00250	0.00025	<0.00007	0.03500		0.00014J	0.00260	0.00047	<0.00006	<0.00006	0.00014J	<2.1E-05	0.00023	0.0083	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		5.3E-05J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<0.000035	<0.000035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.00047	<0.00007	7.7E-05J	0.00330		0.00037	0.00210	0.00039J	<0.00011	<0.00011	<0.00011	0.00039	0.00077	0.002	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-68B									
					2/16/2012	7/16/2012	2/6/2013	8/8/2013	1/22/2014	07/24/2014	1/29/2018	3/21/2018	6/6/2018	1/15/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds														
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.005	<0.0005	**<0.014**	**<0.014**	<0.0002	<0.0028	<0.001	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**2.70000**	**2.40000**	**2.35000**	**2.88000**	**1.50000**	**2.18**	**2.1**	**1.4**	**1.9**	**2**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.005	<0.0005	0.0273J	<0.012	0.00045J	<0.0024	<0.0015	<0.0003	<0.0003	0.00056 J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.45000	0.49000	0.44900	0.55000	0.36400	0.403	0.61	0.29	0.5	0.5
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	**<0.0065**	<0.001	**<0.015**	**0.10100**	<0.00022	<0.003	<0.005	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.91000	0.93000	0.70100	0.62500	0.32900	0.538	0.45	0.2	0.45	0.086
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				**<0.011**		**0.007J**				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	1.20000	1.30000	1.04000	1.28000	0.85700	1.08	1.6	0.83	1.4	1.2
emi-Volatile Organic Compounds														
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00025	**<0.00524**	**<0.00519**	**<0.011**	**<0.0055**	<0.00021	<0.00021	<0.00021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.19000	0.27000	0.27300	<0.0146	**0.53600**	0.445	0.051J	0.07	0.23 J	0.05
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00025	**<0.00619**	**<0.00613**	**<0.013**	**<0.0065**	<0.00058	<0.00059	<0.00058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.0003	**<0.00381**	**<0.00377**	**<0.008**	**<0.004**	<0.00042	<0.00042	<0.00042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00025	<0.00381	<0.00377	<0.008	<0.004	<0.00021	<0.00021	<0.00021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.66000**	**1.30000**	**0.95200**	**1.41000**	**1.10000**	**0.852**	**0.6**	**0.67**	**1.4**	**0.33**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.0004	**<0.0395**	**<0.0392**	**<0.083**	**<0.0415**	<0.0002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00025	<0.0267	<0.0264	**<0.056**	<0.028	<0.00047	<0.00047	<0.00047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.15000	0.23000	0.26100	0.30400	0.26300	0.178	0.13	0.21	0.34	0.1
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00230	0.00300	<0.00286	<0.00283	<0.006	<0.003	0.002	0.0021	0.0022	0.0012
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.04600	0.03400	0.0194J	0.023J	0.0428J	0.0169J	0.014	0.014	0.015	0.008
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00600	0.00540	<0.00381	<0.00377	**0.0123J**	<0.004	<0.0005	<0.00051	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.00170**	**0.00160**	**<0.00381**	**<0.00377**	**<0.008**	**<0.004**	<0.0002	<0.0002	<0.0002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00025	**<0.00619**	**<0.00613**	**<0.013**	**<0.0065**	<0.0003	<0.0003	<0.0003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.0001	<0.0005	**<0.0176**	**<0.0175**	**<0.037**	**<0.0185**	<0.00037	<0.00037	<0.00037	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00520	0.00500	<0.00381	<0.00377	0.00806J	<0.0024	<0.00021	<0.00021	<0.00021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.190**	**0.300**	**0.260**	**0.325**	**0.284**	**0.198**	**0.16**	**0.24**	**0.38**	**0.1**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.00025	<0.00524	<0.00519	<0.011	<0.0055	<0.0002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.05000	0.04400	<0.00333	0.00764J	0.05200	0.00825J	0.0052	0.006	0.0063	0.0031
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.09600	0.13000	0.11800	0.15400	0.14900	0.0966	0.082	0.092	0.18 J	0.057
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**14**	**26**	**12**	**31**	**17**	**10.5**	**9.2**	**12**	**23**	**5**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00025	<0.00524	<0.00519	<0.011	<0.0055	<0.00024	<0.00024	<0.00024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	0.00110	<0.00025	<0.00476	<0.00472	<0.01	<0.005	<0.00025	<0.00025	<0.00025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00025	**<0.029**	**<0.0288**	**<0.061**	**<0.0305**	<0.00079	<0.0008	<0.00079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.19000	0.24000	0.12000	0.13600	0.26300	0.106	0.099	0.15	0.22 J	0.065
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.03500	0.05800	0.04210	0.07950	0.08620	0.00988J	<0.00035	<0.00035	<0.00035	0.0019 J
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.03100	0.02400	<0.00524	<0.00519	0.0341J	<0.0055	0.0025	0.0032	0.0058 J	0.0015

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-73B						MW-74B								
					2/2/2012	7/16/2012	1/30/2013	7/30/2013	1/15/2014	07/18/2014	2/9/2012	7/26/2012	4/2/2013	1/29/2014	08/28/2014	1/30/2018	3/28/2018	6/7/2018	1/23/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.0005	<0.00014	0.00068J	<0.0002	<0.00014	**<0.01**	<0.005	<0.0028	<0.0007	<0.0028	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.00970**	<0.0005	0.00022J	0.00016J	<0.0002	0.00309	**0.35000**	**0.71000**	**0.55200**	**0.79500**	**0.652**	**0.47**	**0.58**	**0.71**	**0.83**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.01	<0.005	<0.0024	<0.0006	<0.0025	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.00590	<0.0005	<0.00011	<0.00011	0.00044J	<0.00011	0.08600	0.14000	0.14700	0.20300	0.2	0.25	0.12	0.17 J	0.22
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	**<0.013**	**<0.01**	<0.003	<0.00075	0.003	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.01500	<0.0005	0.00034J	<0.00015	0.00058	<0.00015	0.32000	0.56000	0.53300	0.77400	0.741	0.75	0.56	0.74	0.69
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03						<0.00011									
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0059J	<0.0015	<0.00026	<0.00026	0.00133J	<0.00026	0.25000	0.38000	0.42700	0.55300	0.558	0.53	0.33	0.51 J	0.63
emi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**	**<0.0021**	<0.00021	**<0.0021**	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00700	0.00280	<0.00031	<0.00031	0.00095	<0.00031	**55**	**41.0**	**56.9**	**525**	**70.6**	**59**	**30**	**57**	**9**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.0005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.0005	<0.0005	**<0.125**	**<0.254**	**<0.255**	**<0.0058**	<0.00058	**<0.0058**	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.0006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<0.0006	<0.0006	**<0.0769**	**<0.151**	**<0.157**	**<0.0042**	<0.00042	**<0.0042**	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0005	<0.0005	<0.0769	<0.151	<0.157	<0.0021	<0.00021	<0.0021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00055J	0.00011J	<0.00007	8.8E-05J	0.01610	<0.00007	**0.39000**	**0.43000**	**0.67300**	**5.52**	**0.95J**	**0.3**	**2.4**	**0.99**	**0.22**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.0008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.0008	<0.0008	**<0.798**	**<1.57**	**<1.63**	<0.002	<0.0002	<0.002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.0005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<0.0005	<0.0005	**<0.538**	**<1.06**	**<1.1**	0.033J	<0.00047	<0.0047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.01200	0.00016J	0.00019J	0.00012J	0.01120	<0.00008	0.29000	0.21000	0.31J	**2.40**	0.413J	0.31	1.4	0.33	0.098
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.0013J	<0.00005	7E-05J	<0.00006	<0.00006	<0.00006	0.00580	0.00620	<0.0577	<0.113	<0.118	0.012	0.019	0.0098 J	0.0032
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.0005	0.00012J	0.00019J	0.00025J	0.00462	0.00015J	0.03700	0.02400	<0.0481	0.282J	<0.098	0.027	0.58	0.034	0.0074
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.0005	5.7E-05J	<0.00008	<0.00008	0.00131	<0.00008	<0.0005	0.00220	**<0.0769**	**<0.151**	**<0.157**	<0.005	**0.22**	<0.005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**<0.0005**	<0.00005	<0.00008	<0.00008	**0.00039J**	<0.00008	**<0.0005**	**0.00085J**	**<0.0769**	**<0.151**	**<0.157**	**<0.002**	**0.064**	**<0.002**	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.0005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.0005	<0.0005	**<0.125**	**<0.245**	**<0.255**	**<0.003**	<0.0003	**<0.003**	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.001	0.00012J	<0.00037	<0.00037	0.0015J	0.000603	<0.001	<0.001	**<0.356**	**<0.698**	**<0.725**	<0.0037	<0.00037	<0.0037	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.0005	9.6E-05J	<0.00008	<0.00008	0.00119	<0.00008	<0.0005	0.0018J	<0.0769	<0.151	<0.157	<0.0021	0.23	<0.0021	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00078J	6.7E-05J	<0.00008	<0.00008	0.01020	<0.00008	**0.25000**	**0.19000**	**0.252J**	**1.84**	**<0.157**	**0.24**	**1.4**	**0.24**	0.079
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.0005	<0.00005	<0.00011	0.00013J	0.00017J	<0.00011	<0.0005	<0.0005	<0.106	<0.208	<0.216	<0.002	<0.0002	<0.002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.01000	5.9E-05J	0.00014J	<0.00007	0.00937	<0.00007	0.00440	0.01800	<0.0673	<0.132	<0.137	0.015	**1.4**	0.017	0.0038
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00410	0.00021	<0.00007	8.1E-05J	0.00951	<0.00007	0.17000	0.14000	0.196J	**1.34**	0.263J	0.19	**1.4**	0.19	0.056
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0014J	0.00064	0.00044J	0.00067J	0.09060	<0.00008	**16.00**	**10.00**	**13.90**	**139.00**	**17.90**	**18**	**21**	**19**	**4**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.0005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**	<0.0024	<0.00024	<0.0024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.0005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0962	<0.189	**<0.196**	<0.0025	<0.00025	<0.0025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.0005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.0005	<0.0005	**<0.587**	**<0.189**	**<1.2**	**<0.0079**	<0.00079	**<0.0079**	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00087J	8.9E-05J	<0.00006	0.00023J	0.03480	<0.00006	0.15000	0.15000	0.169J	**1.28**	0.307J	0.16	**3.7**	0.17	0.046
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00530	0.00015J	<0.00004	<0.00004	0.00052	<0.00004	**43.0**	**38.0**	**63.2**	**420.0**	**53.3**	**56**	**25**	**39**	5
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00770	<0.00005	<0.00011	<0.00011	0.00725	<0.00011	0.00500	0.01000	<0.106	<0.208	<0.216	0.0079J	**0.83**	0.0077 J	0.002

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-75B*					MW-80B					MW-81B				
					2/8/2012	7/26/2012	4/2/2013	1/29/2014	07/24/2014	08/28/2014	1/30/2018	3/28/2018	5/24/2018	1/10/2019	07/24/2014	1/29/2018	3/28/2018	5/25/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	**<0.01**	<0.0025	<0.0028	<0.0007	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.61000**	**0.85000**	**0.36900**	**0.50200**	**0.298**	9E-05J	<0.0002	<0.0002	<0.0002	<0.0002	<0.00008	<0.0002	<0.0002	0.00021 J	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.01	<0.0025	<0.0024	<0.0006	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	0.00036 J	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.13000	0.10000	0.06900	0.07730	0.0737	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	**<0.013**	<0.005	<0.003	<0.00075	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.51000	0.50000	0.28200	0.32800	0.273	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.00011						<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.41000	0.33000	0.24700	0.27600	0.255	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
emi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0005	<0.0005	**<0.00212**	**<0.0519**	**<0.00214**	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.18000	**0.64000**	0.06950	**6.35000**	<0.00602	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<0.00013	<5.8E-05	<5.9E-05	0.00079	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.0006	<0.0006	**<0.00154**	**<0.0377**	**<0.00155**	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<0.00008	<4.2E-05	<4.2E-05	0.001	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0005	<0.0005	<0.00154	<0.0377	<0.00155	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00008	<2.1E-05	<2.1E-05	0.0018	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.62**	**0.60**	**0.10**	**3.18**	**0.546**	0.00016J	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.0008	<0.0008	**<0.016**	**<0.392**	**<0.0161**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.0005	<0.0005	<0.0108	**<0.264**	<0.0109	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.34000	0.26000	0.06970	**2.57000**	0.429	8.4E-05J	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.01300	0.00580	<0.00115	0.0672J	0.0121	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.03500	0.04500	0.00948J	0.60500	0.0626	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00064J	0.00470	<0.00154	**0.0667J**	0.00748J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00008	<0.00005	<5.1E-05	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**<0.0005**	**0.0013J**	**<0.00154**	**<0.0377**	**<0.00155**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	<0.001	<0.001	**<0.00712**	**<0.175**	**<0.00718**	0.00106	<6.9E-05	<3.7E-05	<0.00012	<3.7E-05	<0.00037	<3.7E-05	<3.7E-05	<0.00006	5.8E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00062J	0.00420	<0.00154	0.0704J	0.00677J	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.29000**	**0.23000**	0.05330	**1.56000**	**0.214**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.0005	<0.0005	<0.00212	<0.0519	<0.00214	<0.00011	<0.00002	<0.00002	<4.7E-05	<0.00002	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.01600	0.04000	0.01030	0.70800	0.0914	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.19000	0.17000	0.04250	**1.59**	0.218	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**8.90**	**9.30**	0.21100	**27.10**	**5.7**	0.00157	<0.00002	<0.00002	<0.00002	6.8E-05 J	<0.00008	<0.00002	<0.00002	<0.00002	0.00016
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.0005	<0.0005	<0.00212	**<0.0519**	<0.00214	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.0005	<0.0005	<0.00192	<0.0472	<0.00194	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.0005	<0.0005	**<0.0117**	**<0.288**	**<0.0118**	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<0.00061	<7.9E-05	<0.00008	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.24000	0.27000	0.06060	**2.13000**	0.238	7.9E-05J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	9.4E-05J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00660	0.00270	0.0069J	0.108J	<0.00078	0.00018J	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00980	0.02600	0.00617J	0.41600	0.0537	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-82B				MW-83B					MW-84B					MW-89B		MW-90B	
					2/1/2018	3/22/2018	6/6/2018	1/22/2019	2/8/2018	3/22/2018	6/7/2018	7/19/2018	1/15/2019	2/8/2018	3/27/2018	6/7/2018	7/19/2018	1/24/2019	7/19/2018	1/22/2019	7/19/2018	1/22/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																						
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	**0.018**	**0.019**	**0.02**	**0.03**	**0.032**	**0.0097**	**0.0086**	0.0017	0.002	0.0024	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	0.08	0.1	0.085	0.068	0.091	0.039	0.037	0.0036	0.0029	0.0051	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0002	0.0055	0.0046	0.0049	0.007	0.0082	0.0025	0.00099J	<0.0002	<0.0002	0.00056 J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03																		
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0003	0.00065J	<0.0003	<0.0003	0.1	0.11	0.091	0.066	0.1	0.035	0.031	0.003	0.0019	0.0033	<0.0003	<0.0003	<0.0003	<0.0003
emi-Volatile Organic Compounds																						
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00021	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05	**0.0014J**	<0.00021	<0.00021	<0.00021	<2.1E-05	<0.00021	<2.1E-05	<2.1E-05	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.00004	<0.00004	<0.00004	<0.0004	<0.0004	<0.00004	<0.00004	<0.00004	<0.0004	<0.0004	0.0017 J	0.00048 J	<0.00016	<0.0004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<0.00058	<0.00059	<5.8E-05	<5.8E-05	<5.8E-05	<0.00058	<0.00058	<0.00058	<0.00058	<5.8E-05	<0.00058	<5.8E-05	<5.8E-05	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<0.00042	<0.00042	<4.2E-05	<4.2E-05	<4.2E-05	<0.00042	<0.00042	<0.00042	<0.00042	<4.2E-05	<0.00042	<4.2E-05	<4.2E-05	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00021	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05	<0.00021	<0.00021	<0.00021	<0.00021	<2.1E-05	<0.00021	<2.1E-05	<2.1E-05	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	**0.15**	**0.75**	**0.23**	0.076	0.086	**0.55**	**0.58**	0.025	**0.2J**	<1.9E-05	5.4E-05J	<1.9E-05	<1.9E-05	<0.000019
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	**0.0038**	<0.00002	<0.00002	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<0.00047	<0.00047	<4.7E-05	<4.7E-05	<4.7E-05	<0.00047	<0.00047	<0.00047	<4.7E-05	<4.7E-05	<0.00047	<4.7E-05	<4.7E-05	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05	0.098	0.33	0.11	0.027	0.026	0.22	0.27	0.031	0.14J	3.2E-05 J	<2.7E-05	<2.7E-05	<2.7E-05	<0.000027
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	0.00086J	0.0016	0.00064	<1.5E-05	0.00034	0.003	0.0032	0.00061 J	0.00062 J	4.3E-05 J	<1.5E-05	<1.5E-05	<1.5E-05	<0.000015
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<1.4E-05	6.8E-05J	9.1E-05 J	4.2E-05 J	0.01	0.011	0.007	0.0014	0.0012	0.02	0.0092	0.0022	0.0042J	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<0.000014
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.00051	5.8E-05 J	<0.0005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.0002	<0.00002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.00003	<0.00003	<0.00003	<0.0003	<0.0003	<0.00003	<0.0003	<0.00003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00011J	<3.7E-05	<0.00056	<3.7E-05	<0.00037	<0.00037	<0.00012	<0.00037	<3.7E-05	0.00056J	<0.00037	<0.00037	<0.00037	<3.7E-05	6.5E-05J	<3.7E-05	9.7E-05J	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00021	<0.00021	0.00009 J	<0.00021	<2.1E-05	<0.00021	<0.00021	<0.00021	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00002	<0.00002	<0.00002	<0.00002	0.043	**0.17**	0.061	0.023	0.02	**0.13**	**0.22**	0.019	0.077J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<9.4E-05	0.00021	0.00015 J	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00001	<0.00001	<0.00001	<0.00001	0.0035	0.0043	0.0046	0.00057	0.00051	0.0039	0.0029	0.00069 J	0.0016 J	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00003	<0.00003	<0.00003	<0.00003	0.046	0.072	0.039	0.0083	0.0099	0.074	0.076	0.011	0.039J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00019	<0.00015	<0.00002	<0.00002	**2.6**	**14**	**2**	**1.5**	**1.6**	**2.4**	**2.2**	0.066	**0.95J**	<0.00002	0.0009	<0.00002	<0.00002	0.000045 J
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<0.00024	<0.00024	<2.4E-05	<2.4E-05	<2.4E-05	<0.00024	<0.00024	<0.00024	<0.00024	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<0.00025	<0.00025	<2.5E-05	<2.5E-05	<2.5E-05	<0.00025	<0.00025	<0.00025	<0.00025	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<0.00079	<0.0008	<7.9E-05	<7.9E-05	<7.9E-05	<0.00079	<0.00079	<0.00079	**0.005J**	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	0.04	0.071	0.045	0.0086	0.0074	0.088	0.072	0.013	0.043J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.000021
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<0.00035	<0.00035	<3.5E-05	<3.5E-05	<3.5E-05	<0.00035	<0.00035	0.00062 J	<0.00035	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	0.0029	0.0023	0.0026	0.00037	0.0003	0.0025	0.0018	0.00036 J	0.00097 J	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<0.000019

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	P-11														
					2/4/2009	1/21/2010	6/22/2010	1/18/2011	7/27/2011	2/2/2012	7/26/2012	2/5/2013	8/1/2013	1/15/2014	07/29/2014	1/24/2018	3/23/2018	5/24/2018	1/9/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.00021J	<0.00008	<0.0002	<0.0002	0.00021 J	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	0.00025J	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011							
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	0.00032 J	<0.0003
emi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.9E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00023	0.00005J	0.00013J	<0.00007	0.00026J	<0.00007	<1.9E-05	<1.9E-05	0.00015	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00570	<0.00009	0.00370	<0.00009	0.00075	0.03000	0.01800	<0.00008	<0.00008	0.00951	0.000653	<2.7E-05	0.00021	0.081	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	0.00020	0.0001J	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00015J	<0.00007	0.00012J	<0.00007	0.00012J	0.00160	0.00039	0.00025J	1E-04J	0.00050	0.00012J	<1.4E-05	<1.4E-05	0.0037	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00022	0.00051	0.00020	0.00160	0.00018J	0.00013J	0.00021	0.00036J	0.00059J	0.00403	0.000711	0.00018J	<3.7E-05	<6.3E-05	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00024	<0.00008	9.3E-05J	<0.00008	0.00013J	0.00350	0.00059	0.00014J	<0.00008	0.00103	0.00018J	<0.00002	<0.00002	0.0016	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	<0.00002	<2.4E-05	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00042	<0.00007	8.1E-05J	0.00220	0.00048	<0.00007	<0.00007	0.00029J	7.7E-05J	3.8E-05J	<0.00001	0.0056	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00180	<0.00007	0.00160	<0.00007	8.2E-05J	0.01100	0.00440	7.7E-05J	<0.00007	0.00264	0.00034J	4.5E-05J	<0.00003	0.037	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00270	<0.0001	0.00270	<0.0001	0.00013J	0.00170	0.00026	0.00066	<0.00008	0.05540	<0.00008	<0.00002	<0.00002	0.0024	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00048	<0.00007	0.00053	<0.00007	8.6E-05J	0.00450	0.00055	8.5E-05J	<0.00006	0.00189	0.00032J	<2.1E-05	<2.1E-05	0.04	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00015J	<0.00007	<0.00005	0.00130	0.00023	<0.00011	<0.00011	0.00027J	<0.00011	3.9E-05J	<1.9E-05	0.0032	<1.9E-05

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-2b
Summary of Groundwater Sampling Results - B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	TW-41B											
					1/19/2010	7/27/2011	2/1/2012	7/26/2012	2/5/2013	7/31/2013	1/16/2014	07/25/2014	1/24/2018	3/20/2018	5/16/2018	1/9/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.001	<0.001	<0.0005	<0.00008	0.000347J	<0.0002	0.000594J	0.00065J	0.001J	0.0013	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	0.00750	<0.0011	<0.0005	<0.00011	0.00115	<0.00019	0.00501	<0.0003	0.0036	0.0029	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	0.0033J	<0.001	<0.0005	<0.00015	0.00015J	<0.00017	0.00116	<0.0002	0.00068J	0.0012	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	0.0052J	<0.0031	<0.0015	<0.00026	0.000386J	<0.00058	0.0101	0.0079	0.013	0.015	<0.0003
emi-Volatile Organic Compounds																
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00005	<0.00005	0.00140	<0.00031	<0.00031	<0.00031	<0.00031	<0.000041	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<0.000043	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.01500	<0.00005	0.0001J	<0.00007	0.000256J	<0.0000846	0.0125	0.0003	0.011	0.026	0.0098
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<0.000048	<0.000047	<0.000047	<0.000047
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.04100	<0.00005	0.03900	<0.00008	0.02520	<0.00008	0.142	0.087	0.072	0.08	0.058
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00007	0.00053	<0.00005	0.00041	0.0000751J	0.000409J	0.0000926J	0.00185	0.0019	0.0017	0.0016	0.00091
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	0.00220	0.00016J	0.00110	0.00098	0.00161	0.00093	0.00697	0.0016	0.0034	0.0039	0.0023
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	0.0000879J	<0.00008	<0.00008	<0.000051	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	0.000097 J
Bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.000031	<0.00003	<0.00003	<0.00003
Bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.00110	0.00022	0.00023	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	0.000058J	<0.000037	<0.000037	<0.000037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	0.02900	<0.00005	0.01600	<0.00008	0.01040	<0.00008	0.0845	0.022	0.026	0.034	0.026
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00005	<0.00005	0.0001J	<0.00011	0.000138J	0.000116J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	0.00220	<0.00005	0.00150	<0.00007	0.00153	0.000206J	0.00475	0.0019	0.0026	0.0022	0.0014
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00015J	0.02800	<0.00005	0.0054J	0.0000917J	0.00386	<0.00007	0.00007	0.035	0.037	0.045	0.035
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00014J	0.04900	<0.00051	<0.0013	0.000156J	0.00309J	<0.00259	0.149	0.027	0.12	0.28	0.061
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.000026	<0.000025	<0.000025	<0.000025
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.000081	<0.000079	<0.000079	<0.000079
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.01900	<0.00005	<0.00005	<0.00006	0.00066	<0.000176	0.0573	0.00048	0.0089	0.013	0.0035
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00005	0.000057J	0.00160	<0.00004	<0.00004	<0.00004	<0.00004	<0.000036	<0.000035	<0.000035	<0.000035
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.00095	<0.00005	0.00066	<0.00011	0.00070	0.000223J	0.00209	0.00083	0.0011	0.001	0.00056

1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-12C														
					2/4/2009	1/19/2010	6/22/2010	1/18/2011	7/26/2011	2/1/2012	7/19/2012	2/5/2013	7/31/2013	1/14/2014	07/25/2014	1/23/2018	3/19/2018	5/16/2018	1/9/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000145J	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	**0.209**	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	0.000079J	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00045	0.00024	0.00011J	0.00012J	0.000099J	<0.00005	0.000086J	0.000146J	0.000129J	0.000164J	0.000146J	0.000091J	0.000092J	<7.8E-05	0.00039
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00052	0.00019J	<0.00009	0.00012J	<0.00005	<0.00005	0.00011J	<0.00008	<0.00008	<0.00008	0.000114J	0.0002	0.0001	<2.7E-05	0.093
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	0.00064	<1.5E-05	0.00082
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	7.45E-05J	<0.00005	<0.00005	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	0.0084
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.00014
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	4.1E-05 J
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.0003	0.00077	0.00099	<0.0002	0.0004	<0.0001	0.00011J	<0.00037	<0.00037	<0.00037	<0.00037	<0.00009	0.00013J	<3.7E-05	0.00011 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	0.00013
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.0004	0.00014J	<0.00008	0.00011J	<0.00005	<0.00005	0.000054J	8.65E-05J	8.57E-05J	9.79E-05J	0.000091J	0.0001	<0.00002	<5.2E-05	0.067
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.00011J	<0.00011	<0.00011	0.000034J	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	0.0071
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00037	0.00014J	<0.00007	0.000099J	0.000071J	0.0001J	0.000082J	0.000149J	0.000102J	<0.00007	<0.00007	<0.00003	<0.00003	8.7E-05 J	0.085
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.003	0.0017	0.00046	0.00099	0.00048	0.00054	0.00052	0.000729	0.000585J	0.00008J	0.000598	0.00046	0.0003	<0.00061	<0.00017
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	0.00015J	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00048	0.00015J	<0.00007	0.00011J	<0.00005	<0.00005	0.000059J	<0.00006	<0.00006	0.00006J	0.000081J	0.000069J	<2.1E-05	4.8E-05 J	0.052
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	0.0031

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-15C														
					2/4/2009	1/18/2010	6/23/2010	1/17/2011	7/13/2011	2/2/2012	7/19/2012	1/30/2013	7/30/2013	1/14/2014	07/17/2014	1/23/2018	3/18/2018	5/15/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.00096J	0.0012J	0.001J	0.00096J	<0.001	<0.001	<0.0005	0.000951J	0.000831J	0.000863J	0.000781J	0.00063J	0.00053J	0.00052 J	0.00058 J
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.00068J	0.00058J	<0.0005	<0.0005	<0.0011	0.0017J	<0.0005	0.000408J	0.000203J	0.000275J	0.000219J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000323J	0.000263J	0.000305J	0.00019J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000604J	0.000839J	0.000581J	0.000392J	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.011**	<0.00011	<0.0011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**113**	<0.00031	<0.0031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.013**	<0.00013	<0.0013	<0.00013	<5.8E-05	<5.8E-05	<5.9E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.008**	<0.00008	<0.0008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.008	<0.00008	<0.0008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.000084J	<0.00007	<0.00007	<0.00007	<0.00005	0.000099J	0.00022	**0.35**	<0.00007	<0.0007	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.083**	<0.00083	**<0.0083**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.056**	<0.00056	<0.0056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.034	0.0097	0.013	0.032	0.016	0.041	0.042	0.13	0.0574	0.0912	0.0455	0.027	0.021	0.02	0.02
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00052	0.00041	0.00062	0.0011	0.0012	0.0013	0.002	<0.006	0.00268	<0.0006	0.00342	0.0027	0.002	0.0022	0.0014
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00078	0.00031	<0.00007	<0.00007	<0.00005	0.00021	0.00045	0.0191J	9.45E-05J	<0.0005	0.000315J	0.00047	0.000095J	6.7E-05 J	0.00031
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.008	<0.00008	<0.0008	<0.00008	<0.00005	<0.00005	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.008**	<0.00008	**<0.0008**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.013**	<0.00013	**<0.0013**	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	0.00065	0.00059	0.00044	0.00057	<0.0001	0.00012J	**<0.037**	<0.00037	<0.0037	0.000526	<6.7E-05	<3.7E-05	7.2E-05 J	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.008	<0.00008	<0.0008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.034	0.0075	0.005	0.018	0.0046	0.027	0.021	**0.116**	0.0141	0.0317	0.0102	0.0081	0.0029	0.0046	0.0053
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000059J	<0.011	<0.00011	<0.0011	<0.00011	<0.00002	<0.00002	3.7E-05 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0006	0.00029	0.0002J	0.0003	0.00031	0.0016	0.00079	<0.007	0.000634	0.00158J	0.000763	0.00094	0.00054	0.00074	0.00075
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.0027	0.0011	0.00071	0.0017	0.00074	0.0025	0.0014	0.0769	0.00159	0.00224J	0.00135	0.001	0.00045	0.00064	0.00056
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0016	0.00057	0.00094	0.00091	0.00046	0.0011	0.0018	**89.7**	0.00122J	0.000769J	0.000748	0.00042	<0.00031	<0.00039	<0.00032
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.011	<0.00011	<0.0011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.01	<0.0001	<0.001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.061**	<0.00061	**<0.0061**	<0.00061	<7.9E-05	<7.9E-05	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00014J	<0.00007	<0.00007	0.00019J	0.0015	0.00038	0.0868	0.000354J	<0.0006	<0.00006	<2.1E-05	0.00019	0.00041	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**61.8**	<0.00004	<0.0004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00027	0.00012J	0.00011J	0.00015J	0.00018J	0.00093	0.00046	<0.011	0.00037J	<0.0011	0.00043J	0.00049	0.00035	0.00043	0.00041

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-17C														
					2/4/2009	1/18/2010	6/23/2010	1/17/2011	7/13/2011	2/1/2012	7/12/2012	4/1/2013	7/30/2013	1/13/2014	07/17/2014	1/31/2018	3/18/2018	5/16/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.005	<0.0005	<0.00014	<0.0014	<0.0007	<0.00014	<0.0002	<0.0002	<0.001	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.03**	**0.0083**	**0.024**	**0.023**	**0.01**	**0.016J**	**0.013**	**0.0114**	**0.0162**	**0.00939**	**0.0132**	**0.014**	**0.0067**	**0.0099**	**0.012**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.0005	<0.0005	<0.001	<0.005	<0.0005	<0.00012	<0.0012	<0.0006	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.17	0.053	0.2	0.21	0.021	0.19	0.17	0.161	0.225	0.123	0.0374	0.042	0.16	0.12	0.027
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	**<0.0065**	<0.001	0.00368J	**0.00786J**	<0.00075	<0.00015	<0.001	<0.001	<0.005	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.008	0.0042J	0.0071	0.0081	0.0046J	0.0067J	0.0057	0.0049J	0.00743J	0.00471J	0.0073	0.0097	0.0038	0.0069	0.0087
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.25	0.046	0.33	0.42	0.029	0.22	0.21	0.217	0.27	0.141	0.0482	0.071	0.1	0.094	0.05
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	**<0.011**	**<0.011**	**<0.00519**	<0.00021	<0.00021	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.0028	0.044	0.0018	0.0035	**1.5**	<0.00005	0.039	<0.00031	<0.031	<0.031	**7.09**	**0.59**	0.03	0.08	0.47
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	**<0.013**	**<0.013**	**<0.00613**	<0.00058	<0.00058	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	**<0.008**	**<0.008**	**<0.00377**	<0.00042	<0.00042	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.008	<0.008	<0.00377	<0.00021	<0.00021	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.085	0.063	**0.099**	0.075	0.0073	0.062	**0.1**	**0.176**	**0.151**	**0.144**	0.0203J	0.094	**0.12**	**1.1**	0.025
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	**<0.083**	**<0.083**	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.00502	**<0.056**	**<0.056**	<0.0264	0.0035J	<0.00047	0.0017	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.14	0.13	0.14	0.18	0.021	0.097	0.14	0.216	0.239	0.218	0.0299	0.043	0.15	1.4	0.031
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.0012	0.0013	0.0016	0.0017	0.00028	0.0011	0.0018	<0.00006	<0.006	<0.006	<0.00283	0.00076J	0.002	0.0017	0.00047
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.0084	0.0057	0.0071	0.015	0.0016	0.0048	0.008	0.011	0.0144J	0.0156J	<0.00236	0.0017	0.01	0.0088	0.0012
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00018J	0.00013J	0.00016J	0.0012	0.00017J	0.000091J	0.00022	0.00016J	<0.008	<0.008	<0.00377	<0.0005	<0.0005	0.00011	6.2E-05 J
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	**0.00027**	<0.00005	<0.00005	<0.00005	<0.00008	**<0.008**	**<0.008**	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	**<0.013**	**<0.013**	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	0.0039	0.0018	0.0015	**0.012**	0.0001	0.0048	0.00148	**<0.037**	**0.0491J**	**<0.0175**	0.005	0.0053	0.0018	0.00062
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00017J	0.00012J	0.00017J	0.001	<0.00005	0.00013J	0.00016J	0.000167J	<0.008	<0.008	<0.00377	<0.00021	<0.00021	0.00011	5.9E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.13**	**0.11**	**0.13**	**0.19**	0.021	0.096	**0.14**	**0.185**	**0.199**	**0.184**	0.0255	0.039	**0.13**	**0.099**	0.027
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.011	<0.011	<0.00519	<0.0002	<0.0002	<5.8E-05	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.007	0.0044	0.005	0.019	0.0018	0.002	0.0048	0.00784	0.007941J	0.00707J	<0.0033	0.00073J	0.0056	0.0044	0.00078
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.062	0.055	0.069	0.083	0.009	0.054	0.066	0.0989	0.103	0.0907	0.0118J	0.019	0.066	0.06	0.012
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**3.4**	**2.2**	**3.4**	**4.1**	0.37	**3.3**	**4**	**5.9**	**4.4**	**6.24**	**0.772**	**1.8**	**4.8**	**53**	**1.1**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.011	<0.011	<0.00519	<0.00024	<0.00024	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.01	<0.01	<0.00472	<0.00025	<0.00025	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	**<0.061**	**<0.061**	**<0.0288**	<0.00079	<0.00079	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.078	0.058	0.08	0.076	0.014	0.0081	0.076	0.12	0.12	0.11	0.0122J	0.014	0.071	0.07	0.01
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.0013	0.14	<0.00007	0.00078	0.025	0.00014J	0.0002J	<0.00004	<0.004	<0.004	**8.33**	0.0025	0.0036	0.00022	0.033
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0033	0.0028	0.0026	0.009	0.00098	0.0025	0.0028	0.00356	<0.011	<0.011	<0.00519	0.00031J	0.0031	0.0025	0.00045

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-18C														
					2/5/2009	1/19/2010	6/24/2010	1/17/2011	7/13/2011	2/1/2012	7/11/2012	1/31/2013	7/29/2013	1/13/2014	07/16/2014	1/25/2018	3/19/2018	5/16/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.005	<0.0005	<0.0025	<0.0025	<0.001	<0.005	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**1.4**	**1.5**	**1**	**1.3**	**1.2**	**1.3**	**1.2**	**1.51**	**1.23**	**1.51**	**1.45**	**1.4**	**1.3**	**1.4**	**0.3**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.005	<0.0005	<0.0025	<0.0025	<0.001	<0.005	<0.005	<0.006	<0.012	<0.006	<0.0024	<0.0003	0.00052J	<0.003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.26	0.21	0.13	0.18	0.16	0.19	0.15	0.203	0.22	0.245	0.309	0.35	0.29	0.32	0.41
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.005	<0.0005	<0.0025	<0.0025	<0.0013	**<0.0065**	**<0.01**	**<0.0075**	**0.0688J**	**<0.0075**	**0.0161J**	<0.001	<0.001	**<0.01**	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	1	0.96	0.72	0.83	0.8	0.83	0.72	0.962	0.899	**1.07**	0.986	**1.1**	0.96	0.9	0.03
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				**<0.0025**	<0.001	**<0.005**	**<0.005**	**<0.0055**	**<0.011**	**<0.0055**	**<0.0022**	0.0018	**0.0026**	<0.002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	1.1	1	1	1	0.9	0.82	0.84	1.01	0.881	1.02	1.36	1	0.93	1.1	0.69
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	<0.00005	**<0.0545**	**<0.00534**	**<0.011**	**<0.00519**	<0.00021	<0.00021	<0.00021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.084	0.0081	0.0078	0.012	0.0031	0.01	0.0021	<0.153	<0.015	<0.031	0.0325	<0.0004	<0.0004	0.082	0.29
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.013**	**<0.00613**	<0.00058	<0.00058	<0.00058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.0006	<0.00006	**<0.0396**	**<0.00388**	**<0.008**	**<0.00377**	<0.00042	<0.00042	<0.00042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	<0.00005	<0.0396	<0.00388	<0.008	<0.00377	<0.00021	<0.00021	<0.00021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.95**	**0.46**	**0.2**	**0.31**	**0.34**	**0.16**	**0.46**	**0.977**	**0.871**	**1.06**	**0.778**	**0.41**	**0.44**	**0.3**	**0.33**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.0008	<0.00008	**<0.411**	**<0.0403**	**<0.083**	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	<0.00005	**<0.277**	<0.0272	**<0.056**	<0.0264	<0.00047	<0.00047	<0.00047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.18	0.17	0.082	0.14	0.12	0.062	0.13	0.32	0.265	0.317	0.246	0.15	0.16	0.15	0.21
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.0036	0.0023	0.0015	0.0019	0.0023	0.0018J	0.0019	<0.0297	<0.00291	<0.006	<0.00283	0.0025	0.0035	0.003	0.0075
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.017	0.014	0.0076	0.015	0.013	0.012	0.008	0.0401J	0.0284	0.0414J	0.028	0.017	0.02	0.019	0.007
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.00039	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00014J	**<0.0396**	<0.00388	<0.008	<0.00377	0.0013	<0.0005	<0.0005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	0.00013J	<0.00008	**<0.0004**	**0.00035**	0.00015J	**<0.0005**	<0.00005	**<0.0396**	**<0.00388**	**<0.008**	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.013**	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00023	<0.0002	<0.001	<0.0002	<0.0001	<0.001	<0.0001	**<0.183**	**<0.018**	**<0.037**	**<0.0175**	<0.00037	<0.00037	<0.00037	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.00033	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.0001J	<0.0396	<0.00388	<0.008	<0.00377	0.0008J	<0.00021	0.00038 J	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.16**	0.091	0.077	**0.13**	**0.11**	0.06	**0.14**	**0.288**	**0.225**	**0.276**	**0.207**	**0.14**	**0.15**	**0.13**	**0.13**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	<0.00005	<0.0545	<0.00534	<0.011	<0.00519	<0.0002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0047	0.0035	0.0023	0.0059	0.0042	0.0018J	0.0023	<0.0347	0.00865J	0.0191J	0.00957J	0.0096	0.0071	0.0058	0.0023
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.081	0.052	0.034	0.051	0.052	0.028	0.055	0.132J	0.114	<0.007	0.116	0.056	0.073	0.062	0.095
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**21**	**12**	**6.2**	**13**	**12**	**9.7**	**13**	**20.2**	**20.9**	**20.3**	**14.7**	**14**	**12**	**21**	**4.4**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0545**	<0.00534	<0.011	<0.00519	<0.00024	<0.00024	<0.00024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	<0.00005	<0.0495	<0.00485	<0.01	<0.00472	<0.00025	<0.00025	<0.00025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	**0.026**	**0.041**	**0.02**	**0.064**	**0.076**	**0.085**	**0.075**	**<0.302**	**<0.0296**	**0.188**	**0.164**	**0.024**	**0.041**	**0.037**	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.076	0.052	0.032	0.055	0.052	0.027	0.055	0.155J	0.127	0.177	0.122	0.072	0.086	0.078	0.084
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.031	0.059	0.026	0.043	0.048	0.027	0.075	0.0601J	0.0205J	0.0184J	0.0285	0.0042	0.0067	<0.00035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0025	0.002	0.0012	0.0028	0.0017	0.001J	0.0011	<0.0545	<0.00534	<0.011	0.00571J	0.0055	0.0049	0.0036	0.0012

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-19C														
					2/4/2009	1/18/2010	6/23/2010	1/18/2011	7/14/2011	2/8/2012	7/12/2012	2/1/2013	7/30/2013	1/15/2014	07/17/2014	2/9/2018	3/18/2018	5/16/2018	1/24/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	**0.0056**	<0.0005	<0.0005	<0.001	0.005	<0.0005	0.000558J	0.00427	0.00028J	8.01E-05J	0.0013	0.0027	0.0041 J	0.0044
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005		<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	0.0018J	<0.0005	<0.0005	<0.0011	0.0031J	<0.0005	0.000793J	0.0114	0.000966J	0.000783J	0.00091J	0.0025	<0.003	0.004
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	**<0.01**	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	0.0076	<0.0005	<0.0005	<0.001	0.0085	<0.0005	0.00171	0.0155	0.00136	0.000578J	<0.0002	0.0018	0.0042 J	0.0057
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03					<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0002	<0.0002	<0.002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	0.0043J	<0.001	<0.001	<0.0031	0.0063J	<0.0015	0.00151J	0.0197	0.00207J	0.00179J	0.00095J	0.0044	<0.003	0.0037
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	0.00024	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00021	<0.00011	<2.1E-05	0.000099J	6.1E-05 J	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00016J	0.00125	<0.00031	<0.0006	<0.00031	0.0028	<0.00038	<0.00004	<0.00032
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00025	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00015	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00025	0.0017	0.000079J	0.00015J	0.0012	<0.00005	0.00005J	0.00084	0.000114J	0.00142	0.000845	0.000093J	0.00037	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.0016	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00108	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00022	0.001	0.00012J	0.00015J	0.00067	0.0012	0.00017J	0.000608	0.00279	<0.00015	0.0007	0.0012	0.001	0.00035	0.00078
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.00014J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00012	<0.00006	0.000069J	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	0.0001J	<0.00007	<0.00007	0.00015J	<0.00005	<0.00005	0.000115J	0.000269J	<9.6E-05	<0.00005	0.000057J	0.000065J	<1.4E-05	5.7E-05 J
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	0.000111J	<0.00015	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00025	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	0.0028	0.00036	0.00026	0.00039	0.00022	0.00014J	<0.00037	0.0012J	<0.00071	0.000646	0.00019J	0.0001J	<0.00016	9.6E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	0.000072J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00015	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00017J	0.00051	<0.00008	0.00013J	0.0006	0.00014J	0.00011J	0.000367J	0.000631	0.00116	0.000554	0.00045	0.00081	<3.2E-05	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00015J	<0.00011	0.000164J	<0.00021	<0.00011	<0.00002	<0.00002	<3.1E-05	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00015J	0.00024	0.0021	0.0026	0.0016	<0.00005	0.0018	0.00257	0.000309J	0.00223	0.00169	0.000081J	0.00064	0.00023	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	0.00032	0.00028	0.00032	0.00066	<0.00005	0.00033	0.000605	<0.00007	0.000296J	0.000485	0.000099J	0.00037	<0.00009	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0077	0.09	0.0015	0.0061	0.014	0.00077	0.00048	0.0264J	0.00196J	0.0383	0.0198	0.0022	0.013	<0.00061	<0.00036
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00021	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.00019	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	0.00028	<0.00005	<0.00005	<0.00061	<0.00061	**<0.00117**	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00016J	<0.00007	<0.00007	0.00053	<0.00005	<0.00005	0.000166J	0.000201J	0.00006J	<0.00006	<2.1E-05	0.000051J	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00024	0.00023J	0.024	0.000724J	0.00033J	0.00071	0.00072	<3.5E-05	<0.00013
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.0002	0.0012	0.0016	0.0014	<0.00005	0.0014	0.00207	0.000233J	0.00191	0.00178	0.000053J	0.00076	0.00037	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-21C														
					2/4/2009	1/21/2010	6/22/2010	1/19/2011	7/27/2011	2/2/2012	7/26/2012	2/5/2013	8/1/2013	1/16/2014	07/25/2014	1/24/2018	3/20/2018	5/17/2018	1/9/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000144J	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03								<0.00011			<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.9E-05	<5.8E-05	<5.9E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	**0.023 J**	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000067J	<0.00005	0.000271J	<0.00007	0.00007J	<0.00007	<1.9E-05	<1.9E-05	0.00012J	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.00041	<0.00009	0.00034	<0.00005	<0.00005	<0.00005	0.000237J	<0.00008	0.00008J	<0.00008	<2.7E-05	<2.7E-05	0.00013	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	5.27E-05J	<0.00005	0.000243J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000129J	<0.00008	<5.1E-05	<0.00005	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	0.00013J	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	0.00072	0.00023	0.00062	0.00062	0.0001J	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	0.000058J	<3.7E-05	4.8E-05 J	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	8.12E-05J	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000109J	<0.00008	0.00008J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000072J	<0.00011	<0.00011	<0.00011	0.000184J	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000528	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000291J	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00039	<0.0001	<0.0001	<0.0001	<0.00005	0.00093	<0.00005	0.000429J	0.0021J	0.000523J	<0.00008	<0.00002	<0.00002	0.0014 J	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00008	<7.9E-05	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000184J	7.75E-05J	0.00128	0.000087J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.000355J	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-23C*										
					2/4/2009	1/18/2010	6/23/2010	1/19/2011	7/22/2011	2/2/2012	7/12/2012	2/11/2013	7/31/2013	1/15/2014	08/28/2014
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds															
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.005	<0.005	<0.001	**<0.01**	<0.0005	<0.00014	<0.0014	<0.0002	<0.0014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.017**	**0.012**	**0.0095J**	**0.0072J**	<0.001	**<0.01**	**0.0071**	**0.0111**	**0.0138**	**0.0126**	**0.00596J**
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	0.001J		<0.005	<0.005	<0.001	<0.01	<0.0005	0.000279J	0.00146J	<0.00018	<0.0012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.13	0.074	0.12	0.13	0.1	0.1	0.17	0.151	0.185	0.165	0.15
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	**0.0092J**	<0.005	<0.0013	**<0.013**	<0.001	<0.00015	<0.0015	<0.00022	<0.0015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.0023J	0.0012J	<0.005	<0.005	<0.001	<0.01	0.0025J	0.00433	0.00819J	0.00728	0.00378J
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03				**<0.005**	<0.001	**<0.01**	<0.0005	<0.00011	<0.0011	<0.00018	<0.0011
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.073	0.044	0.069J	0.059J	0.048J	0.039J	0.11	0.0884	0.0988	0.0959	0.0915
Semi-Volatile Organic Compounds															
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	**<0.005**	<0.0001	<0.00005	<0.0005	<0.001	<0.00011	**<0.00534**	**<0.0259**	**<0.022**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.004	<0.00008	0.0035	0.0014J	0.028	<0.00031	<0.015	<0.0731	0.202
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	**<0.0045**	<0.00009	<0.00005	<0.0005	<0.001	<0.00013	**<0.00631**	**<0.0307**	**<0.026**
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	**<0.0035**	<0.00007	<0.00006	<0.0006	<0.0012	<0.00008	**<0.00388**	**<0.0189**	**<0.016**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.005	<0.0001	<0.00005	<0.0005	<0.001	<0.00008	<0.00388	<0.0189	<0.016
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**2.6**	**0.75**	**2.7**	**1.2**	**1.3**	**0.65**	**28**	**1.38**	**1.16**	**4.52**	**18.3**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	**<0.004**	<0.00008	<0.00008	<0.0008	<0.0016	<0.00083	**<0.0403**	**<0.196**	**<0.166**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.0035	<0.00007	<0.00005	<0.0005	<0.001	<0.00056	<0.0272	**<0.132**	**<0.112**
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	**3.4**	1.2	**3.4**	**1.6**	**2**	0.89	**39**	**1.78**	**1.58**	**7.79**	**25.9**
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.017	0.01	0.03	0.012	0.015	0.0068	0.45	<0.00006	<0.00291	<0.0142	0.336
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	1.2	0.36	1.2	0.4	1.7	0.25	**16**	0.641	0.31	1.49	**8.74**
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	**0.31**	**0.12**	**0.3**	**0.12**	**0.15**	**0.046**	**4.8**	**0.104**	**0.0905**	**0.5**	**2.63**
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.072**	**0.029**	**0.093**	**0.04**	**0.044**	**0.016**	**1.2**	**0.0283**	**0.0235J**	**0.119**	**0.73**
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	**<0.0035**	<0.00009	<0.00005	<0.0005	**<0.001**	<0.00013	**<0.00631**	**<0.0307**	**<0.026**
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.002	0.0011	<0.0035	0.0014	0.0019	<0.001	**0.042**	<0.00037	**<0.018**	**<0.0873**	**<0.074**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.28	0.093	0.27	0.099	0.21	0.044	**4.3**	0.103	0.0819	0.476	**2.24**
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**3.5**	**1.2**	**3.6**	**1.6**	**2.7**	**0.85**	**46**	**1.82**	**1.48**	**5.45**	**25.7**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.004	<0.00007	<0.00005	<0.0005	<0.001	<0.00011	<0.00534	<0.0259	<0.022
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	**3**	0.77	**3**	**0.99**	**1.8**	0.48	**34**	**1.09**	0.812	**4.42**	**20.4**
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	**2.5**	0.82	**2.6**	0.88	**2**	0.57	**32**	**1.19**	0.874	**3.78**	**20.5**
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**9.9**	**3.9**	**8.9**	**8.5**	**7.5**	**7.8**	**83**	**12.2**	**13.2**	**43.8**	**57.9**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.01	<0.00009	<0.00005	<0.0005	<0.001	<0.00011	<0.00534	<0.0259	<0.022
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.0045	<0.00009	<0.00005	<0.0005	<0.001	<0.0001	<0.00485	<0.0236	<0.02
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	**<0.0035**	<0.00008	<0.00005	<0.0005	<0.001	<0.00061	**<0.0296**	**<0.144**	**<0.122**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	**8.8**	**2.7**	**8.2**	**3.6**	**3.8**	**1.9**	**130**	**3.48**	**2.8**	**18.2**	**59.4**
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.0035	<0.00007	<0.00005	0.0011J	<0.001	<0.00004	<0.00194	<0.00943	<0.008
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	**1.6**	0.59	**1.9**	0.6	**1.1**	0.35	**21**	**0.754**	0.515	**3.04**	**13.3**

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-24C								
					2/3/2009	1/14/2010	6/29/2010	1/25/2011	7/21/2011	2/9/2012	7/25/2012	2/12/2013	8/8/2013
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds													
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000218J	<0.00015
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026
Semi-Volatile Organic Compounds													
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000077J	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	0.00022	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00055	<0.0002	0.001	<0.0002	0.00013J	0.0013	0.00013J	<0.00037	<0.00037
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00013J	0.00026	<0.0001	<0.0001	0.0002	<0.00005	0.00019J	<0.00008	<0.00008
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-25C												
					1/15/2010	1/26/2011	7/20/2011	2/8/2012	7/18/2012	2/6/2013	8/6/2013	1/22/2014	07/29/2014	1/28/2018	3/27/2018	5/31/2018	1/15/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	**<0.01**	<0.005	<0.0028	<0.0007	<0.0002	<0.0007	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	**0.11J**	**0.092**	**0.076**	**0.039J**	**0.03J**	**0.0304**	**0.0283**	**0.022**	**0.0119**	0.00089J	0.00047J	0.0013	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.001	<0.01	<0.005	0.00653J	<0.0006	0.00034J	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.47	0.5	0.37	0.34	0.33	0.324	0.173	0.32	0.298	0.042	0.043	0.036	0.038
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0013	**<0.013**	**<0.01**	<0.003	<0.00075	<0.00022	<0.00075	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.52	0.53	0.4	0.31	0.31	0.291	0.204	0.261	0.207	0.015	0.015	0.013	0.013
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03			<0.001	**<0.01**	**<0.005**	**<0.0022**	<0.00055	<0.00018	<0.00055	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	1.2	1.2	1	0.98	0.96	1.03	0.575	1.01	1.07	0.29	0.32	0.28	0.27
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.11**	**<0.011**	**<0.011**	<0.00011	<2.1E-05	<0.00021	<0.00021	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	0.0051	<0.00005	<0.00005	<0.31	<0.031	0.372	<0.00031	0.00061	0.0033	0.0075	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.13**	**<0.013**	**<0.013**	<0.00013	<5.8E-05	<0.00058	<0.00058	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.08**	**<0.008**	**<0.008**	<0.00008	<4.2E-05	<0.00042	<0.00042	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.08	<0.008	<0.008	<0.00008	<2.1E-05	<0.00021	<0.00021	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.76**	**1.4**	**1.3**	**0.92**	**0.9**	**0.8**	**1.32**	**1.46**	**0.943**	**0.48**	**0.69**	**0.71**	**0.4**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.83**	**<0.083**	**<0.083**	<0.00083	<0.00002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.56**	**<0.056**	**<0.056**	<0.00056	<4.7E-05	<0.00047	<0.00047	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.21	0.55	0.28	0.26	0.21	0.261J	0.381	0.416	0.284	0.17	0.21	0.23	0.13
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.0027	0.0041	0.0029	0.0021	0.0021	<0.06	<0.006	<0.006	0.00316	0.0017	0.0023	0.0028	0.0012
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.035	0.19	0.031	0.021	0.019	<0.05	0.0377J	0.0372J	0.0209	0.015	0.019	0.024	0.011
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	0.0027	**0.047**	0.0014	0.00054	0.00086	**<0.08**	<0.008	<0.008	0.000813	0.00079	0.0011	0.0012	0.00065
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	**0.0014**	**0.013**	**0.00043**	0.00017J	0.0002	**<0.08**	**<0.008**	**<0.008**	**0.00044J**	**0.00028**	<0.0002	**0.00042 J**	**0.00021**
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.13**	**<0.013**	**<0.013**	**0.0016**	<0.00003	<0.0003	<0.0003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<0.0002	<0.0002	0.002	<0.0001	0.00012J	**<0.37**	**<0.037**	**<0.037**	0.000674	0.00006J	<0.00037	<0.00037	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	0.0025	0.048	0.0012	0.00062	0.00086	<0.08	<0.008	<0.008	0.000957	0.00077	0.0013	0.0014	0.00074
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	**0.22**	**0.52**	**0.29**	**0.26**	**0.22**	**0.174J**	**0.353**	<0.008	**0.276**	**0.18**	**0.2**	**0.21**	**0.14**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.11	<0.011	<0.011	<0.00011	<0.00002	<0.0002	<0.0002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.041	0.32	0.02	0.011	0.0088	<0.07	0.0149J	0.018J	0.0127	0.0092	0.014	0.015	0.0079
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.12	0.34	0.14	0.13	0.096	0.102J	0.163	<0.007	0.129	0.086	0.091	0.11	0.062
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**9.8**	**18**	**19**	**15**	**13**	**10.7**	**19.7**	**19**	**10.7**	**3**	**5.9**	**5.6**	**3.5**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.11**	<0.011	<0.011	<0.00011	<2.4E-05	<0.00024	<0.00024	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.1	<0.01	<0.01	<0.0001	<2.5E-05	<0.00025	<0.00025	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.61**	**<0.061**	**<0.061**	<0.00061	<7.9E-05	<0.00079	<0.00079	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.19	0.7	0.18	0.14	0.12	0.147J	0.187	0.222	0.14	0.089	0.15	0.16	0.077
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.026	0.003	0.0045	<0.04	0.12	<0.004	0.00177	<3.5E-05	<0.00035	<0.00035	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.022	0.24	0.0092	0.0047	0.0063	<0.11	<0.011	<0.011	0.00769	0.0062	0.011	0.01	0.0052

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-27C														
					2/3/2009	1/14/2010	6/30/2010	1/27/2011	7/20/2011	2/9/2012	7/25/2012	2/12/2013	8/8/2013	1/24/2014	07/25/2014	1/31/2018	3/26/2018	6/1/2018	1/22/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011		<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	0.00052	<4.2E-05	0.00057	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000777	<0.00007	<0.00007	<0.00007	0.00041	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	0.00031J	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00026	0.00015J	0.00028	0.00019J	0.00011J	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	0.0012	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000431J	<0.00005	0.000065J	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00038	0.0016	0.0015	0.00047	0.00095	0.00014J	0.00021	0.000652	<0.00037	<0.00037	<0.00037	0.000073J	0.000057J	0.00042	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	5.4E-05 J	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	0.00038	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000055J	<0.00011	0.000143J	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	0.00015J	<0.00007	<0.00007	0.00011J	<0.00005	<0.00005	<0.00007	0.000114J	8.81E-05J	<0.00007	0.000085J	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00025	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	0.00085	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00037	0.00013J	0.00024	0.00015J	<0.00005	<0.00005	0.00019J	<0.00008	0.000353J	0.00008J	<0.00008	<0.00043	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	0.00014J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	9.08E-05J	0.00006J	<0.00006	0.00027	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	5.3E-05 J	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.0001J	<0.00007	<0.00007	0.000064J	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	0.000044J	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-28C														
					2/3/2009	1/13/2010	6/30/2010	1/25/2011	7/19/2011	2/16/2012	7/17/2012	2/7/2013	8/7/2013	1/22/2014	07/25/2014	1/25/2018	3/21/2018	5/17/2018	1/14/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.0026J	0.0013J	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03											<0.00011			<0.0002	
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	0.0002	<0.00008	0.000086J	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.9E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.000097J	0.00024	0.000077J	0.000079J	<0.00005	<0.00005	0.00011J	<0.00007	<0.00007	7.41E-05J	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.00018J	0.00033	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.00014J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.0033	0.00046	0.0012	0.00063	0.00053	0.00013J	<0.0001	<0.00037	<0.00037	<0.00037	<0.00037	0.000064J	<3.7E-05	<3.7E-05	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	0.00018J	<0.00008	<0.00008	0.00019J	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	0.000104J	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.00012J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	0.00016J	0.00033	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00057	0.0014	0.00035	0.00029	0.000091J	0.00031	0.00064	0.000163J	<0.00008	0.00008J	<0.00008	<0.00021	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	0.00034	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00013J	0.00033	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	7.39E-05J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00063	0.0027	0.00075	0.0014	0.00054	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00007J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-34C	MW-34CR					MW-44C*		
					2/8/2012	07/29/2014	1/29/2018	3/27/2018	6/5/2018	1/15/2019	7/20/2011	7/18/2012	2/6/2013
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds													
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.001	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.005	<0.0014
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.0014J	0.000154J	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.005	0.000964J
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.001	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.005	0.00293J
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.0039J	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0011	0.32	0.233
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0013	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.0013	**<0.01**	<0.0015
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.0041J	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.16	0.0895
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0077J	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0031	0.84	0.688
Semi-Volatile Organic Compounds													
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00005	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00005	<0.00075	**<0.529**
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	0.00022	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00005	<0.00075	**<1.49**
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00005	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<0.00005	<0.00075	**<0.625**
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00006	<0.00008	0.0001J	<4.2E-05	<4.2E-05	<4.2E-05	<0.00006	<0.0009	**<0.385**
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00005	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<0.00005	<0.00075	<0.385
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00011J	0.000255J	<1.9E-05	<1.9E-05	<1.9E-05	<7.9E-05	<0.00005	**62**	**1.15J**
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.0012	**<3.99**
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00005	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<0.00005	<0.00075	**<2.69**
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00005	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	2.9E-05 J	0.00012J	**31**	0.632J
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00005	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	0.000097J	0.29	<0.288
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00005	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	0.00014J	**19**	<0.24
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	0.00017J	**3.5**	**<0.385**
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00005	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	**0.00022**	**0.87**	**<0.385**
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00005	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00005	<0.00075	**<0.625**
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00053	0.000799	<3.7E-05	<3.7E-05	<8.1E-05	<3.7E-05	0.00087	**0.013**	**<1.78**
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00005	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	0.00032	**3.3**	<0.385
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.000071J	<0.00008	<0.00002	<0.00002	<0.00002	2.7E-05 J	<0.00005	**38**	**0.453J**
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00005	<0.00011	<0.00002	<0.00002	<0.00002	2.1E-05 J	<0.00005	<0.00075	<0.529
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00017J	<0.00007	<0.00001	<0.00001	<0.00001	1.4E-05 J	0.00016J	**28**	<0.377
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00011J	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	<0.00005	**26**	<0.377
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00043	0.00282	<0.00017	<0.00002	<0.00023	<0.00069	0.00016J	**230**	**18J**
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00005	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<0.00005	<0.00075	**<0.529**
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00005	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<0.00005	<0.00075	**<0.481**
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00005	<0.00061	0.00013J	<7.9E-05	<7.9E-05	<7.9E-05	<0.00005	<0.00075	**<2.93**
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.0001J	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	0.000081J	**88**	0.498J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.000072J	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<0.00005	<0.00075	<0.192
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00021	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	0.00013J	**19**	<0.529

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-47C											
					2/4/2009	1/20/2010	6/24/2010	1/19/2011	7/21/2011	2/7/2012	7/27/2012	2/7/2013	8/6/2013	1/17/2014	07/30/2014	1/23/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03												
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semi-Volatile Organic Compounds																
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	0.00011J	<0.00008	<0.00005	<0.00005	0.00042	<0.00031	<0.00031	<0.00031	<0.00031	9.5E-05 J
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0044	<0.00005	0.000098J	<0.00007	<0.00007	<0.00007	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00017J	0.000058J	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000074J	<0.00005	0.000107J	<0.00005	<0.00005	<0.00005	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000137J	<0.00008	<0.00008	<0.00008	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	0.000099J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**0.00031J**	<0.00008	<0.00008	<0.00008	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.0036	0.00065	0.00021	<0.0002	0.0001J	**0.011**	<0.0001	0.000594	<0.00037	<0.00037	<0.00037	<5.6E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000127J	<0.00008	<0.00008	<0.00008	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000104J	<0.00008	<0.00008	<0.00008	3.4E-05 J
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015J	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000289J	0.000186J	7.18E-05J	<0.00007	2.8E-05 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00025	<0.00005	0.000116J	<0.00007	<0.00007	<0.00007	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00019J	<0.0001	0.00046	0.00021	<0.00005	0.0041	0.00046	0.0004J	<0.00008	0.000297J	<0.00008	0.00083
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	0.0004	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0003	<0.00005	0.000406J	<0.00006	0.000185J	<0.00006	5.2E-05 J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044	0.00056	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015J	<0.00005	0.000388J	0.000131J	<0.00011	<0.00011	2.1E-05 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-48C															
					2/4/2009	1/21/2010	6/24/2010	7/15/2010	1/19/2011	7/18/2011	2/6/2012	7/24/2012	1/31/2013	8/1/2013	1/16/2014	07/16/2014	1/28/2018	3/20/2018	5/24/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																				
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03											<0.00018					
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																				
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	0.0073	<0.00008	<0.00008	<0.00005	<0.00005	0.00014J	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	0.001
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.0004	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00045	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.00035	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<0.00007	**0.18**	<0.00007	<0.00007	<0.00005	<0.00005	0.0013	<0.00007	<0.00007	<0.00007	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	0.00038
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.0004	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	0.073	<0.00009	<0.00009	<0.00005	<0.00005	0.0011	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	9.8E-05 J
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	0.0014	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00012J	<0.00007	0.007	<0.00007	<0.00007	<0.00005	<0.00005	0.00077	<0.00005	<0.00005	<0.00005	<0.00005	0.000025J	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000066J	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000057J	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	**<0.00035**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00035	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00034	0.0018	<0.00035	0.0013	0.001	0.00043	<0.0001	0.00024	<0.00037	<0.00037	<0.00037	<0.00037	0.000079J	0.00011J	<5.4E-05	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.0004	<0.00007	<0.00007	<0.00005	<0.00005	0.000073J	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	0.000044J	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00025	<0.00008	0.065	<0.00008	<0.00008	<0.00005	<0.00005	0.00096	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00045	<0.00007	<0.00007	<0.00005	<0.00005	0.000053J	<0.00011	<0.00011	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	0.00013J	0.0021	0.00019J	0.00019J	0.00013J	<0.00005	0.00095	<0.00007	0.000134J	0.000153J	<0.00007	0.000049J	0.000099J	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.032	<0.00007	<0.00007	<0.00005	<0.00005	0.0011	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00052	0.0002J	**5**	<0.0001	<0.0001	<0.00005	<0.00005	0.0071	0.000495J	0.000158J	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	0.0085
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00035	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.001	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	**0.019**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00032	<0.00007	0.03	<0.00007	<0.00007	<0.00005	<0.00005	0.0034	<0.00006	<0.00006	<0.00006	<0.00006	<2.2E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	0.024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	0.002
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	0.0001J	0.001	0.00015J	0.00012J	0.0001J	<0.00005	0.00052	<0.00011	<0.00011	<0.00011	<0.00011	0.000052J	0.000087J	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-51C				
					07/24/2014	1/29/2018	3/28/2018	5/24/2018	1/10/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds									
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.000104J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03	<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds									
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00111	<3.7E-05	<3.7E-05	<7.3E-05	0.00013 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.000553	<0.0002	<0.00021	0.00029	0.00017
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00006	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.000628	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-53C														
					2/3/2009	1/13/2010	6/30/2010	1/26/2011	7/20/2011	2/9/2012	7/18/2012	2/6/2013	8/6/2013	1/22/2014	07/25/2014	1/28/2018	3/21/2018	5/31/2018	1/14/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000644J	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03											<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00052	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00148	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00062	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00038	<0.00008	<4.2E-05	<4.2E-05	**0.0016**	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00038	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.000071J	<0.00007	<0.00007	<0.00005	0.00008J	0.000091J	<0.00007	<0.00007	0.000358J	8.26E-05J	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	**<0.00395**	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00267	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	0.0002	0.00032	<0.00009	0.00032	0.0002J	<0.00005	<0.00008	<0.00008	0.000856J	<0.00008	<2.7E-05	<2.7E-05	4.4E-05 J	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00029	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00024	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00038	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	**<0.00038**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00062	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00072	0.00024	0.00032	0.00037	0.00014J	<0.0001	<0.0001	<0.00037	<0.00037	<0.00176	<0.00037	0.00012J	<3.7E-05	<0.0001	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00038	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00038	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00052	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00033	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000355J	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0012	0.00027	<0.0001	0.00015J	<0.00005	0.00066	0.00048	0.000183J	<0.00008	0.000381J	0.00194	<0.00002	<3.4E-05	0.00023	<0.00025
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00052	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.00048	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	**<0.0029**	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	0.000939J	0.000067J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00019	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00052	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-54C														
					2/3/2009	1/21/2010	6/30/2010	1/26/2011	7/20/2011	2/8/2012	7/25/2012	2/12/2013	8/6/2013	1/23/2014	07/25/2014	1/28/2018	3/20/2018	5/31/2018	1/14/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.000128J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	0.0029J	<0.0005	0.0024J	<0.0005	0.0018J	0.0011J	0.0011J	0.000187J	0.00062J	0.000527	0.000282J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03											<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	0.0027J	<0.001	0.0011J	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	0.00076J	0.00062J	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000098J	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	**0.13**	<0.00007	0.0096	0.00025	0.022	0.0065	0.0054J	0.00392	0.0173	0.0176	0.00834	0.00048	0.00075	0.0059	0.0014
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.067	0.00016J	0.024	0.0023	0.039	0.035	0.022	0.0219	0.0749	0.062	0.0367	0.023	0.03	0.04	0.014
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	0.00072	<0.00007	0.00042	<0.00007	0.00045	0.00051	0.00039	<0.00006	<0.00006	0.00105	0.000526	0.00034	0.00036	0.00054	<0.0002
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.003	<0.00007	0.005	0.00027	0.0029	0.0024	0.0019	0.00183	0.00389	0.00445	0.00261	0.0015	0.0027	0.0041	0.0013
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	9.93E-05J	<0.00008	<0.00005	<0.00005	6.5E-05 J	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	3.9E-05 J
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	5.6E-05 J
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00072	0.00077	0.00037	0.0016	0.00015J	<0.0001	0.00017J	<0.00037	<0.00037	<0.00037	<0.00037	0.000055J	<3.7E-05	<0.00011	9.6E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	7.58E-05J	<0.00008	<2.1E-05	0.000059J	5.3E-05 J	3.8E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.064	<0.00008	0.028	0.0018	0.046	0.047	0.029	0.0223	0.0878	0.0695	0.0471	0.025	0.029	0.045	0.015
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000064J	<0.00011	<0.00011	0.00011J	<0.00011	<0.00002	<0.00002	2.9E-05 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.0032	<0.00007	0.0032	0.00016J	0.0034	0.0026	0.002	0.00246	0.00474	0.00575	0.00302	0.0023	0.004	0.0049	0.002
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.03	<0.00007	0.015	0.001	0.022	0.021	0.011	0.0092	0.0409	0.0321	0.0208	0.011	0.014	0.022	0.0085
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	**1.1**	<0.0001	0.21	0.0055	0.47	0.35	0.15	0.0681	0.383J	0.315J	0.18	0.022	0.029	0.068	0.019
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.00014J	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.042	<0.00007	0.024	0.0011	0.04	0.034	0.019	0.0128	0.04	0.042	0.0148	0.0023	0.0041	0.023	0.0052
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00011J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.0018	<0.00007	0.0016	<0.00007	0.0017	0.0015	0.0013	0.00138	0.00248	0.00373	0.00169	0.0012	0.0018	0.0028	0.001

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-68C												
					7/15/2010	1/25/2011	7/21/2011	2/16/2012	7/17/2012	2/6/2013	8/7/2013	1/22/2014	07/24/2014	1/29/2018	3/21/2018	6/6/2018	1/15/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.00081J	0.0021J	0.0032J	**0.0069**	**0.0079**	0.00134	0.00364	0.00225	**0.0073**	0.0028	0.0049	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.00012J	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000363J	0.000517J	0.00024J	0.000419J	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	0.00067J	0.0011J	0.0019J	0.0023J	0.000632J	0.0016	0.00059	0.00138	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03									<0.00011				
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000873J	0.000879J	<0.00058	0.000649J	<0.0003	0.00046J	<0.0003	0.0011
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	0.00012J	0.00031	0.00095	0.0014	<0.00031	<0.00031	0.000454J	<0.00031	<0.00004	0.0015	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.00016J	0.00024	0.00011J	0.0025	0.00132	0.000301J	0.00331	0.000188J	<1.9E-05	0.00014	<1.9E-05	<7.7E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	0.00013J	<0.00005	0.0013	0.000647	<0.00008	0.00183	0.000235J	<2.7E-05	0.00017	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00005	<0.00005	0.00089	<0.00005	<0.00005	0.00106	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00005	<0.00005	0.00018J	<0.00008	<0.00008	0.000276J	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.000171J	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.00098	0.006	0.001	0.0015	0.0018	0.000637	0.00157J	<0.00037	<0.00037	0.00015J	<3.7E-05	<0.00056	<4.4E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00005	<0.00005	0.00016J	<0.00008	<0.00008	0.000301J	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	0.0002J	0.000078J	0.0018	0.000168J	<0.00008	0.00192	9.42E-05J	<0.00002	<0.00002	<0.00002	6.6E-05 J
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	<0.00005	<0.00005	0.00011J	<0.00011	0.000104J	<0.00011	<0.00011	<0.00002	<0.00002	<0.0001	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00005	<0.00005	0.0016	<0.00007	<0.00007	0.00233	<0.00007	<0.00001	<0.00001	0.00021	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.0001J	<0.00005	0.0012	0.00034J	0.000135J	0.00167	0.000155J	<0.00003	0.00012	<0.00003	5.7E-05 J
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00083	0.0014	0.0027	0.0015	0.015	0.0129	0.00643	0.0112	0.00274	0.00088	0.0032	0.00035	<0.00079
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.00016J	<0.00005	0.005	0.000499	<0.00006	0.00585	<0.00006	<2.1E-05	0.0001	<2.1E-05	6.2E-05 J
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.0005	0.0039	0.0049	0.0074	0.000062J	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00005	<0.00005	0.00086	<0.00011	<0.00011	0.0014	<0.00011	<1.9E-05	<1.9E-05	0.00015	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-76C					MW-83C				MW-85C			
					07/24/2014	1/30/2018	3/28/2018	5/25/2018	1/23/2019	2/8/2018	3/22/2018	6/7/2018	1/15/2019	2/1/2018	3/28/2018	5/24/2018	2/1/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	0.000149J	<0.0002	<0.0002	0.00021 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.013**	0.0026	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	0.00066J	0.0005J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.000156J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03	<0.00011												
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	0.0014	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	8.7E-05 J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00031	0.0018	<0.00004	<0.00004	0.0041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00013	<5.8E-05	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.000392J	0.0001	0.00012	3.2E-05 J	0.00031	0.0015	0.0015	8.9E-05 J	<1.9E-05	0.0001J	0.000049J	6.7E-05 J	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	0.0003J	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.000696	0.00015	0.00023	7.1E-05 J	0.00011	0.00083	0.001	0.00017	<2.7E-05	0.00013	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	0.0002	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.000234J	0.00006J	0.000055J	4.8E-05 J	4.1E-05 J	0.000034J	0.000068J	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00008	<0.00005	<0.00005	<5.1E-05	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	0.000803	<0.00024	0.00015J	<9.6E-05	<9.1E-05	0.00019J	<3.7E-05	<0.00012	<6.4E-05	0.000091J	0.0002	<0.00013	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.000507	0.00012	0.00012	5.6E-05 J	0.00011	0.00061	0.00044	4.6E-05 J	<0.00002	0.000087J	<0.00002	3.6E-05 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00011	<0.00002	<0.00002	0.00004 J	2.7E-05 J	<0.00002	<0.00002	<9.2E-05	0.00006 J	0.00023	<0.00002	<0.00003	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.000322J	0.00019	0.00018	0.00007 J	<0.00001	0.000044J	<0.00001	1.8E-05 J	<0.00001	0.000015J	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.000778	0.00016	0.00014	7.6E-05 J	7.6E-05 J	0.00035	0.00034	6.7E-05 J	<0.00003	0.00011	<0.00003	3.4E-05 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00176	<0.0028	0.0019	0.00036	0.007	0.012	0.016	0.00039	<0.00036	0.00069	0.0017	0.0026	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	**0.00272**	<7.9E-05	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	0.00015 J	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00183	0.00051	0.00044	0.00023	8.6E-05 J	0.00044	0.00053	3.8E-05 J	<2.1E-05	0.0001	<2.1E-05	0.0001	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00284	0.0032	<3.5E-05	<3.5E-05	0.0012	<3.5E-05	<3.5E-05	<3.5E-05	3.8E-05 J	0.00011J	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.000194J	0.00016	0.00012	4.8E-05 J	<1.9E-05	0.000027J	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-3
Summary of Groundwater Sampling Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-86C				MW-87C				MW-88C				
					2/1/2018	3/28/2018	5/25/2018	1/11/2019	2/8/2018	3/27/2018	6/7/2018	1/22/2019	2/1/2018	3/19/2018	3/20/2018	5/24/2018	1/8/2019
chemical_name	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	75-01-4	8260	2.00E-03	2.00E-03		<0.0002											
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	**0.0028**	0.00041 J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05	<5.9E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	0.00043	0.00014	<1.9E-05	<1.9E-05	<1.9E-05	0.000052J	0.000052J	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	0.0003J	<4.7E-05	<4.7E-05	<4.7E-05	0.00033J	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05	0.00042	0.00011	<2.7E-05	<2.7E-05	0.000053J	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	0.000081J	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<5.1E-05	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	8270	6.00E-03	6.00E-03	<3.7E-05	<3.7E-05	<5.2E-05	<5.7E-05	0.0003	<3.7E-05	<0.00012	<3.7E-05	0.000052J	<3.7E-05	<3.7E-05	<0.00017	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00002	<0.00002	<0.00002	<0.00002	0.00032	0.000063J	<0.00002	<0.00002	0.000023J	0.000056J	0.000056J	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.000051J	<0.00002	<0.00002	7.2E-05 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000025J	0.000025J	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00003	<0.00003	<0.00003	<0.00003	0.00027	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.000054J	<0.00002	<7.9E-05	7.9E-05 J	0.0014	0.00038	<0.00002	<0.00002	0.00011	0.00055	0.00055	0.00011	<5.9E-05
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05	<0.00008	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<2.1E-05	<2.1E-05	3.2E-05 J	<2.1E-05	0.00048	0.00015	<2.1E-05	<2.1E-05	0.00003J	<2.1E-05	<2.1E-05	3.5E-05 J	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<0.00011	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.
* indicates DNAPL is or has been observed in monitoring well

Table 5B-4
Summary of Groundwater Sampling Results - D-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-36D												
					7/15/2010	1/26/2011	7/27/2011	2/14/2012	7/23/2012	2/11/2013	8/5/2013	1/21/2014	08/28/2014	2/7/2018	3/26/2018	6/1/2018	1/24/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																	
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	0.00071J	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	8.95E-05J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.00013J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	0.000127J	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	0.00675	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl Chloride	75-01-4	8260	2.00E-03	2.00E-03													
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																	
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.0004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00058	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<0.00042	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	<0.00007	0.00013J	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000189J	<0.00007	<0.00019	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<0.00047	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00014J	<0.00008	0.00056J	0.002	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<0.00015	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.000105J	0.000224J	<0.00014	0.00016	3.7E-05 J	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	0.000213J	<0.0005	0.00024	0.00019	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	0.000192J	<0.0002	**0.0003**	**0.00024**	2.7E-05 J
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.0003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.005	0.00097	0.0012	0.0012	0.00035	<0.00037	<0.00037	<0.00037	0.00128	<0.00037	0.00054	0.0005	5.5E-05 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00005	0.000078J	<0.00005	<0.00008	<0.00008	<0.00008	0.000347J	<0.00021	0.00031	0.00026	3.1E-05 J
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	0.00017J	<0.00008	<0.0002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	<0.00007	<0.00007	0.00032	0.000052J	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	0.000068J	0.00013J	0.000054J	<0.00007	<0.00007	0.000216J	0.00111	<0.0001	0.00094	0.00039	4.8E-05 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000147J	0.0001J	<0.0003	0.00086	0.00003 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	<0.0001	0.00083	0.000061J	0.000072J	0.00014J	<0.00008	<0.00008	0.0011J	9.23E-05J	<0.0002	0.00015	4.5E-05 J	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00024	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.00025	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00079	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.000072J	0.000069J	<0.00005	<0.00006	<0.00006	0.000665	0.00102	<0.00021	0.00037	0.00028	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	0.00065	<0.00007	0.000056J	0.00023	<0.00005	<0.00004	<0.00004	<0.00004	0.00194	<0.00035	<3.5E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	0.000053J	0.000087J	<0.00005	<0.00011	<0.00011	0.000159J	0.000881	<0.00019	0.00062	0.00036	4.2E-05 J

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-4
Summary of Groundwater Sampling Results - D-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-59D														
					2/5/2009	1/20/2010	7/1/2010	1/20/2011	7/27/2011	2/14/2012	7/23/2012	2/11/2013	8/5/2013	1/23/2014	08/28/2014	2/7/2018	3/26/2018	6/1/2018	1/24/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	0.000135J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	0.0011J	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	0.00064J	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	0.000258J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl Chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.8E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00015J	<0.00007	<0.00007	0.00046	<0.00005	<0.00005	0.000071J	<0.00007	0.00016J	<0.00007	0.000334J	<1.9E-05	<1.9E-05	8.3E-05 J	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00015J	<0.00009	<0.00009	0.00095	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	0.00069	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	0.00027	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.006	0.00023	0.00031	0.0015	0.0011	0.00094	0.00014J	<0.00037	0.000805J	0.000425J	0.00306	0.000063J	<3.7E-05	0.00024	<3.7E-05
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	0.00024	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00014J	<0.00008	<0.00008	0.0011	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	0.00024 J	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.0029	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	0.00011J	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	<0.00007	<0.00007	<0.00007	0.0018	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	7.89E-05J	0.00018J	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00013J	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	0.00017 J	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0019	<0.0001	0.00022	0.0034	<0.00005	<0.00005	0.00036	<0.00008	0.00226J	0.00008J	0.00576	<0.00002	<0.00002	0.0002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<7.9E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.0002	<0.00007	<0.00007	0.0037	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	0.00006J	0.00018J	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00014J	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	0.00063 J	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	0.0011	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	0.000131J	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-4
Summary of Groundwater Sampling Results - D-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-65D														
					2/5/2009	1/21/2010	7/1/2010	1/26/2011	7/27/2011	2/14/2012	7/23/2012	2/11/2013	8/5/2013	1/21/2014	08/28/2014	2/7/2018	3/26/2018	6/1/2018	1/24/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																			
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	0.0013J	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	0.00095J	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl Chloride	75-01-4	8260	2.00E-03	2.00E-03															
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																			
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00009
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<5.8E-05	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<4.2E-05	<4.2E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00012J	<0.00007	0.00014J	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	8.08E-05J	<0.00007	<1.9E-05	<1.9E-05	8.9E-05 J	0.00016
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<4.7E-05	<4.7E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.00019J	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.7E-05	<2.7E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00006	<0.00006	<0.00006	<0.00006	<1.5E-05	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.000078J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	5.74E-05J	<0.00005	<1.4E-05	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	0.0019	0.0027	0.001	0.001	0.001	0.00013J	0.00025	0.000593	<0.00037	<0.00037	0.00244	<3.7E-05	<3.7E-05	<0.0002	0.00006 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<2.1E-05	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00016J	0.00012J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00002	<0.00002	6.1E-05 J	3.9E-05 J
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00029	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000135J	0.000148J	<0.00011	<0.00011	<0.00002	<0.00002	2.2E-05 J	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.000097J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.000117J	<0.00007	<0.00001	<0.00001	1.3E-05 J	2.7E-05 J
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00016J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.00051	0.00026	0.00059	0.00019J	<0.00005	<0.00005	0.000094J	<0.00008	<0.00008	0.000529J	0.00071	<0.00002	<0.00002	0.00029	<0.0026
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<2.4E-05	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<2.5E-05	<2.5E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<7.9E-05	<0.00008	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00014J	<0.00007	<0.00007	<0.00007	0.000065J	<0.00005	<0.00005	<0.00006	0.000093J	0.000294J	<0.00006	<2.1E-05	<2.1E-05	3.5E-05 J	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	0.0015	<0.00007	<0.00007	0.000051J	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<3.5E-05	<3.5E-05	<3.5E-05	<0.00019
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<1.9E-05	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-4
Summary of Groundwater Sampling Results - D-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

			Residential Assessment Level	C/I Assessment Level	MW-66D													
					2/5/2009	1/20/2010	7/1/2010	7/27/2011	2/14/2012	7/23/2012	4/2/2013	8/5/2013	1/29/2014	08/28/2014	2/7/2018	3/26/2018	5/1/2018	1/24/2019
Constituent	CAS	Method	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Volatile Organic Compounds																		
1,2-Dichloroethane	107-06-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	71-43-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	108-90-7	8260	1.00E-01	1.00E-01	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	100-41-4	8260	7.00E-01	7.00E-01	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	75-09-2	8260	5.00E-03	5.00E-03	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	108-88-3	8260	1.00E+00	1.00E+00	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl Chloride	75-01-4	8260	2.00E-03	2.00E-03														
Xylenes (total)	1330-20-7	8260	1.00E+01	1.00E+01	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semi-Volatile Organic Compounds																		
1,2-Diphenylhydrazine	122-66-7	8270	1.10E-03	2.60E-03	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2,4-Dimethylphenol	105-67-9	8270	4.90E-01	1.50E+00	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00031	<0.00031	<0.00031	<0.00031	<0.0004	<4.1E-05	<0.00004	<0.00004
2,4-Dinitrotoluene	121-14-2	8270	1.30E-03	3.00E-03	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.00058	<5.9E-05	<5.8E-05	<5.8E-05
2,6-Dinitrotoluene	606-20-2	8270	1.30E-03	3.00E-03	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00008	<0.00008	<0.00008	<0.00008	<0.00042	<4.3E-05	<4.2E-05	<4.2E-05
2-Chloronaphthalene	91-58-7	8270	2.00E+00	5.80E+00	<0.00012	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00008	<0.00008	<0.00008	<0.00008	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
2-Methylnaphthalene	534-52-1	8270	9.80E-02	2.90E-01	0.00062	<0.00007	<0.00007	<0.00005	<0.00005	0.000085J	<0.00007	<0.00007	<0.00007	0.000211J	<0.00019	<1.9E-05	<1.9E-05	<1.9E-05
4,6-Dinitro-2-methylphenol	91-57-6	8270	2.40E-03	7.30E-03	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00083	<0.00083	<0.00083	<0.00083	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	100-02-7	8270	4.90E-02	1.50E-01	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00056	<0.00056	<0.00056	<0.00056	<0.00047	<4.8E-05	<4.7E-05	<4.7E-05
Acenaphthene	83-32-9	8270	1.50E+00	4.40E+00	0.0004	<0.00009	<0.00009	<0.00005	<0.00005	0.000054J	<0.00008	<0.00008	0.000145J	0.000141J	<0.00027	<2.8E-05	<2.7E-05	<2.7E-05
Acenaphthylene	208-96-8	8270	1.50E+00	4.40E+00	<0.00006	<0.00007	<0.00007	<0.00005	<0.00005	0.000081J	<0.00006	<0.00006	<0.00006	0.000411J	<0.00015	<1.5E-05	<1.5E-05	<1.5E-05
Anthracene	120-12-7	8270	7.30E+00	2.20E+01	0.00015J	<0.00007	<0.00007	0.00022	0.00027	0.00059	<0.00005	<0.00005	<0.00005	0.00304	<0.00014	<1.4E-05	<1.4E-05	<1.4E-05
Benzo(a)anthracene	56-55-3	8270	9.10E-03	2.00E-02	<0.00007	<0.00007	<0.00007	0.00011J	0.00012J	0.00036	<0.00008	<0.00008	<0.00008	0.00041J	<0.0005	<5.1E-05	<0.00005	<0.00005
Benzo(a)pyrene	50-32-8	8270	2.00E-04	2.00E-04	<0.00008	<0.00008	<0.00008	0.00016J	0.00013J	**0.00067**	<0.00008	<0.00008	<0.00008	**0.00044J**	<0.0002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	111-91-1	8270	8.30E-04	1.90E-03	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00013	<0.00013	<0.00013	<0.00013	<0.0003	<3.1E-05	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate	117-81-7	8270	6.00E-03	6.00E-03	**0.0064**	0.0028	0.00096	0.0019	0.0002J	0.0032	<0.00037	<0.00037	<0.00037	0.000585	<0.00037	<3.8E-05	<0.00019	0.00017 J
Chrysene	218-01-9	8270	9.10E-01	2.00E+00	<0.00007	<0.00007	<0.00007	0.00046	0.00052	0.0018	<0.00008	<0.00008	<0.00008	0.00104	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
Dibenzofuran	132-64-9	8270	9.80E-02	2.90E-01	0.00036	<0.00008	0.000083J	<0.00005	<0.00005	0.000066J	<0.00008	<0.00008	<0.00008	0.000133J	<0.0002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate	84-74-2	8270	2.40E+00	7.30E+00	0.00044	0.000086J	<0.00007	0.000056J	<0.00005	0.000078J	<0.00011	<0.00011	<0.00011	0.000121J	<0.0002	<0.00002	<0.00002	<0.00002
Fluoranthene	206-44-0	8270	9.80E-01	2.90E+00	0.00026	<0.00007	<0.00007	0.00035	0.00057	0.0019	<0.00007	<0.00007	<0.00007	0.00116	<0.0001	<0.00001	<0.00001	<0.00001
Fluorene	86-73-7	8270	9.80E-01	2.90E+00	0.00033	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	0.000143J	<0.0003	<3.1E-05	<0.00003	<0.00003
Naphthalene	91-20-3	8270	4.90E-01	1.50E+00	0.0058	<0.0001	0.0002J	<0.00005	<0.00005	0.0004	<0.00008	9.99E-05J	0.000367J	0.00118	<0.0002	<0.00002	<0.00002	<0.00002
Nitrobenzene	98-95-3	8270	4.90E-02	1.50E-01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00024	<2.4E-05	<2.4E-05	<2.4E-05
N-Nitrosodiphenylamine	86-30-6	8270	1.90E-01	4.20E-01	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.00025	<2.6E-05	<2.5E-05	<2.5E-05
Pentachlorophenol	87-86-5	8270	1.00E-03	1.00E-03	<0.00008	<0.00008	<0.00008	0.000084J	<0.00005	<0.00005	<0.00061	<0.00061	<0.00061	<0.00061	<0.00079	<8.1E-05	<7.9E-05	<7.9E-05
Phenanthrene	85-01-8	8270	7.30E-01	2.20E+00	0.00073	0.00012J	<0.00007	0.00011J	0.00011J	0.00058	<0.00006	<0.00006	0.000132J	0.000295J	<0.00021	<2.1E-05	<2.1E-05	<2.1E-05
Phenol	108-95-2	8270	7.30E+00	2.20E+01	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<0.00035	<3.6E-05	<3.5E-05	<3.5E-05
Pyrene	129-00-0	8270	7.30E-01	2.20E+00	0.00017J	<0.00007	<0.00007	0.00036	0.00051	0.0019	<0.00011	<0.00011	<0.00011	0.00118	<0.00019	<1.9E-05	<1.9E-05	<1.9E-05

Notes:
1. Sampling locations shown on Figure 1
2. Concentrations > RAL and non-detects are **bold** type.
3. Concentrations > cPCL and non-detects are highlighted.
4. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-5
Summary of Groundwater Arsenic and Lead Results - A-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

	Arsenic (mg/L)				**Lead (mg/L)**			
Residential Assessment / C/I Assessment Level	0.01				0.015			
	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019
MW-03	0.000895 J	0.00242	0.00363	**0.0191**	<0.0006	<0.0006	0.000787 J	0.00131 J
MW-04	0.00454	0.00092J	0.00492	0.000963 J	0.0016 J	<0.0006	0.00201	<0.0006
MW-05	0.00588	0.00255	0.00488	0.00387	0.00222	0.00149J	<0.0006	0.00149 J
MW-09	0.00104 J	0.0012J	0.00085 J	0.00202	<0.0006	<0.0006	<0.0006	0.000931 J
MW-12A	**0.017**	0.00133J	0.00093 J	0.00192 J	<0.0006	0.00092J	0.000655 J	<0.0006
MW-13	0.00303	0.00984	**0.014**	**0.0602**	<0.0006	<0.0006	<0.0006	0.00133 J
MW-15A	**0.0264**	**0.0137**	**0.019**	**0.027**	<0.0006	<0.0006	<0.0006	0.000722 J
MW-17	**0.0444**	**0.0419**	**0.0415**	**0.046**	<0.0006	<0.0006	<0.0006	<0.0006
MW-18A	0.0043	**0.0239**	**0.0291**	0.0031	<0.0006	<0.0006	<0.0006	<0.0006
MW-20A	0.0087	0.00568	0.00895	0.00788	<0.0006	<0.0006	<0.0006	<0.0006
MW-22AR	0.000896 J	0.000716J	0.00293	0.00488	<0.0006	<0.0006	<0.0006	0.00526
MW-25A	**0.0171**	0.00714	0.00171 J	0.00216	<0.0006	0.0079	<0.0006	<0.0006
MW-26A	**0.032**	**0.0427**	**0.0491**	**0.166**	<0.0006	0.000908J	<0.0006	<0.0006
MW-27A	0.000978 J	<0.0004	0.00207	NS	<0.0006	0.000601J	<0.0006	NS
MW-28A	0.0076	0.0053	**0.0177**	**0.0116**	<0.0006	0.00381	0.00763	<0.0006
MW-32AR	0.00294	**0.0228**	**0.0441**	**0.0316**	<0.0006	<0.0006	<0.0006	0.000644 J
MW-33A	**0.0202**	**0.0201**	0.00573	0.01	<0.0006	<0.0006	<0.0006	<0.0006
MW-35A	**0.0166**	**0.0714**	**0.0189**	**0.0198**	0.000985 J	0.00464	<0.0006	0.000654 J
MW-36A	0.00108 J	0.00753	0.00117 J	0.00107 J	<0.0006	**0.0184**	0.00204	0.00108 J
MW-38A	<0.0004	**0.0138**	**0.0124**	**0.0186**	<0.0006	<0.0006	<0.0006	<0.0006
MW-44A	**0.0275**	**0.0169**	**0.0165**	**0.0101**	<0.0006	<0.0006	<0.0006	<0.0006
MW-49A	0.00163 J	0.00233	0.000922 J	0.0012 J	0.000693 J	<0.0006	0.000913 J	0.00778
MW-50A	0.00205	<0.0004	0.00857	0.00134 J	<0.0006	0.00404	<0.0006	<0.0006
MW-51A	<0.0004	<0.0004	<0.0004	<0.0004	0.000748 J	<0.0006	<0.0006	<0.0006
MW-58A	0.000713 J	0.00106J	0.00143 J	0.00232	<0.0006	<0.0006	<0.0006	<0.0006
MW-59A	0.00181 J	0.00131J	**0.0101**	0.00243	<0.0006	<0.0006	<0.0006	<0.0006
MW-60A	0.000649 J	0.000706J	0.000636 J	0.00453	<0.0006	<0.0006	<0.0006	<0.0006
MW-61A	0.000743 J	0.00116J	0.00172 J	0.00069 J	<0.0006	0.0012J	<0.0006	<0.0006
MW-64A	0.000419 J	**0.0117**	0.00111 J	<0.0004	<0.0006	<0.0006	0.00377	<0.0006
MW-68A	NS	NS	NS	0.00966	NS	NS	NS	NS
MW-69A	0.00916	0.0017J	**0.0142**	0.000717 J	0.00293	<0.0006	0.0145	0.000712 J
MW-77A	**0.0263**	**0.0187**	**0.019**	0.00207	<0.0006	<0.0006	<0.0006	<0.0006
MW-79A	**0.0184**	**0.0149**	**0.0134**	**0.0133**	<0.0006	<0.0006	<0.0006	<0.0006

Note:
1. Sampling locations shown on Figure 1A
2. Concentrations > RAL are **bold** type.
3. Concentrations > cPCL are highlighted.
4. Non-detected concentrations > RAL or cPCL are **bold** type.
5. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
6. RAL = Residential Assessment Level, C/I = Commercial/Industrial
7. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-6
Summary of Groundwater Arsenic and Lead Results - B-CZ/B-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

	Arsenic (mg/L)					Lead (mg/L)				
Level C/I Assessment Level	0.01					0.015				
	Jan/Feb 2018	March/April 2018	May/June 2018	July 2018	January 2019	Jan/Feb 2018	March/April 2018	May/June 2018	July 2018	January 2019
MW-14	<0.0004	<0.0004	<0.0004	NS	0.000752 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-15B	0.00895	0.00329	**0.0111**	NS	0.00244	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-22BR	**0.0219**	**0.0159**	**0.0301**	NS	**0.0535**	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-33BR	0.00144 J	0.00187J	0.00294	NS	0.00143 J	<0.0006	0.000625J	<0.0006	NS	0.000636 J
MW-35B	0.00465	0.00595	**0.0116**	NS	0.00862	<0.0006	0.000835J	<0.0006	NS	0.00165 J
MW-36B	0.00116 J	0.000942J	0.000817 J	NS	0.00118 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-38B	0.000636 J	0.000972J	**0.0386**	NS	<0.0004	<0.0006	0.000962J	<0.0006	NS	<0.0006
MW-39B	**0.0108**	0.00188J	0.00178 J	NS	0.00365	0.00121 J	<0.0006	<0.0006	NS	<0.0006
MW-40B	**0.0679**	**0.0606**	**0.0494**	NS	**0.085**	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-42B	0.00186 J	0.00108J	0.00112 J	NS	0.00216	0.00118 J	<0.0006	<0.0006	NS	0.00412
MW-49B	0.000564 J	0.000746J	0.00146 J	NS	NS	<0.0006	<0.0006	<0.0006	NS	NS
MW-57B	**0.0419**	0.00179J	0.00285	NS	NS	<0.0006	<0.0006	<0.0006	NS	NS
MW-59B	<0.0004	<0.0004	<0.0004	NS	0.000983 J	0.00135 J	0.0031	<0.0006	NS	0.00108 J
MW-62B	0.00842	**0.0173**	**0.028**	NS	<0.0004	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-63B	0.00114 J	0.00211	0.000818 J	NS	0.00338	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-67B	0.000751 J	0.000565J	0.000416 J	NS	<0.0004	0.0022	0.000991J	0.000661 J	NS	0.00331
MW-68B	**0.0117**	**0.014**	**0.0112**	NS	**0.0125**	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-71B	0.00174 J	0.00214	0.000851 J	NS	0.00158 J	<0.0006	0.00832	0.00428	NS	0.000845 J
MW-72B	0.00127 J	0.000624J	0.000951 J	NS	0.00106 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-74B	0.00162 J	0.00142J	0.00131 J	NS	0.0014 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-80B	0.00286	0.00187J	0.00202	NS	0.0018 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-81B	0.00207	0.00134J	0.00203	NS	0.00116 J	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-82B	0.00271	0.00175J	**0.0103**	NS	0.00838	<0.0006	<0.0006	<0.0006	NS	<0.0006
MW-83B	**0.0353**	**0.0185**	**0.0673**	**0.0731**	**0.0916**	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
MW-84B	0.00269	0.00277	<0.0004	<0.0004	0.00219	<0.0006	<0.0006	<0.0006	0.00121 J	<0.0006
MW-89B	NI	NI	NI	0.00138 J	0.000683 J	NI	NI	NI	<0.0006	<0.0006
MW-90B	NI	NI	NI	0.00169 J	0.00346	NI	NI	NI	<0.0006	<0.0006
P-11	**0.0374**	**0.016**	**0.0622**	NS	**0.0183**	0.00215	0.0015J	<0.0006	NS	0.00192 J
TW-41B	**0.0376**	**0.0953**	**0.0976**	NS	**0.125**	<0.0006	<0.0006	<0.0006	NS	<0.0006

Note:
1. Sampling locations shown on Figure 1A
2. Concentrations > RAL are **bold** type.
3. Concentrations > cPCL are highlighted.
4. Non-detected concentrations > RAL or cPCL are **bold** type.
5. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
6. RAL = Residential Assessment Level, C/I = Commercial/Industrial
7. J = Estimated value, < = Compound not detected at the specified detection limit.
8. NI - Not Installed / NS - Not Sampled

Table 5B-7
Summary of Groundwater Arsenic and Lead Results - C-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

	Arsenic (mg/L)				**Lead (mg/L)**			
Residential Assessment Level	0.01				0.015			
C/I Assessment Level								
	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019
MW-12C	0.0025	0.00184J	0.0017 J	0.000796 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-15C	0.000738 J	0.000598J	0.000777 J	0.000629 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-17C	0.00112 J	0.00688	0.00479	0.0013 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-18C	0.00467	0.00327	0.00342	**0.0257**	<0.0006	<0.0006	<0.0006	<0.0006
MW-19C	0.00158 J	0.00107J	0.00294	0.00149 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-21C	0.00128 J	0.00109J	0.00116 J	0.00187 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-25C	0.00283	0.003	0.00305	0.00359	0.0079	0.00585	0.00514	<0.0006
MW-27C	0.00261	<0.0004	0.00212	0.000786 J	**0.0159**	<0.0006	<0.0006	0.000831 J
MW-28C	0.00206	0.00184J	0.00184 J	0.000447 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-34CR	0.00106 J	0.000801J	0.000689 J	0.00132 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-47C	NS	NS	NS	<0.0004	NS	NS	NS	0.000859 J
MW-48C	0.000831 J	0.000581J	0.000562 J	0.000924 J	0.00259	<0.0006	<0.0006	0.00141 J
MW-51C	0.000614 J	0.0004J	<0.0004	<0.0004	0.000858 J	<0.0006	<0.0006	<0.0006
MW-53C	0.000502 J	0.000443J	0.000694 J	<0.0004	0.000712 J	0.00085J	<0.0006	<0.0006
MW-54C	0.00128 J	0.00133J	0.0012 J	0.00123 J	<0.0006	<0.0006	<0.0006	<0.0006
MW-68C	<0.0004	0.000618J	<0.0004	<0.0004	<0.0006	<0.0006	<0.0006	<0.0006
MW-76C	0.00157 J	0.000631J	0.000527 J	0.000579 J	0.00239	<0.0006	<0.0006	<0.0006
MW-83C	0.000609 J	<0.0004	0.00139 J	0.00616	<0.0006	<0.0006	<0.0006	<0.0006
MW-85C	0.00152 J	0.00287	0.00588	0.00136 J	<0.0006	0.00249	<0.0006	<0.0006
MW-86C	0.00156 J	0.00612	0.00768	0.00405	<0.0006	<0.0006	<0.0006	<0.0006
MW-87C	<0.0004	<0.0004	<0.0004	0.000587 J	<0.0006	<0.0006	<0.0006	0.00124 J
MW-88C	0.000557 J	0.000653J	0.00346	0.000864 J	<0.0006	<0.0006	<0.0006	<0.0006

Note:
1. Sampling locations shown on Figure 1A
2. Concentrations > RAL are **bold** type.
3. Concentrations > cPCL are highlighted.
4. Non-detected concentrations > RAL or cPCL are **bold** type.
5. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
6. RAL = Residential Assessment Level, C/I = Commercial/Industrial
7. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5B-8
Summary of Groundwater Arsenic and Lead Results - D-TZ Monitoring Wells
UPRR Houston Wood Preserving Works

	Arsenic (mg/L)				**Lead (mg/L)**			
Residential Assessment Level C/I Assessment Level	0.01				0.015			
	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019	Jan/Feb 2018	March/April 2018	May/June 2018	January 2019
MW-36D	0.000773 J	0.00137J	<0.0004	0.000417 J	0.00182 J	**0.0206**	0.00476	0.00091 J
MW-59D	<0.0004	<0.0004	0.00111 J	0.000765 J	<0.0006	0.0018	0.00438	0.000917 J
MW-65D	<0.0004	0.00761	0.00292	0.00202	<0.0006	0.0006	<0.0006	<0.0006
MW-66D	0.000711 J	0.00663	0.00223	0.00204	0.00162 J	0.0006	<0.0006	<0.0006

Note:
1. Sampling locations shown on Figure 1A
2. Concentrations > RAL are **bold** type.
3. Concentrations > cPCL are highlighted.
4. Non-detected concentrations > RAL or cPCL are **bold** type.
5. TRRP PCLs (30 TAC §350, Tables 1, 2, and 3), last updated April 27, 2018.
6. RAL = Residential Assessment Level, C/I = Commercial/Industrial
7. J = Estimated value, < = Compound not detected at the specified detection limit.

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	9/2/1993	8.17			40.17
	48.34	12/21/1993	3.81			44.53
	48.34	3/24/1994	4.74			43.6
	48.34	6/22/1994	6.35			41.99
	48.34	9/28/1994	7.56			40.78
	48.34	10/13/1994	8.21			40.13
	48.34	1/24/1995	3.18			45.16
	48.34	4/11/1995	3.22			45.12
	48.34	7/11/1995	7.90			40.44
	48.34	1/23/1996	6.27			42.07
	48.34	7/19/1996	8.77			39.57
	48.34	9/17/1996	9.31			39.03
	48.34	10/31/1996	7.61			40.73
	48.34	11/22/1996	9.48			38.86
	48.34	12/27/1996	6.14			42.2
	48.34	1/22/1997	5.68			42.66
	48.34	2/21/1997	3.13			45.21
	48.34	3/25/1997	3.48			44.86
	48.34	4/23/1997	5.17			43.17
	48.34	4/24/1997	5.25			43.09
	48.34	5/13/1997	3.41			44.93
	48.34	6/20/1997	5.91			42.43
	48.34	6/25/1997	3.11			45.23
	48.34	7/1/1997	4.91			43.43
	48.34	7/24/1997	7.90			40.44
	48.34	8/16/1997	8.91			39.43
	48.34	8/22/1997	9.65			38.69
	48.34	9/25/1997	6.96			41.38
	48.34	10/22/1997	5.50			42.84
	48.34	11/25/1997	5.55			42.79
	48.34	12/19/1997	5.10			43.24
	48.34	1/20/1998	3.58			44.76
	48.34	3/3/1998	3.37			44.97
	48.34	3/18/1998	3.16			45.18
	48.34	4/24/1998	7.54			40.8
	48.34	5/21/1998	7.50			40.84
	48.34	7/30/1998	8.44			39.9
	48.34	8/25/1998	7.56			40.78
	48.34	9/21/1998	5.28			43.06
	48.34	10/26/1998	6.96			41.38
	48.34	11/23/1998	5.11			43.23
	48.34	1/29/1999	4.21			44.13
	48.34	2/26/1999	4.32			44.02
	48.34	3/16/1999	4.16			44.18
	48.34	4/29/1999	4.33			44.01
	48.34	6/1/1999	4.39			43.95
	48.34	7/30/1999	5.88			42.46
	48.34	8/27/1999	4.57			43.77
	48.34	9/27/1999	10.48			37.86
	48.34	10/29/1999	11.61			36.73
	48.34	12/29/1999	10.11			38.23
	48.34	2/4/2000	13.22			35.12
	48.34	2/25/2000	9.14			39.2
	48.34	3/27/2000	8.06			40.28
	48.34	4/7/2000	7.64			40.7
	48.34	5/31/2000	7.70			40.64
	48.34	6/1/2000	7.66			40.68
	48.34	7/28/2000	7.71			40.63

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	8/30/2000	10.59			37.75
	48.34	9/19/2000	12.29			36.05
	48.34	10/27/2000	9.09			39.25
	48.34	11/21/2000	9.11			39.23
	48.34	5/1/2001	7.26			41.08
	48.34	10/1/2001	7.57			40.77
	48.34	3/11/2002	7.40			40.94
	48.34	9/23/2002	4.60			43.74
	48.34	3/10/2003	2.89			45.45
	48.34	9/23/2003	3.74			44.6
	48.34	3/15/2004	3.27			45.07
	48.34	9/13/2004	9.03			39.31
	48.34	7/18/2005	3.94			44.4
	48.34	1/4/2006	9.13			39.21
	48.34	7/27/2006	3.30			45.04
	48.34	3/7/2007	2.62			45.72
	48.34	7/27/2007	3.74			44.6
	48.34	1/30/2008	2.85			45.49
	48.34	7/16/2008	7.96			40.38
	48.34	2/4/2009	7.18			41.16
	48.34	7/24/2009	7.63			40.71
	48.34	1/8/2010	5.06			43.28
	48.34	7/12/2010	3.86			44.48
	48.34	1/12/2011	3.71			44.63
	48.34	7/12/2011	6.42			41.92
	48.34	1/26/2012	--			
	48.34	7/9/2012	4.06			44.28
	48.34	1/7/2013	5.09			43.25
	48.34	7/22/2013	8.24			40.1
	48.34	1/7/2014	8.09			40.25
	48.34	7/15/2014	8.78			39.56
	48.34	1/5/2015	7.06			41.28
	48.34	2/11/2018	5.29			43.05
	48.34	3/11/2018	5.72			42.62
	48.34	5/14/2018	5.61			42.73
	48.34	7/2/2018	5.93			42.41
	48.34	13/2019	5.03			43.31
MW-04	49.85	9/2/1993	8.57			41.28
	49.85	12/21/1993	5.42			44.43
	49.85	3/24/1994	5.85			44
	49.85	6/22/1994	6.77			43.08
	49.85	9/28/1994	8.18			41.67
	49.85	10/13/1994	8.93			40.92
	49.85	1/24/1995	4.72			45.13
	49.85	4/11/1995	4.57			45.28
	49.85	7/11/1995	6.47			43.38
	49.85	1/23/1996	7.85			42
	49.85	7/19/1996	9.62			40.23
	49.85	9/17/1996	10.09			39.76
	49.85	10/31/1996	7.93			41.92
	49.85	11/22/1996	10.62			39.23
	49.85	12/27/1996	8.06			41.79
	49.85	1/22/1997	6.07			43.78
	49.85	2/21/1997	4.86			44.99
	49.85	3/25/1997	5.16			44.69
	49.85	4/23/1997	6.25			43.6
	49.85	4/24/1997	6.45			43.4
	49.85	5/13/1997	5.07			44.78

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-04	49.85	6/20/1997	6.69			43.16
	49.85	6/25/1997	4.68			45.17
	49.85	7/1/1997	5.91			43.94
	49.85	7/24/1997	8.61			41.24
	49.85	8/16/1997	9.62			40.23
	49.85	8/22/1997	10.35			39.5
	49.85	9/25/1997	8.13			41.72
	49.85	10/22/1997	7.23			42.62
	49.85	11/25/1997	7.25			42.6
	49.85	12/19/1997	6.76			43.09
	49.85	1/20/1998	5.40			44.45
	49.85	3/3/1998	5.00			44.85
	49.85	3/18/1998	4.82			45.03
	49.85	4/24/1998	8.63			41.22
	49.85	5/21/1998	9.30			40.55
	49.85	7/30/1998	10.19			39.66
	49.85	8/25/1998	9.05			40.8
	49.85	9/21/1998	7.05			42.8
	49.85	10/26/1998	8.12			41.73
	49.85	11/23/1998	6.01			43.84
	49.85	1/29/1999	5.19			44.66
	49.85	2/26/1999	5.22			44.63
	49.85	3/16/1999	6.21			43.64
	49.85	4/29/1999	6.33			43.52
	49.85	6/1/1999	6.39			43.46
	49.85	7/30/1999	7.79			42.06
	49.85	8/27/1999	6.51			43.34
	49.85	9/27/1999	11.32			38.53
	49.85	10/29/1999	12.21			37.64
	49.85	12/29/1999	11.52			38.33
	49.85	2/4/2000	14.33			35.52
	49.85	2/25/2000	10.63			39.22
	49.85	3/27/2000	9.38			40.47
	49.85	4/7/2000	9.09			40.76
	49.85	5/31/2000	9.13			40.72
	49.85	6/1/2000	9.10			40.75
	49.85	7/28/2000	9.18			40.67
	49.85	8/30/2000	12.17			37.68
	49.85	9/19/2000	13.39			36.46
	49.85	10/27/2000	10.69			39.16
	49.85	11/21/2000	9.61			40.24
	49.85	5/1/2001	8.41			41.44
	49.85	10/1/2001	8.68			41.17
	49.85	3/11/2002	5.41			44.44
	49.85	9/23/2002	5.29			44.56
	49.85	3/10/2003	4.36			45.49
	49.85	9/23/2003	5.28			44.57
	49.85	3/15/2004	4.80			45.05
	49.85	9/13/2004	9.80			40.05
	49.85	7/18/2005	5.84			44.01
	49.85	1/4/2006	10.48			39.37
	49.85	7/27/2006	5.30			44.55
	49.85	3/7/2007	4.10			45.75
	49.85	7/27/2007	5.36			44.49
	49.85	1/29/2008	4.18			45.67
	49.85	7/16/2008	8.66			41.19
	49.85	2/4/2009	8.93			40.92
	49.85	7/24/2009	9.27			40.58

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-04	49.85	1/8/2010	6.34			43.51
	49.85	7/12/2010	5.02			44.83
	49.85	1/12/2011	5.26			44.59
	49.85	7/12/2011	8.06			41.79
	49.85	1/26/2012	--			
	49.85	7/9/2012	3.74			46.11
	49.85	1/7/2013	4.62			45.23
	49.85	7/22/2013	7.59			42.26
	49.85	1/7/2014	7.16			42.69
	49.85	7/15/2014	7.62			42.23
	49.85	1/5/2015	6.12			43.73
	49.85	8/10/2015	4.26			45.59
	49.85	1/13/2016	3.92			45.93
	49.85	7/6/2016	4.31			45.54
	49.85	1/12/2017	4.67			45.18
	49.85	7/6/2017	5.12			44.73
	49.85	9/5/2017	5.01			44.84
	49.85	2/11/2018	5.12			44.73
	49.85	3/11/2018	5.67			44.18
	49.85	5/14/2018	6.06			43.79
	49.85	7/2/2018	6.42			43.43
	49.85	1/3/2019	5.52			44.33
MW-05	49.24	9/2/1993	4.90			44.34
	49.24	12/21/1993	2.21			47.03
	49.24	3/24/1994	2.30			46.94
	49.24	6/22/1994	2.80			46.44
	49.24	9/28/1994	3.90			45.34
	49.24	10/13/1994	5.05			44.19
	49.24	1/24/1995	1.36			47.88
	49.24	4/11/1995	3.90			45.34
	49.24	7/11/1995	5.33			43.91
	49.24	1/23/1996	7.42			41.82
	49.24	7/19/1996	8.61			40.63
	49.24	9/17/1996	9.01			40.23
	49.24	10/31/1996	7.84			41.4
	49.24	11/22/1996	9.68			39.56
	49.24	12/27/1996	7.66			41.58
	49.24	1/22/1997	5.89			43.35
	49.24	2/21/1997	4.45			44.79
	49.24	3/25/1997	4.65			44.59
	49.24	4/23/1997	5.53			43.71
	49.24	4/24/1997	5.68			43.56
	49.24	5/13/1997	4.39			44.85
	49.24	6/20/1997	5.67			43.57
	49.24	6/25/1997	3.97			45.27
	49.24	7/1/1997	5.06			44.18
	49.24	7/24/1997	7.46			41.78
	49.24	8/16/1997	8.57			40.67
	49.24	8/22/1997	9.20			40.04
	49.24	9/25/1997	7.28			41.96
	49.24	10/22/1997	6.70			42.54
	49.24	11/25/1997	6.70			42.54
	49.24	12/19/1997	6.26			42.98
	49.24	1/20/1998	5.05			44.19
	49.24	3/4/1998	4.54			44.7
	49.24	3/18/1998	4.36			44.88
	49.24	4/24/1998	7.67			41.57

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-05	49.24	5/21/1998	8.80			40.44
	49.24	7/30/1998	9.90			39.34
	49.24	8/25/1998	8.86			40.38
	49.24	9/21/1998	6.59			42.65
	49.24	10/26/1998	7.77			41.47
	49.24	11/23/1998	5.79			43.45
	49.24	1/29/1999	4.88			44.36
	49.24	2/26/1999	4.96			44.28
	49.24	3/16/1999	5.81			43.43
	49.24	4/29/1999	5.91			43.33
	49.24	6/1/1999	5.99			43.25
	49.24	7/30/1999	7.00			42.24
	49.24	8/27/1999	6.13			43.11
	49.24	9/27/1999	10.17			39.07
	49.24	10/29/1999	11.65			37.59
	49.24	12/29/1999	10.90			38.34
	49.24	2/4/2000	13.77			35.47
	49.24	2/25/2000	9.46			39.78
	49.24	3/27/2000	8.62			40.62
	49.24	4/7/2000	8.20			41.04
	49.24	5/31/2000	8.26			40.98
	49.24	6/1/2000	8.21			41.03
	49.24	7/28/2000	8.26			40.98
	49.24	8/30/2000	11.33			37.91
	49.24	9/19/2000	12.33			36.91
	49.24	10/27/2000	9.94			39.3
	49.24	11/21/2000	9.21			40.03
	49.24	5/1/2001	7.47			41.77
	49.24	10/1/2001	7.79			41.45
	49.24	3/11/2002	4.92			44.32
	49.24	9/23/2002	4.76			44.48
	49.24	3/10/2003	3.77			45.47
	49.24	9/23/2003	4.61			44.63
	49.24	3/15/2004	4.22			45.02
	49.24	9/13/2004	8.58			40.66
	49.24	7/18/2005	5.61			43.63
	49.24	1/4/2006	9.76			39.48
	49.24	7/27/2006	4.85			44.39
	49.24	3/7/2007	5.94			43.3
	49.24	7/27/2007	4.53			44.71
	49.24	1/29/2008	3.71			45.53
	49.24	7/15/2008	7.77			41.47
	49.24	2/4/2009	8.33			40.91
	49.24	7/24/2009	8.67			40.57
	49.24	1/8/2010	6.06			43.18
	49.24	7/12/2010	4.86			44.38
	49.24	1/12/2011	5.06			44.18
	49.24	7/12/2011	10.96			38.28
	49.24	2/2/2012	4.9			44.34
	49.24	7/9/2012	4.61			44.63
	49.24	1/7/2013	7.58			41.66
	49.24	7/22/2013	10.44			38.8
MW-09	49.26	9/2/1993	7.43			41.86
	49.26	12/21/1993	4.89			44.4
	49.26	3/24/1994	4.92			44.37
	49.26	6/22/1994	5.51			43.78
	49.26	9/28/1994	6.90			42.39
	49.26	10/13/1994	7.66			41.63

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-09	49.26	1/24/1995	4.10			45.19
	49.26	4/11/1995	3.74			45.55
	49.26	7/11/1995	5.08			44.21
	49.26	1/23/1996	7.09			42.2
	49.26	7/19/1996	8.27			41.02
	49.26	9/17/1996	8.58			40.71
	49.26	10/31/1996	7.27			42.02
	49.26	11/22/1996	9.17			40.12
	49.26	12/27/1996	7.05			42.24
	49.26	1/22/1997	5.42			43.87
	49.26	2/21/1997	4.09			45.2
	49.26	3/25/1997	4.17			45.12
	49.26	4/23/1997	5.05			44.24
	49.26	4/24/1997	5.21			44.08
	49.26	5/13/1997	4.16			45.13
	49.26	6/20/1997	5.32			43.97
	49.26	6/25/1997	3.80			45.49
	49.26	7/1/1997	4.57			44.72
	49.26	7/24/1997	7.03			42.26
	49.26	8/16/1997	8.26			41.03
	49.26	8/22/1997	8.67			40.62
	49.26	9/25/1997	6.99			42.3
	49.26	10/22/1997	6.10			43.19
	49.26	11/25/1997	6.12			43.17
	49.26	12/19/1997	5.62			43.67
	49.26	1/20/1998	4.60			44.69
	49.26	3/4/1998	4.15			45.14
	49.26	3/18/1998	4.02			45.27
	49.26	4/24/1998	7.32			41.97
	49.26	5/21/1998	8.10			41.19
	49.26	7/30/1998	9.12			40.17
	49.26	8/25/1998	8.41			40.88
	49.26	9/21/1998	6.11			43.18
	49.26	10/26/1998	7.61			41.68
	49.26	11/23/1998	5.43			43.86
	49.26	1/29/1999	4.60			44.69
	49.26	2/26/1999	4.68			44.61
	49.26	3/16/1999	5.46			43.83
	49.26	4/29/1999	5.66			43.63
	49.26	6/1/1999	5.66			43.63
	49.26	7/30/1999	7.11			42.18
	49.26	8/27/1999	5.86			43.43
	49.26	9/27/1999	9.81			39.48
	49.26	10/29/1999	10.63			38.66
	49.26	12/29/1999	9.99			39.3
	49.26	2/4/2000	12.44			36.85
	49.26	2/25/2000	8.88			40.41
	49.26	3/27/2000	8.22			41.07
	49.26	4/7/2000	8.10			41.19
	49.26	5/31/2000	8.15			41.14
	49.26	6/1/2000	8.00			41.29
	49.26	7/28/2000	8.11			41.18
	49.26	8/30/2000	11.10			38.19
	49.26	9/19/2000	11.91			37.38
	49.26	10/27/2000	9.84			39.45
	49.26	11/21/2000	8.89			40.4
	49.26	5/1/2001	7.16			42.13
	49.26	10/1/2001	7.39			41.9

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-09	49.26	3/11/2002	4.61			44.68
	49.26	9/23/2002	4.45			44.84
	49.26	3/10/2003	3.59			45.67
	49.26	9/23/2003	4.31			44.95
	49.26	3/15/2004	4.18			45.08
	49.26	9/13/2004	8.39			40.87
	49.26	7/18/2005	5.53			43.73
	49.26	1/4/2006	9.46			39.8
	49.26	7/27/2006	4.85			44.41
	49.26	3/7/2007	5.58			43.68
	49.26	7/27/2007	3.78			45.48
	49.26	1/29/2008	3.52			45.74
	49.26	7/15/2008	7.04			42.22
	49.26	2/4/2009	8.01			41.25
	49.26	7/24/2009	8.34			40.92
	49.26	1/8/2010	5.89			43.37
	49.26	7/12/2010	4.32			44.94
	49.26	1/12/2011	4.61			44.65
	49.26	7/12/2011	10.71			38.55
	49.26	1/26/2012	4.73			44.53
	49.26	7/9/2012	4.23			45.03
	49.26	1/7/2013	6.73			42.53
	49.26	7/22/2013	9.16			40.1
	49.26	1/7/2014	8.72			40.54
	49.26	7/16/2014	8.17			41.09
	49.26	1/5/2015	8.01			41.25
	49.26	8/10/2015	6.17			43.09
	49.26	1/13/2016	5.81			43.45
	49.26	7/6/2016	6.14			43.12
	49.26	1/12/2017	6.71			42.55
	49.26	7/6/2017	7.09			42.17
	49.26	9/5/2017	7.06			42.20
	49.26	2/11/2018	5.16			44.10
	49.26	3/11/2018	6.01			43.25
	49.26	5/14/2018	6.21			43.05
	49.26	7/2/2018	6.67			42.59
	49.26	1/3/2019	5.61			43.65
MW-12A	49.96	3/25/1997	5.52			44.44
	49.96	4/23/1997	6.51			43.45
	49.96	4/24/1997	6.66			43.3
	49.96	5/13/1997	5.47			44.49
	49.96	6/20/1997	6.81			43.15
	49.96	9/25/1997	8.08			41.88
	49.96	10/22/1997	7.10			42.86
	49.96	11/25/1997	7.12			42.84
	49.96	12/19/1997	6.96			43
	49.96	1/20/1998	5.69			44.27
	49.96	3/4/1998	4.52			45.44
	49.96	3/18/1998	5.28			44.68
	49.96	4/24/1998	8.70			41.26
	49.96	5/21/1998	9.10			40.86
	49.96	8/25/1998	10.05			39.91
	49.96	9/21/1998	7.11			42.85
	49.96	10/26/1998	9.11			40.85
	49.96	11/23/1998	6.01			43.95
	49.96	1/29/1999	5.44			44.52
	49.96	2/26/1999	5.52			44.44
	49.96	3/16/1999	6.21			43.75

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW--12A	49.96	4/29/1999	6.38			43.58
	49.96	6/1/1999	6.31			43.65
	49.96	7/30/1999	7.88			42.08
	49.96	8/27/1999	6.56			43.4
	49.96	9/27/1999	11.61			38.35
	49.96	10/29/1999	12.79			37.17
	49.96	11/18/1999	13.18			36.78
	49.96	12/29/1999	12.03			37.93
	49.96	2/4/2000	15.43			34.53
	49.96	2/25/2000	11.34			38.62
	49.96	3/27/2000	9.22			40.74
	49.96	4/7/2000	8.80			41.16
	49.96	5/31/2000	8.84			41.12
	49.96	6/1/2000	8.81			41.15
	49.96	7/28/2000	8.87			41.09
	49.96	8/30/2000	11.76			38.2
	49.96	9/19/2000	13.22			36.74
	49.96	10/27/2000	10.54			39.42
	49.96	11/21/2000	10.16			39.8
	49.96	5/1/2001	8.60			41.36
	49.96	10/1/2001	8.73			41.23
	49.96	3/11/2002	6.01			43.95
	49.96	9/23/2002	5.87			44.09
	49.96	3/10/2003	5.37			44.59
	49.96	9/23/2003	5.96			44
	49.96	3/15/2004	5.54			44.42
	49.96	9/13/2004	10.30			39.66
	49.96	7/18/2005	7.01			42.95
	49.96	1/4/2006	10.57			39.39
	49.96	7/27/2006	6.60			43.36
	49.96	3/7/2007	6.94			43.02
	49.96	7/27/2007	5.79			44.17
	49.96	1/30/2008	5.29			44.67
	49.96	7/15/2008	9.19			40.77
	49.96	2/4/2009	8.81			41.15
	49.96	7/24/2009	9.13			40.83
	49.96	1/8/2010	5.47			44.49
	49.96	7/12/2010	9.72			40.24
	49.96	1/12/2011	5.59			44.37
	49.96	7/12/2011	12.46			37.5
	49.96	1/26/2012	5.78			44.18
	49.96	7/9/2012	5.96			44
	49.96	1/7/2013	9.04			40.92
	49.96	7/22/2013	11.64			38.32
	49.96	1/7/2014	7.38			42.58
	49.96	7/16/2014	9.82			40.14
	49.96	1/5/2015	6.46			43.50
	49.96	8/10/2015	5.26			44.70
	49.96	1/13/2016	4.67			45.29
	49.96	7/6/2016	4.96			45.00
	49.96	1/12/2017	5.67			44.29
	49.96	7/6/2017	6.03			43.93
	49.96	9/5/2017	5.86			44.10
	49.96	2/11/2018	6.48			43.48
	49.96	3/11/2018	7.12			42.84
	49.96	5/14/2018	8.92			41.04
	49.96	1/3/2019	8.37			41.59

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	3/25/1997	5.60			44.42
	50.02	4/23/1997	6.64			43.38
	50.02	4/24/1997	6.74			43.28
	50.02	5/13/1997	5.55			44.47
	50.02	6/20/1997	7.01			43.01
	50.02	9/25/1997	8.32			41.7
	50.02	10/22/1997	7.25			42.77
	50.02	11/25/1997	7.29			42.73
	50.02	12/19/1997	6.86			43.16
	50.02	1/20/1998	5.88			44.14
	50.02	3/4/1998	5.64	44.08	1.72	44.38
	50.02	3/18/1998	5.38	44.07	1.73	44.64
	50.02	4/9/1998	7.87		0.98	42.15
	50.02	4/16/1998	8.31		1.35	41.71
	50.02	4/24/1998	8.72	43.82	1.98	41.3
	50.02	5/8/1998	NM		0.50	
	50.02	5/12/1998	NM		0.50	
	50.02	5/21/1998	10.48			39.54
	50.02	5/25/1998	NM		1.00	
	50.02	6/9/1998	NM		1.00	
	50.02	6/16/1998	NM		1.20	
	50.02	6/26/1998	NM		1.50	
	50.02	7/2/1998	NM		1.50	
	50.02	7/10/1998	NM		2.00	
	50.02	7/14/1998	NM		2.00	
	50.02	7/23/1998	NM		2.00	
	50.02	8/5/1998	NM		2.00	
	50.02	8/13/1998	NM		2.00	
	50.02	8/18/1998	NM		2.00	
	50.02	8/25/1998	10.22			39.8
	50.02	9/15/1998	NM		2.00	
	50.02	9/21/1998	7.73			42.29
	50.02	9/30/1998	NM		4.00	
	50.02	10/8/1998	NM		4.00	
	50.02	10/16/1998	NM		4.00	
	50.02	10/26/1998	8.88			41.14
	50.02	11/6/1998	NM		4.00	
	50.02	11/13/1998	NM		1.49	
	50.02	11/19/1998	NM		4.00	
	50.02	11/23/1998	6.11			43.91
	50.02	12/16/1998	NM		4.00	
	50.02	1/7/1999	NM		4.00	
	50.02	1/15/1999	NM		4.00	
	50.02	1/22/1999	NM		4.00	
	50.02	1/26/1999	NM		4.00	
	50.02	1/29/1999	5.70			44.32
	50.02	2/4/1999	NM		4.00	
	50.02	2/9/1999	NM		3.00	
	50.02	2/26/1999	5.83	39.95	5.85	44.19
	50.02	3/16/1999	6.30	43.60	2.20	43.72
	50.02	4/29/1999	6.44	38.90	6.90	43.58
	50.02	5/21/1999	7.40	36.90	8.90	42.62
	50.02	5/27/1999	7.38	36.90	8.90	42.64
	50.02	6/1/1999	6.40	37.90	7.90	43.62
	50.02	6/10/1999	7.36	36.90	8.90	42.66
	50.02	7/30/1999	7.98			42.04
	50.02	8/27/1999	6.61	38.90	6.90	43.41
	50.02	9/27/1999	11.71	42.34	3.46	38.31

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	10/29/1999	12.76	41.84	3.96	37.26
	50.02	11/18/1999	13.22			36.8
	50.02	12/29/1999	12.01	41.84	3.96	38.01
	50.02	2/4/2000	13.22	41.84	3.96	36.8
	50.02	2/25/2000	11.44	41.84	3.96	38.58
	50.02	3/27/2000	NM			
	50.02	4/7/2000	8.73	41.81	3.99	41.29
	50.02	5/31/2000	8.77	41.81	3.99	41.25
	50.02	6/1/2000	8.73	41.81	3.99	41.29
	50.02	7/28/2000	8.77	41.89	3.91	41.25
	50.02	8/30/2000	11.66	41.82	3.98	38.36
	50.02	9/19/2000	13.33	40.89	4.91	36.69
	50.02	10/27/2000	11.75	41.80	4.00	38.27
	50.02	11/21/2000	10.64	43.48	2.32	39.38
	50.02	5/1/2001	8.71	43.46	2.34	41.31
	50.02	10/1/2001	8.37		15.00	41.65
	50.02	3/14/2002	6.37	36.99	8.81	43.65
	50.02	9/23/2002	6.10	40.03	5.77	43.92
	50.02	3/10/2003	5.45			44.57
	50.02	9/24/2003	6.29	39.85	5.95	43.73
	50.02	3/15/2004	5.63			44.39
	50.02	9/13/2004	10.44	38.72	7.08	39.58
	50.02	7/18/2005	7.14	38.40	7.40	42.88
	50.02	1/4/2006	10.75	35.98	9.82	39.27
	50.02	7/27/2006	6.07	35.74	10.06	43.95
	50.02	3/7/2007	6.96	34.60	11.20	43.06
	50.02	7/27/2007	5.36	33.45	12.35	44.66
	50.02	1/31/2008	5.75	33.34	12.46	44.27
	50.02	7/15/2008	9.38	38.88	6.92	40.64
	50.02	2/4/2009	8.89	38.14	7.66	41.13
	50.02	7/24/2009	9.18	38.51	7.29	40.84
	50.02	1/8/2010	6.81	37.46	8.34	43.21
	50.02	5/27/2010	7.29	39.5	6.30	42.73
	50.02	6/28/2010	7.39	44.1	1.70	42.63
	50.02	7/12/2010	7.47	44.25	1.55	42.55
	50.02	8/31/2010	7.26	45.42	0.38	42.76
	50.02	1/12/2011	7.01	45.39	0.41	43.01
	50.02	7/12/2011	10.09	45.39	0.41	39.93
	50.02	3/8/2012	6.87	40.2	5.60	43.15
	50.02	7/9/2012	7.16	40.1	5.70	42.86
	50.02	1/7/2013	9.17	39.86	5.94	40.85
	50.02	7/22/2013	11.16	39.04	6.76	38.86
	50.02	1/7/2014	11.34	45.12	0.68	38.68
	50.02	7/15/2014	10.59	44.89	0.91	39.43
	50.02	1/5/2015	10.06	44.91	1.29	39.96
	50.02	8/10/2015	7.39	46.1	0.10	42.63
	50.02	1/13/2016	6.06	45.79	0.41	43.96
	50.02	7/6/2016	6.29	45.72	0.48	43.73
	50.02	1/12/2017	7.02	45.81	0.39	43.00
	50.02	7/6/2017	7.01	45.71	1.89	43.01
	50.02	9/5/2017	7.03	45.6	2.00	42.99
	50.02	2/7/2018	7.13	45.87	0.33	42.89
	50.02	3/11/2018	7.42	45.96	0.24	42.6
	50.02	5/14/2018	8.59	45.91	0.29	41.43
	50.02	1/3/2019	7.96	45.87	0.33	42.06
MW-12C	50.14	5/13/1997	39.34			10.8
	50.14	6/20/1997	38.94			11.2
	50.14	9/25/1997	36.70			13.44

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12C	50.14	10/22/1997	36.09			14.05
	50.14	11/25/1997	36.13			14.01
	50.14	12/19/1997	35.34			14.8
	50.14	1/20/1998	32.60			17.54
	50.14	3/4/1998	31.56			18.58
	50.14	3/18/1998	31.64			18.5
	50.14	4/24/1998	31.06			19.08
	50.14	5/21/1998	38.20			11.94
	50.14	8/25/1998	31.00			19.14
	50.14	9/21/1998	29.86			20.28
	50.14	10/26/1998	30.12			20.02
	50.14	11/23/1998	28.38			21.76
	50.14	1/29/1999	27.61			22.53
	50.14	2/26/1999	27.69			22.45
	50.14	3/16/1999	28.00			22.14
	50.14	4/29/1999	28.21			21.93
	50.14	6/1/1999	28.20			21.94
	50.14	7/30/1999	29.80			20.34
	50.14	8/27/1999	28.41			21.73
	50.14	9/27/1999	29.20			20.94
	50.14	10/29/1999	29.78			20.36
	50.14	11/18/1999	30.17			19.97
	50.14	12/29/1999	29.09			21.05
	50.14	2/4/2000	29.66			20.48
	50.14	2/25/2000	30.32			19.82
	50.14	3/27/2000	28.91			21.23
	50.14	4/7/2000	27.40			22.74
	50.14	5/31/2000	27.44			22.7
	50.14	6/1/2000	27.43			22.71
	50.14	7/28/2000	27.45			22.69
	50.14	8/30/2000	33.61			16.53
	50.14	9/19/2000	30.03			20.11
	50.14	10/27/2000	33.94			16.2
	50.14	11/21/2000	29.12			21.02
	50.14	5/1/2001	26.85			23.29
	50.14	10/1/2001	26.85			23.29
	50.14	3/11/2002	25.59			24.55
	50.14	9/23/2002	26.57			23.57
	50.14	3/10/2003	24.85			25.29
	50.14	9/23/2003	26.06			24.08
	50.14	3/15/2004	24.31			25.83
	50.14	9/13/2004	26.15			23.99
	50.14	7/18/2005	26.23			23.91
	50.14	1/4/2006	22.26			27.88
	50.14	7/27/2006	25.28			24.86
	50.14	3/7/2007	23.78			26.36
	50.14	7/27/2007	22.05			28.09
	50.14	1/30/2008	22.69			27.45
	50.14	7/15/2008	24.41			25.73
	50.14	2/4/2009	24.59			25.55
	50.14	7/24/2009	24.91			25.23
	50.14	1/8/2010	23.03			27.11
	50.14	7/12/2010	23.91			26.23
	50.14	1/12/2011	23.76			26.38
	50.14	7/12/2011	25.98			24.16
	50.14	1/26/2012	25.76			24.38
	50.14	7/9/2012	24.59			25.55
	50.14	1/7/2013	26.04			24.1

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12C	50.14	7/22/2013	27.09			23.05
	50.14	1/7/2014	26.52			23.62
	50.14	7/16/2014	25.15			24.99
	50.14	1/5/2015	26.01			24.13
	50.14	8/10/2015	24.26			25.88
	50.14	1/13/2016	23.83			26.31
	50.14	7/6/2016	24.13			26.01
	50.14	1/12/2017	24.49			25.65
	50.14	7/6/2017	24.88			25.26
	50.14	9/5/2017	24.84			25.30
	50.14	2/11/2018	25.13			25.01
	50.14	3/11/2018	24.04			26.1
	50.14	4/14/2018	25.96			24.18
	50.14	1/3/2019	25.34			24.8
MW-13	50.65	3/25/1997	9.43			41.22
	50.65	4/23/1997	9.87			40.78
	50.65	4/24/1997	9.92			40.73
	50.65	5/13/1997	9.30			41.35
	50.65	6/20/1997	10.11			40.54
	50.65	9/25/1997	10.75			39.9
	50.65	10/22/1997	10.09			40.56
	50.65	11/25/1997	10.11			40.54
	50.65	12/19/1997	10.01			40.64
	50.65	1/20/1998	9.32			41.33
	50.65	3/4/1998	9.23			41.42
	50.65	3/18/1998	8.90			41.75
	50.65	4/24/1998	10.74			39.82
	50.65	5/21/1998	12.11			38.54
	50.65	8/25/1998	12.00			38.56
	50.65	9/21/1998	10.13			40.43
	50.65	10/26/1998	11.15			39.41
	50.65	11/23/1998	9.22			41.34
	50.65	1/29/1999	8.00			42.65
	50.65	2/26/1999	8.11			42.54
	50.65	3/16/1999	9.51			41.14
	50.65	4/29/1999	9.79			40.86
	50.65	6/1/1999	9.70			40.95
	50.65	7/30/1999	11.01			39.64
	50.65	8/27/1999	9.96			40.69
	50.65	9/27/1999	12.84			37.81
	50.65	10/29/1999	13.88			36.77
	50.65	11/17/1999	14.00			36.65
	50.65	12/29/1999	13.08			37.57
	50.65	2/4/2000	15.61			35.04
	50.65	2/25/2000	12.17			38.48
	50.65	3/27/2000	10.95			39.7
	50.65	4/7/2000	10.51			40.14
	50.65	5/31/2000	10.57			40.08
	50.65	6/1/2000	10.51			40.14
	50.65	7/28/2000	10.54			40.11
	50.65	8/30/2000	13.63			37.02
	50.65	9/19/2000	14.57			36.08
	50.65	10/27/2000	11.11			39.54
	50.65	11/21/2000	11.44			39.21
	50.65	5/1/2001	10.70			39.95
	50.65	10/1/2001	10.31			40.34
	50.65	3/11/2002	9.62			41.03
	50.65	9/23/2002	9.17			41.48

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-13	50.65	3/10/2003	9.17			41.48
	50.65	9/23/2003	9.14			41.51
	50.65	3/15/2004	9.30			41.35
	50.65	9/13/2004	11.98			38.67
	50.65	7/18/2005	10.25			40.4
	50.65	1/4/2006	12.03			38.62
	50.65	7/27/2006	8.82			41.83
	50.65	3/7/2007	9.95			40.7
	50.65	7/27/2007	8.90			41.75
	50.65	1/30/2008	8.85			41.8
	50.65	7/15/2008	10.89			39.76
	50.65	2/4/2009	10.59			40.06
	50.65	7/23/2009	11.07			39.58
	50.65	1/8/2010	9.22			41.43
	50.65	7/12/2010	11.12			39.53
	50.65	1/12/2011	8.89			41.76
	50.65	7/12/2011	12.96			37.69
	50.65	1/26/2012	9.31			41.34
	50.65	7/9/2012	9.14			41.51
	50.65	1/7/2013	10.68			39.97
	50.65	7/22/2013	12.13			38.52
	50.65	1/7/2014	10.13			40.52
	50.65	7/16/2014	11.04			39.61
	50.65	1/5/2015	9.34			41.31
	50.65	8/10/2015	7.67			42.98
	50.65	1/13/2016	7.01			43.64
	50.65	7/6/2016	7.39			43.26
	50.65	1/12/2017	7.81			42.84
	50.65	7/6/2017	7.96			42.69
	50.65	9/5/2017	9.01			41.64
	50.65	2/11/2018	9.58			41.07
	50.65	3/11/2018	10.09			40.56
	50.65	5/14/2018	10.96			39.69
	50.65	1/3/2019	10.52			40.13
MW-14	50.66	3/25/1997	7.71			42.95
	50.66	4/23/1997	8.31			42.35
	50.66	4/24/1997	8.34			42.32
	50.66	5/13/1997	7.83			42.83
	50.66	6/20/1997	8.64			42.02
	50.66	9/25/1997	9.95			40.71
	50.66	10/22/1997	8.89			41.77
	50.66	11/25/1997	8.86			41.8
	50.66	12/19/1997	8.62			42.04
	50.66	1/20/1998	8.08			42.58
	50.66	3/4/1998	7.72			42.94
	50.66	3/18/1998	7.66			43
	50.66	4/24/1998	9.75			40.91
	50.66	5/21/1998	11.00			39.66
	50.66	8/25/1998	12.00			38.66
	50.66	9/21/1998	9.41			41.25
	50.66	10/26/1998	11.10			39.56
	50.66	11/23/1998	8.08			42.58
	50.66	1/29/1999	7.10			43.56
	50.66	2/26/1999	7.21			43.45
	50.66	3/16/1999	8.74			41.92
	50.66	4/29/1999	8.93			41.73
	50.66	6/1/1999	8.92			41.74
	50.66	7/30/1999	10.44			40.22

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-14	50.66	8/27/1999	9.21			41.45
	50.66	9/27/1999	12.56			38.1
	50.66	10/29/1999	13.56			37.1
	50.66	11/17/1999	13.63			37.03
	50.66	12/29/1999	12.88			37.78
	50.66	2/4/2000	14.22			36.44
	50.66	2/25/2000	11.73			38.93
	50.66	3/27/2000	10.54			40.12
	50.66	4/7/2000	10.14			40.52
	50.66	5/31/2000	10.17			40.49
	50.66	6/1/2000	10.13			40.53
	50.66	7/28/2000	10.17			40.49
	50.66	8/30/2000	13.22			37.44
	50.66	9/19/2000	14.27			36.39
	50.66	10/27/2000	11.56			39.1
	50.66	11/21/2000	11.17			39.49
	50.66	5/1/2001	9.71			40.95
	50.66	10/1/2001	10.64			40.02
	50.66	3/11/2002	8.45			42.21
	50.66	9/23/2002	7.90			42.76
	50.66	3/10/2003	8.59			42.07
	50.66	9/23/2003	7.70			42.96
	50.66	3/15/2004	7.96			42.7
	50.66	9/13/2004	11.05			39.61
	50.66	7/18/2005	9.55			41.11
	50.66	1/4/2006	11.83			38.83
	50.66	7/27/2006	7.80			42.86
	50.66	3/7/2007	8.96			41.7
	50.66	7/27/2007	8.01			42.65
	50.66	1/30/2008	7.66			43
	50.66	7/15/2008	10.41			40.25
	50.66	2/4/2009	10.27			40.39
	50.66	7/23/2009	10.67			39.99
	50.66	1/8/2010	8.24			42.42
	50.66	7/12/2010	10.54			40.12
	50.66	1/12/2011	18.09			32.57
	50.66	7/12/2011	12.93			37.73
	50.66	1/26/2012	8.57			42.09
	50.66	7/9/2012	8.61			42.05
	50.66	1/7/2013	10.46			40.2
	50.66	7/22/2013	11.91			38.75
	50.66	1/7/2014	9.39			41.27
	50.66	7/16/2014	10.58			40.08
	50.66	1/5/2015	8.79			41.87
	50.66	8/10/2015	6.34			44.32
	50.66	1/13/2016	5.79			44.87
	50.66	7/6/2016	6.06			44.60
	50.66	1/12/2017	6.59			44.07
	50.66	7/6/2017	6.92			43.74
	50.66	9/5/2017	6.83			43.83
	50.66	2/11/2018	8.66			42.00
	50.66	3/11/2018	8.99			41.67
	50.66	5/14/2018	10.09			40.57
	50.66	1/3/2019	9.37			41.29
MW-15A	50.41	3/25/1997	8.22			42.19
	50.41	4/23/1997	8.28			42.13
	50.41	4/24/1997	8.51			41.9
	50.41	5/13/1997	8.06			42.35

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15A	50.41	6/20/1997	8.64			41.77
	50.41	9/25/1997	9.75			40.66
	50.41	10/22/1997	9.09			41.32
	50.41	11/25/1997	9.13			41.28
	50.41	12/19/1997	8.89			41.52
	50.41	1/20/1998	8.35			42.06
	50.41	3/4/1998	8.09			42.32
	50.41	3/18/1998	7.98			42.43
	50.41	4/24/1998	9.57			40.84
	50.41	5/21/1998	11.10			39.31
	50.41	8/25/1998	11.78			38.63
	50.41	9/21/1998	9.59			40.82
	50.41	10/26/1998	10.69			39.72
	50.41	11/23/1998	8.46			41.95
	50.41	1/29/1999	7.11			43.3
	50.41	2/26/1999	7.23			43.18
	50.41	3/16/1999	9.17			41.24
	50.41	4/29/1999	9.29			41.12
	50.41	6/1/1999	9.29			41.12
	50.41	7/30/1999	10.83			39.58
	50.41	8/27/1999	9.39			41.02
	50.41	9/27/1999	12.02			38.39
	50.41	10/29/1999	13.11			37.3
	50.41	11/17/1999	13.44			36.97
	50.41	12/29/1999	12.49			37.92
	50.41	2/4/2000	15.71			34.7
	50.41	2/25/2000	11.34			39.07
	50.41	3/27/2000	10.66			39.75
	50.41	4/7/2000	10.20			40.21
	50.41	5/31/2000	10.23			40.18
	50.41	6/1/2000	10.22			40.19
	50.41	7/28/2000	10.23			40.18
	50.41	8/30/2000	13.34			37.07
	50.41	9/19/2000	14.01			36.4
	50.41	10/27/2000	11.77			38.64
	50.41	11/21/2000	11.09			39.32
	50.41	5/1/2001	9.85			40.56
	50.41	10/1/2001	9.73			40.68
	50.41	3/11/2002	8.81			41.6
	50.41	9/23/2002	8.21			42.2
	50.41	3/10/2003	7.76			42.65
	50.41	9/23/2003	7.87			42.54
	50.41	3/15/2004	7.94			42.47
	50.41	9/13/2004	10.72			39.69
	50.41	7/18/2005	9.33			41.08
	50.41	1/4/2006	11.66			38.75
	50.41	7/27/2006	7.92			42.49
	50.41	3/7/2007	9.19			41.22
	50.41	7/27/2007	7.88			42.53
	50.41	1/30/2008	8.02			42.39
	50.41	7/15/2008	10.26			40.15
	50.41	2/4/2009	10.59			39.82
	50.41	7/23/2009	11.01			39.4
	50.41	1/8/2010	8.64			41.77
	50.41	7/12/2010	10.81			39.6
	50.41	1/12/2011	8.77			41.64
	50.41	7/12/2011	12.78			37.63
	50.41	1/26/2012	9.29			41.12

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15A	50.41	7/9/2012	5.92			44.49
	50.41	1/7/2013	10.77			39.64
	50.41	7/22/2013	12.21			38.2
	50.41	1/7/2014	9.85			40.56
	50.41	7/16/2014	10.65			39.76
	50.41	1/5/2015	9.07			41.34
	50.41	8/10/2015	6.49			43.92
	50.41	1/13/2016	5.79			44.62
	50.41	7/6/2016	6.21			44.20
	50.41	1/12/2017	6.82			43.59
	50.41	7/6/2017	7.47			42.94
	50.41	9/5/2017	7.43			42.98
	50.41	2/11/2018	8.89			41.52
	50.41	3/11/2018	9.23			41.18
	50.41	5/14/2018	10.18			40.23
	50.41	1/3/2019	9.41			41
MW-15B	50.20	1/26/2012	10.13			40.07
	50.20	7/9/2012	8.32			41.88
	50.20	1/7/2013	10.71			39.49
	50.20	7/22/2013	11.97			38.23
	50.20	1/7/2014	9.81			40.39
	50.20	7/15/2014	10.36			39.84
	50.20	1/5/2015	9.26			40.94
	50.20	8/10/2015	7.29			42.91
	50.20	1/13/2016	6.81			43.39
	50.20	7/6/2016	7.56			42.64
	50.20	1/12/2017	8.09			42.11
	50.20	7/6/2017	8.61			41.59
	50.20	9/5/2017	8.56			41.64
	50.20	2/11/2018	8.74			41.46
	50.20	3/11/2018	9.09			41.11
	50.20	5/14/2018	9.91			40.29
	50.20	1/3/2019	9.4			40.8
MW-15C	50.01	5/13/1997	33.46			16.55
	50.01	6/20/1997	34.18			15.83
	50.01	9/25/1997	33.77			16.24
	50.01	10/22/1997	32.89			17.12
	50.01	11/25/1997	32.95			17.06
	50.01	12/19/1997	32.01			18
	50.01	1/20/1998	29.90			20.11
	50.01	3/4/1998	28.56			21.45
	50.01	3/18/1998	28.53			21.48
	50.01	4/24/1998	28.46			21.55
	50.01	5/21/1998	35.00			15.01
	50.01	8/25/1998	29.30			20.71
	50.01	9/21/1998	28.15			21.86
	50.01	10/26/1998	28.11			21.9
	50.01	11/23/1998	26.50			23.51
	50.01	1/29/1999	25.44			24.57
	50.01	2/26/1999	25.51			24.5
	50.01	3/16/1999	26.11			23.9
	50.01	4/29/1999	26.33			23.68
	50.01	6/1/1999	26.39			23.62
	50.01	7/30/1999	27.99			22.02
	50.01	8/27/1999	26.51			23.5
	50.01	9/27/1999	27.46			22.55
	50.01	10/29/1999	28.26			21.75
	50.01	11/17/1999	28.55			21.46

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15C	50.01	12/29/1999	27.61			22.4
	50.01	2/4/2000	28.11			21.9
	50.01	2/25/2000	28.23			21.78
	50.01	3/27/2000	27.45			22.56
	50.01	4/7/2000	26.11			23.9
	50.01	5/31/2000	26.13			23.88
	50.01	6/1/2000	26.03			23.98
	50.01	7/28/2000	26.14			23.87
	50.01	8/30/2000	29.11			20.9
	50.01	9/19/2000	28.67			21.34
	50.01	10/27/2000	27.64			22.37
	50.01	11/21/2000	27.56			22.45
	50.01	5/1/2001	25.24			24.77
	50.01	10/1/2001	25.40			24.61
	50.01	3/11/2002	24.17			25.84
	50.01	9/23/2002	25.35			24.66
	50.01	3/10/2003	23.52			26.49
	50.01	9/23/2003	24.88			25.13
	50.01	3/15/2004	22.97			27.04
	50.01	9/13/2004	24.80			25.21
	50.01	7/18/2005	25.17			24.84
	50.01	1/4/2006	26.23			23.78
	50.01	7/27/2006	24.31			25.7
	50.01	3/7/2007	22.76			27.25
	50.01	7/27/2007	21.03			28.98
	50.01	1/30/2008	21.80			28.21
	50.01	7/15/2008	23.63			26.38
	50.01	2/4/2009	23.73			26.28
	50.01	7/23/2009	23.96			26.05
	50.01	1/8/2010	21.88			28.13
	50.01	7/12/2010	23.08			26.93
	50.01	1/12/2011	23.04			26.97
	50.01	7/12/2011	25.09			24.92
	50.01	1/26/2012	24.37			25.64
	50.01	7/9/2012	24.41			25.6
	50.01	1/7/2013	25.21			24.8
	50.01	7/22/2013	26.10			23.91
	50.01	1/7/2014	25.26			24.75
	50.01	7/16/2014	24.15			25.86
	50.01	1/5/2015	25.34			24.67
	50.01	8/10/2015	22.74			27.27
	50.01	1/13/2016	21.92			28.09
	50.01	7/6/2016	22.26			27.75
	50.01	1/12/2017	22.69			27.32
	50.01	7/6/2017	23.31			26.70
	50.01	9/5/2017	23.29			26.72
	50.01	2/11/2018	23.63			26.38
	50.01	3/11/2018	22.47			27.54
	50.01	5/14/2018	23.33			26.68
	50.01	1/3/2019	23.87			26.14
MW-16	51.51	3/25/1997	7.41			44.1
	51.51	4/23/1997	8.44			43.07
	51.51	4/24/1997	8.52			42.99
	51.51	5/13/1997	8.29			43.22
	51.51	6/20/1997	8.41			43.1
	51.51	9/25/1997	10.71			40.8
	51.51	10/22/1997	9.53			41.98
	51.51	11/25/1997	9.55			41.96

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-16	51.51	12/19/1997	9.10			42.41
	51.51	1/20/1998	8.60			42.91
	51.51	3/4/1998	8.13			43.38
	51.51	3/18/1998	8.59			42.92
	51.51	4/24/1998	9.96			41.55
	51.51	5/21/1998	11.43			40.08
	51.51	7/30/1998	12.56			38.95
	51.51	8/25/1998	11.53			39.98
	51.51	9/21/1998	9.81			41.7
	51.51	10/26/1998	10.44			41.07
	51.51	11/23/1998	8.98			42.53
	51.51	1/29/1999	7.12			44.39
	51.51	2/26/1999	7.23			44.28
	51.51	3/16/1999	10.06			41.45
	51.51	4/29/1999	10.16			41.35
	51.51	6/1/1999	10.16			41.35
	51.51	7/30/1999	11.76			39.75
	51.51	8/27/1999	10.33			41.18
	51.51	9/27/1999	11.79			39.72
	51.51	10/29/1999	12.93			38.58
	51.51	11/17/1999	13.71			37.8
	51.51	12/29/1999	12.20			39.31
	51.51	2/4/2000	15.11			36.4
	51.51	2/25/2000	11.10			40.41
	51.51	3/27/2000	11.48			40.03
	51.51	4/7/2000	11.09			40.42
	51.51	5/31/2000	11.11			40.4
	51.51	6/1/2000	11.00			40.51
	51.51	7/28/2000	11.11			40.4
	51.51	8/30/2000	13.10			38.41
	51.51	9/19/2000	14.83			36.68
	51.51	10/27/2000	11.66			39.85
	51.51	11/21/2000	11.29			40.22
	51.51	5/1/2001	9.92			41.59
	51.51	10/1/2001	9.93			41.58
	51.51	3/11/2002	9.12			42.39
	51.51	9/23/2002	8.65			42.86
	51.51	3/10/2003	7.74			43.77
	51.51	9/23/2003	8.48			43.03
	51.51	3/15/2004	8.09			43.42
	51.51	9/13/2004	10.38			41.13
	51.51	7/18/2005	10.42			41.09
	51.51	1/4/2006	12.48			39.03
	51.51	7/27/2006	9.37			42.14
	51.51	3/7/2007	9.66			41.85
	51.51	7/27/2007	7.85			43.66
	51.51	1/31/2008	8.42	25.40	3.40	43.09
	51.51	7/15/2008	10.16			41.35
	51.51	2/5/2009	11.93			39.58
	51.51	7/23/2009	12.67			38.84
	51.51	1/8/2010	8.66			42.85
	51.51	7/12/2010	10.31			41.2
	51.51	1/12/2011	9.89			41.62
	51.51	7/12/2011	12.98			38.53
	51.51	1/26/2012	9.92			41.59
	51.51	7/9/2012	9.68			41.83
	51.51	1/7/2013	11.41			40.1
	51.51	7/22/2013	12.39			39.12

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-16	51.51	1/7/2014	12.02			39.49
	51.51	7/15/2014	9.69			41.82
	51.51	1/5/2015	11.07			40.44
	51.51	8/10/2015	9.42			42.09
MW-17	50.92	3/25/1997	9.97			40.95
	50.92	4/23/1997	10.41			40.51
	50.92	4/24/1997	10.51			40.41
	50.92	5/13/1997	10.32			40.6
	50.92	6/20/1997	11.07			39.85
	50.92	9/25/1997	12.39			38.53
	50.92	10/22/1997	11.19			39.73
	50.92	11/25/1997	11.21			39.71
	50.92	12/19/1997	11.01			39.91
	50.92	1/20/1998	10.25			40.67
	50.92	3/4/1998	9.93			40.99
	50.92	3/18/1998	9.94			40.98
	50.92	4/9/1998	11.32			39.6
	50.92	4/16/1998	11.52			39.4
	50.92	4/24/1998	11.80			39.12
	50.92	5/8/1998	NM			
	50.92	5/12/1998	NM			
	50.92	5/21/1998	13.30			37.62
	50.92	5/25/1998	NM			
	50.92	6/9/1998	NM			
	50.92	6/16/1998	NM			
	50.92	6/26/1998	NM			
	50.92	7/2/1998	NM			
	50.92	7/10/1998	NM			
	50.92	7/14/1998	NM			
	50.92	7/23/1998	NM			
	50.92	8/5/1998	NM			
	50.92	8/13/1998	NM			
	50.92	8/25/1998	13.78			37.14
	50.92	9/15/1998	NM			
	50.92	9/21/1998	11.49			39.43
	50.92	9/30/1998	NM			
	50.92	10/8/1998	NM			
	50.92	10/16/1998	NM			
	50.92	10/26/1998	12.22			38.7
	50.92	11/6/1998	NM			
	50.92	11/13/1998	NM			
	50.92	11/19/1998	NM			
	50.92	11/23/1998	10.21			40.71
	50.92	12/16/1998	NM			
	50.92	1/7/1999	NM			
	50.92	1/15/1999	NM			
	50.92	1/22/1999	NM			
	50.92	1/26/1999	NM			
	50.92	1/29/1999	10.88			40.04
	50.92	2/4/1999	NM			
	50.92	2/9/1999	NM			
	50.92	2/26/1999	10.93			39.99
	50.92	3/16/1999	11.18			39.74
	50.92	4/29/1999	11.00			39.92
	50.92	5/21/1999	11.25			39.67
	50.92	5/27/1999	11.31			39.61
	50.92	6/1/1999	11.07			39.85
	50.92	6/10/1999	11.28			39.64

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17	50.92	7/30/1999	12.67			38.25
	50.92	8/27/1999	11.27			39.65
	50.92	9/27/1999	14.67			36.25
	50.92	10/29/1999	15.11			35.81
	50.92	11/17/1999	16.08			34.84
	50.92	12/29/1999	14.43			36.49
	50.92	2/4/2000	17.21			33.71
	50.92	2/25/2000	13.63			37.29
	50.92	3/27/2000	13.08	32.60	0.70	37.84
	50.92	4/7/2000	12.63	32.30	1.00	38.29
	50.92	5/31/2000	12.67	32.30	1.00	38.25
	50.92	6/1/2000	12.61	32.30	1.00	38.31
	50.92	7/28/2000	12.69	32.30	1.00	38.23
	50.92	8/30/2000	15.56			35.36
	50.92	9/19/2000	16.24	32.20	1.10	34.68
	50.92	10/27/2000	14.10			36.82
	50.92	11/21/2000	13.12			37.8
	50.92	5/1/2001	11.82	32.44	0.86	39.1
	50.92	10/1/2001	12.55	32.30	1.00	38.37
	50.92	3/14/2002	10.91	31.79	1.51	40.01
	50.92	9/23/2002	10.48			40.44
	50.92	3/10/2003	9.76			41.16
	50.92	9/24/2003	10.59	32.85	0.45	40.33
	50.92	3/15/2004	10.15			40.77
	50.92	9/13/2004	13.09			37.83
	50.92	7/18/2005	12.06	32.90	0.40	38.86
	50.92	1/4/2006	13.90	32.90	0.40	37.02
	50.92	7/27/2006	10.71	33.28	0.02	40.21
	50.92	3/7/2007	10.91	33.00	0.30	40.01
	50.92	7/27/2007	9.33	33.02	0.28	41.59
	50.92	1/31/2008	10.00	31.17	2.13	40.92
	50.92	7/15/2008	12.95	33.08	0.23	37.97
	50.92	2/4/2009	12.64	Trace	Trace	38.28
	50.92	7/12/2010	12.96			37.96
MW-17	50.92	1/8/2010	10.62			40.3
	50.92	7/12/2010	12.96			37.96
	50.92	1/12/2011	11.06			39.86
	50.92	7/12/2011	14.93			35.99
	50.92	1/26/2012	11.2			39.72
	50.92	7/9/2012	11.02			39.9
	50.92	1/7/2013	13.14			37.78
	50.92	7/22/2013	14.62			36.3
	50.92	1/7/2014	12.36			38.56
	50.92	7/15/2014	12.54			38.38
	50.92	1/5/2015	11.71			39.21
	50.92	8/10/2015	9.61			41.31
	50.92	1/13/2016	9.02			41.90
	50.92	7/6/2016	9.47			41.45
	50.92	1/12/2017	10.06			40.86
	50.92	7/6/2017	10.62			40.30
	50.92	9/5/2017	10.51			40.41
	50.92	2/11/2018	10.76			40.16
	50.92	3/11/2018	11.21			39.71
	50.92	5/14/2018	12.21			38.71
	50.92	1/3/2019	11.72			39.2
	50.17	3/15/2004	22.75			27.42
	50.17	9/13/2004	24.56			25.61
	50.17	7/18/2005	25.02			25.15

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17C	50.17	1/4/2006	26.07			24.1
	50.17	7/27/2006	24.15			26.02
	50.17	3/7/2007	22.51			27.66
	50.17	7/27/2007	20.93			29.24
	50.17	1/30/2008	21.74			28.43
	50.17	7/15/2008	23.65			26.52
	50.17	2/4/2009	23.72			26.45
	50.17	7/23/2009	24.08			26.09
	50.17	1/8/2010	21.98			28.19
	50.17	7/12/2010	23.03			27.14
	50.17	1/12/2011	23.16			27.01
	50.17	7/12/2011	25.11			25.06
	50.17	1/26/2012	24.27			25.9
	50.17	7/9/2012	24.32			25.85
	50.17	1/7/2013	24.76			25.41
	50.17	7/22/2013	25.89			24.28
	50.17	1/7/2014	25.06			25.11
	50.17	7/15/2014	23.98			26.19
	50.17	1/5/2015	24.62			25.55
	50.17	8/10/2015	22.47			27.70
	50.17	1/13/2016	21.81			28.36
	50.17	7/6/2016	22.16			28.01
	50.17	1/12/2017	22.67			27.50
	50.17	7/6/2017	23.09			27.08
	50.17	9/5/2017	23.01			27.16
	50.17	2/11/2018	23.11			27.06
	50.17	3/11/2018	22.21			27.96
	50.17	5/14/2018	23.02			27.15
	50.17	1/3/2019	22.71			27.46
MW-18A	51.57	3/25/1997	15.41			36.16
	51.57	4/23/1997	15.80			35.77
	51.57	5/13/1997	14.92			36.65
	51.57	6/20/1997	16.02			35.55
	51.57	9/25/1997	15.15			36.42
	51.57	10/22/1997	16.38			35.19
	51.57	11/25/1997	16.37			35.2
	51.57	12/19/1997	16.11			35.46
	51.57	1/20/1998	15.49			36.08
	51.57	3/4/1998	15.19			36.38
	51.57	3/18/1998	14.28			37.29
	51.57	4/24/1998	17.53			34.04
	51.57	5/21/1998	18.41			33.16
	51.57	7/30/1998	18.59			32.98
	51.57	8/25/1998	16.95			34.62
	51.57	9/21/1998	16.39			35.18
	51.57	10/26/1998	15.77			35.8
	51.57	11/23/1998	16.26			35.31
	51.57	1/29/1999	17.02			34.55
	51.57	2/26/1999	17.11			34.46
	51.57	4/29/1999	16.01			35.56
	51.57	6/1/1999	16.11			35.46
	51.57	7/30/1999	17.55			34.02
	51.57	8/27/1999	16.39			35.18
	51.57	9/27/1999	19.13			32.44
	51.57	10/29/1999	20.50			31.07
	51.57	11/17/1999	21.63			29.94
	51.57	12/29/1999	19.83			31.74
	51.57	2/4/2000	23.71			27.86

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18A	51.57	2/25/2000	18.80			32.77
	51.57	3/27/2000	17.98			33.59
	51.57	4/7/2000	17.61			33.96
	51.57	5/31/2000	17.65			33.92
	51.57	6/1/2000	17.60			33.97
	51.57	7/28/2000	17.67			33.9
	51.57	8/30/2000	20.30			31.27
	51.57	9/19/2000	19.54			32.03
	51.57	10/27/2000	18.75			32.82
	51.57	11/21/2000	16.52			35.05
	51.57	5/1/2001	17.91	27.85	7.94	33.66
	51.57	10/1/2001	17.47			34.1
	51.57	3/11/2002	16.68			34.89
	51.57	9/23/2002	15.30			36.27
	51.57	3/10/2003	15.77			35.8
	51.57	9/23/2003	25.08			26.49
	51.57	3/15/2004	15.58			35.99
	51.57	9/13/2004	18.32			33.25
	51.57	7/18/2005	14.88			36.69
	51.57	1/4/2006	17.96			33.61
	51.57	7/27/2006	14.15			37.42
	51.57	3/7/2007	17.32			34.25
	51.57	7/27/2007	15.22			36.35
	51.57	1/30/2008	15.63			35.94
	51.57	7/15/2008	17.43			34.14
	51.57	2/5/2009	18.67			32.9
	51.57	7/23/2009	19.03			32.54
	51.57	1/8/2010	16.51			35.06
	51.57	7/12/2010	18.11			33.46
	51.57	1/12/2011	15.82			35.75
	51.57	7/12/2011	19.02			32.55
	51.57	1/26/2012	16.9			34.67
	51.57	7/9/2012	15.06			36.51
	51.57	1/7/2013	18.39			33.18
	51.57	7/22/2013	18.74			32.83
	51.57	1/7/2014	18.06			33.51
	51.57	7/16/2014	18.14			33.43
	51.57	1/5/2015	17.39			34.18
	51.57	8/10/2015	15.02			36.55
	51.57	1/13/2016	14.36			37.21
	51.57	7/6/2016	14.71			36.86
	51.57	1/12/2017	15.09			36.48
	51.57	7/6/2017	15.59			35.98
	51.57	9/5/2017	15.49			36.08
	51.57	2/11/2018	16.62			34.95
	51.57	3/11/2018	17.12			34.45
	51.57	5/14/2018	17.71			33.86
	51.57	1/3/2019	17.52			34.05
MW-18C	51.47	5/13/1997	29.45			22.02
	51.47	6/20/1997	30.37			21.1
	51.47	9/25/1997	31.53			19.94
	51.47	10/22/1997	30.71			20.76
	51.47	11/25/1997	30.75			20.72
	51.47	12/19/1997	30.10			21.37
	51.47	1/20/1998	28.30			23.17
	51.47	3/4/1998	27.03			24.44
	51.47	3/18/1998	26.81			24.66
	51.47	4/9/1998	27.04			24.43

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	4/16/1998	27.03			24.44
	51.47	4/24/1998	27.25			24.22
	51.47	5/8/1998	NM			
	51.47	5/12/1998	NM			
	51.47	5/21/1998	27.68			23.79
	51.47	5/25/1998	NM			
	51.47	6/9/1998	NM			
	51.47	6/16/1998	NM			
	51.47	6/26/1998	NM			
	51.47	7/2/1998	NM			
	51.47	7/10/1998	NM			
	51.47	7/14/1998	NM			
	51.47	7/23/1998	NM			
	51.47	7/30/1998	28.40			23.07
	51.47	8/5/1998	NM			
	51.47	8/13/1998	NM			
	51.47	8/25/1998	28.88			22.59
	51.47	9/15/1998	NM			
	51.47	9/21/1998	27.94			23.53
	51.47	9/30/1998	NM			
	51.47	10/8/1998	NM			
	51.47	10/16/1998	NM			
	51.47	10/26/1998	27.62			23.85
	51.47	11/6/1998	NM			
	51.47	11/11/1998	26.85		0.67	24.62
	51.47	11/19/1998	NM			
	51.47	11/23/1998	26.21			25.26
	51.47	12/16/1998	NM			
	51.47	1/7/1999	NM			
	51.47	1/15/1999	NM			
	51.47	1/22/1999	NM			
	51.47	1/26/1999	NM			
	51.47	1/29/1999	25.36			26.11
	51.47	2/4/1999	NM			
	51.47	2/9/1999	NM			
	51.47	2/26/1999	25.41			26.06
	51.47	4/29/1999	26.33			25.14
	51.47	5/21/1999	25.75			25.72
	51.47	5/27/1999	25.76			25.71
	51.47	6/1/1999	26.38			25.09
	51.47	6/10/1999	25.68			25.79
	51.47	7/30/1999	25.61			25.86
	51.47	8/27/1999	26.51			24.96
	51.47	9/27/1999	27.28			24.19
	51.47	10/29/1999	27.95			23.52
	51.47	11/17/1999	28.42			23.05
	51.47	12/29/1999	27.26			24.21
	51.47	2/4/2000	27.84			23.63
	51.47	2/25/2000	27.83			23.64
	51.47	3/27/2000	27.48			23.99
	51.47	4/7/2000	25.80			25.67
	51.47	5/31/2000	25.83			25.64
	51.47	6/1/2000	25.81			25.66
	51.47	7/28/2000	25.86			25.61
	51.47	8/30/2000	28.42			23.05
	51.47	9/19/2000	28.77	80.44	0.97	22.7
	51.47	10/27/2000	28.69			22.78
	51.47	11/21/2000	27.67			23.8

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	5/1/2001	25.20			26.27
	51.47	10/1/2001	25.59			25.8
	51.47	3/14/2002	24.35			27.12
	51.47	9/25/2002	25.45			26.02
	51.47	3/10/2003	23.60			27.87
	51.47	9/24/2003	25.15			26.32
	51.47	3/15/2004	24.23			27.24
	51.47	9/13/2004	25.12	78.22	1.70	26.35
	51.47	7/18/2005	25.50	66.20	0.30	25.97
	51.47	1/4/2006	26.71			24.76
	51.47	7/27/2006	24.80			26.67
	51.47	3/7/2007	23.11			28.36
	51.47	7/27/2007	24.80			26.67
	51.47	1/30/2008	22.64			28.83
	51.47	7/15/2008	24.43			27.04
	51.47	2/5/2009	24.34			27.13
	51.47	7/23/2009	24.61			26.86
	51.47	1/8/2010	22.56			28.91
	51.47	7/12/2010	23.77			27.7
	51.47	7/12/2011	25.87			25.6
	51.47	1/26/2012	26.82			24.65
	51.47	1/12/2011	24.03			27.44
	51.47	7/9/2012	24.82			26.65
	51.47	1/7/2013	25.61			25.86
	51.47	7/22/2013	26.76			24.71
	51.47	1/7/2014	25.68			25.79
	51.47	7/16/2014	24.60			26.87
	51.47	1/5/2015	25.02			26.45
	51.47	8/10/2015	23.41			28.06
	51.47	1/13/2016	22.76			28.71
	51.47	7/6/2016	23.12			28.35
	51.47	1/12/2017	23.73			27.74
	51.47	7/6/2017	24.13			27.34
	51.47	9/5/2017	24.08			27.39
	51.47	2/11/2018	23.7			27.77
	51.47	3/11/2018	22.88			28.59
	51.47	5/14/2018	23.47			28.00
	51.47	1/3/2019	23.01			28.46
MW-19C	53.05	11/23/1998	28.84			24.21
	53.05	1/29/1999	28.21			24.84
	53.05	2/26/1999	28.28			24.77
	53.05	3/16/1999	28.31			24.74
	53.05	4/29/1999	28.56			24.49
	53.05	6/1/1999	28.48			24.57
	53.05	7/30/1999	30.00			23.05
	53.05	8/27/1999	28.61			24.44
	53.05	9/27/1999	29.72			23.33
	53.05	10/29/1999	30.46			22.59
	53.05	11/17/1999	30.76			22.29
	53.05	12/29/1999	29.44			23.61
	53.05	2/4/2000	30.22			22.83
	53.05	2/25/2000	29.93			23.12
	53.05	3/27/2000	29.80			23.25
	53.05	4/7/2000	28.40			24.65
	53.05	5/31/2000	28.44			24.61
	53.05	6/1/2000	28.33			24.72
	53.05	7/28/2000	28.37			24.68
	53.05	8/30/2000	29.99			23.06

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-19C	53.05	9/19/2000	30.97			22.08
	53.05	10/27/2000	28.49			24.56
	53.05	11/21/2000	29.88			23.17
	53.05	5/1/2001	27.61	71.55	3.56	25.44
	53.05	10/1/2001	27.84			25.21
	53.05	3/11/2002	26.68			26.37
	53.05	9/23/2002	27.66			25.39
	53.05	3/10/2003	25.77			27.28
	53.05	9/23/2003	27.21			25.84
	53.05	3/15/2004	25.36			27.69
	53.05	9/13/2004	27.20			25.85
	53.05	7/18/2005	27.71			25.34
	53.05	1/4/2006	28.78			24.27
	53.05	7/27/2006	26.91			26.14
	53.05	3/7/2007	25.22			27.83
	53.05	7/27/2007	23.71			29.34
	53.05	1/31/2008	24.57			28.48
	53.05	7/15/2008	26.38			26.67
	53.05	2/4/2009	26.44			26.61
	53.05	7/23/2009	26.81			26.24
	53.05	1/9/2010	24.47			28.58
	53.05	7/12/2010	25.67			27.38
	53.05	1/12/2011	25.86			27.19
	53.05	7/12/2011	27.81			25.24
	53.05	1/26/2012	26.74			26.31
	53.05	7/9/2012	27.26			25.79
	53.05	1/7/2013	27.73			25.32
	53.05	7/22/2013	28.58			24.47
	53.05	1/7/2014	27.71			25.34
	53.05	7/15/2014	26.65			26.40
	53.05	1/5/2015	27.34			25.71
	53.05	8/10/2015	25.21			27.84
	53.05	1/13/2016	24.68			28.37
	53.05	7/6/2016	NM			
	53.05	2/11/2018	21.74			31.31
	53.05	3/11/2018	24.74			28.31
	53.05	5/14/2018	25.72			27.33
	53.05	1/3/2019	25.03			28.02
MW-20A	50.43	11/23/1998	8.31			42.116
	50.43	1/29/1999	8.70			41.726
	50.43	2/26/1999	8.81			41.616
	50.43	3/16/1999	9.26			41.166
	50.43	4/29/1999	9.33			41.096
	50.43	6/1/1999	9.30			41.126
	50.43	7/30/1999	10.91			39.516
	50.43	8/27/1999	9.56			40.866
	50.43	9/27/1999	10.79			39.636
	50.43	10/29/1999	11.96			38.466
	50.43	11/17/1999	13.06			37.366
	50.43	12/29/1999	11.11			39.316
	50.43	2/4/2000	14.89			35.536
	50.43	2/25/2000	10.33			40.096
	50.43	3/27/2000	10.79			39.636
	50.43	4/7/2000	10.41			40.016
	50.43	5/31/2000	10.46			39.966
	50.43	6/1/2000	10.41			40.016
	50.43	7/28/2000	10.47			39.956
	50.43	8/30/2000	12.56			37.866

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-20A	50.43	9/19/2000	13.68			36.746
	50.43	10/27/2000	11.01			39.416
	50.43	11/21/2000	10.64			39.786
	50.43	5/1/2001	9.40			41.03
	50.43	10/1/2001	10.42			40.01
	50.43	3/11/2002	8.59			41.836
	50.43	9/23/2002	8.51			41.916
	50.43	3/10/2003	7.42			43.006
	50.43	9/23/2003	7.95			42.476
	50.43	3/15/2004	7.72			42.706
	50.43	9/13/2004	10.22			40.206
	50.43	7/18/2005	9.88			40.546
	50.43	1/4/2006	11.72			38.706
	50.43	7/27/2006	8.59			41.836
	50.43	3/7/2007	8.91			41.516
	50.43	7/27/2007	7.63			42.796
	50.43	1/30/2008	7.91			42.516
	50.43	7/15/2008	10.05			40.376
	50.43	2/4/2009	10.18			40.246
	50.43	7/23/2009	10.47			39.956
	50.43	1/9/2010	8.23			42.196
	50.43	7/12/2010	10.62			39.806
	50.43	1/12/2011	8.76			41.666
	50.43	7/12/2011	12.53			37.896
	50.43	1/26/2012	11.61			38.816
	50.43	7/9/2012	9.18			41.246
	50.43	1/7/2013	10.66			39.766
	50.43	7/22/2013	12.17			38.256
	50.43	1/7/2014	11.62			38.806
	50.43	7/15/2014	9.83			40.60
	50.43	1/5/2015	11.09			39.34
	50.43	8/10/2015	9.34			41.09
	50.43	7/6/2017	8.12			42.31
	50.43	9/6/2017	8.06			42.37
	50.43	2/11/2018	9.22			41.21
	50.43	3/11/2018	9.03			41.396
	50.43	5/14/2018	9.89			40.536
	50.43	1/3/2019	9.26			41.17
MW-21C	49.05	11/23/1998	27.83			21.223
	49.05	1/29/1999	27.11			21.943
	49.05	2/26/1999	27.26			21.793
	49.05	3/16/1999	27.42			21.633
	49.05	4/29/1999	27.99			21.063
	49.05	6/1/1999	27.80			21.253
	49.05	7/30/1999	29.00			20.053
	49.05	8/27/1999	27.99			21.063
	49.05	9/27/1999	28.43			20.623
	49.05	10/29/1999	29.12			19.933
	49.05	11/18/1999	29.25			19.803
	49.05	12/29/1999	10.89			38.163
	49.05	2/4/2000	28.94			20.113
	49.05	2/25/2000	11.43			37.623
	49.05	3/27/2000	28.13			20.923
	49.05	4/7/2000	26.79			22.263
	49.05	5/31/2000	26.83			22.223
	49.05	6/1/2000	26.83			22.223
	49.05	7/28/2000	26.88			22.173
	49.05	8/30/2000	29.91			19.143

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-21C	49.05	9/19/2000	29.15			19.903
	49.05	10/27/2000	30.21			18.843
	49.05	11/21/2000	28.33			20.723
	49.05	5/1/2001	26.01			23.04
	49.05	10/1/2001	26.05			23
	49.05	3/11/2002	24.80			24.253
	49.05	9/23/2002	25.50			23.553
	49.05	3/10/2003	23.82			25.233
	49.05	9/23/2003	25.08			23.973
	49.05	3/15/2004	23.48			25.573
	49.05	9/13/2004	25.44			23.613
	49.05	7/18/2005	25.33			23.723
	49.05	1/4/2006	26.44			22.613
	49.05	7/27/2006	24.55			24.503
	49.05	3/7/2007	22.91			26.143
	49.05	7/27/2007	21.29			27.763
	49.05	1/29/2008	22.09			26.963
	49.05	7/15/2008	23.31			25.743
	49.05	2/4/2009	24.03			25.023
	49.05	7/24/2009	24.29			24.763
	49.05	1/9/2010	21.89			27.163
	49.05	7/12/2010	23.01			26.043
	49.05	1/12/2011	23.21			25.843
	49.05	7/12/2011	25.09			23.963
	49.05	1/26/2012	24.48			24.573
	49.05	7/9/2012	23.39			25.663
	49.05	1/7/2013	25.17			23.883
	49.05	7/22/2013	26.49			22.563
	49.05	1/7/2014	25.94			23.113
	49.05	7/15/2014	24.61			24.44
	49.05	1/5/2015	25.31			23.74
	49.05	8/10/2015	23.37			25.68
	49.05	1/13/2016	22.71			26.34
	49.05	7/6/2016	23.04			26.01
	49.05	1/12/2017	23.59			25.46
	49.05	7/6/2017	24.02			25.03
	49.05	9/5/2017	23.96			25.09
	49.05	2/11/2018	24.08			24.97
	49.05	3/11/2018	23.07			25.98
	49.05	5/14/2018	23.97			25.08
	49.05	1/3/2019	23.17			25.88
MW-22A	46.07	11/23/1998	NM			
	46.07	1/29/1999	2.10			43.969
	46.07	2/26/1999	2.21			43.859
	46.07	3/16/1999	2.65			43.419
	46.07	4/29/1999	2.71			43.359
	46.07	6/1/1999	2.68			43.389
	46.07	7/30/1999	4.12			41.949
	46.07	8/27/1999	2.81			43.259
	46.07	9/27/1999	8.53			37.539
	46.07	10/29/1999	10.23			35.839
	46.07	11/18/1999	9.92			36.149
	46.07	12/29/1999	9.56			36.509
	46.07	2/4/2000	12.31			33.759
	46.07	2/25/2000	8.72			37.349
	46.07	3/27/2000	6.30			39.769
	46.07	4/7/2000	6.03			40.039
	46.07	5/31/2000	6.12			39.949

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22A	46.07	6/1/2000	6.00			40.069
	46.07	7/28/2000	6.13			39.939
	46.07	8/30/2000	9.09			36.979
	46.07	9/19/2000	10.12			35.949
	46.07	10/27/2000	8.64			37.429
	46.07	11/21/2000	7.69			38.379
	46.07	5/1/2001	5.15			40.92
	46.07	10/1/2001	5.49			40.58
	46.07	3/11/2002	2.34			43.729
	46.07	9/23/2002	2.11			43.959
	46.07	3/10/2003	1.68			44.389
	46.07	9/23/2003	2.30			43.769
	46.07	3/15/2004	2.05			44.019
	46.07	9/14/2004	6.89			39.179
	46.07	7/18/2005	3.65			42.419
	46.07	1/6/2006	7.29			38.779
	46.07	7/27/2006	1.65			44.419
	46.07	3/7/2007	NM			
	46.07	7/27/2007	2.84			43.229
	46.07	1/29/2008	1.05			45.019
	46.07	7/14/2008	5.33			40.739
	46.07	2/3/2009	5.24			40.829
	46.07	7/23/2009	5.91			40.159
	46.07	1/9/2010	1.32			44.749
	46.07	7/12/2010	6.52			39.549
	46.07	1/12/2011	3.21			42.859
	46.07	7/11/2011	8.39			37.679
	46.07	1/27/2012	0.98			45.089
	46.07	7/10/2012	1.74			44.326
	46.07	1/8/2013	3.09			42.979
	46.07	7/22/2013	NM			
	46.07	1/7/2014	3.81			42.26
	46.07	7/15/2014	3.22			42.85
	46.07	1/5/2015	NM			
	46.07	8/10/2015	NM			
	46.07	1/13/2016	NM			
	46.07	7/6/2016	NM			
	46.07	1/12/2017	NM			
	46.07	7/6/2017	NM			
	46.07	9/5/2017	NM	REPLACED		
MW-22AR	45.56	2/11/2018	3.43			42.13
	45.56	3/11/2018	2.24			43.32
	45.56	5/14/2018	4.41			41.15
	45.56	7/2/2018	4.48			41.08
	45.56	1/3/2019	3.67			41.89
MW-22B	45.86	11/23/1998	2.25			43.606
	45.86	1/29/1999	2.28			43.576
	45.86	2/26/1999	2.34			43.516
	45.86	3/16/1999	2.42			43.436
	45.86	4/29/1999	2.56			43.296
	45.86	6/1/1999	2.60			43.256
	45.86	7/30/1999	4.31			41.546
	45.86	8/27/1999	2.83			43.026
	45.86	9/27/1999	8.45			37.406
	45.86	10/29/1999	10.11			35.746
	45.86	11/18/1999	9.75			36.106
	45.86	12/29/1999	9.43			36.426

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22B	45.86	2/4/2000	12.56			33.296
	45.86	2/25/2000	8.63			37.226
	45.86	3/27/2000	6.00			39.856
	45.86	4/7/2000	5.64			40.216
	45.86	5/31/2000	5.69			40.166
	45.86	6/1/2000	5.61			40.246
	45.86	7/28/2000	5.67			40.186
	45.86	8/30/2000	8.57			37.286
	45.86	9/19/2000	9.94			35.916
	45.86	10/27/2000	7.03			38.826
	45.86	11/21/2000	7.63			38.226
	45.86	5/1/2001	4.93			40.93
	45.86	10/1/2001	5.40			40.46
	45.86	3/11/2002	1.75			44.106
	45.86	9/23/2002	2.11			43.746
	45.86	3/10/2003	1.02			44.836
	45.86	9/23/2003	2.99			42.866
	45.86	3/15/2004	1.20			44.656
	45.86	9/14/2004	NM			
	45.86	7/18/2005	NM			
	45.86	1/6/2006	7.05			38.806
	45.86	7/27/2006	1.58			44.276
	45.86	3/7/2007	NM			
	45.86	7/27/2007	2.85			43.006
	45.86	1/29/2008	0.85			45.006
	45.86	7/14/2008	5.45			40.406
	45.86	2/3/2009	4.78			41.076
	45.86	7/23/2009	5.39			40.466
	45.86	1/9/2010	3.27			42.586
	45.86	7/12/2010	6.21			39.646
	45.86	1/12/2011	0.37			45.486
	45.86	7/11/2011	8.32			37.536
	45.86	1/27/2012	0.06			45.796
	45.86	7/10/2012	1.27			44.586
	45.86	1/8/2013	NM			
	45.86	7/22/2013	NM			
	45.86	1/7/2014	4.14			41.716
	45.86	7/15/2014	3.79			42.07
	45.86	1/5/2015	3.87			41.99
	45.86	8/10/2015	2.62			43.24
	45.86	1/13/2016	2.09			43.77
	45.86	7/6/2016	NM			
	45.86	1/12/2017	NM			
	45.86	7/6/2017	NM			
	45.86	9/5/2017	NM	REPLACED		
MW-22BR	45.71	2/11/2018	4.14			41.57
	45.71	3/12/2018	3.29			42.42
	45.71	5/14/2018	5.27			40.44
	45.71	7/2/2018	5.39			40.32
	45.71	1/3/2019	4.29			41.42
MW-23C	51.91	11/23/1998	27.41			24.504
	51.91	1/29/1999	26.80			25.114
	51.91	2/26/1999	26.88			25.034
	51.91	3/16/1999	26.93			24.984
	51.91	4/29/1999	27.09			24.824
	51.91	6/1/1999	27.00			24.914
	51.91	7/30/1999	29.55			22.364

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-23C	51.91	8/27/1999	27.29			24.624
	51.91	9/27/1999	28.40			23.514
	51.91	10/29/1999	29.11			22.804
	51.91	11/17/1999	29.49			22.424
	51.91	12/29/1999	28.46			23.454
	51.91	2/4/2000	28.96			22.954
	51.91	2/25/2000	28.96			22.954
	51.91	3/27/2000	28.61			23.304
	51.91	4/7/2000	27.10			24.814
	51.91	5/31/2000	27.15			24.764
	51.91	6/1/2000	27.11			24.804
	51.91	7/28/2000	27.15			24.764
	51.91	8/30/2000	29.96			21.954
	51.91	9/19/2000	29.77			22.144
	51.91	10/27/2000	28.44			23.474
	51.91	11/21/2000	28.61			23.304
	51.91	5/1/2001	26.26			25.65
	51.91	10/1/2001	26.50		0.60	25.41
	51.91	3/11/2002	25.33			26.584
	51.91	9/23/2002	26.43			25.484
	51.91	3/10/2003	24.53			27.384
	51.91	9/23/2003	25.95			25.964
	51.91	3/15/2004	24.15			27.764
	51.91	9/13/2004	25.97			25.944
	51.91	7/18/2005	26.46			25.454
	51.91	1/4/2006	27.53			24.384
	51.91	3/7/2007	23.96			27.954
	51.91	7/27/2007	22.41			29.504
	51.91	1/31/2008	23.22	75.98	1.71	28.694
	48.89[1]	2/4/2009	22.11	72.05	1.47	26.78
	48.89[1]	7/23/2009	22.93	73.01	0.51	25.961
	48.89[1]	1/9/2010	20.29	71.8	1.72	28.601
	48.89[1]	5/27/2010	22.81	71.5	2.02	26.081
	48.89[1]	6/28/2010	22.93	72.15	1.37	25.961
	48.89[1]	7/12/2010	21.41	72.4	1.12	27.481
	48.89[1]	8/31/2010	21.61	72.65	0.87	27.281
	48.89[1]	1/12/2011	21.7	71.25	1.45	27.191
	48.89	7/12/2011	23.11	70.65	2.05	25.782
	48.89	1/26/2012	22.81	71.57	1.13	26.082
	48.89	7/9/2012	22.31	71.45	1.25	26.582
	48.89	1/7/2013	23.32	71.06	1.64	25.572
	48.89	7/22/2013	24.38			24.512
	48.89	1/7/2014	23.51	70.8	2.30	25.38
	48.89	7/15/2014	24.06	70.96	2.14	24.83
	48.89	1/5/2015	22.47	71.72	1.08	26.42
	48.89	8/10/2015	19.34	72.17	0.63	29.55
	48.89	1/13/2016	23.16	71.91	0.89	25.73
	48.89	7/6/2016	23.09	71.56	1.24	25.80
	48.89	1/12/2017	23.74	71.81	0.99	25.15
	48.89	7/6/2017	23.61	77.27	0.53	25.28
	48.89	9/5/2017	23.67	77.29	0.51	25.22
	48.89	2/7/2018	23.86	77.46	0.34	25.03
	48.89	3/11/2018	23.99	77.41	0.39	24.9
	48.89	5/14/2018	25.02	77.49	0.31	23.87
	48.89	1/3/2019	24.29	77.31	0.49	24.6
MW-24A	45.79	3/27/2000	7.87			37.92
	45.79	4/7/2000	7.63			38.16
	45.79	5/31/2000	7.65			38.14

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24A	45.79	6/1/2000	7.43			38.36
	45.79	7/28/2000	7.60			38.19
	45.79	8/30/2000	10.44			35.35
	45.79	9/19/2000	10.57			35.22
	45.79	10/27/2000	NM			NM
	45.79	11/21/2000	7.09			38.7
	45.79	5/1/2001	6.72			39.07
	45.79	10/1/2001	7.81			37.98
	45.79	3/11/2002	3.91			41.88
	45.79	9/23/2002	5.04			40.75
	45.79	3/10/2003	2.76			43.03
	45.79	9/23/2003	4.66			41.13
	45.79	3/15/2004	3.10			42.69
	45.79	9/14/2004	8.24			37.55
	45.79	7/18/2005	6.03			39.76
	45.79	1/6/2006	8.93			36.86
	45.79	7/27/2006	4.21			41.58
	45.79	3/7/2007	3.86			41.93
	45.79	1/30/2008	NM			NM
MW-24AR	45.65	2/5/2009	5.18			40.47
	45.65	7/23/2009	7.36			38.29
	45.65	1/9/2010	3.72			41.93
	45.65	7/12/2010	4.29			41.36
	45.65	1/13/2011	3.58			42.07
	45.65	7/11/2011	6.38			39.27
	45.65	1/27/2012	4.59			41.06
	45.65	7/10/2012	4.38			41.27
	45.65	1/8/2013	5.59			40.06
	45.65	7/23/2013	10.14	71.06		35.51
	45.65	1/8/2014	7.11			38.54
	45.65	1/5/2015	NM			NM
	45.65	7/6/2016	NM			NM
MW-24B	46.06	3/27/2000	11.91			34.15
	46.06	4/7/2000	11.60			34.46
	46.06	5/31/2000	11.63			34.43
	46.06	6/1/2000	11.51			34.55
	46.06	7/28/2000	11.69			34.37
	46.06	8/30/2000	13.91			32.15
	46.06	9/19/2000	14.72			31.34
	46.06	10/27/2000	12.44			33.62
	46.06	11/21/2000	11.38			34.68
	46.06	5/1/2001	10.71			35.35
	46.06	10/1/2001	11.75			34.31
	46.06	3/11/2002	9.01			37.05
	46.06	9/23/2002	9.69			36.37
	46.06	3/10/2003	7.83			38.23
	46.06	9/23/2003	8.98			37.08
	46.06	3/15/2004	7.33			38.73
	46.06	9/14/2004	9.24			36.82
	46.06	7/18/2005	9.54			36.52
	46.06	1/6/2006	11.86			34.2
	46.06	7/27/2006	10.50			35.56
	46.06	3/7/2007	8.88			37.18
	46.06	7/27/2007	9.85			36.21
	46.06	1/28/2008	7.37			38.69
	46.06	7/14/2008	11.41			34.65
	46.06	2/3/2009	11.18			34.88
	46.06	7/23/2009	12.26			33.8

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24B	46.06	1/9/2010	9.89			36.17
	46.06	7/12/2010	12.82			33.24
	46.06	1/13/2011	11.1			34.96
	46.06	7/11/2011	14.09			31.97
	46.06	1/27/2012	11.36			34.7
	46.06	7/10/2012	10.49			35.57
	46.06	1/8/2013	12.96			33.1
	46.06	7/23/2013	8.49			37.57
	46.06	1/5/2015	NM			NM
MW-24C	46.05	3/27/2000	25.77			20.28
	46.05	4/7/2000	24.27			21.78
	46.05	5/31/2000	24.30			21.75
	46.05	6/1/2000	24.22			21.83
	46.05	7/28/2000	24.26			21.79
	46.05	8/30/2000	27.34			18.71
	46.05	9/19/2000	26.59			19.46
	46.05	10/27/2000	27.64			18.41
	46.05	11/21/2000	25.43			20.62
	46.05	5/1/2001	23.90			22.15
	46.05	10/1/2001	23.71			22.34
	46.05	3/11/2002	22.40			23.65
	46.05	9/23/2002	23.04			23.01
	46.05	3/10/2003	21.71			24.34
	46.05	9/23/2003	23.04			23.01
	46.05	3/15/2004	21.45			24.6
	46.05	9/14/2004	22.45			23.6
	46.05	7/18/2005	22.19			23.86
	46.05	1/6/2006	23.57			22.48
	46.05	7/27/2006	22.61			23.44
	46.05	3/7/2007	21.07			24.98
	46.05	7/27/2007	19.62			26.43
	46.05	1/28/2008	19.43			26.62
	46.05	7/14/2008	20.63			25.42
	46.05	2/3/2009	21.68			24.37
	46.05	7/23/2009	23.07			22.98
	46.05	1/9/2010	20.46			25.59
	46.05	7/12/2010	20.44			25.61
	46.05	1/13/2011	20.26			25.79
	46.05	7/11/2011	21.59			24.46
	46.05	1/27/2012	21.23			24.82
	46.05	7/10/2012	20.81			25.24
	46.05	1/8/2013	22.42			23.63
	46.05	7/23/2013	23.81			22.24
	46.05	1/5/2015	NM			
MW-25A	44.65	3/27/2000	9.15			35.5
	44.65	4/7/2000	8.79			35.86
	44.65	5/31/2000	8.81			35.84
	44.65	6/1/2000	8.86			35.79
	44.65	7/28/2000	8.84			35.81
	44.65	8/30/2000	11.43			33.22
	44.65	9/19/2000	11.12			33.53
	44.65	10/27/2000	10.09			34.56
	44.65	11/21/2000	8.10			36.55
	44.65	5/1/2001	8.94			35.71
	44.65	10/1/2001	8.81			35.84
	44.65	3/11/2002	7.23			37.42
	44.65	9/23/2002	5.65			39
	44.65	3/10/2003	5.84			38.81

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-25A	44.65	9/23/2003	5.35			39.3
	44.65	3/15/2004	5.75			38.9
	44.65	9/14/2004	7.00			37.65
	44.65	7/18/2005	6.42			38.23
	44.65	1/6/2006	9.29			35.36
	44.65	7/27/2006	5.10			39.55
	44.65	3/7/2007	4.76			39.89
	44.65	7/27/2007	4.22			40.43
	44.65	1/28/2008	4.25			40.4
	44.65	7/14/2008	8.59			36.06
	44.65	2/3/2009	8.90			35.75
	44.65	7/23/2009	8.71			35.94
	44.65	1/9/2010	6.84			37.81
	44.65	7/12/2010	7.78			36.87
	44.65	1/12/2011	6.26			38.39
	44.65	7/11/2011	10.22			34.43
	44.65	1/27/2012	5.24			39.41
	44.65	7/10/2012	4.56			40.09
	44.65	1/8/2013	8.62			36.03
	44.65	7/23/2013	9.37			35.28
	44.65	1/8/2014	8.92			35.73
	44.65	7/16/2014	8.61			36.04
	44.65	1/5/2015	8.71			35.94
	44.65	8/10/2015	6.94			37.71
	44.65	1/13/2016	6.07			38.58
	44.65	7/6/2016	6.62			38.03
	44.65	1/12/2017	6.98			37.67
	44.65	7/6/2017	7.31			37.34
	44.65	9/5/2017	7.16			37.49
	44.65	2/11/2018	5.71			38.94
	44.65	3/12/2018	6.06			38.59
	44.65	5/14/2018	7.49			37.16
	44.65	1/3/2019	6.84			37.81
MW-25C	44.49	3/27/2000	19.92			24.57
	44.49	4/7/2000	19.50			24.99
	44.49	5/31/2000	19.56			24.93
	44.49	6/1/2000	19.51			24.98
	44.49	7/28/2000	19.54			24.95
	44.49	8/30/2000	22.14			22.35
	44.49	9/19/2000	21.30	66.73	0.90	23.19
	44.49	10/27/2000	20.63			23.86
	44.49	11/21/2000	27.63			16.86
	44.49	5/1/2001	18.14			26.35
	44.49	10/1/2001	18.29		0.40	26.2
	44.49	3/14/2002	17.39	64.32	4.13	27.1
	44.49	9/23/2002	17.81	61.41	6.00	26.68
	44.49	3/10/2003	16.73			27.76
	44.49	9/23/2003	22.35			22.14
	44.49	3/15/2004	16.15			28.34
	44.49	9/14/2004	17.00	60.14	2.56	27.49
	44.49	7/18/2005	15.57			28.92
	44.49	1/6/2006	18.49			26
	44.49	7/27/2006	15.32	60.64	2.03	29.17
	44.49	3/7/2007	15.87	59.82	2.18	28.62
	44.49	7/27/2007	14.25	60.61	1.04	30.24
	44.49	1/28/2008	14.91	60.88	0.67	29.58
	44.49	7/14/2008	17.24	60.95	0.60	27.25
	44.49	2/3/2009	15.97	TRACE	TRACE	28.52

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-25C	44.49	7/23/2009	16.39			28.1
	44.49	1/9/2010	13.68	61.45	0.65	30.81
	44.49	5/27/2010	16.09			28.4
	44.49	6/28/2010	16.26			28.23
	44.49	7/12/2010	16.05			28.44
	44.49	8/31/2010	16.21			28.28
	44.49	1/12/2011	16.29			28.2
	44.49	7/11/2011	18.81			25.68
	44.49	1/27/2012	17.29			27.2
	44.49	7/10/2012	16.53			27.96
	44.49	1/8/2013	18.34			26.15
	44.49	7/23/2013	18.74			25.75
	44.49	1/8/2014	18.23			26.26
	44.49	7/16/2014	18.66			25.83
	44.49	1/5/2015	17.81			26.68
	44.49	8/10/2015	16.09			28.40
	44.49	1/13/2016	15.61			28.88
	44.49	7/6/2016	16.02			28.47
	44.49	1/12/2017	16.64			27.85
	44.49	7/5/2017	16.84			27.65
	44.49	9/5/2017	16.81			27.68
	44.49	2/11/2018	15.27			29.22
	44.49	3/12/2018	15.63			28.86
	44.49	5/14/2018	16.02			28.47
	44.49	1/3/2019	15.29			29.2
MW-26A	44.62	3/27/2000	7.40			37.22
	44.62	4/7/2000	6.99			37.63
	44.62	5/31/2000	7.10			37.52
	44.62	6/1/2000	7.00			37.62
	44.62	7/28/2000	7.11			37.51
	44.62	8/30/2000	9.69			34.93
	44.62	9/19/2000	11.43			33.19
	44.62	10/27/2000	8.11			36.51
	44.62	11/21/2000	8.24			36.38
	44.62	5/1/2001	6.01			38.61
	44.62	10/1/2001	6.34			38.28
	44.62	3/11/2002	4.05			40.57
	44.62	9/23/2002	4.29			40.33
	44.62	3/10/2003	2.84			41.78
	44.62	9/23/2003	4.84			39.78
	44.62	3/15/2004	3.30			41.32
	44.62	9/14/2004	6.80			37.82
	44.62	7/18/2005	6.72			37.9
	44.62	1/6/2006	9.34			35.28
	44.62	7/27/2006	4.42			40.2
	44.62	3/7/2007	4.70			39.92
	44.62	7/27/2007	3.98			40.64
	44.62	1/29/2008	2.37			42.25
	44.62	7/14/2008	7.87			36.75
	44.62	2/3/2009	6.89			37.73
	44.62	7/23/2009	7.88			36.74
	44.62	1/9/2010	4.31			40.31
	44.62	7/12/2010	8.12			36.5
	44.62	1/13/2011	2.38			42.24
	44.62	7/11/2011	10.27			34.35
	44.62	1/27/2012	3.09			41.53
	44.62	7/10/2012	2.77			41.85
	44.62	1/8/2013	7.27			37.35

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-26A	44.62	7/23/2013	9.72			34.9
	44.62	1/8/2014	6.33			38.29
	44.62	7/16/2014	7.64			36.98
	44.62	1/5/2015	5.74			38.88
	44.62	8/10/2015	4.03			40.59
	44.62	1/13/2016	3.41			41.21
	44.62	7/6/2016	3.72			40.90
	44.62	1/12/2017	4.92			39.70
	44.62	7/5/2017	5.34			39.28
	44.62	9/5/2017	5.27			39.35
	44.62	2/11/2018	4.43			40.19
	44.62	3/12/2018	4.77			39.85
	44.62	5/14/2018	6.61			38.01
	44.62	1/3/2019	6.06			38.56
MW-27A	44.90	5/1/2001	6.41			38.49
	44.90	10/1/2001	5.31			39.59
	44.90	3/11/2002	4.21			40.69
	44.90	9/23/2002	3.31			41.59
	44.90	3/10/2003	4.05			40.85
	44.90	9/23/2003	3.24			41.66
	44.90	3/15/2004	2.99			41.91
	44.90	9/14/2004	5.09			39.81
	44.90	7/18/2005	4.45			40.45
	44.90	1/6/2006	4.55			40.35
	44.90	7/27/2006	4.26			40.64
	44.90	3/7/2007	3.01			41.89
	45.04	7/27/2007	2.12			42.92
	45.04	1/28/2008	1.88			43.16
	45.04	7/14/2008	4.57			40.47
	45.04	2/3/2009	4.27			40.77
	45.04	7/23/2009	4.36			40.68
	45.04	1/9/2010	3.69			41.35
	45.04	7/12/2010	5.31			39.73
	45.04	1/12/2011	3.76			41.28
	45.04	7/12/2011	6.72			38.32
	45.04	1/26/2012				NM
	45.04	7/10/2012	well covered			NM
	45.04	1/7/2013	well covered			NM
	45.04	7/23/2013	NM			NM
	45.04	8/10/2015	NM			NM
	45.04	2/11/2018	4.21			40.83
	45.04	3/12/2018	4.59			40.45
	45.04	5/14/2018	5.06			39.98
	45.04	1/3/2019	NM			NM
MW-27C	45.04	5/1/2001	17.82			27.22
	45.04	10/1/2001	17.82			27.22
	45.04	3/11/2002	16.36			28.68
	45.04	9/23/2002	16.49			28.55
	45.04	3/10/2003	18.68			26.36
	45.04	9/23/2003	16.89			28.15
	45.04	3/15/2004	14.35			30.69
	45.04	9/14/2004	14.49			30.55
	45.04	7/18/2005	16.12			28.92
	45.04	1/6/2006	18.07			26.97
	45.04	7/27/2006	17.13			27.91
	45.04	3/7/2007	15.47			29.57
	44.90	7/27/2007	14.85			30.05
	45.04	1/28/2008	14.31			30.73

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-27C	45.04	7/14/2008	17.51			27.53
	45.04	2/3/2009	15.76			29.28
	45.04	7/23/2009	16.38			28.66
	45.04	1/9/2010	14.82			30.22
	45.04	7/12/2010	16.12			28.92
	45.04	1/12/2011	15.84			29.2
	45.04	7/11/2011	18.17			26.87
	45.04	1/27/2012	17.14			27.9
	45.04	7/10/2012	16.56			28.48
	45.04	1/8/2013	17.04			28
	45.04	7/23/2013	18.61			26.43
	45.04	1/8/2014	18.12			26.92
	45.04	7/16/2014	16.94			28.10
	45.04	1/5/2015	17.74			27.30
	45.04	8/10/2015	15.71			29.33
	45.04	1/13/2016	15.04			30.00
	45.04	7/6/2016	15.32			29.72
	45.04	1/12/2017	15.91			29.13
	45.04	7/5/2017	16.39			28.65
	45.04	9/5/2017	16.36			28.68
	45.04	2/11/2018	16.59			28.45
	45.04	3/12/2018	16.97			28.07
	45.04	5/14/2018	15.89			29.15
	45.04	1/3/2019	14.32			30.72
MW-28A	43.86	5/1/2001	7.45			36.41
	43.86	10/1/2001	8.26			35.6
	43.86	3/11/2002	4.90			38.96
	43.86	9/23/2002	5.71			38.15
	43.86	3/10/2003	3.11			40.75
	43.86	9/23/2003	5.81			38.05
	43.86	9/14/2004	9.34			34.52
	43.86	7/18/2005	7.52			36.34
	43.86	1/6/2006	9.32			34.54
	43.86	7/27/2006	5.54			38.32
	43.86	3/7/2007	5.06			38.8
	43.86	7/27/2007	2.86			41
	43.86	1/29/2008	2.61			41.25
	43.86	7/14/2008	8.74			35.12
	43.86	2/3/2009	8.36			35.5
	43.86	7/23/2009	8.94			34.92
	43.86	1/9/2010	4.54			39.32
	43.86	7/12/2010	8.66			35.2
	43.86	1/12/2011	3.87			39.99
	43.86	7/11/2011	11.43			32.43
	43.86	1/27/2012	2.66			41.2
	43.86	7/10/2012	4.52			39.34
	43.86	1/8/2013	8.11			35.75
	43.86	7/23/2013	10.78			33.08
	43.86	1/8/2014	7.71			36.15
	43.86	7/16/2014	8.19			35.67
	43.86	1/5/2015	7.21			36.65
	43.86	8/10/2015	5.72			38.14
	43.86	1/13/2016	5.09			38.77
	43.86	7/6/2016	5.42			38.44
	43.86	1/12/2017	5.89			37.97
	43.86	7/5/2017	6.13			37.73
	43.86	9/5/2017	6.06			37.80
	43.86	2/11/2018	5.31			38.55

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-28A	43.86	3/12/2018	5.61			38.25
	43.86	5/14/2018	6.02			37.84
	43.86	1/3/2019	5.41			38.45
MW-28C	43.96	5/1/2001	17.14			26.82
	43.96	10/1/2001	17.51			26.45
	43.96	3/11/2002	16.29			27.67
	43.96	9/23/2002	17.75			26.21
	43.96	3/10/2003	15.84			28.12
	43.96	9/23/2003	17.48			26.48
	43.96	3/15/2004	15.56			28.4
	43.96	9/14/2004	17.20			26.76
	43.96	7/18/2005	16.60			27.36
	43.96	1/6/2006	17.61			26.35
	43.96	7/27/2006	17.73			26.23
	43.96	3/7/2007	15.59			28.37
	43.96	7/27/2007	12.90			31.06
	43.96	1/29/2008	14.35			29.61
	43.96	7/14/2008	16.26			27.7
	43.96	2/3/2009	16.03			27.93
	43.96	7/23/2009	16.53			27.43
	43.96	1/9/2010	14.89			29.07
	43.96	7/12/2010	15.89			28.07
	43.96	1/12/2011	18.37			25.59
	43.96	7/11/2011	18.16			25.8
	43.96	1/27/2012	16.12			27.84
	43.96	7/10/2012	16.79			27.17
	43.96	1/8/2013	17.62			26.34
	43.96	7/23/2013	18.87			25.09
	43.96	1/8/2014	17.59			26.37
	43.96	7/16/2014	16.98			26.98
	43.96	1/5/2015	16.84			27.12
	43.96	8/10/2015	14.39			29.57
	43.96	1/13/2016	13.72			30.24
	43.96	7/6/2016	14.03			29.93
	43.96	1/12/2017	14.64			29.32
	43.96	7/5/2017	14.88			29.08
	43.96	9/5/2017	14.89			29.07
	43.96	2/11/2018	17.33			26.63
	43.96	3/12/2018	14.73			29.23
	43.96	5/14/2018	16.59			27.37
	43.96	1/3/2019	15.88			28.08
MW-29A	46.59	5/1/2001	5.01			41.58
	46.59	10/1/2001	5.38			41.21
	46.59	3/11/2002	1.51			45.08
	46.59	9/23/2002	1.65			44.94
	46.59	3/10/2003	1.42			45.17
	46.59	9/23/2003	1.50			45.09
	46.59	3/15/2004	1.85			44.74
	46.59	9/14/2004	6.35			40.24
	46.59	7/18/2005	3.12			43.47
	46.59	1/6/2006	6.57			40.02
	46.59	7/27/2006	1.44			45.15
	46.59	3/7/2007	1.95			44.64
	46.59	7/27/2007	2.49			44.1
	46.59	1/28/2008	1.28			45.31
	46.59	7/14/2008	4.14			42.45
	46.59	2/3/2009	3.50			43.09
	46.59	7/23/2009	4.09			42.5

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-29A	46.59	1/9/2010	1.76			44.83
	46.59	7/12/2010	3.62			42.97
	46.59	1/13/2011	3.07			43.52
	46.59	7/11/2011	7.14			39.45
	46.59	7/10/2012	4.17			42.42
	46.59	1/8/2013	4.91			41.68
	46.59	7/23/2013	--			--
	Plugged					NM
MW-29B	46.26	5/1/2001	19.01			27.25
	46.26	10/1/2001	19.41			26.85
	46.26	3/11/2002	18.04			28.22
	46.26	9/23/2002	18.82			27.44
	46.26	3/10/2003	17.21			29.05
	46.26	9/23/2003	18.09			28.17
	46.26	3/15/2004	17.10			29.16
	46.26	9/14/2004	17.76			28.5
	46.26	7/18/2005	18.11			28.15
	46.26	1/6/2006	18.83			27.43
	46.26	7/27/2006	18.41			27.85
	46.26	3/7/2007	17.21			29.05
	46.26	7/27/2007	15.49			30.77
	46.26	1/28/2008	15.32			30.94
	46.26	7/14/2008	18.23			28.03
	46.26	2/3/2009	17.72			28.54
	46.26	7/23/2009	16.19			30.07
	46.26	1/9/2010	16.02			30.24
	46.26	7/12/2010	19.29			26.97
	46.26	1/13/2011	17.73			28.53
	46.26	7/11/2011	20.06			26.2
	46.26	7/10/2012	9.71			36.55
	46.26	1/8/2013	9.92			36.34
	Plugged					
MW-29C	46.46	5/1/2001	25.51			20.95
	46.46	10/1/2001	25.04			21.42
	46.46	3/11/2002	23.51			22.95
	46.46	9/23/2002	24.10			22.36
	46.46	3/10/2003	22.71			23.75
	46.46	9/23/2003	23.48			22.98
	46.46	3/15/2004	22.24			24.22
	46.46	9/14/2004	24.12			22.34
	46.46	7/18/2005	23.75			22.71
	46.46	1/6/2006	25.12			21.34
	46.46	7/27/2006	23.35			23.11
	46.46	3/7/2007	22.38			24.08
	46.46	7/27/2007	20.42			26.04
	46.46	1/28/2008	21.08			25.38
	46.46	7/14/2008	22.38			24.08
	46.46	2/3/2009	22.86			23.6
	46.46	7/23/2009	22.81			23.65
	46.46	1/9/2010	20.71			25.75
	46.46	7/12/2010	21.32			25.14
	46.46	1/13/2011	20.39			26.07
	46.46	7/11/2011	23.17			23.29
	46.46	7/10/2012	20.69			25.77
	46.46	1/8/2013	21.27			25.19
	46.46	7/23/2013	--			--
	Plugged					
MW-30A	50.45	3/15/2004	9.71			40.74

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-30A	50.45	9/13/2004	12.76			37.69
	50.45	7/18/2005	11.80			38.65
	50.45	1/4/2006	13.52			36.93
	50.45	7/27/2006	10.45			40
	50.45	3/7/2007	10.98			39.47
	50.45	7/27/2007	9.49			40.96
	50.45	1/30/2008	9.62			40.83
	50.45	7/15/2008	12.52			37.93
	50.45	2/4/2009	13.01			37.44
	50.45	7/23/2009	13.71			36.74
	50.45	1/9/2010	10.87			39.58
	50.45	7/12/2010	12.61			37.84
	50.45	1/12/2011	10.06			40.39
	50.45	7/12/2011	14.76			35.69
	50.45	1/26/2012	10.78			39.67
	50.45	7/9/2012	11.13			39.32
	50.45	1/8/2013	12.91			37.54
	50.45	7/23/2013	14.16			36.29
	50.45	1/8/2014	13.81			36.64
	50.45	7/15/2014	12.10			38.35
	50.45	1/5/2015	13.22			37.23
	50.45	8/10/2015	12.16	Plugged and Abandoned		38.29
MW-31A	52.08	3/15/2004	10.97			41.11
	52.08	9/13/2004	13.00			39.08
	52.08	7/18/2005	13.05			39.03
	52.08	1/4/2006	14.77			37.31
	52.08	7/27/2006	11.83			40.25
	52.08	3/7/2007	12.43			39.65
	52.08	7/27/2007	10.83			41.25
	52.08	1/31/2008	10.99			41.09
	52.08	7/15/2008	13.68			38.4
	52.08	2/4/2009	14.23			37.85
	52.08	7/23/2009	14.73			37.35
	52.08	1/9/2010	12.31			39.77
	52.08	7/12/2010	14.06			38.02
	52.08	1/12/2011	11.62			40.46
	52.08	7/12/2011	15.92			36.16
	52.08	1/26/2012	12.24			39.84
	52.08	7/9/2012	12.79			39.29
	52.08	1/8/2013	14.14			37.94
	52.08	7/23/2013	16.24			35.84
	52.08	1/8/2014	15.96			36.12
	52.08	7/15/2014	13.19			38.89
	52.08	1/5/2015	15.16			36.92
	52.08	8/10/2015	12.76	Plugged and Abandoned		39.32
MW-32A	43.77	3/15/2004	1.00			42.77
	43.77	9/14/2004	6.03	29.00	3.48	37.74
	43.77	7/18/2005	5.82	26.56	5.92	37.95
	43.77	1/6/2006	6.93	24.92	7.57	36.84
	43.77	7/27/2006	12.96	25.71	6.74	30.81
	43.77	3/7/2007	4.03	25.26	7.19	39.74
	43.77	7/27/2007	1.95	30.76	1.70	41.82
	43.77	1/28/2008	2.18			41.59
	43.77	7/14/2008	6.14	26.25	6.20	37.63
	43.77	2/3/2009	5.71	26.29	6.16	38.06
	43.77	7/23/2009	6.29	26.51	5.94	37.48
	43.77	1/9/2010	3.55	25.41	7.04	40.22
	43.77	5/27/2010	5.86	26.2	6.25	37.91

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-32A	43.77	6/28/2010	6.02	29.1	3.35	37.75
	43.77	7/12/2010	6.12	29.45	3.00	37.65
	43.77	8/31/2010	5.43	30.67	1.78	38.34
	43.77	1/13/2011	2.63	29.15	3.30	41.14
	43.77	7/11/2011	5.92	28.82	3.63	37.85
	Plugged					37.85
MW-32AR	44.56	1/27/2012	3.22			41.34
	44.56	7/10/2012	3.73			40.83
	44.56	1/8/2013	6.64			37.92
	44.56	7/23/2013	9.42			35.14
	44.56	1/8/2014	5.64			38.92
	44.56	7/16/2014	6.74			37.82
	44.56	1/5/2015				
	44.56	8/10/2015	3.18			41.38
	44.56	1/13/2016	2.66			41.90
	44.56	7/6/2016	3.14			41.42
	44.56	1/12/2017	3.67			40.89
	44.56	7/5/2017	4.16			40.40
	44.56	9/6/2017	4.03			40.53
	44.56	2/11/2018	4.06			40.50
	44.56	3/12/2018	5.02			39.54
	44.56	5/14/2018	5.91			38.65
	44.56	1/3/2019	5.42			39.14
MW-32B	44.41	1/27/2012	3.11	30.52	5.77	41.3
	44.41	7/10/2012	3.81	30.16	6.13	40.6
	44.41	1/8/2013	6.34	30.02	6.38	38.07
	44.41	7/23/2013	7.14			37.27
	44.41	1/8/2014	6.72	34.82	1.58	37.69
	44.41	7/16/2014	6.72	34.29	2.11	37.69
	44.41	1/5/2015	6.02	35.77	0.63	38.39
	44.41	8/10/2015	4.41	36.09	0.31	40.00
	44.41	1/13/2016	3.61	36.07	0.33	40.80
	44.41	7/6/2016	3.91	35.96	0.44	40.50
	44.41	1/12/2017	4.83	36.02	0.38	39.58
	44.41	7/5/2017	4.86	36.13	0.27	39.55
	44.41	9/6/2017	4.78	36.24	3.67	39.63
	44.41	2/7/2018	5.16	36.21	0.19	39.25
	44.41	3/12/2018	5.41	36.13	0.27	39.00
	44.41	5/15/2018	6.47	36.21	0.19	37.94
	44.41	1/3/2019	6.09	36.29	0.11	38.32
MW-33A	44.25	3/15/2004	3.90			40.35
	44.25	9/14/2004	7.85			36.4
	44.25	7/18/2005	6.35			37.9
	44.25	1/6/2006	8.00			36.25
	44.25	7/27/2006	4.73			39.52
	44.25	3/7/2007	5.22			39.03
	44.25	7/27/2007	3.48			40.77
	44.25	1/29/2008	3.34			40.91
	44.25	7/14/2008	7.42	25.19	0.03	36.83
	44.25	2/3/2009	7.28			36.97
	44.25	7/23/2009	7.63			36.62
	44.25	1/9/2010	4.79			39.46
	44.25	7/12/2010	7.61			36.64
	44.25	1/13/2011	3.19			41.06
	44.25	7/11/2011	9.87			34.38
	44.25	1/27/2012	2.69			41.56
	44.25	7/10/2012	3.86			40.39
	44.25	1/8/2013	6.76			37.49

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-33A	44.25	7/23/2013	9.83			34.42
	44.25	1/8/2014	6.71			37.54
	44.25	7/16/2014	7.09			37.16
	44.25	1/5/2015	5.02			39.23
	44.25	8/10/2015	4.09			40.16
	44.25	1/13/2016	3.51			40.74
	44.25	7/6/2016	3.89			40.36
	44.25	1/12/2017	5.01			39.24
	44.25	7/5/2017	5.59			38.66
	44.25	9/6/2017	5.51			38.74
	44.25	2/11/2018	4.38			39.87
	44.25	3/12/2018	4.86			39.39
	44.25	5/14/2018	6.42			37.83
	44.25	1/3/2019	5.77			38.48
MW-33B	44.35	3/7/2007	4.21			40.04
	44.35	7/27/2007	3.72			40.53
	44.35	1/29/2008	2.37	39.12	3.37	41.88
	44.35	7/14/2008	5.74	37.44	5.05	38.51
	44.35	2/3/2009	9.28	36.91	5.58	34.97
	44.35	7/23/2009	NM			NM
	44.35	1/9/2010	4.61	35.21	7.28	39.74
	44.35	5/27/2010	6.82			37.53
	44.35	6/28/2010	6.91			37.44
	44.35	7/12/2010	7.02			37.33
	44.35	8/31/2010	7.22			37.13
	44.35	1/13/2011	3.11	29.7	0.30	41.24
	44.35	7/11/2011	10.19	29.75	0.25	34.16
	44.35	1/5/2015	NM			NM
MW-33BR	44.35	1/27/2012	4.07			40.28
	44.35	7/10/2012	2.59			41.76
	44.35	1/8/2013	3.86			40.49
	44.35	7/23/2013	9.68			34.67
	44.35	1/8/2014	7.41			36.94
	44.35	7/16/2014	6.72			37.63
	44.35	1/5/2015	5.22			39.13
	44.35	8/10/2015	3.96			40.39
	44.35	1/13/2016	3.22			41.13
	44.35	7/6/2016	3.71			40.64
	44.35	1/12/2017	4.74			39.61
	44.35	7/5/2017	5.19			39.16
	44.35	9/6/2017	4.99			39.36
	44.35	2/11/2018	4.74			39.61
	44.35	3/12/2018	5.19			39.16
	44.35	5/14/2018	6.03			38.32
	44.35	1/3/2019	5.18			39.17
MW-34C	45.31	3/15/2004	17.40			27.91
	45.31	9/14/2004	18.82			26.49
	45.31	7/18/2005	19.41	65.29	7.19	25.9
	45.31	1/6/2006	20.54	65.27	8.38	24.77
	45.31	7/27/2006	18.55	63.84	8.61	26.76
	45.31	4/9/2007	16.34	62.06	10.39	28.97
	45.31	7/27/2007	NM			
	45.31	1/29/2008	16.32			28.99
	45.31	7/15/2008	18.13	43.49	29.01	27.18
	45.31	2/5/2009	18.08	61.79	10.71	27.23
	45.31	7/23/2009	NM			
	45.31	1/9/2010	16.41	69.20	3.30	28.9
	45.31	7/12/2010	NM			

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-34C	45.31	1/12/2011	16.41	64.90		28.9
	45.31	7/11/2011	19.08	65.26		26.23
	45.31	2/8/2012	18.41			26.9
	45.31	7/10/2012	NM			
	45.31	1/8/2013	NM			
	45.31	7/23/2013	NM			
MW-34CR	46.47	7/16/2014	19.17			27.30
	46.47	1/5/2015	19.01			27.46
	46.47	8/10/2015	17.39			29.08
	46.47	1/13/2016	15.99			30.48
	46.47	7/6/2016	16.06			30.41
	46.47	1/12/2017	16.94			29.53
	46.47	7/5/2017	17.01			29.46
	46.47	9/6/2017	17.11			29.36
	46.47	2/11/2018	18.19			28.28
	46.47	3/12/2018	18.52			27.95
	46.47	5/14/2018	18.26			28.21
	46.47	1/32019	18.26			28.21
MW-35A	44.75	3/7/2007	3.49			41.82
	44.75	7/27/2007	3.05			42.26
	44.75	1/29/2008	1.82			43.49
	44.75	7/14/2008	6.21			39.1
	44.75	2/3/2009	5.54			39.77
	44.75	7/23/2009	5.76			39.55
	44.75	1/9/2010	4.14			41.17
	44.75	7/12/2010	6.04			39.27
	44.75	1/13/2011	2.46			42.85
	44.75	7/11/2011	8.44			36.87
	44.75	1/27/2012	1.35			43.96
	44.75	7/10/2012	2.33			42.98
	44.75	1/8/2013	5.37			39.94
	44.75	7/23/2013	9.18			36.13
	44.75	1/8/2014	5.06			40.25
	44.75	7/15/2014	6.51			38.24
	44.75	1/5/2015	4.22			40.53
	44.75	8/10/2015	3.68			41.07
	44.75	1/13/2016	3.08			41.67
	44.75	7/6/2016	3.34			41.41
	44.75	1/12/2017	3.87			40.88
	44.75	7/5/2017	4.41			40.34
	44.75	9/6/2017	NM			
	44.75	2/11/2018	3.69			41.06
	44.75	3/11/2018	4.06			40.69
	44.75	5/14/2018	8.71			36.04
	44.75	1/3/2019	8.06			36.69
MW-35B	44.83	3/7/2007	3.31			41.52
	44.83	7/27/2007	3.29			41.54
	44.83	1/29/2008	1.95			42.88
	44.83	7/14/2008	6.40			38.43
	44.83	2/3/2009	5.79			39.04
	44.83	7/23/2009	6.42			38.41
	44.83	1/9/2010	3.51			41.32
	44.83	7/12/2010	6.39			38.44
	44.83	1/13/2011	2.96			41.87
	44.83	7/11/2011	8.67			36.16
	44.83	1/27/2012	1.59			43.24
	44.83	7/10/2012	2.74			42.09
	44.83	1/8/2013	6.09			38.74

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-35B	44.83	7/23/2013	9.22			35.61
	44.83	1/8/2014	5.31			39.52
	44.83	7/15/2014	6.75			38.08
	44.83	1/5/2015	4.81			40.02
	44.83	8/10/2015	3.97			40.86
	44.83	1/13/2016	3.26			41.57
	44.83	7/6/2016	3.57			41.26
	44.83	1/12/2017	4.06			40.77
	44.83	7/5/2017	4.66			40.17
	44.83	9/6/2017	NM			
	44.83	2/11/2018	4.06			40.77
	44.83	3/11/2018	4.31			40.52
	44.83	5/14/2018	6.11			38.72
	44.83	1/3/2019	5.33			39.5
MW-36A	44.53	3/7/2007	8.71			35.82
	44.53	7/27/2007	6.54			37.99
	44.53	1/29/2008	5.59			38.94
	44.53	7/14/2008	9.33			35.2
	44.53	2/3/2009	10.69			33.84
	44.53	7/23/2009	12.03			32.5
	44.53	1/9/2010	9.23			35.3
	44.53	7/12/2010	9.14			35.39
	44.53	1/13/2011	8.62			35.91
	44.53	7/11/2011	12.16			32.37
	44.53	1/27/2012	6.82			37.71
	44.53	7/10/2012	6.68			37.85
	44.53	1/8/2013	7.61			36.92
	44.53	7/23/2013	11.36			33.17
	44.53	1/8/2014	9.23			35.3
	44.53	7/16/2014	8.62			35.91
	44.53	1/5/2015	8.67			35.86
	44.53	8/10/2015	6.47			38.06
	44.53	1/13/2016	5.79			38.74
	44.53	7/6/2016	6.13			38.40
	44.53	1/12/2017	6.58			37.95
	44.53	7/5/2017	7.01			37.52
	44.53	9/6/2017	6.92			37.61
	44.53	2/11/2018	7.77			36.76
	44.53	3/11/2018	8.06			36.47
	44.53	5/14/2018	8.92			35.61
	44.53	1/3/2019	8.22			36.31
MW-36B	44.07	7/12/2010	1.32			42.75
	44.07	1/13/2011	9.71			34.36
	44.07	7/11/2011	11.57			32.5
	44.07	1/27/2012	0.46			43.61
	44.07	7/10/2012	6.64			37.43
	44.07	1/8/2013	6.71			37.36
	44.07	7/23/2013	9.39			34.68
	44.07	1/8/2014	4.09			39.98
	44.07	7/16/2014	3.61			40.46
	44.07	1/5/2015	3.21			40.86
	44.07	8/10/2015	1.46			42.61
	44.07	1/13/2016	1.06			43.01
	44.07	7/6/2016	4.06			40.01
	44.07	1/12/2017	4.59			39.48
	44.07	7/5/2017	4.72			39.35
	44.07	9/6/2017	4.41			39.66
	44.07	2/11/2018	0.32			43.75

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-36B	44.07	3/11/2018	1.81			42.26
	44.07	5/14/2018	1.62			42.45
	44.07	1/3/2019	1.09			42.98
MW-36D	44.33	7/12/2010	85.39			-41.06
	44.33	1/13/2011	85.03			-40.7
	44.33	7/11/2011	85.33			-41
	44.33	1/27/2012	85.62			-41.29
	44.33	7/10/2012	85.17			-40.84
	44.33	1/8/2013	85.37			-41.04
	44.33	7/23/2013	85.93			-41.6
	44.33	1/8/2014	85.32			-40.99
	44.33	7/16/2014	84.77			-40.44
	44.33	1/5/2015	85.01			-40.68
	44.33	8/10/2015	84.67			-40.34
	44.33	1/13/2016	84.29			-39.96
	44.33	7/6/2016	84.42			-40.09
	44.33	1/12/2017	84.73			-40.40
	44.33	7/5/2017	84.89			-40.56
	44.33	9/6/2017	84.86			-40.53
	44.33	2/11/2018	82.59			-38.26
	44.33	3/11/2018	82.77			-38.44
	44.33	5/14/2018	83.09			-38.76
	44.33	1/3/2019	82.51			-38.18
MW-38A	46.39	3/7/2007	3.26			43.13
	46.39	7/27/2007	3.08			43.31
	46.39	1/29/2008	1.85			44.54
	46.39	7/14/2008	5.84			40.55
	46.39	2/3/2009	5.15			41.24
	46.39	7/23/2009	5.06			41.33
	46.39	1/9/2010	2.27			44.12
	46.39	7/12/2010	6.42			39.97
	46.39	1/13/2011	1.76			44.63
	46.39	7/11/2011	8.16			38.23
	46.39	1/27/2012	1.8			44.59
	46.39	7/10/2012	2.52			43.87
	46.39	1/8/2013	4.62			41.77
	46.39	7/23/2013	8.34			38.05
	46.39	1/8/2014	4.77			41.62
	46.39	7/15/2014	6.20			40.19
	46.39	1/5/2015	4.16			42.23
	46.39	8/10/2015	3.61			42.78
	46.39	1/13/2016	3.02			43.37
	46.39	7/6/2016	3.42			42.97
	46.39	1/12/2017	4.01			42.38
	46.39	7/5/2017	4.21			42.18
	46.39	9/6/2017	4.12			42.27
	46.39	2/11/2018	2.61			43.78
	46.39	3/11/2018	4.12			42.27
	46.39	5/14/2018	5.41			40.98
	46.39	1/3/2019	4.66			41.73
MW-38B	45.51	3/15/2004	1.07			44.44
	45.51	9/14/2004	6.10			39.41
	45.51	7/18/2005	2.41			43.1
	45.51	1/6/2006	6.33			39.18
	45.51	7/27/2006	1.27			44.24
	45.51	3/7/2007	2.38			43.13
	45.51	7/27/2007	2.25			43.26
	45.51	1/29/2008	0.61			44.9

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-38B	45.51	7/14/2008	4.86			40.65
	45.51	2/3/2009	4.33			41.18
	45.51	7/23/2009	4.47			41.04
	45.51	1/9/2010	1.44			44.07
	45.51	7/12/2010	5.72			39.79
	45.51	1/13/2011	0.68			44.83
	45.51	7/11/2011	7.82			37.69
	45.51	1/27/2012	0.85			44.66
	45.51	7/10/2012	0.74			44.77
	45.51	1/8/2013	3.97			41.54
	45.51	7/23/2013	7.51			38
	45.51	1/8/2014	3.47			42.04
	45.51	7/15/2014	5.50			40.01
	45.51	1/5/2015	3.07			42.44
	45.51	8/10/2015	2.17			43.34
	45.51	1/13/2016	2.41			43.10
	45.51	7/6/2016	2.96			42.55
	45.51	1/12/2017	3.81			41.70
	45.51	7/5/2017	4.07			41.44
	45.51	9/6/2017	3.91			41.60
	45.51	2/11/2018	2.02			43.49
	45.51	3/11/2018	3.22			42.29
	45.51	5/14/2018	4.62			40.89
	45.51	1/3/2019	3.79			41.72
MW-39B	49.58	3/15/2004	5.48			44.1
	49.58	9/13/2004	10.02			39.56
	49.58	7/18/2005	7.21			42.37
	49.58	1/4/2006	10.37			39.21
	49.58	7/27/2006	6.08			43.5
	49.58	3/7/2007	6.91			42.67
	49.58	7/27/2007	5.74			43.84
	49.58	1/30/2008	6.34			43.24
	49.58	7/15/2008	8.96			40.62
	49.58	2/4/2009	8.60			40.98
	49.58	7/24/2009	9.13			40.45
	49.58	1/8/2010	5.61			43.97
	49.58	7/12/2010	9.31			40.27
	49.58	1/12/2011	5.64			43.94
	49.58	7/12/2011	11.97			37.61
	49.58	1/26/2012	5.84			43.74
	49.58	7/9/2012	5.77			43.81
	49.58	1/7/2013	8.68			40.9
	49.58	7/22/2013	11.17			38.41
	49.58	1/7/2014	7.23			42.35
	49.58	7/16/2014	9.46			40.12
	49.58	1/5/2015	6.71			42.87
	49.58	8/10/2015	4.82			44.76
	49.58	1/13/2016	4.17			45.41
	49.58	7/6/2016	4.26			45.32
	49.58	1/12/2017	5.61			43.97
	49.58	7/5/2017	5.87			43.71
	49.58	9/6/2017	5.66			43.92
	49.58	2/11/2018	6.09			43.49
	49.58	3/11/2018	7.04			42.54
	49.58	5/14/2018	8.73			40.85
	49.58	1/3/2019	7.97			41.61
MW-40B	49.59	3/15/2004	5.46			44.13
	49.59	9/13/2004	9.72			39.87

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-40B	49.59	7/18/2005	7.19			42.4
	49.59	1/4/2006	10.25			39.34
	49.59	7/27/2006	6.18			43.41
	49.59	3/7/2007	6.81			42.78
	49.59	7/27/2007	5.00			44.59
	49.59	1/30/2008	5.23			44.36
	49.59	7/15/2008	8.76			40.83
	49.59	2/4/2009	8.57			41.02
	49.59	7/24/2009	9.06			40.53
	49.59	1/8/2010	5.37			44.22
	49.59	7/12/2010	9.17			40.42
	49.59	1/12/2011	5.81			43.78
	49.59	7/12/2011	11.46			38.13
	49.59	1/26/2012	5.68			43.91
	49.59	7/9/2012	5.74			43.85
	49.59	1/7/2013	8.63			40.96
	49.59	7/22/2013	11.06			38.53
	49.59	1/7/2014	7.24			42.35
	49.59	7/16/2014	9.27			40.32
	49.59	1/5/2015	7.02			42.57
	49.59	8/10/2015	5.02			44.57
	49.59	1/13/2016	4.39			45.20
	49.59	7/6/2016	4.67			44.92
	49.59	1/12/2017	5.22			44.37
	49.59	7/5/2017	5.77			43.82
	49.59	9/6/2017	5.71			43.88
	49.59	2/11/2018	6.21			43.38
	49.59	3/11/2018	6.82			42.77
	49.59	5/14/2018	8.44			41.15
	49.59	1/3/2019	7.91			41.68
MW-41B	49.37	3/15/2004	4.66			44.71
	49.37	9/13/2004	9.76	35.01	9.80	39.61
	49.37	7/18/2005	5.96	32.23	12.58	43.41
	49.37	1/4/2006	10.03	32.21	12.60	39.34
	49.37	7/27/2006	5.65	29.55	15.26	43.72
	49.37	3/7/2007	4.41	29.13	15.68	44.96
	49.37	7/27/2007	5.27	12.00	32.81	44.1
	49.37	2/22/2008	5.04	25.14	19.67	44.7
	49.37	7/15/2008	8.87	25.09	19.72	40.5
	49.37	2/4/2009	8.93	23.79	21.02	40.44
	49.37	7/24/2009	9.46	23.91	20.90	39.91
	49.37	1/8/2010	5.92	23.65	21.16	43.45
	49.37	5/27/2010	6.13	25.45	19.36	43.24
	49.37	6/28/2010	6.21	38.2	6.61	43.16
	49.37	7/12/2010	6.32	38.45	6.36	43.05
	49.37	8/31/2010	6.26	39.22	5.59	43.11
	49.37	1/12/2011	6.02	39.6	5.21	43.35
	49.37	7/12/2011	8.86	39.75	5.06	40.51
	49.37	3/8/2012	6.31	20.67	24.14	43.06
	49.37	7/9/2012	8.23			41.14
	49.37	1/7/2013	9.09	41.13	3.68	40.28
	49.37	7/22/2013	10.31	39.29	5.52	39.06
	49.37	1/7/2014	9.06	39.17	5.64	40.31
	49.37	7/15/2014	8.62	37.86	6.95	40.75
	49.37	1/5/2015	8.26	39.02	5.79	41.11
	49.37	8/10/2015	6.01	40.39	4.42	43.36
	49.37	1/13/2016	5.51	39.91	4.90	43.86
	49.37	7/6/2016	5.72	40.01	4.80	43.65

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-41B	49.37	1/12/2017	6.39	40.56	4.25	42.98
	49.37	7/6/2017	6.34	40.57	1.73	43.03
	49.37	9/6/2017	6.36	40.62	1.68	43.01
	49.37	2/7/2018	6.97	40.76	1.54	42.40
	49.37	3/11/2018	7.21	40.63	1.67	42.16
	49.37	5/14/2018	8.71	40.82	1.48	40.66
	49.37	7/2/2018	8.97	40.96	1.34	40.4
	49.37	1/3/2019	8.22	40.83	1.47	41.15
MW-42B	50.52	3/7/2007	7.31			43.21
	50.52	7/27/2007	5.74			44.78
	50.52	1/30/2008	6.62			43.9
	50.52	7/15/2008	8.73			41.79
	50.52	2/4/2009	9.32			41.2
	50.52	7/24/2009	9.61			40.91
	50.52	1/8/2010	6.02			44.5
	50.52	7/12/2010	7.13			43.39
	50.52	1/12/2011	6.33			44.19
	50.52	7/12/2011	11.76			38.76
	50.52	1/26/2012	6.62			43.9
	50.52	7/9/2012	6.81			43.71
	50.52	1/7/2013	9.23			41.29
	50.52	7/22/2013	11.08			39.44
	50.52	1/7/2014	8.02			42.5
	50.52	7/15/2014	7.37			43.15
	50.52	1/5/2015	7.31			43.21
	50.52	8/10/2015	5.67			44.85
	50.52	1/13/2016	4.92			45.60
	50.52	7/6/2016	5.36			45.16
	50.52	1/12/2017	5.94			44.58
	50.52	7/6/2017	6.27			44.25
	50.52	9/6/2017	6.39			44.13
	50.52	2/11/2018	6.84			43.68
	50.52	3/11/2018	7.12			43.40
	50.52	5/14/2018	8.76			41.76
	50.52	7/2/2018	8.99			41.53
	50.52	1/3/2019	8.02			42.50
MW-44A	45.11	3/7/2007	10.86			34.25
	45.11	7/27/2007	7.46			37.65
	45.11	1/30/2008	8.44			36.67
	45.11	7/14/2008	10.75			34.36
	45.11	2/3/2009	12.55			32.56
	45.11	7/23/2009	12.76			32.35
	45.11	1/9/2010	10.23			34.88
	45.11	7/12/2010	11.24			33.87
	45.11	1/12/2011	9.63			35.48
	45.11	7/11/2011	12.59			32.52
	45.11	1/27/2012	9.27			35.84
	45.11	7/10/2012	10.11			35
	45.11	1/8/2013	11.01			34.1
	45.11	7/23/2013	12.24			32.87
	45.11	1/8/2014	11.91			33.2
	45.11	7/16/2014	11.32			33.79
	45.11	1/5/2015	11.27			33.84
	45.11	8/10/2015	9.71			35.40
	45.11	1/13/2016	9.11			36.00
	45.11	7/6/2016	9.26			35.85
	45.11	1/12/2017	9.71			35.40
	45.11	7/5/2017	10.06			35.05

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-44A	45.11	9/6/2017	9.94			35.17
	45.11	2/11/2018	8.79			36.32
	45.11	3/11/2018	9.83			35.28
	45.11	5/14/2018	9.91			35.20
	45.11	1/3/2019	9.23			35.88
MW-44C	45.03	3/15/2004	17.54			27.49
	45.03	9/14/2004	18.35			26.68
	45.03	7/18/2005	18.90	64.77	5.35	26.13
	45.03	1/6/2006	20.03	66.50	5.37	25
	45.03	7/27/2006	18.47	63.35	6.75	26.56
	45.03	3/7/2007	16.02	62.30	7.75	29.01
	45.03	7/27/2007	14.83	65.45	5.50	30.2
	45.03	1/29/2008	15.95			29.08
	45.03	7/14/2008	17.91	64.95	6.18	27.12
	45.03	2/3/2009	16.72	64.15	6.98	28.31
	45.03	7/23/2009	17.12	64.05	6.75	27.91
	45.03	1/9/2010	15.57	63.81	6.99	29.46
	45.03	5/27/2010	16.67	64.7	6.10	28.36
	45.03	6/28/2010	16.77	67.85	2.95	28.26
	45.03	7/12/2010	16.91	70.35	0.45	28.12
	45.03	8/31/2010	16.89	70.63	0.17	28.14
	45.03	1/12/2011	16.77	70.05	0.75	28.26
	45.03	7/11/2011	19.31	70.05	0.75	25.72
	45.03	1/27/2012	17.91	63.88	6.92	27.12
	45.03	7/10/2012	17.61	63.7	7.10	27.42
	45.03	1/8/2013	19.02	62.94	7.86	26.01
	45.03	7/23/2013	20.36	70.26	0.54	24.67
	45.03	1/8/2014	19.67	70.42	0.38	25.36
	45.03	7/16/2014	18.72	69.31	1.49	26.31
	45.03	1/5/2015	18.67	69.82	0.98	26.36
	45.03	8/10/2015	16.31	70.29	0.51	28.72
	45.03	1/13/2016	16.26	69.93	0.87	28.77
	45.03	7/6/2016	16.47	69.71	1.09	28.56
	45.03	1/12/2017	17.22	70.11	0.69	27.81
	45.03	7/5/2017	17.33	70.34	0.46	27.70
	45.03	9/6/2017	17.36	70.43	-0.87	27.67
	45.03	2/8/2018	17.77	70.34	0.46	27.26
	45.03	5/15/2018	NM			
	45.13	1/4/2019	18.42	70.41	0.39	26.71
MW-45C	44.73	3/15/2004	17.15			27.58
	44.73	9/14/2004	17.82	61.66	9.02	26.91
	44.73	7/18/2005	18.38	60.76	9.89	26.35
	44.73	1/6/2006	19.51	62.87	8.87	25.22
	44.73	7/27/2006	17.92	61.64	8.94	26.81
	44.73	3/7/2007	15.95	60.81	9.79	28.78
	44.73	7/27/2007	14.38			30.35
	44.73	1/29/2008	14.86	61.39	9.46	29.87
	44.73	7/14/2008	17.22	61.25	9.88	27.51
	44.73	2/3/2009	17.00	61.24	9.61	27.73
	44.73	7/23/2009	17.46	61.30	9.55	27.27
	44.73	1/9/2010	14.98	61.56	9.29	29.75
	44.73	5/27/2010	16.31	61.1	9.75	28.42
	44.73	6/28/2010	16.42	63.45	7.40	28.31
	44.73	7/12/2010	16.61	68.8	2.05	28.12
	44.73	8/31/2010	16.46	69.62	1.23	28.27
	44.73	1/12/2011	16.31	69.1	1.75	28.42
	44.73	7/11/2011	18.29	69.3	1.55	26.44
	44.73	3/8/2012	16.31	70.6	0.25	28.42

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-45C	44.73	7/10/2012	20.69	70.21	0.64	24.04
	44.73	1/8/2013	21.39	69.91	0.69	23.34
	44.73	7/23/2013	22.72	70.39	0.21	22.01
	44.73	1/8/2014	22.13	70.35	0.25	22.6
	44.73	7/16/2014	21.32	69.91	0.69	23.41
	44.73	1/5/2015	20.19	70.55	0.05	24.54
	44.73	8/10/2015	18.61			26.12
	44.73	1/13/2016	17.49			27.24
	44.73	7/6/2016	17.62			27.11
	44.73	1/12/2017	18.22			26.51
	44.73	7/5/2017	17.96			26.77
	44.73	9/6/2017	18.16			26.57
	44.73	2/8/2018	18.62	70.6	0.00	26.11
	44.73	3/11/2018	18.83			25.9
	44.73	5/15/2018	19.61			25.12
	44.73	1/4/2019	19.02			25.71
MW-46C	44.94	3/15/2004	16.16	ND	ND	28.78
	44.94	9/14/2004	17.97	ND	ND	26.97
	44.94	7/18/2005	18.50	69.05	3.78	26.44
	44.94	1/13/2006	19.66	70.20	3.22	25.28
	44.94	7/27/2006	17.96	68.89	3.90	26.98
	44.94	3/7/2007	16.01	69.32	3.43	28.93
	44.94	7/27/2007	14.54	69.31	3.59	30.4
	44.94	1/30/2008	15.68	70.81	2.00	29.26
	44.94	7/14/2008	17.38	69.97	2.84	27.56
	44.94	2/3/2009	16.78	69.28	3.53	28.16
	44.94	7/23/2009	17.59	69.35	3.55	27.35
	44.94	1/9/2010	14.53	68.74	4.16	30.41
	44.94	5/27/2010	16.26	69.4	3.50	28.68
	44.94	6/28/2010	16.39	70.85	2.05	28.55
	44.94	7/12/2010	16.29	72.25	0.65	28.65
	44.94	8/31/2010	16.13	72.46	0.44	28.81
	44.94	1/12/2011	15.96	71.75	1.15	28.98
	44.94	7/11/2011	18.07	71.65	1.25	26.87
	44.94	1/26/2012	16.54	ND	ND	28.4
	44.94	7/10/2012	20.34	72.8	0.10	24.6
	44.94	1/8/2013	21.18	71.31	1.59	23.76
	44.94	7/23/2013	21.96	72.16	0.74	22.98
	44.94	1/8/2014	21.81	72.55	0.35	23.13
	44.94	7/16/2014	20.86	71.39	1.51	24.08
	44.94	1/5/2015	20.47	72.06	0.84	24.47
	44.94	8/10/2015	18.39	72.42	0.48	26.55
	44.94	1/13/2016	18.24	72.59	0.31	26.70
	44.94	7/6/2016	18.54	72.49	0.41	26.40
	44.94	1/12/2017	19.27	72.46	0.44	25.67
	44.94	7/5/2017	19.12	72.34	0.56	25.82
	44.94	9/6/2017	19.29	72.34	0.56	25.65
	44.94	2/8/2018	19.96	72.46	0.44	24.98
	44.94	3/11/2018	20.04	72.32	0.58	24.90
	44.94	5/15/2018	21.02	72.59	0.31	23.92
	44.94	1/4/2019	20.49	72.46	0.44	24.45
MW-47C	45.61	7/27/2007	16.62			28.99
	45.61	1/29/2008	16.04			29.57
	45.61	7/14/2008	18.15			27.46
	45.61	2/4/2009	18.39			27.22
	45.61	7/23/2009	18.61			27
	45.61	1/9/2010	16.46			29.15
	45.61	7/12/2010	18.33			27.28

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-47C	45.61	1/12/2011	17.86			27.75
	45.61	7/11/2011	19.94			25.67
	45.61	1/26/2012	18.77			26.84
	45.61	7/9/2012	18.17			27.44
	45.61	1/8/2013	19.47			26.14
	45.61	7/23/2013	20.61			25
	45.61	1/8/2014	19.57			26.04
	45.61	7/16/2014	19.02			26.59
	45.61	1/5/2015	19.07			26.54
	45.61	8/10/2015	17.41			28.20
	45.61	1/13/2016	16.83			28.78
	45.61	7/6/2016	17.01			28.60
	45.61	1/12/2017	17.59			28.02
	45.52	7/5/2017	NM			
	45.52	9/6/2017	NM			
	45.52					45.52
MW-48C	44.68	3/15/2004	17.31			27.37
	44.68	9/14/2004	18.60			26.08
	44.68	7/18/2005	19.17			25.51
	44.68	1/6/2006	20.33			24.35
	44.68	7/27/2006	18.73			25.95
	44.68	3/7/2007	16.52			28.16
	44.68	7/27/2007	15.22			29.46
	44.68	1/29/2008	16.32			28.36
	44.68	7/14/2008	17.63			27.05
	44.68	2/4/2009	17.97			26.71
	44.68	7/24/2009	18.39			26.29
	44.68	1/9/2010	15.81			28.87
	44.68	7/12/2010	17.42			27.26
	44.68	1/12/2011	17.52			27.16
	44.68	7/11/2011	19.58			25.1
	44.68	1/26/2012	18.52			26.16
	44.68	7/9/2012	17.12			27.56
	44.68	1/8/2013	18.26			26.42
	44.68	7/23/2013	20.17			24.51
	44.68	1/8/2014	19.19			25.49
	44.68	7/16/2014	18.38			26.30
	44.68	1/5/2015	18.76			25.92
	44.68	8/10/2015	16.34			28.34
	44.68	1/13/2016	15.72			28.96
	44.68	7/6/2016	16.16			28.52
	44.68	1/12/2017	16.71			27.97
	44.68	7/5/2017	17.17			27.51
	44.68	9/6/2017	17.15			27.53
	44.68	2/11/2018	17.36			27.32
	44.68	3/11/2018	16.74			27.94
	44.68	5/14/2018	17.33			27.35
	44.68	1/4/2019	16.67			28.01
MW-49A	46.18	3/7/2007	12.91			33.27
	46.18	7/27/2007	8.86			37.32
	46.18	1/31/2008	12.02			34.16
	46.18	7/15/2008	12.99			33.19
	46.18	2/4/2009	13.29			32.89
	46.18	7/24/2009	13.71			32.47
	46.18	1/9/2010	11.07			35.11
	46.18	7/12/2010	11.62			34.56
	46.18	1/12/2011	10.82			35.36
	46.18	7/11/2011	12.31			33.87

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-49A	46.18	1/26/2012	9.48			36.7
	46.18	7/9/2012	9.79			36.39
	46.18	1/8/2013	11.31			34.87
	46.18	7/23/2013	11.92			34.26
	46.18	1/8/2014	11.56			34.62
	46.18	7/16/2014	10.57			35.61
	46.18	1/5/2015	16.12			30.06
	46.18	8/10/2015	9.61			36.57
	46.18	1/13/2016	9.34			36.84
	46.18	7/6/2016	9.57			36.61
	46.18	1/12/2017	10.03			36.15
	46.18	7/5/2017	10.32			35.86
	46.18	9/6/2017	10.24			35.94
	46.18	2/11/2018	10.29			35.89
	46.18	3/11/2018	10.56			35.62
	46.18	5/14/2018	12.34			33.84
	46.18	1/4/2019	11.81			34.37
MW-49B	46.22	2/4/2009	11.65			34.57
	46.22	7/24/2009	11.93			34.29
	46.22	1/9/2010	9.73			36.49
	46.22	7/12/2010	11.36			34.86
	46.22	1/12/2011	8.04			38.18
	46.22	7/11/2011	12.29			33.93
	46.22	1/26/2012	10.74			35.48
	46.22	7/9/2012	7.38			38.84
	46.22	1/8/2013	11.27	33.56	1.19	34.95
	46.22	7/23/2013	11.83	33.91	0.84	34.39
	46.22	1/8/2014	11.24			34.98
	46.22	7/16/2014	9.62			36.60
	46.22	1/5/2015	10.74			35.48
	46.22	8/10/2015	8.17			38.05
	46.22	1/13/2016	7.74			38.48
	46.22	7/6/2016	8.02			38.20
	46.22	1/12/2017	8.46			37.76
	46.22	7/5/2017	8.72			37.50
	46.22	9/6/2017	8.67			37.55
	46.22	2/11/2018	10.03			36.19
	46.22	3/11/2018	10.64			35.58
	46.22	5/14/2018	13.27			32.95
	46.22	1/4/2019	12.59			33.63
MW-50A	46.96	3/7/2007	8.16			38.8
	46.96	7/27/2007	4.70			42.26
	46.96	1/31/2008	5.68			41.28
	46.96	7/16/2008	7.99			38.97
	46.96	2/4/2009	9.31			37.65
	46.96	7/24/2009	9.49			37.47
	46.96	1/9/2010	7.02			39.94
	46.96	7/12/2010	8.74			38.22
	46.96	1/12/2011	5.61			41.35
	46.96	7/11/2011	9.86			37.1
	46.96	1/26/2012	7.21			39.75
	46.96	7/9/2012	4.63			42.33
	46.96	1/8/2013	5.91			41.05
	46.96	7/23/2013	7.13			39.83
	46.96	1/8/2014	6.71			40.25
	46.96	7/16/2014	6.29			40.67
	46.96	1/5/2015	6.22			40.74
	46.96	8/10/2015	5.01			41.95

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-50A	46.96	1/13/2016	4.06			42.90
	46.96	7/6/2016	4.71			42.25
	46.96	1/12/2017	5.21			41.75
	46.96	7/5/2017	5.63			41.33
	46.96	9/6/2017	5.51			41.45
	46.96	2/11/2018	4.39			42.57
	46.96	3/11/2018	4.81			42.15
	46.96	5/15/2018	5.27			41.69
	46.96	1/3/2019	4.62			42.34
MW-51A	47.80	3/7/2007	6.96			40.84
	47.80	7/27/2007	5.45			42.35
	47.80	1/31/2008	5.92			41.88
	47.80	7/15/2008	NM			
	47.80	2/4/2009	9.98			37.82
	47.80	7/24/2009	10.34			37.46
	47.80	1/9/2010	7.83			39.97
	47.80	7/12/2010	9.16			38.64
	47.80	1/12/2011	8.56			39.24
	47.80	7/11/2011	12.74			35.06
	47.80	1/26/2012	7.33			40.47
	47.80	7/9/2012	7.26			40.54
	47.80	1/8/2013	7.62			40.18
	47.80	7/23/2013	10.54			37.26
	47.80	1/8/2014	10.21			37.59
	47.80	7/16/2014	8.51			39.29
	47.80	1/5/2015	9.87			39.29
	47.80	8/10/2015	7.96			39.84
	47.80	1/13/2016	7.13			40.67
	47.80	7/6/2016	7.29			40.51
	47.80	1/12/2017	7.63			40.17
	47.80	7/5/2017	7.74			40.06
	47.80	9/6/2017	7.63			40.17
	47.80	2/11/2018	5.92			41.88
	47.80	3/12/2018	6.41			41.39
	47.80	5/15/2018	7.16			40.64
	47.80	1/4/2019	6.67			41.13
MW-51C	47.48	7/16/2014	22.21			25.27
	47.48	1/5/2015	NM			
	47.48	8/10/2015	18.79			28.69
	47.48	1/13/2016	18.06			29.42
	47.48	7/6/2016	18.26			29.22
	47.48	1/12/2017	18.68			28.80
	47.48	7/5/2017	19.12			28.36
	47.48	9/6/2017	19.02			28.46
	47.48	2/11/2018	17.63			29.85
	47.48	3/12/2018	18.03			29.45
	47.48	5/15/2018	20.83			26.65
	47.48	1/3/2019	20.17			27.31
MW-52A	51.91	3/7/2007	13.66			38.25
	51.91	7/27/2007	11.76			40.15
	51.91	1/31/2008	12.60			39.31
	51.91	7/15/2008	14.42			37.49
	51.91	2/5/2009	15.52			36.39
	51.91	7/23/2009	16.39			35.52
	51.91	1/9/2010	12.57			39.34
	51.91	7/12/2010	14.19			37.72
	51.91	1/12/2011	9.06			42.85
	51.91	7/12/2011	16.53			35.38

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-52A	51.91	1/26/2012	12.99			38.92
	51.91	7/9/2012	12.43			39.48
	51.91	1/7/2013	14.94			36.97
	51.91	7/22/2013	16.29			35.62
	51.91	1/7/2014	16.01			35.9
	51.91	7/15/2014	15.39			36.52
	51.91	1/5/2015	15.37			36.54
	51.91	8/10/2015	13.61			38.30
	51.91	1/13/2016	12.96			38.95
	51.91	7/6/2016	NM			NM
MW-53C	45.49	3/7/2007	16.12			29.37
	45.49	7/27/2007	14.55			30.94
	45.49	1/29/2008	15.12			30.37
	45.49	7/14/2008	16.86			28.63
	45.49	2/3/2009	16.69			28.8
	45.49	7/23/2009	17.62			27.87
	45.49	1/9/2010	15.19			30.3
	45.49	7/12/2010	15.71			29.78
	45.49	1/12/2011	16.58			28.91
	45.49	7/11/2011	18.61			26.88
	45.49	1/27/2012	17.54			27.95
	45.49	7/10/2012	17.73			27.76
	45.49	1/8/2013	18.14			27.35
	45.49	7/23/2013	19.28			26.21
	45.49	1/8/2014	21.12			24.37
	45.49	7/16/2014	17.37			28.12
	45.49	1/5/2015	20.71			24.78
	45.49	8/10/2015	18.72			26.77
	45.49	1/13/2016	18.06			27.43
	45.49	7/6/2016	18.42			27.07
	45.49	1/12/2017	18.89			26.60
	45.49	7/5/2017	19.16			26.33
	45.49	9/6/2017	19.13			26.36
	45.49	2/11/2018	16.43			29.06
	45.49	3/11/2018	15.54			29.95
	45.49	5/14/2018	16.56			28.93
	45.49	1/4/2019	15.93			29.56
MW-54C	44.99	3/7/2007	15.74			29.25
	44.99	7/27/2007	14.63			30.36
	44.99	1/28/2008	15.28			29.71
	44.99	7/14/2008	16.68			28.31
	44.99	2/3/2009	16.87			28.12
	44.99	7/23/2009	17.84			27.15
	44.99	1/9/2010	15.46			29.53
	44.99	7/12/2010	16.49			28.5
	44.99	1/12/2011	16.46			28.53
	44.99	7/11/2011	18.23			26.76
	44.99	1/27/2012	17.42			27.57
	44.99	7/10/2012	17.36			27.63
	44.99	1/8/2013	17.81			27.18
	44.99	7/23/2013	18.89			26.1
	44.99	1/8/2014	18.14			26.85
	44.99	7/16/2014	17.49			27.50
	44.99	1/5/2015	17.86			27.13
	44.99	8/10/2015	16.02			28.97
	44.99	1/13/2016	15.33			29.66
	44.99	7/6/2016	15.66			29.33
	44.99	1/12/2017	16.17			28.82

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-54C	44.99	7/5/2017	16.61			28.38
	44.99	9/6/2017	16.59			28.40
	44.99	2/11/2018	15.4			29.59
	44.99	3/11/2018	15.68			29.31
	44.99	5/14/2018	16.31			28.68
	44.99	1/4/2019	15.71			29.28
MW-55A	52.01	2/4/2009	13.79			38.22
	52.01	7/23/2009	14.06			37.95
	52.01	1/9/2010	10.83			41.18
	52.01	7/12/2010	12.72			39.29
	52.01	1/12/2011	10.13			41.88
	52.01	7/12/2011	15.18			36.83
	52.01	1/26/2012	11.71			40.3
	52.01	7/9/2012	12.29			39.72
	52.01	1/7/2013	13.34			38.67
	52.01	7/22/2013	14.19			37.82
	52.01	1/7/2014	12.73			39.28
	52.01	7/15/2014	11.30			40.71
	52.01	1/5/2015	12.51			39.50
	52.01	8/10/2015	10.79			41.22
MW-55B	52.04	1/26/2012	13.28			38.76
	52.04	7/9/2012	13.93			38.11
	52.04	1/7/2013	13.73			38.31
	52.04	7/22/2013	14.59			37.45
	52.04	1/7/2014	12.89			39.15
	52.04	7/15/2014	12.49			39.55
	52.04	1/5/2015	12.41			39.63
	52.04	8/10/2015	10.19			41.85
MW-57A	47.72	2/5/2009	12.73		0.00	34.99
	47.72	7/23/2009	12.91		0.00	34.81
	47.72	1/9/2010	9.78		0.00	37.94
	47.72	7/12/2010	8.56	24.55	2.55	39.16
	47.72	1/12/2011	9.83	22.76	4.14	37.89
	47.72	7/12/2011	13.88	22.79	4.11	33.84
	47.72	1/26/2012	10.54	22.78	4.12	37.18
	47.72	7/9/2012	9.72	22.65	4.25	38
	47.72	1/7/2013	10.61	22.14	4.76	37.11
	47.72	7/22/2013	13.21	23.05	3.85	34.51
	47.72	1/7/2014	11.79	26.15	0.75	35.93
	47.72	7/15/2014	10.42	26.09	0.81	37.30
	47.72	1/5/2015	10.13	26.75	0.15	37.59
	47.72	8/10/2015	7.46	26.9	0.00	40.26
	47.72	7/6/2016	7.39			40.33
	47.72	1/12/2017	8.07			39.65
	47.72	7/6/2017	8.41			39.31
	47.72	9/6/2017	8.46			39.26
	47.72	2/7/2018	8.98			38.74
	47.72	3/11/2018	9.24			38.48
	47.72	5/14/2018	9.67			38.05
	47.72	1/4/2019	9.52			38.2
MW-57B	50.90	1/26/2012	28.83	42.51	0.44	22.07
	50.90	7/9/2012	27.93	42.45	0.50	22.97
	50.90	1/7/2013	28.63	41.36	1.59	22.27
	50.90	7/22/2013	16.34	41.67	1.28	34.56
	50.90	1/7/2014	15.04			35.86
	50.90	7/15/2014	15.71			35.19
	50.90	1/5/2015	14.32			36.58
	50.90	8/10/2015	12.42			38.48

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-57B	50.90	7/6/2016	12.44			38.46
	50.90	1/12/2017	13.24			37.66
	50.90	7/6/2017	13.57			37.33
	50.90	9/6/2017	13.79			37.11
	50.90	2/7/2018	12.42			38.48
	50.90	3/11/2018	12.62			38.28
	50.90	5/14/2018	13.29			37.61
	50.90	1/4/2019	13.03			37.87
MW-58A	47.76	2/5/2009	14.55			33.21
	47.76	7/23/2009	14.04			33.72
	47.76	1/9/2010	12.29			35.47
	47.76	7/12/2010	14.03			33.73
	47.76	1/12/2011	11.88			35.88
	47.76	7/12/2011	16.16			31.6
	47.76	1/26/2012	12.26			35.5
	47.76	7/9/2012	11.62			36.14
	47.76	1/7/2013	11.91			35.85
	47.76	7/22/2013	13.71			34.05
	47.76	1/7/2014	13.26			34.5
	47.76	7/15/2014	13.06			34.70
	47.76	1/5/2015	13.06			34.70
	47.76	8/10/2015	11.29			36.47
	47.76	7/6/2016	7.46			40.30
	47.76	1/12/2017	8.04			39.72
	47.76	7/6/2017	8.39			39.37
	47.76	9/6/2017	8.33			39.43
	47.76	2/11/2018	6.47			41.29
	47.76	3/11/2018	12.71			35.05
	47.76	5/14/2018	12.94			34.82
	47.76	1/4/2019	12.29			35.47
MW-59A	44.18	2/5/2009	10.71			33.47
	44.18	7/23/2009	9.96			34.22
	44.18	1/9/2010	8.62			35.56
	44.18	7/12/2010	9.97			34.21
	44.18	1/12/2011	8.06			36.12
	44.18	7/11/2011	10.54			33.64
	44.18	1/26/2012	6.36			37.82
	44.18	7/9/2012	7.63			36.55
	44.18	1/8/2013	9.09			35.09
	44.18	7/23/2013	9.76			34.42
	44.18	1/8/2014	9.34			34.84
	44.18	7/16/2014	9.17			35.01
	44.18	1/5/2015	8.71			35.47
	44.18	8/10/2015	5.76			38.42
	44.18	1/13/2016	5.01			39.17
	44.18	7/6/2016	5.26			38.92
	44.18	1/12/2017	5.81			38.37
	44.18	7/5/2017	6.14			38.04
	44.18	9/6/2017	6.09			38.09
	44.18	2/11/2018	6.26			37.92
	44.18	3/12/2018	9.13			35.05
	44.18	5/14/2018	8.81			35.37
	44.18	1/4/2019	8.12			36.06
MW-59B	44.36	7/12/2010	7.43			36.93
	44.36	1/12/2011	6.89			37.47
	44.36	7/11/2011	11.03			33.33
	44.36	1/26/2012	4.44			39.92
	44.36	7/9/2012	7.48			36.88

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-59B	44.36	1/8/2013	9.36			35
	44.36	7/23/2013	9.94			34.42
	44.36	1/8/2014	9.52			34.84
	44.36	7/16/2014	8.67			35.69
	44.36	1/5/2015	8.92			35.44
	44.36	8/10/2015	5.91			38.45
	44.36	1/13/2016	5.22			39.14
	44.36	7/6/2016	5.39			38.97
	44.36	1/12/2017	5.97			38.39
	44.36	7/5/2017	6.27			38.09
	44.36	9/6/2017	6.06			38.30
	44.36	2/11/2018	7.59			36.77
	44.36	3/12/2018	9.61			34.75
	44.36	5/14/2018	9.09			35.27
	44.36	1/4/2019	8.27			36.09
MW-59D	44.22	2/5/2009	84.17			-39.95
	44.22	7/23/2009	83.53			-39.31
	44.22	1/9/2010	81.73			-37.51
	44.22	7/12/2010	82.16			-37.94
	44.22	1/12/2011	82.83			-38.61
	44.22	7/11/2011	82.89			-38.67
	44.22	1/26/2012	82.93			-38.71
	44.22	7/9/2012	82.36			-38.14
	44.22	1/8/2013	82.81			-38.59
	44.22	7/23/2013	83.04			-38.82
	44.22	1/8/2014	83.14			-38.92
	44.22	7/16/2014	82.67			-38.45
	44.22	1/5/2015	82.07			-37.85
	44.22	8/10/2015	81.77			-37.55
	44.22	1/13/2016	81.03			-36.81
	44.22	7/6/2016	81.62			-37.40
	44.22	1/12/2017	82.09			-37.87
	44.22	7/5/2017	82.17			-37.95
	44.22	9/6/2017	82.16			-37.94
	44.22	2/11/2018	81.09			-36.87
	44.22	3/12/2018	81.17			-36.95
	44.22	5/14/2018	81.79			-37.57
	44.22	1/4/2019	81.02			-36.8
MW-60A	46.79	2/4/2009	9.56			37.23
	46.79	7/23/2009	9.71			37.08
	46.79	1/9/2010	7.72			39.07
	46.79	7/12/2010	8.61			38.18
	46.79	1/12/2011	5.82			40.97
	46.79	7/11/2011	9.86			36.93
	46.79	1/26/2012	4.34			42.45
	46.79	7/9/2012	5.42			41.37
	46.79	1/8/2013	6.91			39.88
	46.79	7/23/2013	10.42			36.37
	46.79	1/8/2014	8.06			38.73
	46.79	7/16/2014	7.29			39.50
	46.79	1/5/2015	7.39			39.40
	46.79	8/10/2015	6.32			40.47
	46.79	1/13/2016	5.67			41.12
	46.79	7/6/2016	6.13			40.66
	46.79	1/12/2017	--			
	46.79	9/6/2017	NM			
	46.79	2/11/2018	3.49			43.30
	46.79	3/12/2018	3.71			43.08

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-60A	46.79	5/14/2018	5.19			41.60
	46.79	1/4/2019	4.33			42.46
MW-61A	44.67	2/3/2009	8.35			36.32
	44.67	7/23/2009	8.47			36.2
	44.67	1/9/2010	6.49			38.18
	44.67	7/12/2010	8.09			36.58
	44.67	1/12/2011	6.56			38.11
	44.67	7/11/2011	9.67			35
	44.67	1/26/2012	2.48			42.19
	44.67	7/9/2012	4.55			40.12
	44.67	1/8/2013	6.72			37.95
	44.67	7/23/2013	9.16			35.51
	44.67	1/8/2014	7.04			37.63
	44.67	7/16/2014	6.34			38.33
	44.67	1/5/2015	6.52			38.15
	44.67	8/10/2015	4.02			40.65
	44.67	1/13/2016	3.34			41.33
	44.67	7/6/2016	3.97			40.70
	44.67	1/12/2017	4.34			40.33
	44.67	7/5/2017	4.47			40.20
	44.67	9/6/2017	4.39			40.28
	44.67	2/11/2018	5.52			39.15
	44.67	3/12/2018	6.62			38.05
	44.67	5/14/2018	6.27			38.40
	44.67	1/4/2019	5.58			39.09
MW-62B	48.16	2/4/2009	6.99			41.17
	48.16	7/24/2009	7.39			40.77
	48.16	1/8/2010	5.13			43.03
	48.16	7/12/2010	5.79			42.37
	48.16	1/12/2011	4.21			43.95
	48.16	7/12/2011	11.06			37.1
	48.16	1/26/2012	3.18			44.98
	48.16	7/9/2012	4.87			43.29
	48.16	1/8/2013	5.92			42.24
	48.16	7/23/2013	7.01			41.15
	48.16	1/8/2014	6.52			41.64
	48.16	7/15/2014	6.06			42.10
	48.16	1/5/2015	6.02			42.14
	48.16	8/10/2015	4.16			44.00
	48.16	1/13/2016	3.64			44.52
	48.16	7/6/2016	4.09			44.07
	48.16	1/12/2017	4.71			43.45
	48.16	7/6/2017	5.09			43.07
	48.16	9/6/2017	4.71			43.45
	48.16	2/11/2018	4.12			44.04
	48.16	3/11/2018	5.37			42.79
	48.16	5/14/2018	6.81			41.35
	48.16	7/2/2018	6.92			41.24
	48.16	1/4/2019	6.03			42.13
MW-63B	44.48	2/5/2009	31.54			12.94
	44.48	7/23/2009	9.52			34.96
	44.48	1/9/2010	1.34			43.14
	44.48	7/12/2010	5.71			38.77
	44.48	1/13/2011	7.13			37.35
	44.48	7/11/2011	4.21			40.27
	44.48	1/27/2012	2.96			41.52
	44.48	7/10/2012	1.32			43.16
	44.48	1/8/2013	8.54			35.94

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-63B	44.48	7/23/2013	9.43			35.05
	44.48	1/8/2014	7.72			36.76
	44.48	7/16/2014	7.03			37.45
	44.48	1/5/2015	7.09			37.39
	44.48	8/10/2015	5.34			39.14
	44.48	1/13/2016	4.69			39.79
	44.48	7/6/2016	5.01			39.47
	44.48	1/12/2017	5.84			38.64
	44.48	7/5/2017	6.19			38.29
	44.48	9/6/2017	6.12			38.36
	44.48	2/11/2018	5.31			39.17
	44.48	3/11/2018	6.39			38.09
	44.48	5/14/2018	7.19			37.29
	44.48	1/4/2019	6.47			38.01
MW-64A	48.31	2/4/2009	9.02			39.29
	48.31	7/24/2009	9.13			39.18
	48.31	1/9/2010	6.52			41.79
	48.31	7/12/2010	6.82			41.49
	48.31	1/12/2011	4.77			43.54
	48.31	7/12/2011	8.17			40.14
	48.31	1/26/2012	4.81			43.5
	48.31	7/9/2012	5.93			42.38
	48.31	1/7/2013	7.03			41.28
	48.31	7/22/2013	8.79			39.52
	48.31	1/7/2014	8.39			39.92
	48.31	7/15/2014	7.72			40.59
	48.31	1/5/2015	7.79			40.52
	48.31	8/10/2015	5.71			42.60
	48.31	1/13/2016	5.06			43.25
	48.31	7/6/2016	5.67			42.64
	48.31	1/12/2017	6.07			42.24
	48.31	7/6/2017	6.27			42.04
	48.31	9/6/2017	6.16			42.15
	48.31	2/11/2018	5.46			42.85
	48.31	3/12/2018	5.83			42.48
	48.31	5/14/2018	6.39			41.92
	48.31	1/4/2019	5.39			42.92
MW-65D	44.55	2/5/2009	86.72			-42.17
	44.55	7/23/2009	86.47			-41.92
	44.55	1/9/2010	84.39			-39.84
	44.55	7/12/2010	84.39			-39.84
	44.55	1/12/2011	83.96			-39.41
	44.55	7/11/2011	85.81			-41.26
	44.55	1/27/2012	85.76			-41.21
	44.55	1/8/2013	85.81			-41.26
	44.55	7/23/2013	85.83			-41.28
	44.55	1/8/2014	85.78			-41.23
	44.55	7/16/2014	84.91			-40.36
	44.55	1/5/2015	85.31			-40.76
	44.55	8/10/2015	85.06			-40.51
	44.55	1/13/2016	84.81			-40.26
	44.55	7/6/2016	85.09			-40.54
	44.55	1/12/2017	85.52			-40.97
	44.55	7/5/2017	85.72			-41.17
	44.55	9/6/2017	85.7			-41.15
	44.55	2/11/2018	83.42			-38.87
	44.55	3/12/2018	83.28			-38.73
	44.55	5/14/2018	83.74			-39.19

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-65D	44.55	1/4/2019	83.03			-38.48
MW-66D	44.55	2/5/2009	86.18			-39.67
	46.51	7/23/2009	85.82			-39.31
	46.51	1/9/2010	84.02			-37.51
	46.51	7/12/2010	84.86			-38.35
	46.51	1/12/2011	NM			
	46.51	7/11/2011	84.93			-38.42
	46.51	1/26/2012	84.88			-38.37
	46.51	7/9/2012	85.02			-38.51
	46.51	1/8/2013	86.09			-39.58
	46.51	7/23/2013	86.42			-39.91
	46.51	1/8/2014	86.09			-39.58
	46.51	7/16/2014	85.26			-38.75
	46.51	1/5/2015	85.42			-38.91
	46.51	8/10/2015	85.21			-38.70
	46.51	1/13/2016	84.71			-38.20
	46.51	7/6/2016	84.86			-38.35
	46.51	1/12/2017	85.26			-38.75
	46.51	7/5/2017	85.66			-39.15
	46.51	9/6/2017	85.67			-39.16
	46.51	2/11/2018	83.28			-36.77
	46.51	3/12/2018	83.37			-36.86
	46.51	5/14/2018	84.06			-37.55
	46.51	1/4/2019	83.36			-36.85
MW-67B	43.93	7/12/2010	5.76			38.17
	43.93	1/13/2011	10.62			33.31
	43.93	7/11/2011	17.64			26.29
	43.93	1/27/2012	9.87			34.06
	43.93	7/10/2012	11.19			32.74
	43.93	1/8/2013	11.72			32.21
	43.93	7/23/2013	10.69			33.24
	43.93	1/8/2014	10.64			33.29
	43.93	7/16/2014	11.22			32.71
	43.93	1/5/2015	10.22			33.71
	43.93	1/13/2016	6.17			37.76
	43.93	7/6/2016	6.39			37.54
	43.93	1/12/2017	7.04			36.89
	43.93	7/5/2017	7.14			36.79
	43.93	9/6/2017	6.97			36.96
	43.93	2/11/2018	8.89			35.04
	43.93	3/12/2018	9.13			34.80
	43.93	5/14/2018	10.16			33.77
	43.93	1/4/2019	9.42			34.51
MW-68B	44.63	1/27/2012	1.16			43.47
	44.63	7/10/2012	3.82			40.81
	44.63	1/8/2013	6.76			37.87
	44.63	7/23/2013	10.33			34.3
	44.63	1/8/2014	5.82			38.81
	44.63	7/16/2014	7.41			37.22
	44.63	1/5/2015	4.32			40.31
	44.63	8/10/2015	3.56			41.07
	44.63	1/13/2016	2.86			41.77
	44.63	7/6/2016	3.07			41.56
	44.63	1/12/2017	3.86			40.77
	44.63	7/5/2017	3.97			40.66
	44.63	9/6/2017	3.84			40.79
	44.63	2/11/2018	3.07			41.56
	44.63	3/12/2018	4.24			40.39

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-68B	44.63	5/14/2018	6.46			38.17
	44.63	1/4/2019	5.82			38.81
MW-68C	44.80	7/12/2010	16.52			28.28
	44.80	1/13/2011	16.92			27.88
	44.80	7/11/2011	19.34			25.46
	44.80	1/27/2012	17.66			27.14
	44.80	7/10/2012	17.96			26.84
	44.80	1/8/2013	19.39			25.41
	44.80	7/23/2013	19.87			24.93
	44.80	1/8/2014	19.29			25.51
	44.80	7/16/2014	18.39			26.41
	44.80	1/5/2015	18.71			26.09
	44.80	8/10/2015	16.29			28.51
	44.80	1/13/2016	15.74			29.06
	44.80	7/6/2016	15.94			28.86
	44.80	1/12/2017	16.54			28.26
	44.80	7/5/2017	17.02			27.78
	44.80	9/6/2017	17.01			27.79
	44.80	2/11/2018	16.21			28.59
	44.80	3/12/2018	16.88			27.92
	44.80	5/14/2018	17.35			27.45
	44.80	1/4/2019	16.74			28.06
MW-69A	45.71	7/12/2010	11.81			33.9
	45.71	1/12/2011	11.16			34.55
	45.71	7/11/2011	NM			
	45.71	1/26/2012	10.44			35.27
	45.71	7/9/2012	4.21			41.5
	45.71	1/8/2013	5.31			40.4
	45.71	7/23/2013	7.34			38.37
	45.71	1/8/2014	7.02			38.69
	45.71	7/16/2014	6.34			39.37
	45.71	1/5/2015	6.71			39.00
	45.71	8/10/2015	3.61			42.10
	45.71	1/13/2016	2.91			42.80
	45.71	7/6/2016	3.79			41.92
	45.71	1/12/2017	4.34			41.37
	45.71	7/5/2017	4.59			41.12
	45.71	9/6/2017	4.43			41.28
	45.71	2/11/2018	11.21			34.50
	45.71	3/11/2018	12.58			33.13
	45.71	5/14/2018	11.34			34.37
	45.71	1/4/2019	10.61			35.1
MW-70B	44.86	1/27/2012	6.51	34.26	1.21	38.35
	44.86	7/10/2012	6.06	34.17	1.30	38.8
	44.86	1/8/2013	6.67	34.02	1.68	38.19
	44.86	7/23/2013	8.22	34.07	1.63	36.64
	44.86	1/8/2014	7.89	35.51	0.14	36.97
	44.86	7/16/2014	6.16	34.71	0.94	38.70
	44.86	1/5/2015	7.07	35.26	0.39	37.79
	44.86	8/10/2015	5.26	35.49	0.16	39.60
	44.86	1/13/2016	4.96	35.39	0.26	39.90
	44.86	7/6/2016	5.34	35.31	0.34	39.52
	44.86	1/12/2017	6.17	35.09	0.56	38.69
	44.86	7/5/2017	6.39	35.14	0.51	38.47
	44.86	9/6/2017	6.56	35.34	0.31	38.30
	44.86	2/8/2018	6.42	35.31	0.34	38.44
	44.86	3/12/2018	6.69	35.21	0.44	38.17
	44.86	5/15/2018	7.52	35.39	0.26	37.34

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-70B	44.86	1/4/2019	6.96	35.31	0.34	37.9
MW-71B	44.59	1/27/2012	7.08			37.51
	44.59	7/10/2012	8.16			36.43
	44.59	1/8/2013	4.09			40.5
	44.59	7/23/2013	8.61			35.98
	44.59	1/8/2014	16.36			28.23
	44.59	7/16/2014	16.02			28.57
	44.59	1/5/2015	15.83			28.76
	44.59	8/10/2015	13.76			30.83
	44.59	1/13/2016	13.09			31.50
	44.59	7/6/2016	13.31			31.28
	44.59	1/12/2017	13.94			30.65
	44.59	7/5/2017	14.34			30.25
	44.59	9/6/2017	14.21			30.38
	44.59	1/25/2018	0.76			43.83
	44.59	3/12/2018	1.61			42.98
	44.59	5/14/2018	2.26			42.33
	44.59	1/4/2019	1.58			43.01
MW-72B	51.97	1/26/2012	38.76			13.21
	51.97	7/9/2012	27.27			24.7
	51.97	1/7/2013	20.08			31.89
	51.97	7/22/2013	18.39			33.58
	51.97	1/7/2014	17.31			34.66
	51.97	7/15/2014	16.91			35.06
	51.97	1/5/2015	16.74			35.23
	51.97	8/10/2015	14.59			37.38
	51.97	1/13/2016	13.93			38.04
	51.97	7/6/2016	NM			
	51.97	2/11/2018	12.26			39.71
	51.97	3/12/2018	19.71			32.26
	51.97	5/14/2018	20.92			31.05
	51.97	1/4/2019	20.13			31.84
MW-73B	51.42	1/26/2012	25.48			25.94
	51.42	7/9/2012	25.03			26.39
	51.42	1/7/2013	26.11			25.31
	51.42	7/22/2013	26.87			24.55
	51.42	1/7/2014	26.19			25.23
	51.42	7/15/2014	25.14			26.28
	51.42	1/5/2015	25.81			25.61
	51.42	8/10/2015	22.46			28.96
			Plugged and Abandoned			
MW-74B	47.58	1/26/2012	7.63			39.95
	47.58	7/9/2012	7.15			40.43
	47.58	1/8/2013	9.62			37.96
	47.58	7/23/2013	11.72			35.86
	47.58	1/8/2014	9.59			37.99
	47.58	7/16/2014	9.01			38.57
	47.58	1/5/2015	9.07			38.51
	47.58	8/10/2015	7.36			40.22
	47.58	1/13/2016	6.86			40.72
	47.58	7/6/2016	7.39			40.19
	47.58	1/12/2017	7.84			39.74
	47.58	7/5/2017	8.17			39.41
	47.58	9/6/2017	8.02			39.56
	47.58	2/11/2018	6.91			40.67
	47.58	3/12/2018	7.22			40.36
	47.58	5/15/2018	8.33			39.25
	47.58	1/4/2019	7.62			39.96

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-75B	46.78	1/26/2012	9.07	35.26	1.84	37.71
	46.78	7/9/2012	9.32	35.2	1.90	37.46
	46.78	1/8/2013	10.16	34.13	2.97	36.62
	46.78	7/23/2013	9.74	35.71	1.39	37.04
	46.78	1/8/2014	10.13	36.72	0.43	36.65
	46.78	7/16/2014	11.41	35.71	1.44	35.37
	46.78	1/5/2015	11.33	36.79	0.36	35.45
	46.78	8/10/2015	8.86	37.07	0.08	37.92
	46.78	1/13/2016	7.81	36.84	0.31	38.97
	46.78	7/6/2016	7.8	36.53	0.62	38.98
	46.78	1/12/2017	8.04	36.36	0.79	38.74
	46.78	7/5/2017	8.04	36.36	0.79	38.74
	46.78	9/6/2017	8.22	36.47	3.15	38.56
	46.78	2/8/2018	8.17	36.91	2.71	38.61
	46.78	3/12/2018	8.37	36.94	2.68	38.41
	46.78	5/15/2018	9.22	37.03	2.59	37.56
	46.78	1/4/2019	9.28	36.96	2.66	37.5
MW-76C	47.84	7/16/2014	22.68			25.16
	47.84	1/5/2015	23.41			24.43
	47.84	8/10/2015	21.19			26.65
	47.84	1/13/2016	20.81			27.03
	47.84	7/6/2016	21.09			26.75
	47.84	1/12/2017	21.67			26.17
	47.84	7/5/2017	21.99			25.85
	47.84	9/6/2017	21.93			25.91
	47.84	2/11/2018	20.74			27.10
	47.84	3/12/2018	21.02			26.82
	47.84	5/15/2018	21.46			26.38
	47.84	1/4/2019	20.67			27.17
MW-77A	49.05	7/16/2014	6.62			42.43
	49.05	1/5/2015	6.27			42.78
	49.05	8/10/2015	4.34			44.71
	49.05	1/13/2016	3.96			45.09
	49.05	7/6/2016	4.29			44.76
	49.05	1/12/2017	4.73			44.32
	49.05	7/5/2017	4.91			44.14
	49.05	9/6/2017	4.78			44.27
	49.05	2/11/2018	7.62			41.43
	49.05	3/12/2018	8.09			40.96
	49.05	5/15/2018	7.06			41.99
	49.05	1/4/2019	6.34			42.71
MW-78A	48.68	7/16/2014	8.02	28.72	1.38	40.66
	48.68	1/5/2015	9.17	21.17	8.93	39.51
	48.68	8/10/2015	7.34	23.71	6.39	41.34
	48.68	1/13/2016	6.63	21.77	3.58	42.05
	48.68	7/6/2016	6.71	21.97	3.38	41.97
	48.68	1/12/2017	7.42	22.74	2.61	41.26
	48.68	7/5/2017	7.79	23.59	1.76	40.89
	48.68	9/6/2017	7.81	23.48	6.19	40.87
	48.68	2/11/2018	8.29	23.97	1.38	40.39
	48.68	3/12/2018	8.46	23.91	1.44	40.22
	48.68	5/15/2018	9.28	24.07	1.28	39.4
	48.68	1/4/2019	8.78	24.39	0.96	39.9
MW-79A	48.95	7/16/2014	7.26			41.69
	48.95	1/5/2015	5.29			43.66
	48.95	8/10/2015	3.71			45.24
	48.95	1/13/2016	3.06			45.89
	48.95	7/6/2016	3.76			45.19

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-79A	48.95	1/12/2017	4.06			44.89
	48.95	7/5/2017	4.31			44.64
	48.95	9/6/2017	4.16			44.79
	48.95	2/11/2018	10.82			38.13
	48.95	3/12/2018	11.26			37.69
	48.95	5/15/2018	9.46			39.49
	48.95	1/4/2019	8.8			40.15
MW-80B	47.11	7/16/2014	5.29			41.82
	47.11	1/5/2015	6.17			40.94
	47.11	8/10/2015	4.33			42.78
	47.11	1/13/2016	3.96			43.15
	47.11	7/6/2016	4.56			42.55
	47.11	1/12/2017	5.06			42.05
	47.11	7/5/2017	5.34			41.77
	47.11	9/6/2017	5.26			41.85
	47.11	2/11/2018	11.34			35.77
	47.11	3/11/2018	11.77			35.34
	47.11	5/15/2018	11.36			35.75
	47.11	1/4/2019	10.71			36.4
MW-81B	46.77	7/16/2014	6.47			40.30
	46.77	1/5/2015	7.06			39.71
	46.77	8/10/2015	5.22			41.55
	46.77	1/13/2016	4.77			42.00
	46.77	7/6/2016	5.16			41.61
	46.77	1/12/2017	5.72			41.05
	46.77	7/5/2017	5.96			40.81
	46.77	9/6/2017	5.71			41.06
	46.77	2/11/2018	7.04			39.73
	46.77	3/11/2018	7.51			39.26
	46.77	5/15/2018	8.23			38.54
	46.77	1/4/2019	7.67			39.1
MW-82B	44.64	2/11/2018	2.53			42.11
	44.64	3/11/2018	3.44			41.20
	44.64	5/14/2018	5.61			39.03
	44.64	1/4/2019	4.83			39.81
MW-83B	45.33	2/11/2018	4.06			41.27
	45.33	3/11/2018	4.69			40.64
	45.33	5/14/2018	7.47			37.86
	45.33	7/19/2018	5.87			39.46
	45.33	1/4/2019	6.82			38.51
MW-83C	45.42	2/11/2018	17.52			27.90
	45.42	3/11/2018	16.96			28.46
	45.42	5/14/2018	18.11			27.31
	45.42	1/4/2019	17.42			28.00
MW-84B	44.50	2/11/2018	4.37			40.13
	44.50	3/11/2018	4.93			39.57
	44.50	5/14/2018	7.36			37.14
	44.50	7/19/2018	6.07			38.43
	44.50	1/4/2019	6.71			37.79
MW-85C	49.10	2/11/2018	22.51			26.59
	49.10	3/11/2018	22.77			26.33
	49.10	5/15/2018	22.61			26.49
	49.10	1/4/2019	21.92			27.18
MW-86C	46.61	2/11/2018	20.14			26.47
	46.61	3/11/2018	19.91			26.70
	46.61	5/15/2018	20.26			26.35
	46.61	1/4/2019	19.51			27.10
MW-87C	44.26	2/11/2018	15.86			28.40

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-87C	44.26	3/11/2018	16.29			27.97
	44.26	5/14/2018	16.26			28.00
	44.26	1/4/2019	15.52			28.74
MW-88C	51.17	2/11/2018	24.7			26.47
	51.17	3/11/2018	23.93			27.24
	51.17	5/14/2018	24.67			26.50
	51.17	1/4/2019	24.01			27.16
MW-89B	44.57	7/19/2018	6.78			37.79
	44.57	1/4/2019	8.21			36.36
MW-90B	44.39	7/19/2018	5.63			38.76
	44.39	1/4/2019	7.16			37.23
P-10	47.69	9/2/1993	6.87			40.85
	47.69	12/21/1993	3.32			44.4
	47.69	3/24/1994	3.88			43.84
	47.69	6/22/1994	4.98			42.74
	47.69	9/28/1994	6.38			41.34
	47.69	10/13/1994	7.07			40.65
	47.69	1/24/1995	2.67			45.05
	47.69	4/11/1995	2.59			45.13
	47.69	7/11/1995	4.69			43.03
	47.69	1/23/1996	5.84			41.88
	47.69	7/19/1996	10.04			37.68
	47.69	9/17/1996	8.34			39.38
	47.69	10/31/1996	6.97			40.75
	47.69	11/22/1996	8.84			38.88
	47.69	12/27/1996	6.20			41.52
	47.69	1/22/1997	4.10			43.62
	47.69	2/21/1997	2.86			44.86
	47.69	3/25/1997	3.19			44.53
	47.69	4/23/1997	4.42			43.3
	47.69	4/24/1997	4.57			43.15
	47.69	5/13/1997	3.14			44.58
	47.69	6/20/1997	4.94			42.78
	47.69	6/25/1997	2.74			44.98
	47.69	7/1/1997	4.13			43.59
	47.69	7/24/1997	7.91			39.81
	47.69	8/16/1997	7.86			39.86
	47.69	8/22/1997	8.67			39.05
	47.69	9/25/1997	6.54			41.18
	47.69	10/22/1997	5.36			42.36
	47.69	11/25/1997	5.36			42.36
	47.69	12/19/1997	4.72			43
	47.69	1/20/1998	3.40			44.32
	47.69	1/29/1998	3.11			44.61
	47.69	3/18/1998	2.84			44.88
	47.69	4/24/1998	6.80			40.92
	47.69	5/21/1998	7.35			40.37
	47.69	7/30/1998	8.23			39.49
	47.69	8/25/1998	7.34			40.38
	47.69	9/21/1998	5.25			42.47
	47.69	10/26/1998	6.11			41.61
	47.69	11/23/1998	4.10			43.62
	47.69	2/26/1999	3.21			44.51
	47.69	3/16/1999	4.21			43.51
	47.69	4/29/1999	4.53			43.19
	47.69	6/1/1999	4.53			43.19
	47.69	7/30/1999	6.00			41.72
	47.69	8/27/1999	4.72			43

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-10	47.69	9/27/1999	9.58			38.14
	47.69	10/29/1999	10.61			37.11
	47.69	12/29/1999	11.55			36.17
	47.69	2/4/2000	13.71			34.01
	47.69	2/25/2000	10.44			37.28
	47.69	3/27/2000	7.53			40.19
	47.69	4/7/2000	7.09			40.63
	47.69	5/31/2000	7.14			40.58
	47.69	6/1/2000	7.11			40.61
	47.69	7/28/2000	7.15			40.57
	47.69	8/30/2000	10.15			37.57
	47.69	9/19/2000	11.56			36.16
	47.69	10/27/2000	8.66			39.06
	47.69	11/21/2000	9.64			38.08
	47.69	5/1/2001	6.52			41.2
	47.69	10/1/2001	6.85			40.87
	47.69	3/11/2002	3.41			44.31
	47.69	9/23/2002	3.54			44.18
	47.69	3/10/2003	2.43			45.26
	47.69	9/23/2003	1.61			46.08
	47.69	3/15/2004	2.85			44.84
	47.69	9/13/2004	7.99			39.7
	47.69	7/18/2005	4.20			43.49
	47.69	1/4/2006	8.58			39.11
	47.69	7/27/2006	3.46			44.23
	47.69	1/23/2007	2.36			45.33
	47.69	3/7/2007	NM			
	47.69	7/27/2007	3.75			43.94
	47.69	1/29/2008	2.30			45.39
	47.69	7/16/2008	6.91			40.78
	47.69	1/22/2009	6.35			41.34
	47.69	7/23/2009	NM			
	47.69	1/8/2010	4.06			43.63
	47.69	7/12/2010	2.06			45.63
	47.73	1/12/2011	4.13			43.60
	47.73	7/12/2011	9.84			37.89
	47.73	1/27/2012	3.12			44.61
	47.73	7/10/2013	10.79			36.94
	47.73	1/8/2014	5.51			42.22
	47.73	7/2/2014	7.74			39.99
	47.73	1/7/2015	3.96			43.77
	47.73	8/10/2015	5.39			42.34
	47.71	1/12/2016	2.47			45.24
	47.71	7/6/2016	5.18			42.53
	47.71	1/12/2017	4.52			43.19
	47.71	7/12/2017	6.07			41.64
	47.71	1/3/2018	6.71			41.00
	47.71	1/3/2019	6.32			41.39
P-11	48.98	9/2/1993	7.87			41.15
	48.98	12/21/1993	4.57			44.45
	48.98	3/24/1994	5.04			43.98
	48.98	6/22/1994	6.19			42.83
	48.98	9/28/1994	7.40			41.62
	48.98	10/13/1994	8.14			40.88
	48.98	1/24/1995	3.90			45.12
	48.98	4/11/1995	3.77			45.25
	48.98	7/11/1995	5.69			43.33
	48.98	1/23/1996	6.81			42.21

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-11	48.98	7/19/1996	7.81			41.21
	48.98	9/17/1996	9.15			39.87
	48.98	10/31/1996	7.52			41.5
	48.98	11/22/1996	9.46			39.56
	48.98	12/27/1996	6.64			42.38
	48.98	1/22/1997	4.70			44.32
	48.98	2/21/1997	3.88			45.14
	48.98	3/25/1997	4.09			44.93
	48.98	4/23/1997	5.27			43.75
	48.98	4/24/1997	5.41			43.61
	48.98	5/13/1997	4.12			44.9
	48.98	6/20/1997	5.79			43.23
	48.98	6/25/1997	3.83			45.19
	48.98	7/1/1997	5.01			44.01
	48.98	7/24/1997	7.56			41.46
	48.98	8/16/1997	8.74			40.28
	48.98	8/22/1997	9.37			39.65
	48.98	9/25/1997	7.24			41.78
	48.98	10/22/1997	5.98			43.04
	48.98	11/25/1997	6.00			43.02
	48.98	12/19/1997	5.52			43.5
	48.98	1/20/1998	4.30			44.72
	48.98	3/4/1998	4.08			44.94
	48.98	3/18/1998	3.92			45.1
	48.98	4/24/1998	7.61			41.41
	48.98	5/21/1998	8.10			40.92
	48.98	7/30/1998	9.21			39.81
	48.98	8/25/1998	8.44			40.58
	48.98	9/21/1998	5.91			43.11
	48.98	10/26/1998	7.59			41.43
	48.98	11/23/1998	5.41			43.61
	48.98	1/29/1999	4.11			44.91
	48.98	2/26/1999	4.22			44.8
	48.98	3/16/1999	4.96			44.06
	48.98	4/29/1999	5.15			43.87
	48.98	6/1/1999	5.15			43.87
	48.98	7/30/1999	6.66			42.36
	48.98	8/27/1999	5.23			43.79
	48.98	9/27/1999	10.49			38.53
	48.98	10/29/1999	11.91			37.11
	48.98	12/29/1999	11.12			37.9
	48.98	2/4/2000	12.13			36.89
	48.98	2/25/2000	10.46			38.56
	48.98	3/27/2000	8.32			40.7
	48.98	4/7/2000	7.91			41.11
	48.98	5/31/2000	7.96			41.06
	48.98	6/1/2000	7.93			41.09
	48.98	7/28/2000	7.97			41.05
	48.98	8/30/2000	10.88			38.14
	48.98	9/19/2000	12.32			36.7
	48.98	10/27/2000	10.94			38.08
	48.98	11/21/2000	9.77			39.25
	48.98	5/1/2001	7.48			41.54
	48.98	10/1/2001	7.74			41.28
	48.98	3/11/2002	4.51			44.51
	48.98	9/23/2002	4.46			44.56
	48.98	3/10/2003	3.69			45.29
	48.98	9/23/2003	4.54			44.44

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-11	48.98	3/15/2004	4.51			44.47
	48.98	9/13/2004	9.14			39.84
	48.98	7/18/2005	5.27			43.71
	48.98	1/4/2006	9.56			39.42
	48.98	7/27/2006	4.54			44.44
	48.98	3/7/2007	NM			
	48.98	7/27/2007	4.61			44.37
	48.98	1/30/2008	2.71			46.27
	48.98	7/15/2008	7.93			41.05
	48.98	2/4/2009	7.82			41.16
	48.98	7/24/2009	7.74			41.24
	48.98	1/8/2010	5.67			43.31
	48.98	7/12/2010	6.78			42.2
	48.98	1/12/2011	4.21			44.77
	48.98	7/12/2011	11.51			37.47
	48.98	1/26/2012	4.25			44.73
	48.98	1/7/2013	7.96			41.02
	48.98	7/22/2013	10.96			38.02
	48.98	1/7/2014	6.52			42.46
	48.98	7/16/2014	8.87			40.11
	48.98	1/5/2015	5.61			43.37
	48.98	8/10/2015	3.86			45.12
	48.98	1/13/2016	3.26			45.72
	48.98	7/6/2016	3.74			45.24
	48.98	1/12/2017	4.36			44.62
	48.98	7/6/2017	4.62			44.36
	48.98	9/6/2017	4.62			44.36
	48.98	2/11/2018	5.09			43.89
	48.98	3/11/2018	5.54			43.44
	48.98	5/14/2018	7.14			41.84
	48.98	7/2/2018	7.28			41.7
	48.98	1/4/2019	6.43			42.55
P-12	48.78	9/2/1993	7.02			41.8
	48.78	12/21/1993	4.30			44.52
	48.78	3/24/1994	4.45			44.37
	48.78	6/22/1994	5.06			43.76
	48.78	9/28/1994	6.46			42.36
	48.78	10/13/1994	7.19			41.63
	48.78	1/24/1995	3.63			45.19
	48.78	4/11/1995	3.25			45.57
	48.78	7/11/1995	4.62			44.2
	48.78	1/23/1996	6.62			42.2
	48.78	7/19/1996	8.64			40.18
	48.78	9/17/1996	8.12			40.7
	48.78	10/31/1996	6.81			42.01
	48.78	11/22/1996	8.70			40.12
	48.78	12/27/1996	6.57			42.25
	48.78	1/22/1997	4.93			43.89
	48.78	2/21/1997	3.61			45.21
	48.78	3/25/1997	3.70			45.12
	48.78	4/23/1997	4.58			44.24
	48.78	4/24/1997	4.74			44.08
	48.78	5/13/1997	3.69			45.13
	48.78	6/20/1997	4.86			43.96
	48.78	6/25/1997	3.35			45.47
	48.78	7/1/1997	4.11			44.71
	48.78	7/24/1997	6.58			42.24
	48.78	8/16/1997	7.80			41.02

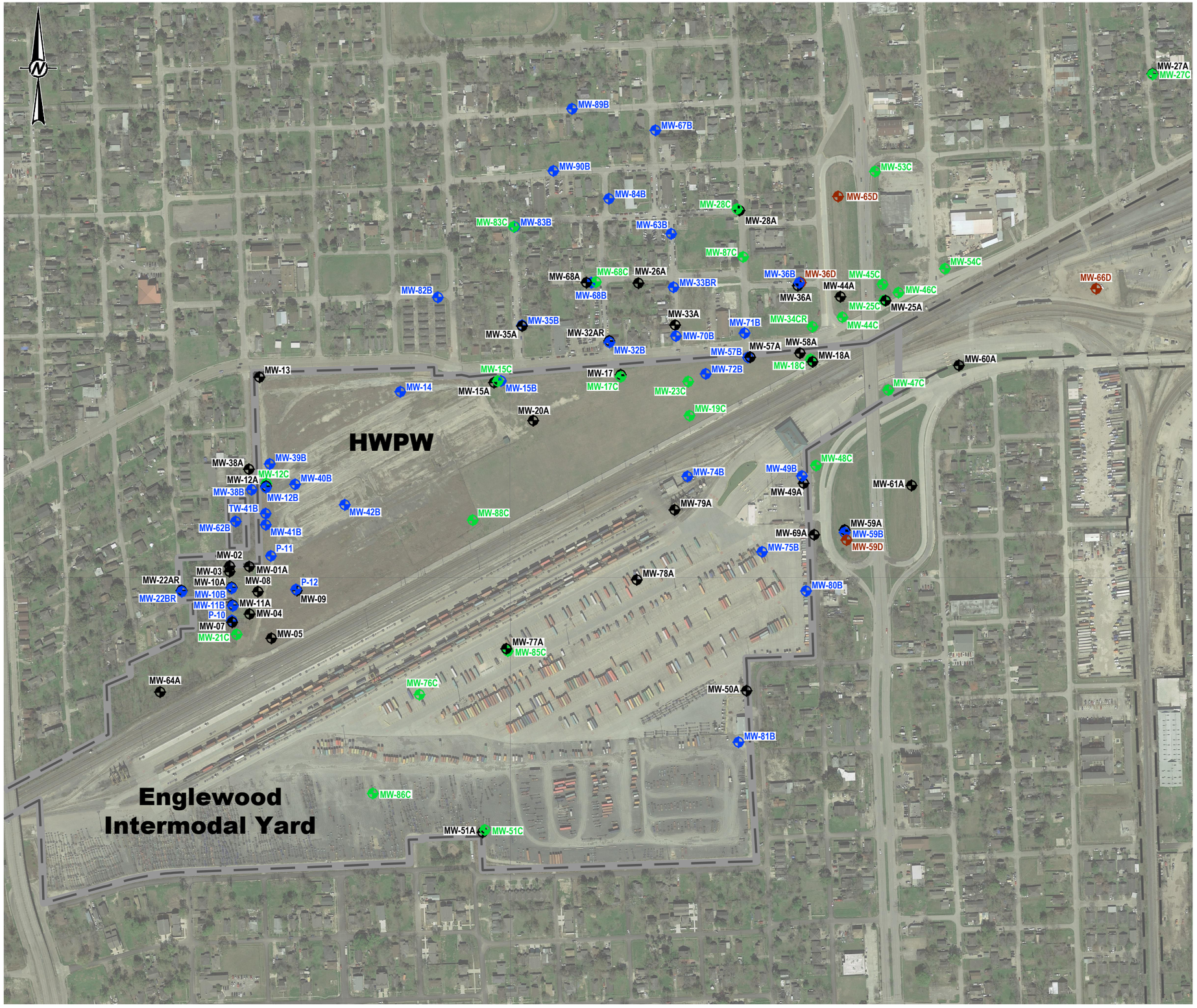
Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-12	48.78	8/22/1997	8.22			40.6
	48.78	9/25/1997	6.54			42.28
	48.78	10/22/1997	5.66			43.16
	48.78	11/25/1997	5.70			43.12
	48.78	12/19/1997	5.13			43.69
	48.78	1/20/1998	4.15			44.67
	48.78	3/4/1998	3.78			45.04
	48.78	3/18/1998	3.61			45.21
	48.78	4/24/1998	6.90			41.92
	48.78	5/21/1998	7.80			41.02
	48.78	7/30/1998	8.15			40.67
	48.78	8/25/1998	8.31			40.51
	48.78	9/21/1998	5.64			43.18
	48.78	10/26/1998	7.66			41.16
	48.78	11/23/1998	5.65			43.17
	48.78	1/29/1999	4.20			44.62
	48.78	2/26/1999	4.31			44.51
	48.78	3/16/1999	4.99			43.83
	48.78	4/29/1999	5.10			43.72
	48.78	6/1/1999	5.10			43.72
	48.78	7/30/1999	6.75			42.07
	48.78	8/27/1999	5.34			43.48
	48.78	9/27/1999	9.36			39.46
	48.78	10/29/1999	10.11			38.71
	48.78	12/29/1999	9.44			39.38
	48.78	2/4/2000	12.10			36.72
	48.78	2/25/2000	8.63			40.19
	48.78	3/27/2000	7.76			41.06
	48.78	4/7/2000	7.35			41.47
	48.78	5/31/2000	7.39			41.43
	48.78	6/1/2000	7.34			41.48
	48.78	7/28/2000	7.37			41.45
	48.78	8/30/2000	10.66			38.16
	48.78	9/19/2000	11.45			37.37
	48.78	10/27/2000	10.94			37.88
	48.78	11/21/2000	8.93			39.89
	48.78	5/1/2001	6.70			42.12
	48.78	10/1/2001	6.93			41.89
	48.78	3/11/2002	4.15			44.67
	48.78	9/23/2002	3.90			44.92
	48.78	3/10/2003	3.13			45.65
	48.78	9/23/2003	3.86			44.92
	48.78	3/15/2004	NM			
	48.78	9/13/2004	7.93			40.85
	48.78	7/18/2005	5.06			43.72
	48.78	1/4/2006	8.98			39.8
	48.78	7/27/2006	4.35			44.43
	48.78	1/22/2007	3.19			45.59
	48.78	3/7/2007	NM			
	48.78	7/27/2007	4.22			44.56
	48.78	1/29/2008	3.03			45.75
	48.78	7/16/2008	6.78			42
	48.78	1/22/2009	6.99			41.79
	48.78	7/24/2009	NM			
	48.78	1/8/2010	4.13			44.65
	48.78	7/12/2010	3.93			44.85
	48.80	1/12/2011	4.83			43.97
	48.80	7/12/2011	10.02			38.78

Table 5D
GROUNDWATER MEASUREMENTS
UPRR Houston Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-12	48.80	1/27/2012	4.52			44.28
	48.80	7/9/2012	5.15			43.65
	48.80	7/10/2013	9.73			39.07
	48.80	1/8/2014	6.41			42.39
	48.80	7/2/2014	6.46			42.34
	48.80	1/7/2015	3.19			45.61
	48.80	8/10/2015	4.06			44.74
	48.76	1/12/2016	3.26			45.50
	48.76	7/6/2016	5.09			43.67
	48.76	1/12/2017	5.11			43.65
	48.76	7/12/2017	6.39			42.37
	48.76	1/3/2018	7.14			41.62
	48.76	1/3/2019	6.69			42.07
TW-41B	49.67	2/4/2009	8.44			41.23
	49.67	7/24/2009	8.34			41.33
	49.67	1/8/2010	4.86			44.81
	49.67	7/12/2010	6.12			43.55
	49.67	1/12/2011	5.17			44.5
	49.67	7/12/2011	12.02			37.65
	49.67	1/26/2012	5.27			44.4
	49.67	7/9/2012	6.23			43.44
	49.67	1/7/2013	8.54			41.13
	49.67	7/22/2013	11.53			38.14
	49.67	1/7/2014	7.32			42.35
	49.67	7/16/2014	9.65			40.02
	49.67	1/5/2015	NM			
	49.67	8/10/2015	4.96			44.71
	49.67	1/13/2016	4.13			45.54
	49.67	7/6/2016	4.31			45.36
	49.67	1/12/2017	4.93			44.74
	49.67	7/6/2017	5.32			44.35
	49.67	9/6/2017	5.26			44.41
	49.67	2/11/2018	5.86			43.81
	49.67	3/11/2018	6.69			42.98
	49.67	5/14/2018	8.67			41.00
	49.67	7/2/2018	8.87			40.8
	49.67	1/4/2019	7.97			41.7
TW-56A	51.89	2/5/2009	17.48			34.41
	51.89	7/23/2009	17.17			34.72
	51.89	1/8/2010	14.53			37.36
	51.89	7/12/2010	15.78			36.11
	51.89	1/12/2011	14.09			37.8
	51.89	7/12/2011	17.89			34
	51.89	1/26/2012	15.06			36.83
	51.89	1/7/2013	16.92			34.97
	51.89	7/22/2013	18.12			33.77
	51.89	1/7/2014	NM			
	51.89	7/15/2014	16.05			35.84
	51.89	1/5/2015	NM			
	51.89	8/10/2015	6.39			45.5

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
MONITORING WELL LOCATION MAP

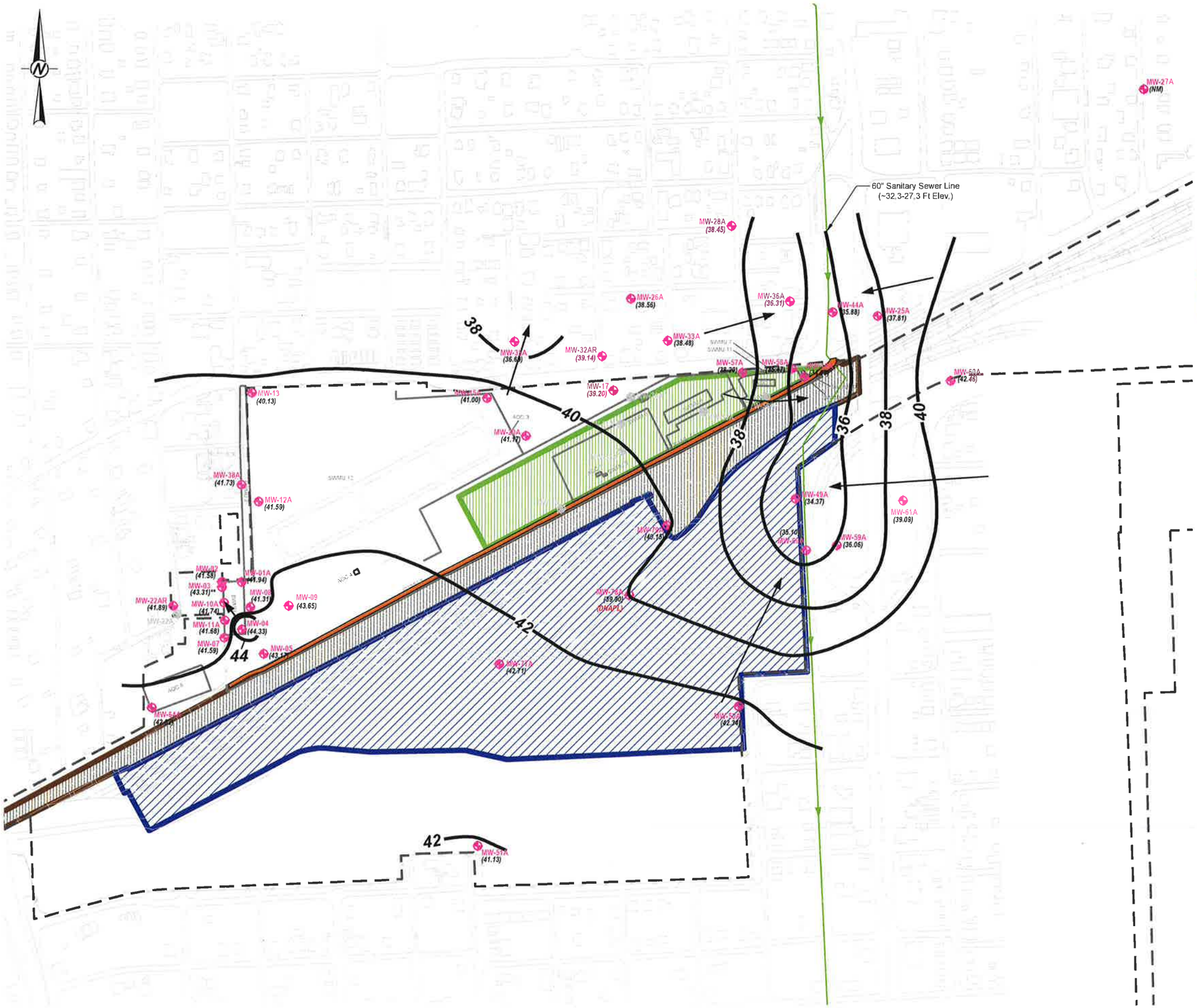
CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	1

Path: \\esworkana\data\Projects - Round Rock\19119232 - HWPW\2019-5 May\ | File Name: FIG 1 - MW Location Map.dwg | Last Edited By: adiamond Date: 2019-05-10 Time:9:41:04 AM | Printed By: adiamond Date: 2019-07-10 Time:10:28:30 AM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (37.71) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
3. ** - NOT USED TO DEVELOP POTENTIOMETRIC SURFACE.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

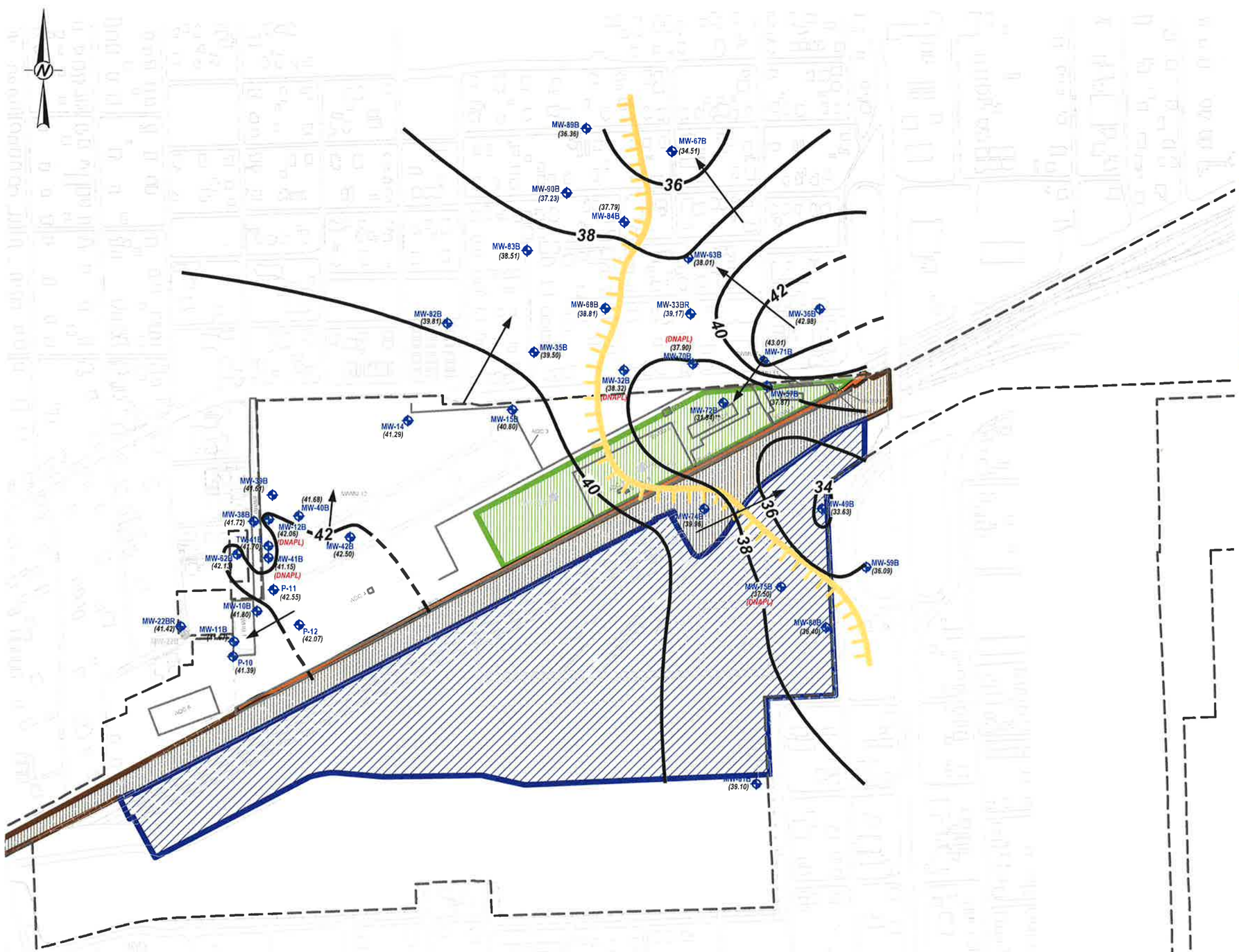
TITLE
GROUNDWATER GRADIENT MAP A-TZ
JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	SG
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-1



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ / B-TZ — B-TZ/B-CZ BOUNDARY
- (39.98) — GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 36 — GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
3. ** - NOT USED TO GENERATE CONTOURS.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/2/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

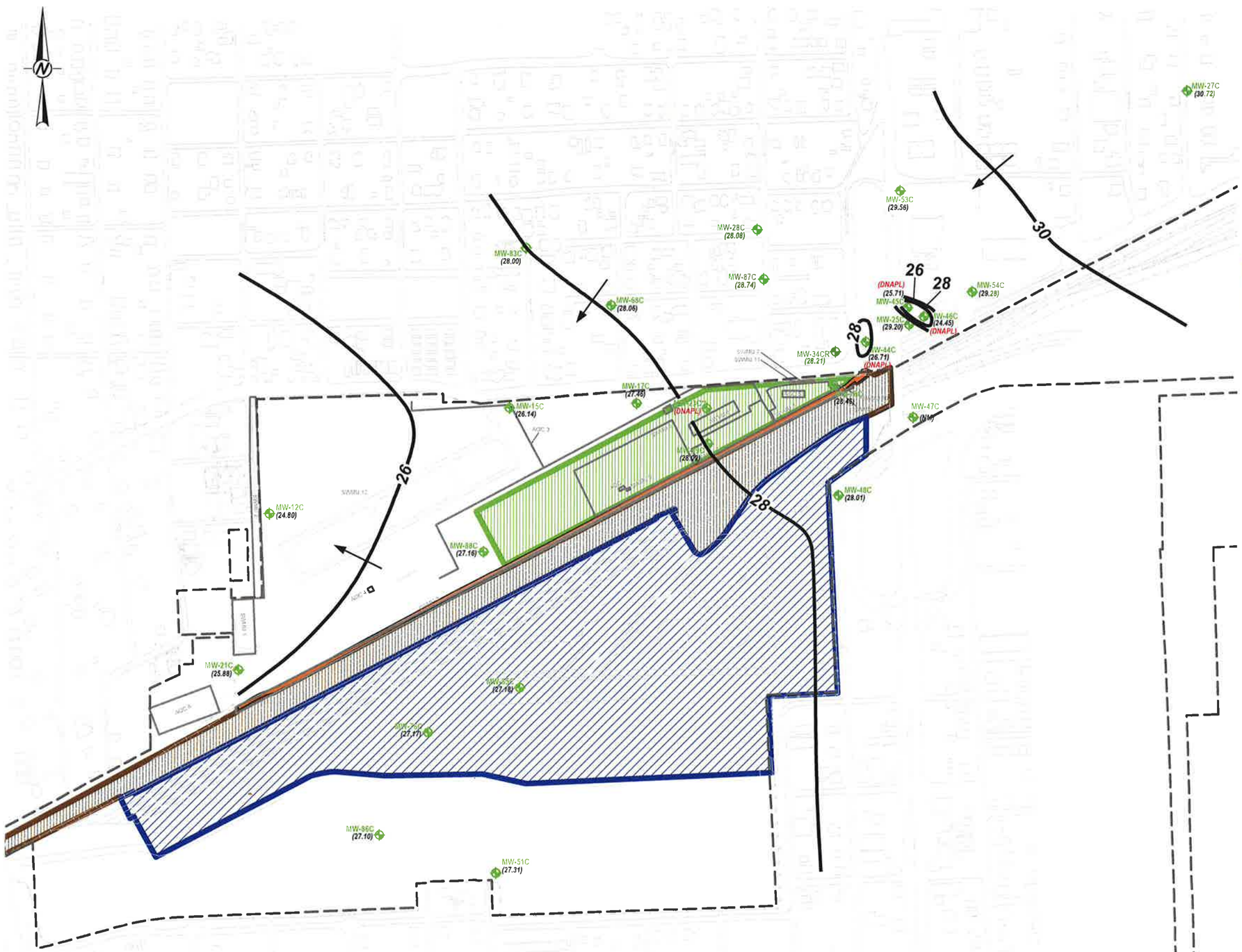
TITLE
GROUNDWATER GRADIENT MAP B-TZ AND B-CZ
JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	SG
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5A-2



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- (26.04) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 26 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
3. ** NOT USED TO CREATE POTENTIOMETRIC SURFACE.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/12/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

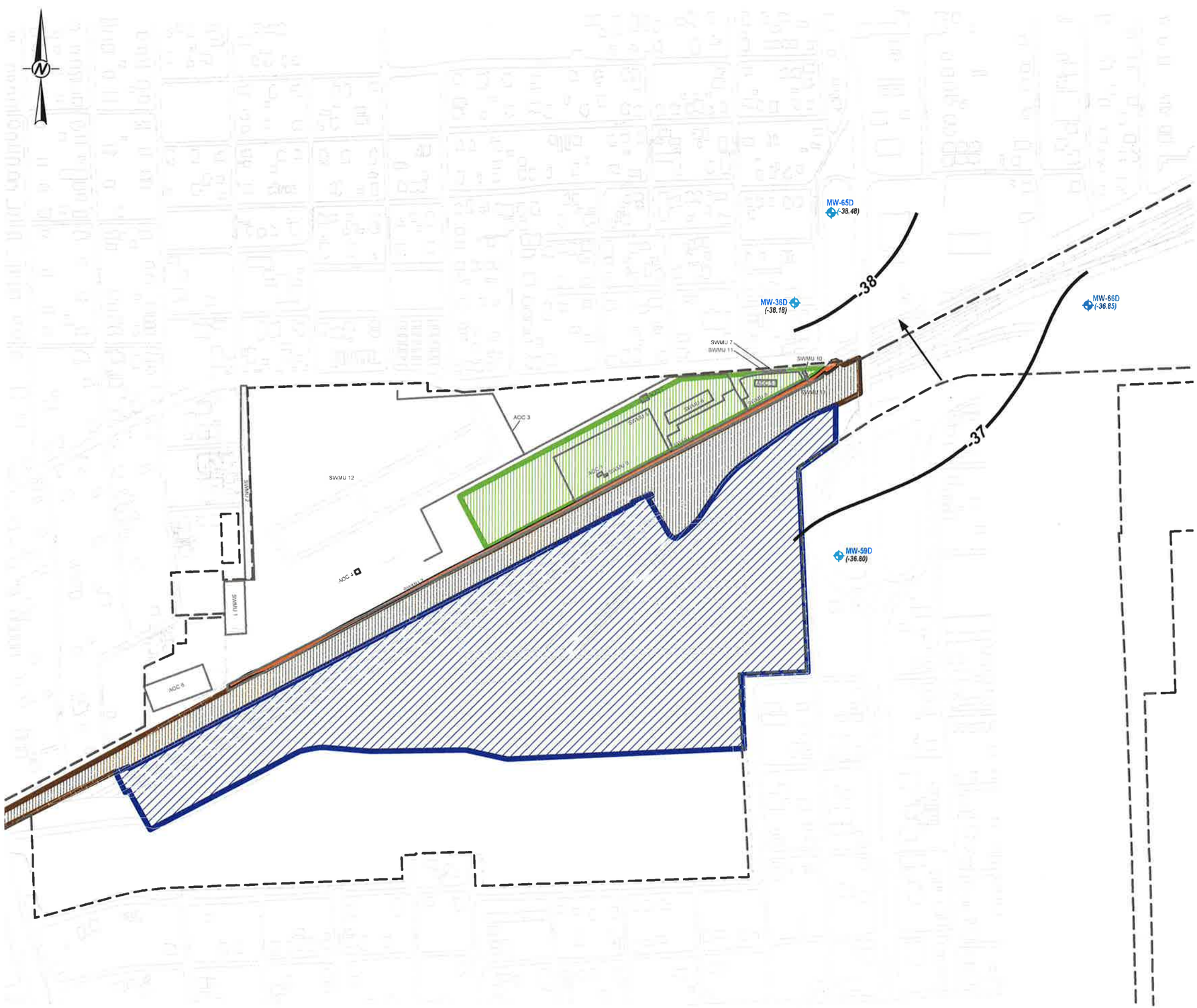
TITLE
GROUNDWATER GRADIENT MAP C-TZ
JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-06-11
DESIGNED	AJD
PREPARED	AJD
REVIEWED	SG
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5A-3



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- D-TZ MONITORING WELL LOCATION
- (-38.37) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- -39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/2/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP D-TZ
JANUARY 2019

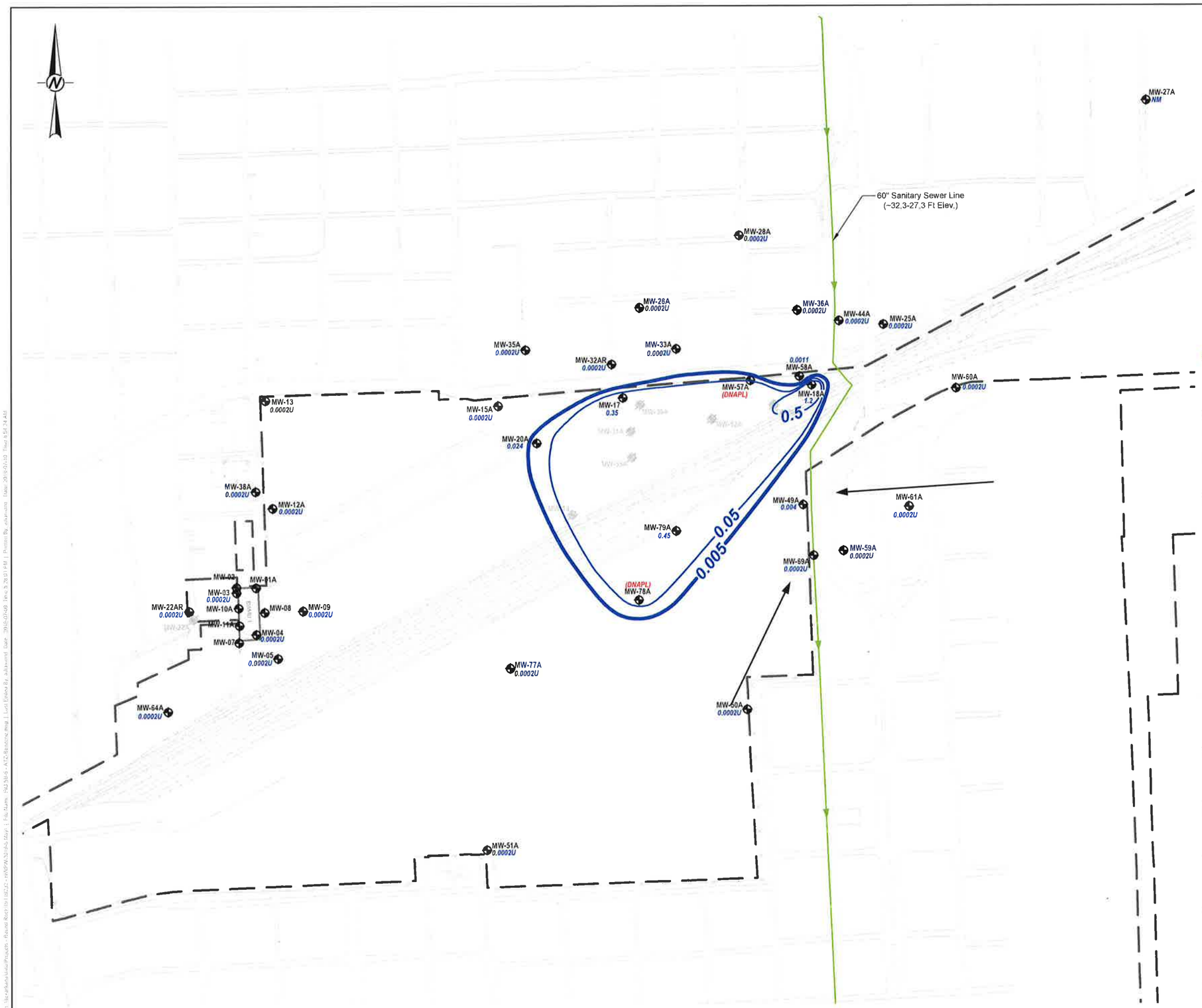
CONSULTANT
GOLDER

YYYY-MM-DD	2019-05-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	SG
APPROVED	ECM

PROJECT NO.	REV	FIGURE
19119232	0	5A-4

Path: C:\Autodesk\Temp-Dwg\AcPublish_34920 | File Name: FIG 5A-4 - Groundwater Gradient Map D-TZ - January 2019.dwg | Last Edited By: adamond Date: 2019-05-06 Time: 10:49:21 AM | Printed By: adamond Date: 2019-05-06 Time: 10:50:29 AM

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



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.108 BENZENE CONCENTRATION IN mg/L
- 0.005 BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

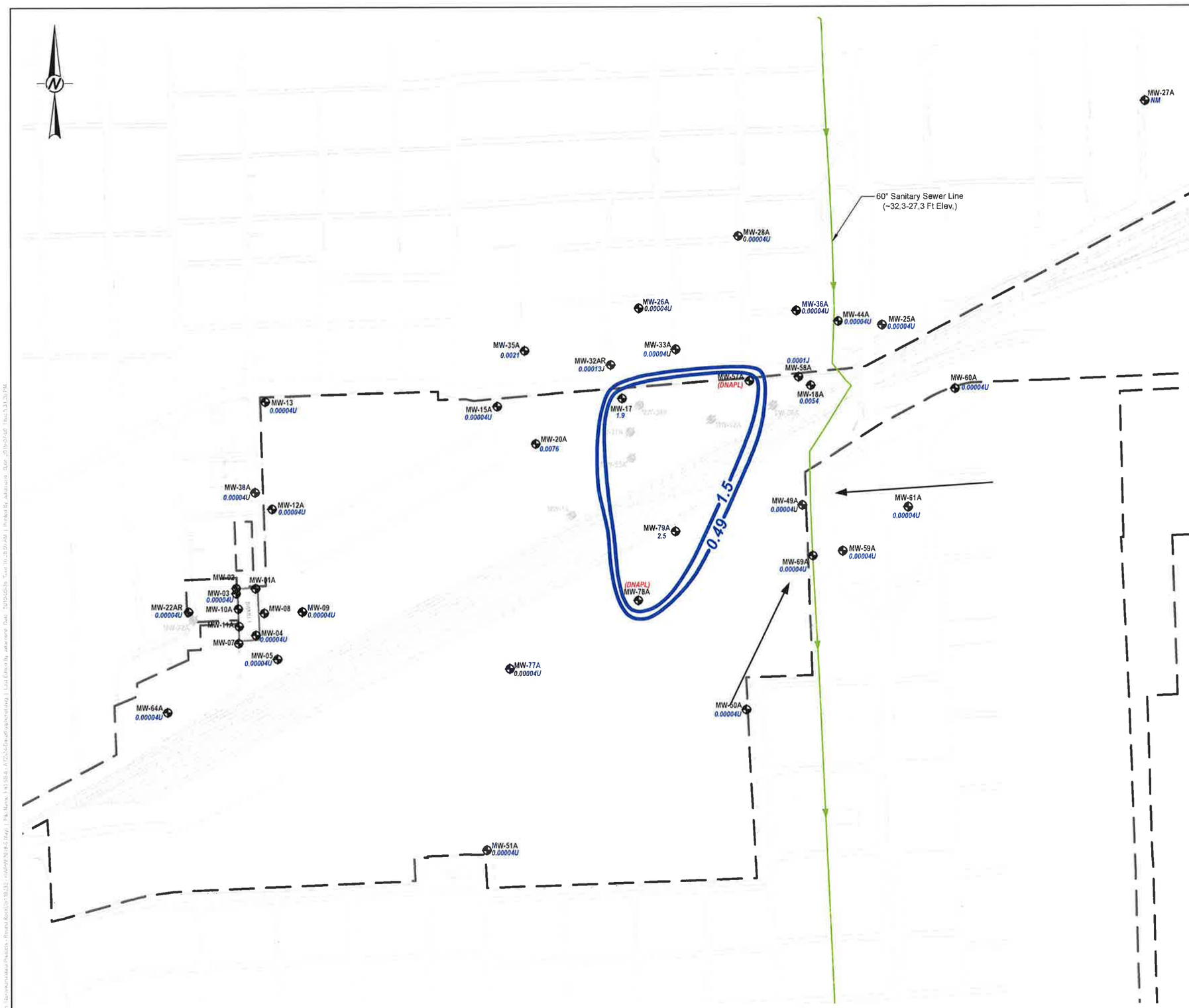
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
BENZENE - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-5



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 8.01 — 2,4-DIMETHYLPHENOL CONCENTRATION IN mg/L
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

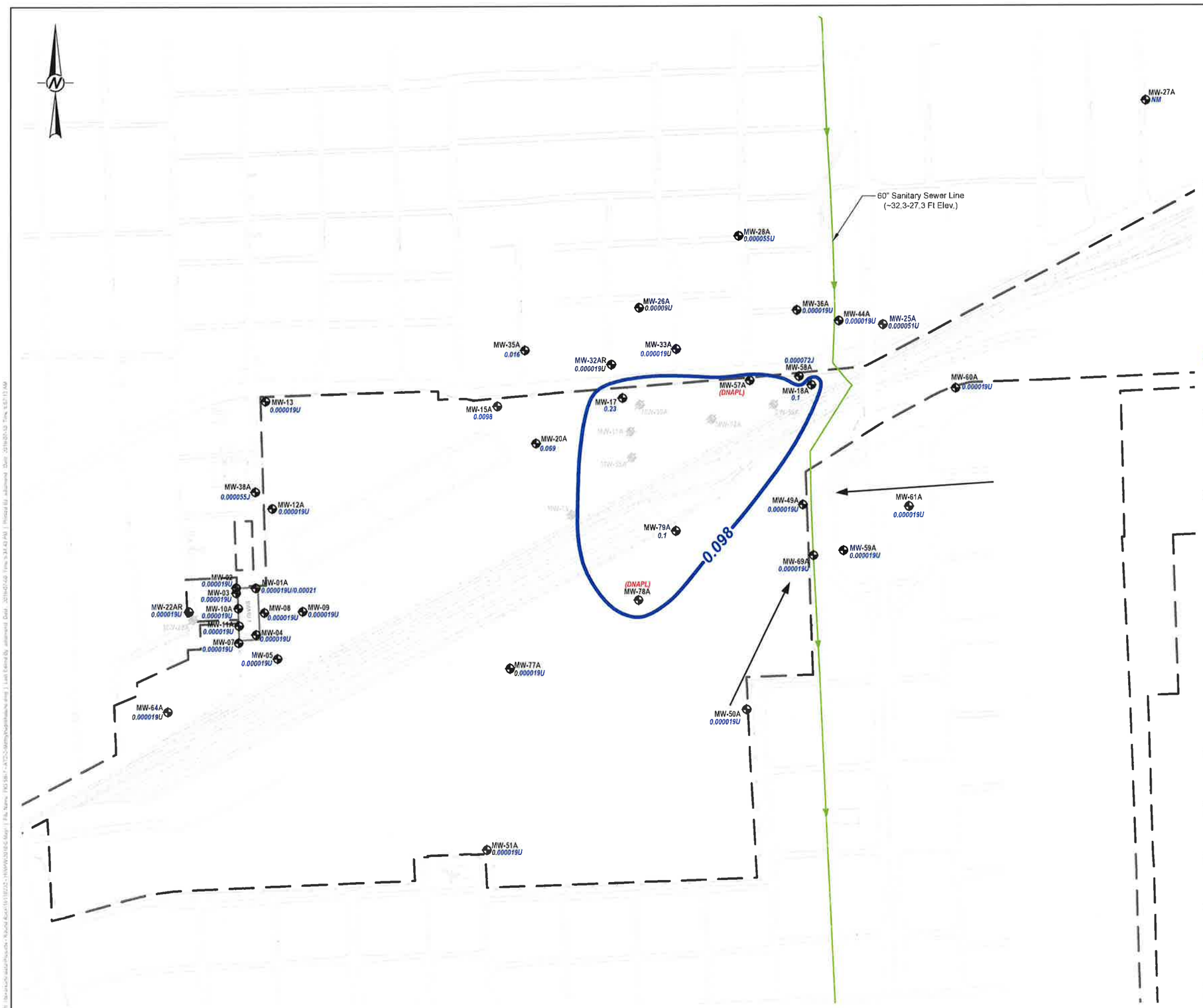
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
2,4-DIMETHYLPHENOL - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-6



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.293 — 2-METHYLNAPHTHALENE CONCENTRATION IN mg/L
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

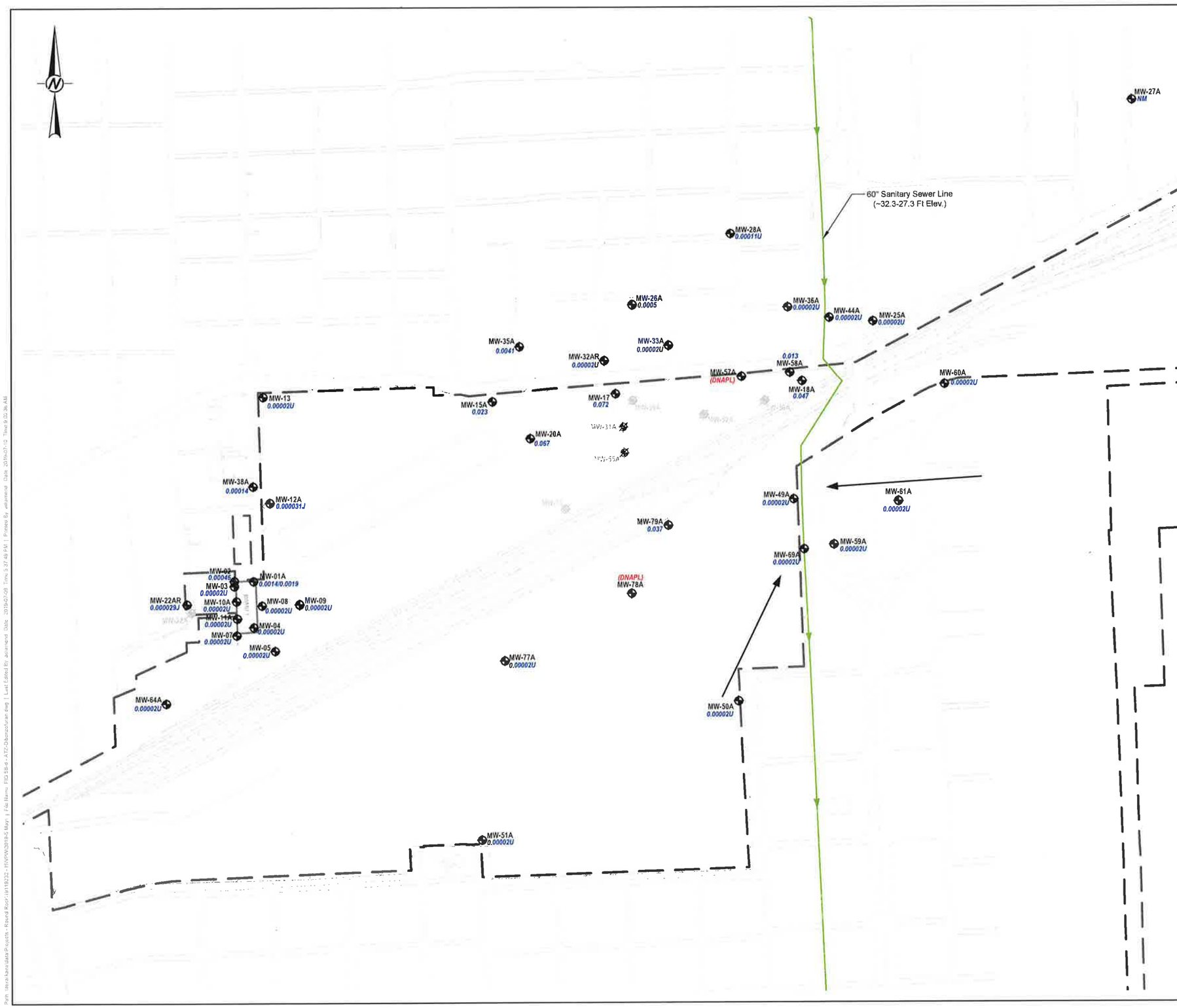
TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
2-METHYLNAPHTHALENE - JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-7



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 5.27 DIBENZOFURAN CONCENTRATION IN mg/L
- 0.098 DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
DIBENZOFURAN - JANUARY 2019

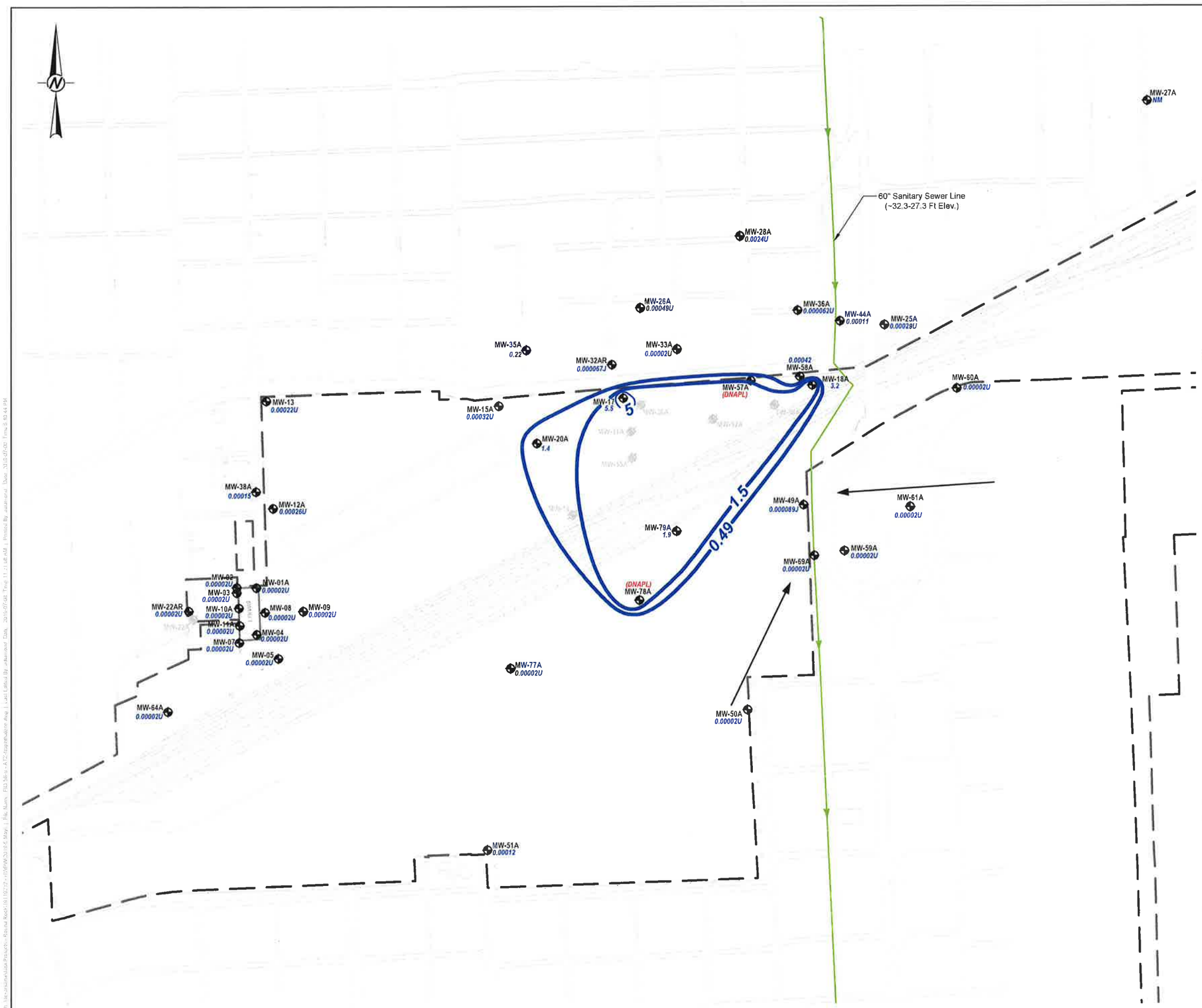
CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-8

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



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 5.27 NAPHTHALENE CONCENTRATION IN mg/L
- 0.49 NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

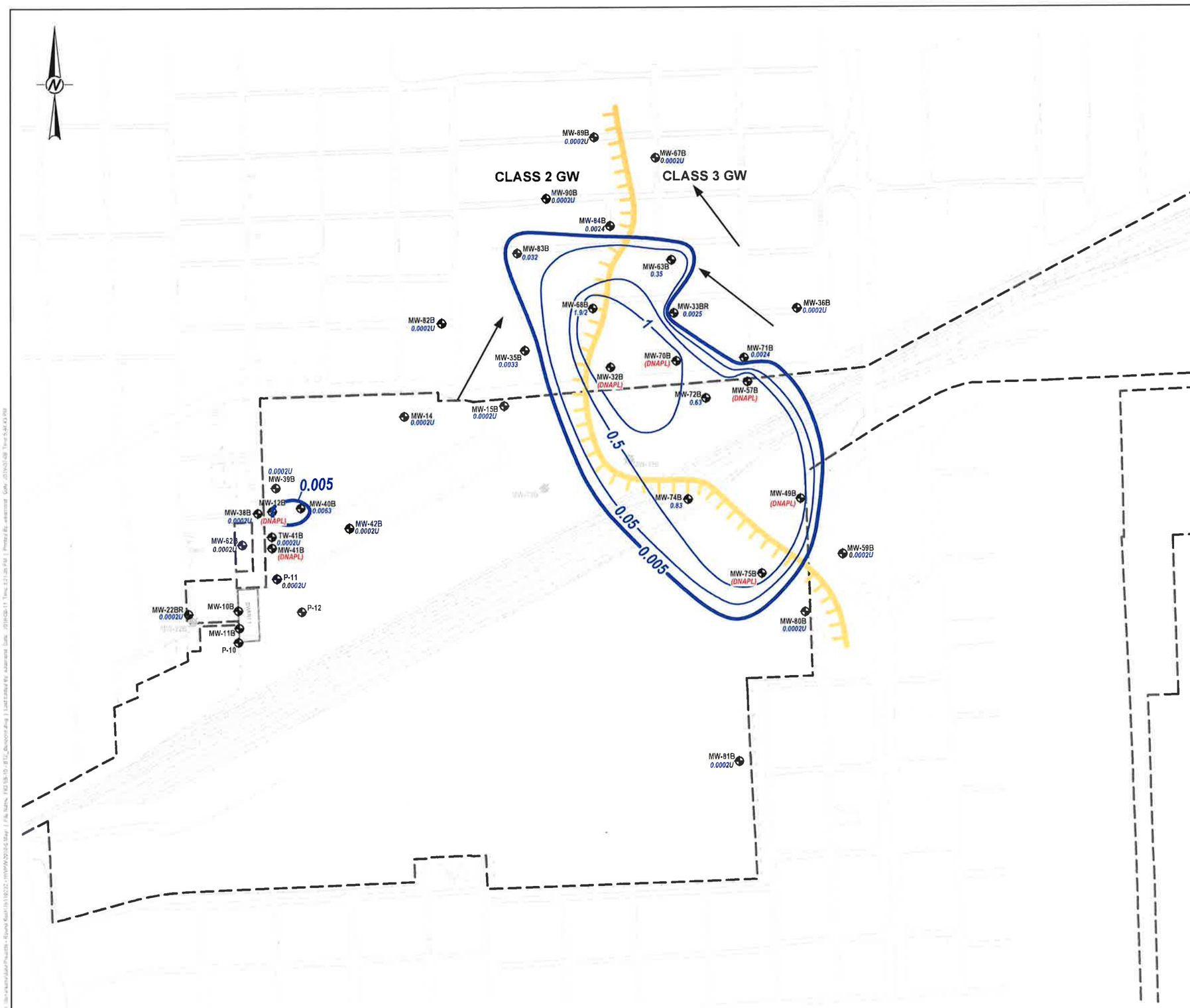
TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
NAPHTHALENE - JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-9



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.346 — BENZENE CONCENTRATION IN mg/L
- 0.005 — BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.005 mg/L
   CLASS 3 GW PCL: 0.5 mg/L

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

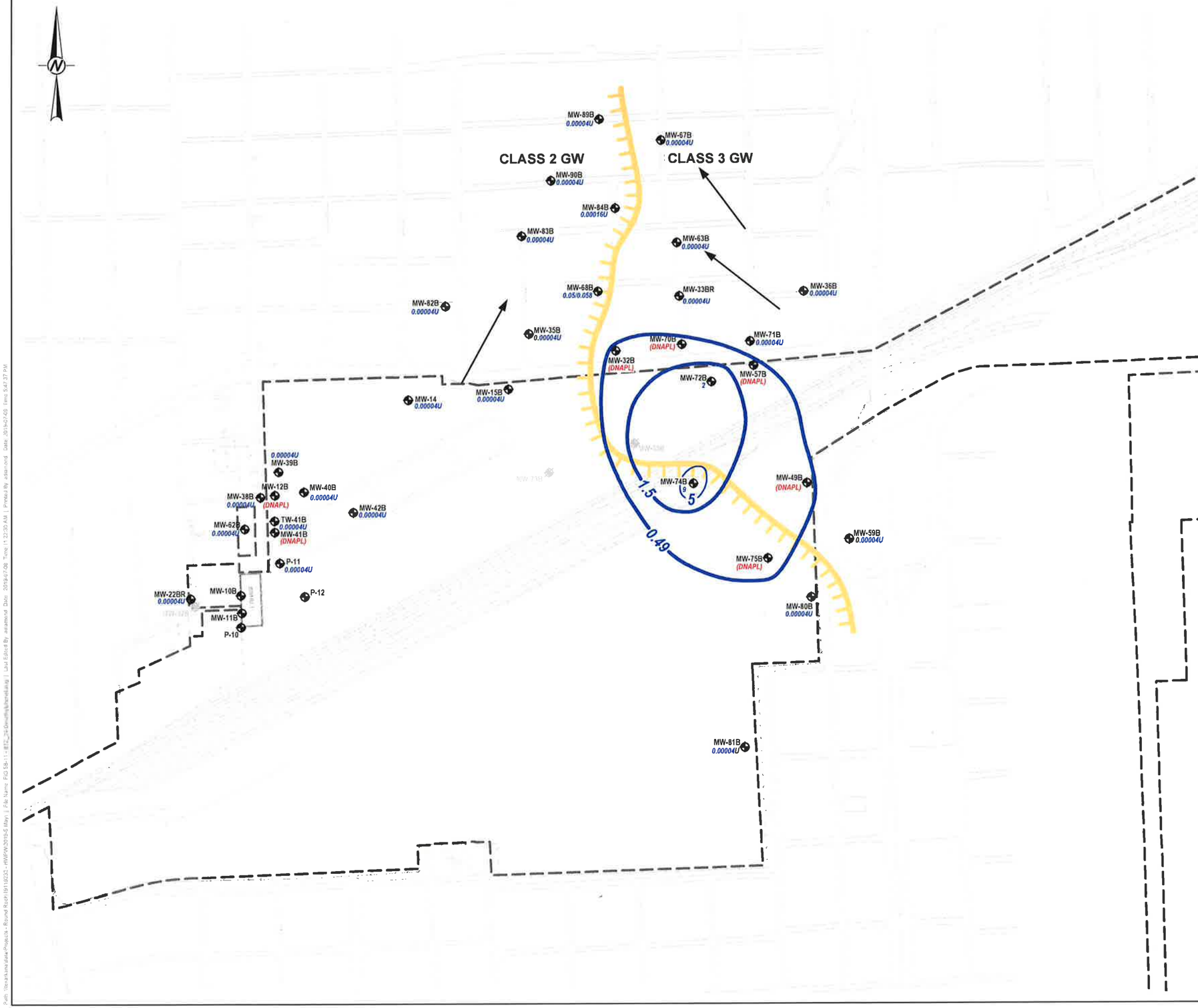
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP BENZENE - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-10



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 13.6 — 2,4-DIMETHYLPHENOL CONCENTRATION IN mg/L
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (RES.) & 1.5 mg/L (C/I)
   CLASS 3 GW PCL: 49 mg/L (RES.) & 150 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

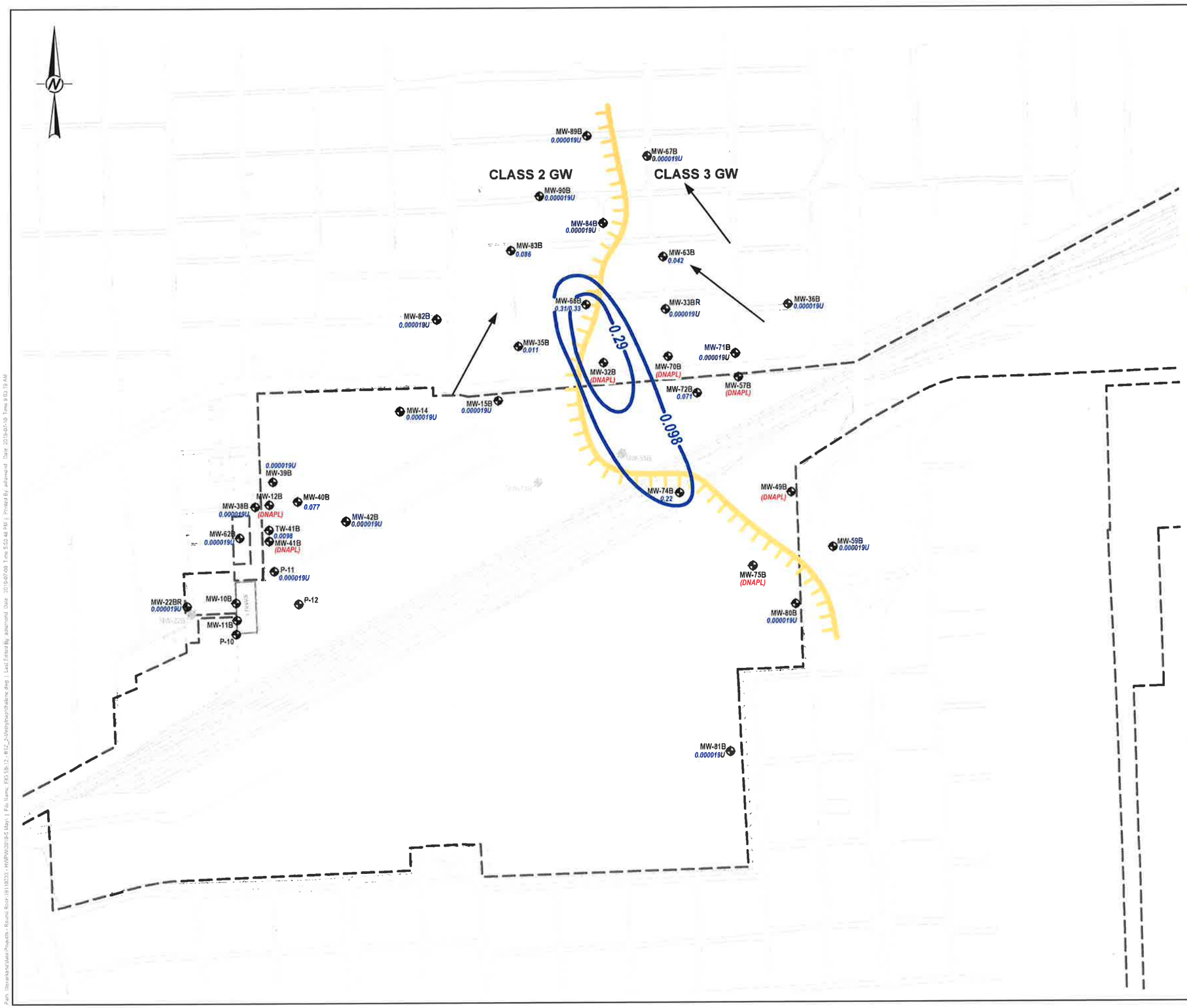
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP
2,4-DIMETHYLPHENOL - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-11



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.276 — 2-METHYLNAPHTHALENE CONCENTRATION IN mg/L
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (RES.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mg/L (RES.) & 29 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

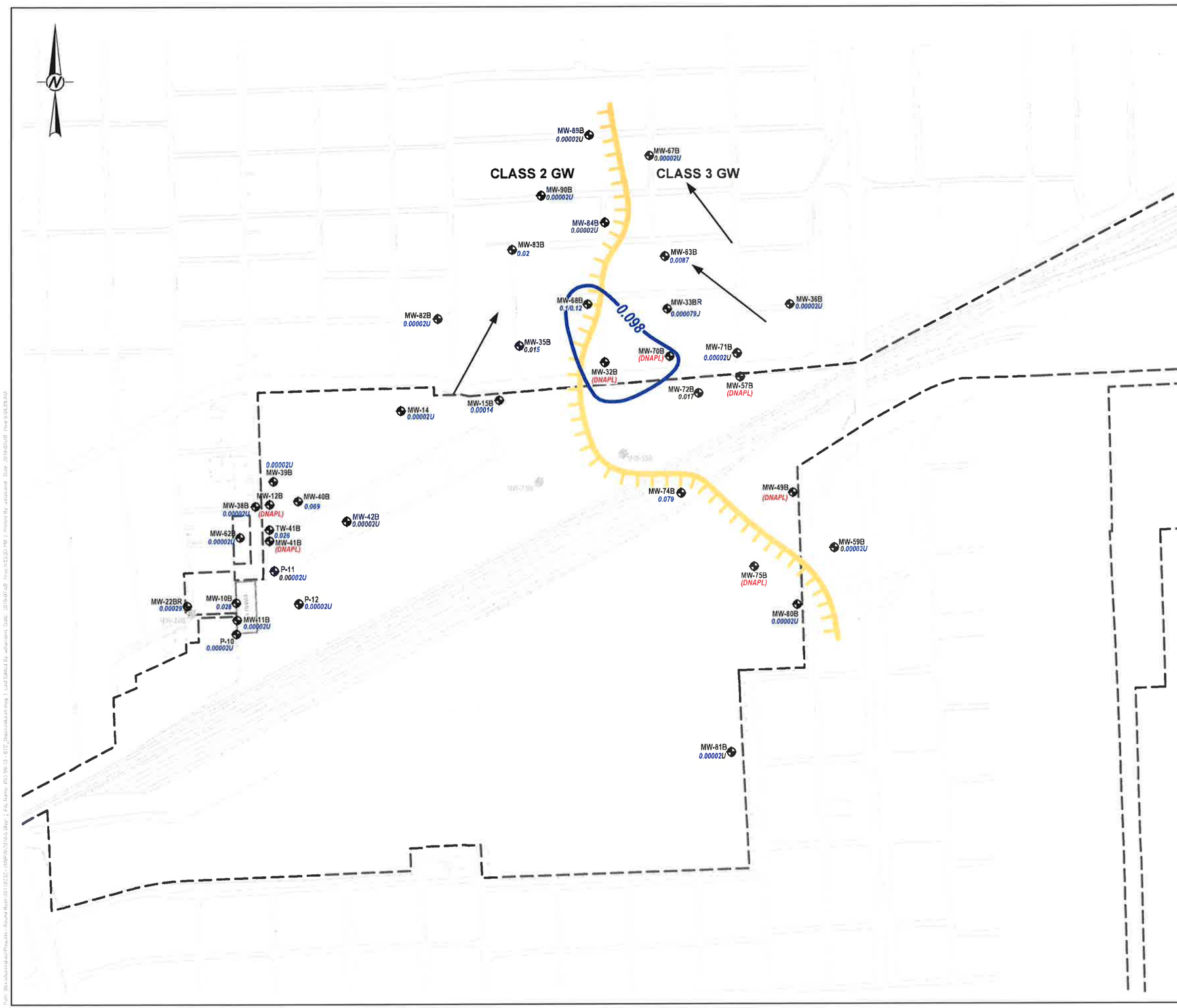
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP
2-METHYLNAPHTHALENE - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-12



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 8.01 — DIBENZOFURAN CONCENTRATION IN mg/L
- 0.098 — DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (RES.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mg/L (RES.) & 29 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

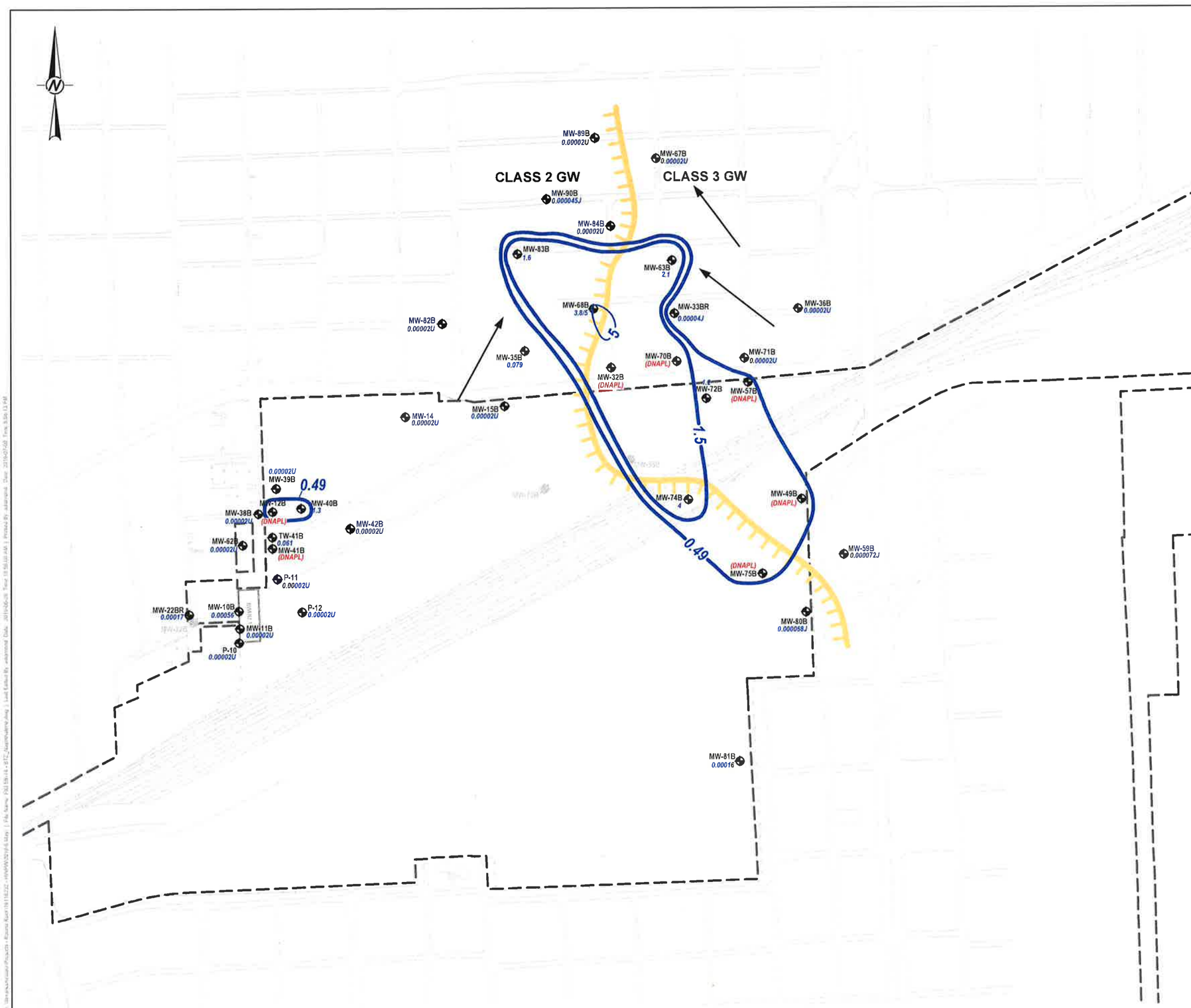
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP DIBENZOFURAN - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-13



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 5.57 — NAPHTHALENE CONCENTRATION IN mg/L
- 0.49 — NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (RES.) & 1.5 mg/L (C/I)
   CLASS 3 GW PCL: 49 mg/L (RES.) & 150 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

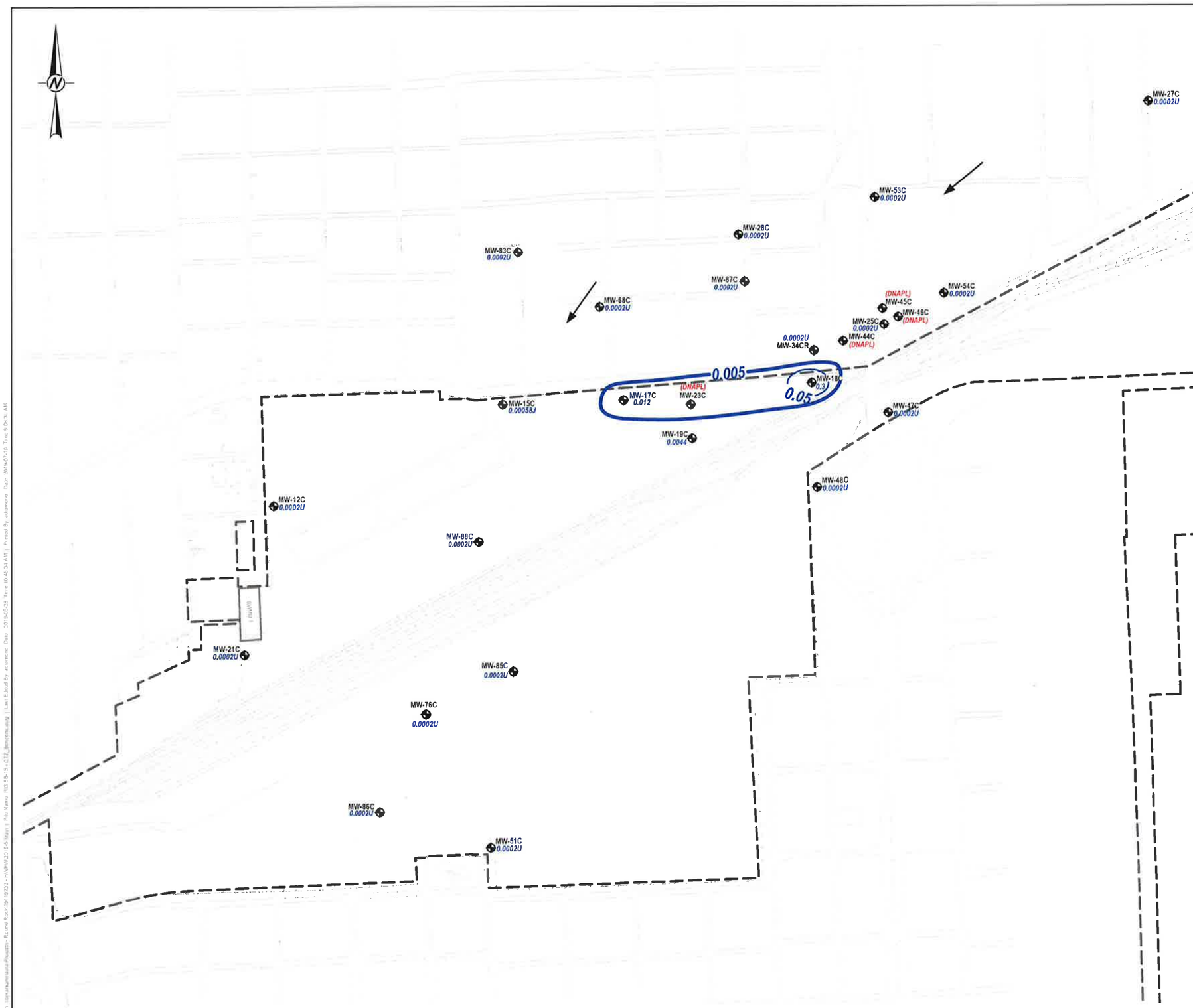
TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP NAPHTHALENE - JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-14



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 8.01 BENZENE CONCENTRATION IN mg/L
- 0.005 BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/19/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

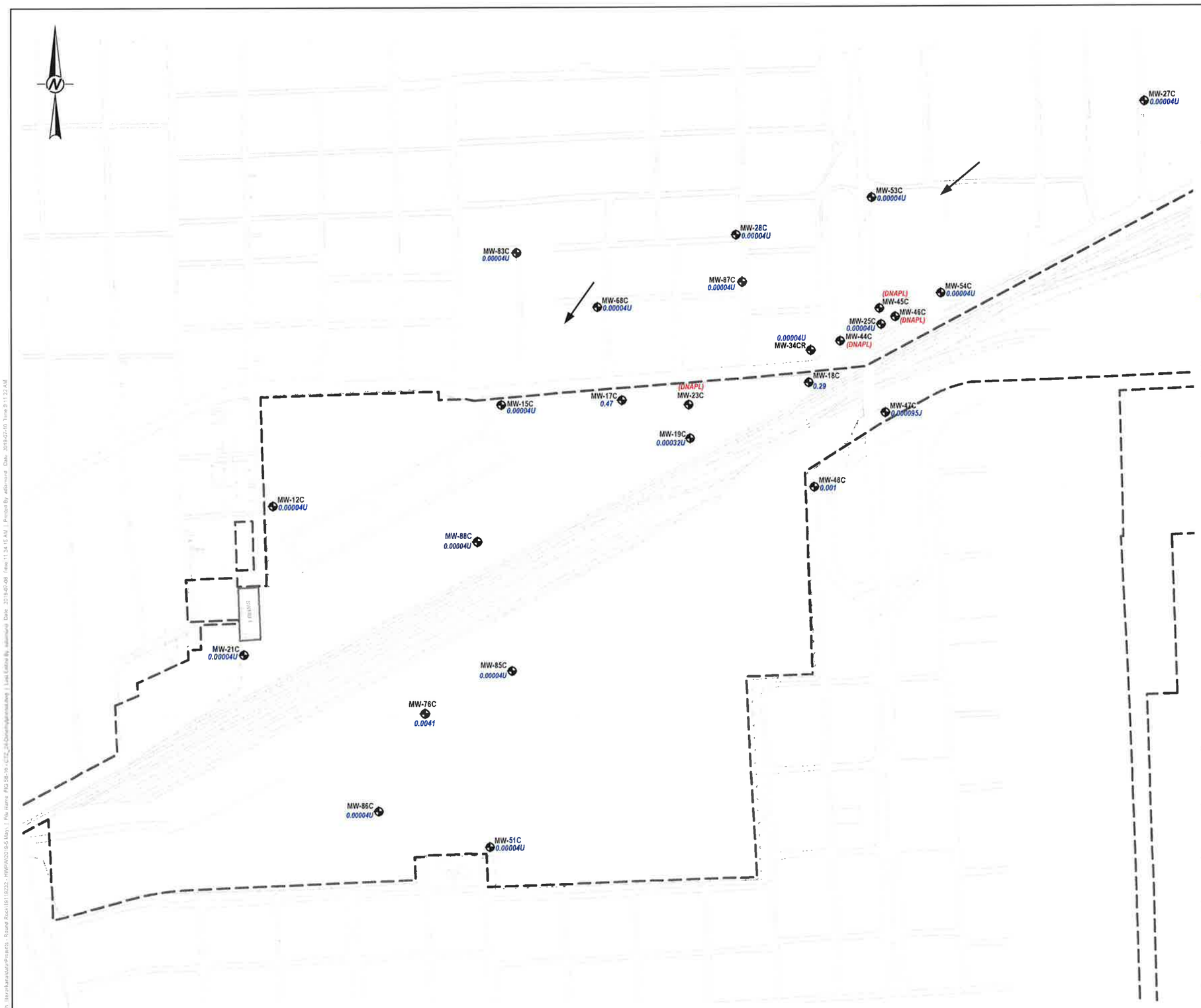
TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
BENZENE - JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-15



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.0325 — 2,4-DIMETHYLPHENOL CONCENTRATION IN mg/L
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

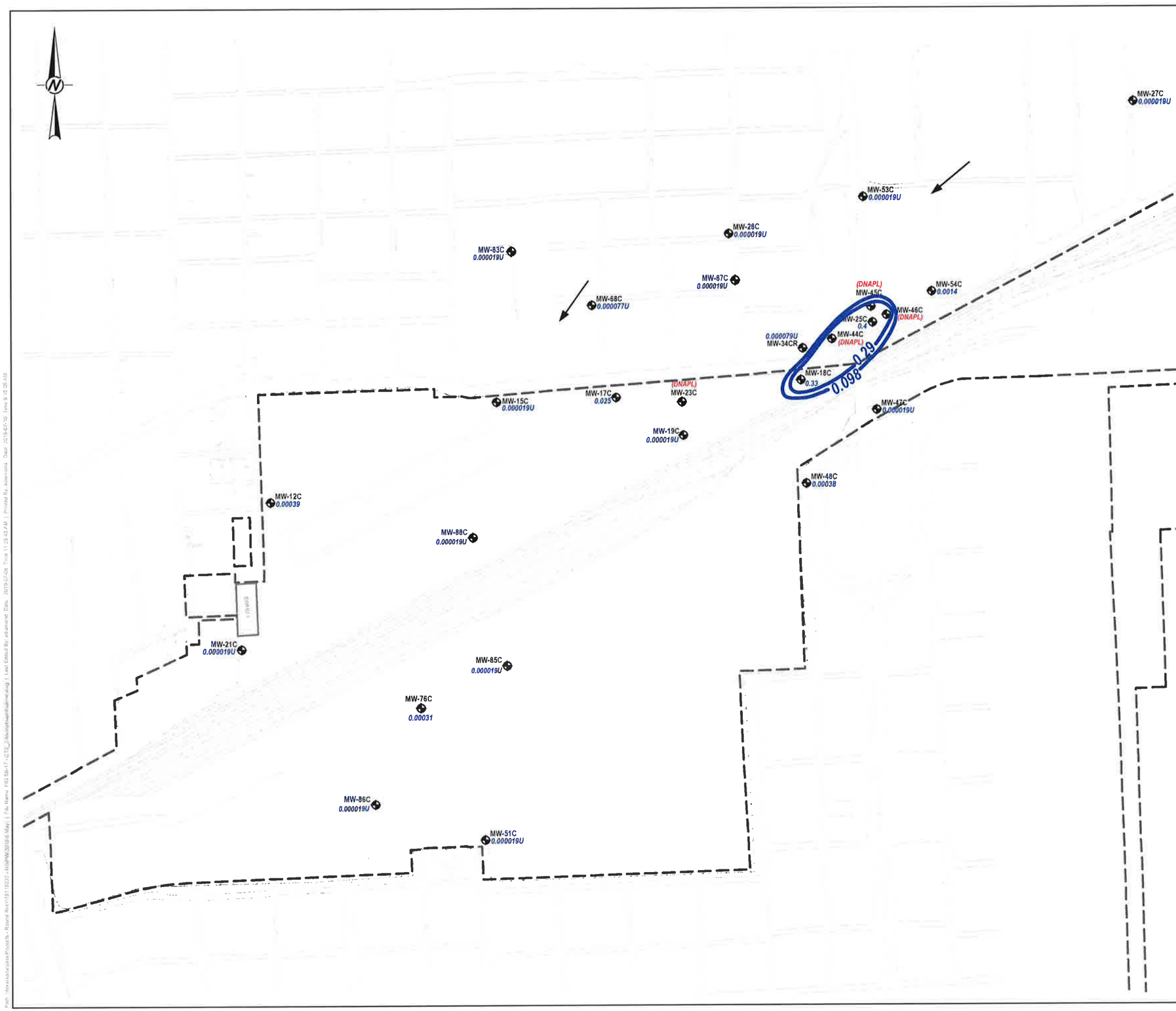
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
2,4-DIMETHYLPHENOL - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-16



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.778 — 2-METHYLNAPHTHALENE CONCENTRATION IN mg/L
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

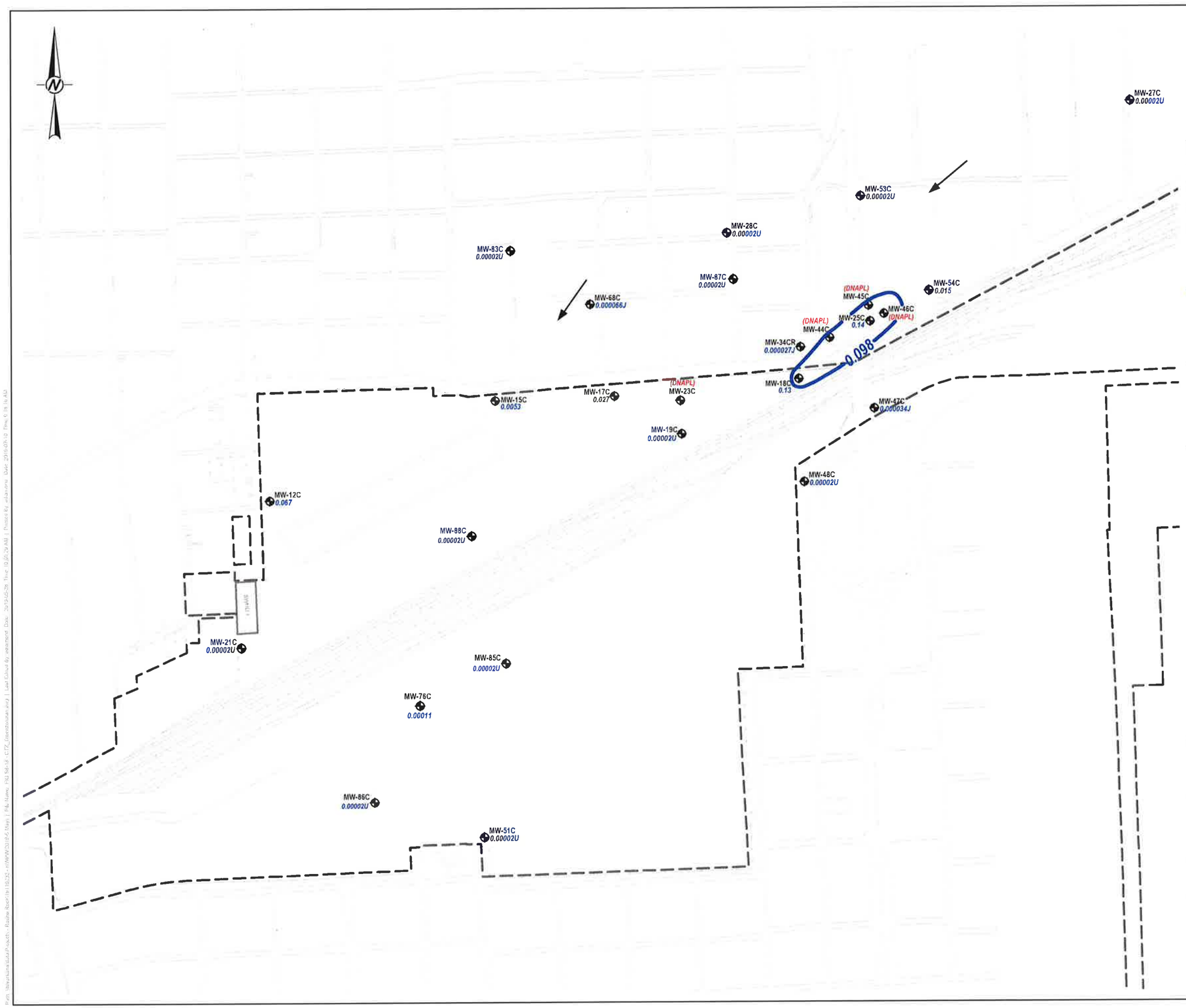
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
2-METHYLNAPHTHALENE - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-17



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.207 DIBENZOFURAN CONCENTRATION IN mg/L
- 0.098 DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

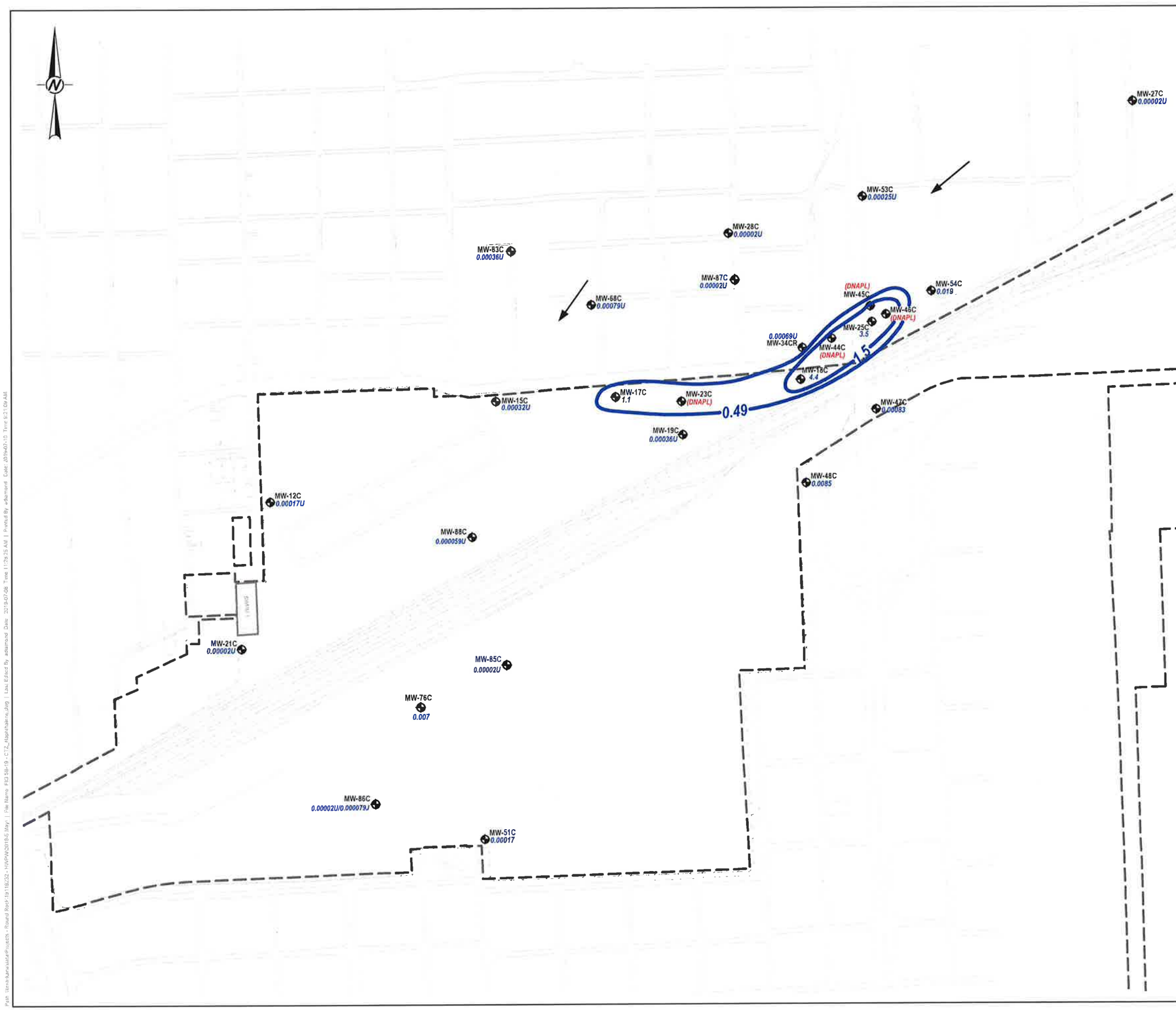
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
DIBENZOFURAN - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-18



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 14.7 NAPHTHALENE CONCENTRATION IN mg/L
- 0.49 NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

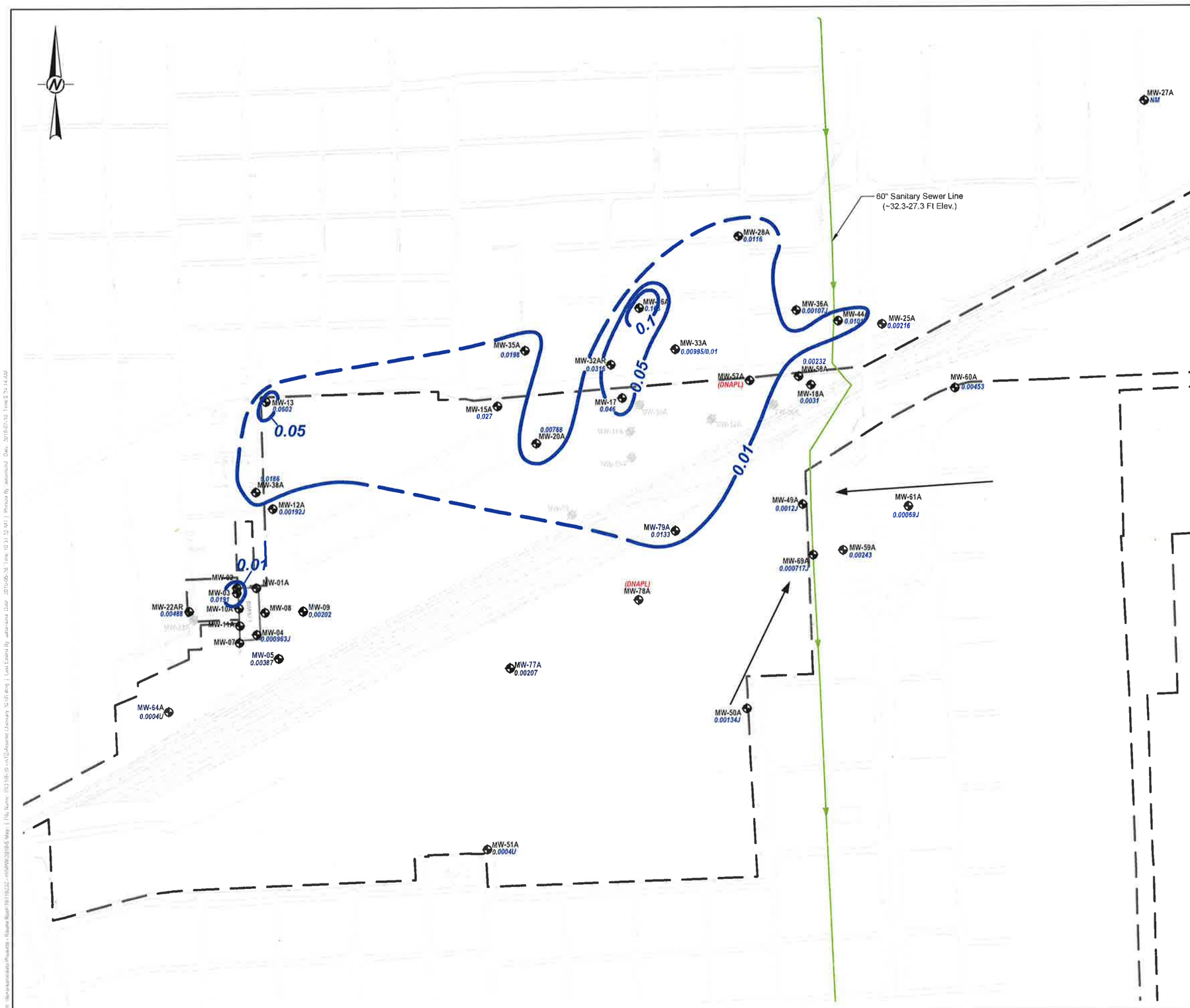
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
NAPHTHALENE - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-19



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.108 ARSENIC CONCENTRATION IN mg/L
- 0.01 ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L).
3. NM - NOT MEASURED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

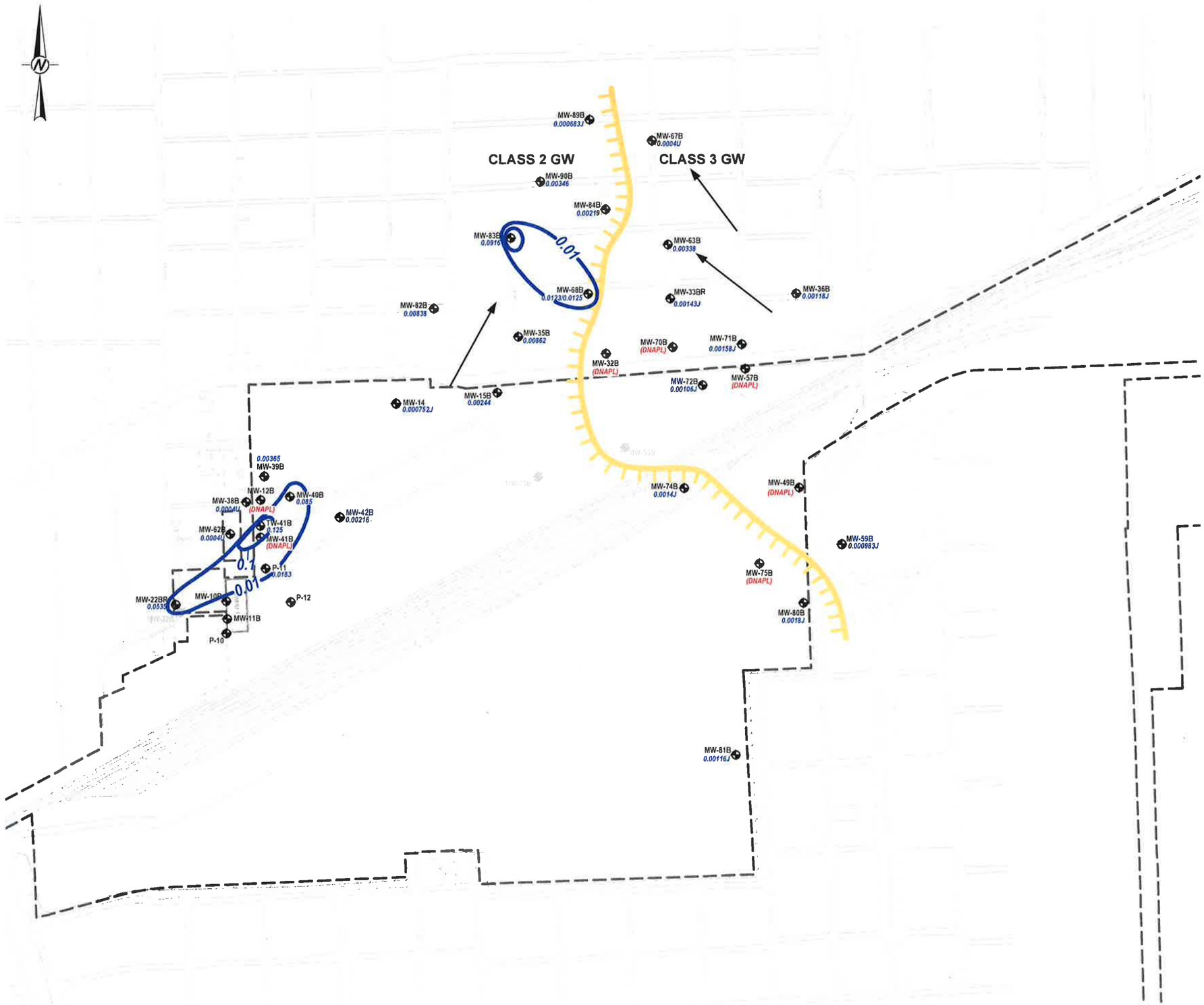
TITLE
A-TZ GROUNDWATER COC CONCENTRATION MAP
ARSENIC - JANUARY 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-20



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.346 — ARSENIC CONCENTRATION IN mg/L
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

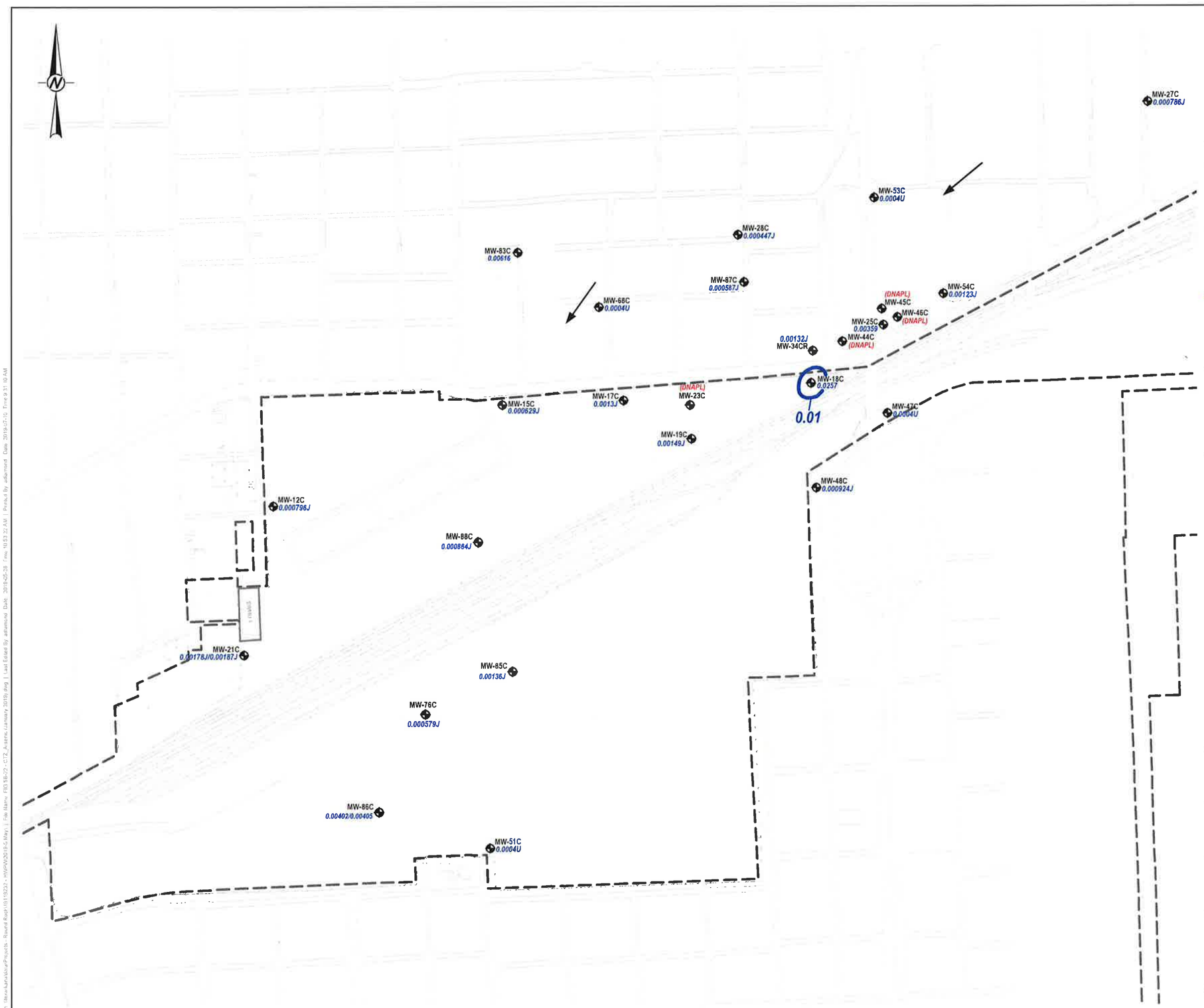
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-CZ/B-TZ GROUNDWATER COC CONCENTRATION MAP ARSENIC - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-21



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 8.01 ARSENIC CONCENTRATION IN mg/L
- 0.01 ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2019).
2. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/9/19

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
C-TZ GROUNDWATER COC CONCENTRATION MAP
ARSENIC - JANUARY 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	5B-22

ATTACHMENT A

Data Usability Summary and Analytical Reports from January 2019 Site-Wide Sampling Event

Memorandum

February 26, 2019

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	CK Chris G. Knight/mkd/176-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the Site Wide Groundwater Monitoring Event at the Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works site during January-February 2019. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS19010437, HS19010488, HS19010754, HS19011117, HS19011199, and HS19020155. The intended use of the data is to support the Site Wide Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern.

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

2. Laboratory Qualifications

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

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

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

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 with the following exceptions:

i) The collection time on the sample containers did not match the sample times listed on the chain of custody for the following samples: WG-1620-TW41B-20190109 and WG-1620-MW05-20190109. The sample times listed on the chain of custody were used. No further action was required.

ii) WG-1620-FB02-20190109 was missing the sample date and time on the container labels. The sample was logged in using the date and time listed on the chain of custody. No further action was required.

iii) 1620-MW71B-20190115 was missing the sample time on the voa vial labels. The sample was logged in using the time listed on the chain of custody. No further action was required.

iv) All samples submitted on January 25, 2019 in data package HS19011199 were missing collection dates and times from their container lables. All samples were logged in using the date and time listed on the chain of custodies. No further action was required.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

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

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass 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 result was non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

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

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (greater than five times) 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/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable) with the following exceptions:

i) One LCS/LCSD was reported with elevated RPDs for several SVOCs. All associated sample results were non-detect and not affected by the indicated variability. No further action was required.

4.7 Matrix Spike/Matrix Spike Duplicate 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/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

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

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

i) One MS/MSD was reported with elevated recoveries for chlorobenzene and ethylbenzene. Non-detect sample results associated with high MS/MSD recoveries were not qualified – they would not be impacted by any indicated high bias. If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD. No further action was required.

ii) One MS/MSD was reported with low recoveries for multiple SVOCs due to possible matrix interference and were not assessed. No further action was required.

The laboratory performed additional MS/MSD 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 as specified in Table 1 for metals analysis. The laboratory performed additional site-specific duplicate analyses internally. The relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project.

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

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

4.9 Field QA/QC Samples

The field QA/QC consisted of six trip blank samples, eight field blank samples, and five field duplicate sample sets.

Trip Blank Sample Analysis

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

Field Blank Sample Analysis

To assess ambient conditions at the site, eight field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest with the following exceptions (see Table 4):

i) The following field blanks yielded low level detections for multiple SVOCs: WQ-1620-FB01-20190108, WQ-1620-FB02-20190109, WQ-1620-FB03-20190111, WQ-1620-FB04-20190114, WQ-1620-FB05-20190115, WQ-1620-FB07-20190123, and WQ-1620-FB08-20190124. Associated sample results that were significantly greater than the concentrations found in the field blanks or were non-detect were not impacted. No further action was required. Associated sample results with comparable concentrations were qualified as non-detect.

Field Duplicate Sample Analysis

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

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.10 Field Procedures

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

4.11 Analyte Reporting

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

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

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Site Wide Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-MW13-20190108	MW-13	Water	01/08/2019	09:45	X	X	X	MS/MSD-P
WG-1620-MW14-20190108	MW-14	Water	01/08/2019	10:40	X	X	X	
WG-1620-MW15A-20190108	MW-15A	Water	01/08/2019	11:30	X	X	X	
WG-1620-MW15C-20190108	MW-15C	Water	01/08/2019	12:20	X	X	X	
WG-1620-MW15B-20190108	MW-15B	Water	01/08/2019	13:05	X	X	X	
WG-1620-MW20A-20190108	MW-20A	Water	01/08/2019	15:00	X	X	X	
WG-1620-MW88C-20190108	MW-88C	Water	01/08/2019	16:00	X	X	X	
WG-1620-MW42B-20190108	MW-42B	Water	01/08/2019	16:55	X	X	X	
WG-1620-MW40B-20190108	MW-40B	Water	01/08/2019	17:45	X	X	X	
WG-1620-MW39B-20190108	MW-39B	Water	01/08/2019	18:45	X	X	X	
WQ-1620-FB01-20190108	-	Water	01/08/2019	19:00	X	X	X	Field Blank
WQ-1620-TB01-20190108	-	Water	01/09/2019	00:00	X			Trip Blank
WG-1620-MW12A-20190109	MW-12A	Water	01/09/2019	07:35	X	X	X	
WG-1620-MW12C-20190109	MW-12C	Water	01/09/2019	08:25	X	X	X	
WG-1620-TW41B-20190109	TW-41B	Water	01/09/2019	10:35	X	X	X	
WG-1620-MW05-20190109	MW-05	Water	01/09/2019	11:25	X	X	X	MS/MSD-P
WG-1620-P11-20190109	P-11	Water	01/09/2019	12:25	X	X	X	
WG-1620-MW03-20190109	MW-03	Water	01/09/2019	13:15	X	X	X	
WG-1620-MW09-20190109	MW-09	Water	01/09/2019	14:05	X	X	X	
WG-1620-MW04-20190109	MW-04	Water	01/09/2019	15:05	X	X	X	MS/MSD-P

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-MW21C-20190109	MW-21C	Water	01/09/2019	16:20	X	X	X	
WG-1620-FD01-20190109	MW-21C	Water	01/09/2019	16:20	X	X	X	Field duplicate of MW21C
WG-1620-MW17-20190109	MW-17	Water	01/09/2019	17:20	X	X	X	
WQ-1620-FB02-20190109	-	Water	01/09/2019	17:35	X	X	X	Field Blank
WQ-1620-TB02-20190110	-	Water	01/10/2019	00:00	X			Trip Blank
WG-1620-MW17C-20190110	MW-17C	Water	01/10/2019	07:25	X	X	X	
WG-1620-MW18C-20190110	MW-18C	Water	01/10/2019	08:20	X	X	X	
WG-1620-MW18A-20190110	MW-18A	Water	01/10/2019	10:45	X	X	X	
WG-1620-MW48C-20190110	MW-48C	Water	01/10/2019	11:45	X	X	X	
WG-1620-MW69A-20190110	MW-69A	Water	01/10/2019	12:45	X	X	X	
WG-1620-MW80B-20190110	MW-80B	Water	01/10/2019	13:50	X	X	X	
WG-1620-MW50A-20190110	MW-50A	Water	01/10/2019	14:40	X	X	X	
WG-1620-MW81B-20190110	MW-81B	Water	01/10/2019	15:30	X	X	X	
WG-1620-MW51A-20190110	MW-51A	Water	01/10/2019	16:40	X	X	X	
WG-1620-MW51C-20190110	MW-51C	Water	01/10/2019	17:30	X	X	X	
WG-1620-MW86C-20190111	MW-86C	Water	01/11/2019	08:25	X	X	X	
WG-1620-FD02-20190111	MW-86C	Water	01/11/2019	08:25	X	X	X	Field duplicate of MW86C
WG-1620-MW60A-20190111	MW-60A	Water	01/11/2019	10:15	X	X	X	
WQ-1620-FB03-20190111	-	Water	01/11/2019	11:15	X	X	X	Field Blank
WG-1620-MW53C-20190114	MW-53C	Water	01/14/2019	12:05	X	X	X	

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-MW54C-20190114	MW-54C	Water	01/14/2019	13:00	X	X	X	
WG-1620-MW36B-20190114	MW-36B	Water	01/14/2019	14:05	X	X	X	
WG-1620-MW36A-20190114	MW-36A	Water	01/14/2019	14:55	X	X	X	
WG-1620-MW28A-20190114	MW-28A	Water	01/14/2019	15:50	X	X	X	
WG-1620-MW28C-20190114	MW-28C	Water	01/14/2019	16:35	X	X	X	MS/MSD; DUP
WG-1620-MW63B-20190114	MW-63B	Water	01/14/2019	17:40	X	X	X	
WG-1620-FB04-20190114	-	Water	01/14/2019	18:00	X	X	X	Field Blank
WQ-1620-TB04-20190115	-	Water	01/15/2019	00:00	X			Trip Blank
WG-1620-MW26A-20190115	MW-26A	Water	01/15/2019	07:40	X	X	X	
WG-1620-MW68B-20190115	MW-68B	Water	01/15/2019	08:55	X	X	X	
WG-1620-FD03-20190115	MW-68B	Water	01/15/2019	08:55	X	X	X	Field duplicate of MW68B
WG-1620-MW68C-20190115	MW-68C	Water	01/15/2019	09:45	X	X	X	
WG-1620-MW83B-20190115	MW-83B	Water	01/15/2019	10:40	X	X	X	
WG-1620-MW83C-20190115	MW-83C	Water	01/15/2019	11:15	X	X	X	
WG-1620-MW35A-20190115	MW-35A	Water	01/15/2019	12:45	X	X	X	
WG-1620-MW35B-20190115	MW-35B	Water	01/15/2019	13:25	X	X	X	
WG-1620-MW25A-20190115	MW-25A	Water	01/15/2019	14:25	X	X	X	
WG-1620-MW25C-20190115	MW-25C	Water	01/15/2019	15:10	X	X	X	
WG-1620-MW34CR-20190115	MW-34CR	Water	01/15/2019	15:55	X	X	X	
WG-1620-MW71B-20190115	MW-71B	Water	01/15/2019	16:50	X	X	X	

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-FB05-20190115	-	Water	01/15/2019	17:15	X	X	X	Field Blank
WG-1620-MW44A-20190122	MW-44A	Water	01/22/2019	07:25	X	X	X	
WG-1620-MW87C-20190122	MW-87C	Water	01/22/2019	08:15	X	X	X	
WG-1620-MW33BR-20190122	MW-33BR	Water	01/22/2019	09:05	X	X	X	
WG-1620-MW33A-20190122	MW-33A	Water	01/22/2019	10:00	X	X	X	
WG-1620-FD04-20190122	MW-33A	Water	01/22/2019	10:00	X	X	X	Field duplicate of MW33A
WG-1620-MW38B-20190122	MW-38B	Water	01/22/2019	11:00	X	X	X	
WG-1620-MW22AR-20190122	MW-22AR	Water	01/22/2019	11:50	X	X	X	
WG-1620-MW22BR-20190122	MW-22BR	Water	01/22/2019	12:35	X	X	X	
WG-1620-MW38A-20190122	MW-38A	Water	01/22/2019	13:40	X	X	X	
WG-1620-MW82B-20190122	MW-82B	Water	01/22/2019	14:55	X	X	X	MS/MSD-P; DUP
WG-1620-MW90B-20190122	MW-90B	Water	01/22/2019	16:00	X	X	X	
WG-1620-MW89B-20190122	MW-89B	Water	01/22/2019	16:50	X	X	X	
WG-1620-MW27C-20190122	MW-27C	Water	01/22/2019	17:45	X	X	X	
WQ-1620-FB06-20190122	-	Water	01/22/2019	18:00	X	X	X	Field Blank
WQ-1620-TB05-20190123	-	Water	01/23/2019	00:00	X			Trip Blank
WG-1620-MW62B-20190123	MW-62B	Water	01/23/2019	07:15	X	X	X	
WG-1620-MW64A-20190123	MW-64A	Water	01/23/2019	08:10	X	X	X	
WG-1620-MW61A-20190123	MW-61A	Water	01/23/2019	09:20	X	X	X	MS/MSD; DUP
WG-1620-MW47C-20190123	MW-47C	Water	01/23/2019	10:15	X	X	X	

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-MW58A-20190123	MW-58A	Water	01/23/2019	11:20	X	X	X	
WG-1620-MW32AR-20190123	MW-32AR	Water	01/23/2019	12:15	X	X	X	
WG-1620-MW76C-20190123	MW-76C	Water	01/23/2019	13:20	X	X	X	
WG-1620-MW74B-20190123	MW-74B	Water	01/23/2019	14:15	X	X	X	
WG-1620-MW79A-20190123	MW-79A	Water	01/23/2019	15:05	X	X	X	
WG-1620-MW49A-20190123	MW-49A	Water	01/23/2019	15:50	X	X	X	
WG-1620-MW59A-20190123	MW-59A	Water	01/23/2019	16:40	X	X	X	
WQ-1620-FB07-20190123	-	Water	01/23/2019	17:00	X	X	X	Field Blank
WG-1620-MW59B-20190123	MW-59B	Water	01/23/2019	17:30	X	X	X	
WQ-1620-TB06-20190124	-	Water	01/24/2019	00:00	X			Trip Blank
WG-1620-MW59D-20190124	MW-59D	Water	01/24/2019	07:20	X	X	X	
WG-1620-FD05-20190124	MW-59D	Water	01/24/2019	07:20	X	X	X	Field duplicate of MW59D
WG-1620-MW36D-20190124	MW-36D	Water	01/24/2019	08:25	X	X	X	
WG-1620-MW65D-20190124	MW-65D	Water	01/24/2019	09:25	X	X	X	MS/MSD-P; DUP
WG-1620-MW66D-20190124	MW-66D	Water	01/24/2019	10:30	X	X	X	
WG-1620-MW84B-20190124	MW-84B	Water	01/24/2019	11:40	X	X	X	
WG-1620-MW67B-20190124	MW-67B	Water	01/24/2019	12:50	X	X	X	MS/MSD; DUP
WG-1620-MW19C-20190124	MW-19C	Water	01/24/2019	13:50	X	X	X	
WG-1620-MW72B-20190124	MW-72B	Water	01/24/2019	14:55	X	X	X	
WQ-1620-FB08-20190124	-	Water	01/24/2019	16:15	X	X	X	Field Blank

Table 1

Sample Collection and Analysis Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					VOCs	SVOCs	Metals	
WG-1620-TB07-20190201	-	Water	02/01/2019	00:00	X			Trip Blank
WG-1620-MW77A-201290201	MW-77A	Water	02/01/2019	13:05	X	X	X	
WG-1620-MW85C-201290201	MW-85C	Water	02/01/2019	14:00	X	X	X	

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
MS/MSD - Matrix Spike/Matrix Spike Duplicate
MS/MSD-P - Matrix Spike/Matrix Spike Duplicate (partial parameters)
DUP - Laboratory Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		MW-03	MW-04	MW-05	MW-09	MW-12A
Sample Name:		WG-1620-MW03-20190109	WG-1620-MW04-20190109	WG-1620-MW05-20190109	WG-1620-MW09-20190109	WG-1620-MW12A-20190109
Sample Date:		01/09/2019	01/09/2019	01/09/2019	01/09/2019	01/09/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	0.0041	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.000079 J	<0.000014	0.000093 J	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000051	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.000031 J
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.00026
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000080	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-03**	**MW-04**	**MW-05**	**MW-09**	**MW-12A**
	Sample Name:	**WG-1620-MW03-20190109**	**WG-1620-MW04-20190109**	**WG-1620-MW05-20190109**	**WG-1620-MW09-20190109**	**WG-1620-MW12A-20190109**
	Sample Date:	**01/09/2019**	**01/09/2019**	**01/09/2019**	**01/09/2019**	**01/09/2019**
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals						
Arsenic	mg/L	0.0191	0.000963 J	0.00387	0.00202	0.00192 J
Lead	mg/L	0.00131 J	<0.000600	0.00149 J	0.000931 J	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-12C**	**MW-13**	**MW-14**	**MW-15A**
Sample Name:		**WG-1620-MW12C-20190109**	**WG-1620-MW13-20190108**	**WG-1620-MW14-20190108**	**WG-1620-MW15A-20190108**
Sample Date:		**01/09/2019**	**01/08/2019**	**01/08/2019**	**01/08/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	0.00080 J
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.00039	<0.000019	<0.000019	0.0098
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.093	<0.000027	<0.000027	0.10
Acenaphthylene	mg/L	0.00082	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0084	0.00039	0.000052 J	0.0025
Benzo(a)anthracene	mg/L	0.00014	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.000041 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00011 J	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	0.00013	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000022 J	<0.000020
Dibenzofuran	mg/L	0.067	<0.000020	<0.000020	0.023
Fluoranthene	mg/L	0.0071	<0.000010	<0.000010	0.0012
Fluorene	mg/L	0.085	<0.000030	<0.000030	0.038
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.00017	<0.00022	<0.000020	<0.00032
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.052	<0.000021	<0.000021	0.0090

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-12C**	**MW-13**	**MW-14**	**MW-15A**
	Sample Name:	**WG-1620-MW12C-20190109**	**WG-1620-MW13-20190108**	**WG-1620-MW14-20190108**	**WG-1620-MW15A-20190108**
	Sample Date:	**01/09/2019**	**01/08/2019**	**01/08/2019**	**01/08/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0031	<0.000019	<0.000019	0.00051
Metals					
Arsenic	mg/L	0.000796 J	0.0602	0.000752 J	0.0270
Lead	mg/L	<0.000600	0.00133 J	<0.000600	0.000722 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-15B**	**MW-15C**	**MW-17**	**MW-17C**
	Sample Name:	**WG-1620-MW15B-20190108**	**WG-1620-MW15C-20190108**	**WG-1620-MW17-20190109**	**WG-1620-MW17C-20190110**
	Sample Date:	**01/08/2019**	**01/08/2019**	**01/09/2019**	**01/10/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.0020	<0.00020
Benzene	mg/L	<0.00020	0.00058 J	0.35	0.012
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.0030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.21	0.027
Methylene chloride	mg/L	<0.0010	<0.0010	<0.010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.68	0.0087
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	0.66	0.050
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	1.9	0.47
2,4-Dinitrotoluene	mg/L	<0.000059	<0.000058	<0.00058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	0.23	0.025
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047
Acenaphthene	mg/L	0.0026	0.020	0.091	0.031
Acenaphthylene	mg/L	0.00015	0.0014	0.0029	0.00047
Anthracene	mg/L	0.00023	0.00031	0.0057	0.0012
Benzo(a)anthracene	mg/L	<0.000051	<0.000050	<0.00050	0.000062 J
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.00020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.00037	0.00062
Chrysene	mg/L	<0.000021	<0.000021	<0.00021	0.000059 J
Di-n-butylphthalate (DBP)	mg/L	0.000022 J	<0.000020	<0.00020	<0.000020
Dibenzofuran	mg/L	0.00014	0.0053	0.072	0.027
Fluoranthene	mg/L	0.00045	0.00075	0.0015	0.00078
Fluorene	mg/L	0.000055 J	0.00056	0.043	0.012
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025
Naphthalene	mg/L	<0.000020	<0.00032	5.5	1.1
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024
Pentachlorophenol	mg/L	<0.000080	<0.000079	<0.00079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.028	0.010

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-15B**	**MW-15C**	**MW-17**	**MW-17C**
	Sample Name:	**WG-1620-MW15B-20190108**	**WG-1620-MW15C-20190108**	**WG-1620-MW17-20190109**	**WG-1620-MW17C-20190110**
	Sample Date:	**01/08/2019**	**01/08/2019**	**01/09/2019**	**01/10/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	2.2	0.033
Pyrene	mg/L	0.00027	0.00041	0.00081 J	0.00045
Metals					
Arsenic	mg/L	0.00244	0.000629 J	0.0460	0.00130 J
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-18A**	**MW-18C**	**MW-19C**	**MW-20A**
Sample Name:		**WG-1620-MW18A-20190110**	**WG-1620-MW18C-20190110**	**WG-1620-MW19C-20190124**	**WG-1620-MW20A-20190108**
Sample Date:		**01/10/2019**	**01/10/2019**	**01/24/2019**	**01/08/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.0050	<0.0020	<0.00020	<0.00020
Benzene	mg/L	1.2	0.30	0.0044	0.024
Chlorobenzene	mg/L	<0.0075	<0.0030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.34	0.41	0.0040	0.024
Methylene chloride	mg/L	<0.025	<0.010	<0.0010	<0.0010
Toluene	mg/L	0.92	0.030	0.0057	0.00077 J
Vinyl chloride	mg/L	<0.0050	<0.0020	<0.00020	--
Xylenes (total)	mg/L	1.0	0.69	0.0037	0.022
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.00021	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.0054	0.29	<0.00032	0.0076
2,4-Dinitrotoluene	mg/L	<0.00058	<0.00059	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.00042	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.00021	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.10	0.33	<0.000019	0.069
4,6-Dinitro-2-methylphenol	mg/L	<0.00020	<0.00020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.00047	<0.00047	<0.000047	<0.000047
Acenaphthene	mg/L	0.048	0.21	0.00078	0.10
Acenaphthylene	mg/L	0.0016	0.0075	<0.000015	0.00057
Anthracene	mg/L	0.0064	0.0070	0.000057 J	0.0058
Benzo(a)anthracene	mg/L	<0.00050	<0.00051	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.00020	<0.00020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.00030	<0.00030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00037	<0.00037	0.000096 J	<0.000037
Chrysene	mg/L	<0.00021	<0.00021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.00020	<0.00020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.047	0.13	<0.000020	0.067
Fluoranthene	mg/L	0.0020	0.0023	<0.000010	0.00041
Fluorene	mg/L	0.021	0.095	<0.000030	0.062
N-Nitrosodiphenylamine	mg/L	<0.00025	<0.00025	<0.000025	<0.000025
Naphthalene	mg/L	3.2	4.4	<0.00036	1.4
Nitrobenzene	mg/L	<0.00024	<0.00024	<0.000024	<0.000024
Pentachlorophenol	mg/L	0.014	<0.00080	<0.000079	<0.000079
Phenanthrene	mg/L	0.024	0.084	<0.000021	0.025

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-18A**	**MW-18C**	**MW-19C**	**MW-20A**
	Sample Name:	**WG-1620-MW18A-20190110**	**WG-1620-MW18C-20190110**	**WG-1620-MW19C-20190124**	**WG-1620-MW20A-20190108**
	Sample Date:	**01/10/2019**	**01/10/2019**	**01/24/2019**	**01/08/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	0.0032	<0.00035	<0.00013	<0.000035
Pyrene	mg/L	0.0012	0.0012	<0.000019	0.00025
Metals					
Arsenic	mg/L	0.00310	0.0257	0.00149 J	0.00788
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-21C**	**MW-21C**	**MW-22AR**	**MW-22BR**
	Sample Name:	**WG-1620-MW21C-20190109**	**WG-1620-FD01-20190109**	**WG-1620-MW22AR-20190122**	**WG-1620-MW22BR-20190122**
	Sample Date:	**01/09/2019**	**01/09/2019**	**01/22/2019**	**01/22/2019**
			Duplicate		
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	0.00071	0.022
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.000028 J	0.00048
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	0.000065 J	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.00051	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	0.000029 J	0.00029
Fluoranthene	mg/L	<0.000010	<0.000010	0.000079 J	0.0011
Fluorene	mg/L	<0.000030	<0.000030	0.00014	0.0025
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	<0.000020	0.00017
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.000068 J	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-21C**	**MW-21C**	**MW-22AR**	**MW-22BR**
	Sample Name:	**WG-1620-MW21C-20190109**	**WG-1620-FD01-20190109**	**WG-1620-MW22AR-20190122**	**WG-1620-MW22BR-20190122**
	Sample Date:	**01/09/2019**	**01/09/2019**	**01/22/2019**	**01/22/2019**
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	0.000084 J	0.00046
Metals					
Arsenic	mg/L	0.00187 J	0.00178 J	0.00488	0.0535
Lead	mg/L	<0.000600	<0.000600	0.00526	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-25A**	**MW-25C**	**MW-26A**	**MW-27C**
Sample Name:		**WG-1620-MW25A-20190115**	**WG-1620-MW25C-20190115**	**WG-1620-MW26A-20190115**	**WG-1620-MW27C-20190122**
Sample Date:		**01/15/2019**	**01/15/2019**	**01/15/2019**	**01/22/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	0.00056 J	<0.00030
Ethylbenzene	mg/L	<0.00030	0.038	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.013	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	0.27	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000051	0.40	<0.000090	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.000036 J	0.13	0.042	<0.000027
Acenaphthylene	mg/L	<0.000015	0.0012	0.00027	<0.000015
Anthracene	mg/L	0.000015 J	0.011	0.00087	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	0.00065	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.00021	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000078	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	0.00074	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000020 J	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.14	0.00050	<0.000020
Fluoranthene	mg/L	0.000015 J	0.0079	0.0044	<0.000010
Fluorene	mg/L	<0.000030	0.062	0.0039	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.00029	3.5	<0.00049	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.000029 J	0.077	0.00012	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-25A**	**MW-25C**	**MW-26A**	**MW-27C**
	Sample Name:	**WG-1620-MW25A-20190115**	**WG-1620-MW25C-20190115**	**WG-1620-MW26A-20190115**	**WG-1620-MW27C-20190122**
	Sample Date:	**01/15/2019**	**01/15/2019**	**01/15/2019**	**01/22/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.000027 J	0.0052	0.0025	<0.000019
Metals					
Arsenic	mg/L	0.00216	0.00359	0.166	0.000786 J
Lead	mg/L	<0.000600	<0.000600	<0.000600	0.000831 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		MW-28A	MW-28C	MW-32AR	MW-33A
Sample Name:		WG-1620-MW28A-20190114	WG-1620-MW28C-20190114	WG-1620-MW32AR-20190123	WG-1620-MW33A-20190122
Sample Date:		01/14/2019	01/14/2019	01/23/2019	01/22/2019
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.00013 J	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000055	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.000092 J	<0.000027	0.00010	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.000020 J	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000061 J	<0.000037	<0.000044	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.000025 J
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000020 J	<0.000020
Dibenzofuran	mg/L	<0.00011	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	0.000051 J	0.00033
Fluorene	mg/L	0.000056 J	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.0024	<0.000020	0.000067 J	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.000034 J	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-28A**	**MW-28C**	**MW-32AR**	**MW-33A**
	Sample Name:	**WG-1620-MW28A-20190114**	**WG-1620-MW28C-20190114**	**WG-1620-MW32AR-20190123**	**WG-1620-MW33A-20190122**
	Sample Date:	**01/14/2019**	**01/14/2019**	**01/23/2019**	**01/22/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.000065 J	<0.000019	0.000036 J	0.00015
Metals					
Arsenic	mg/L	0.0116	0.000447 J	0.0316	0.0100
Lead	mg/L	<0.000600	<0.000600	0.000644 J	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		MW-33A	MW-33BR	MW-34CR	MW-35A
Sample Name:		WG-1620-FD04-20190122	WG-1620-MW33BR-20190122	WG-1620-MW34CR-20190115	WG-1620-MW35A-20190115
Sample Date:		01/22/2019	01/22/2019	01/15/2019	01/15/2019
		Duplicate			
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.0025	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.013	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	0.0021
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000079	0.016
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.0013	0.000029 J	0.0039
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.000068 J
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	0.00044
Benzo(a)anthracene	mg/L	0.000062 J	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	0.000034 J	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000021 J	<0.000020
Dibenzofuran	mg/L	<0.000020	0.000079 J	0.000027 J	0.0041
Fluoranthene	mg/L	0.00044	0.000053 J	0.000014 J	0.00015
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	0.0022
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.000040 J	<0.00069	0.22
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	0.0025

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-33A**	**MW-33BR**	**MW-34CR**	**MW-35A**
	Sample Name:	**WG-1620-FD04-20190122**	**WG-1620-MW33BR-20190122**	**WG-1620-MW34CR-20190115**	**WG-1620-MW35A-20190115**
	Sample Date:	**01/22/2019**	**01/22/2019**	**01/15/2019**	**01/15/2019**
		Duplicate			
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00034	0.000030 J	<0.000019	0.000070 J
Metals					
Arsenic	mg/L	0.00995	0.00143 J	0.00132 J	0.0198
Lead	mg/L	<0.000600	0.000636 J	<0.000600	0.000654 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		MW-35B	MW-36A	MW-36B	MW-36D
Sample Name:		WG-1620-MW35B-20190115	WG-1620-MW36A-20190114	WG-1620-MW36B-20190114	WG-1620-MW36D-20190124
Sample Date:		01/15/2019	01/14/2019	01/14/2019	01/24/2019
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.0033	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.0094	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	<0.00020	--
Xylenes (total)	mg/L	0.0040	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.011	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.013	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	0.00018	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0011	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	0.000077 J	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.000058 J	<0.000020	<0.000020	0.000027 J
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00014	<0.000037	0.00022	0.000055 J
Chrysene	mg/L	0.000098 J	<0.000021	<0.000021	0.000031 J
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.015	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0013	<0.000010	<0.000010	0.000048 J
Fluorene	mg/L	0.0066	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.079	<0.000062	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.0086	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-35B**	**MW-36A**	**MW-36B**	**MW-36D**
	Sample Name:	**WG-1620-MW35B-20190115**	**WG-1620-MW36A-20190114**	**WG-1620-MW36B-20190114**	**WG-1620-MW36D-20190124**
	Sample Date:	**01/15/2019**	**01/14/2019**	**01/14/2019**	**01/24/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00075	<0.000019	<0.000019	0.000042 J
Metals					
Arsenic	mg/L	0.00862	0.00107 J	0.00118 J	0.000417 J
Lead	mg/L	0.00165 J	0.00108 J	<0.000600	0.000910 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-38A**	**MW-38B**	**MW-39B**	**MW-40B**
	Sample Name:	**WG-1620-MW38A-20190122**	**WG-1620-MW38B-20190122**	**WG-1620-MW39B-20190108**	**WG-1620-MW40B-20190108**
	Sample Date:	**01/22/2019**	**01/22/2019**	**01/08/2019**	**01/08/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	0.0063
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	0.041
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.0048
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	0.052
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000055 J	<0.000019	<0.000019	0.077
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.014	<0.000027	0.00062	0.12
Acenaphthylene	mg/L	0.00020	<0.000015	<0.000015	0.00083
Anthracene	mg/L	0.00017	0.00010	0.00016	0.0070
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	0.000079 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.000045 J
Di-n-butylphthalate (DBP)	mg/L	0.000068 J	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.00014	<0.000020	<0.000020	0.069
Fluoranthene	mg/L	0.0013	<0.000010	0.000067 J	0.0041
Fluorene	mg/L	0.0024	<0.000030	<0.000030	0.087
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.00015	<0.000020	<0.000092	1.3
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.00058	<0.000021	0.000039 J	0.068

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-38A**	**MW-38B**	**MW-39B**	**MW-40B**
	Sample Name:	**WG-1620-MW38A-20190122**	**WG-1620-MW38B-20190122**	**WG-1620-MW39B-20190108**	**WG-1620-MW40B-20190108**
	Sample Date:	**01/22/2019**	**01/22/2019**	**01/08/2019**	**01/08/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0011	<0.000019	0.000052 J	0.0020
Metals					
Arsenic	mg/L	0.0186	<0.000400	0.00365	0.0850
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-42B**	**MW-44A**	**MW-47C**	**MW-48C**
Sample Name:		**WG-1620-MW42B-20190108**	**WG-1620-MW44A-20190122**	**WG-1620-MW47C-20190123**	**WG-1620-MW48C-20190110**
Sample Date:		**01/08/2019**	**01/22/2019**	**01/23/2019**	**01/10/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.000095 J	0.0010
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.00038
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.037	<0.000027	0.000098 J
Acenaphthylene	mg/L	<0.000015	0.00036	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.00044	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000061 J	<0.000037	<0.000056	<0.000037
Chrysene	mg/L	<0.000021	0.000026 J	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	0.000034 J	<0.000020
Fluoranthene	mg/L	0.00011	0.0058	0.000028 J	<0.000010
Fluorene	mg/L	<0.000030	0.0097	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.00011	0.00083	0.0085
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.000052 J	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-42B**	**MW-44A**	**MW-47C**	**MW-48C**
	Sample Name:	**WG-1620-MW42B-20190108**	**WG-1620-MW44A-20190122**	**WG-1620-MW47C-20190123**	**WG-1620-MW48C-20190110**
	Sample Date:	**01/08/2019**	**01/22/2019**	**01/23/2019**	**01/10/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	0.0020
Pyrene	mg/L	0.00010	0.0033	0.000021 J	<0.000019
Metals					
Arsenic	mg/L	0.00216	0.0101	<0.000400	0.000924 J
Lead	mg/L	0.00412	<0.000600	0.000859 J	0.00141 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-49A**	**MW-50A**	**MW-51A**	**MW-51C**
Sample Name:		**WG-1620-MW49A-20190123**	**WG-1620-MW50A-20190110**	**WG-1620-MW51A-20190110**	**WG-1620-MW51C-20190110**
Sample Date:		**01/23/2019**	**01/10/2019**	**01/10/2019**	**01/10/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.0040	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.0031	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.0023	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--
Xylenes (total)	mg/L	0.0087	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000055	<0.000037	0.000078 J	0.00013 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.000089 J	<0.000020	0.00012	0.00017
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-49A**	**MW-50A**	**MW-51A**	**MW-51C**
	Sample Name:	**WG-1620-MW49A-20190123**	**WG-1620-MW50A-20190110**	**WG-1620-MW51A-20190110**	**WG-1620-MW51C-20190110**
	Sample Date:	**01/23/2019**	**01/10/2019**	**01/10/2019**	**01/10/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.00120 J	0.00134 J	<0.000400	<0.000400
Lead	mg/L	0.00778	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-53C**	**MW-54C**	**MW-58A**	**MW-59A**
Sample Name:		**WG-1620-MW53C-20190114**	**WG-1620-MW54C-20190114**	**WG-1620-MW58A-20190123**	**WG-1620-MW59A-20190123**
Sample Date:		**01/14/2019**	**01/14/2019**	**01/23/2019**	**01/23/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.0011	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	0.00046 J	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.0032	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.0014	<0.00020
Vinyl chloride	mg/L	--	--	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	0.0050	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.00010 J	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.0014	0.000072 J	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.014	0.023	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.00020	0.00038	<0.000015
Anthracene	mg/L	<0.000014	0.0013	0.0020	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.000039 J	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	0.000056 J	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000096 J	<0.000070	<0.000037
Chrysene	mg/L	<0.000021	0.000038 J	0.000030 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000032 J	<0.000020
Dibenzofuran	mg/L	<0.000020	0.015	0.013	<0.000020
Fluoranthene	mg/L	<0.000010	0.0020	0.0020	<0.000010
Fluorene	mg/L	<0.000030	0.0085	0.015	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.00025	0.019	0.00042	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.0052	0.0038	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-53C**	**MW-54C**	**MW-58A**	**MW-59A**
	Sample Name:	**WG-1620-MW53C-20190114**	**WG-1620-MW54C-20190114**	**WG-1620-MW58A-20190123**	**WG-1620-MW59A-20190123**
	Sample Date:	**01/14/2019**	**01/14/2019**	**01/23/2019**	**01/23/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	0.000074 J	<0.000035
Pyrene	mg/L	<0.000019	0.0010	0.00088	<0.000019
Metals					
Arsenic	mg/L	<0.000400	0.00123 J	0.00232	0.00243
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		MW-59B	MW-59D	MW-59D	MW-60A
Sample Name:		WG-1620-MW59B-20190123	WG-1620-MW59D-20190124	WG-1620-FD05-20190124	WG-1620-MW60A-20190111
Sample Date:		01/23/2019	01/24/2019	01/24/2019	01/11/2019
				Duplicate	
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.000033 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000056	<0.000037	<0.000037	<0.000092
Chrysene	mg/L	0.000036 J	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	0.000064 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.000051 J	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.000072 J	<0.000020	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-59B**	**MW-59D**	**MW-59D**	**MW-60A**
	Sample Name:	**WG-1620-MW59B-20190123**	**WG-1620-MW59D-20190124**	**WG-1620-FD05-20190124**	**WG-1620-MW60A-20190111**
	Sample Date:	**01/23/2019**	**01/24/2019**	**01/24/2019**	**01/11/2019**
				Duplicate	
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.000053 J	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.000983 J	0.000765 J	0.000637 J	0.00453
Lead	mg/L	0.00108 J	0.000917 J	0.000727 J	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-61A**	**MW-62B**	**MW-63B**	**MW-64A**
Sample Name:		**WG-1620-MW61A-20190123**	**WG-1620-MW62B-20190123**	**WG-1620-MW63B-20190114**	**WG-1620-MW64A-20190123**
Sample Date:		**01/23/2019**	**01/23/2019**	**01/14/2019**	**01/23/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.35	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	0.00073 J	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.48	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.0071	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	0.11	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.00040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00059	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	0.042	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.00027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	0.0029	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00017 J	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.00051	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.00020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.00037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.00020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	0.0087	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.00010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	0.0029	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	2.1	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.00080	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.00094 J	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-61A**	**MW-62B**	**MW-63B**	**MW-64A**
	Sample Name:	**WG-1620-MW61A-20190123**	**WG-1620-MW62B-20190123**	**WG-1620-MW63B-20190114**	**WG-1620-MW64A-20190123**
	Sample Date:	**01/23/2019**	**01/23/2019**	**01/14/2019**	**01/23/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.00035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.00019	<0.000019
Metals					
Arsenic	mg/L	0.000690 J	<0.000400	0.00338	<0.000400
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Location ID:		**MW-65D**	**MW-66D**	**MW-67B**	**MW-68B**
Sample Name:		**WG-1620-MW65D-20190124**	**WG-1620-MW66D-20190124**	**WG-1620-MW67B-20190124**	**WG-1620-MW68B-20190115**
Sample Date:		**01/24/2019**	**01/24/2019**	**01/24/2019**	**01/15/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	2.0
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	0.00056 J
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	0.50
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.086
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	1.2
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.00021
2,4-Dimethylphenol	mg/L	<0.000090	<0.000040	<0.000040	0.050
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.00058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.00042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.00021
2-Methylnaphthalene	mg/L	0.00016	<0.000019	<0.000019	0.33
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.00020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.00047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	0.100
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.0012
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	0.0080
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.00050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.00020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.00030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000060 J	0.00017 J	0.000051 J	<0.00037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.00021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.00020
Dibenzofuran	mg/L	0.000039 J	<0.000020	<0.000020	0.10
Fluoranthene	mg/L	0.000027 J	<0.000010	<0.000010	0.0031
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	0.057
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.00025
Naphthalene	mg/L	<0.0026	<0.000020	<0.000020	5.0
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.00024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.00079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	0.065

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-65D**	**MW-66D**	**MW-67B**	**MW-68B**
	Sample Name:	**WG-1620-MW65D-20190124**	**WG-1620-MW66D-20190124**	**WG-1620-MW67B-20190124**	**WG-1620-MW68B-20190115**
	Sample Date:	**01/24/2019**	**01/24/2019**	**01/24/2019**	**01/15/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.00019	<0.000035	<0.000035	0.0019 J
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	0.0015
Metals					
Arsenic	mg/L	0.00202	0.00204	<0.000400	0.0123
Lead	mg/L	<0.000600	<0.000600	0.00331	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-68B**	**MW-68C**	**MW-69A**	**MW-71B**
	Sample Name:	**WG-1620-FD03-20190115**	**WG-1620-MW68C-20190115**	**WG-1620-MW69A-20190110**	**WG-1620-MW71B-20190115**
	Sample Date:	**01/15/2019**	**01/15/2019**	**01/10/2019**	**01/15/2019**
		Duplicate			
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	1.9	<0.00020	<0.00020	0.0024
Chlorobenzene	mg/L	0.00056 J	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.49	<0.00030	<0.00030	0.00093 J
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.084	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	<0.00020	--
Xylenes (total)	mg/L	1.2	0.0011	<0.00030	0.00084 J
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.058	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	0.0013 J	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.31	<0.000077	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	0.0011 J	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	0.0074 J	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.13	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0014	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0098	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.00050	<0.000051	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.00020	<0.000020	<0.000020	0.000021 J
bis(2-Chloroethoxy)methane	mg/L	0.0036	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00037	<0.000044	<0.000037	<0.000037
Chrysene	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.00020	<0.000020	<0.000020	0.000022 J
Dibenzofuran	mg/L	0.12	0.000066 J	<0.000020	<0.000020
Fluoranthene	mg/L	0.0039	<0.000010	<0.000010	0.000039 J
Fluorene	mg/L	0.065	0.000057 J	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	0.0051	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	3.8	<0.00079	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.00024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.00079	<0.000080	<0.000079	<0.000079
Phenanthrene	mg/L	0.073	0.000062 J	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-68B**	**MW-68C**	**MW-69A**	**MW-71B**
	Sample Name:	**WG-1620-FD03-20190115**	**WG-1620-MW68C-20190115**	**WG-1620-MW69A-20190110**	**WG-1620-MW71B-20190115**
	Sample Date:	**01/15/2019**	**01/15/2019**	**01/10/2019**	**01/15/2019**
		Duplicate			
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	0.0015 J	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0018	<0.000019	<0.000019	0.000037 J
Metals					
Arsenic	mg/L	0.0125	<0.000400	0.000717 J	0.00158 J
Lead	mg/L	<0.000600	<0.000600	0.000712 J	0.000845 J

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-72B**	**MW-74B**	**MW-76C**	**MW-77A**
	Sample Name:	**WG-1620-MW72B-20190124**	**WG-1620-MW74B-20190123**	**WG-1620-MW76C-20190123**	**WG-1620-MW77A-201290201**
	Sample Date:	**01/24/2019**	**01/23/2019**	**01/23/2019**	**02/01/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	0.011	<0.0020	<0.00020	<0.00020
Benzene	mg/L	0.63	0.83	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.0030	<0.0030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.20	0.22	<0.00030	<0.00030
Methylene chloride	mg/L	<0.010	<0.010	<0.0010	<0.0010
Toluene	mg/L	0.58	0.69	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	0.63	0.63	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.00021	<0.00021	<0.000021	<0.000022
2,4-Dimethylphenol	mg/L	2.0	9.0	0.0041	<0.000042
2,4-Dinitrotoluene	mg/L	<0.00058	<0.00058	<0.000058	<0.000060
2,6-Dinitrotoluene	mg/L	<0.00042	<0.00042	<0.000042	<0.000044
2-Chloronaphthalene	mg/L	<0.00021	<0.00021	<0.000021	<0.000022
2-Methylnaphthalene	mg/L	0.071	0.22	0.00031	<0.000020
4,6-Dinitro-2-methylphenol	mg/L	<0.00020	<0.00020	<0.000020	<0.000021
4-Nitrophenol	mg/L	0.0073 J	<0.00047	<0.000047	<0.000049
Acenaphthene	mg/L	0.019	0.098	0.00011	<0.000028
Acenaphthylene	mg/L	0.00069 J	0.0032	<0.000015	<0.000016
Anthracene	mg/L	0.0015	0.0074	0.000041 J	<0.000015
Benzo(a)anthracene	mg/L	<0.00050	<0.00050	<0.000050	<0.000052
Benzo(a)pyrene	mg/L	<0.00020	<0.00020	<0.000020	<0.000021
bis(2-Chloroethoxy)methane	mg/L	<0.00030	<0.00030	<0.000030	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00037	<0.00037	<0.000091	0.00010 J
Chrysene	mg/L	<0.00021	<0.00021	<0.000021	<0.000022
Di-n-butylphthalate (DBP)	mg/L	<0.00020	<0.00020	0.000027 J	0.000081 J
Dibenzofuran	mg/L	0.017	0.079	0.00011	<0.000021
Fluoranthene	mg/L	<0.00010	0.0038	<0.000010	<0.000010
Fluorene	mg/L	0.0091	0.056	0.000076 J	<0.000031
N-Nitrosodiphenylamine	mg/L	<0.00025	<0.00025	<0.000025	<0.000026
Naphthalene	mg/L	1.2	4.0	0.0070	<0.000021
Nitrobenzene	mg/L	<0.00024	<0.0024	<0.000024	<0.000025
Pentachlorophenol	mg/L	<0.00079	<0.00079	<0.000079	<0.000082
Phenanthrene	mg/L	0.0042	0.046	0.000086 J	<0.000022

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-72B**	**MW-74B**	**MW-76C**	**MW-77A**
	Sample Name:	**WG-1620-MW72B-20190124**	**WG-1620-MW74B-20190123**	**WG-1620-MW76C-20190123**	**WG-1620-MW77A-201290201**
	Sample Date:	**01/24/2019**	**01/23/2019**	**01/23/2019**	**02/01/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	0.58	5.0	0.0012	<0.000036
Pyrene	mg/L	<0.00019	0.0020	<0.000019	<0.000020
Metals					
Arsenic	mg/L	0.00106 J	0.00140 J	0.000579 J	0.00207
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-79A**	**MW-80B**	**MW-81B**	**MW-82B**
	Sample Name:	**WG-1620-MW79A-20190123**	**WG-1620-MW80B-20190110**	**WG-1620-MW81B-20190110**	**WG-1620-MW82B-20190122**
	Sample Date:	**01/23/2019**	**01/10/2019**	**01/10/2019**	**01/22/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.0020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.45	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.0030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.19	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.55	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	0.54	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	2.5	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.00058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.10	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.00020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.00047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.039	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0021	<0.000014	<0.000014	0.000042 J
Benzo(a)anthracene	mg/L	<0.00050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.00020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.00030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00037	<0.000037	0.000058 J	<0.000037
Chrysene	mg/L	<0.00021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.00020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.037	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.022	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.00025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	1.9	0.000068 J	0.00016	<0.000020
Nitrobenzene	mg/L	<0.00024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.00079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.012	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-79A**	**MW-80B**	**MW-81B**	**MW-82B**
	Sample Name:	**WG-1620-MW79A-20190123**	**WG-1620-MW80B-20190110**	**WG-1620-MW81B-20190110**	**WG-1620-MW82B-20190122**
	Sample Date:	**01/23/2019**	**01/10/2019**	**01/10/2019**	**01/22/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	0.51	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00063 J	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.0133	0.00180 J	0.00116 J	0.00838
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-83B**	**MW-83C**	**MW-84B**	**MW-85C**
	Sample Name:	**WG-1620-MW83B-20190115**	**WG-1620-MW83C-20190115**	**WG-1620-MW84B-20190124**	**WG-1620-MW85C-201290201**
	Sample Date:	**01/15/2019**	**01/15/2019**	**01/24/2019**	**02/01/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.032	<0.00020	0.0024	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.091	<0.00030	0.0051	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.0082	<0.00020	0.00056 J	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	0.100	<0.00030	0.0033	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	0.000087 J	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.00016	<0.000041
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000059
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000043
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.086	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000048
Acenaphthene	mg/L	0.026	<0.000027	0.000032 J	<0.000028
Acenaphthylene	mg/L	0.00034	<0.000015	0.000043 J	<0.000015
Anthracene	mg/L	0.0012	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000051
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000064	<0.000037	<0.000037	<0.000038
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00015 J	0.000060 J	<0.000020	<0.000020
Dibenzofuran	mg/L	0.020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.00051	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.0099	<0.000030	<0.000030	<0.000031
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000026
Naphthalene	mg/L	1.6	<0.00036	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000081
Phenanthrene	mg/L	0.0074	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-83B**	**MW-83C**	**MW-84B**	**MW-85C**
	Sample Name:	**WG-1620-MW83B-20190115**	**WG-1620-MW83C-20190115**	**WG-1620-MW84B-20190124**	**WG-1620-MW85C-201290201**
	Sample Date:	**01/15/2019**	**01/15/2019**	**01/24/2019**	**02/01/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	0.000038 J	<0.000035	<0.000036
Pyrene	mg/L	0.00030	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.0916	0.00616	0.00219	0.00136 J
Lead	mg/L	<0.000600	<0.000600	<0.000600	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-86C**	**MW-86C**	**MW-87C**	**MW-88C**
	Sample Name:	**WG-1620-MW86C-20190111**	**WG-1620-FD02-20190111**	**WG-1620-MW87C-20190122**	**WG-1620-MW88C-20190108**
	Sample Date:	**01/11/2019**	**01/11/2019**	**01/22/2019**	**01/08/2019**
			Duplicate		
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000057	<0.00010	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000072 J	0.00011 J	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.000079 J	<0.000020	<0.000020	<0.000059
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-86C**	**MW-86C**	**MW-87C**	**MW-88C**
	Sample Name:	**WG-1620-MW86C-20190111**	**WG-1620-FD02-20190111**	**WG-1620-MW87C-20190122**	**WG-1620-MW88C-20190108**
	Sample Date:	**01/11/2019**	**01/11/2019**	**01/22/2019**	**01/08/2019**
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.00402	0.00405	0.000587 J	0.000864 J
Lead	mg/L	<0.000600	<0.000600	0.00124 J	<0.000600

Notes:

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

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-89B**	**MW-90B**	**P-11**	**TW-41B**
	Sample Name:	**WG-1620-MW89B-20190122**	**WG-1620-MW90B-20190122**	**WG-1620-P11-20190109**	**WG-1620-TW41B-20190109**
	Sample Date:	**01/22/2019**	**01/22/2019**	**01/09/2019**	**01/09/2019**
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.0020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.0020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.0030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.0030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.0020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.0030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.0098
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	0.058
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.00091
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	0.0023
Benzo(a)anthracene	mg/L	<0.000051	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000097 J
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	0.026
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.0014
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	0.035
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.000045 J	<0.000020	0.061
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000080	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	0.0035

Table 2

Analytical Results Summary
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

	Location ID:	**MW-89B**	**MW-90B**	**P-11**	**TW-41B**
	Sample Name:	**WG-1620-MW89B-20190122**	**WG-1620-MW90B-20190122**	**WG-1620-P11-20190109**	**WG-1620-TW41B-20190109**
	Sample Date:	**01/22/2019**	**01/22/2019**	**01/09/2019**	**01/09/2019**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	0.00056
Metals					
Arsenic	mg/L	0.000683 J	0.00346	0.0183	0.125
Lead	mg/L	<0.000600	<0.000600	0.00192 J	<0.000600

Notes:

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

Table 3

Analytical Methods
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270	Water	7	40
Metals	SW-846 6020A	Water	-	180

Notes:

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

Method References:

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

Table 4

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Parameter	Field Blank ID	Blank Date (dd/mm/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WQ-1620-FB01-20190108	01/08/2019	Naphthalene	0.000096 J	WG-1620-MW13-20190108	0.00022	<0.00022	mg/L
					WG-1620-MW15A-20190108	0.00032	<0.00032	mg/L
					WG-1620-MW15C-20190108	0.00032	<0.00032	mg/L
					WG-1620-MW39B-20190108	0.000092 J	<0.000092	mg/L
					WG-1620-MW88C-20190108	0.000059 J	<0.000059	mg/L
SVOCs	WQ-1620-FB02-20190109	01/09/2019	Naphthalene	0.00031	WG-1620-MW12A-20190109	0.00026	<0.00026	mg/L
					WG-1620-MW12C-20190109	0.00017	<0.00017	mg/L
SVOCs	WQ-1620-FB03-20190111	01/11/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.000058 J	WG-1620-FD02-20190111	0.00010 J	<0.00010	mg/L
					WG-1620-MW60A-20190111	0.000092 J	<0.000092	mg/L
					WG-1620-MW86C-20190111	0.000057 J	<0.000057	mg/L
SVOCs	WQ-1620-FB04-20190114	01/14/2019	2-Methylnaphthalene	0.00021	WG-1620-MW28A-20190114	0.000055 J	<0.000055	mg/L
			Acenaphthylene	0.000045 J	WG-1620-MW54C-20190114	0.00020	<0.00020	mg/L
			Dibenzofuran	0.000026 J	WG-1620-MW28A-20190114	0.00011	<0.00011	mg/L
			Naphthalene	0.0031	WG-1620-MW28A-20190114	0.0024	<0.0024	mg/L
					WG-1620-MW36A-20190114	0.000062 J	<0.000062	mg/L
					WG-1620-MW53C-20190114	0.00025	<0.00025	mg/L
SVOCs	WQ-1620-FB05-20190115	01/15/2019	2-Methylnaphthalene	0.000046 J	WG-1620-MW25A-20190115	0.000051 J	<0.000051	mg/L
					WG-1620-MW26A-20190115	0.000090 J	<0.000090	mg/L
					WG-1620-MW34CR-20190115	0.000079 J	<0.000079	mg/L
					WG-1620-MW68C-20190115	0.000077 J	<0.000077	mg/L
			bis(2-Ethylhexyl)phthalate (DEHP)	0.000057 J	WG-1620-MW25A-20190115	0.000078 J	<0.000078	mg/L
					WG-1620-MW35B-20190115	0.00014 J	<0.00014	mg/L
					WG-1620-MW68C-20190115	0.000044 J	<0.000044	mg/L

Table 4

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
Site Wide Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2019

Parameter	Field Blank ID	Blank Date (dd/mm/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WQ-1620-FB05-20190115	01/15/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.000057 J	WG-1620-MW83B-20190115	0.000064 J	<0.000064	mg/L
			Naphthalene	0.00056	WG-1620-MW25A-20190115	0.00029	<0.00029	mg/L
					WG-1620-MW26A-20190115	0.00049	<0.00049	mg/L
					WG-1620-MW34CR-20190115	0.00069	<0.00069	mg/L
					WG-1620-MW68C-20190115	0.00079	<0.00079	mg/L
					WG-1620-MW83C-20190115	0.00036	<0.00036	mg/L
SVOCs	WQ-1620-FB07-20190123	01/23/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.000053 J	WG-1620-MW32AR-20190123	0.000044 J	<0.000044	mg/L
					WG-1620-MW47C-20190123	0.000056 J	<0.000056	mg/L
					WG-1620-MW49A-20190123	0.000055 J	<0.000055	mg/L
					WG-1620-MW58A-20190123	0.000070 J	<0.000070	mg/L
					WG-1620-MW59B-20190123	0.000056 J	<0.000056	mg/L
					WG-1620-MW76C-20190123	0.000091 J	<0.000091	mg/L
SVOCs	WQ-1620-FB08-20190124	01/24/2019	2,4-Dimethylphenol	0.00057	WG-1620-MW19C-20190124	0.00032	<0.00032	mg/L
					WG-1620-MW65D-20190124	0.000090 J	<0.000090	mg/L
					WG-1620-MW84B-20190124	0.00016 J	<0.00016	mg/L
			Naphthalene	0.00075	WG-1620-MW19C-20190124	0.00036	<0.00036	mg/L
					WG-1620-MW65D-20190124	0.0026	<0.0026	mg/L
			Phenol	0.00041	WG-1620-MW19C-20190124	0.00013 J	<0.00013	mg/L
					WG-1620-MW65D-20190124	0.00019 J	<0.00019	mg/L

Notes:

SVOCs - Semi-volatile Organic Compounds
< - Not detected at the associated reporting limit
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

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

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

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704231-18-21
Effective Date: 5/1/2018
Expiration Date: 4/30/2019

Stephanie Bergeron Perdue

Executive Director Texas Commission on Environmental Quality

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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 200.8

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 110.1

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	10005206

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 150.1

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10008409

Method EPA 160.1

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	10009208

Method EPA 160.2

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	10009606

Method EPA 160.3

Analyte	AB	Analyte ID	Method ID
Residue-total (total solids)	TX	1950	10010001

Method EPA 160.4

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

Method EPA 1613

Analyte	AB	Analyte ID	Method ID

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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 305.1

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	10276207

Method EPA 310.1

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

Method EPA 325.1

Analyte	AB	Analyte ID	Method ID
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 335.3

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061004

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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 351.3

Analyte	AB	Analyte ID	Method ID
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	10065802

Method EPA 360.1

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	10069008

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 405.1

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	10075602
Carbonaceous BOD, CBOD	TX	1555	10075602

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 425.1

Analyte	AB	Analyte ID	Method ID
Surfactants - MBAS	TX	2025	10080601

Method EPA 602

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10102202
Ethylbenzene	TX	4765	10102202
m+p-xylene	TX	5240	10102202
Methyl tert-butyl ether (MTBE)	TX	5000	10102202
o-Xylene	TX	5250	10102202
Toluene	TX	5140	10102202
Xylene (total)	TX	5260	10102202

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

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

Method EPA 8081

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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 (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8280

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10186808
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10186808
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10186808
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10186808
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10186808
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10186808
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10186808
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10186808
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10186808
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10186808
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10186808
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10186808
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10186808
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10186808
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10186808
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10186808
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10186808
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10186808
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10186808
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10186808
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10186808
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10186808
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10186808
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10186808
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10186808

Method EPA 8290

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

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
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 8315

Analyte	**AB**	**Analyte ID**	**Method ID**
Formaldehyde	TX	4815	10187801

Method EPA 8316

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

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 9012

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10243206
Total cyanide	TX	1645	10243206

Method EPA 9014

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

Method EPA 9038

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10196802

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

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

Method EPA 9060

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

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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: ***Non-Potable Water***

n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

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

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

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

Method SM 2320 B

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

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID
Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048004

Method SM 2540 B

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

Method SM 2540 C

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

Method SM 2540 D

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

Method SM 3500-Cr B

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

Method SM 4500-Cl F

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

Method SM 4500-Cl⁻ E

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	20019209

Method SM 4500-CN⁻ C

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20020808

Method SM 4500-CN⁻ E

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20021209

Method SM 4500-CN⁻ G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20021607

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

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

Method SM 4500-NH3 F

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

Method SM 4500-O G

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

Method SM 4500-P E

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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: ***Non-Potable Water***

Method SM 4500-S2^{-} F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

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

Method SM 4500-SO3^{-} B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

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

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

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

Method SM 5540 C

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

Method TCEQ 1005

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

Method ASTM D2216

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

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

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

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

Method EPA 300.0

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

Method EPA 310.1

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

Method EPA 350.3

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

Method EPA 365.3

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

Method EPA 6020

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	T104704231-18-21
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	Expiration Date:	4/30/2019
10450 Stancliff Road, Suite 210 Houston, TX 77099-4338	Issue Date:	5/1/2018

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

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

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

Method EPA 7196

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

Method EPA 7470

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10166004

Method EPA 8015

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	T104704231-18-21
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	Expiration Date:	4/30/2019
10450 Stancliff Road, Suite 210 Houston, TX 77099-4338	Issue Date:	5/1/2018

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

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

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

Method EPA 8021

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

Method EPA 8081

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

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

Method EPA 8082

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

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

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
2,2-Dichloropropane	TX	4665	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

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
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

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
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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
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 8280

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10186808
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10186808
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10186808
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10186808
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10186808
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10186808
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10186808
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10186808
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10186808

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10186808
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10186808
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10186808
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10186808
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10186808
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10186808
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10186808
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10186808
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10186808
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10186808
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10186808
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10186808
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10186808
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10186808
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10186808
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10186808

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-18-21

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

Expiration Date: 4/30/2019

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

Issue Date: 5/1/2018

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

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

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 8315

Analyte	AB	Analyte ID	Method ID
Formaldehyde	TX	4815	10187801

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

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

Method EPA 9014

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

Method EPA 9038

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

Method EPA 9040

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

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

	Certificate:	**T104704231-18-21**
ALS Laboratory Group, Environmental Services Division (Houston, Texas)	**Expiration Date:**	**4/30/2019**
10450 Stancliff Road, Suite 210 **Houston, TX 77099-4338**	**Issue Date:**	**5/1/2018**

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

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

Sulfate	TX	2000	10199209

Method EPA 9060

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

Method EPA 9065

Analyte	**AB**	**Analyte ID**	**Method ID**
Total phenolics	TX	1905	10200405

Method EPA 9071

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

Method EPA 9095

Analyte	**AB**	**Analyte ID**	**Method ID**
Paint Filter Liquids Test	TX	10312	10204009

Method EPA 9250

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	10207202

Method SM 2320 B

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

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 G

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20005203

Method SSA/ASA Part 3:34

Analyte	**AB**	**Analyte ID**	**Method ID**
Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34

Method TCEQ 1005

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

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

January 24, 2019

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

Work Order: **HS19010437**

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

Dear Eric,

ALS Environmental received 14 sample(s) on Jan 10, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010437**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010437**	

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: 01/24/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19010437					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 136572,136574,136587,R331023,R331030					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			2
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			3
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			4
		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: 01/24/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19010437				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 136572,136574,136587,R331023,R331030				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

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

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/24/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010437
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136572,136574,136587,R331023,R331030

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW15A-20190108, WG-1620-MW20A-20190108, WG-1620-MW40B-20190108; the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 136673, Texas TPH by TX1005, LCS/LCSD RPD was above the RPD limit for surrogates 2-Fluorobiphenyl and Trifluoromethyl benzene. The individual recoveries were in control.
3	Batches 136572 and 136574, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for the batches.
4	Batch R331030, Volatile Organics Method SW8260, sample HS19010488-02, MS and MSD were 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: HS19010437

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19010437-01	WG-1620-MW13-20190108	Groundwater		08-Jan-2019 09:45	10-Jan-2019 09:05	☐
HS19010437-02	WG-1620-MW14-20190108	Groundwater		08-Jan-2019 10:40	10-Jan-2019 09:05	☐
HS19010437-03	WG-1620-MW15A-20190108	Groundwater		08-Jan-2019 11:30	10-Jan-2019 09:05	☐
HS19010437-04	WG-1620-MW15C-20190108	Groundwater		08-Jan-2019 12:20	10-Jan-2019 09:05	☐
HS19010437-05	WG-1620-MW15B-20190108	Groundwater		08-Jan-2019 13:05	10-Jan-2019 09:05	☐
HS19010437-06	WG-1620-MW20A-20190108	Groundwater		08-Jan-2019 15:00	10-Jan-2019 09:05	☐
HS19010437-07	WG-1620-MW88C-20190108	Groundwater		08-Jan-2019 16:00	10-Jan-2019 09:05	☐
HS19010437-08	WG-1620-MW42B-20190108	Groundwater		08-Jan-2019 16:55	10-Jan-2019 09:05	☐
HS19010437-09	WG-1620-MW40B-20190108	Groundwater		08-Jan-2019 17:45	10-Jan-2019 09:05	☐
HS19010437-10	WG-1620-MW39B-20190108	Groundwater		08-Jan-2019 18:45	10-Jan-2019 09:05	☐
HS19010437-11	WG-1620-MW12A-20190109	Groundwater		09-Jan-2019 07:35	10-Jan-2019 09:05	☐
HS19010437-12	WG-1620-MW12C-20190109	Groundwater		09-Jan-2019 08:25	10-Jan-2019 09:05	☐
HS19010437-13	WQ-1620-FB01-20190108	Water		08-Jan-2019 19:00	10-Jan-2019 09:05	☐
HS19010437-14	WQ-1620-TB01-20190108	Water	ALS-121118-63	09-Jan-2019 00:00	10-Jan-2019 09:05	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW13-20190108	Lab ID:HS19010437-01
Collection Date:	08-Jan-2019 09:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 15:27
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 15:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 15:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 15:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 15:27
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 15:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 15:27
Surr: 1,2-Dichloroethane-d4	*91.8*			*70-126*	*%REC*	*1*	*14-Jan-2019 15:27*
Surr: 4-Bromofluorobenzene	*92.9*			*81-113*	*%REC*	*1*	*14-Jan-2019 15:27*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2019 15:27*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2019 15:27*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW13-20190108	Lab ID:HS19010437-01
Collection Date:	08-Jan-2019 09:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 13:45
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 13:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 13:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 13:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 13:45
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 13:45
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 13:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 13:45
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 13:45
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 13:45
Anthracene	**0.00039**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 13:45
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 13:45
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 13:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 13:45
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 13:45
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 13:45
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 13:45
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 13:45
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 13:45
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 13:45
Naphthalene	**0.00022**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 13:45
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 13:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 13:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 13:45
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 13:45
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 13:45
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 13:45
Surr: 2,4,6-Tribromophenol	*58.1*			*34-129*	*%REC*	*1*	*22-Jan-2019 13:45*
Surr: 2-Fluorobiphenyl	*52.4*			*40-125*	*%REC*	*1*	*22-Jan-2019 13:45*
Surr: 2-Fluorophenol	*40.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 13:45*
Surr: 4-Terphenyl-d14	*62.5*			*40-135*	*%REC*	*1*	*22-Jan-2019 13:45*
Surr: Nitrobenzene-d5	*45.3*			*41-120*	*%REC*	*1*	*22-Jan-2019 13:45*
Surr: Phenol-d6	*54.1*			*20-120*	*%REC*	*1*	*22-Jan-2019 13:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.0602**		**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:42
Lead	**0.00133**	J	**0.000600**	**0.00200**	**mg/L**	1	21-Jan-2019 15:32

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW14-20190108	Lab ID:HS19010437-02
Collection Date:	08-Jan-2019 10:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 16:39
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 16:39
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 16:39
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 16:39
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 16:39
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 16:39
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 16:39
Surr: 1,2-Dichloroethane-d4	*96.9*			*70-126*	*%REC*	*1*	*14-Jan-2019 16:39*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 16:39*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*14-Jan-2019 16:39*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*14-Jan-2019 16:39*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW14-20190108	Lab ID:HS19010437-02
Collection Date:	08-Jan-2019 10:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:04
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 14:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 14:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 14:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:04
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 14:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 14:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 14:04
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 14:04
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 14:04
Anthracene	**0.000052**	J	**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 14:04
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 14:04
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 14:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 14:04
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 14:04
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 14:04
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 14:04
Di-n-butyl phthalate	**0.000022**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jan-2019 14:04
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 14:04
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 14:04
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 14:04
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 14:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 14:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 14:04
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 14:04
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 14:04
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 14:04
Surr: 2,4,6-Tribromophenol	*57.9*			*34-129*	*%REC*	*1*	*22-Jan-2019 14:04*
Surr: 2-Fluorobiphenyl	*59.0*			*40-125*	*%REC*	*1*	*22-Jan-2019 14:04*
Surr: 2-Fluorophenol	*56.3*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:04*
Surr: 4-Terphenyl-d14	*60.8*			*40-135*	*%REC*	*1*	*22-Jan-2019 14:04*
Surr: Nitrobenzene-d5	*60.1*			*41-120*	*%REC*	*1*	*22-Jan-2019 14:04*
Surr: Phenol-d6	*64.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.000752**	J	**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:44
Lead	U		0.000600	0.00200	mg/L	1	21-Jan-2019 15:34

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15A-20190108	Lab ID:HS19010437-03
Collection Date:	08-Jan-2019 11:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jan-2019 17:02
Benzene	U		0.00020	0.0010	mg/L	1	14-Jan-2019 17:02
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 17:02
Ethylbenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 17:02
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jan-2019 17:02
Toluene	U		0.00020	0.0010	mg/L	1	14-Jan-2019 17:02
Xylenes, Total	**0.00080**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2019 17:02
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*1*	*14-Jan-2019 17:02*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 17:02*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2019 17:02*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*14-Jan-2019 17:02*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15A-20190108	Lab ID:HS19010437-03
Collection Date:	08-Jan-2019 11:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:23
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 14:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 14:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 14:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:23
2-Methylnaphthalene	**0.0098**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 14:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 14:23
Acenaphthene	**0.10**		**0.0027**	**0.010**	**mg/L**	100	24-Jan-2019 15:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 14:23
Anthracene	**0.0025**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 14:23
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 14:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 14:23
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 14:23
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 14:23
Dibenzofuran	**0.023**		**0.00020**	**0.0010**	**mg/L**	10	23-Jan-2019 15:05
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 14:23
Fluoranthene	**0.0012**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
Fluorene	**0.038**		**0.00030**	**0.0010**	**mg/L**	10	23-Jan-2019 15:05
Naphthalene	**0.00032**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 14:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 14:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 14:23
Phenanthrene	**0.0090**		**0.000021**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 14:23
Pyrene	**0.00051**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2019 14:23
Surr: 2,4,6-Tribromophenol	*62.1*			*34-129*	*%REC*	*10*	*23-Jan-2019 15:05*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: 2,4,6-Tribromophenol	*47.6*			*34-129*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: 2-Fluorobiphenyl	*45.3*			*40-125*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: 2-Fluorobiphenyl	*60.9*			*40-125*	*%REC*	*10*	*23-Jan-2019 15:05*
Surr: 2-Fluorophenol	*57.7*			*20-120*	*%REC*	*10*	*23-Jan-2019 15:05*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: 2-Fluorophenol	*47.6*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: 4-Terphenyl-d14	*60.3*			*40-135*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: 4-Terphenyl-d14	*67.5*			*40-135*	*%REC*	*10*	*23-Jan-2019 15:05*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15A-20190108	Lab ID:HS19010437-03
Collection Date:	08-Jan-2019 11:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*59.8*			*41-120*	*%REC*	*10*	*23-Jan-2019 15:05*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: Nitrobenzene-d5	*53.1*			*41-120*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: Phenol-d6	*56.1*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:23*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 15:16*
Surr: Phenol-d6	*58.6*			*20-120*	*%REC*	*10*	*23-Jan-2019 15:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.0270**		**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:46
Lead	**0.000722**	J	**0.000600**	**0.00200**	**mg/L**	1	21-Jan-2019 15:36

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

Client:	Golder Associates Inc.		**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:	HS19010437
Sample ID:	WG-1620-MW15C-20190108	Lab ID:	HS19010437-04
Collection Date:	08-Jan-2019 12:20	Matrix:	Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jan-2019 17:26
Benzene	**0.00058**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2019 17:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 17:26
Ethylbenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 17:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jan-2019 17:26
Toluene	U		0.00020	0.0010	mg/L	1	14-Jan-2019 17:26
Xylenes, Total	U		0.00030	0.0010	mg/L	1	14-Jan-2019 17:26
Surr: 1,2-Dichloroethane-d4	*96.1*			*70-126*	*%REC*	*1*	*14-Jan-2019 17:26*
Surr: 4-Bromofluorobenzene	*98.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 17:26*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jan-2019 17:26*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*14-Jan-2019 17:26*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15C-20190108	Lab ID:HS19010437-04
Collection Date:	08-Jan-2019 12:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 14:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 14:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 14:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 14:43
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 14:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 14:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 14:43
Acenaphthene	**0.020**		**0.00027**	**0.0010**	**mg/L**	10	23-Jan-2019 15:25
Acenaphthylene	**0.0014**		**0.000015**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Anthracene	**0.00031**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 14:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 14:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 14:43
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 14:43
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 14:43
Dibenzofuran	**0.0053**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 14:43
Fluoranthene	**0.00075**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Fluorene	**0.00056**		**0.000030**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Naphthalene	**0.00032**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 14:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 14:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 14:43
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 14:43
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 14:43
Pyrene	**0.00041**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2019 14:43
Surr: 2,4,6-Tribromophenol	*46.7*			*34-129*	*%REC*	*1*	*22-Jan-2019 14:43*
Surr: 2,4,6-Tribromophenol	*51.4*			*34-129*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: 2-Fluorobiphenyl	*41.6*			*40-125*	*%REC*	*1*	*22-Jan-2019 14:43*
Surr: 2-Fluorobiphenyl	*48.6*			*40-125*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: 2-Fluorophenol	*43.2*			*20-120*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: 2-Fluorophenol	*40.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:43*
Surr: 4-Terphenyl-d14	*61.4*			*40-135*	*%REC*	*1*	*22-Jan-2019 14:43*
Surr: 4-Terphenyl-d14	*68.2*			*40-135*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: Nitrobenzene-d5	*48.2*			*41-120*	*%REC*	*1*	*22-Jan-2019 14:43*
Surr: Nitrobenzene-d5	*52.9*			*41-120*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: Phenol-d6	*49.0*			*20-120*	*%REC*	*10*	*23-Jan-2019 15:25*
Surr: Phenol-d6	*46.7*			*20-120*	*%REC*	*1*	*22-Jan-2019 14:43*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15C-20190108	Lab ID:HS19010437-04
Collection Date:	08-Jan-2019 12:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.000629**	J	**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:48
Lead	U		0.000600	0.00200	mg/L	1	21-Jan-2019 15:38

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW15B-20190108	Lab ID:HS19010437-05
Collection Date:	08-Jan-2019 13:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 17:50
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 17:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 17:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 17:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 17:50
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 17:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 17:50
Surr: 1,2-Dichloroethane-d4	*95.9*			*70-126*	*%REC*	*1*	*14-Jan-2019 17:50*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*14-Jan-2019 17:50*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2019 17:50*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*14-Jan-2019 17:50*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437	
Sample ID:	WG-1620-MW15B-20190108	Lab ID:HS19010437-05	
Collection Date:	08-Jan-2019 13:05	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:02
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 15:02
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	22-Jan-2019 15:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 15:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:02
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 15:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 15:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 15:02
Acenaphthene	**0.0026**		**0.000027**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Acenaphthylene	**0.00015**		**0.000015**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Anthracene	**0.00023**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	22-Jan-2019 15:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 15:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 15:02
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 15:02
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 15:02
Dibenzofuran	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Di-n-butyl phthalate	**0.000022**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jan-2019 15:02
Fluoranthene	**0.00045**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Fluorene	**0.000055**	J	**0.000030**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 15:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 15:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 15:02
Pentachlorophenol	U		0.000080	0.00020	mg/L	1	22-Jan-2019 15:02
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 15:02
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 15:02
Pyrene	**0.00027**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2019 15:02
Surr: 2,4,6-Tribromophenol	*59.1*			*34-129*	*%REC*	*1*	*22-Jan-2019 15:02*
Surr: 2-Fluorobiphenyl	*55.9*			*40-125*	*%REC*	*1*	*22-Jan-2019 15:02*
Surr: 2-Fluorophenol	*53.6*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:02*
Surr: 4-Terphenyl-d14	*63.0*			*40-135*	*%REC*	*1*	*22-Jan-2019 15:02*
Surr: Nitrobenzene-d5	*57.7*			*41-120*	*%REC*	*1*	*22-Jan-2019 15:02*
Surr: Phenol-d6	*58.9*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.00244**		**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:54
Lead	U		0.000600	0.00200	mg/L	1	18-Jan-2019 23:54

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW20A-20190108	Lab ID:HS19010437-06
Collection Date:	08-Jan-2019 15:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jan-2019 18:14
Benzene	**0.024**		**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2019 18:14
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 18:14
Ethylbenzene	**0.024**		**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2019 18:14
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jan-2019 18:14
Toluene	**0.00077**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2019 18:14
Xylenes, Total	**0.022**		**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2019 18:14
Surr: 1,2-Dichloroethane-d4	*94.9*			*70-126*	*%REC*	*1*	*14-Jan-2019 18:14*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*14-Jan-2019 18:14*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jan-2019 18:14*
Surr: Toluene-d8	*97.2*			*82-127*	*%REC*	*1*	*14-Jan-2019 18:14*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437	
Sample ID:	WG-1620-MW20A-20190108	Lab ID:HS19010437-06	
Collection Date:	08-Jan-2019 15:00	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:21
2,4-Dimethylphenol	**0.0076**		**0.000040**	**0.00020**	**mg/L**	1	22-Jan-2019 15:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 15:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 15:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:21
2-Methylnaphthalene	**0.069**		**0.00019**	**0.0010**	**mg/L**	10	23-Jan-2019 21:28
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 15:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 15:21
Acenaphthene	**0.10**		**0.0027**	**0.010**	**mg/L**	100	23-Jan-2019 16:22
Acenaphthylene	**0.00057**		**0.000015**	**0.00010**	**mg/L**	1	22-Jan-2019 15:21
Anthracene	**0.0058**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2019 15:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 15:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 15:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 15:21
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 15:21
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 15:21
Dibenzofuran	**0.067**		**0.00020**	**0.0010**	**mg/L**	10	23-Jan-2019 21:28
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 15:21
Fluoranthene	**0.00041**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2019 15:21
Fluorene	**0.062**		**0.00030**	**0.0010**	**mg/L**	10	23-Jan-2019 21:28
Naphthalene	**1.4**		**0.020**	**0.10**	**mg/L**	1000	23-Jan-2019 16:41
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 15:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 15:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 15:21
Phenanthrene	**0.025**		**0.00021**	**0.0010**	**mg/L**	10	23-Jan-2019 21:28
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 15:21
Pyrene	**0.00025**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2019 15:21
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: 2,4,6-Tribromophenol	*60.2*			*34-129*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*23-Jan-2019 16:22*
Surr: 2,4,6-Tribromophenol	*44.2*			*34-129*	*%REC*	*1*	*22-Jan-2019 15:21*
Surr: 2-Fluorobiphenyl	*40.7*			*40-125*	*%REC*	*1*	*22-Jan-2019 15:21*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*23-Jan-2019 16:22*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: 2-Fluorobiphenyl	*59.2*			*40-125*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*23-Jan-2019 16:22*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: 2-Fluorophenol	*57.4*			*20-120*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: 2-Fluorophenol	*60.4*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:21*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW20A-20190108	Lab ID:HS19010437-06
Collection Date:	08-Jan-2019 15:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*59.9*			*40-135*	*%REC*	*1*	*22-Jan-2019 15:21*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*23-Jan-2019 16:22*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: 4-Terphenyl-d14	*72.1*			*40-135*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*23-Jan-2019 16:22*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: Nitrobenzene-d5	*61.4*			*41-120*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: Nitrobenzene-d5	*60.5*			*41-120*	*%REC*	*1*	*22-Jan-2019 15:21*
Surr: Phenol-d6	*56.6*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:21*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*23-Jan-2019 16:41*
Surr: Phenol-d6	*60.1*			*20-120*	*%REC*	*10*	*23-Jan-2019 21:28*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*23-Jan-2019 16:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.00788**		**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:56
Lead	U		0.000600	0.00200	mg/L	1	18-Jan-2019 23:56

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW88C-20190108	Lab ID:HS19010437-07
Collection Date:	08-Jan-2019 16:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 18:38
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 18:38
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 18:38
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 18:38
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 18:38
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 18:38
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 18:38
Surr: 1,2-Dichloroethane-d4	*96.8*			*70-126*	*%REC*	*1*	*14-Jan-2019 18:38*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*14-Jan-2019 18:38*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2019 18:38*
Surr: Toluene-d8	*98.2*			*82-127*	*%REC*	*1*	*14-Jan-2019 18:38*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW88C-20190108	Lab ID:HS19010437-07
Collection Date:	08-Jan-2019 16:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 15:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 15:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 15:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 15:40
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 15:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 15:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 15:40
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 15:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 15:40
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jan-2019 15:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 15:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 15:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 15:40
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 15:40
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 15:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 15:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 15:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 15:40
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 15:40
Naphthalene	**0.000059**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2019 15:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 15:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 15:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 15:40
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 15:40
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 15:40
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 15:40
Surr: 2,4,6-Tribromophenol	*47.4*			*34-129*	*%REC*	*1*	*22-Jan-2019 15:40*
Surr: 2-Fluorobiphenyl	*40.4*			*40-125*	*%REC*	*1*	*22-Jan-2019 15:40*
Surr: 2-Fluorophenol	*37.2*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:40*
Surr: 4-Terphenyl-d14	*55.6*			*40-135*	*%REC*	*1*	*22-Jan-2019 15:40*
Surr: Nitrobenzene-d5	*42.6*			*41-120*	*%REC*	*1*	*22-Jan-2019 15:40*
Surr: Phenol-d6	*41.2*			*20-120*	*%REC*	*1*	*22-Jan-2019 15:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.000864**	J	**0.000400**	**0.00200**	**mg/L**	1	18-Jan-2019 23:58
Lead	U		0.000600	0.00200	mg/L	1	18-Jan-2019 23:58

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW42B-20190108	Lab ID:HS19010437-08
Collection Date:	08-Jan-2019 16:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:02
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:02
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:02
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:02
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 19:02
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:02
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:02
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*14-Jan-2019 19:02*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*14-Jan-2019 19:02*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jan-2019 19:02*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*14-Jan-2019 19:02*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW42B-20190108	Lab ID:HS19010437-08
Collection Date:	08-Jan-2019 16:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:03
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 18:03
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 18:03
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 18:03
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:03
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 18:03
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:03
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 18:03
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 18:03
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 18:03
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 18:03
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 18:03
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:03
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 18:03
Bis(2-ethylhexyl)phthalate	**0.000061**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 18:03
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 18:03
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:03
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:03
Fluoranthene	**0.00011**		**0.000010**	**0.00010**	**mg/L**	1	18-Jan-2019 18:03
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 18:03
Naphthalene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:03
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 18:03
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 18:03
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 18:03
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 18:03
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 18:03
Pyrene	**0.00010**		**0.000019**	**0.00010**	**mg/L**	1	18-Jan-2019 18:03
Surr: 2,4,6-Tribromophenol	*58.9*			*34-129*	*%REC*	*1*	*18-Jan-2019 18:03*
Surr: 2-Fluorobiphenyl	*43.4*			*40-125*	*%REC*	*1*	*18-Jan-2019 18:03*
Surr: 2-Fluorophenol	*34.7*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:03*
Surr: 4-Terphenyl-d14	*69.9*			*40-135*	*%REC*	*1*	*18-Jan-2019 18:03*
Surr: Nitrobenzene-d5	*41.5*			*41-120*	*%REC*	*1*	*18-Jan-2019 18:03*
Surr: Phenol-d6	*47.5*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:03*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.00216**		**0.000400**	**0.00200**	**mg/L**	1	19-Jan-2019 00:00
Lead	**0.00412**		**0.000600**	**0.00200**	**mg/L**	1	19-Jan-2019 00:00

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW40B-20190108	Lab ID:HS19010437-09
Collection Date:	08-Jan-2019 17:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jan-2019 19:26
Benzene	**0.0063**		**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2019 19:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2019 19:26
Ethylbenzene	**0.041**		**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2019 19:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jan-2019 19:26
Toluene	**0.0048**		**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2019 19:26
Xylenes, Total	**0.052**		**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2019 19:26
Surr: 1,2-Dichloroethane-d4	*95.6*			*70-126*	*%REC*	*1*	*14-Jan-2019 19:26*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*14-Jan-2019 19:26*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2019 19:26*
Surr: Toluene-d8	*97.1*			*82-127*	*%REC*	*1*	*14-Jan-2019 19:26*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW40B-20190108	Lab ID:HS19010437-09
Collection Date:	08-Jan-2019 17:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:23
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 18:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 18:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 18:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:23
2-Methylnaphthalene	**0.077**		**0.00019**	**0.0010**	**mg/L**	10	21-Jan-2019 16:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 18:23
Acenaphthene	**0.12**		**0.0027**	**0.010**	**mg/L**	100	21-Jan-2019 16:27
Acenaphthylene	**0.00083**		**0.000015**	**0.00010**	**mg/L**	1	18-Jan-2019 18:23
Anthracene	**0.0070**		**0.000014**	**0.00010**	**mg/L**	1	18-Jan-2019 18:23
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 18:23
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 18:23
Bis(2-ethylhexyl)phthalate	**0.000079**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 18:23
Chrysene	**0.000045**	J	**0.000021**	**0.00010**	**mg/L**	1	18-Jan-2019 18:23
Dibenzofuran	**0.069**		**0.00020**	**0.0010**	**mg/L**	10	21-Jan-2019 16:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:23
Fluoranthene	**0.0041**		**0.000010**	**0.00010**	**mg/L**	1	18-Jan-2019 18:23
Fluorene	**0.087**		**0.00030**	**0.0010**	**mg/L**	10	21-Jan-2019 16:07
Naphthalene	**1.3**		**0.020**	**0.10**	**mg/L**	1000	24-Jan-2019 14:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 18:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 18:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 18:23
Phenanthrene	**0.068**		**0.00021**	**0.0010**	**mg/L**	10	21-Jan-2019 16:07
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 18:23
Pyrene	**0.0020**		**0.000019**	**0.00010**	**mg/L**	1	18-Jan-2019 18:23
Surr: 2,4,6-Tribromophenol	*74.0*			*34-129*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: 2,4,6-Tribromophenol	*57.7*			*34-129*	*%REC*	*1*	*18-Jan-2019 18:23*
Surr: 2-Fluorobiphenyl	*45.4*			*40-125*	*%REC*	*1*	*18-Jan-2019 18:23*
Surr: 2-Fluorobiphenyl	*69.3*			*40-125*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: 2-Fluorophenol	*63.6*			*20-120*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: 2-Fluorophenol	*63.5*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:23*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW40B-20190108	Lab ID:HS19010437-09
Collection Date:	08-Jan-2019 17:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*96.8*			*40-135*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: 4-Terphenyl-d14	*69.3*			*40-135*	*%REC*	*1*	*18-Jan-2019 18:23*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: Nitrobenzene-d5	*42.0*			*41-120*	*%REC*	*1*	*18-Jan-2019 18:23*
Surr: Nitrobenzene-d5	*60.5*			*41-120*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 14:56*
Surr: Phenol-d6	*62.7*			*20-120*	*%REC*	*10*	*21-Jan-2019 16:07*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*21-Jan-2019 16:27*
Surr: Phenol-d6	*50.3*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.0850**		**0.000400**	**0.00200**	**mg/L**	1	19-Jan-2019 00:02
Lead	U		0.000600	0.00200	mg/L	1	19-Jan-2019 00:02

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW39B-20190108	Lab ID:HS19010437-10
Collection Date:	08-Jan-2019 18:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:50
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 19:50
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 19:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 19:50
Surr: 1,2-Dichloroethane-d4	*95.8*			*70-126*	*%REC*	*1*	*14-Jan-2019 19:50*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*14-Jan-2019 19:50*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2019 19:50*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*14-Jan-2019 19:50*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437	
Sample ID:	WG-1620-MW39B-20190108	Lab ID:HS19010437-10	
Collection Date:	08-Jan-2019 18:45	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:42
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 18:42
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 18:42
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 18:42
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 18:42
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 18:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:42
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 18:42
Acenaphthene	**0.00062**		**0.000027**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 18:42
Anthracene	**0.00016**		**0.000014**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 18:42
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:42
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 18:42
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jan-2019 18:42
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 18:42
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 18:42
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 18:42
Fluoranthene	**0.000067**	J	**0.000010**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 18:42
Naphthalene	**0.000092**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 18:42
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 18:42
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 18:42
Phenanthrene	**0.000039**	J	**0.000021**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 18:42
Pyrene	**0.000052**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jan-2019 18:42
Surr: 2,4,6-Tribromophenol	*70.2*			*34-129*	*%REC*	*1*	*18-Jan-2019 18:42*
Surr: 2-Fluorobiphenyl	*67.6*			*40-125*	*%REC*	*1*	*18-Jan-2019 18:42*
Surr: 2-Fluorophenol	*60.3*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:42*
Surr: 4-Terphenyl-d14	*73.1*			*40-135*	*%REC*	*1*	*18-Jan-2019 18:42*
Surr: Nitrobenzene-d5	*62.9*			*41-120*	*%REC*	*1*	*18-Jan-2019 18:42*
Surr: Phenol-d6	*64.3*			*20-120*	*%REC*	*1*	*18-Jan-2019 18:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.00365**		**0.000400**	**0.00200**	**mg/L**	1	19-Jan-2019 00:04
Lead	U		0.000600	0.00200	mg/L	1	19-Jan-2019 00:04

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW12A-20190109	Lab ID:HS19010437-11
Collection Date:	09-Jan-2019 07:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:14
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:14
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:14
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:14
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 20:14
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:14
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:14
Surr: 1,2-Dichloroethane-d4	*94.7*			*70-126*	*%REC*	*1*	*14-Jan-2019 20:14*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*14-Jan-2019 20:14*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2019 20:14*
Surr: Toluene-d8	*99.3*			*82-127*	*%REC*	*1*	*14-Jan-2019 20:14*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437	
Sample ID:	WG-1620-MW12A-20190109	Lab ID:HS19010437-11	
Collection Date:	09-Jan-2019 07:35	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 19:02
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 19:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 19:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 19:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 19:02
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 19:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 19:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 19:02
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 19:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 19:02
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 19:02
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 19:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 19:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 19:02
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jan-2019 19:02
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 19:02
Dibenzofuran	**0.000031**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 19:02
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 19:02
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 19:02
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 19:02
Naphthalene	**0.00026**		**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 19:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 19:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 19:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 19:02
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 19:02
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 19:02
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 19:02
Surr: 2,4,6-Tribromophenol	*59.9*			*34-129*	*%REC*	*1*	*18-Jan-2019 19:02*
Surr: 2-Fluorobiphenyl	*54.5*			*40-125*	*%REC*	*1*	*18-Jan-2019 19:02*
Surr: 2-Fluorophenol	*52.2*			*20-120*	*%REC*	*1*	*18-Jan-2019 19:02*
Surr: 4-Terphenyl-d14	*77.0*			*40-135*	*%REC*	*1*	*18-Jan-2019 19:02*
Surr: Nitrobenzene-d5	*48.6*			*41-120*	*%REC*	*1*	*18-Jan-2019 19:02*
Surr: Phenol-d6	*52.0*			*20-120*	*%REC*	*1*	*18-Jan-2019 19:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.00192**	J	**0.000400**	**0.00200**	**mg/L**	1	19-Jan-2019 00:06
Lead	U		0.000600	0.00200	mg/L	1	19-Jan-2019 00:06

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW12C-20190109	Lab ID:HS19010437-12
Collection Date:	09-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:38
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:38
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:38
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:38
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 20:38
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 20:38
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 20:38
Surr: 1,2-Dichloroethane-d4	*96.1*			*70-126*	*%REC*	*1*	*14-Jan-2019 20:38*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 20:38*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jan-2019 20:38*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*14-Jan-2019 20:38*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437	
Sample ID:	WG-1620-MW12C-20190109	Lab ID:HS19010437-12	
Collection Date:	09-Jan-2019 08:25	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 19:22
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 19:22
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 19:22
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 19:22
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 19:22
2-Methylnaphthalene	**0.00039**		**0.000019**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 19:22
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 19:22
Acenaphthene	**0.093**		**0.00027**	**0.0010**	**mg/L**	10	21-Jan-2019 18:25
Acenaphthylene	**0.00082**		**0.000015**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Anthracene	**0.0084**		**0.000014**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Benz(a)anthracene	**0.00014**		**0.000050**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Benzo(a)pyrene	**0.000041**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 19:22
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 19:22
Chrysene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Dibenzofuran	**0.067**		**0.00020**	**0.0010**	**mg/L**	10	21-Jan-2019 18:25
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 19:22
Fluoranthene	**0.0071**		**0.000010**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Fluorene	**0.085**		**0.00030**	**0.0010**	**mg/L**	10	21-Jan-2019 18:25
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 19:22
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 19:22
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 19:22
Phenanthrene	**0.052**		**0.00021**	**0.0010**	**mg/L**	10	21-Jan-2019 18:25
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 19:22
Pyrene	**0.0031**		**0.000019**	**0.00010**	**mg/L**	1	18-Jan-2019 19:22
Surr: 2,4,6-Tribromophenol	*67.7*			*34-129*	*%REC*	*1*	*18-Jan-2019 19:22*
Surr: 2,4,6-Tribromophenol	*53.9*			*34-129*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: 2-Fluorobiphenyl	*46.8*			*40-125*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: 2-Fluorobiphenyl	*42.5*			*40-125*	*%REC*	*1*	*18-Jan-2019 19:22*
Surr: 2-Fluorophenol	*39.0*	*J*		*20-120*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: 2-Fluorophenol	*45.0*			*20-120*	*%REC*	*1*	*18-Jan-2019 19:22*
Surr: 4-Terphenyl-d14	*71.6*			*40-135*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: 4-Terphenyl-d14	*75.5*			*40-135*	*%REC*	*1*	*18-Jan-2019 19:22*
Surr: Nitrobenzene-d5	*41.9*			*41-120*	*%REC*	*1*	*18-Jan-2019 19:22*
Surr: Nitrobenzene-d5	*44.5*			*41-120*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: Phenol-d6	*36.7*	*J*		*20-120*	*%REC*	*10*	*21-Jan-2019 18:25*
Surr: Phenol-d6	*39.7*			*20-120*	*%REC*	*1*	*18-Jan-2019 19:22*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WG-1620-MW12C-20190109	Lab ID:HS19010437-12
Collection Date:	09-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	**0.000796**	J	**0.000400**	**0.00200**	**mg/L**	1	19-Jan-2019 00:08
Lead	U		0.000600	0.00200	mg/L	1	19-Jan-2019 00:08

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WQ-1620-FB01-20190108	Lab ID:HS19010437-13
Collection Date:	08-Jan-2019 19:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:14
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:14
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:14
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:14
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2019 00:14
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:14
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:14
Surr: 1,2-Dichloroethane-d4	*95.8*			*70-126*	*%REC*	*1*	*15-Jan-2019 00:14*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*15-Jan-2019 00:14*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*15-Jan-2019 00:14*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*15-Jan-2019 00:14*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WQ-1620-FB01-20190108	Lab ID:HS19010437-13
Collection Date:	08-Jan-2019 19:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2019 15:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2019 15:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2019 15:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2019 15:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2019 15:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2019 15:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2019 15:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2019 15:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2019 15:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2019 15:48
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2019 15:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2019 15:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2019 15:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2019 15:48
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2019 15:48
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2019 15:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2019 15:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2019 15:48
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2019 15:48
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2019 15:48
Naphthalene	**0.000096**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2019 15:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2019 15:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2019 15:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2019 15:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2019 15:48
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2019 15:48
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2019 15:48
Surr: 2,4,6-Tribromophenol	*61.4*			*34-129*	*%REC*	*1*	*21-Jan-2019 15:48*
Surr: 2-Fluorobiphenyl	*65.7*			*40-125*	*%REC*	*1*	*21-Jan-2019 15:48*
Surr: 2-Fluorophenol	*59.5*			*20-120*	*%REC*	*1*	*21-Jan-2019 15:48*
Surr: 4-Terphenyl-d14	*81.4*			*40-135*	*%REC*	*1*	*21-Jan-2019 15:48*
Surr: Nitrobenzene-d5	*61.2*			*41-120*	*%REC*	*1*	*21-Jan-2019 15:48*
Surr: Phenol-d6	*68.4*			*20-120*	*%REC*	*1*	*21-Jan-2019 15:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jan-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	19-Jan-2019 00:10
Lead	U		0.000600	0.00200	mg/L	1	19-Jan-2019 00:10

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010437
Sample ID:	WQ-1620-TB01-20190108	Lab ID:HS19010437-14
Collection Date:	09-Jan-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:50
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 23:50
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:50
Surr: 1,2-Dichloroethane-d4	*93.9*			*70-126*	*%REC*	*1*	*14-Jan-2019 23:50*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*14-Jan-2019 23:50*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2019 23:50*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*14-Jan-2019 23:50*

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

Batch ID: 136572 **Method:** LOW-LEVEL SEMIVOLATILES **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010437-01	1	1000	1 (mL)	0.001
HS19010437-02	1	1000	1 (mL)	0.001
HS19010437-03	1	1000	1 (mL)	0.001
HS19010437-04	1	1000	1 (mL)	0.001
HS19010437-05	1	990	1 (mL)	0.00101
HS19010437-06	1	1000	1 (mL)	0.001
HS19010437-07	1	1000	1 (mL)	0.001

Batch ID: 136574 **Method:** LOW-LEVEL SEMIVOLATILES **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010437-08	1	1000	1 (mL)	0.001
HS19010437-09	1	1000	1 (mL)	0.001
HS19010437-10	1	1000	1 (mL)	0.001
HS19010437-11	1	1000	1 (mL)	0.001
HS19010437-12	1	1000	1 (mL)	0.001
HS19010437-13	1	1000	1 (mL)	0.001

Batch ID: 136687 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010437-01	1	10	10 (mL)	1
HS19010437-02	1	10	10 (mL)	1
HS19010437-03	1	10	10 (mL)	1
HS19010437-04	1	10	10 (mL)	1
HS19010437-05	1	10	10 (mL)	1
HS19010437-06	1	10	10 (mL)	1
HS19010437-07	1	10	10 (mL)	1
HS19010437-08	1	10	10 (mL)	1
HS19010437-09	1	10	10 (mL)	1
HS19010437-10	1	10	10 (mL)	1
HS19010437-11	1	10	10 (mL)	1
HS19010437-12	1	10	10 (mL)	1
HS19010437-13	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136572	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Groundwater		
HS19010437-01	WG-1620-MW13-20190108	08 Jan 2019 09:45		14 Jan 2019 11:18	22 Jan 2019 13:45	1
HS19010437-02	WG-1620-MW14-20190108	08 Jan 2019 10:40		14 Jan 2019 11:18	22 Jan 2019 14:04	1
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30		14 Jan 2019 11:18	24 Jan 2019 15:16	100
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30		14 Jan 2019 11:18	23 Jan 2019 15:05	10
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30		14 Jan 2019 11:18	22 Jan 2019 14:23	1
HS19010437-04	WG-1620-MW15C-20190108	08 Jan 2019 12:20		14 Jan 2019 11:18	23 Jan 2019 15:25	10
HS19010437-04	WG-1620-MW15C-20190108	08 Jan 2019 12:20		14 Jan 2019 11:18	22 Jan 2019 14:43	1
HS19010437-05	WG-1620-MW15B-20190108	08 Jan 2019 13:05		14 Jan 2019 11:18	22 Jan 2019 15:02	1
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00		14 Jan 2019 11:18	23 Jan 2019 21:28	10
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00		14 Jan 2019 11:18	23 Jan 2019 16:41	1000
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00		14 Jan 2019 11:18	23 Jan 2019 16:22	100
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00		14 Jan 2019 11:18	22 Jan 2019 15:21	1
HS19010437-07	WG-1620-MW88C-20190108	08 Jan 2019 16:00		14 Jan 2019 11:18	22 Jan 2019 15:40	1
Batch ID 136574	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Water		
HS19010437-13	WQ-1620-FB01-20190108	08 Jan 2019 19:00		14 Jan 2019 11:18	21 Jan 2019 15:48	1
Batch ID 136574	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Groundwater		
HS19010437-08	WG-1620-MW42B-20190108	08 Jan 2019 16:55		14 Jan 2019 11:18	18 Jan 2019 18:03	1
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45		14 Jan 2019 11:18	24 Jan 2019 14:56	1000
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45		14 Jan 2019 11:18	21 Jan 2019 16:27	100
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45		14 Jan 2019 11:18	21 Jan 2019 16:07	10
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45		14 Jan 2019 11:18	18 Jan 2019 18:23	1
HS19010437-10	WG-1620-MW39B-20190108	08 Jan 2019 18:45		14 Jan 2019 11:18	18 Jan 2019 18:42	1
HS19010437-11	WG-1620-MW12A-20190109	09 Jan 2019 07:35		14 Jan 2019 11:18	18 Jan 2019 19:02	1
HS19010437-12	WG-1620-MW12C-20190109	09 Jan 2019 08:25		14 Jan 2019 11:18	21 Jan 2019 18:25	10
HS19010437-12	WG-1620-MW12C-20190109	09 Jan 2019 08:25		14 Jan 2019 11:18	18 Jan 2019 19:22	1
Batch ID 136687	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19010437-13	WQ-1620-FB01-20190108	08 Jan 2019 19:00		16 Jan 2019 13:30	19 Jan 2019 00:10	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136687	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19010437-01	WG-1620-MW13-20190108	08 Jan 2019 09:45		16 Jan 2019 13:30	21 Jan 2019 15:32	1
HS19010437-01	WG-1620-MW13-20190108	08 Jan 2019 09:45		16 Jan 2019 13:30	18 Jan 2019 23:42	1
HS19010437-02	WG-1620-MW14-20190108	08 Jan 2019 10:40		16 Jan 2019 13:30	21 Jan 2019 15:34	1
HS19010437-02	WG-1620-MW14-20190108	08 Jan 2019 10:40		16 Jan 2019 13:30	18 Jan 2019 23:44	1
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30		16 Jan 2019 13:30	21 Jan 2019 15:36	1
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30		16 Jan 2019 13:30	18 Jan 2019 23:46	1
HS19010437-04	WG-1620-MW15C-20190108	08 Jan 2019 12:20		16 Jan 2019 13:30	21 Jan 2019 15:38	1
HS19010437-04	WG-1620-MW15C-20190108	08 Jan 2019 12:20		16 Jan 2019 13:30	18 Jan 2019 23:48	1
HS19010437-05	WG-1620-MW15B-20190108	08 Jan 2019 13:05		16 Jan 2019 13:30	18 Jan 2019 23:54	1
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00		16 Jan 2019 13:30	18 Jan 2019 23:56	1
HS19010437-07	WG-1620-MW88C-20190108	08 Jan 2019 16:00		16 Jan 2019 13:30	18 Jan 2019 23:58	1
HS19010437-08	WG-1620-MW42B-20190108	08 Jan 2019 16:55		16 Jan 2019 13:30	19 Jan 2019 00:00	1
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45		16 Jan 2019 13:30	19 Jan 2019 00:02	1
HS19010437-10	WG-1620-MW39B-20190108	08 Jan 2019 18:45		16 Jan 2019 13:30	19 Jan 2019 00:04	1
HS19010437-11	WG-1620-MW12A-20190109	09 Jan 2019 07:35		16 Jan 2019 13:30	19 Jan 2019 00:06	1
HS19010437-12	WG-1620-MW12C-20190109	09 Jan 2019 08:25		16 Jan 2019 13:30	19 Jan 2019 00:08	1
Batch ID R331023	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19010437-01	WG-1620-MW13-20190108	08 Jan 2019 09:45			14 Jan 2019 15:27	1
HS19010437-02	WG-1620-MW14-20190108	08 Jan 2019 10:40			14 Jan 2019 16:39	1
HS19010437-03	WG-1620-MW15A-20190108	08 Jan 2019 11:30			14 Jan 2019 17:02	1
HS19010437-04	WG-1620-MW15C-20190108	08 Jan 2019 12:20			14 Jan 2019 17:26	1
HS19010437-05	WG-1620-MW15B-20190108	08 Jan 2019 13:05			14 Jan 2019 17:50	1
HS19010437-06	WG-1620-MW20A-20190108	08 Jan 2019 15:00			14 Jan 2019 18:14	1
HS19010437-07	WG-1620-MW88C-20190108	08 Jan 2019 16:00			14 Jan 2019 18:38	1
HS19010437-08	WG-1620-MW42B-20190108	08 Jan 2019 16:55			14 Jan 2019 19:02	1
HS19010437-09	WG-1620-MW40B-20190108	08 Jan 2019 17:45			14 Jan 2019 19:26	1
HS19010437-10	WG-1620-MW39B-20190108	08 Jan 2019 18:45			14 Jan 2019 19:50	1
HS19010437-11	WG-1620-MW12A-20190109	09 Jan 2019 07:35			14 Jan 2019 20:14	1
HS19010437-12	WG-1620-MW12C-20190109	09 Jan 2019 08:25			14 Jan 2019 20:38	1
Batch ID R331030	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19010437-13	WQ-1620-FB01-20190108	08 Jan 2019 19:00			15 Jan 2019 00:14	1
HS19010437-14	WQ-1620-TB01-20190108	09 Jan 2019 00:00			14 Jan 2019 23:50	1

WorkOrder: HS19010437
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19010437
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles

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	0.000068	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000065	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000062	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000081	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000072	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000041	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000036	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000053	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000036	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000056	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000051	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000067	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000076	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000077	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00010	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000070	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000047	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000094	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000061	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000045	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000064	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000065	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000082	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000051	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000078	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000066	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: HS19010437
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles

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	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000041	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000052	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000052	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000061	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000056	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000022	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00020	0.00019	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000066	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000072	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000074	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000074	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000066	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000069	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000083	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000082	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000060	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000080	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000074	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000073	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000065	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000083	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000068	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00016	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000066	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000074	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: HS19010437
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136687 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-136687** Units: **mg/L** Analysis Date: **18-Jan-2019 23:12**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916084** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

MBLK Sample ID: **MBLK-136687** Units: **mg/L** Analysis Date: **21-Jan-2019 12:35**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916877** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	U	0.00200								

LCS Sample ID: **LCS-136687** Units: **mg/L** Analysis Date: **18-Jan-2019 23:14**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916085** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05083	0.00200	0.05	0	102	80 - 120				

LCS Sample ID: **LCS-136687** Units: **mg/L** Analysis Date: **21-Jan-2019 12:37**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916878** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04843	0.00200	0.05	0	96.9	80 - 120				

MS Sample ID: **HS19010555-01MS** Units: **mg/L** Analysis Date: **18-Jan-2019 23:20**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916088** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05243	0.00200	0.05	0.000065	105	80 - 120				

MS Sample ID: **HS19010555-01MS** Units: **mg/L** Analysis Date: **21-Jan-2019 12:44**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916881** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04854	0.00200	0.05	0.000012	97.1	80 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136687 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS19010555-01MSD** Units: **mg/L** Analysis Date: **18-Jan-2019 23:22**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916089** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05203	0.00200	0.05	0.000065	104	80 - 120	0.05243	0.77	20	

MSD Sample ID: **HS19010555-01MSD** Units: **mg/L** Analysis Date: **21-Jan-2019 12:46**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916882** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04827	0.00200	0.05	0.000012	96.5	80 - 120	0.04854	0.564	20	

PDS Sample ID: **HS19010555-01PDS** Units: **mg/L** Analysis Date: **18-Jan-2019 23:24**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916090** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1068	0.00200	0.1	0.000065	107	75 - 125				

PDS Sample ID: **HS19010555-01PDS** Units: **mg/L** Analysis Date: **21-Jan-2019 12:49**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916883** PrepDate: **16-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.09723	0.00200	0.1	0.000012	97.2	75 - 125				

SD Sample ID: **HS19010555-01SD** Units: **mg/L** Analysis Date: **18-Jan-2019 23:18**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4916087** PrepDate: **16-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000065	0	10	

SD Sample ID: **HS19010555-01SD** Units: **mg/L** Analysis Date: **21-Jan-2019 12:42**
Client ID: Run ID: **ICPMS04_331384** SeqNo: **4916880** PrepDate: **16-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Lead	U	0.0100					0.000012	0	10	

The following samples were analyzed in this batch:

HS19010437-01	HS19010437-02	HS19010437-03	HS19010437-04
HS19010437-05	HS19010437-06	HS19010437-07	HS19010437-08
HS19010437-09	HS19010437-10	HS19010437-11	HS19010437-12
HS19010437-13			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136572 **Instrument: SV-7** **Method: SW8270**

MBLK Sample ID: **MBLK-136572** Units: **ug/L** Analysis Date: **22-Jan-2019 12:09**
Client ID: Run ID: **SV-7_331539** SeqNo: **4921851** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.111*	*0.20*	*5*	*0*	*62.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.579*	*0.20*	*5*	*0*	*71.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.29*	*0.20*	*5*	*0*	*65.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.791*	*0.20*	*5*	*0*	*75.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.544*	*0.20*	*5*	*0*	*70.9*	*41 - 120*				
Surr: Phenol-d6	*3.571*	*0.20*	*5*	*0*	*71.4*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136572 **Instrument: SV-7** **Method: SW8270**

LCS Sample ID: **LCS-136572** Units: **ug/L** Analysis Date: **22-Jan-2019 12:28**
Client ID: Run ID: **SV-7_331539** SeqNo: **4921852** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.25	0.20	5	0	65.0	39 - 127				
2,4-Dimethylphenol	2.654	0.20	5	0	53.1	35 - 120				
2,4-Dinitrotoluene	2.946	0.20	5	0	58.9	50 - 122				
2,6-Dinitrotoluene	2.813	0.20	5	0	56.3	50 - 120				
2-Chloronaphthalene	2.834	0.20	5	0	56.7	50 - 120				
2-Methylnaphthalene	2.863	0.10	5	0	57.3	50 - 120				
4,6-Dinitro-2-methylphenol	2.928	0.20	5	0	58.6	25 - 121				
4-Nitrophenol	3.083	1.0	5	0	61.7	30 - 130				
Acenaphthene	2.566	0.10	5	0	51.3	45 - 120				
Acenaphthylene	2.772	0.10	5	0	55.4	47 - 120				
Anthracene	2.947	0.10	5	0	58.9	45 - 120				
Benz(a)anthracene	2.971	0.10	5	0	59.4	40 - 120				
Benzo(a)pyrene	3.115	0.10	5	0	62.3	45 - 120				
Bis(2-chloroethoxy)methane	2.916	0.20	5	0	58.3	45 - 120				
Bis(2-ethylhexyl)phthalate	3.205	0.20	5	0	64.1	40 - 139				
Chrysene	2.906	0.10	5	0	58.1	43 - 120				
Dibenzofuran	2.848	0.10	5	0	57.0	50 - 120				
Di-n-butyl phthalate	3.195	0.20	5	0	63.9	45 - 123				
Fluoranthene	3.091	0.10	5	0	61.8	45 - 125				
Fluorene	2.956	0.10	5	0	59.1	49 - 120				
Naphthalene	2.834	0.10	5	0	56.7	45 - 120				
Nitrobenzene	3.097	0.20	5	0	61.9	44 - 120				
N-Nitrosodiphenylamine	2.761	0.20	5	0	55.2	40 - 125				
Pentachlorophenol	2.15	0.20	5	0	43.0	19 - 121				
Phenanthrene	2.871	0.10	5	0	57.4	45 - 121				
Phenol	2.818	0.20	5	0	56.4	20 - 124				
Pyrene	3.018	0.10	5	0	60.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*2.845*	*0.20*	*5*	*0*	*56.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.873*	*0.20*	*5*	*0*	*57.5*	*40 - 125*				
Surr: 2-Fluorophenol	*2.831*	*0.20*	*5*	*0*	*56.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*2.997*	*0.20*	*5*	*0*	*59.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.066*	*0.20*	*5*	*0*	*61.3*	*41 - 120*				
Surr: Phenol-d6	*3.129*	*0.20*	*5*	*0*	*62.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136572 **Instrument: SV-7** **Method: SW8270**

LCSD Sample ID: **LCSD-136572** Units: **ug/L** Analysis Date: **22-Jan-2019 12:48**
Client ID: Run ID: **SV-7_331539** SeqNo: **4921853** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.261	0.20	5	0	65.2	39 - 127	3.25	0.342	20	
2,4-Dimethylphenol	2.585	0.20	5	0	51.7	35 - 120	2.654	2.62	20	
2,4-Dinitrotoluene	2.853	0.20	5	0	57.1	50 - 122	2.946	3.2	20	
2,6-Dinitrotoluene	2.835	0.20	5	0	56.7	50 - 120	2.813	0.779	20	
2-Chloronaphthalene	2.883	0.20	5	0	57.7	50 - 120	2.834	1.69	20	
2-Methylnaphthalene	2.781	0.10	5	0	55.6	50 - 120	2.863	2.92	20	
4,6-Dinitro-2-methylphenol	2.849	0.20	5	0	57.0	25 - 121	2.928	2.72	30	
4-Nitrophenol	2.819	1.0	5	0	56.4	30 - 130	3.083	8.94	20	
Acenaphthene	2.539	0.10	5	0	50.8	45 - 120	2.566	1.06	20	
Acenaphthylene	2.725	0.10	5	0	54.5	47 - 120	2.772	1.69	20	
Anthracene	2.807	0.10	5	0	56.1	45 - 120	2.947	4.86	20	
Benz(a)anthracene	3.013	0.10	5	0	60.3	40 - 120	2.971	1.4	20	
Benzo(a)pyrene	3.05	0.10	5	0	61.0	45 - 120	3.115	2.11	20	
Bis(2-chloroethoxy)methane	2.77	0.20	5	0	55.4	45 - 120	2.916	5.17	20	
Bis(2-ethylhexyl)phthalate	3.301	0.20	5	0	66.0	40 - 139	3.205	2.96	20	
Chrysene	2.992	0.10	5	0	59.8	43 - 120	2.906	2.94	20	
Dibenzofuran	2.816	0.10	5	0	56.3	50 - 120	2.848	1.14	20	
Di-n-butyl phthalate	3.144	0.20	5	0	62.9	45 - 123	3.195	1.58	20	
Fluoranthene	2.91	0.10	5	0	58.2	45 - 125	3.091	6.04	20	
Fluorene	2.867	0.10	5	0	57.3	49 - 120	2.956	3.06	20	
Naphthalene	2.818	0.10	5	0	56.4	45 - 120	2.834	0.569	20	
Nitrobenzene	2.964	0.20	5	0	59.3	44 - 120	3.097	4.41	20	
N-Nitrosodiphenylamine	2.798	0.20	5	0	56.0	40 - 125	2.761	1.34	20	
Pentachlorophenol	2.022	0.20	5	0	40.4	19 - 121	2.15	6.16	20	
Phenanthrene	2.853	0.10	5	0	57.1	45 - 121	2.871	0.657	20	
Phenol	3.092	0.20	5	0	61.8	20 - 124	2.818	9.26	20	
Pyrene	3.078	0.10	5	0	61.6	40 - 130	3.018	1.95	20	
Surr: 2,4,6-Tribromophenol	*2.638*	*0.20*	*5*	*0*	*52.8*	*34 - 129*	*2.845*	*7.55*	*20*	
Surr: 2-Fluorobiphenyl	*2.882*	*0.20*	*5*	*0*	*57.6*	*40 - 125*	*2.873*	*0.327*	*20*	
Surr: 2-Fluorophenol	*2.881*	*0.20*	*5*	*0*	*57.6*	*20 - 120*	*2.831*	*1.74*	*20*	
Surr: 4-Terphenyl-d14	*3.126*	*0.20*	*5*	*0*	*62.5*	*40 - 135*	*2.997*	*4.2*	*20*	
Surr: Nitrobenzene-d5	*2.929*	*0.20*	*5*	*0*	*58.6*	*41 - 120*	*3.066*	*4.58*	*20*	
Surr: Phenol-d6	*3.065*	*0.20*	*5*	*0*	*61.3*	*20 - 120*	*3.129*	*2.08*	*20*	

The following samples were analyzed in this batch: HS19010437-01 HS19010437-02 HS19010437-03 HS19010437-04 HS19010437-05 HS19010437-06 HS19010437-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 16:47**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923243** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.108*	*0.20*	*5*	*0*	*62.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.184*	*0.20*	*5*	*0*	*63.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.135*	*0.20*	*5*	*0*	*62.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.842*	*0.20*	*5*	*0*	*76.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.149*	*0.20*	*5*	*0*	*63.0*	*41 - 120*				
Surr: Phenol-d6	*3.133*	*0.20*	*5*	*0*	*62.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 17:06**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923244** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.425	0.20	5	0	68.5	39 - 127				
2,4-Dimethylphenol	2.909	0.20	5	0	58.2	35 - 120				
2,4-Dinitrotoluene	3.257	0.20	5	0	65.1	50 - 122				
2,6-Dinitrotoluene	3.348	0.20	5	0	67.0	50 - 120				
2-Chloronaphthalene	3.311	0.20	5	0	66.2	50 - 120				
2-Methylnaphthalene	3.319	0.10	5	0	66.4	50 - 120				
4,6-Dinitro-2-methylphenol	2.839	0.20	5	0	56.8	25 - 121				
4-Nitrophenol	3.667	1.0	5	0	73.3	30 - 130				
Acenaphthene	2.962	0.10	5	0	59.2	45 - 120				
Acenaphthylene	3.213	0.10	5	0	64.3	47 - 120				
Anthracene	3.335	0.10	5	0	66.7	45 - 120				
Benz(a)anthracene	3.534	0.10	5	0	70.7	40 - 120				
Benzo(a)pyrene	3.583	0.10	5	0	71.7	45 - 120				
Bis(2-chloroethoxy)methane	3.193	0.20	5	0	63.9	45 - 120				
Bis(2-ethylhexyl)phthalate	3.532	0.20	5	0	70.6	40 - 139				
Chrysene	3.656	0.10	5	0	73.1	43 - 120				
Dibenzofuran	3.153	0.10	5	0	63.1	50 - 120				
Di-n-butyl phthalate	3.53	0.20	5	0	70.6	45 - 123				
Fluoranthene	3.345	0.10	5	0	66.9	45 - 125				
Fluorene	3.258	0.10	5	0	65.2	49 - 120				
Naphthalene	3.154	0.10	5	0	63.1	45 - 120				
Nitrobenzene	3.125	0.20	5	0	62.5	44 - 120				
N-Nitrosodiphenylamine	3.485	0.20	5	0	69.7	40 - 125				
Pentachlorophenol	1.947	0.20	5	0	38.9	19 - 121				
Phenanthrene	3.258	0.10	5	0	65.2	45 - 121				
Phenol	3.007	0.20	5	0	60.1	20 - 124				
Pyrene	3.499	0.10	5	0	70.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.918*	*0.20*	*5*	*0*	*78.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.542*	*0.20*	*5*	*0*	*70.8*	*40 - 125*				
Surr: 2-Fluorophenol	*3.197*	*0.20*	*5*	*0*	*63.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.935*	*0.20*	*5*	*0*	*78.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.356*	*0.20*	*5*	*0*	*67.1*	*41 - 120*				
Surr: Phenol-d6	*3.433*	*0.20*	*5*	*0*	*68.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 17:26**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923245** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.542	0.20	5	0	70.8	39 - 127	3.425	3.38	20	
2,4-Dimethylphenol	2.885	0.20	5	0	57.7	35 - 120	2.909	0.836	20	
2,4-Dinitrotoluene	3.412	0.20	5	0	68.2	50 - 122	3.257	4.64	20	
2,6-Dinitrotoluene	3.653	0.20	5	0	73.1	50 - 120	3.348	8.71	20	
2-Chloronaphthalene	3.275	0.20	5	0	65.5	50 - 120	3.311	1.08	20	
2-Methylnaphthalene	3.455	0.10	5	0	69.1	50 - 120	3.319	4.01	20	
4,6-Dinitro-2-methylphenol	2.502	0.20	5	0	50.0	25 - 121	2.839	12.6	30	
4-Nitrophenol	3.099	1.0	5	0	62.0	30 - 130	3.667	16.8	20	
Acenaphthene	3.033	0.10	5	0	60.7	45 - 120	2.962	2.37	20	
Acenaphthylene	3.372	0.10	5	0	67.4	47 - 120	3.213	4.84	20	
Anthracene	3.326	0.10	5	0	66.5	45 - 120	3.335	0.279	20	
Benz(a)anthracene	3.597	0.10	5	0	71.9	40 - 120	3.534	1.77	20	
Benzo(a)pyrene	3.783	0.10	5	0	75.7	45 - 120	3.583	5.42	20	
Bis(2-chloroethoxy)methane	3.321	0.20	5	0	66.4	45 - 120	3.193	3.94	20	
Bis(2-ethylhexyl)phthalate	3.63	0.20	5	0	72.6	40 - 139	3.532	2.72	20	
Chrysene	3.715	0.10	5	0	74.3	43 - 120	3.656	1.6	20	
Dibenzofuran	3.225	0.10	5	0	64.5	50 - 120	3.153	2.28	20	
Di-n-butyl phthalate	3.561	0.20	5	0	71.2	45 - 123	3.53	0.865	20	
Fluoranthene	3.507	0.10	5	0	70.1	45 - 125	3.345	4.74	20	
Fluorene	3.396	0.10	5	0	67.9	49 - 120	3.258	4.13	20	
Naphthalene	3.137	0.10	5	0	62.7	45 - 120	3.154	0.533	20	
Nitrobenzene	3.302	0.20	5	0	66.0	44 - 120	3.125	5.5	20	
N-Nitrosodiphenylamine	3.648	0.20	5	0	73.0	40 - 125	3.485	4.59	20	
Pentachlorophenol	1.865	0.20	5	0	37.3	19 - 121	1.947	4.33	20	
Phenanthrene	3.466	0.10	5	0	69.3	45 - 121	3.258	6.17	20	
Phenol	2.767	0.20	5	0	55.3	20 - 124	3.007	8.3	20	
Pyrene	3.583	0.10	5	0	71.7	40 - 130	3.499	2.37	20	
Surr: 2,4,6-Tribromophenol	*3.67*	*0.20*	*5*	*0*	*73.4*	*34 - 129*	*3.918*	*6.54*	*20*	
Surr: 2-Fluorobiphenyl	*3.491*	*0.20*	*5*	*0*	*69.8*	*40 - 125*	*3.542*	*1.44*	*20*	
Surr: 2-Fluorophenol	*2.782*	*0.20*	*5*	*0*	*55.6*	*20 - 120*	*3.197*	*13.9*	*20*	
Surr: 4-Terphenyl-d14	*3.868*	*0.20*	*5*	*0*	*77.4*	*40 - 135*	*3.935*	*1.72*	*20*	
Surr: Nitrobenzene-d5	*3.24*	*0.20*	*5*	*0*	*64.8*	*41 - 120*	*3.356*	*3.51*	*20*	
Surr: Phenol-d6	*3.045*	*0.20*	*5*	*0*	*60.9*	*20 - 120*	*3.433*	*12*	*20*	

The following samples were analyzed in this batch: HS19010437-08 HS19010437-09 HS19010437-10 HS19010437-11 HS19010437-12 HS19010437-13

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: R331023 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 11:44**
Client ID: Run ID: **VOA2_331023** SeqNo: **4908196** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.11*	*1.0*	*50*	*0*	*94.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.66*	*1.0*	*50*	*0*	*95.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.79*	*1.0*	*50*	*0*	*99.6*	*81 - 120*				

LCS Sample ID: **VLCSW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 10:56**
Client ID: Run ID: **VOA2_331023** SeqNo: **4908195** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.48	1.0	20	0	92.4	70 - 124				
Benzene	18.31	1.0	20	0	91.5	74 - 120				
Chlorobenzene	19.85	1.0	20	0	99.2	76 - 113				
Ethylbenzene	19.67	1.0	20	0	98.3	77 - 117				
Methylene chloride	18.97	2.0	20	0	94.9	70 - 127				
Toluene	19.01	1.0	20	0	95.0	77 - 118				
Xylenes, Total	58.55	1.0	60	0	97.6	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.34*	*1.0*	*50*	*0*	*96.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.17*	*1.0*	*50*	*0*	*98.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.29*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.06*	*1.0*	*50*	*0*	*98.1*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: **R331023** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS19010437-01MS** Units: **ug/L** Analysis Date: **14-Jan-2019 15:51**
Client ID: **WG-1620-MW13-20190108** Run ID: **VOA2_331023** SeqNo: **4908205** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.74	1.0	20	0	78.7	70 - 127				
Benzene	16.25	1.0	20	0	81.2	70 - 127				
Chlorobenzene	17.48	1.0	20	0	87.4	70 - 114				
Ethylbenzene	18.16	1.0	20	0	90.8	70 - 124				
Methylene chloride	15.39	2.0	20	0	76.9	70 - 128				
Toluene	17.05	1.0	20	0	85.3	70 - 123				
Xylenes, Total	52.77	1.0	60	0	88.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.06*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.03*	*1.0*	*50*	*0*	*98.1*	*81 - 113*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*48.48*	*1.0*	*50*	*0*	*97.0*	*82 - 127*				

MSD Sample ID: **HS19010437-01MSD** Units: **ug/L** Analysis Date: **14-Jan-2019 16:15**
Client ID: **WG-1620-MW13-20190108** Run ID: **VOA2_331023** SeqNo: **4908206** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.54	1.0	20	0	82.7	70 - 127	15.74	4.96	20	
Benzene	16.74	1.0	20	0	83.7	70 - 127	16.25	2.99	20	
Chlorobenzene	18.07	1.0	20	0	90.3	70 - 114	17.48	3.32	20	
Ethylbenzene	19.07	1.0	20	0	95.4	70 - 124	18.16	4.88	20	
Methylene chloride	16.41	2.0	20	0	82.1	70 - 128	15.39	6.45	20	
Toluene	17.79	1.0	20	0	89.0	70 - 123	17.05	4.23	20	
Xylenes, Total	55.22	1.0	60	0	92.0	70 - 130	52.77	4.54	20	
Surr: 1,2-Dichloroethane-d4	*49.47*	*1.0*	*50*	*0*	*98.9*	*70 - 126*	*50.06*	*1.19*	*20*	
Surr: 4-Bromofluorobenzene	*48.97*	*1.0*	*50*	*0*	*97.9*	*81 - 113*	*49.03*	*0.12*	*20*	
Surr: Dibromofluoromethane	*50.1*	*1.0*	*50*	*0*	*100*	*77 - 123*	*50.4*	*0.594*	*20*	
Surr: Toluene-d8	*48.98*	*1.0*	*50*	*0*	*98.0*	*82 - 127*	*48.48*	*1.02*	*20*	

The following samples were analyzed in this batch:

HS19010437-01	HS19010437-02	HS19010437-03	HS19010437-04
HS19010437-05	HS19010437-06	HS19010437-07	HS19010437-08
HS19010437-09	HS19010437-10	HS19010437-11	HS19010437-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: R331030 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 23:26**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908344** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.99*	*1.0*	*50*	*0*	*96.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.31*	*1.0*	*50*	*0*	*96.6*	*82 - 115*				
Surr: Dibromofluoromethane	*51.08*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*49.07*	*1.0*	*50*	*0*	*98.1*	*81 - 120*				

LCS Sample ID: **VLCSW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 22:38**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908367** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.25	1.0	20	0	96.3	70 - 124				
Benzene	18.74	1.0	20	0	93.7	74 - 120				
Chlorobenzene	20.42	1.0	20	0	102	76 - 113				
Ethylbenzene	20.53	1.0	20	0	103	77 - 117				
Methylene chloride	19.15	2.0	20	0	95.7	70 - 127				
Toluene	19.5	1.0	20	0	97.5	77 - 118				
Xylenes, Total	61.55	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.25*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.3*	*1.0*	*50*	*0*	*98.6*	*82 - 115*				
Surr: Dibromofluoromethane	*50.3*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*48.78*	*1.0*	*50*	*0*	*97.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010437

QC BATCH REPORT

Batch ID: R331030 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19010488-02MS** Units: **ug/L** Analysis Date: **15-Jan-2019 01:28**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908349** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.83	1.0	20	0	114	70 - 127				
Benzene	22.47	1.0	20	0	112	70 - 127				
Chlorobenzene	24.15	1.0	20	0	121	70 - 114				S
Ethylbenzene	24.94	1.0	20	0	125	70 - 124				S
Methylene chloride	22.3	2.0	20	0	112	70 - 128				
Toluene	23.63	1.0	20	0	118	70 - 123				
Xylenes, Total	72.41	1.0	60	0	121	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.71*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.81*	*1.0*	*50*	*0*	*99.6*	*81 - 113*				
Surr: Dibromofluoromethane	*50.81*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*48.43*	*1.0*	*50*	*0*	*96.9*	*82 - 127*				

MSD Sample ID: **HS19010488-02MSD** Units: **ug/L** Analysis Date: **15-Jan-2019 01:52**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908350** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.17	1.0	20	0	111	70 - 127	22.83	2.94	20	
Benzene	22.05	1.0	20	0	110	70 - 127	22.47	1.87	20	
Chlorobenzene	24.13	1.0	20	0	121	70 - 114	24.15	0.0925	20	S
Ethylbenzene	24.35	1.0	20	0	122	70 - 124	24.94	2.38	20	
Methylene chloride	21.15	2.0	20	0	106	70 - 128	22.3	5.27	20	
Toluene	23.48	1.0	20	0	117	70 - 123	23.63	0.623	20	
Xylenes, Total	72.09	1.0	60	0	120	70 - 130	72.41	0.437	20	
Surr: 1,2-Dichloroethane-d4	*50.31*	*1.0*	*50*	*0*	*101*	*70 - 126*	*51.71*	*2.75*	*20*	
Surr: 4-Bromofluorobenzene	*49.85*	*1.0*	*50*	*0*	*99.7*	*81 - 113*	*49.81*	*0.0761*	*20*	
Surr: Dibromofluoromethane	*50.75*	*1.0*	*50*	*0*	*102*	*77 - 123*	*50.81*	*0.117*	*20*	
Surr: Toluene-d8	*48.58*	*1.0*	*50*	*0*	*97.2*	*82 - 127*	*48.43*	*0.305*	*20*	

The following samples were analyzed in this batch: HS19010437-13 HS19010437-14

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19010437**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19010437

Date/Time Received: **10-Jan-2019 09:05**
Received by: **PJM**

Checklist completed by: *Pablo Marinez* eSignature — 10-Jan-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 16-Jan-2019 Date

Matrices: **WATER**

Carrier name: **Client**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	2.8C/3.2C, 2.3C/2.7C, 2.7C/3.1C, 2.2C/2.6C UC/C	IR # 11
Cooler(s)/Kit(s):	44417, 25283, 43015, 24932	
Date/Time sample(s) sent to storage:	1/10/19 20:30	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	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 2

COC ID: 194315

HS19010437

WV

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TBO-20190108~~ WG-1620-MW13-20190108	1-8-19	0945	Water	1	6	X		X	X							
2	WG-1620-MW14-20190108		1040	W		6	X		X	X							
3	WG-1620-MW15A-20190108		1130	W		6	X		X	X							
4	WG-1620-MW15C-20190108		1220	W		6	X		X	X							
5	WG-1620-MW15B-20190108		1305	W		6	X		X	X							
6	WG-1620-MW20A-20190108		1500	W		6	X		X	X							
7	WG-1620-MW88C-20190108		1600	W		6	X		X	X							
8	WG-1620-MW42B-20190108		1655	W		6	X		X	X							
9	WG-1620-MW40B-20190108		1745	W		6	X		X	X							
10	WG-1620-MW39B-20190108		1845	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-10-19 Time: 9:05 Received by:

Relinquished by: Date: 1-10-19 Time: 9:05 Received by (Laboratory): PM

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

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	WC
25283	2.3C
24952	2.2C
43015	2.7C
44417	2.8C

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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: 194308

HS19010437

, WV

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 201801~~			~~Water~~													
2	WG-1620-MW12A-20190109	1-9-19	0735	W		6	X		X	X							
3	WG-1620-MW12C-20190109	1-9-19	0825	W		6	X		X	X							
4	WG-1620-FB01-20190108	1-8-19	1900	W		6	X		X	X							
5	WG-1620-TB01-20190108	—	—	—		2	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYDOLL

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-10-19 Time: 9:05 Received by:

Relinquished by: Date: 1-10-19 Time: 9:05 Received by (Laboratory): PM

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

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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

January 25, 2019

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

Work Order: **HS19010488**

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

Dear Eric,

ALS Environmental received 25 sample(s) on Jan 11, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010488**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010488**	

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: 01/25/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010488
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136574, 136614, 136717, 136742, R331030, R331042, R331088, R331375

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			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				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/25/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010488
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136574, 136614, 136717, 136742, R331030, R331042, R331088, R331375

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

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

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/25/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010488
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136574, 136614, 136717, 136742, R331030, R331042, R331088, R331375

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW17-20190109, WG-1620-MW17C-20190110, WG-1620-MW18C-20190110, WG-1620-MW18A-20190110, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 136574, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch. Batch 136614, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.
3	Batch R331030, Volatile Organics Method SW8260, sample WG-1620-MW05-20190109, MS and or MSD recovered outside the control limits due to suspect matrix effect.
4	Batch 136574, Semivolatile Organics Method SW8270, samples WG-1620-MW17-20190109, WG-1620-MW18C-20190110, WG-1620-MW18A-20190110; GCMS semi-volatile extract of these samples were run at a dilution due to a high level of matrix interference. Volatile Organics Method SW8260, samples WG-1620-TW41B-20190109, WG-1620-MW17-20190109, WG-1620-MW18C-20190110, WG-1620-MW18A-20190110: Lowest practical dilution performed o these samples due to high concentration of non-target analyte(s).

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: HS19010488

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19010488-01	WG-1620-TW41B-20190109	Groundwater		09-Jan-2019 10:35	11-Jan-2019 14:00	☐
HS19010488-02	WG-1620-MW05-20190109	Groundwater		09-Jan-2019 11:25	11-Jan-2019 14:00	☐
HS19010488-03	WG-1620-P11-20190109	Groundwater		09-Jan-2019 12:25	11-Jan-2019 14:00	☐
HS19010488-04	WG-1620-MW03-20190109	Groundwater		09-Jan-2019 13:15	11-Jan-2019 14:00	☐
HS19010488-05	WG-1620-MW09-20190109	Groundwater		09-Jan-2019 14:05	11-Jan-2019 14:00	☐
HS19010488-06	WG-1620-MW04-20190109	Groundwater		09-Jan-2019 15:05	11-Jan-2019 14:00	☐
HS19010488-07	WG-1620-MW21C-20190109	Groundwater		09-Jan-2019 16:20	11-Jan-2019 14:00	☐
HS19010488-08	WG-1620-FD01-20190109	Groundwater		09-Jan-2019 16:20	11-Jan-2019 14:00	☐
HS19010488-09	WG-1620-MW17-20190109	Groundwater		09-Jan-2019 17:20	11-Jan-2019 14:00	☐
HS19010488-10	WQ-1620-FB02-20190109	Water		09-Jan-2019 17:35	11-Jan-2019 14:00	☐
HS19010488-11	WG-1620-MW17C-20190110	Groundwater		10-Jan-2019 07:25	11-Jan-2019 14:00	☐
HS19010488-12	WG-1620-MW18C-20190110	Groundwater		10-Jan-2019 08:20	11-Jan-2019 14:00	☐
HS19010488-13	WG-1620-MW18A-20190110	Groundwater		10-Jan-2019 10:45	11-Jan-2019 14:00	☐
HS19010488-14	WG-1620-MW48C-20190110	Groundwater		10-Jan-2019 11:45	11-Jan-2019 14:00	☐
HS19010488-15	WG-1620-MW69A-20190110	Groundwater		10-Jan-2019 12:45	11-Jan-2019 14:00	☐
HS19010488-16	WQ-1620-TB02-20190110	Water	ALS-121118-61	10-Jan-2019 00:00	11-Jan-2019 14:00	☐
HS19010488-17	WG-1620-MW80B-20190110	Groundwater		10-Jan-2019 13:50	11-Jan-2019 14:00	☐
HS19010488-18	WG-1620-MW50A-20190110	Groundwater		10-Jan-2019 14:40	11-Jan-2019 14:00	☐
HS19010488-19	WG-1620-MW81B-20190110	Groundwater		10-Jan-2019 15:30	11-Jan-2019 14:00	☐
HS19010488-20	WG-1620-MW51A-20190110	Groundwater		10-Jan-2019 16:40	11-Jan-2019 14:00	☐
HS19010488-21	WG-1620-MW51C-20190110	Groundwater		10-Jan-2019 17:30	11-Jan-2019 14:00	☐
HS19010488-22	WG-1620-MW86C-20190111	Groundwater		11-Jan-2019 08:25	11-Jan-2019 14:00	☐
HS19010488-23	WG-1620-FD02-20190111	Groundwater		11-Jan-2019 08:25	11-Jan-2019 14:00	☐
HS19010488-24	WQ-1620-FB03-20190111	Water		11-Jan-2019 11:15	11-Jan-2019 14:00	☐
HS19010488-25	WG-1620-MW60A-20190111	Groundwater		11-Jan-2019 10:15	11-Jan-2019 14:00	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-TW41B-20190109	Lab ID:HS19010488-01
Collection Date:	09-Jan-2019 10:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.0020	0.010	mg/L	10	15-Jan-2019 01:04
Benzene		U	0.0020	0.010	mg/L	10	15-Jan-2019 01:04
Chlorobenzene		U	0.0030	0.010	mg/L	10	15-Jan-2019 01:04
Ethylbenzene		U	0.0030	0.010	mg/L	10	15-Jan-2019 01:04
Methylene chloride		U	0.010	0.020	mg/L	10	15-Jan-2019 01:04
Toluene		U	0.0020	0.010	mg/L	10	15-Jan-2019 01:04
Xylenes, Total		U	0.0030	0.010	mg/L	10	15-Jan-2019 01:04
Surr: 1,2-Dichloroethane-d4	*96.2*			*70-126*	*%REC*	*10*	*15-Jan-2019 01:04*
Surr: 4-Bromofluorobenzene	*97.9*			*81-113*	*%REC*	*10*	*15-Jan-2019 01:04*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*10*	*15-Jan-2019 01:04*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*10*	*15-Jan-2019 01:04*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-TW41B-20190109	Lab ID:HS19010488-01
Collection Date:	09-Jan-2019 10:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2019 23:41
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2019 23:41
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2019 23:41
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2019 23:41
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2019 23:41
2-Methylnaphthalene	**0.0098**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2019 23:41
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2019 23:41
Acenaphthene	**0.058**		**0.00027**	**0.0010**	**mg/L**	10	23-Jan-2019 17:26
Acenaphthylene	**0.00091**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Anthracene	**0.0023**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2019 23:41
Benzo(a)pyrene	**0.000097**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2019 23:41
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2019 23:41
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2019 23:41
Dibenzofuran	**0.026**		**0.00020**	**0.0010**	**mg/L**	10	23-Jan-2019 17:26
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2019 23:41
Fluoranthene	**0.0014**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Fluorene	**0.035**		**0.00030**	**0.0010**	**mg/L**	10	23-Jan-2019 17:26
Naphthalene	**0.061**		**0.00020**	**0.0010**	**mg/L**	10	23-Jan-2019 17:26
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2019 23:41
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2019 23:41
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2019 23:41
Phenanthrene	**0.0035**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2019 23:41
Pyrene	**0.00056**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2019 23:41
Surr: 2,4,6-Tribromophenol	*70.2*			*34-129*	*%REC*	*10*	*23-Jan-2019 17:26*
Surr: 2,4,6-Tribromophenol	*73.2*			*34-129*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: 2-Fluorobiphenyl	*57.7*			*40-125*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: 2-Fluorobiphenyl	*47.1*			*40-125*	*%REC*	*10*	*23-Jan-2019 17:26*
Surr: 2-Fluorophenol	*46.3*			*20-120*	*%REC*	*10*	*23-Jan-2019 17:26*
Surr: 2-Fluorophenol	*55.4*			*20-120*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: 4-Terphenyl-d14	*71.2*			*40-135*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: 4-Terphenyl-d14	*74.2*			*40-135*	*%REC*	*10*	*23-Jan-2019 17:26*
Surr: Nitrobenzene-d5	*52.3*			*41-120*	*%REC*	*10*	*23-Jan-2019 17:26*
Surr: Nitrobenzene-d5	*54.5*			*41-120*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: Phenol-d6	*56.0*			*20-120*	*%REC*	*1*	*21-Jan-2019 23:41*
Surr: Phenol-d6	*49.9*			*20-120*	*%REC*	*10*	*23-Jan-2019 17:26*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-TW41B-20190109	Lab ID:HS19010488-01
Collection Date:	09-Jan-2019 10:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.125**		**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:04
Lead	U		0.000600	0.00200	mg/L	1	23-Jan-2019 20:04

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW05-20190109	Lab ID:HS19010488-02
Collection Date:	09-Jan-2019 11:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:37
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2019 00:37
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 00:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2019 00:37
Surr: 1,2-Dichloroethane-d4	*93.7*			*70-126*	*%REC*	*1*	*15-Jan-2019 00:37*
Surr: 4-Bromofluorobenzene	*95.4*			*81-113*	*%REC*	*1*	*15-Jan-2019 00:37*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Jan-2019 00:37*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*15-Jan-2019 00:37*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW05-20190109	Lab ID:HS19010488-02
Collection Date:	09-Jan-2019 11:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:01
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 00:01
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 00:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 00:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:01
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:01
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 00:01
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 00:01
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 00:01
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jan-2019 00:01
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 00:01
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 00:01
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 00:01
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:01
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:01
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:01
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 00:01
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 00:01
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:01
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 00:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 00:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 00:01
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:01
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 00:01
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:01
Surr: 2,4,6-Tribromophenol	*68.8*			*34-129*	*%REC*	*1*	*22-Jan-2019 00:01*
Surr: 2-Fluorobiphenyl	*65.1*			*40-125*	*%REC*	*1*	*22-Jan-2019 00:01*
Surr: 2-Fluorophenol	*53.4*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:01*
Surr: 4-Terphenyl-d14	*71.4*			*40-135*	*%REC*	*1*	*22-Jan-2019 00:01*
Surr: Nitrobenzene-d5	*55.5*			*41-120*	*%REC*	*1*	*22-Jan-2019 00:01*
Surr: Phenol-d6	*59.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:01*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.00387**		**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:06
Lead	**0.00149**	J	**0.000600**	**0.00200**	**mg/L**	1	23-Jan-2019 20:06

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-P11-20190109	Lab ID:HS19010488-03
Collection Date:	09-Jan-2019 12:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2019 05:52
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 05:52
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 05:52
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 05:52
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2019 05:52
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 05:52
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2019 05:52
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*1*	*15-Jan-2019 05:52*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*15-Jan-2019 05:52*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*15-Jan-2019 05:52*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*15-Jan-2019 05:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-P11-20190109	Lab ID:HS19010488-03
Collection Date:	09-Jan-2019 12:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:20
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 00:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 00:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 00:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:20
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:20
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 00:20
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 00:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 00:20
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jan-2019 00:20
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 00:20
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 00:20
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 00:20
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:20
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:20
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:20
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 00:20
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 00:20
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 00:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 00:20
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 00:20
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:20
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 00:20
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:20
Surr: 2,4,6-Tribromophenol	*65.2*			*34-129*	*%REC*	*1*	*22-Jan-2019 00:20*
Surr: 2-Fluorobiphenyl	*59.8*			*40-125*	*%REC*	*1*	*22-Jan-2019 00:20*
Surr: 2-Fluorophenol	*48.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:20*
Surr: 4-Terphenyl-d14	*69.7*			*40-135*	*%REC*	*1*	*22-Jan-2019 00:20*
Surr: Nitrobenzene-d5	*48.9*			*41-120*	*%REC*	*1*	*22-Jan-2019 00:20*
Surr: Phenol-d6	*50.1*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.0183**		**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:08
Lead	**0.00192**	J	**0.000600**	**0.00200**	**mg/L**	1	23-Jan-2019 20:08

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW03-20190109	Lab ID:HS19010488-04
Collection Date:	09-Jan-2019 13:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:16
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 06:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 06:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2019 06:16
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2019 06:16
Surr: 1,2-Dichloroethane-d4	*96.2*			*70-126*	*%REC*	*1*	*15-Jan-2019 06:16*
Surr: 4-Bromofluorobenzene	*96.8*			*81-113*	*%REC*	*1*	*15-Jan-2019 06:16*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Jan-2019 06:16*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*15-Jan-2019 06:16*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW03-20190109	Lab ID:HS19010488-04	
Collection Date:	09-Jan-2019 13:15	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jan-2019 00:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2019 00:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2019 00:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2019 00:40
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2019 00:40
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jan-2019 00:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jan-2019 00:40
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jan-2019 00:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jan-2019 00:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2019 00:40
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jan-2019 00:40
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jan-2019 00:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jan-2019 00:40
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jan-2019 00:40
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jan-2019 00:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2019 00:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2019 00:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2019 00:40
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jan-2019 00:40
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2019 00:40
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jan-2019 00:40
Surr: 2,4,6-Tribromophenol	*67.1*			*34-129*	*%REC*	*1*	*22-Jan-2019 00:40*
Surr: 2-Fluorobiphenyl	*61.3*			*40-125*	*%REC*	*1*	*22-Jan-2019 00:40*
Surr: 2-Fluorophenol	*48.8*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:40*
Surr: 4-Terphenyl-d14	*77.5*			*40-135*	*%REC*	*1*	*22-Jan-2019 00:40*
Surr: Nitrobenzene-d5	*54.5*			*41-120*	*%REC*	*1*	*22-Jan-2019 00:40*
Surr: Phenol-d6	*55.7*			*20-120*	*%REC*	*1*	*22-Jan-2019 00:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.0191**		**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:10
Lead	**0.00131**	J	**0.000600**	**0.00200**	**mg/L**	1	23-Jan-2019 20:10

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW09-20190109	Lab ID:HS19010488-05
Collection Date:	09-Jan-2019 14:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:42
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:42
Chlorobenzene	**0.0041**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2019 06:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2019 06:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2019 06:42
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2019 06:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2019 06:42
Surr: 1,2-Dichloroethane-d4	*94.4*			*70-126*	*%REC*	*1*	*15-Jan-2019 06:42*
Surr: 4-Bromofluorobenzene	*95.5*			*81-113*	*%REC*	*1*	*15-Jan-2019 06:42*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*15-Jan-2019 06:42*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*15-Jan-2019 06:42*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW09-20190109	Lab ID:HS19010488-05
Collection Date:	09-Jan-2019 14:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 17:46
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2019 17:46
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	23-Jan-2019 17:46
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 17:46
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 17:46
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 17:46
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 17:46
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 17:46
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2019 17:46
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2019 17:46
Anthracene	**0.000093**	J	**0.000014**	**0.00010**	**mg/L**	1	23-Jan-2019 17:46
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	23-Jan-2019 17:46
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 17:46
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 17:46
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2019 17:46
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 17:46
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2019 17:46
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 17:46
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2019 17:46
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2019 17:46
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 17:46
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 17:46
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 17:46
Pentachlorophenol	U		0.000080	0.00020	mg/L	1	23-Jan-2019 17:46
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 17:46
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2019 17:46
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 17:46
Surr: 2,4,6-Tribromophenol	*64.4*			*34-129*	*%REC*	*1*	*23-Jan-2019 17:46*
Surr: 2-Fluorobiphenyl	*62.8*			*40-125*	*%REC*	*1*	*23-Jan-2019 17:46*
Surr: 2-Fluorophenol	*37.9*			*20-120*	*%REC*	*1*	*23-Jan-2019 17:46*
Surr: 4-Terphenyl-d14	*81.3*			*40-135*	*%REC*	*1*	*23-Jan-2019 17:46*
Surr: Nitrobenzene-d5	*45.2*			*41-120*	*%REC*	*1*	*23-Jan-2019 17:46*
Surr: Phenol-d6	*45.8*			*20-120*	*%REC*	*1*	*23-Jan-2019 17:46*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.00202**		**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:13
Lead	**0.000931**	J	**0.000600**	**0.00200**	**mg/L**	1	23-Jan-2019 20:13

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW04-20190109	Lab ID:HS19010488-06
Collection Date:	09-Jan-2019 15:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 01:09
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 01:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 01:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 01:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 01:09
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 01:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 01:09
Surr: 1,2-Dichloroethane-d4	*92.9*			*70-126*	*%REC*	*1*	*16-Jan-2019 01:09*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*16-Jan-2019 01:09*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 01:09*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*16-Jan-2019 01:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW04-20190109	Lab ID:HS19010488-06	
Collection Date:	09-Jan-2019 15:05	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:05
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2019 18:05
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2019 18:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 18:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:05
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 18:05
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2019 18:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2019 18:05
Anthracene	**0.000079**	J	**0.000014**	**0.00010**	**mg/L**	1	23-Jan-2019 18:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2019 18:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 18:05
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2019 18:05
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:05
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:05
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:05
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2019 18:05
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2019 18:05
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:05
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 18:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 18:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2019 18:05
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:05
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2019 18:05
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:05
Surr: 2,4,6-Tribromophenol	*59.0*			*34-129*	*%REC*	*1*	*23-Jan-2019 18:05*
Surr: 2-Fluorobiphenyl	*52.9*			*40-125*	*%REC*	*1*	*23-Jan-2019 18:05*
Surr: 2-Fluorophenol	*41.3*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:05*
Surr: 4-Terphenyl-d14	*62.6*			*40-135*	*%REC*	*1*	*23-Jan-2019 18:05*
Surr: Nitrobenzene-d5	*48.8*			*41-120*	*%REC*	*1*	*23-Jan-2019 18:05*
Surr: Phenol-d6	*49.4*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.000963**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:15
Lead	U		0.000600	0.00200	mg/L	1	23-Jan-2019 20:15

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW21C-20190109	Lab ID:HS19010488-07
Collection Date:	09-Jan-2019 16:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 02:45
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 02:45
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 02:45
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 02:45
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 02:45
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 02:45
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 02:45
Surr: 1,2-Dichloroethane-d4	*94.6*			*70-126*	*%REC*	*1*	*16-Jan-2019 02:45*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*16-Jan-2019 02:45*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jan-2019 02:45*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*16-Jan-2019 02:45*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW21C-20190109	Lab ID:HS19010488-07
Collection Date:	09-Jan-2019 16:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:25
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2019 18:25
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2019 18:25
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 18:25
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:25
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:25
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:25
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 18:25
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2019 18:25
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2019 18:25
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2019 18:25
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2019 18:25
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:25
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 18:25
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2019 18:25
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:25
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:25
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:25
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2019 18:25
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2019 18:25
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:25
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 18:25
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 18:25
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2019 18:25
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:25
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2019 18:25
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:25
Surr: 2,4,6-Tribromophenol	*42.3*			*34-129*	*%REC*	*1*	*23-Jan-2019 18:25*
Surr: 2-Fluorobiphenyl	*43.2*			*40-125*	*%REC*	*1*	*23-Jan-2019 18:25*
Surr: 2-Fluorophenol	*36.0*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:25*
Surr: 4-Terphenyl-d14	*74.0*			*40-135*	*%REC*	*1*	*23-Jan-2019 18:25*
Surr: Nitrobenzene-d5	*41.1*			*41-120*	*%REC*	*1*	*23-Jan-2019 18:25*
Surr: Phenol-d6	*42.2*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.00187**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:17
Lead	U		0.000600	0.00200	mg/L	1	23-Jan-2019 20:17

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-FD01-20190109	Lab ID:HS19010488-08
Collection Date:	09-Jan-2019 16:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:09
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 03:09
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:09
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*16-Jan-2019 03:09*
Surr: 4-Bromofluorobenzene	*92.6*			*81-113*	*%REC*	*1*	*16-Jan-2019 03:09*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 03:09*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*16-Jan-2019 03:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-FD01-20190109	Lab ID:HS19010488-08
Collection Date:	09-Jan-2019 16:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:45
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2019 18:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2019 18:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 18:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 18:45
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:45
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 18:45
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2019 18:45
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2019 18:45
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2019 18:45
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2019 18:45
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 18:45
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2019 18:45
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:45
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:45
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 18:45
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2019 18:45
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2019 18:45
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 18:45
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 18:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 18:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2019 18:45
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 18:45
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2019 18:45
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 18:45
Surr: 2,4,6-Tribromophenol	*35.2*			*34-129*	*%REC*	*1*	*23-Jan-2019 18:45*
Surr: 2-Fluorobiphenyl	*42.3*			*40-125*	*%REC*	*1*	*23-Jan-2019 18:45*
Surr: 2-Fluorophenol	*29.9*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:45*
Surr: 4-Terphenyl-d14	*65.1*			*40-135*	*%REC*	*1*	*23-Jan-2019 18:45*
Surr: Nitrobenzene-d5	*41.6*			*41-120*	*%REC*	*1*	*23-Jan-2019 18:45*
Surr: Phenol-d6	*34.1*			*20-120*	*%REC*	*1*	*23-Jan-2019 18:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JCJ
Arsenic	**0.00178**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2019 20:19
Lead	U		0.000600	0.00200	mg/L	1	23-Jan-2019 20:19

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW17-20190109	Lab ID:HS19010488-09
Collection Date:	09-Jan-2019 17:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	16-Jan-2019 07:59
Benzene	**0.35**		**0.0020**	**0.010**	**mg/L**	10	16-Jan-2019 07:59
Chlorobenzene	U		0.0030	0.010	mg/L	10	16-Jan-2019 07:59
Ethylbenzene	**0.21**		**0.0030**	**0.010**	**mg/L**	10	16-Jan-2019 07:59
Methylene chloride	U		0.010	0.020	mg/L	10	16-Jan-2019 07:59
Toluene	**0.68**		**0.0020**	**0.010**	**mg/L**	10	16-Jan-2019 07:59
Xylenes, Total	**0.66**		**0.0030**	**0.010**	**mg/L**	10	16-Jan-2019 07:59
Surr: 1,2-Dichloroethane-d4	*95.5*			*70-126*	*%REC*	*10*	*16-Jan-2019 07:59*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*10*	*16-Jan-2019 07:59*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*10*	*16-Jan-2019 07:59*
Surr: Toluene-d8	*97.5*			*82-127*	*%REC*	*10*	*16-Jan-2019 07:59*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW17-20190109	Lab ID:HS19010488-09	
Collection Date:	09-Jan-2019 17:20	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	24-Jan-2019 17:10
2,4-Dimethylphenol	**1.9**		**0.040**	**0.20**	**mg/L**	1000	25-Jan-2019 11:27
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	24-Jan-2019 17:10
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	24-Jan-2019 17:10
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	24-Jan-2019 17:10
2-Methylnaphthalene	**0.23**		**0.0019**	**0.010**	**mg/L**	100	24-Jan-2019 17:29
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	24-Jan-2019 17:10
4-Nitrophenol	U		0.00047	0.010	mg/L	10	24-Jan-2019 17:10
Acenaphthene	**0.091**		**0.00027**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Acenaphthylene	**0.0029**		**0.00015**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Anthracene	**0.0057**		**0.00014**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	24-Jan-2019 17:10
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	24-Jan-2019 17:10
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	24-Jan-2019 17:10
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	24-Jan-2019 17:10
Chrysene	U		0.00021	0.0010	mg/L	10	24-Jan-2019 17:10
Dibenzofuran	**0.072**		**0.00020**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	24-Jan-2019 17:10
Fluoranthene	**0.0015**		**0.00010**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Fluorene	**0.043**		**0.00030**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Naphthalene	**5.5**		**0.020**	**0.10**	**mg/L**	1000	25-Jan-2019 11:27
Nitrobenzene	U		0.00024	0.0020	mg/L	10	24-Jan-2019 17:10
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	24-Jan-2019 17:10
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	24-Jan-2019 17:10
Phenanthrene	**0.028**		**0.00021**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Phenol	**2.2**		**0.035**	**0.20**	**mg/L**	1000	25-Jan-2019 11:27
Pyrene	**0.00081**	J	**0.00019**	**0.0010**	**mg/L**	10	24-Jan-2019 17:10
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*25-Jan-2019 11:27*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jan-2019 17:29*
Surr: 2,4,6-Tribromophenol	*76.5*			*34-129*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: 2-Fluorobiphenyl	*67.3*			*40-125*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jan-2019 17:29*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*25-Jan-2019 11:27*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*25-Jan-2019 11:27*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 17:29*
Surr: 2-Fluorophenol	*105*			*20-120*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: 4-Terphenyl-d14	*73.8*			*40-135*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jan-2019 17:29*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*25-Jan-2019 11:27*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW17-20190109	Lab ID:HS19010488-09
Collection Date:	09-Jan-2019 17:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*60.3*			*41-120*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jan-2019 17:29*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*25-Jan-2019 11:27*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*25-Jan-2019 11:27*
Surr: Phenol-d6	*90.5*			*20-120*	*%REC*	*10*	*24-Jan-2019 17:10*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 17:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.0460**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:42
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 14:42

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WQ-1620-FB02-20190109	Lab ID:HS19010488-10
Collection Date:	09-Jan-2019 17:35	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:31
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 23:31
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:31
Surr: 1,2-Dichloroethane-d4	*107*			*70-126*	*%REC*	*1*	*14-Jan-2019 23:31*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 23:31*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*14-Jan-2019 23:31*
Surr: Toluene-d8	*108*			*82-127*	*%REC*	*1*	*14-Jan-2019 23:31*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WQ-1620-FB02-20190109	Lab ID:HS19010488-10
Collection Date:	09-Jan-2019 17:35	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	23-Jan-2019 19:24
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	23-Jan-2019 19:24
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	23-Jan-2019 19:24
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	23-Jan-2019 19:24
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	23-Jan-2019 19:24
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	23-Jan-2019 19:24
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	23-Jan-2019 19:24
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	23-Jan-2019 19:24
Acenaphthene		U	0.000027	0.00010	mg/L	1	23-Jan-2019 19:24
Acenaphthylene		U	0.000015	0.00010	mg/L	1	23-Jan-2019 19:24
Anthracene		U	0.000014	0.00010	mg/L	1	23-Jan-2019 19:24
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	23-Jan-2019 19:24
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	23-Jan-2019 19:24
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	23-Jan-2019 19:24
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	23-Jan-2019 19:24
Chrysene		U	0.000021	0.00010	mg/L	1	23-Jan-2019 19:24
Dibenzofuran		U	0.000020	0.00010	mg/L	1	23-Jan-2019 19:24
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	23-Jan-2019 19:24
Fluoranthene		U	0.000010	0.00010	mg/L	1	23-Jan-2019 19:24
Fluorene		U	0.000030	0.00010	mg/L	1	23-Jan-2019 19:24
Naphthalene	**0.00031**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2019 19:24
Nitrobenzene		U	0.000024	0.00020	mg/L	1	23-Jan-2019 19:24
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	23-Jan-2019 19:24
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	23-Jan-2019 19:24
Phenanthrene		U	0.000021	0.00010	mg/L	1	23-Jan-2019 19:24
Phenol		U	0.000035	0.00020	mg/L	1	23-Jan-2019 19:24
Pyrene		U	0.000019	0.00010	mg/L	1	23-Jan-2019 19:24
Surr: 2,4,6-Tribromophenol	*53.6*			*34-129*	*%REC*	*1*	*23-Jan-2019 19:24*
Surr: 2-Fluorobiphenyl	*59.9*			*40-125*	*%REC*	*1*	*23-Jan-2019 19:24*
Surr: 2-Fluorophenol	*56.7*			*20-120*	*%REC*	*1*	*23-Jan-2019 19:24*
Surr: 4-Terphenyl-d14	*65.9*			*40-135*	*%REC*	*1*	*23-Jan-2019 19:24*
Surr: Nitrobenzene-d5	*75.0*			*41-120*	*%REC*	*1*	*23-Jan-2019 19:24*
Surr: Phenol-d6	*60.9*			*20-120*	*%REC*	*1*	*23-Jan-2019 19:24*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	24-Jan-2019 14:44
Lead		U	0.000600	0.00200	mg/L	1	24-Jan-2019 14:44

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW17C-20190110	Lab ID:HS19010488-11
Collection Date:	10-Jan-2019 07:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	16-Jan-2019 03:33
Benzene	**0.012**		**0.00020**	**0.0010**	**mg/L**	1	16-Jan-2019 03:33
Chlorobenzene	U		0.00030	0.0010	mg/L	1	16-Jan-2019 03:33
Ethylbenzene	**0.027**		**0.00030**	**0.0010**	**mg/L**	1	16-Jan-2019 03:33
Methylene chloride	U		0.0010	0.0020	mg/L	1	16-Jan-2019 03:33
Toluene	**0.0087**		**0.00020**	**0.0010**	**mg/L**	1	16-Jan-2019 03:33
Xylenes, Total	**0.050**		**0.00030**	**0.0010**	**mg/L**	1	16-Jan-2019 03:33
Surr: 1,2-Dichloroethane-d4	*94.8*			*70-126*	*%REC*	*1*	*16-Jan-2019 03:33*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*16-Jan-2019 03:33*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jan-2019 03:33*
Surr: Toluene-d8	*96.6*			*82-127*	*%REC*	*1*	*16-Jan-2019 03:33*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW17C-20190110	Lab ID:HS19010488-11	
Collection Date:	10-Jan-2019 07:25	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 19:44
2,4-Dimethylphenol	**0.47**		**0.0040**	**0.020**	**mg/L**	100	24-Jan-2019 18:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2019 19:44
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 19:44
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 19:44
2-Methylnaphthalene	**0.025**		**0.00019**	**0.0010**	**mg/L**	10	24-Jan-2019 17:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 19:44
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 19:44
Acenaphthene	**0.031**		**0.00027**	**0.0010**	**mg/L**	10	24-Jan-2019 17:48
Acenaphthylene	**0.00047**		**0.000015**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Anthracene	**0.0012**		**0.000014**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Benz(a)anthracene	**0.000062**	J	**0.000050**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 19:44
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 19:44
Bis(2-ethylhexyl)phthalate	**0.00062**		**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2019 19:44
Chrysene	**0.000059**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Dibenzofuran	**0.027**		**0.00020**	**0.0010**	**mg/L**	10	24-Jan-2019 17:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 19:44
Fluoranthene	**0.00078**		**0.000010**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Fluorene	**0.012**		**0.00030**	**0.0010**	**mg/L**	10	24-Jan-2019 17:48
Naphthalene	**1.1**		**0.020**	**0.10**	**mg/L**	1000	24-Jan-2019 18:26
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 19:44
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 19:44
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2019 19:44
Phenanthrene	**0.010**		**0.00021**	**0.0010**	**mg/L**	10	24-Jan-2019 17:48
Phenol	**0.033**		**0.00035**	**0.0020**	**mg/L**	10	24-Jan-2019 17:48
Pyrene	**0.00045**		**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2019 19:44
Surr: 2,4,6-Tribromophenol	*51.1*			*34-129*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jan-2019 18:26*
Surr: 2,4,6-Tribromophenol	*65.5*			*34-129*	*%REC*	*1*	*23-Jan-2019 19:44*
Surr: 2-Fluorobiphenyl	*50.5*			*40-125*	*%REC*	*1*	*23-Jan-2019 19:44*
Surr: 2-Fluorobiphenyl	*63.0*			*40-125*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jan-2019 18:26*
Surr: 2-Fluorophenol	*64.2*			*20-120*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 18:26*
Surr: 2-Fluorophenol	*60.3*			*20-120*	*%REC*	*1*	*23-Jan-2019 19:44*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW17C-20190110	Lab ID:HS19010488-11
Collection Date:	10-Jan-2019 07:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*62.4*			*40-135*	*%REC*	*1*	*23-Jan-2019 19:44*
Surr: 4-Terphenyl-d14	*70.3*			*40-135*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jan-2019 18:26*
Surr: Nitrobenzene-d5	*67.8*			*41-120*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jan-2019 18:26*
Surr: Nitrobenzene-d5	*79.0*			*41-120*	*%REC*	*1*	*23-Jan-2019 19:44*
Surr: Phenol-d6	*67.9*			*20-120*	*%REC*	*1*	*23-Jan-2019 19:44*
Surr: Phenol-d6	*63.7*			*20-120*	*%REC*	*10*	*24-Jan-2019 17:48*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 18:07*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 18:26*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00130**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:46
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 14:46

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW18C-20190110	Lab ID:HS19010488-12
Collection Date:	10-Jan-2019 08:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	16-Jan-2019 08:25
Benzene	**0.30**		**0.0020**	**0.010**	**mg/L**	10	16-Jan-2019 08:25
Chlorobenzene	U		0.0030	0.010	mg/L	10	16-Jan-2019 08:25
Ethylbenzene	**0.41**		**0.0030**	**0.010**	**mg/L**	10	16-Jan-2019 08:25
Methylene chloride	U		0.010	0.020	mg/L	10	16-Jan-2019 08:25
Toluene	**0.030**		**0.0020**	**0.010**	**mg/L**	10	16-Jan-2019 08:25
Vinyl chloride	U		0.0020	0.010	mg/L	10	16-Jan-2019 08:25
Xylenes, Total	**0.69**		**0.0030**	**0.010**	**mg/L**	10	16-Jan-2019 08:25
Surr: 1,2-Dichloroethane-d4	*96.4*			*70-126*	*%REC*	*10*	*16-Jan-2019 08:25*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*10*	*16-Jan-2019 08:25*
Surr: Dibromofluoromethane	*99.7*			*77-123*	*%REC*	*10*	*16-Jan-2019 08:25*
Surr: Toluene-d8	*97.1*			*82-127*	*%REC*	*10*	*16-Jan-2019 08:25*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW18C-20190110	Lab ID:HS19010488-12	
Collection Date:	10-Jan-2019 08:20	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	24-Jan-2019 18:45
2,4-Dimethylphenol	**0.29**		**0.0040**	**0.020**	**mg/L**	100	24-Jan-2019 19:04
2,4-Dinitrotoluene	U		0.00059	0.0020	mg/L	10	24-Jan-2019 18:45
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	24-Jan-2019 18:45
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	24-Jan-2019 18:45
2-Methylnaphthalene	**0.33**		**0.0019**	**0.010**	**mg/L**	100	24-Jan-2019 19:04
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	24-Jan-2019 18:45
4-Nitrophenol	U		0.00047	0.010	mg/L	10	24-Jan-2019 18:45
Acenaphthene	**0.21**		**0.0027**	**0.010**	**mg/L**	100	24-Jan-2019 19:04
Acenaphthylene	**0.0075**		**0.00015**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Anthracene	**0.0070**		**0.00014**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Benz(a)anthracene	U		0.00051	0.0010	mg/L	10	24-Jan-2019 18:45
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	24-Jan-2019 18:45
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	24-Jan-2019 18:45
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	24-Jan-2019 18:45
Chrysene	U		0.00021	0.0010	mg/L	10	24-Jan-2019 18:45
Dibenzofuran	**0.13**		**0.0020**	**0.010**	**mg/L**	100	24-Jan-2019 19:04
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	24-Jan-2019 18:45
Fluoranthene	**0.0023**		**0.00010**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Fluorene	**0.095**		**0.00030**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Naphthalene	**4.4**		**0.020**	**0.10**	**mg/L**	1000	24-Jan-2019 19:23
Nitrobenzene	U		0.00024	0.0020	mg/L	10	24-Jan-2019 18:45
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	24-Jan-2019 18:45
Pentachlorophenol	U		0.00080	0.0020	mg/L	10	24-Jan-2019 18:45
Phenanthrene	**0.084**		**0.00021**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Phenol	U		0.00035	0.0020	mg/L	10	24-Jan-2019 18:45
Pyrene	**0.0012**		**0.00019**	**0.0010**	**mg/L**	10	24-Jan-2019 18:45
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jan-2019 19:23*
Surr: 2,4,6-Tribromophenol	*57.2*			*34-129*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: 2-Fluorobiphenyl	*59.3*			*40-125*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jan-2019 19:23*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 19:23*
Surr: 2-Fluorophenol	*84.1*			*20-120*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: 4-Terphenyl-d14	*65.3*			*40-135*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jan-2019 19:23*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW18C-20190110	Lab ID:HS19010488-12
Collection Date:	10-Jan-2019 08:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*67.5*			*41-120*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jan-2019 19:23*
Surr: Phenol-d6	*68.2*			*20-120*	*%REC*	*10*	*24-Jan-2019 18:45*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 19:04*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 19:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.0257**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:48
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 14:48

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW18A-20190110	Lab ID:HS19010488-13
Collection Date:	10-Jan-2019 10:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.0050	0.025	mg/L	25	16-Jan-2019 08:52
Benzene	**1.2**		**0.0050**	**0.025**	**mg/L**	25	16-Jan-2019 08:52
Chlorobenzene	U		0.0075	0.025	mg/L	25	16-Jan-2019 08:52
Ethylbenzene	**0.34**		**0.0075**	**0.025**	**mg/L**	25	16-Jan-2019 08:52
Methylene chloride	U		0.025	0.050	mg/L	25	16-Jan-2019 08:52
Toluene	**0.92**		**0.0050**	**0.025**	**mg/L**	25	16-Jan-2019 08:52
Vinyl chloride	U		0.0050	0.025	mg/L	25	16-Jan-2019 08:52
Xylenes, Total	**1.0**		**0.0075**	**0.025**	**mg/L**	25	16-Jan-2019 08:52
Surr: 1,2-Dichloroethane-d4	*93.3*			*70-126*	*%REC*	*25*	*16-Jan-2019 08:52*
Surr: 4-Bromofluorobenzene	*99.2*			*81-113*	*%REC*	*25*	*16-Jan-2019 08:52*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*25*	*16-Jan-2019 08:52*
Surr: Toluene-d8	*97.0*			*82-127*	*%REC*	*25*	*16-Jan-2019 08:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW18A-20190110	Lab ID:HS19010488-13	
Collection Date:	10-Jan-2019 10:45	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	24-Jan-2019 19:42
2,4-Dimethylphenol	**0.0054**		**0.00040**	**0.0020**	**mg/L**	10	24-Jan-2019 19:42
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	24-Jan-2019 19:42
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	24-Jan-2019 19:42
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	24-Jan-2019 19:42
2-Methylnaphthalene	**0.10**		**0.0019**	**0.010**	**mg/L**	100	24-Jan-2019 20:01
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	24-Jan-2019 19:42
4-Nitrophenol	U		0.00047	0.010	mg/L	10	24-Jan-2019 19:42
Acenaphthene	**0.048**		**0.00027**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Acenaphthylene	**0.0016**		**0.00015**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Anthracene	**0.0064**		**0.00014**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	24-Jan-2019 19:42
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	24-Jan-2019 19:42
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	24-Jan-2019 19:42
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	24-Jan-2019 19:42
Chrysene	U		0.00021	0.0010	mg/L	10	24-Jan-2019 19:42
Dibenzofuran	**0.047**		**0.00020**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	24-Jan-2019 19:42
Fluoranthene	**0.0020**		**0.00010**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Fluorene	**0.021**		**0.00030**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Naphthalene	**3.2**		**0.020**	**0.10**	**mg/L**	1000	24-Jan-2019 20:20
Nitrobenzene	U		0.00024	0.0020	mg/L	10	24-Jan-2019 19:42
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	24-Jan-2019 19:42
Pentachlorophenol	**0.014**		**0.00079**	**0.0020**	**mg/L**	10	24-Jan-2019 19:42
Phenanthrene	**0.024**		**0.00021**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Phenol	**0.0032**		**0.00035**	**0.0020**	**mg/L**	10	24-Jan-2019 19:42
Pyrene	**0.0012**		**0.00019**	**0.0010**	**mg/L**	10	24-Jan-2019 19:42
Surr: 2,4,6-Tribromophenol	*69.5*			*34-129*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jan-2019 20:01*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jan-2019 20:20*
Surr: 2-Fluorobiphenyl	*62.7*			*40-125*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jan-2019 20:01*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jan-2019 20:20*
Surr: 2-Fluorophenol	*116*			*20-120*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 20:01*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 20:20*
Surr: 4-Terphenyl-d14	*72.6*			*40-135*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jan-2019 20:01*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jan-2019 20:20*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW18A-20190110	Lab ID:HS19010488-13
Collection Date:	10-Jan-2019 10:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*53.7*			*41-120*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jan-2019 20:01*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jan-2019 20:20*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jan-2019 20:20*
Surr: Phenol-d6	*68.1*			*20-120*	*%REC*	*10*	*24-Jan-2019 19:42*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jan-2019 20:01*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00310**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:50
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 14:50

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW48C-20190110	Lab ID:HS19010488-14
Collection Date:	10-Jan-2019 11:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:57
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:57
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:57
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:57
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 03:57
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 03:57
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 03:57
Surr: 1,2-Dichloroethane-d4	*96.0*			*70-126*	*%REC*	*1*	*16-Jan-2019 03:57*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*16-Jan-2019 03:57*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jan-2019 03:57*
Surr: Toluene-d8	*98.7*			*82-127*	*%REC*	*1*	*16-Jan-2019 03:57*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW48C-20190110	Lab ID:HS19010488-14	
Collection Date:	10-Jan-2019 11:45	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 14-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2019 20:43
2,4-Dimethylphenol	**0.0010**		**0.000040**	**0.00020**	**mg/L**	1	23-Jan-2019 20:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2019 20:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2019 20:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2019 20:43
2-Methylnaphthalene	**0.00038**		**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2019 20:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2019 20:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2019 20:43
Acenaphthene	**0.000098**	J	**0.000027**	**0.00010**	**mg/L**	1	23-Jan-2019 20:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2019 20:43
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2019 20:43
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2019 20:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2019 20:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2019 20:43
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2019 20:43
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 20:43
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2019 20:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2019 20:43
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2019 20:43
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2019 20:43
Naphthalene	**0.0085**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2019 20:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2019 20:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2019 20:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2019 20:43
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2019 20:43
Phenol	**0.0020**		**0.000035**	**0.00020**	**mg/L**	1	23-Jan-2019 20:43
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2019 20:43
Surr: 2,4,6-Tribromophenol	*41.9*			*34-129*	*%REC*	*1*	*23-Jan-2019 20:43*
Surr: 2-Fluorobiphenyl	*50.3*			*40-125*	*%REC*	*1*	*23-Jan-2019 20:43*
Surr: 2-Fluorophenol	*49.9*			*20-120*	*%REC*	*1*	*23-Jan-2019 20:43*
Surr: 4-Terphenyl-d14	*67.4*			*40-135*	*%REC*	*1*	*23-Jan-2019 20:43*
Surr: Nitrobenzene-d5	*51.2*			*41-120*	*%REC*	*1*	*23-Jan-2019 20:43*
Surr: Phenol-d6	*55.5*			*20-120*	*%REC*	*1*	*23-Jan-2019 20:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.000924**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:53
Lead	**0.00141**	J	**0.000600**	**0.00200**	**mg/L**	1	24-Jan-2019 14:53

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW69A-20190110	Lab ID:HS19010488-15
Collection Date:	10-Jan-2019 12:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 04:21
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 04:21
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 04:21
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 04:21
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 04:21
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 04:21
Vinyl chloride		U	0.00020	0.0010	mg/L	1	16-Jan-2019 04:21
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 04:21
Surr: 1,2-Dichloroethane-d4	*94.6*			*70-126*	*%REC*	*1*	*16-Jan-2019 04:21*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*1*	*16-Jan-2019 04:21*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jan-2019 04:21*
Surr: Toluene-d8	*98.5*			*82-127*	*%REC*	*1*	*16-Jan-2019 04:21*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW69A-20190110	Lab ID:HS19010488-15
Collection Date:	10-Jan-2019 12:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	18-Jan-2019 14:30
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	18-Jan-2019 14:30
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	18-Jan-2019 14:30
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	18-Jan-2019 14:30
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	18-Jan-2019 14:30
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	18-Jan-2019 14:30
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	18-Jan-2019 14:30
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	18-Jan-2019 14:30
Acenaphthene		U	0.000027	0.00010	mg/L	1	18-Jan-2019 14:30
Acenaphthylene		U	0.000015	0.00010	mg/L	1	18-Jan-2019 14:30
Anthracene		U	0.000014	0.00010	mg/L	1	18-Jan-2019 14:30
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	18-Jan-2019 14:30
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	18-Jan-2019 14:30
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	18-Jan-2019 14:30
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	18-Jan-2019 14:30
Chrysene		U	0.000021	0.00010	mg/L	1	18-Jan-2019 14:30
Dibenzofuran		U	0.000020	0.00010	mg/L	1	18-Jan-2019 14:30
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	18-Jan-2019 14:30
Fluoranthene		U	0.000010	0.00010	mg/L	1	18-Jan-2019 14:30
Fluorene		U	0.000030	0.00010	mg/L	1	18-Jan-2019 14:30
Naphthalene		U	0.000020	0.00010	mg/L	1	18-Jan-2019 14:30
Nitrobenzene		U	0.000024	0.00020	mg/L	1	18-Jan-2019 14:30
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	18-Jan-2019 14:30
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	18-Jan-2019 14:30
Phenanthrene		U	0.000021	0.00010	mg/L	1	18-Jan-2019 14:30
Phenol		U	0.000035	0.00020	mg/L	1	18-Jan-2019 14:30
Pyrene		U	0.000019	0.00010	mg/L	1	18-Jan-2019 14:30
Surr: 2,4,6-Tribromophenol	*35.6*			*34-129*	*%REC*	*1*	*18-Jan-2019 14:30*
Surr: 2-Fluorobiphenyl	*40.4*			*40-125*	*%REC*	*1*	*18-Jan-2019 14:30*
Surr: 2-Fluorophenol	*40.6*			*20-120*	*%REC*	*1*	*18-Jan-2019 14:30*
Surr: 4-Terphenyl-d14	*55.0*			*40-135*	*%REC*	*1*	*18-Jan-2019 14:30*
Surr: Nitrobenzene-d5	*41.3*			*41-120*	*%REC*	*1*	*18-Jan-2019 14:30*
Surr: Phenol-d6	*41.7*			*20-120*	*%REC*	*1*	*18-Jan-2019 14:30*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.000717**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:55
Lead	**0.000712**	J	**0.000600**	**0.00200**	**mg/L**	1	24-Jan-2019 14:55

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WQ-1620-TB02-20190110	Lab ID:HS19010488-16
Collection Date:	10-Jan-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:55
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2019 23:55
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2019 23:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2019 23:55
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*14-Jan-2019 23:55*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*14-Jan-2019 23:55*
Surr: Dibromofluoromethane	*95.5*			*77-123*	*%REC*	*1*	*14-Jan-2019 23:55*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*14-Jan-2019 23:55*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW80B-20190110	Lab ID:HS19010488-17
Collection Date:	10-Jan-2019 13:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:09
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 05:09
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:09
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*1*	*16-Jan-2019 05:09*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*16-Jan-2019 05:09*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 05:09*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*16-Jan-2019 05:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW80B-20190110	Lab ID:HS19010488-17	
Collection Date:	10-Jan-2019 13:50	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 14:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 14:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 14:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 14:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 14:50
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 14:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 14:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 14:50
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 14:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 14:50
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 14:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 14:50
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 14:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 14:50
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jan-2019 14:50
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 14:50
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 14:50
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 14:50
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 14:50
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 14:50
Naphthalene	**0.000068**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 14:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 14:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 14:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 14:50
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 14:50
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 14:50
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 14:50
Surr: 2,4,6-Tribromophenol	*43.0*			*34-129*	*%REC*	*1*	*18-Jan-2019 14:50*
Surr: 2-Fluorobiphenyl	*42.7*			*40-125*	*%REC*	*1*	*18-Jan-2019 14:50*
Surr: 2-Fluorophenol	*36.2*			*20-120*	*%REC*	*1*	*18-Jan-2019 14:50*
Surr: 4-Terphenyl-d14	*56.1*			*40-135*	*%REC*	*1*	*18-Jan-2019 14:50*
Surr: Nitrobenzene-d5	*42.9*			*41-120*	*%REC*	*1*	*18-Jan-2019 14:50*
Surr: Phenol-d6	*41.8*			*20-120*	*%REC*	*1*	*18-Jan-2019 14:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00180**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 14:57
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 14:57

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW50A-20190110	Lab ID:HS19010488-18
Collection Date:	10-Jan-2019 14:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:33
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:33
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:33
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:33
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 05:33
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:33
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:33
Surr: 1,2-Dichloroethane-d4	*93.8*			*70-126*	*%REC*	*1*	*16-Jan-2019 05:33*
Surr: 4-Bromofluorobenzene	*96.8*			*81-113*	*%REC*	*1*	*16-Jan-2019 05:33*
Surr: Dibromofluoromethane	*99.1*			*77-123*	*%REC*	*1*	*16-Jan-2019 05:33*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*16-Jan-2019 05:33*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW50A-20190110	Lab ID:HS19010488-18
Collection Date:	10-Jan-2019 14:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:09
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 15:09
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 15:09
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 15:09
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:09
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:09
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 15:09
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 15:09
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 15:09
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 15:09
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 15:09
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:09
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 15:09
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jan-2019 15:09
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:09
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:09
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:09
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 15:09
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 15:09
Naphthalene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:09
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 15:09
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 15:09
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 15:09
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:09
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 15:09
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:09
Surr: 2,4,6-Tribromophenol	*41.9*			*34-129*	*%REC*	*1*	*18-Jan-2019 15:09*
Surr: 2-Fluorobiphenyl	*41.6*			*40-125*	*%REC*	*1*	*18-Jan-2019 15:09*
Surr: 2-Fluorophenol	*38.1*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:09*
Surr: 4-Terphenyl-d14	*57.0*			*40-135*	*%REC*	*1*	*18-Jan-2019 15:09*
Surr: Nitrobenzene-d5	*42.9*			*41-120*	*%REC*	*1*	*18-Jan-2019 15:09*
Surr: Phenol-d6	*41.2*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:09*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00134**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 15:00
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:00

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW81B-20190110	Lab ID:HS19010488-19
Collection Date:	10-Jan-2019 15:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:57
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:57
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:57
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:57
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 05:57
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 05:57
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 05:57
Surr: 1,2-Dichloroethane-d4	*94.9*			*70-126*	*%REC*	*1*	*16-Jan-2019 05:57*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*16-Jan-2019 05:57*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 05:57*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*16-Jan-2019 05:57*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW81B-20190110	Lab ID:HS19010488-19	
Collection Date:	10-Jan-2019 15:30	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:29
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 15:29
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 15:29
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 15:29
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:29
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:29
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:29
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 15:29
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 15:29
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 15:29
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 15:29
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 15:29
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:29
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 15:29
Bis(2-ethylhexyl)phthalate	**0.000058**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 15:29
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:29
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:29
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:29
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 15:29
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 15:29
Naphthalene	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 15:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 15:29
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 15:29
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 15:29
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:29
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 15:29
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:29
Surr: 2,4,6-Tribromophenol	*35.9*			*34-129*	*%REC*	*1*	*18-Jan-2019 15:29*
Surr: 2-Fluorobiphenyl	*45.4*			*40-125*	*%REC*	*1*	*18-Jan-2019 15:29*
Surr: 2-Fluorophenol	*44.9*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:29*
Surr: 4-Terphenyl-d14	*53.4*			*40-135*	*%REC*	*1*	*18-Jan-2019 15:29*
Surr: Nitrobenzene-d5	*50.6*			*41-120*	*%REC*	*1*	*18-Jan-2019 15:29*
Surr: Phenol-d6	*50.6*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00116**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 15:15
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:15

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

Client:	Golder Associates Inc.		**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:	HS19010488
Sample ID:	WG-1620-MW51A-20190110	Lab ID:	HS19010488-20
Collection Date:	10-Jan-2019 16:40	Matrix:	Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:20
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 06:20
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:20
Surr: 1,2-Dichloroethane-d4	*93.8*			*70-126*	*%REC*	*1*	*16-Jan-2019 06:20*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*16-Jan-2019 06:20*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 06:20*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*16-Jan-2019 06:20*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW51A-20190110	Lab ID:HS19010488-20	
Collection Date:	10-Jan-2019 16:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:49
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 15:49
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 15:49
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 15:49
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 15:49
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:49
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:49
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 15:49
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 15:49
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 15:49
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 15:49
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 15:49
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:49
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 15:49
Bis(2-ethylhexyl)phthalate	**0.000078**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 15:49
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:49
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 15:49
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 15:49
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 15:49
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 15:49
Naphthalene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 15:49
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 15:49
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 15:49
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 15:49
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 15:49
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 15:49
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 15:49
Surr: 2,4,6-Tribromophenol	*42.4*			*34-129*	*%REC*	*1*	*18-Jan-2019 15:49*
Surr: 2-Fluorobiphenyl	*51.6*			*40-125*	*%REC*	*1*	*18-Jan-2019 15:49*
Surr: 2-Fluorophenol	*52.4*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:49*
Surr: 4-Terphenyl-d14	*54.0*			*40-135*	*%REC*	*1*	*18-Jan-2019 15:49*
Surr: Nitrobenzene-d5	*55.3*			*41-120*	*%REC*	*1*	*18-Jan-2019 15:49*
Surr: Phenol-d6	*55.0*			*20-120*	*%REC*	*1*	*18-Jan-2019 15:49*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2019 15:18
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:18

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW51C-20190110	Lab ID:HS19010488-21
Collection Date:	10-Jan-2019 17:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:44
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 06:44
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 06:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 06:44
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*1*	*16-Jan-2019 06:44*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*1*	*16-Jan-2019 06:44*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jan-2019 06:44*
Surr: Toluene-d8	*99.7*			*82-127*	*%REC*	*1*	*16-Jan-2019 06:44*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW51C-20190110	Lab ID:HS19010488-21	
Collection Date:	10-Jan-2019 17:30	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:08
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 16:08
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 16:08
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 16:08
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:08
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:08
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 16:08
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 16:08
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 16:08
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 16:08
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 16:08
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 16:08
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:08
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 16:08
Bis(2-ethylhexyl)phthalate	**0.00013**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 16:08
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:08
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:08
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 16:08
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 16:08
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 16:08
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 16:08
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 16:08
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 16:08
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 16:08
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:08
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 16:08
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:08
Surr: 2,4,6-Tribromophenol	*47.3*			*34-129*	*%REC*	*1*	*18-Jan-2019 16:08*
Surr: 2-Fluorobiphenyl	*53.5*			*40-125*	*%REC*	*1*	*18-Jan-2019 16:08*
Surr: 2-Fluorophenol	*61.9*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:08*
Surr: 4-Terphenyl-d14	*55.4*			*40-135*	*%REC*	*1*	*18-Jan-2019 16:08*
Surr: Nitrobenzene-d5	*57.0*			*41-120*	*%REC*	*1*	*18-Jan-2019 16:08*
Surr: Phenol-d6	*62.7*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:08*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2019 15:20
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:20

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW86C-20190111	Lab ID:HS19010488-22
Collection Date:	11-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:08
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:08
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:08
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:08
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 07:08
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:08
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:08
Surr: 1,2-Dichloroethane-d4	*96.9*			*70-126*	*%REC*	*1*	*16-Jan-2019 07:08*
Surr: 4-Bromofluorobenzene	*98.2*			*81-113*	*%REC*	*1*	*16-Jan-2019 07:08*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 07:08*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*16-Jan-2019 07:08*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW86C-20190111	Lab ID:HS19010488-22	
Collection Date:	11-Jan-2019 08:25	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:28
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 16:28
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 16:28
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 16:28
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:28
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:28
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 16:28
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 16:28
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 16:28
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 16:28
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 16:28
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 16:28
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 16:28
Bis(2-ethylhexyl)phthalate	**0.000057**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 16:28
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:28
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:28
Di-n-butyl phthalate	**0.000072**	J	**0.000020**	**0.00020**	**mg/L**	1	18-Jan-2019 16:28
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 16:28
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 16:28
Naphthalene	**0.000079**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jan-2019 16:28
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 16:28
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 16:28
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 16:28
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:28
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 16:28
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:28
Surr: 2,4,6-Tribromophenol	*34.7*			*34-129*	*%REC*	*1*	*18-Jan-2019 16:28*
Surr: 2-Fluorobiphenyl	*41.4*			*40-125*	*%REC*	*1*	*18-Jan-2019 16:28*
Surr: 2-Fluorophenol	*33.5*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:28*
Surr: 4-Terphenyl-d14	*53.8*			*40-135*	*%REC*	*1*	*18-Jan-2019 16:28*
Surr: Nitrobenzene-d5	*42.7*			*41-120*	*%REC*	*1*	*18-Jan-2019 16:28*
Surr: Phenol-d6	*36.4*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:28*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00402**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 15:22
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:22

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-FD02-20190111	Lab ID:HS19010488-23
Collection Date:	11-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:32
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:32
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:32
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:32
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2019 07:32
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2019 07:32
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2019 07:32
Surr: 1,2-Dichloroethane-d4	*94.1*			*70-126*	*%REC*	*1*	*16-Jan-2019 07:32*
Surr: 4-Bromofluorobenzene	*97.5*			*81-113*	*%REC*	*1*	*16-Jan-2019 07:32*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jan-2019 07:32*
Surr: Toluene-d8	*98.7*			*82-127*	*%REC*	*1*	*16-Jan-2019 07:32*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-FD02-20190111	Lab ID:HS19010488-23
Collection Date:	11-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 16:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 16:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 16:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 16:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 16:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 16:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 16:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 16:48
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 16:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 16:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 16:48
Bis(2-ethylhexyl)phthalate	**0.00010**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 16:48
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:48
Di-n-butyl phthalate	**0.00011**	J	**0.000020**	**0.00020**	**mg/L**	1	18-Jan-2019 16:48
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 16:48
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 16:48
Naphthalene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 16:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 16:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 16:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 16:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 16:48
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 16:48
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 16:48
Surr: 2,4,6-Tribromophenol	*36.0*			*34-129*	*%REC*	*1*	*18-Jan-2019 16:48*
Surr: 2-Fluorobiphenyl	*42.0*			*40-125*	*%REC*	*1*	*18-Jan-2019 16:48*
Surr: 2-Fluorophenol	*36.6*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:48*
Surr: 4-Terphenyl-d14	*49.9*			*40-135*	*%REC*	*1*	*18-Jan-2019 16:48*
Surr: Nitrobenzene-d5	*41.5*			*41-120*	*%REC*	*1*	*18-Jan-2019 16:48*
Surr: Phenol-d6	*40.1*			*20-120*	*%REC*	*1*	*18-Jan-2019 16:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00405**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 15:25
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:25

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WQ-1620-FB03-20190111	Lab ID:HS19010488-24
Collection Date:	11-Jan-2019 11:15	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jan-2019 07:36
Benzene		U	0.00020	0.0010	mg/L	1	19-Jan-2019 07:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jan-2019 07:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jan-2019 07:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jan-2019 07:36
Toluene		U	0.00020	0.0010	mg/L	1	19-Jan-2019 07:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jan-2019 07:36
Surr: 1,2-Dichloroethane-d4	*95.9*			*70-126*	*%REC*	*1*	*19-Jan-2019 07:36*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*19-Jan-2019 07:36*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*19-Jan-2019 07:36*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*19-Jan-2019 07:36*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WQ-1620-FB03-20190111	Lab ID:HS19010488-24	
Collection Date:	11-Jan-2019 11:15	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 17:07
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 17:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 17:07
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 17:07
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 17:07
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 17:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 17:07
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 17:07
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 17:07
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 17:07
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 17:07
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 17:07
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:07
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 17:07
Bis(2-ethylhexyl)phthalate	**0.000058**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 17:07
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 17:07
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jan-2019 17:07
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 17:07
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 17:07
Naphthalene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:07
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 17:07
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 17:07
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 17:07
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 17:07
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 17:07
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 17:07
Surr: 2,4,6-Tribromophenol	*41.0*			*34-129*	*%REC*	*1*	*18-Jan-2019 17:07*
Surr: 2-Fluorobiphenyl	*55.2*			*40-125*	*%REC*	*1*	*18-Jan-2019 17:07*
Surr: 2-Fluorophenol	*53.1*			*20-120*	*%REC*	*1*	*18-Jan-2019 17:07*
Surr: 4-Terphenyl-d14	*60.2*			*40-135*	*%REC*	*1*	*18-Jan-2019 17:07*
Surr: Nitrobenzene-d5	*57.9*			*41-120*	*%REC*	*1*	*18-Jan-2019 17:07*
Surr: Phenol-d6	*59.8*			*20-120*	*%REC*	*1*	*18-Jan-2019 17:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2019 15:27
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:27

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488
Sample ID:	WG-1620-MW60A-20190111	Lab ID:HS19010488-25
Collection Date:	11-Jan-2019 10:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jan-2019 14:49
Benzene		U	0.00020	0.0010	mg/L	1	19-Jan-2019 14:49
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jan-2019 14:49
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jan-2019 14:49
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jan-2019 14:49
Toluene		U	0.00020	0.0010	mg/L	1	19-Jan-2019 14:49
Vinyl chloride		U	0.00020	0.0010	mg/L	1	19-Jan-2019 14:49
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jan-2019 14:49
Surr: 1,2-Dichloroethane-d4	*94.3*			*70-126*	*%REC*	*1*	*19-Jan-2019 14:49*
Surr: 4-Bromofluorobenzene	*99.0*			*81-113*	*%REC*	*1*	*19-Jan-2019 14:49*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*19-Jan-2019 14:49*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*19-Jan-2019 14:49*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010488	
Sample ID:	WG-1620-MW60A-20190111	Lab ID:HS19010488-25	
Collection Date:	11-Jan-2019 10:15	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES		**Method:SW8270**			Prep:SW3510 / 15-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jan-2019 17:27
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jan-2019 17:27
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jan-2019 17:27
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jan-2019 17:27
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jan-2019 17:27
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 17:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jan-2019 17:27
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jan-2019 17:27
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jan-2019 17:27
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jan-2019 17:27
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jan-2019 17:27
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jan-2019 17:27
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:27
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jan-2019 17:27
Bis(2-ethylhexyl)phthalate	**0.000092**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jan-2019 17:27
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 17:27
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:27
Di-n-butyl phthalate	**0.000064**	J	**0.000020**	**0.00020**	**mg/L**	1	18-Jan-2019 17:27
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jan-2019 17:27
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jan-2019 17:27
Naphthalene	U		0.000020	0.00010	mg/L	1	18-Jan-2019 17:27
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jan-2019 17:27
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jan-2019 17:27
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jan-2019 17:27
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jan-2019 17:27
Phenol	U		0.000035	0.00020	mg/L	1	18-Jan-2019 17:27
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jan-2019 17:27
Surr: 2,4,6-Tribromophenol	*36.6*			*34-129*	*%REC*	*1*	*18-Jan-2019 17:27*
Surr: 2-Fluorobiphenyl	*40.2*			*40-125*	*%REC*	*1*	*18-Jan-2019 17:27*
Surr: 2-Fluorophenol	*39.8*			*20-120*	*%REC*	*1*	*18-Jan-2019 17:27*
Surr: 4-Terphenyl-d14	*53.2*			*40-135*	*%REC*	*1*	*18-Jan-2019 17:27*
Surr: Nitrobenzene-d5	*41.5*			*41-120*	*%REC*	*1*	*18-Jan-2019 17:27*
Surr: Phenol-d6	*43.7*			*20-120*	*%REC*	*1*	*18-Jan-2019 17:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2019		Analyst: JHD
Arsenic	**0.00453**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2019 15:29
Lead	U		0.000600	0.00200	mg/L	1	24-Jan-2019 15:29

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

Batch ID: 136574 **Method:** LOW-LEVEL SEMIVOLATILES **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010488-01	1	1000	1 (mL)	0.001
HS19010488-02	1	1000	1 (mL)	0.001
HS19010488-03	1	1000	1 (mL)	0.001
HS19010488-04	1	1000	1 (mL)	0.001
HS19010488-05	1	990	1 (mL)	0.00101
HS19010488-06	1	1000	1 (mL)	0.001
HS19010488-07	1	1000	1 (mL)	0.001
HS19010488-08	1	1000	1 (mL)	0.001
HS19010488-09	1	1000	1 (mL)	0.001
HS19010488-10	1	1000	1 (mL)	0.001
HS19010488-11	1	1000	1 (mL)	0.001
HS19010488-12	1	990	1 (mL)	0.00101
HS19010488-13	1	1000	1 (mL)	0.001
HS19010488-14	1	1000	1 (mL)	0.001

Batch ID: 136614 **Method:** LOW-LEVEL SEMIVOLATILES **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010488-15	1	1000	1 (mL)	0.001
HS19010488-17	1	1000	1 (mL)	0.001
HS19010488-18	1	1000	1 (mL)	0.001
HS19010488-19	1	1000	1 (mL)	0.001
HS19010488-20	1	1000	1 (mL)	0.001
HS19010488-21	1	1000	1 (mL)	0.001
HS19010488-22	1	1000	1 (mL)	0.001
HS19010488-23	1	1000	1 (mL)	0.001
HS19010488-24	1	1000	1 (mL)	0.001
HS19010488-25	1	1000	1 (mL)	0.001

Batch ID: 136717 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010488-01	1	10	10 (mL)	1
HS19010488-02	1	10	10 (mL)	1
HS19010488-03	1	10	10 (mL)	1
HS19010488-04	1	10	10 (mL)	1
HS19010488-05	1	10	10 (mL)	1
HS19010488-06	1	10	10 (mL)	1
HS19010488-07	1	10	10 (mL)	1
HS19010488-08	1	10	10 (mL)	1

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

Batch ID: 136742 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010488-09	1	10	10 (mL)	1
HS19010488-10	1	10	10 (mL)	1
HS19010488-11	1	10	10 (mL)	1
HS19010488-12	1	10	10 (mL)	1
HS19010488-13	1	10	10 (mL)	1
HS19010488-14	1	10	10 (mL)	1
HS19010488-15	1	10	10 (mL)	1
HS19010488-17	1	10	10 (mL)	1
HS19010488-18	1	10	10 (mL)	1
HS19010488-19	1	10	10 (mL)	1
HS19010488-20	1	10	10 (mL)	1
HS19010488-21	1	10	10 (mL)	1
HS19010488-22	1	10	10 (mL)	1
HS19010488-23	1	10	10 (mL)	1
HS19010488-24	1	10	10 (mL)	1
HS19010488-25	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136574	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Water		
HS19010488-10	WQ-1620-FB02-20190109	09 Jan 2019 17:35		14 Jan 2019 11:18	23 Jan 2019 19:24	1
Batch ID 136574	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Groundwater		
HS19010488-01	WG-1620-TW41B-20190109	09 Jan 2019 10:35		14 Jan 2019 11:18	23 Jan 2019 17:26	10
HS19010488-01	WG-1620-TW41B-20190109	09 Jan 2019 10:35		14 Jan 2019 11:18	21 Jan 2019 23:41	1
HS19010488-02	WG-1620-MW05-20190109	09 Jan 2019 11:25		14 Jan 2019 11:18	22 Jan 2019 00:01	1
HS19010488-03	WG-1620-P11-20190109	09 Jan 2019 12:25		14 Jan 2019 11:18	22 Jan 2019 00:20	1
HS19010488-04	WG-1620-MW03-20190109	09 Jan 2019 13:15		14 Jan 2019 11:18	22 Jan 2019 00:40	1
HS19010488-05	WG-1620-MW09-20190109	09 Jan 2019 14:05		14 Jan 2019 11:18	23 Jan 2019 17:46	1
HS19010488-06	WG-1620-MW04-20190109	09 Jan 2019 15:05		14 Jan 2019 11:18	23 Jan 2019 18:05	1
HS19010488-07	WG-1620-MW21C-20190109	09 Jan 2019 16:20		14 Jan 2019 11:18	23 Jan 2019 18:25	1
HS19010488-08	WG-1620-FD01-20190109	09 Jan 2019 16:20		14 Jan 2019 11:18	23 Jan 2019 18:45	1
HS19010488-09	WG-1620-MW17-20190109	09 Jan 2019 17:20		14 Jan 2019 11:18	25 Jan 2019 11:27	1000
HS19010488-09	WG-1620-MW17-20190109	09 Jan 2019 17:20		14 Jan 2019 11:18	24 Jan 2019 17:29	100
HS19010488-09	WG-1620-MW17-20190109	09 Jan 2019 17:20		14 Jan 2019 11:18	24 Jan 2019 17:10	10
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25		14 Jan 2019 11:18	24 Jan 2019 18:26	1000
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25		14 Jan 2019 11:18	24 Jan 2019 18:07	100
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25		14 Jan 2019 11:18	24 Jan 2019 17:48	10
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25		14 Jan 2019 11:18	23 Jan 2019 19:44	1
HS19010488-12	WG-1620-MW18C-20190110	10 Jan 2019 08:20		14 Jan 2019 11:18	24 Jan 2019 19:23	1000
HS19010488-12	WG-1620-MW18C-20190110	10 Jan 2019 08:20		14 Jan 2019 11:18	24 Jan 2019 19:04	100
HS19010488-12	WG-1620-MW18C-20190110	10 Jan 2019 08:20		14 Jan 2019 11:18	24 Jan 2019 18:45	10
HS19010488-13	WG-1620-MW18A-20190110	10 Jan 2019 10:45		14 Jan 2019 11:18	24 Jan 2019 20:20	1000
HS19010488-13	WG-1620-MW18A-20190110	10 Jan 2019 10:45		14 Jan 2019 11:18	24 Jan 2019 20:01	100
HS19010488-13	WG-1620-MW18A-20190110	10 Jan 2019 10:45		14 Jan 2019 11:18	24 Jan 2019 19:42	10
HS19010488-14	WG-1620-MW48C-20190110	10 Jan 2019 11:45		14 Jan 2019 11:18	23 Jan 2019 20:43	1
Batch ID 136614	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Water		
HS19010488-24	WQ-1620-FB03-20190111	11 Jan 2019 11:15		15 Jan 2019 10:05	18 Jan 2019 17:07	1
Batch ID 136614	**Test Name :** LOW-LEVEL SEMIVOLATILES			**Matrix:** Groundwater		
HS19010488-15	WG-1620-MW69A-20190110	10 Jan 2019 12:45		15 Jan 2019 10:05	18 Jan 2019 14:30	1
HS19010488-17	WG-1620-MW80B-20190110	10 Jan 2019 13:50		15 Jan 2019 10:05	18 Jan 2019 14:50	1
HS19010488-18	WG-1620-MW50A-20190110	10 Jan 2019 14:40		15 Jan 2019 10:05	18 Jan 2019 15:09	1
HS19010488-19	WG-1620-MW81B-20190110	10 Jan 2019 15:30		15 Jan 2019 10:05	18 Jan 2019 15:29	1
HS19010488-20	WG-1620-MW51A-20190110	10 Jan 2019 16:40		15 Jan 2019 10:05	18 Jan 2019 15:49	1
HS19010488-21	WG-1620-MW51C-20190110	10 Jan 2019 17:30		15 Jan 2019 10:05	18 Jan 2019 16:08	1
HS19010488-22	WG-1620-MW86C-20190111	11 Jan 2019 08:25		15 Jan 2019 10:05	18 Jan 2019 16:28	1
HS19010488-23	WG-1620-FD02-20190111	11 Jan 2019 08:25		15 Jan 2019 10:05	18 Jan 2019 16:48	1
HS19010488-25	WG-1620-MW60A-20190111	11 Jan 2019 10:15		15 Jan 2019 10:05	18 Jan 2019 17:27	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136717	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19010488-01	WG-1620-TW41B-20190109	09 Jan 2019 10:35		17 Jan 2019 08:30	23 Jan 2019 20:04	1
HS19010488-02	WG-1620-MW05-20190109	09 Jan 2019 11:25		17 Jan 2019 08:30	23 Jan 2019 20:06	1
HS19010488-03	WG-1620-P11-20190109	09 Jan 2019 12:25		17 Jan 2019 08:30	23 Jan 2019 20:08	1
HS19010488-04	WG-1620-MW03-20190109	09 Jan 2019 13:15		17 Jan 2019 08:30	23 Jan 2019 20:10	1
HS19010488-05	WG-1620-MW09-20190109	09 Jan 2019 14:05		17 Jan 2019 08:30	23 Jan 2019 20:13	1
HS19010488-06	WG-1620-MW04-20190109	09 Jan 2019 15:05		17 Jan 2019 08:30	23 Jan 2019 20:15	1
HS19010488-07	WG-1620-MW21C-20190109	09 Jan 2019 16:20		17 Jan 2019 08:30	23 Jan 2019 20:17	1
HS19010488-08	WG-1620-FD01-20190109	09 Jan 2019 16:20		17 Jan 2019 08:30	23 Jan 2019 20:19	1
Batch ID 136742	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19010488-10	WQ-1620-FB02-20190109	09 Jan 2019 17:35		17 Jan 2019 13:00	24 Jan 2019 14:44	1
HS19010488-24	WQ-1620-FB03-20190111	11 Jan 2019 11:15		17 Jan 2019 13:00	24 Jan 2019 15:27	1
Batch ID 136742	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19010488-09	WG-1620-MW17-20190109	09 Jan 2019 17:20		17 Jan 2019 13:00	24 Jan 2019 14:42	1
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25		17 Jan 2019 13:00	24 Jan 2019 14:46	1
HS19010488-12	WG-1620-MW18C-20190110	10 Jan 2019 08:20		17 Jan 2019 13:00	24 Jan 2019 14:48	1
HS19010488-13	WG-1620-MW18A-20190110	10 Jan 2019 10:45		17 Jan 2019 13:00	24 Jan 2019 14:50	1
HS19010488-14	WG-1620-MW48C-20190110	10 Jan 2019 11:45		17 Jan 2019 13:00	24 Jan 2019 14:53	1
HS19010488-15	WG-1620-MW69A-20190110	10 Jan 2019 12:45		17 Jan 2019 13:00	24 Jan 2019 14:55	1
HS19010488-17	WG-1620-MW80B-20190110	10 Jan 2019 13:50		17 Jan 2019 13:00	24 Jan 2019 14:57	1
HS19010488-18	WG-1620-MW50A-20190110	10 Jan 2019 14:40		17 Jan 2019 13:00	24 Jan 2019 15:00	1
HS19010488-19	WG-1620-MW81B-20190110	10 Jan 2019 15:30		17 Jan 2019 13:00	24 Jan 2019 15:15	1
HS19010488-20	WG-1620-MW51A-20190110	10 Jan 2019 16:40		17 Jan 2019 13:00	24 Jan 2019 15:18	1
HS19010488-21	WG-1620-MW51C-20190110	10 Jan 2019 17:30		17 Jan 2019 13:00	24 Jan 2019 15:20	1
HS19010488-22	WG-1620-MW86C-20190111	11 Jan 2019 08:25		17 Jan 2019 13:00	24 Jan 2019 15:22	1
HS19010488-23	WG-1620-FD02-20190111	11 Jan 2019 08:25		17 Jan 2019 13:00	24 Jan 2019 15:25	1
HS19010488-25	WG-1620-MW60A-20190111	11 Jan 2019 10:15		17 Jan 2019 13:00	24 Jan 2019 15:29	1
Batch ID R331030	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19010488-01	WG-1620-TW41B-20190109	09 Jan 2019 10:35			15 Jan 2019 01:04	10
HS19010488-02	WG-1620-MW05-20190109	09 Jan 2019 11:25			15 Jan 2019 00:37	1
HS19010488-03	WG-1620-P11-20190109	09 Jan 2019 12:25			15 Jan 2019 05:52	1
HS19010488-04	WG-1620-MW03-20190109	09 Jan 2019 13:15			15 Jan 2019 06:16	1
HS19010488-05	WG-1620-MW09-20190109	09 Jan 2019 14:05			15 Jan 2019 06:42	1
Batch ID R331042	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19010488-10	WQ-1620-FB02-20190109	09 Jan 2019 17:35			14 Jan 2019 23:31	1
HS19010488-16	WQ-1620-TB02-20190110	10 Jan 2019 00:00			14 Jan 2019 23:55	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R331088	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS19010488-06	WG-1620-MW04-20190109	09 Jan 2019 15:05			16 Jan 2019 01:09	1
HS19010488-07	WG-1620-MW21C-20190109	09 Jan 2019 16:20			16 Jan 2019 02:45	1
HS19010488-08	WG-1620-FD01-20190109	09 Jan 2019 16:20			16 Jan 2019 03:09	1
HS19010488-09	WG-1620-MW17-20190109	09 Jan 2019 17:20			16 Jan 2019 07:59	10
HS19010488-11	WG-1620-MW17C-20190110	10 Jan 2019 07:25			16 Jan 2019 03:33	1
HS19010488-12	WG-1620-MW18C-20190110	10 Jan 2019 08:20			16 Jan 2019 08:25	10
HS19010488-13	WG-1620-MW18A-20190110	10 Jan 2019 10:45			16 Jan 2019 08:52	25
HS19010488-14	WG-1620-MW48C-20190110	10 Jan 2019 11:45			16 Jan 2019 03:57	1
HS19010488-15	WG-1620-MW69A-20190110	10 Jan 2019 12:45			16 Jan 2019 04:21	1
HS19010488-17	WG-1620-MW80B-20190110	10 Jan 2019 13:50			16 Jan 2019 05:09	1
HS19010488-18	WG-1620-MW50A-20190110	10 Jan 2019 14:40			16 Jan 2019 05:33	1
HS19010488-19	WG-1620-MW81B-20190110	10 Jan 2019 15:30			16 Jan 2019 05:57	1
HS19010488-20	WG-1620-MW51A-20190110	10 Jan 2019 16:40			16 Jan 2019 06:20	1
HS19010488-21	WG-1620-MW51C-20190110	10 Jan 2019 17:30			16 Jan 2019 06:44	1
HS19010488-22	WG-1620-MW86C-20190111	11 Jan 2019 08:25			16 Jan 2019 07:08	1
HS19010488-23	WG-1620-FD02-20190111	11 Jan 2019 08:25			16 Jan 2019 07:32	1
Batch ID R331375	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS19010488-25	WG-1620-MW60A-20190111	11 Jan 2019 10:15			19 Jan 2019 14:49	1
Batch ID R331375	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19010488-24	WQ-1620-FB03-20190111	11 Jan 2019 11:15			19 Jan 2019 07:36	1

WorkOrder: HS19010488
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	Arsenic	7440-38-2	0.000500	0.000340	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.000916	0.000600	0.00200

WorkOrder: HS19010488
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19010488
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles

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	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000041	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000052	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000052	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000061	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000056	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000022	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00020	0.00019	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000066	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000072	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000074	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000074	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000066	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000069	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000083	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000082	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000060	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000080	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000074	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000073	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000065	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000083	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000068	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00016	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000066	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000074	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: HS19010488
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles

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	0.000068	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000065	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000062	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000081	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000072	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000041	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000036	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000053	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000036	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000056	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000051	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000067	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000076	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000077	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00010	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000070	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000047	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000094	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000061	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000045	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000064	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000065	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000082	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000051	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000078	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000066	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: HS19010488
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00054	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	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: HS19010488
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	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00052	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00055	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00052	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.0012	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00057	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00050	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136717 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-136717** Units: **mg/L** Analysis Date: **22-Jan-2019 16:33**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920121** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-136717** Units: **mg/L** Analysis Date: **22-Jan-2019 16:35**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920122** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05211	0.00200	0.05	0	104	80 - 120				
Lead	0.05367	0.00200	0.05	0	107	80 - 120				

MS Sample ID: **HS19010627-01MS** Units: **mg/L** Analysis Date: **22-Jan-2019 16:41**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920125** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05757	0.00200	0.05	0.003203	109	80 - 120				
Lead	0.04375	0.00200	0.05	0	87.5	80 - 120				

MSD Sample ID: **HS19010627-01MSD** Units: **mg/L** Analysis Date: **22-Jan-2019 16:42**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920126** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0581	0.00200	0.05	0.003203	110	80 - 120	0.05757	0.92	20	
Lead	0.04683	0.00200	0.05	0	93.7	80 - 120	0.04375	6.81	20	

PDS Sample ID: **HS19010627-01PDS** Units: **mg/L** Analysis Date: **22-Jan-2019 16:44**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920127** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1073	0.00200	0.1	0.003203	104	75 - 125				
Lead	0.08872	0.00200	0.1	0.000038	88.7	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136717 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS19010627-01SD** Units: **mg/L** Analysis Date: **22-Jan-2019 16:39**
Client ID: Run ID: **ICPMS05_331472** SeqNo: **4920124** PrepDate: **17-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.003007	0.0100					0.003203	0	10	J
Lead	U	0.0100					0.000038	0	10	

The following samples were analyzed in this batch: HS19010488-01 HS19010488-02 HS19010488-03 HS19010488-04 HS19010488-05 HS19010488-06 HS19010488-07 HS19010488-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136742 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-136742** Units: **mg/L** Analysis Date: **18-Jan-2019 16:37**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915229** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-136742** Units: **mg/L** Analysis Date: **18-Jan-2019 16:39**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915230** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05049	0.00200	0.05	0	101	80 - 120				
Lead	0.05272	0.00200	0.05	0	105	80 - 120				

MS Sample ID: **HS19010531-01MS** Units: **mg/L** Analysis Date: **18-Jan-2019 16:45**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915233** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.053	0.00200	0.05	0.000277	105	80 - 120				
Lead	0.04919	0.00200	0.05	0.000038	98.3	80 - 120				

MSD Sample ID: **HS19010531-01MSD** Units: **mg/L** Analysis Date: **18-Jan-2019 16:47**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915234** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0533	0.00200	0.05	0.000277	106	80 - 120	0.053	0.566	20	
Lead	0.04072	0.00200	0.05	0.000038	81.4	80 - 120	0.04919	18.9	20	

PDS Sample ID: **HS19010531-01PDS** Units: **mg/L** Analysis Date: **18-Jan-2019 16:49**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915235** PrepDate: **17-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09869	0.00200	0.1	0.000277	98.4	75 - 125				
Lead	0.08084	0.00200	0.1	0.000038	80.8	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136742 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS19010531-01SD** Units: **mg/L** Analysis Date: **18-Jan-2019 16:43**
Client ID: Run ID: **ICPMS05_331295** SeqNo: **4915232** PrepDate: **17-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					-0.000909	0	10	
Lead	U	0.0100					0.000118	0	10	

The following samples were analyzed in this batch:

HS19010488-09	HS19010488-10	HS19010488-11	HS19010488-12
HS19010488-13	HS19010488-14	HS19010488-15	HS19010488-17
HS19010488-18	HS19010488-19	HS19010488-20	HS19010488-21
HS19010488-22	HS19010488-23	HS19010488-24	HS19010488-25

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 16:47**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923243** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.108*	*0.20*	*5*	*0*	*62.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.184*	*0.20*	*5*	*0*	*63.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.135*	*0.20*	*5*	*0*	*62.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.842*	*0.20*	*5*	*0*	*76.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.149*	*0.20*	*5*	*0*	*63.0*	*41 - 120*				
Surr: Phenol-d6	*3.133*	*0.20*	*5*	*0*	*62.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 17:06**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923244** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.425	0.20	5	0	68.5	39 - 127				
2,4-Dimethylphenol	2.909	0.20	5	0	58.2	35 - 120				
2,4-Dinitrotoluene	3.257	0.20	5	0	65.1	50 - 122				
2,6-Dinitrotoluene	3.348	0.20	5	0	67.0	50 - 120				
2-Chloronaphthalene	3.311	0.20	5	0	66.2	50 - 120				
2-Methylnaphthalene	3.319	0.10	5	0	66.4	50 - 120				
4,6-Dinitro-2-methylphenol	2.839	0.20	5	0	56.8	25 - 121				
4-Nitrophenol	3.667	1.0	5	0	73.3	30 - 130				
Acenaphthene	2.962	0.10	5	0	59.2	45 - 120				
Acenaphthylene	3.213	0.10	5	0	64.3	47 - 120				
Anthracene	3.335	0.10	5	0	66.7	45 - 120				
Benz(a)anthracene	3.534	0.10	5	0	70.7	40 - 120				
Benzo(a)pyrene	3.583	0.10	5	0	71.7	45 - 120				
Bis(2-chloroethoxy)methane	3.193	0.20	5	0	63.9	45 - 120				
Bis(2-ethylhexyl)phthalate	3.532	0.20	5	0	70.6	40 - 139				
Chrysene	3.656	0.10	5	0	73.1	43 - 120				
Dibenzofuran	3.153	0.10	5	0	63.1	50 - 120				
Di-n-butyl phthalate	3.53	0.20	5	0	70.6	45 - 123				
Fluoranthene	3.345	0.10	5	0	66.9	45 - 125				
Fluorene	3.258	0.10	5	0	65.2	49 - 120				
Naphthalene	3.154	0.10	5	0	63.1	45 - 120				
Nitrobenzene	3.125	0.20	5	0	62.5	44 - 120				
N-Nitrosodiphenylamine	3.485	0.20	5	0	69.7	40 - 125				
Pentachlorophenol	1.947	0.20	5	0	38.9	19 - 121				
Phenanthrene	3.258	0.10	5	0	65.2	45 - 121				
Phenol	3.007	0.20	5	0	60.1	20 - 124				
Pyrene	3.499	0.10	5	0	70.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.918*	*0.20*	*5*	*0*	*78.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.542*	*0.20*	*5*	*0*	*70.8*	*40 - 125*				
Surr: 2-Fluorophenol	*3.197*	*0.20*	*5*	*0*	*63.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.935*	*0.20*	*5*	*0*	*78.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.356*	*0.20*	*5*	*0*	*67.1*	*41 - 120*				
Surr: Phenol-d6	*3.433*	*0.20*	*5*	*0*	*68.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-136574** Units: **ug/L** Analysis Date: **21-Jan-2019 17:26**
Client ID: Run ID: **SV-6_331448** SeqNo: **4923245** PrepDate: **14-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.542	0.20	5	0	70.8	39 - 127	3.425	3.38	20	
2,4-Dimethylphenol	2.885	0.20	5	0	57.7	35 - 120	2.909	0.836	20	
2,4-Dinitrotoluene	3.412	0.20	5	0	68.2	50 - 122	3.257	4.64	20	
2,6-Dinitrotoluene	3.653	0.20	5	0	73.1	50 - 120	3.348	8.71	20	
2-Chloronaphthalene	3.275	0.20	5	0	65.5	50 - 120	3.311	1.08	20	
2-Methylnaphthalene	3.455	0.10	5	0	69.1	50 - 120	3.319	4.01	20	
4,6-Dinitro-2-methylphenol	2.502	0.20	5	0	50.0	25 - 121	2.839	12.6	30	
4-Nitrophenol	3.099	1.0	5	0	62.0	30 - 130	3.667	16.8	20	
Acenaphthene	3.033	0.10	5	0	60.7	45 - 120	2.962	2.37	20	
Acenaphthylene	3.372	0.10	5	0	67.4	47 - 120	3.213	4.84	20	
Anthracene	3.326	0.10	5	0	66.5	45 - 120	3.335	0.279	20	
Benz(a)anthracene	3.597	0.10	5	0	71.9	40 - 120	3.534	1.77	20	
Benzo(a)pyrene	3.783	0.10	5	0	75.7	45 - 120	3.583	5.42	20	
Bis(2-chloroethoxy)methane	3.321	0.20	5	0	66.4	45 - 120	3.193	3.94	20	
Bis(2-ethylhexyl)phthalate	3.63	0.20	5	0	72.6	40 - 139	3.532	2.72	20	
Chrysene	3.715	0.10	5	0	74.3	43 - 120	3.656	1.6	20	
Dibenzofuran	3.225	0.10	5	0	64.5	50 - 120	3.153	2.28	20	
Di-n-butyl phthalate	3.561	0.20	5	0	71.2	45 - 123	3.53	0.865	20	
Fluoranthene	3.507	0.10	5	0	70.1	45 - 125	3.345	4.74	20	
Fluorene	3.396	0.10	5	0	67.9	49 - 120	3.258	4.13	20	
Naphthalene	3.137	0.10	5	0	62.7	45 - 120	3.154	0.533	20	
Nitrobenzene	3.302	0.20	5	0	66.0	44 - 120	3.125	5.5	20	
N-Nitrosodiphenylamine	3.648	0.20	5	0	73.0	40 - 125	3.485	4.59	20	
Pentachlorophenol	1.865	0.20	5	0	37.3	19 - 121	1.947	4.33	20	
Phenanthrene	3.466	0.10	5	0	69.3	45 - 121	3.258	6.17	20	
Phenol	2.767	0.20	5	0	55.3	20 - 124	3.007	8.3	20	
Pyrene	3.583	0.10	5	0	71.7	40 - 130	3.499	2.37	20	
Surr: 2,4,6-Tribromophenol	*3.67*	*0.20*	*5*	*0*	*73.4*	*34 - 129*	*3.918*	*6.54*	*20*	
Surr: 2-Fluorobiphenyl	*3.491*	*0.20*	*5*	*0*	*69.8*	*40 - 125*	*3.542*	*1.44*	*20*	
Surr: 2-Fluorophenol	*2.782*	*0.20*	*5*	*0*	*55.6*	*20 - 120*	*3.197*	*13.9*	*20*	
Surr: 4-Terphenyl-d14	*3.868*	*0.20*	*5*	*0*	*77.4*	*40 - 135*	*3.935*	*1.72*	*20*	
Surr: Nitrobenzene-d5	*3.24*	*0.20*	*5*	*0*	*64.8*	*41 - 120*	*3.356*	*3.51*	*20*	
Surr: Phenol-d6	*3.045*	*0.20*	*5*	*0*	*60.9*	*20 - 120*	*3.433*	*12*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136574 **Instrument: SV-6** **Method: SW8270**

The following samples were analyzed in this batch:

HS19010488-01	HS19010488-02	HS19010488-03	HS19010488-04
HS19010488-05	HS19010488-06	HS19010488-07	HS19010488-08
HS19010488-09	HS19010488-10	HS19010488-11	HS19010488-12
HS19010488-13	HS19010488-14		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136614 **Instrument: SV-7** **Method: SW8270**

MBLK Sample ID: **MBLK-136614** Units: **ug/L** Analysis Date: **17-Jan-2019 19:01**
Client ID: Run ID: **SV-7_331241** SeqNo: **4915155** PrepDate: **15-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.152*	*0.20*	*5*	*0*	*63.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.863*	*0.20*	*5*	*0*	*77.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.919*	*0.20*	*5*	*0*	*78.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.214*	*0.20*	*5*	*0*	*84.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.915*	*0.20*	*5*	*0*	*78.3*	*41 - 120*				
Surr: Phenol-d6	*4.189*	*0.20*	*5*	*0*	*83.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136614 **Instrument: SV-7** **Method: SW8270**

LCS Sample ID: **LCS-136614** Units: **ug/L** Analysis Date: **17-Jan-2019 16:40**
Client ID: Run ID: **SV-7_331241** SeqNo: **4915153** PrepDate: **15-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.99	0.20	5	0	99.8	39 - 127				
2,4-Dimethylphenol	3.683	0.20	5	0	73.7	35 - 120				
2,4-Dinitrotoluene	3.944	0.20	5	0	78.9	50 - 122				
2,6-Dinitrotoluene	3.842	0.20	5	0	76.8	50 - 120				
2-Chloronaphthalene	4.065	0.20	5	0	81.3	50 - 120				
2-Methylnaphthalene	3.843	0.10	5	0	76.9	50 - 120				
4,6-Dinitro-2-methylphenol	3.213	0.20	5	0	64.3	25 - 121				
4-Nitrophenol	3.837	1.0	5	0	76.7	30 - 130				
Acenaphthene	3.79	0.10	5	0	75.8	45 - 120				
Acenaphthylene	4.016	0.10	5	0	80.3	47 - 120				
Anthracene	4.161	0.10	5	0	83.2	45 - 120				
Benz(a)anthracene	4.224	0.10	5	0	84.5	40 - 120				
Benzo(a)pyrene	4.464	0.10	5	0	89.3	45 - 120				
Bis(2-chloroethoxy)methane	4.216	0.20	5	0	84.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.92	0.20	5	0	98.4	40 - 139				
Chrysene	4.291	0.10	5	0	85.8	43 - 120				
Dibenzofuran	3.906	0.10	5	0	78.1	50 - 120				
Di-n-butyl phthalate	4.49	0.20	5	0	89.8	45 - 123				
Fluoranthene	4.015	0.10	5	0	80.3	45 - 125				
Fluorene	3.871	0.10	5	0	77.4	49 - 120				
Naphthalene	4.004	0.10	5	0	80.1	45 - 120				
Nitrobenzene	4.219	0.20	5	0	84.4	44 - 120				
N-Nitrosodiphenylamine	4.239	0.20	5	0	84.8	40 - 125				
Pentachlorophenol	1.934	0.20	5	0	38.7	19 - 121				
Phenanthrene	4.082	0.10	5	0	81.6	45 - 121				
Phenol	4.413	0.20	5	0	88.3	20 - 124				
Pyrene	4.499	0.10	5	0	90.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.432*	*0.20*	*5*	*0*	*68.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.042*	*0.20*	*5*	*0*	*80.8*	*40 - 125*				
Surr: 2-Fluorophenol	*4.43*	*0.20*	*5*	*0*	*88.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.443*	*0.20*	*5*	*0*	*88.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.201*	*0.20*	*5*	*0*	*84.0*	*41 - 120*				
Surr: Phenol-d6	*4.753*	*0.20*	*5*	*0*	*95.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136614 **Instrument: SV-7** **Method: SW8270**

LCSD Sample ID: **LCSD-136614** Units: **ug/L** Analysis Date: **17-Jan-2019 17:00**
Client ID: Run ID: **SV-7_331241** SeqNo: **4915154** PrepDate: **15-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.972	0.20	5	0	99.4	39 - 127	4.99	0.356	20	
2,4-Dimethylphenol	4.037	0.20	5	0	80.7	35 - 120	3.683	9.15	20	
2,4-Dinitrotoluene	4.066	0.20	5	0	81.3	50 - 122	3.944	3.05	20	
2,6-Dinitrotoluene	4.093	0.20	5	0	81.9	50 - 120	3.842	6.35	20	
2-Chloronaphthalene	4.608	0.20	5	0	92.2	50 - 120	4.065	12.5	20	
2-Methylnaphthalene	4.041	0.10	5	0	80.8	50 - 120	3.843	5.03	20	
4,6-Dinitro-2-methylphenol	3.691	0.20	5	0	73.8	25 - 121	3.213	13.8	30	
4-Nitrophenol	4.013	1.0	5	0	80.3	30 - 130	3.837	4.49	20	
Acenaphthene	4.047	0.10	5	0	80.9	45 - 120	3.79	6.55	20	
Acenaphthylene	4.205	0.10	5	0	84.1	47 - 120	4.016	4.61	20	
Anthracene	4.086	0.10	5	0	81.7	45 - 120	4.161	1.83	20	
Benz(a)anthracene	4.252	0.10	5	0	85.0	40 - 120	4.224	0.65	20	
Benzo(a)pyrene	4.455	0.10	5	0	89.1	45 - 120	4.464	0.216	20	
Bis(2-chloroethoxy)methane	4.269	0.20	5	0	85.4	45 - 120	4.216	1.27	20	
Bis(2-ethylhexyl)phthalate	4.966	0.20	5	0	99.3	40 - 139	4.92	0.929	20	
Chrysene	4.279	0.10	5	0	85.6	43 - 120	4.291	0.268	20	
Dibenzofuran	4.031	0.10	5	0	80.6	50 - 120	3.906	3.15	20	
Di-n-butyl phthalate	4.433	0.20	5	0	88.7	45 - 123	4.49	1.28	20	
Fluoranthene	4.049	0.10	5	0	81.0	45 - 125	4.015	0.841	20	
Fluorene	4.017	0.10	5	0	80.3	49 - 120	3.871	3.7	20	
Naphthalene	4.287	0.10	5	0	85.7	45 - 120	4.004	6.82	20	
Nitrobenzene	4.559	0.20	5	0	91.2	44 - 120	4.219	7.75	20	
N-Nitrosodiphenylamine	4.288	0.20	5	0	85.8	40 - 125	4.239	1.15	20	
Pentachlorophenol	2.003	0.20	5	0	40.1	19 - 121	1.934	3.51	20	
Phenanthrene	4.101	0.10	5	0	82.0	45 - 121	4.082	0.45	20	
Phenol	4.418	0.20	5	0	88.4	20 - 124	4.413	0.108	20	
Pyrene	4.407	0.10	5	0	88.1	40 - 130	4.499	2.08	20	
Surr: 2,4,6-Tribromophenol	*3.49*	*0.20*	*5*	*0*	*69.8*	*34 - 129*	*3.432*	*1.67*	*20*	
Surr: 2-Fluorobiphenyl	*4.292*	*0.20*	*5*	*0*	*85.8*	*40 - 125*	*4.042*	*5.99*	*20*	
Surr: 2-Fluorophenol	*4.447*	*0.20*	*5*	*0*	*88.9*	*20 - 120*	*4.43*	*0.376*	*20*	
Surr: 4-Terphenyl-d14	*4.457*	*0.20*	*5*	*0*	*89.1*	*40 - 135*	*4.443*	*0.312*	*20*	
Surr: Nitrobenzene-d5	*4.464*	*0.20*	*5*	*0*	*89.3*	*41 - 120*	*4.201*	*6.07*	*20*	
Surr: Phenol-d6	*4.808*	*0.20*	*5*	*0*	*96.2*	*20 - 120*	*4.753*	*1.14*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: 136614 **Instrument: SV-7** **Method: SW8270**

The following samples were analyzed in this batch:

HS19010488-15	HS19010488-17	HS19010488-18	HS19010488-19
HS19010488-20	HS19010488-21	HS19010488-22	HS19010488-23
HS19010488-24	HS19010488-25		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331030 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 23:26**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908344** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.99*	*1.0*	*50*	*0*	*96.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.31*	*1.0*	*50*	*0*	*96.6*	*82 - 115*				
Surr: Dibromofluoromethane	*51.08*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*49.07*	*1.0*	*50*	*0*	*98.1*	*81 - 120*				

LCS Sample ID: **VLCSW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 22:38**
Client ID: Run ID: **VOA2_331030** SeqNo: **4908367** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.25	1.0	20	0	96.3	70 - 124				
Benzene	18.74	1.0	20	0	93.7	74 - 120				
Chlorobenzene	20.42	1.0	20	0	102	76 - 113				
Ethylbenzene	20.53	1.0	20	0	103	77 - 117				
Methylene chloride	19.15	2.0	20	0	95.7	70 - 127				
Toluene	19.5	1.0	20	0	97.5	77 - 118				
Xylenes, Total	61.55	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.25*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.3*	*1.0*	*50*	*0*	*98.6*	*82 - 115*				
Surr: Dibromofluoromethane	*50.3*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*48.78*	*1.0*	*50*	*0*	*97.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: **R331030** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS19010488-02MS** Units: **ug/L** Analysis Date: **15-Jan-2019 01:28**
Client ID: **WG-1620-MW05-20190109** Run ID: **VOA2_331030** SeqNo: **4908349** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.83	1.0	20	0	114	70 - 127				
Benzene	22.47	1.0	20	0	112	70 - 127				
Chlorobenzene	24.15	1.0	20	0	121	70 - 114				S
Ethylbenzene	24.94	1.0	20	0	125	70 - 124				S
Methylene chloride	22.3	2.0	20	0	112	70 - 128				
Toluene	23.63	1.0	20	0	118	70 - 123				
Xylenes, Total	72.41	1.0	60	0	121	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.71*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.81*	*1.0*	*50*	*0*	*99.6*	*81 - 113*				
Surr: Dibromofluoromethane	*50.81*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*48.43*	*1.0*	*50*	*0*	*96.9*	*82 - 127*				

MSD Sample ID: **HS19010488-02MSD** Units: **ug/L** Analysis Date: **15-Jan-2019 01:52**
Client ID: **WG-1620-MW05-20190109** Run ID: **VOA2_331030** SeqNo: **4908350** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.17	1.0	20	0	111	70 - 127	22.83	2.94	20	
Benzene	22.05	1.0	20	0	110	70 - 127	22.47	1.87	20	
Chlorobenzene	24.13	1.0	20	0	121	70 - 114	24.15	0.0925	20	S
Ethylbenzene	24.35	1.0	20	0	122	70 - 124	24.94	2.38	20	
Methylene chloride	21.15	2.0	20	0	106	70 - 128	22.3	5.27	20	
Toluene	23.48	1.0	20	0	117	70 - 123	23.63	0.623	20	
Xylenes, Total	72.09	1.0	60	0	120	70 - 130	72.41	0.437	20	
Surr: 1,2-Dichloroethane-d4	*50.31*	*1.0*	*50*	*0*	*101*	*70 - 126*	*51.71*	*2.75*	*20*	
Surr: 4-Bromofluorobenzene	*49.85*	*1.0*	*50*	*0*	*99.7*	*81 - 113*	*49.81*	*0.0761*	*20*	
Surr: Dibromofluoromethane	*50.75*	*1.0*	*50*	*0*	*102*	*77 - 123*	*50.81*	*0.117*	*20*	
Surr: Toluene-d8	*48.58*	*1.0*	*50*	*0*	*97.2*	*82 - 127*	*48.43*	*0.305*	*20*	

The following samples were analyzed in this batch: HS19010488-01 HS19010488-02 HS19010488-03 HS19010488-04 HS19010488-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331042 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 16:03**
Client ID: Run ID: **VOA9_331042** SeqNo: **4908590** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*52.42*	*1.0*	*50*	*0*	*105*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.73*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*46.85*	*1.0*	*50*	*0*	*93.7*	*73 - 126*				
Surr: Toluene-d8	*53.74*	*1.0*	*50*	*0*	*107*	*81 - 120*				

LCS Sample ID: **VLCSW-190114** Units: **ug/L** Analysis Date: **14-Jan-2019 14:49**
Client ID: Run ID: **VOA9_331042** SeqNo: **4908589** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.08	1.0	20	0	110	70 - 124				
Benzene	21.79	1.0	20	0	109	74 - 120				
Chlorobenzene	20.68	1.0	20	0	103	76 - 113				
Ethylbenzene	21.73	1.0	20	0	109	77 - 117				
Methylene chloride	22.78	2.0	20	0	114	70 - 127				
Toluene	22.03	1.0	20	0	110	77 - 118				
Xylenes, Total	66.56	1.0	60	0	111	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.04*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*54.12*	*1.0*	*50*	*0*	*108*	*82 - 115*				
Surr: Dibromofluoromethane	*49.98*	*1.0*	*50*	*0*	*100.0*	*73 - 126*				
Surr: Toluene-d8	*50.7*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331042 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS19010467-02MS** Units: **ug/L** Analysis Date: **14-Jan-2019 18:36**
Client ID: Run ID: **VOA9_331042** SeqNo: **4908596** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	21.71	1.0	20	0	109	70 - 127				
Benzene	21.8	1.0	20	0	109	70 - 127				
Chlorobenzene	20.27	1.0	20	0	101	70 - 114				
Ethylbenzene	21.99	1.0	20	0	110	70 - 124				
Methylene chloride	21.99	2.0	20	0	110	70 - 128				
Toluene	21.85	1.0	20	0	109	70 - 123				
Xylenes, Total	66.02	1.0	60	0	110	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.54*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.06*	*1.0*	*50*	*0*	*104*	*81 - 113*				
Surr: Dibromofluoromethane	*50.09*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*49.13*	*1.0*	*50*	*0*	*98.3*	*82 - 127*				

MSD Sample ID: **HS19010467-02MSD** Units: **ug/L** Analysis Date: **14-Jan-2019 19:00**
Client ID: Run ID: **VOA9_331042** SeqNo: **4908597** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.61	1.0	20	0	103	70 - 127	21.71	5.2	20	
Benzene	19.71	1.0	20	0	98.6	70 - 127	21.8	10.1	20	
Chlorobenzene	20.38	1.0	20	0	102	70 - 114	20.27	0.52	20	
Ethylbenzene	21.86	1.0	20	0	109	70 - 124	21.99	0.553	20	
Methylene chloride	21.1	2.0	20	0	106	70 - 128	21.99	4.11	20	
Toluene	21.9	1.0	20	0	110	70 - 123	21.85	0.227	20	
Xylenes, Total	66.02	1.0	60	0	110	70 - 130	66.02	0.00586	20	
Surr: 1,2-Dichloroethane-d4	*52.8*	*1.0*	*50*	*0*	*106*	*70 - 126*	*52.54*	*0.482*	*20*	
Surr: 4-Bromofluorobenzene	*52.25*	*1.0*	*50*	*0*	*105*	*81 - 113*	*52.06*	*0.372*	*20*	
Surr: Dibromofluoromethane	*49.85*	*1.0*	*50*	*0*	*99.7*	*77 - 123*	*50.09*	*0.477*	*20*	
Surr: Toluene-d8	*49.1*	*1.0*	*50*	*0*	*98.2*	*82 - 127*	*49.13*	*0.0609*	*20*	

The following samples were analyzed in this batch: HS19010488-10 HS19010488-16

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331088 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190115** Units: **ug/L** Analysis Date: **16-Jan-2019 00:45**
Client ID: Run ID: **VOA2_331088** SeqNo: **4909708** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.9*	*1.0*	*50*	*0*	*91.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.85*	*1.0*	*50*	*0*	*95.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.78*	*1.0*	*50*	*0*	*99.6*	*73 - 126*				
Surr: Toluene-d8	*49.71*	*1.0*	*50*	*0*	*99.4*	*81 - 120*				

LCS Sample ID: **VLCSW-190115** Units: **ug/L** Analysis Date: **15-Jan-2019 23:57**
Client ID: Run ID: **VOA2_331088** SeqNo: **4909707** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.81	1.0	20	0	99.0	70 - 124				
Benzene	19.09	1.0	20	0	95.4	74 - 120				
Chlorobenzene	20.75	1.0	20	0	104	76 - 113				
Ethylbenzene	21.28	1.0	20	0	106	77 - 117				
Methylene chloride	18.35	2.0	20	0	91.8	70 - 127				
Toluene	20.36	1.0	20	0	102	77 - 118				
Vinyl chloride	19.58	1.0	20	0	97.9	70 - 130				
Xylenes, Total	62.79	1.0	60	0	105	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.91*	*1.0*	*50*	*0*	*99.8*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.41*	*1.0*	*50*	*0*	*98.8*	*82 - 115*				
Surr: Dibromofluoromethane	*50.13*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*48.78*	*1.0*	*50*	*0*	*97.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331088 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS19010488-06MS** Units: **ug/L** Analysis Date: **16-Jan-2019 01:33**
Client ID: **WG-1620-MW04-20190109** Run ID: **VOA2_331088** SeqNo: **4909710** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.95	1.0	20	0	84.7	70 - 127				
Benzene	17.86	1.0	20	0	89.3	70 - 127				
Chlorobenzene	19.02	1.0	20	0	95.1	70 - 114				
Ethylbenzene	19.54	1.0	20	0	97.7	70 - 124				
Methylene chloride	16.69	2.0	20	0	83.4	70 - 128				
Toluene	18.79	1.0	20	0	93.9	70 - 123				
Vinyl chloride	17.28	1.0	20	0	86.4	70 - 130				
Xylenes, Total	57.26	1.0	60	0	95.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.2*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.41*	*1.0*	*50*	*0*	*98.8*	*81 - 113*				
Surr: Dibromofluoromethane	*50.42*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*48.54*	*1.0*	*50*	*0*	*97.1*	*82 - 127*				

MSD Sample ID: **HS19010488-06MSD** Units: **ug/L** Analysis Date: **16-Jan-2019 01:57**
Client ID: **WG-1620-MW04-20190109** Run ID: **VOA2_331088** SeqNo: **4909711** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.52	1.0	20	0	87.6	70 - 127	16.95	3.31	20	
Benzene	17.44	1.0	20	0	87.2	70 - 127	17.86	2.42	20	
Chlorobenzene	19.05	1.0	20	0	95.3	70 - 114	19.02	0.135	20	
Ethylbenzene	19.44	1.0	20	0	97.2	70 - 124	19.54	0.474	20	
Methylene chloride	16.64	2.0	20	0	83.2	70 - 128	16.69	0.246	20	
Toluene	18.45	1.0	20	0	92.2	70 - 123	18.79	1.83	20	
Vinyl chloride	16.89	1.0	20	0	84.4	70 - 130	17.28	2.28	20	
Xylenes, Total	57.03	1.0	60	0	95.0	70 - 130	57.26	0.409	20	
Surr: 1,2-Dichloroethane-d4	*48.91*	*1.0*	*50*	*0*	*97.8*	*70 - 126*	*50.2*	*2.61*	*20*	
Surr: 4-Bromofluorobenzene	*48.89*	*1.0*	*50*	*0*	*97.8*	*81 - 113*	*49.41*	*1.07*	*20*	
Surr: Dibromofluoromethane	*50.28*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.42*	*0.279*	*20*	
Surr: Toluene-d8	*48.41*	*1.0*	*50*	*0*	*96.8*	*82 - 127*	*48.54*	*0.251*	*20*	

The following samples were analyzed in this batch:

HS19010488-06	HS19010488-07	HS19010488-08	HS19010488-09
HS19010488-11	HS19010488-12	HS19010488-13	HS19010488-14
HS19010488-15	HS19010488-17	HS19010488-18	HS19010488-19
HS19010488-20	HS19010488-21	HS19010488-22	HS19010488-23

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331375 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190119** Units: **ug/L** Analysis Date: **19-Jan-2019 06:48**
Client ID: Run ID: **VOA2_331375** SeqNo: **4916449** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.02*	*1.0*	*50*	*0*	*96.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.55*	*1.0*	*50*	*0*	*97.1*	*82 - 115*				
Surr: Dibromofluoromethane	*51.36*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.2*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-190119** Units: **ug/L** Analysis Date: **19-Jan-2019 06:00**
Client ID: Run ID: **VOA2_331375** SeqNo: **4916448** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.42	1.0	20	0	92.1	70 - 124				
Benzene	21.42	1.0	20	0	107	74 - 120				
Chlorobenzene	20.64	1.0	20	0	103	76 - 113				
Ethylbenzene	20.92	1.0	20	0	105	77 - 117				
Methylene chloride	20.7	2.0	20	0	103	70 - 127				
Toluene	20.48	1.0	20	0	102	77 - 118				
Vinyl chloride	22.22	1.0	20	0	111	70 - 130				
Xylenes, Total	64.7	1.0	60	0	108	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.26*	*1.0*	*50*	*0*	*96.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.47*	*1.0*	*50*	*0*	*98.9*	*82 - 115*				
Surr: Dibromofluoromethane	*50.33*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.75*	*1.0*	*50*	*0*	*99.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010488

QC BATCH REPORT

Batch ID: R331375 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19010732-02MS** Units: **ug/L** Analysis Date: **19-Jan-2019 08:24**
Client ID: Run ID: **VOA2_331375** SeqNo: **4916453** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.89	1.0	20	0	74.5	70 - 127				
Benzene	18.1	1.0	20	0	90.5	70 - 127				
Chlorobenzene	17.84	1.0	20	0	89.2	70 - 114				
Ethylbenzene	18.19	1.0	20	0	90.9	70 - 124				
Methylene chloride	17.53	2.0	20	0	87.7	70 - 128				
Toluene	18.23	1.0	20	0	91.2	70 - 123				
Vinyl chloride	20.06	1.0	20	0	100	70 - 130				
Xylenes, Total	54.51	1.0	60	0	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.32*	*1.0*	*50*	*0*	*98.6*	*81 - 113*				
Surr: Dibromofluoromethane	*51.47*	*1.0*	*50*	*0*	*103*	*77 - 123*				
Surr: Toluene-d8	*50*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS19010732-02MSD** Units: **ug/L** Analysis Date: **19-Jan-2019 08:49**
Client ID: Run ID: **VOA2_331375** SeqNo: **4916454** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.77	1.0	20	0	73.8	70 - 127	14.89	0.821	20	
Benzene	17.86	1.0	20	0	89.3	70 - 127	18.1	1.33	20	
Chlorobenzene	17.56	1.0	20	0	87.8	70 - 114	17.84	1.56	20	
Ethylbenzene	18.02	1.0	20	0	90.1	70 - 124	18.19	0.904	20	
Methylene chloride	15.93	2.0	20	0	79.7	70 - 128	17.53	9.57	20	
Toluene	18.04	1.0	20	0	90.2	70 - 123	18.23	1.1	20	
Vinyl chloride	19.35	1.0	20	0	96.7	70 - 130	20.06	3.63	20	
Xylenes, Total	54.72	1.0	60	0	91.2	70 - 130	54.51	0.387	20	
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*70 - 126*	*50.24*	*1.01*	*20*	
Surr: 4-Bromofluorobenzene	*50.29*	*1.0*	*50*	*0*	*101*	*81 - 113*	*49.32*	*1.94*	*20*	
Surr: Dibromofluoromethane	*50.03*	*1.0*	*50*	*0*	*100*	*77 - 123*	*51.47*	*2.83*	*20*	
Surr: Toluene-d8	*50.64*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50*	*1.26*	*20*	

The following samples were analyzed in this batch: HS19010488-24 HS19010488-25

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19010488**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19010488

Date/Time Received: **11-Jan-2019 14:00**
Received by: **PJM**

Checklist completed by: *Pablo Marinez* eSignature 11-Jan-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 16-Jan-2019 Date

Matrices: **WATER**

Carrier name: **Client**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☐	☐	☑
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
TX1005 solids received in hermetically sealed vials?	☐	☐	N/A ☑
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 0.8C/1.1C, 1.0C/1.3C, 1.3C/1.6C, 1.4C/1.7C, 1.5C/1.8C, 0.9C/1.2C UC/C — IR # 25

Cooler(s)/Kit(s): 25701, 5678, 44264, 44416, 25009, 43599

Date/Time sample(s) sent to storage: 1/11/19 18:00

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes:
WG-1620-TW41B-20190109 & WG-1620-MW05-20190109 - Collection Time does not match, logged per CoC
TW41B - CoC = 10:35 Label = 9:35
MW05 - CoC = 11:25 Label = 10:10
WG-1620-FB02-20190109 - Sample Label missing Collection Date/Time, log per CoC (1-9-19 17:35)

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 2

COC ID: 194325

HS19010488

, WV

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92588	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0760	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 68179 0750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__201801~~			Water	1	2	~~X~~		~~X~~	~~X~~							
2	WG-1620-TW41B-20190109	1-9-19	1035	W		6	X		X	X							
3	WG-1620-MW05-20190109	1-9-19	1125	W		6	X		X	X							
4	WG-1620-P11-20190109	1-9-19	1225	W		6	X		X	X							
5	WG-1620-MW03-20190109	1-9-19	1315	W		6	X		X	X							
6	WG-1620-MW09-20190109	1-9-19	1405	W		6	X		X	X							
7	WG-1620-MW04-20190109	1-9-19	1505	W		6	X		X	X							
8	WG-1620-MW21C-20190109	1-9-19	1620	W		6	X		X	X							
9	WG-1620-FD01-20190109	1-9-19	1620	W		6	X		X	X							
10	WG-1620-MW17-20190109	1-9-19	1720	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN C. BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-11-19 Time: 14:00 Received by:

Relinquished by: Date: 1-11-19 Time: 14:00 Received by (Laboratory): PM

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

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	UC
25701	0.8C
5678	1.0C
1R25	CF+0.3
44264	1.3C
25009	1.5C

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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: 194309

HS19010488

WV

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 201001~~			~~Water~~	~~-~~	~~2~~											
2	WG-1620-FB02-20190109	1-9-19	1735	W		6	X		X	X							
3	WG-1620-MW17C-20190110	1-10-19	0725	W		6	X		X	X							
4	WG-1620-MW18C-20190110	1-10-19	0820	W		6		X	X	X							
5	WG-1620-MW18A-20190110	1-10-19	1045	W		6		X	X	X							
6	WG-1620-MW48C-20190110	1-10-19	1145	W		6	X		X	X							
7	WG-1620-MW69A-20190110	1-10-19	1245	W		6		X	X	X							
8	WG-1620-TB02-20190110			W		2	X										
9	WG-1620-MW80B-20190110	1-10-19	1350	W		6	X		X	X							
10	WG-1620-MW50A-20190110	1-10-19	1440	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-11-19 Time: 14:00

Received by:

Relinquished by: Date: 1-11-19 Time: 14:00

Received by (Laboratory): PM

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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 3 of 3

COC ID: 194318

HS19010488

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.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	WQ-1620-TB0__-201801____			Water	1	2											
2	WG-1620-MW81B-20190110	1-10-19	1530	W		6	X		X	X							
3	WG-1620-MW51A-20190110	1-10-19	1640	W		6	X		X	X							
4	WG-1620-MW51C-20190110	1-10-19	1730	W		6	X		X	X							
5	WG-1620-MW86C-20190111	1-11-19	0825	W		6	X		X	X							
6	WG-1620-FD02-20190111	1-11-19	0825	W		6	X		X	X							
7	WG-1620-FB03-20190111	1-11-19	1115	W		6	X		X	X							
8	WG-1620-MW60A-20190111	1-11-19	1015	W		6		X	X	X							
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYSON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-11-19 Time: 14:00

Received by:

Relinquished by: Date: 1-11-19 Time: 14:00

Received by (Laboratory): PM

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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

February 14, 2019

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

Work Order: **HS19010754**

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

Dear Eric,

ALS Environmental received 22 sample(s) on Jan 17, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010754**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19010754**	

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: 02/14/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010754
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136788,136815,136946,136947,R331619,R331648,R331734,R331781

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		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 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				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: 02/14/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010754
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136788,136815,136946,136947,R331619,R331648,R331734,R331781

#[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				
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: 02/14/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19010754
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 136788,136815,136946,136947,R331619,R331648,R331734,R331781

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW63B-20190114, WG-1620-MW68B-20190115, WG-1620-FD03-20190115, WG-1620-MW83B-20190115, WG-1620-MW35A-20190115, WG-1620-MW25C-20190115, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 136788, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.
3	Batch R331648, Volatile Organics Method SW8260, sample HS19011106-02, MS was performed on unrelated sample.
4	Batch R331648, Volatile Organics Method SW8260, sample HS19011106-02, MS/MSD RPD is for an unrelated sample.
5	Batch 136815, Semivolatile Organics Method SW8270, sample WG-1620-MW68B-20190115, the GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
6	See Run Log and CCB Exceptions Report.

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).

FORM 13 - ANALYSIS RUN LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754
Start Date: 23-Jan-2019 End Date: 24-Jan-2019

Run ID:ICPMS05_331608
Instrument:ICPMS05
Method:SW6020

Sample No.	D/F	Time	FileID	Analytes
ICV	1	23-Jan-2019 19:14	016_ICV.d	AS PB
LLICV2	1	23-Jan-2019 19:16	017SMPL.d	AS PB
LLICV5	1	23-Jan-2019 19:18	018LICV.d	AS PB
ICB	1	23-Jan-2019 19:21	019_ICB.d	AS PB
ICSA	1	23-Jan-2019 19:25	021ICSA.d	AS PB
ICSAB	1	23-Jan-2019 19:41	025ICSB.d	AS PB
CCV 1	1	23-Jan-2019 20:01	032_CCV.d	AS PB
CCB 1	1	23-Jan-2019 20:04	033_CCB.d	AS PB
CCV 2	1	23-Jan-2019 20:29	044_CCV.d	AS PB
CCB 2	1	23-Jan-2019 20:31	045_CCB.d	AS PB
ICCV 3	1	23-Jan-2019 21:18	058_ICV.d	AS PB
LLCCV2	1	23-Jan-2019 21:20	059SMPL.d	AS PB
LLCCV5	1	23-Jan-2019 21:22	060LICV.d	AS PB
ICCB 3	1	23-Jan-2019 21:25	061_ICB.d	AS PB
CCB 4	1	23-Jan-2019 21:43	069_CCB.d	AS PB
CCV 4	1	23-Jan-2019 21:45	070_CCV.d	AS PB
CCV 5	1	23-Jan-2019 22:05	079_CCV.d	AS PB
CCB 5	1	23-Jan-2019 22:07	080_CCB.d	AS PB
CCB 6	1	23-Jan-2019 22:34	092_CCB.d	AS PB
CCV 6	1	23-Jan-2019 22:37	093_CCV.d	AS PB
ICSA	1	23-Jan-2019 22:39	094ICSA.d	AS PB
ICSAB	1	23-Jan-2019 22:41	095ICSB.d	AS PB
CCB 7	1	23-Jan-2019 22:56	100_CCB.d	AS PB
CCV 7	1	23-Jan-2019 22:58	101_CCV.d	AS PB
CCV 8	1	23-Jan-2019 23:16	109_CCV.d	AS PB
CCB 8	1	23-Jan-2019 23:18	110_CCB.d	AS PB
CCV 9	1	23-Jan-2019 23:43	121_CCV.d	AS PB
CCB 9	1	23-Jan-2019 23:45	122_CCB.d	AS PB
CCV 10	1	24-Jan-2019 00:03	130_CCV.d	AS PB
CCB 10	1	24-Jan-2019 00:05	131_CCB.d	AS PB
CCV 11	1	24-Jan-2019 00:30	142_CCV.d	AS PB
CCB 11	1	24-Jan-2019 00:32	143_CCB.d	AS PB
CCV 12	1	24-Jan-2019 00:57	154_CCV.d	AS PB
CCB 12	1	24-Jan-2019 00:59	155_CCB.d	AS PB
MBLK-136946	1	24-Jan-2019 01:01	156SMPL.d	AS PB
LCS-136946	1	24-Jan-2019 01:04	157SMPL.d	AS PB
ZZZZZZSD	5	24-Jan-2019 01:08	159SMPL.d	AS PB
ZZZZZZMS	1	24-Jan-2019 01:10	160SMPL.d	AS PB
ZZZZZZMSD	1	24-Jan-2019 01:13	161SMPL.d	AS PB
ZZZZZZPDS	1	24-Jan-2019 01:15	162SMPL.d	AS PB
CCV 13	1	24-Jan-2019 01:17	163_CCV.d	AS PB
CCB 13	1	24-Jan-2019 01:20	164_CCB.d	AS PB
WG-1620-MW53C-20190114	1	24-Jan-2019 01:29	168SMPL.d	AS PB
CCV 14	1	24-Jan-2019 01:44	175_CCV.d	AS PB
CCB 14	1	24-Jan-2019 01:47	176_CCB.d	AS PB
CCV 15	1	24-Jan-2019 02:11	187_CCV.d	AS PB
CCB 15	1	24-Jan-2019 02:14	188_CCB.d	AS PB
CCV 16	1	24-Jan-2019 02:18	190_CCV.d	AS PB
CCB 16	1	24-Jan-2019 02:20	191_CCB.d	AS PB
LLICV2	1	24-Jan-2019 02:23	192SMPL.d	AS PB
LLICV5	1	24-Jan-2019 02:25	193LICV.d	AS PB

CCB EXCEPTIONS REPORT

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

Run ID:ICPMS05_331608
Instrument:ICPMS05
Method:SW6020

ICB	Date: 23-Jan-2019 19:21	Seq: 4922194	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.419	0.4	2	

CCB 1	Date: 23-Jan-2019 20:04	Seq: 4922207	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-1.286	0.4	2	

CCB 2	Date: 23-Jan-2019 20:31	Seq: 4922219	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-1.388	0.4	2	

CCB 5	Date: 23-Jan-2019 22:07	Seq: 4922251	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.528	0.4	2	

CCB 8	Date: 23-Jan-2019 23:18	Seq: 4922500	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.463	0.4	2	

CCB 9	Date: 23-Jan-2019 23:45	Seq: 4922512	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.527	0.4	2	

CCB 10	Date: 24-Jan-2019 00:05	Seq: 4922647	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.509	0.4	2	

CCB 11	Date: 24-Jan-2019 00:32	Seq: 4922659	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.506	0.4	2	

CCB 12	Date: 24-Jan-2019 00:59	Seq: 4922671	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.553	0.4	2	

CCB 13	Date: 24-Jan-2019 01:20	Seq: 4922680	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.56	0.4	2	

CCB 14	Date: 24-Jan-2019 01:47	Seq: 4922692	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.578	0.4	2	

CCB 15	Date: 24-Jan-2019 02:14	Seq: 4922704	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.749	0.4	2	

CCB 16	Date: 24-Jan-2019 02:20	Seq: 4922707	D/F: 1	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	
Arsenic	-0.785	0.4	2	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19010754

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19010754-01	WG-1620-MW53C-20190114	Groundwater		14-Jan-2019 12:05	17-Jan-2019 08:27	☐
HS19010754-02	WG-1620-MW54C-20190114	Groundwater		14-Jan-2019 13:00	17-Jan-2019 08:27	☐
HS19010754-03	WG-1620-MW36B-20190114	Groundwater		14-Jan-2019 14:05	17-Jan-2019 08:27	☐
HS19010754-04	WG-1620-MW36A-20190114	Groundwater		14-Jan-2019 14:55	17-Jan-2019 08:27	☐
HS19010754-05	WG-1620-MW28A-20190114	Groundwater		14-Jan-2019 15:50	17-Jan-2019 08:27	☐
HS19010754-06	WG-1620-MW28C-20190114	Groundwater		14-Jan-2019 16:35	17-Jan-2019 08:27	☐
HS19010754-07	WG-1620-MW63B-20190114	Groundwater		14-Jan-2019 17:40	17-Jan-2019 08:27	☐
HS19010754-08	WG-1620-FB04-20190114	Water		14-Jan-2019 18:00	17-Jan-2019 08:27	☐
HS19010754-09	WG-1620-MW26A-20190115	Groundwater		15-Jan-2019 07:40	17-Jan-2019 08:27	☐
HS19010754-10	WG-1620-MW68B-20190115	Groundwater		15-Jan-2019 08:55	17-Jan-2019 08:27	☐
HS19010754-11	WG-1620-FD03-20190115	Groundwater		15-Jan-2019 08:55	17-Jan-2019 08:27	☐
HS19010754-12	WG-1620-MW68C-20190115	Groundwater		15-Jan-2019 09:45	17-Jan-2019 08:27	☐
HS19010754-13	WG-1620-MW83B-20190115	Groundwater		15-Jan-2019 10:40	17-Jan-2019 08:27	☐
HS19010754-14	WG-1620-MW83C-20190115	Groundwater		15-Jan-2019 11:15	17-Jan-2019 08:27	☐
HS19010754-15	WG-1620-MW35A-20190115	Groundwater		15-Jan-2019 12:45	17-Jan-2019 08:27	☐
HS19010754-16	WG-1620-MW35B-20190115	Groundwater		15-Jan-2019 13:25	17-Jan-2019 08:27	☐
HS19010754-17	WG-1620-MW25A-20190115	Groundwater		15-Jan-2019 14:25	17-Jan-2019 08:27	☐
HS19010754-18	WG-1620-MW25C-20190115	Groundwater		15-Jan-2019 15:10	17-Jan-2019 08:27	☐
HS19010754-19	WG-1620-MW34CR-20190115	Groundwater		15-Jan-2019 15:55	17-Jan-2019 08:27	☐
HS19010754-20	WG-1620-MW71B-20190115	Groundwater		15-Jan-2019 16:50	17-Jan-2019 08:27	☐
HS19010754-21	WG-1620-FB05-20190115	Water		15-Jan-2019 17:15	17-Jan-2019 08:27	☐
HS19010754-22	WQ-1620-TB04-20190115	Water		15-Jan-2019 00:00	17-Jan-2019 08:27	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW53C-20190114	Lab ID:HS19010754-01
Collection Date:	14-Jan-2019 12:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:27
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 02:27
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:27
Surr: 1,2-Dichloroethane-d4	*94.2*			*70-126*	*%REC*	*1*	*24-Jan-2019 02:27*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*24-Jan-2019 02:27*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*24-Jan-2019 02:27*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 02:27*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW53C-20190114	Lab ID:HS19010754-01	
Collection Date:	14-Jan-2019 12:05	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	01-Feb-2019 10:32
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	01-Feb-2019 10:32
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	01-Feb-2019 10:32
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	01-Feb-2019 10:32
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	01-Feb-2019 10:32
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	01-Feb-2019 10:32
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	01-Feb-2019 10:32
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	01-Feb-2019 10:32
Acenaphthene		U	0.000027	0.00010	mg/L	1	01-Feb-2019 10:32
Acenaphthylene		U	0.000015	0.00010	mg/L	1	01-Feb-2019 10:32
Anthracene		U	0.000014	0.00010	mg/L	1	01-Feb-2019 10:32
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	01-Feb-2019 10:32
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	01-Feb-2019 10:32
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	01-Feb-2019 10:32
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	01-Feb-2019 10:32
Chrysene		U	0.000021	0.00010	mg/L	1	01-Feb-2019 10:32
Dibenzofuran		U	0.000020	0.00010	mg/L	1	01-Feb-2019 10:32
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	01-Feb-2019 10:32
Fluoranthene		U	0.000010	0.00010	mg/L	1	01-Feb-2019 10:32
Fluorene		U	0.000030	0.00010	mg/L	1	01-Feb-2019 10:32
Naphthalene	**0.00025**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 10:32
Nitrobenzene		U	0.000024	0.00020	mg/L	1	01-Feb-2019 10:32
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	01-Feb-2019 10:32
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	01-Feb-2019 10:32
Phenanthrene		U	0.000021	0.00010	mg/L	1	01-Feb-2019 10:32
Phenol		U	0.000035	0.00020	mg/L	1	01-Feb-2019 10:32
Pyrene		U	0.000019	0.00010	mg/L	1	01-Feb-2019 10:32
Surr: 2,4,6-Tribromophenol	*46.9*			*34-129*	*%REC*	*1*	*01-Feb-2019 10:32*
Surr: 2-Fluorobiphenyl	*43.8*			*40-125*	*%REC*	*1*	*01-Feb-2019 10:32*
Surr: 2-Fluorophenol	*44.0*			*20-120*	*%REC*	*1*	*01-Feb-2019 10:32*
Surr: 4-Terphenyl-d14	*71.7*			*40-135*	*%REC*	*1*	*01-Feb-2019 10:32*
Surr: Nitrobenzene-d5	*46.6*			*41-120*	*%REC*	*1*	*01-Feb-2019 10:32*
Surr: Phenol-d6	*41.5*			*20-120*	*%REC*	*1*	*01-Feb-2019 10:32*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	24-Jan-2019 01:29
Lead		U	0.000600	0.00200	mg/L	1	24-Jan-2019 01:29

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW54C-20190114	Lab ID:HS19010754-02
Collection Date:	14-Jan-2019 13:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:52
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:52
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:52
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:52
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 02:52
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 02:52
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 02:52
Surr: 1,2-Dichloroethane-d4	*94.1*			*70-126*	*%REC*	*1*	*24-Jan-2019 02:52*
Surr: 4-Bromofluorobenzene	*99.9*			*81-113*	*%REC*	*1*	*24-Jan-2019 02:52*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*24-Jan-2019 02:52*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*24-Jan-2019 02:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW54C-20190114	Lab ID:HS19010754-02	
Collection Date:	14-Jan-2019 13:00	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 10:52
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 10:52
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 10:52
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 10:52
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 10:52
2-Methylnaphthalene	**0.0014**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 10:52
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 10:52
Acenaphthene	**0.014**		**0.00027**	**0.0010**	**mg/L**	10	01-Feb-2019 17:10
Acenaphthylene	**0.00020**		**0.000015**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Anthracene	**0.0013**		**0.000014**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 10:52
Benzo(a)pyrene	**0.000039**	J	**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Bis(2-chloroethoxy)methane	**0.000056**	J	**0.000030**	**0.00020**	**mg/L**	1	01-Feb-2019 10:52
Bis(2-ethylhexyl)phthalate	**0.000096**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 10:52
Chrysene	**0.000038**	J	**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Dibenzofuran	**0.015**		**0.00020**	**0.0010**	**mg/L**	10	01-Feb-2019 17:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 10:52
Fluoranthene	**0.0020**		**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Fluorene	**0.0085**		**0.000030**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Naphthalene	**0.019**		**0.00020**	**0.0010**	**mg/L**	10	01-Feb-2019 17:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 10:52
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 10:52
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 10:52
Phenanthrene	**0.0052**		**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 10:52
Pyrene	**0.0010**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 10:52
Surr: 2,4,6-Tribromophenol	*52.5*			*34-129*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: 2,4,6-Tribromophenol	*56.0*			*34-129*	*%REC*	*1*	*01-Feb-2019 10:52*
Surr: 2-Fluorobiphenyl	*47.7*			*40-125*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: 2-Fluorobiphenyl	*45.4*			*40-125*	*%REC*	*1*	*01-Feb-2019 10:52*
Surr: 2-Fluorophenol	*36.3*			*20-120*	*%REC*	*1*	*01-Feb-2019 10:52*
Surr: 2-Fluorophenol	*44.1*			*20-120*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: 4-Terphenyl-d14	*68.8*			*40-135*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: 4-Terphenyl-d14	*73.8*			*40-135*	*%REC*	*1*	*01-Feb-2019 10:52*
Surr: Nitrobenzene-d5	*42.8*			*41-120*	*%REC*	*1*	*01-Feb-2019 10:52*
Surr: Nitrobenzene-d5	*44.1*			*41-120*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: Phenol-d6	*36.2*	*J*		*20-120*	*%REC*	*10*	*01-Feb-2019 17:10*
Surr: Phenol-d6	*46.2*			*20-120*	*%REC*	*1*	*01-Feb-2019 10:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW54C-20190114	Lab ID:HS19010754-02
Collection Date:	14-Jan-2019 13:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00123**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:23
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:23

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW36B-20190114	Lab ID:HS19010754-03
Collection Date:	14-Jan-2019 14:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 03:16
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 03:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 03:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 03:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 03:16
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 03:16
Vinyl chloride		U	0.00020	0.0010	mg/L	1	24-Jan-2019 03:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 03:16
Surr: 1,2-Dichloroethane-d4	*95.6*			*70-126*	*%REC*	*1*	*24-Jan-2019 03:16*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*24-Jan-2019 03:16*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*24-Jan-2019 03:16*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 03:16*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW36B-20190114	Lab ID:HS19010754-03	
Collection Date:	14-Jan-2019 14:05	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:11
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 11:11
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 11:11
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 11:11
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:11
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 11:11
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:11
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 11:11
Acenaphthene	U		0.000027	0.00010	mg/L	1	01-Feb-2019 11:11
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 11:11
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 11:11
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 11:11
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:11
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 11:11
Bis(2-ethylhexyl)phthalate	**0.00022**		**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 11:11
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:11
Dibenzofuran	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:11
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:11
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 11:11
Fluorene	U		0.000030	0.00010	mg/L	1	01-Feb-2019 11:11
Naphthalene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:11
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 11:11
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 11:11
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 11:11
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:11
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 11:11
Pyrene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 11:11
Surr: 2,4,6-Tribromophenol	*62.4*			*34-129*	*%REC*	*1*	*01-Feb-2019 11:11*
Surr: 2-Fluorobiphenyl	*47.7*			*40-125*	*%REC*	*1*	*01-Feb-2019 11:11*
Surr: 2-Fluorophenol	*43.6*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:11*
Surr: 4-Terphenyl-d14	*81.9*			*40-135*	*%REC*	*1*	*01-Feb-2019 11:11*
Surr: Nitrobenzene-d5	*47.7*			*41-120*	*%REC*	*1*	*01-Feb-2019 11:11*
Surr: Phenol-d6	*50.3*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:11*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00118**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:25
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:25

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW36A-20190114	Lab ID:HS19010754-04
Collection Date:	14-Jan-2019 14:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2019 16:19
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 16:19
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 16:19
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 16:19
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2019 16:19
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 16:19
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2019 16:19
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2019 16:19
Surr: 1,2-Dichloroethane-d4	*92.2*			*70-126*	*%REC*	*1*	*25-Jan-2019 16:19*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*1*	*25-Jan-2019 16:19*
Surr: Dibromofluoromethane	*95.9*			*77-123*	*%REC*	*1*	*25-Jan-2019 16:19*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*25-Jan-2019 16:19*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW36A-20190114	Lab ID:HS19010754-04	
Collection Date:	14-Jan-2019 14:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:31
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 11:31
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 11:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 11:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:31
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 11:31
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 11:31
Acenaphthene	U		0.000027	0.00010	mg/L	1	01-Feb-2019 11:31
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 11:31
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 11:31
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 11:31
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 11:31
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 11:31
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:31
Dibenzofuran	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:31
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:31
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 11:31
Fluorene	U		0.000030	0.00010	mg/L	1	01-Feb-2019 11:31
Naphthalene	**0.000062**	J	**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 11:31
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 11:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 11:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 11:31
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:31
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 11:31
Pyrene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 11:31
Surr: 2,4,6-Tribromophenol	*54.4*			*34-129*	*%REC*	*1*	*01-Feb-2019 11:31*
Surr: 2-Fluorobiphenyl	*55.9*			*40-125*	*%REC*	*1*	*01-Feb-2019 11:31*
Surr: 2-Fluorophenol	*42.5*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:31*
Surr: 4-Terphenyl-d14	*73.0*			*40-135*	*%REC*	*1*	*01-Feb-2019 11:31*
Surr: Nitrobenzene-d5	*44.9*			*41-120*	*%REC*	*1*	*01-Feb-2019 11:31*
Surr: Phenol-d6	*47.5*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00107**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:27
Lead	**0.00108**	J	**0.000600**	**0.00200**	**mg/L**	1	25-Jan-2019 16:27

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW28A-20190114	Lab ID:HS19010754-05
Collection Date:	14-Jan-2019 15:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 08:55
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 08:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 08:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 08:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 08:55
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 08:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 08:55
Surr: 1,2-Dichloroethane-d4	*91.6*			*70-126*	*%REC*	*1*	*24-Jan-2019 08:55*
Surr: 4-Bromofluorobenzene	*96.5*			*81-113*	*%REC*	*1*	*24-Jan-2019 08:55*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*24-Jan-2019 08:55*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 08:55*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW28A-20190114	Lab ID:HS19010754-05
Collection Date:	14-Jan-2019 15:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:51
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 11:51
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 11:51
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 11:51
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 11:51
2-Methylnaphthalene	**0.000055**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:51
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 11:51
Acenaphthene	**0.000092**	J	**0.000027**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 11:51
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 11:51
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 11:51
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 11:51
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 11:51
Bis(2-ethylhexyl)phthalate	**0.000061**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 11:51
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:51
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 11:51
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 11:51
Fluorene	**0.000056**	J	**0.000030**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
Naphthalene	**0.0024**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 11:51
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 11:51
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 11:51
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 11:51
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 11:51
Pyrene	**0.000065**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 11:51
Surr: 2,4,6-Tribromophenol	*63.8*			*34-129*	*%REC*	*1*	*01-Feb-2019 11:51*
Surr: 2-Fluorobiphenyl	*64.3*			*40-125*	*%REC*	*1*	*01-Feb-2019 11:51*
Surr: 2-Fluorophenol	*52.7*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:51*
Surr: 4-Terphenyl-d14	*73.0*			*40-135*	*%REC*	*1*	*01-Feb-2019 11:51*
Surr: Nitrobenzene-d5	*59.4*			*41-120*	*%REC*	*1*	*01-Feb-2019 11:51*
Surr: Phenol-d6	*56.6*			*20-120*	*%REC*	*1*	*01-Feb-2019 11:51*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.0116**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:29
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:29

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW28C-20190114	Lab ID:HS19010754-06
Collection Date:	14-Jan-2019 16:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 00:51
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 00:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 00:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 00:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 00:51
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 00:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 00:51
Surr: 1,2-Dichloroethane-d4	*95.3*			*70-126*	*%REC*	*1*	*24-Jan-2019 00:51*
Surr: 4-Bromofluorobenzene	*95.7*			*81-113*	*%REC*	*1*	*24-Jan-2019 00:51*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*24-Jan-2019 00:51*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 00:51*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW28C-20190114	Lab ID:HS19010754-06
Collection Date:	14-Jan-2019 16:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 12:10
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 12:10
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 12:10
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 12:10
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 12:10
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 12:10
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 12:10
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 12:10
Acenaphthene	U		0.000027	0.00010	mg/L	1	01-Feb-2019 12:10
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 12:10
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 12:10
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 12:10
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 12:10
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 12:10
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 12:10
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 12:10
Dibenzofuran	U		0.000020	0.00010	mg/L	1	01-Feb-2019 12:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 12:10
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 12:10
Fluorene	U		0.000030	0.00010	mg/L	1	01-Feb-2019 12:10
Naphthalene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 12:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 12:10
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 12:10
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 12:10
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 12:10
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 12:10
Pyrene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 12:10
Surr: 2,4,6-Tribromophenol	*75.2*			*34-129*	*%REC*	*1*	*01-Feb-2019 12:10*
Surr: 2-Fluorobiphenyl	*63.0*			*40-125*	*%REC*	*1*	*01-Feb-2019 12:10*
Surr: 2-Fluorophenol	*47.4*			*20-120*	*%REC*	*1*	*01-Feb-2019 12:10*
Surr: 4-Terphenyl-d14	*75.8*			*40-135*	*%REC*	*1*	*01-Feb-2019 12:10*
Surr: Nitrobenzene-d5	*54.3*			*41-120*	*%REC*	*1*	*01-Feb-2019 12:10*
Surr: Phenol-d6	*58.1*			*20-120*	*%REC*	*1*	*01-Feb-2019 12:10*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.000447**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:32
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:32

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW63B-20190114	Lab ID:HS19010754-07
Collection Date:	14-Jan-2019 17:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 03:40
Benzene	**0.35**		**0.0020**	**0.010**	**mg/L**	10	25-Jan-2019 06:35
Chlorobenzene	**0.00073**	J	**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 03:40
Ethylbenzene	**0.48**		**0.0030**	**0.010**	**mg/L**	10	25-Jan-2019 06:35
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 03:40
Toluene	**0.0071**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 03:40
Xylenes, Total	**0.11**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 03:40
Surr: 1,2-Dichloroethane-d4	*92.5*			*70-126*	*%REC*	*1*	*24-Jan-2019 03:40*
Surr: 1,2-Dichloroethane-d4	*93.9*			*70-126*	*%REC*	*10*	*25-Jan-2019 06:35*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*24-Jan-2019 03:40*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*10*	*25-Jan-2019 06:35*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*24-Jan-2019 03:40*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*10*	*25-Jan-2019 06:35*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*24-Jan-2019 03:40*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*10*	*25-Jan-2019 06:35*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW63B-20190114	Lab ID:HS19010754-07	
Collection Date:	14-Jan-2019 17:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	07-Feb-2019 12:16
2,4-Dimethylphenol	U		0.00040	0.0020	mg/L	10	07-Feb-2019 12:16
2,4-Dinitrotoluene	U		0.00059	0.0020	mg/L	10	07-Feb-2019 12:16
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	07-Feb-2019 12:16
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	07-Feb-2019 12:16
2-Methylnaphthalene	**0.042**		**0.00019**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	07-Feb-2019 12:16
4-Nitrophenol	U		0.00047	0.010	mg/L	10	07-Feb-2019 12:16
Acenaphthene	U		0.00027	0.0010	mg/L	10	07-Feb-2019 12:16
Acenaphthylene	**0.0029**		**0.00015**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
Anthracene	**0.00017**	J	**0.00014**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
Benz(a)anthracene	U		0.00051	0.0010	mg/L	10	07-Feb-2019 12:16
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	07-Feb-2019 12:16
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	07-Feb-2019 12:16
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	07-Feb-2019 12:16
Chrysene	U		0.00021	0.0010	mg/L	10	07-Feb-2019 12:16
Dibenzofuran	**0.0087**		**0.00020**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	07-Feb-2019 12:16
Fluoranthene	U		0.00010	0.0010	mg/L	10	07-Feb-2019 12:16
Fluorene	**0.0029**		**0.00030**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
Naphthalene	**2.1**		**0.020**	**0.10**	**mg/L**	1000	12-Feb-2019 19:12
Nitrobenzene	U		0.00024	0.0020	mg/L	10	07-Feb-2019 12:16
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	07-Feb-2019 12:16
Pentachlorophenol	U		0.00080	0.0020	mg/L	10	07-Feb-2019 12:16
Phenanthrene	**0.00094**	J	**0.00021**	**0.0010**	**mg/L**	10	07-Feb-2019 12:16
Phenol	U		0.00035	0.0020	mg/L	10	07-Feb-2019 12:16
Pyrene	U		0.00019	0.0010	mg/L	10	07-Feb-2019 12:16
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*12-Feb-2019 19:12*
Surr: 2,4,6-Tribromophenol	*61.9*			*34-129*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: 2-Fluorobiphenyl	*51.1*			*40-125*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*12-Feb-2019 19:12*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 19:12*
Surr: 2-Fluorophenol	*81.7*			*20-120*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: 4-Terphenyl-d14	*64.4*			*40-135*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*12-Feb-2019 19:12*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*12-Feb-2019 19:12*
Surr: Nitrobenzene-d5	*44.8*			*41-120*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: Phenol-d6	*64.6*			*20-120*	*%REC*	*10*	*07-Feb-2019 12:16*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 19:12*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW63B-20190114	Lab ID:HS19010754-07
Collection Date:	14-Jan-2019 17:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00338**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 16:55
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:55

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-FB04-20190114	Lab ID:HS19010754-08
Collection Date:	14-Jan-2019 18:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 18:26
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 18:26
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 18:26
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 18:26
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 18:26
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 18:26
Vinyl chloride		U	0.00020	0.0010	mg/L	1	24-Jan-2019 18:26
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 18:26
Surr: 1,2-Dichloroethane-d4	*93.5*			*70-126*	*%REC*	*1*	*24-Jan-2019 18:26*
Surr: 4-Bromofluorobenzene	*96.8*			*81-113*	*%REC*	*1*	*24-Jan-2019 18:26*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*24-Jan-2019 18:26*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*24-Jan-2019 18:26*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-FB04-20190114	Lab ID:HS19010754-08	
Collection Date:	14-Jan-2019 18:00	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 17:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 17:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 17:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 17:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 17:50
2-Methylnaphthalene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 17:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 17:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 17:50
Acenaphthene	**0.000045**	J	**0.000027**	**0.00010**	**mg/L**	1	01-Feb-2019 17:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 17:50
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 17:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 17:50
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 17:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 17:50
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 17:50
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 17:50
Dibenzofuran	**0.000026**	J	**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 17:50
Di-n-butyl phthalate	**0.000023**	J	**0.000020**	**0.00020**	**mg/L**	1	01-Feb-2019 17:50
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 17:50
Fluorene	U		0.000030	0.00010	mg/L	1	01-Feb-2019 17:50
Naphthalene	**0.0031**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 17:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 17:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 17:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 17:50
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 17:50
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 17:50
Pyrene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 17:50
Surr: 2,4,6-Tribromophenol	*66.2*			*34-129*	*%REC*	*1*	*01-Feb-2019 17:50*
Surr: 2-Fluorobiphenyl	*72.6*			*40-125*	*%REC*	*1*	*01-Feb-2019 17:50*
Surr: 2-Fluorophenol	*64.2*			*20-120*	*%REC*	*1*	*01-Feb-2019 17:50*
Surr: 4-Terphenyl-d14	*83.1*			*40-135*	*%REC*	*1*	*01-Feb-2019 17:50*
Surr: Nitrobenzene-d5	*65.6*			*41-120*	*%REC*	*1*	*01-Feb-2019 17:50*
Surr: Phenol-d6	*67.3*			*20-120*	*%REC*	*1*	*01-Feb-2019 17:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	U		0.000400	0.00200	mg/L	1	25-Jan-2019 16:57
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 16:57

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW26A-20190115	Lab ID:HS19010754-09
Collection Date:	15-Jan-2019 07:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 04:04
Benzene	U		0.00020	0.0010	mg/L	1	24-Jan-2019 04:04
Chlorobenzene	**0.00056**	J	**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 04:04
Ethylbenzene	U		0.00030	0.0010	mg/L	1	25-Jan-2019 01:38
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 04:04
Toluene	U		0.00020	0.0010	mg/L	1	24-Jan-2019 04:04
Xylenes, Total	U		0.00030	0.0010	mg/L	1	24-Jan-2019 04:04
Surr: 1,2-Dichloroethane-d4	*94.5*			*70-126*	*%REC*	*1*	*24-Jan-2019 04:04*
Surr: 1,2-Dichloroethane-d4	*92.4*			*70-126*	*%REC*	*1*	*25-Jan-2019 01:38*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*24-Jan-2019 04:04*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*25-Jan-2019 01:38*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*24-Jan-2019 04:04*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*25-Jan-2019 01:38*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*24-Jan-2019 04:04*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2019 01:38*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW26A-20190115	Lab ID:HS19010754-09	
Collection Date:	15-Jan-2019 07:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 18:09
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 18:09
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 18:09
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 18:09
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 18:09
2-Methylnaphthalene	**0.000090**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 18:09
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 18:09
Acenaphthene	**0.042**		**0.00027**	**0.0010**	**mg/L**	10	07-Feb-2019 13:15
Acenaphthylene	**0.00027**		**0.000015**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Anthracene	**0.00087**		**0.000014**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 18:09
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 18:09
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 18:09
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 18:09
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 18:09
Dibenzofuran	**0.00050**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 18:09
Fluoranthene	**0.0044**		**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Fluorene	**0.0039**		**0.000030**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Naphthalene	**0.00049**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 18:09
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 18:09
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 18:09
Phenanthrene	**0.00012**		**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 18:09
Pyrene	**0.0025**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 18:09
Surr: 2,4,6-Tribromophenol	*79.4*			*34-129*	*%REC*	*1*	*01-Feb-2019 18:09*
Surr: 2,4,6-Tribromophenol	*61.4*			*34-129*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: 2-Fluorobiphenyl	*52.5*			*40-125*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: 2-Fluorobiphenyl	*59.8*			*40-125*	*%REC*	*1*	*01-Feb-2019 18:09*
Surr: 2-Fluorophenol	*52.6*			*20-120*	*%REC*	*1*	*01-Feb-2019 18:09*
Surr: 2-Fluorophenol	*46.4*			*20-120*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: 4-Terphenyl-d14	*65.9*			*40-135*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: 4-Terphenyl-d14	*73.8*			*40-135*	*%REC*	*1*	*01-Feb-2019 18:09*
Surr: Nitrobenzene-d5	*56.0*			*41-120*	*%REC*	*1*	*01-Feb-2019 18:09*
Surr: Nitrobenzene-d5	*47.7*			*41-120*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: Phenol-d6	*53.6*			*20-120*	*%REC*	*10*	*07-Feb-2019 13:15*
Surr: Phenol-d6	*58.2*			*20-120*	*%REC*	*1*	*01-Feb-2019 18:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW26A-20190115	Lab ID:HS19010754-09
Collection Date:	15-Jan-2019 07:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.166**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:00
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:00

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW68B-20190115	Lab ID:HS19010754-10
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 04:28
Benzene	**2.0**		**0.010**	**0.050**	**mg/L**	50	25-Jan-2019 07:01
Chlorobenzene	**0.00056**	J	**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 04:28
Ethylbenzene	**0.50**		**0.015**	**0.050**	**mg/L**	50	25-Jan-2019 07:01
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 04:28
Toluene	**0.086**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 04:28
Xylenes, Total	**1.2**		**0.015**	**0.050**	**mg/L**	50	25-Jan-2019 07:01
Surr: 1,2-Dichloroethane-d4	*80.1*			*70-126*	*%REC*	*1*	*24-Jan-2019 04:28*
Surr: 1,2-Dichloroethane-d4	*92.7*			*70-126*	*%REC*	*50*	*25-Jan-2019 07:01*
Surr: 4-Bromofluorobenzene	*98.3*			*81-113*	*%REC*	*1*	*24-Jan-2019 04:28*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*50*	*25-Jan-2019 07:01*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*24-Jan-2019 04:28*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*50*	*25-Jan-2019 07:01*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*24-Jan-2019 04:28*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*50*	*25-Jan-2019 07:01*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW68B-20190115	Lab ID:HS19010754-10	
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	07-Feb-2019 13:35
2,4-Dimethylphenol	**0.050**		**0.00040**	**0.0020**	**mg/L**	10	07-Feb-2019 13:35
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	07-Feb-2019 13:35
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	07-Feb-2019 13:35
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	07-Feb-2019 13:35
2-Methylnaphthalene	**0.33**		**0.0019**	**0.010**	**mg/L**	100	07-Feb-2019 13:55
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	07-Feb-2019 13:35
4-Nitrophenol	U		0.00047	0.010	mg/L	10	07-Feb-2019 13:35
Acenaphthene	**0.100**		**0.0027**	**0.010**	**mg/L**	100	07-Feb-2019 13:55
Acenaphthylene	**0.0012**		**0.00015**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Anthracene	**0.0080**		**0.00014**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	07-Feb-2019 13:35
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	07-Feb-2019 13:35
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	07-Feb-2019 13:35
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	07-Feb-2019 13:35
Chrysene	U		0.00021	0.0010	mg/L	10	07-Feb-2019 13:35
Dibenzofuran	**0.10**		**0.0020**	**0.010**	**mg/L**	100	07-Feb-2019 13:55
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	07-Feb-2019 13:35
Fluoranthene	**0.0031**		**0.00010**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Fluorene	**0.057**		**0.00030**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Naphthalene	**5.0**		**0.020**	**0.10**	**mg/L**	1000	07-Feb-2019 17:31
Nitrobenzene	U		0.00024	0.0020	mg/L	10	07-Feb-2019 13:35
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	07-Feb-2019 13:35
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	07-Feb-2019 13:35
Phenanthrene	**0.065**		**0.00021**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Phenol	**0.0019**	J	**0.00035**	**0.0020**	**mg/L**	10	07-Feb-2019 13:35
Pyrene	**0.0015**		**0.00019**	**0.0010**	**mg/L**	10	07-Feb-2019 13:35
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*07-Feb-2019 17:31*
Surr: 2,4,6-Tribromophenol	*71.6*			*34-129*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: 2-Fluorobiphenyl	*47.4*			*40-125*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*07-Feb-2019 17:31*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*07-Feb-2019 17:31*
Surr: 2-Fluorophenol	*80.2*			*20-120*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: 4-Terphenyl-d14	*64.2*			*40-135*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*07-Feb-2019 17:31*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW68B-20190115	Lab ID:HS19010754-10
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*07-Feb-2019 17:31*
Surr: Nitrobenzene-d5	*53.3*			*41-120*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: Phenol-d6	*51.0*			*20-120*	*%REC*	*10*	*07-Feb-2019 13:35*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*07-Feb-2019 13:55*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*07-Feb-2019 17:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.0123**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:02
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:02

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-FD03-20190115	Lab ID:HS19010754-11
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 04:52
Benzene	**1.9**		**0.010**	**0.050**	**mg/L**	50	25-Jan-2019 07:28
Chlorobenzene	**0.00056**	J	**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 04:52
Ethylbenzene	**0.49**		**0.015**	**0.050**	**mg/L**	50	25-Jan-2019 07:28
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 04:52
Toluene	**0.084**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 04:52
Xylenes, Total	**1.2**		**0.015**	**0.050**	**mg/L**	50	25-Jan-2019 07:28
Surr: 1,2-Dichloroethane-d4	*80.8*			*70-126*	*%REC*	*1*	*24-Jan-2019 04:52*
Surr: 1,2-Dichloroethane-d4	*95.0*			*70-126*	*%REC*	*50*	*25-Jan-2019 07:28*
Surr: 4-Bromofluorobenzene	*98.5*			*81-113*	*%REC*	*1*	*24-Jan-2019 04:52*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*50*	*25-Jan-2019 07:28*
Surr: Dibromofluoromethane	*98.9*			*77-123*	*%REC*	*1*	*24-Jan-2019 04:52*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*50*	*25-Jan-2019 07:28*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*24-Jan-2019 04:52*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*50*	*25-Jan-2019 07:28*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-FD03-20190115	Lab ID:HS19010754-11	
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	07-Feb-2019 14:34
2,4-Dimethylphenol	**0.058**		**0.00040**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
2,4-Dinitrotoluene	**0.0013**	J	**0.00058**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	07-Feb-2019 14:34
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	07-Feb-2019 14:34
2-Methylnaphthalene	**0.31**		**0.019**	**0.10**	**mg/L**	1000	07-Feb-2019 17:51
4,6-Dinitro-2-methylphenol	**0.0011**	J	**0.00020**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
4-Nitrophenol	**0.0074**	J	**0.00047**	**0.010**	**mg/L**	10	07-Feb-2019 14:34
Acenaphthene	**0.13**		**0.027**	**0.10**	**mg/L**	1000	07-Feb-2019 17:51
Acenaphthylene	**0.0014**		**0.00015**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Anthracene	**0.0098**		**0.00014**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	07-Feb-2019 14:34
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	07-Feb-2019 14:34
Bis(2-chloroethoxy)methane	**0.0036**		**0.00030**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	07-Feb-2019 14:34
Chrysene	U		0.00021	0.0010	mg/L	10	07-Feb-2019 14:34
Dibenzofuran	**0.12**		**0.020**	**0.10**	**mg/L**	1000	07-Feb-2019 17:51
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	07-Feb-2019 14:34
Fluoranthene	**0.0039**		**0.00010**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Fluorene	**0.065**		**0.00030**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Naphthalene	**3.8**		**0.020**	**0.10**	**mg/L**	1000	07-Feb-2019 17:51
Nitrobenzene	U		0.00024	0.0020	mg/L	10	07-Feb-2019 14:34
N-Nitrosodiphenylamine	**0.0051**		**0.00025**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	07-Feb-2019 14:34
Phenanthrene	**0.073**		**0.00021**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Phenol	**0.0015**	J	**0.00035**	**0.0020**	**mg/L**	10	07-Feb-2019 14:34
Pyrene	**0.0018**		**0.00019**	**0.0010**	**mg/L**	10	07-Feb-2019 14:34
Surr: 2,4,6-Tribromophenol	*63.0*			*34-129*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*07-Feb-2019 17:51*
Surr: 2-Fluorobiphenyl	*55.3*			*40-125*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*07-Feb-2019 17:51*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*07-Feb-2019 17:51*
Surr: 2-Fluorophenol	*80.1*			*20-120*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: 4-Terphenyl-d14	*59.4*			*40-135*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*07-Feb-2019 17:51*
Surr: Nitrobenzene-d5	*44.9*			*41-120*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*07-Feb-2019 17:51*
Surr: Phenol-d6	*59.1*			*20-120*	*%REC*	*10*	*07-Feb-2019 14:34*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*07-Feb-2019 17:51*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-FD03-20190115	Lab ID:HS19010754-11
Collection Date:	15-Jan-2019 08:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.0125**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:04
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:04

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW68C-20190115	Lab ID:HS19010754-12
Collection Date:	15-Jan-2019 09:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 05:16
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 02:02
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 05:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 02:02
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 05:16
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 05:16
Xylenes, Total	**0.0011**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 05:16
Surr: 1,2-Dichloroethane-d4	*94.0*			*70-126*	*%REC*	*1*	*24-Jan-2019 05:16*
Surr: 1,2-Dichloroethane-d4	*91.6*			*70-126*	*%REC*	*1*	*25-Jan-2019 02:02*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*24-Jan-2019 05:16*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*25-Jan-2019 02:02*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*24-Jan-2019 05:16*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Jan-2019 02:02*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*24-Jan-2019 05:16*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*25-Jan-2019 02:02*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW68C-20190115	Lab ID:HS19010754-12	
Collection Date:	15-Jan-2019 09:45	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 19:09
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 19:09
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	01-Feb-2019 19:09
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 19:09
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 19:09
2-Methylnaphthalene	**0.000077**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 19:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 19:09
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 19:09
Acenaphthene	U		0.000027	0.00010	mg/L	1	01-Feb-2019 19:09
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 19:09
Anthracene	U		0.000014	0.00010	mg/L	1	01-Feb-2019 19:09
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	01-Feb-2019 19:09
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 19:09
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 19:09
Bis(2-ethylhexyl)phthalate	**0.000044**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 19:09
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 19:09
Dibenzofuran	**0.000066**	J	**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 19:09
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 19:09
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Feb-2019 19:09
Fluorene	**0.000057**	J	**0.000030**	**0.00010**	**mg/L**	1	01-Feb-2019 19:09
Naphthalene	**0.00079**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 19:09
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 19:09
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 19:09
Pentachlorophenol	U		0.000080	0.00020	mg/L	1	01-Feb-2019 19:09
Phenanthrene	**0.000062**	J	**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 19:09
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 19:09
Pyrene	U		0.000019	0.00010	mg/L	1	01-Feb-2019 19:09
Surr: 2,4,6-Tribromophenol	*56.9*			*34-129*	*%REC*	*1*	*01-Feb-2019 19:09*
Surr: 2-Fluorobiphenyl	*55.4*			*40-125*	*%REC*	*1*	*01-Feb-2019 19:09*
Surr: 2-Fluorophenol	*52.4*			*20-120*	*%REC*	*1*	*01-Feb-2019 19:09*
Surr: 4-Terphenyl-d14	*75.7*			*40-135*	*%REC*	*1*	*01-Feb-2019 19:09*
Surr: Nitrobenzene-d5	*54.3*			*41-120*	*%REC*	*1*	*01-Feb-2019 19:09*
Surr: Phenol-d6	*55.2*			*20-120*	*%REC*	*1*	*01-Feb-2019 19:09*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	U		0.000400	0.00200	mg/L	1	25-Jan-2019 17:06
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:06

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW83B-20190115	Lab ID:HS19010754-13
Collection Date:	15-Jan-2019 10:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 05:40
Benzene	**0.032**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 05:40
Chlorobenzene	U		0.00030	0.0010	mg/L	1	24-Jan-2019 05:40
Ethylbenzene	**0.091**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 05:40
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 05:40
Toluene	**0.0082**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 05:40
Xylenes, Total	**0.100**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 05:40
Surr: 1,2-Dichloroethane-d4	*95.0*			*70-126*	*%REC*	*1*	*24-Jan-2019 05:40*
Surr: 4-Bromofluorobenzene	*98.8*			*81-113*	*%REC*	*1*	*24-Jan-2019 05:40*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*24-Jan-2019 05:40*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*24-Jan-2019 05:40*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW83B-20190115	Lab ID:HS19010754-13	
Collection Date:	15-Jan-2019 10:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 19:28
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 19:28
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 19:28
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 19:28
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 19:28
2-Methylnaphthalene	**0.086**		**0.00019**	**0.0010**	**mg/L**	10	07-Feb-2019 15:53
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 19:28
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 19:28
Acenaphthene	**0.026**		**0.00027**	**0.0010**	**mg/L**	10	07-Feb-2019 15:53
Acenaphthylene	**0.00034**		**0.000015**	**0.00010**	**mg/L**	1	01-Feb-2019 19:28
Anthracene	**0.0012**		**0.000014**	**0.00010**	**mg/L**	1	01-Feb-2019 19:28
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 19:28
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 19:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 19:28
Bis(2-ethylhexyl)phthalate	**0.000064**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 19:28
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 19:28
Dibenzofuran	**0.020**		**0.00020**	**0.0010**	**mg/L**	10	07-Feb-2019 15:53
Di-n-butyl phthalate	**0.00015**	J	**0.000020**	**0.00020**	**mg/L**	1	01-Feb-2019 19:28
Fluoranthene	**0.00051**		**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 19:28
Fluorene	**0.0099**		**0.00030**	**0.0010**	**mg/L**	10	07-Feb-2019 15:53
Naphthalene	**1.6**		**0.020**	**0.10**	**mg/L**	1000	12-Feb-2019 19:32
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 19:28
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 19:28
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 19:28
Phenanthrene	**0.0074**		**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 19:28
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 19:28
Pyrene	**0.00030**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 19:28
Surr: 2,4,6-Tribromophenol	*66.8*			*34-129*	*%REC*	*1*	*01-Feb-2019 19:28*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: 2,4,6-Tribromophenol	*53.8*			*34-129*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: 2-Fluorobiphenyl	*50.3*			*40-125*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: 2-Fluorobiphenyl	*56.4*			*40-125*	*%REC*	*1*	*01-Feb-2019 19:28*
Surr: 2-Fluorophenol	*56.1*			*20-120*	*%REC*	*1*	*01-Feb-2019 19:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: 2-Fluorophenol	*56.2*			*20-120*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: 4-Terphenyl-d14	*48.3*			*40-135*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: 4-Terphenyl-d14	*68.7*			*40-135*	*%REC*	*1*	*01-Feb-2019 19:28*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW83B-20190115	Lab ID:HS19010754-13
Collection Date:	15-Jan-2019 10:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
Surr: Nitrobenzene-d5	*44.1*			*41-120*	*%REC*	*1*	*01-Feb-2019 19:28*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: Nitrobenzene-d5	*45.2*			*41-120*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: Phenol-d6	*47.4*			*20-120*	*%REC*	*10*	*07-Feb-2019 15:53*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 19:32*
Surr: Phenol-d6	*55.3*			*20-120*	*%REC*	*1*	*01-Feb-2019 19:28*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.0916**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:09
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:09

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW83C-20190115	Lab ID:HS19010754-14
Collection Date:	15-Jan-2019 11:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:04
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:04
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:04
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:04
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 06:04
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:04
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:04
Surr: 1,2-Dichloroethane-d4	*94.8*			*70-126*	*%REC*	*1*	*24-Jan-2019 06:04*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*1*	*24-Jan-2019 06:04*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*24-Jan-2019 06:04*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 06:04*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW83C-20190115	Lab ID:HS19010754-14	
Collection Date:	15-Jan-2019 11:15	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	**0.000087**	J	**0.000021**	**0.00020**	**mg/L**	1	13-Feb-2019 18:35
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 18:35
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 18:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 18:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 18:35
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:35
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 18:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 18:35
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 18:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 18:35
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 18:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 18:35
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 18:35
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	13-Feb-2019 18:35
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:35
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:35
Di-n-butyl phthalate	**0.000060**	J	**0.000020**	**0.00020**	**mg/L**	1	13-Feb-2019 18:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 18:35
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 18:35
Naphthalene	**0.00036**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 18:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 18:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 18:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 18:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:35
Phenol	**0.000038**	J	**0.000035**	**0.00020**	**mg/L**	1	13-Feb-2019 18:35
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:35
Surr: 2,4,6-Tribromophenol	*40.9*			*34-129*	*%REC*	*1*	*13-Feb-2019 18:35*
Surr: 2-Fluorobiphenyl	*43.5*			*40-125*	*%REC*	*1*	*13-Feb-2019 18:35*
Surr: 2-Fluorophenol	*39.4*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:35*
Surr: 4-Terphenyl-d14	*64.3*			*40-135*	*%REC*	*1*	*13-Feb-2019 18:35*
Surr: Nitrobenzene-d5	*45.3*			*41-120*	*%REC*	*1*	*13-Feb-2019 18:35*
Surr: Phenol-d6	*45.6*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00616**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:11
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:11

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW35A-20190115	Lab ID:HS19010754-15
Collection Date:	15-Jan-2019 12:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2019 15:31
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 15:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 15:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 15:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2019 15:31
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 15:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2019 15:31
Surr: 1,2-Dichloroethane-d4	*92.7*			*70-126*	*%REC*	*1*	*25-Jan-2019 15:31*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*25-Jan-2019 15:31*
Surr: Dibromofluoromethane	*95.1*			*77-123*	*%REC*	*1*	*25-Jan-2019 15:31*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*25-Jan-2019 15:31*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW35A-20190115	Lab ID:HS19010754-15	
Collection Date:	15-Jan-2019 12:45	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 20:08
2,4-Dimethylphenol	**0.0021**		**0.000040**	**0.00020**	**mg/L**	1	01-Feb-2019 20:08
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 20:08
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 20:08
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 20:08
2-Methylnaphthalene	**0.016**		**0.00019**	**0.0010**	**mg/L**	10	13-Feb-2019 18:55
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 20:08
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 20:08
Acenaphthene	**0.0039**		**0.000027**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Acenaphthylene	**0.000068**	J	**0.000015**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Anthracene	**0.00044**		**0.000014**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 20:08
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 20:08
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 20:08
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 20:08
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 20:08
Dibenzofuran	**0.0041**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 20:08
Fluoranthene	**0.00015**		**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Fluorene	**0.0022**		**0.000030**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Naphthalene	**0.22**		**0.0020**	**0.010**	**mg/L**	100	13-Feb-2019 19:15
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 20:08
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 20:08
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 20:08
Phenanthrene	**0.0025**		**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 20:08
Pyrene	**0.000070**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 20:08
Surr: 2,4,6-Tribromophenol	*74.0*			*34-129*	*%REC*	*1*	*01-Feb-2019 20:08*
Surr: 2,4,6-Tribromophenol	*78.4*			*34-129*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: 2-Fluorobiphenyl	*58.7*			*40-125*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: 2-Fluorobiphenyl	*51.3*			*40-125*	*%REC*	*1*	*01-Feb-2019 20:08*
Surr: 2-Fluorophenol	*45.1*			*20-120*	*%REC*	*1*	*01-Feb-2019 20:08*
Surr: 2-Fluorophenol	*53.7*			*20-120*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: 4-Terphenyl-d14	*82.0*			*40-135*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: 4-Terphenyl-d14	*74.2*			*40-135*	*%REC*	*1*	*01-Feb-2019 20:08*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW35A-20190115	Lab ID:HS19010754-15
Collection Date:	15-Jan-2019 12:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
Surr: Nitrobenzene-d5	*48.5*			*41-120*	*%REC*	*1*	*01-Feb-2019 20:08*
Surr: Nitrobenzene-d5	*63.8*			*41-120*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: Phenol-d6	*63.3*			*20-120*	*%REC*	*10*	*13-Feb-2019 18:55*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*13-Feb-2019 19:15*
Surr: Phenol-d6	*52.4*			*20-120*	*%REC*	*1*	*01-Feb-2019 20:08*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.0198**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:13
Lead	**0.000654**	J	**0.000600**	**0.00200**	**mg/L**	1	25-Jan-2019 17:13

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW35B-20190115	Lab ID:HS19010754-16
Collection Date:	15-Jan-2019 13:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	25-Jan-2019 15:55
Benzene	**0.0033**		**0.00020**	**0.0010**	**mg/L**	1	25-Jan-2019 15:55
Chlorobenzene	U		0.00030	0.0010	mg/L	1	25-Jan-2019 15:55
Ethylbenzene	**0.0094**		**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2019 15:55
Methylene chloride	U		0.0010	0.0020	mg/L	1	25-Jan-2019 15:55
Toluene	U		0.00020	0.0010	mg/L	1	25-Jan-2019 15:55
Xylenes, Total	**0.0040**		**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2019 15:55
Surr: 1,2-Dichloroethane-d4	*92.6*			*70-126*	*%REC*	*1*	*25-Jan-2019 15:55*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*25-Jan-2019 15:55*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*25-Jan-2019 15:55*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*25-Jan-2019 15:55*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW35B-20190115	Lab ID:HS19010754-16	
Collection Date:	15-Jan-2019 13:25	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2019 20:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	12-Feb-2019 20:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2019 20:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2019 20:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	12-Feb-2019 20:50
2-Methylnaphthalene	**0.011**		**0.00019**	**0.0010**	**mg/L**	10	12-Feb-2019 21:10
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2019 20:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2019 20:50
Acenaphthene	**0.013**		**0.00027**	**0.0010**	**mg/L**	10	12-Feb-2019 21:10
Acenaphthylene	**0.00018**		**0.000015**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Anthracene	**0.0011**		**0.000014**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Benz(a)anthracene	**0.000077**	J	**0.000050**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Benzo(a)pyrene	**0.000058**	J	**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2019 20:50
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	12-Feb-2019 20:50
Chrysene	**0.000098**	J	**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Dibenzofuran	**0.015**		**0.00020**	**0.0010**	**mg/L**	10	12-Feb-2019 21:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	12-Feb-2019 20:50
Fluoranthene	**0.0013**		**0.000010**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Fluorene	**0.0066**		**0.000030**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Naphthalene	**0.079**		**0.00020**	**0.0010**	**mg/L**	10	12-Feb-2019 21:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2019 20:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2019 20:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2019 20:50
Phenanthrene	**0.0086**		**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Phenol	U		0.000035	0.00020	mg/L	1	12-Feb-2019 20:50
Pyrene	**0.00075**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Surr: 2,4,6-Tribromophenol	*40.8*			*34-129*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 2,4,6-Tribromophenol	*50.1*			*34-129*	*%REC*	*10*	*12-Feb-2019 21:10*
Surr: 2-Fluorobiphenyl	*41.4*			*40-125*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 2-Fluorobiphenyl	*41.1*			*40-125*	*%REC*	*10*	*12-Feb-2019 21:10*
Surr: 2-Fluorophenol	*35.2*			*20-120*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 2-Fluorophenol	*29.2*	*J*		*20-120*	*%REC*	*10*	*12-Feb-2019 21:10*
Surr: 4-Terphenyl-d14	*70.7*			*40-135*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 4-Terphenyl-d14	*74.1*			*40-135*	*%REC*	*10*	*12-Feb-2019 21:10*
Surr: Nitrobenzene-d5	*43.7*			*41-120*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: Nitrobenzene-d5	*50.5*			*41-120*	*%REC*	*10*	*12-Feb-2019 21:10*
Surr: Phenol-d6	*41.5*			*20-120*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: Phenol-d6	*29.1*	*J*		*20-120*	*%REC*	*10*	*12-Feb-2019 21:10*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW35B-20190115	Lab ID:HS19010754-16
Collection Date:	15-Jan-2019 13:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00862**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:37
Lead	**0.00165**	J	**0.000600**	**0.00200**	**mg/L**	1	25-Jan-2019 17:37

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW25A-20190115	Lab ID:HS19010754-17
Collection Date:	15-Jan-2019 14:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:28
Benzene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:28
Chlorobenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:28
Ethylbenzene		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:28
Methylene chloride		U	0.0010	0.0020	mg/L	1	24-Jan-2019 06:28
Toluene		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:28
Vinyl chloride		U	0.00020	0.0010	mg/L	1	24-Jan-2019 06:28
Xylenes, Total		U	0.00030	0.0010	mg/L	1	24-Jan-2019 06:28
Surr: 1,2-Dichloroethane-d4	*92.5*			*70-126*	*%REC*	*1*	*24-Jan-2019 06:28*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*24-Jan-2019 06:28*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*24-Jan-2019 06:28*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*24-Jan-2019 06:28*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW25A-20190115	Lab ID:HS19010754-17
Collection Date:	15-Jan-2019 14:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 20:47
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 20:47
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 20:47
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 20:47
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 20:47
2-Methylnaphthalene	**0.000051**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 20:47
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 20:47
Acenaphthene	**0.000036**	J	**0.000027**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Feb-2019 20:47
Anthracene	**0.000015**	J	**0.000014**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	01-Feb-2019 20:47
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Feb-2019 20:47
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 20:47
Bis(2-ethylhexyl)phthalate	**0.000078**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Feb-2019 20:47
Chrysene	U		0.000021	0.00010	mg/L	1	01-Feb-2019 20:47
Dibenzofuran	U		0.000020	0.00010	mg/L	1	01-Feb-2019 20:47
Di-n-butyl phthalate	**0.000020**	J	**0.000020**	**0.00020**	**mg/L**	1	01-Feb-2019 20:47
Fluoranthene	**0.000015**	J	**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Fluorene	U		0.000030	0.00010	mg/L	1	01-Feb-2019 20:47
Naphthalene	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 20:47
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 20:47
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 20:47
Phenanthrene	**0.000029**	J	**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 20:47
Pyrene	**0.000027**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 20:47
Surr: 2,4,6-Tribromophenol	*47.1*			*34-129*	*%REC*	*1*	*01-Feb-2019 20:47*
Surr: 2-Fluorobiphenyl	*58.2*			*40-125*	*%REC*	*1*	*01-Feb-2019 20:47*
Surr: 2-Fluorophenol	*46.5*			*20-120*	*%REC*	*1*	*01-Feb-2019 20:47*
Surr: 4-Terphenyl-d14	*71.7*			*40-135*	*%REC*	*1*	*01-Feb-2019 20:47*
Surr: Nitrobenzene-d5	*57.9*			*41-120*	*%REC*	*1*	*01-Feb-2019 20:47*
Surr: Phenol-d6	*54.4*			*20-120*	*%REC*	*1*	*01-Feb-2019 20:47*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00216**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:39
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:39

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW25C-20190115	Lab ID:HS19010754-18
Collection Date:	15-Jan-2019 15:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	24-Jan-2019 06:52
Benzene	U		0.00020	0.0010	mg/L	1	24-Jan-2019 06:52
Chlorobenzene	U		0.00030	0.0010	mg/L	1	24-Jan-2019 06:52
Ethylbenzene	**0.038**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 06:52
Methylene chloride	U		0.0010	0.0020	mg/L	1	24-Jan-2019 06:52
Toluene	**0.013**		**0.00020**	**0.0010**	**mg/L**	1	24-Jan-2019 06:52
Vinyl chloride	U		0.00020	0.0010	mg/L	1	24-Jan-2019 06:52
Xylenes, Total	**0.27**		**0.00030**	**0.0010**	**mg/L**	1	24-Jan-2019 06:52
Surr: 1,2-Dichloroethane-d4	*95.4*			*70-126*	*%REC*	*1*	*24-Jan-2019 06:52*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*24-Jan-2019 06:52*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*24-Jan-2019 06:52*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*24-Jan-2019 06:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW25C-20190115	Lab ID:HS19010754-18	
Collection Date:	15-Jan-2019 15:10	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Feb-2019 21:07
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Feb-2019 21:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	01-Feb-2019 21:07
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Feb-2019 21:07
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Feb-2019 21:07
2-Methylnaphthalene	**0.40**		**0.0019**	**0.010**	**mg/L**	100	12-Feb-2019 22:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Feb-2019 21:07
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Feb-2019 21:07
Acenaphthene	**0.13**		**0.0027**	**0.010**	**mg/L**	100	12-Feb-2019 22:09
Acenaphthylene	**0.0012**		**0.000015**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Anthracene	**0.011**		**0.00014**	**0.0010**	**mg/L**	10	12-Feb-2019 21:50
Benz(a)anthracene	**0.00065**		**0.000050**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Benzo(a)pyrene	**0.00021**		**0.000020**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Feb-2019 21:07
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	01-Feb-2019 21:07
Chrysene	**0.00074**		**0.000021**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Dibenzofuran	**0.14**		**0.0020**	**0.010**	**mg/L**	100	12-Feb-2019 22:09
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	01-Feb-2019 21:07
Fluoranthene	**0.0079**		**0.000010**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Fluorene	**0.062**		**0.00030**	**0.0010**	**mg/L**	10	12-Feb-2019 21:50
Naphthalene	**3.5**		**0.020**	**0.10**	**mg/L**	1000	12-Feb-2019 22:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Feb-2019 21:07
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Feb-2019 21:07
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	01-Feb-2019 21:07
Phenanthrene	**0.077**		**0.00021**	**0.0010**	**mg/L**	10	12-Feb-2019 21:50
Phenol	U		0.000035	0.00020	mg/L	1	01-Feb-2019 21:07
Pyrene	**0.0052**		**0.000019**	**0.00010**	**mg/L**	1	01-Feb-2019 21:07
Surr: 2,4,6-Tribromophenol	*67.9*			*34-129*	*%REC*	*1*	*01-Feb-2019 21:07*
Surr: 2,4,6-Tribromophenol	*84.4*			*34-129*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*12-Feb-2019 22:29*
Surr: 2-Fluorobiphenyl	*55.1*			*40-125*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*12-Feb-2019 22:29*
Surr: 2-Fluorobiphenyl	*43.0*			*40-125*	*%REC*	*1*	*01-Feb-2019 21:07*
Surr: 2-Fluorophenol	*40.6*			*20-120*	*%REC*	*1*	*01-Feb-2019 21:07*
Surr: 2-Fluorophenol	*50.2*			*20-120*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 22:29*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW25C-20190115	Lab ID:HS19010754-18
Collection Date:	15-Jan-2019 15:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: ACN
Surr: 4-Terphenyl-d14	*83.3*			*40-135*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*12-Feb-2019 22:29*
Surr: 4-Terphenyl-d14	*71.9*			*40-135*	*%REC*	*1*	*01-Feb-2019 21:07*
Surr: Nitrobenzene-d5	*48.3*			*41-120*	*%REC*	*1*	*01-Feb-2019 21:07*
Surr: Nitrobenzene-d5	*66.1*			*41-120*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*12-Feb-2019 22:29*
Surr: Phenol-d6	*60.2*			*20-120*	*%REC*	*10*	*12-Feb-2019 21:50*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*12-Feb-2019 22:09*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*12-Feb-2019 22:29*
Surr: Phenol-d6	*50.5*			*20-120*	*%REC*	*1*	*01-Feb-2019 21:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00359**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:41
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:41

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW34CR-20190115	Lab ID:HS19010754-19
Collection Date:	15-Jan-2019 15:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:44
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2019 22:44
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:44
Surr: 1,2-Dichloroethane-d4	*93.8*			*70-126*	*%REC*	*1*	*25-Jan-2019 22:44*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*25-Jan-2019 22:44*
Surr: Dibromofluoromethane	*95.7*			*77-123*	*%REC*	*1*	*25-Jan-2019 22:44*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2019 22:44*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-MW34CR-20190115	Lab ID:HS19010754-19	
Collection Date:	15-Jan-2019 15:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Feb-2019 21:45
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Feb-2019 21:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Feb-2019 21:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Feb-2019 21:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Feb-2019 21:45
2-Methylnaphthalene	**0.000079**	J	**0.000019**	**0.00010**	**mg/L**	1	05-Feb-2019 21:45
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Feb-2019 21:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Feb-2019 21:45
Acenaphthene	**0.000029**	J	**0.000027**	**0.00010**	**mg/L**	1	05-Feb-2019 21:45
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Feb-2019 21:45
Anthracene	U		0.000014	0.00010	mg/L	1	05-Feb-2019 21:45
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	05-Feb-2019 21:45
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	05-Feb-2019 21:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Feb-2019 21:45
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	05-Feb-2019 21:45
Chrysene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 21:45
Dibenzofuran	**0.000027**	J	**0.000020**	**0.00010**	**mg/L**	1	05-Feb-2019 21:45
Di-n-butyl phthalate	**0.000021**	J	**0.000020**	**0.00020**	**mg/L**	1	05-Feb-2019 21:45
Fluoranthene	**0.000014**	J	**0.000010**	**0.00010**	**mg/L**	1	05-Feb-2019 21:45
Fluorene	U		0.000030	0.00010	mg/L	1	05-Feb-2019 21:45
Naphthalene	**0.00069**		**0.000020**	**0.00010**	**mg/L**	1	05-Feb-2019 21:45
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Feb-2019 21:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Feb-2019 21:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Feb-2019 21:45
Phenanthrene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 21:45
Phenol	U		0.000035	0.00020	mg/L	1	05-Feb-2019 21:45
Pyrene	U		0.000019	0.00010	mg/L	1	05-Feb-2019 21:45
Surr: 2,4,6-Tribromophenol	*58.3*			*34-129*	*%REC*	*1*	*05-Feb-2019 21:45*
Surr: 2-Fluorobiphenyl	*46.8*			*40-125*	*%REC*	*1*	*05-Feb-2019 21:45*
Surr: 2-Fluorophenol	*42.7*			*20-120*	*%REC*	*1*	*05-Feb-2019 21:45*
Surr: 4-Terphenyl-d14	*69.4*			*40-135*	*%REC*	*1*	*05-Feb-2019 21:45*
Surr: Nitrobenzene-d5	*41.3*			*41-120*	*%REC*	*1*	*05-Feb-2019 21:45*
Surr: Phenol-d6	*43.5*			*20-120*	*%REC*	*1*	*05-Feb-2019 21:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00132**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:44
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:44

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-MW71B-20190115	Lab ID:HS19010754-20
Collection Date:	15-Jan-2019 16:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	25-Jan-2019 23:08
Benzene	**0.0024**		**0.00020**	**0.0010**	**mg/L**	1	25-Jan-2019 23:08
Chlorobenzene	U		0.00030	0.0010	mg/L	1	25-Jan-2019 23:08
Ethylbenzene	**0.00093**	J	**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2019 23:08
Methylene chloride	U		0.0010	0.0020	mg/L	1	25-Jan-2019 23:08
Toluene	U		0.00020	0.0010	mg/L	1	25-Jan-2019 23:08
Xylenes, Total	**0.00084**	J	**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2019 23:08
Surr: 1,2-Dichloroethane-d4	*91.0*			*70-126*	*%REC*	*1*	*25-Jan-2019 23:08*
Surr: 4-Bromofluorobenzene	*99.6*			*81-113*	*%REC*	*1*	*25-Jan-2019 23:08*
Surr: Dibromofluoromethane	*95.8*			*77-123*	*%REC*	*1*	*25-Jan-2019 23:08*
Surr: Toluene-d8	*99.7*			*82-127*	*%REC*	*1*	*25-Jan-2019 23:08*

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

Client:	Golder Associates Inc.		**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works		WorkOrder:HS19010754
Sample ID:	WG-1620-MW71B-20190115		Lab ID:HS19010754-20
Collection Date:	15-Jan-2019 16:50		Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Feb-2019 22:05
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Feb-2019 22:05
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Feb-2019 22:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Feb-2019 22:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Feb-2019 22:05
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	05-Feb-2019 22:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Feb-2019 22:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Feb-2019 22:05
Acenaphthene	U		0.000027	0.00010	mg/L	1	05-Feb-2019 22:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Feb-2019 22:05
Anthracene	U		0.000014	0.00010	mg/L	1	05-Feb-2019 22:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	05-Feb-2019 22:05
Benzo(a)pyrene	**0.000021**	J	**0.000020**	**0.00010**	**mg/L**	1	05-Feb-2019 22:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Feb-2019 22:05
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	05-Feb-2019 22:05
Chrysene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 22:05
Dibenzofuran	U		0.000020	0.00010	mg/L	1	05-Feb-2019 22:05
Di-n-butyl phthalate	**0.000022**	J	**0.000020**	**0.00020**	**mg/L**	1	05-Feb-2019 22:05
Fluoranthene	**0.000039**	J	**0.000010**	**0.00010**	**mg/L**	1	05-Feb-2019 22:05
Fluorene	U		0.000030	0.00010	mg/L	1	05-Feb-2019 22:05
Naphthalene	U		0.000020	0.00010	mg/L	1	05-Feb-2019 22:05
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Feb-2019 22:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Feb-2019 22:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Feb-2019 22:05
Phenanthrene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 22:05
Phenol	U		0.000035	0.00020	mg/L	1	05-Feb-2019 22:05
Pyrene	**0.000037**	J	**0.000019**	**0.00010**	**mg/L**	1	05-Feb-2019 22:05
Surr: 2,4,6-Tribromophenol	*57.1*			*34-129*	*%REC*	*1*	*05-Feb-2019 22:05*
Surr: 2-Fluorobiphenyl	*55.1*			*40-125*	*%REC*	*1*	*05-Feb-2019 22:05*
Surr: 2-Fluorophenol	*55.5*			*20-120*	*%REC*	*1*	*05-Feb-2019 22:05*
Surr: 4-Terphenyl-d14	*67.0*			*40-135*	*%REC*	*1*	*05-Feb-2019 22:05*
Surr: Nitrobenzene-d5	*50.1*			*41-120*	*%REC*	*1*	*05-Feb-2019 22:05*
Surr: Phenol-d6	*54.3*			*20-120*	*%REC*	*1*	*05-Feb-2019 22:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	**0.00158**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2019 17:46
Lead	**0.000845**	J	**0.000600**	**0.00200**	**mg/L**	1	25-Jan-2019 17:46

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WG-1620-FB05-20190115	Lab ID:HS19010754-21
Collection Date:	15-Jan-2019 17:15	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2019 21:56
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 21:56
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 21:56
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 21:56
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2019 21:56
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 21:56
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2019 21:56
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2019 21:56
Surr: 1,2-Dichloroethane-d4	*90.6*			*70-126*	*%REC*	*1*	*25-Jan-2019 21:56*
Surr: 4-Bromofluorobenzene	*96.2*			*81-113*	*%REC*	*1*	*25-Jan-2019 21:56*
Surr: Dibromofluoromethane	*95.5*			*77-123*	*%REC*	*1*	*25-Jan-2019 21:56*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2019 21:56*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754	
Sample ID:	WG-1620-FB05-20190115	Lab ID:HS19010754-21	
Collection Date:	15-Jan-2019 17:15	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 18-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Feb-2019 22:25
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Feb-2019 22:25
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Feb-2019 22:25
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Feb-2019 22:25
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Feb-2019 22:25
2-Methylnaphthalene	**0.000046**	J	**0.000019**	**0.00010**	**mg/L**	1	05-Feb-2019 22:25
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Feb-2019 22:25
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Feb-2019 22:25
Acenaphthene	U		0.000027	0.00010	mg/L	1	05-Feb-2019 22:25
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Feb-2019 22:25
Anthracene	U		0.000014	0.00010	mg/L	1	05-Feb-2019 22:25
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	05-Feb-2019 22:25
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	05-Feb-2019 22:25
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Feb-2019 22:25
Bis(2-ethylhexyl)phthalate	**0.000057**	J	**0.000037**	**0.00020**	**mg/L**	1	05-Feb-2019 22:25
Chrysene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 22:25
Dibenzofuran	U		0.000020	0.00010	mg/L	1	05-Feb-2019 22:25
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	05-Feb-2019 22:25
Fluoranthene	U		0.000010	0.00010	mg/L	1	05-Feb-2019 22:25
Fluorene	U		0.000030	0.00010	mg/L	1	05-Feb-2019 22:25
Naphthalene	**0.00056**		**0.000020**	**0.00010**	**mg/L**	1	05-Feb-2019 22:25
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Feb-2019 22:25
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Feb-2019 22:25
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Feb-2019 22:25
Phenanthrene	U		0.000021	0.00010	mg/L	1	05-Feb-2019 22:25
Phenol	U		0.000035	0.00020	mg/L	1	05-Feb-2019 22:25
Pyrene	U		0.000019	0.00010	mg/L	1	05-Feb-2019 22:25
Surr: 2,4,6-Tribromophenol	*47.4*			*34-129*	*%REC*	*1*	*05-Feb-2019 22:25*
Surr: 2-Fluorobiphenyl	*52.2*			*40-125*	*%REC*	*1*	*05-Feb-2019 22:25*
Surr: 2-Fluorophenol	*44.4*			*20-120*	*%REC*	*1*	*05-Feb-2019 22:25*
Surr: 4-Terphenyl-d14	*61.3*			*40-135*	*%REC*	*1*	*05-Feb-2019 22:25*
Surr: Nitrobenzene-d5	*47.0*			*41-120*	*%REC*	*1*	*05-Feb-2019 22:25*
Surr: Phenol-d6	*53.0*			*20-120*	*%REC*	*1*	*05-Feb-2019 22:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2019		Analyst: JCJ
Arsenic	U		0.000400	0.00200	mg/L	1	25-Jan-2019 17:48
Lead	U		0.000600	0.00200	mg/L	1	25-Jan-2019 17:48

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19010754
Sample ID:	WQ-1620-TB04-20190115	Lab ID:HS19010754-22
Collection Date:	15-Jan-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:20
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2019 22:20
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:20
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2019 22:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2019 22:20
Surr: 1,2-Dichloroethane-d4	*92.9*			*70-126*	*%REC*	*1*	*25-Jan-2019 22:20*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*1*	*25-Jan-2019 22:20*
Surr: Dibromofluoromethane	*95.5*			*77-123*	*%REC*	*1*	*25-Jan-2019 22:20*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2019 22:20*

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

Batch ID: 136788 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010754-01	1	1000	1 (mL)	0.001
HS19010754-02	1	1000	1 (mL)	0.001

Batch ID: 136815 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010754-03	1	1000	1 (mL)	0.001
HS19010754-04	1	1000	1 (mL)	0.001
HS19010754-05	1	1000	1 (mL)	0.001
HS19010754-06	1	1000	1 (mL)	0.001
HS19010754-07	1	990	1 (mL)	0.00101
HS19010754-08	1	1000	1 (mL)	0.001
HS19010754-09	1	1000	1 (mL)	0.001
HS19010754-10	1	1000	1 (mL)	0.001
HS19010754-11	1	1000	1 (mL)	0.001
HS19010754-12	1	990	1 (mL)	0.00101
HS19010754-13	1	1000	1 (mL)	0.001
HS19010754-14	1	1000	1 (mL)	0.001
HS19010754-15	1	1000	1 (mL)	0.001
HS19010754-16	1	1000	1 (mL)	0.001
HS19010754-17	1	1000	1 (mL)	0.001
HS19010754-18	1	1000	1 (mL)	0.001
HS19010754-19	1	1000	1 (mL)	0.001
HS19010754-20	1	1000	1 (mL)	0.001
HS19010754-21	1	1000	1 (mL)	0.001

Batch ID: 136946 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010754-01	1	10	10 (mL)	1

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

Batch ID: 136947 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19010754-02	1	10	10 (mL)	1
HS19010754-03	1	10	10 (mL)	1
HS19010754-04	1	10	10 (mL)	1
HS19010754-05	1	10	10 (mL)	1
HS19010754-06	1	10	10 (mL)	1
HS19010754-07	1	10	10 (mL)	1
HS19010754-08	1	10	10 (mL)	1
HS19010754-09	1	10	10 (mL)	1
HS19010754-10	1	10	10 (mL)	1
HS19010754-11	1	10	10 (mL)	1
HS19010754-12	1	10	10 (mL)	1
HS19010754-13	1	10	10 (mL)	1
HS19010754-14	1	10	10 (mL)	1
HS19010754-15	1	10	10 (mL)	1
HS19010754-16	1	10	10 (mL)	1
HS19010754-17	1	10	10 (mL)	1
HS19010754-18	1	10	10 (mL)	1
HS19010754-19	1	10	10 (mL)	1
HS19010754-20	1	10	10 (mL)	1
HS19010754-21	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136788	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Groundwater		
HS19010754-01	WG-1620-MW53C-20190114	14 Jan 2019 12:05		18 Jan 2019 10:59	01 Feb 2019 10:32	1
HS19010754-02	WG-1620-MW54C-20190114	14 Jan 2019 13:00		18 Jan 2019 10:59	01 Feb 2019 17:10	10
HS19010754-02	WG-1620-MW54C-20190114	14 Jan 2019 13:00		18 Jan 2019 10:59	01 Feb 2019 10:52	1
Batch ID 136815	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Water		
HS19010754-08	WG-1620-FB04-20190114	14 Jan 2019 18:00		18 Jan 2019 17:15	01 Feb 2019 17:50	1
HS19010754-21	WG-1620-FB05-20190115	15 Jan 2019 17:15		18 Jan 2019 17:15	05 Feb 2019 22:25	1
Batch ID 136815	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Groundwater		
HS19010754-03	WG-1620-MW36B-20190114	14 Jan 2019 14:05		18 Jan 2019 17:15	01 Feb 2019 11:11	1
HS19010754-04	WG-1620-MW36A-20190114	14 Jan 2019 14:55		18 Jan 2019 17:15	01 Feb 2019 11:31	1
HS19010754-05	WG-1620-MW28A-20190114	14 Jan 2019 15:50		18 Jan 2019 17:15	01 Feb 2019 11:51	1
HS19010754-06	WG-1620-MW28C-20190114	14 Jan 2019 16:35		18 Jan 2019 17:15	01 Feb 2019 12:10	1
HS19010754-07	WG-1620-MW63B-20190114	14 Jan 2019 17:40		18 Jan 2019 17:15	12 Feb 2019 19:12	1000
HS19010754-07	WG-1620-MW63B-20190114	14 Jan 2019 17:40		18 Jan 2019 17:15	07 Feb 2019 12:16	10
HS19010754-09	WG-1620-MW26A-20190115	15 Jan 2019 07:40		18 Jan 2019 17:15	07 Feb 2019 13:15	10
HS19010754-09	WG-1620-MW26A-20190115	15 Jan 2019 07:40		18 Jan 2019 17:15	01 Feb 2019 18:09	1
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55		18 Jan 2019 17:15	07 Feb 2019 17:31	1000
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55		18 Jan 2019 17:15	07 Feb 2019 13:55	100
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55		18 Jan 2019 17:15	07 Feb 2019 13:35	10
HS19010754-11	WG-1620-FD03-20190115	15 Jan 2019 08:55		18 Jan 2019 17:15	07 Feb 2019 17:51	1000
HS19010754-11	WG-1620-FD03-20190115	15 Jan 2019 08:55		18 Jan 2019 17:15	07 Feb 2019 14:34	10
HS19010754-12	WG-1620-MW68C-20190115	15 Jan 2019 09:45		18 Jan 2019 17:15	01 Feb 2019 19:09	1
HS19010754-13	WG-1620-MW83B-20190115	15 Jan 2019 10:40		18 Jan 2019 17:15	12 Feb 2019 19:32	1000
HS19010754-13	WG-1620-MW83B-20190115	15 Jan 2019 10:40		18 Jan 2019 17:15	07 Feb 2019 15:53	10
HS19010754-13	WG-1620-MW83B-20190115	15 Jan 2019 10:40		18 Jan 2019 17:15	01 Feb 2019 19:28	1
HS19010754-14	WG-1620-MW83C-20190115	15 Jan 2019 11:15		18 Jan 2019 17:15	13 Feb 2019 18:35	1
HS19010754-15	WG-1620-MW35A-20190115	15 Jan 2019 12:45		18 Jan 2019 17:15	13 Feb 2019 19:15	100
HS19010754-15	WG-1620-MW35A-20190115	15 Jan 2019 12:45		18 Jan 2019 17:15	13 Feb 2019 18:55	10
HS19010754-15	WG-1620-MW35A-20190115	15 Jan 2019 12:45		18 Jan 2019 17:15	01 Feb 2019 20:08	1
HS19010754-16	WG-1620-MW35B-20190115	15 Jan 2019 13:25		18 Jan 2019 17:15	12 Feb 2019 21:10	10
HS19010754-16	WG-1620-MW35B-20190115	15 Jan 2019 13:25		18 Jan 2019 17:15	12 Feb 2019 20:50	1
HS19010754-17	WG-1620-MW25A-20190115	15 Jan 2019 14:25		18 Jan 2019 17:15	01 Feb 2019 20:47	1
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10		18 Jan 2019 17:15	12 Feb 2019 22:09	100
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10		18 Jan 2019 17:15	12 Feb 2019 22:29	1000
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10		18 Jan 2019 17:15	12 Feb 2019 21:50	10
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10		18 Jan 2019 17:15	01 Feb 2019 21:07	1
HS19010754-19	WG-1620-MW34CR-20190115	15 Jan 2019 15:55		18 Jan 2019 17:15	05 Feb 2019 21:45	1
HS19010754-20	WG-1620-MW71B-20190115	15 Jan 2019 16:50		18 Jan 2019 17:15	05 Feb 2019 22:05	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 136946	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19010754-01	WG-1620-MW53C-20190114	14 Jan 2019 12:05		23 Jan 2019 10:00	24 Jan 2019 01:29	1
Batch ID 136947	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19010754-08	WG-1620-FB04-20190114	14 Jan 2019 18:00		23 Jan 2019 10:00	25 Jan 2019 16:57	1
HS19010754-21	WG-1620-FB05-20190115	15 Jan 2019 17:15		23 Jan 2019 10:00	25 Jan 2019 17:48	1
Batch ID 136947	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19010754-02	WG-1620-MW54C-20190114	14 Jan 2019 13:00		23 Jan 2019 10:00	25 Jan 2019 16:23	1
HS19010754-03	WG-1620-MW36B-20190114	14 Jan 2019 14:05		23 Jan 2019 10:00	25 Jan 2019 16:25	1
HS19010754-04	WG-1620-MW36A-20190114	14 Jan 2019 14:55		23 Jan 2019 10:00	25 Jan 2019 16:27	1
HS19010754-05	WG-1620-MW28A-20190114	14 Jan 2019 15:50		23 Jan 2019 10:00	25 Jan 2019 16:29	1
HS19010754-06	WG-1620-MW28C-20190114	14 Jan 2019 16:35		23 Jan 2019 10:00	25 Jan 2019 16:32	1
HS19010754-07	WG-1620-MW63B-20190114	14 Jan 2019 17:40		23 Jan 2019 10:00	25 Jan 2019 16:55	1
HS19010754-09	WG-1620-MW26A-20190115	15 Jan 2019 07:40		23 Jan 2019 10:00	25 Jan 2019 17:00	1
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55		23 Jan 2019 10:00	25 Jan 2019 17:02	1
HS19010754-11	WG-1620-FD03-20190115	15 Jan 2019 08:55		23 Jan 2019 10:00	25 Jan 2019 17:04	1
HS19010754-12	WG-1620-MW68C-20190115	15 Jan 2019 09:45		23 Jan 2019 10:00	25 Jan 2019 17:06	1
HS19010754-13	WG-1620-MW83B-20190115	15 Jan 2019 10:40		23 Jan 2019 10:00	25 Jan 2019 17:09	1
HS19010754-14	WG-1620-MW83C-20190115	15 Jan 2019 11:15		23 Jan 2019 10:00	25 Jan 2019 17:11	1
HS19010754-15	WG-1620-MW35A-20190115	15 Jan 2019 12:45		23 Jan 2019 10:00	25 Jan 2019 17:13	1
HS19010754-16	WG-1620-MW35B-20190115	15 Jan 2019 13:25		23 Jan 2019 10:00	25 Jan 2019 17:37	1
HS19010754-17	WG-1620-MW25A-20190115	15 Jan 2019 14:25		23 Jan 2019 10:00	25 Jan 2019 17:39	1
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10		23 Jan 2019 10:00	25 Jan 2019 17:41	1
HS19010754-19	WG-1620-MW34CR-20190115	15 Jan 2019 15:55		23 Jan 2019 10:00	25 Jan 2019 17:44	1
HS19010754-20	WG-1620-MW71B-20190115	15 Jan 2019 16:50		23 Jan 2019 10:00	25 Jan 2019 17:46	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R331619	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19010754-01	WG-1620-MW53C-20190114	14 Jan 2019 12:05			24 Jan 2019 02:27	1
HS19010754-02	WG-1620-MW54C-20190114	14 Jan 2019 13:00			24 Jan 2019 02:52	1
HS19010754-03	WG-1620-MW36B-20190114	14 Jan 2019 14:05			24 Jan 2019 03:16	1
HS19010754-05	WG-1620-MW28A-20190114	14 Jan 2019 15:50			24 Jan 2019 08:55	1
HS19010754-06	WG-1620-MW28C-20190114	14 Jan 2019 16:35			24 Jan 2019 00:51	1
HS19010754-07	WG-1620-MW63B-20190114	14 Jan 2019 17:40			24 Jan 2019 03:40	1
HS19010754-09	WG-1620-MW26A-20190115	15 Jan 2019 07:40			24 Jan 2019 04:04	1
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55			24 Jan 2019 04:28	1
HS19010754-11	WG-1620-FD03-20190115	15 Jan 2019 08:55			24 Jan 2019 04:52	1
HS19010754-12	WG-1620-MW68C-20190115	15 Jan 2019 09:45			24 Jan 2019 05:16	1
HS19010754-13	WG-1620-MW83B-20190115	15 Jan 2019 10:40			24 Jan 2019 05:40	1
HS19010754-14	WG-1620-MW83C-20190115	15 Jan 2019 11:15			24 Jan 2019 06:04	1
HS19010754-17	WG-1620-MW25A-20190115	15 Jan 2019 14:25			24 Jan 2019 06:28	1
HS19010754-18	WG-1620-MW25C-20190115	15 Jan 2019 15:10			24 Jan 2019 06:52	1
Batch ID R331648	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19010754-08	WG-1620-FB04-20190114	14 Jan 2019 18:00			24 Jan 2019 18:26	1
Batch ID R331734	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19010754-07	WG-1620-MW63B-20190114	14 Jan 2019 17:40			25 Jan 2019 06:35	10
HS19010754-09	WG-1620-MW26A-20190115	15 Jan 2019 07:40			25 Jan 2019 01:38	1
HS19010754-10	WG-1620-MW68B-20190115	15 Jan 2019 08:55			25 Jan 2019 07:01	50
HS19010754-11	WG-1620-FD03-20190115	15 Jan 2019 08:55			25 Jan 2019 07:28	50
HS19010754-12	WG-1620-MW68C-20190115	15 Jan 2019 09:45			25 Jan 2019 02:02	1
Batch ID R331781	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19010754-21	WG-1620-FB05-20190115	15 Jan 2019 17:15			25 Jan 2019 21:56	1
HS19010754-22	WQ-1620-TB04-20190115	15 Jan 2019 00:00			25 Jan 2019 22:20	1
Batch ID R331781	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19010754-04	WG-1620-MW36A-20190114	14 Jan 2019 14:55			25 Jan 2019 16:19	1
HS19010754-15	WG-1620-MW35A-20190115	15 Jan 2019 12:45			25 Jan 2019 15:31	1
HS19010754-16	WG-1620-MW35B-20190115	15 Jan 2019 13:25			25 Jan 2019 15:55	1
HS19010754-19	WG-1620-MW34CR-20190115	15 Jan 2019 15:55			25 Jan 2019 22:44	1
HS19010754-20	WG-1620-MW71B-20190115	15 Jan 2019 16:50			25 Jan 2019 23:08	1

WorkOrder: HS19010754
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19010754
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	Arsenic	7440-38-2	0.000500	0.000340	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.000916	0.000600	0.00200

WorkOrder: HS19010754
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000041	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000052	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000052	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000061	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000056	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000022	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00020	0.00019	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000066	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000072	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000074	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000074	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000066	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000069	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000083	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000082	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000060	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000080	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000074	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000073	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000065	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000083	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000068	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00016	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000066	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000074	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: HS19010754
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00054	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	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: HS19010754
InstrumentID: VOA6
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00072	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00062	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00062	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00061	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.0011	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00060	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00059	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.0019	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136946 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-136946** Units: **mg/L** Analysis Date: **24-Jan-2019 01:01**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922672** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-136946** Units: **mg/L** Analysis Date: **24-Jan-2019 01:04**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922673** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0499	0.00200	0.05	0	99.8	80 - 120				
Lead	0.0543	0.00200	0.05	0	109	80 - 120				

MS Sample ID: **HS19010878-02MS** Units: **mg/L** Analysis Date: **24-Jan-2019 01:10**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922676** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05	0.00200	0.05	0.000564	98.9	80 - 120				
Lead	0.04998	0.00200	0.05	0.000015	99.9	80 - 120				

MSD Sample ID: **HS19010878-02MSD** Units: **mg/L** Analysis Date: **24-Jan-2019 01:13**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922677** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04906	0.00200	0.05	0.000564	97.0	80 - 120	0.05	1.9	20	
Lead	0.05394	0.00200	0.05	0.000015	108	80 - 120	0.04998	7.63	20	

PDS Sample ID: **HS19010878-02PDS** Units: **mg/L** Analysis Date: **24-Jan-2019 01:15**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922678** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0983	0.00200	0.1	0.000564	97.7	75 - 125				
Lead	0.1026	0.00200	0.1	0	103	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136946 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS19010878-02SD** Units: **mg/L** Analysis Date: **24-Jan-2019 01:08**
Client ID: Run ID: **ICPMS05_331608** SeqNo: **4922675** PrepDate: **23-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000564	0	10	
Lead	U	0.0100					0.000015	0	10	

The following samples were analyzed in this batch: HS19010754-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136947 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-136947** Units: **mg/L** Analysis Date: **25-Jan-2019 15:25**
Client ID: Run ID: **ICPMS04_331709** SeqNo: **4925482** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-136947** Units: **mg/L** Analysis Date: **25-Jan-2019 15:28**
Client ID: Run ID: **ICPMS04_331709** SeqNo: **4925483** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05406	0.00200	0.05	0	108	80 - 120				
Lead	0.05565	0.00200	0.05	0	111	80 - 120				

MS Sample ID: **HS19010754-06MS** Units: **mg/L** Analysis Date: **25-Jan-2019 16:36**
Client ID: **WG-1620-MW28C-20190114** Run ID: **ICPMS04_331709** SeqNo: **4926026** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05541	0.00200	0.05	0.000447	110	80 - 120				
Lead	0.05412	0.00200	0.05	0.000416	107	80 - 120				

MSD Sample ID: **HS19010754-06MSD** Units: **mg/L** Analysis Date: **25-Jan-2019 16:38**
Client ID: **WG-1620-MW28C-20190114** Run ID: **ICPMS04_331709** SeqNo: **4926027** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05782	0.00200	0.05	0.000447	115	80 - 120	0.05541	4.25	20	
Lead	0.05466	0.00200	0.05	0.000416	108	80 - 120	0.05412	0.998	20	

PDS Sample ID: **HS19010754-06PDS** Units: **mg/L** Analysis Date: **25-Jan-2019 16:41**
Client ID: **WG-1620-MW28C-20190114** Run ID: **ICPMS04_331709** SeqNo: **4926028** PrepDate: **23-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1044	0.00200	0.1	0.000447	104	75 - 125				
Lead	0.1058	0.00200	0.1	0.000416	105	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: **136947** **Instrument:** **ICPMS04** **Method:** **SW6020**

SD Sample ID: **HS19010754-06SD** Units: **mg/L** Analysis Date: **25-Jan-2019 16:34**
Client ID: **WG-1620-MW28C-20190114** Run ID: **ICPMS04_331709** SeqNo: **4926025** PrepDate: **23-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000447	0	10	
Lead	U	0.0100					0.000416	0	10	

The following samples were analyzed in this batch:

HS19010754-02	HS19010754-03	HS19010754-04	HS19010754-05
HS19010754-06	HS19010754-07	HS19010754-08	HS19010754-09
HS19010754-10	HS19010754-11	HS19010754-12	HS19010754-13
HS19010754-14	HS19010754-15	HS19010754-16	HS19010754-17
HS19010754-18	HS19010754-19	HS19010754-20	HS19010754-21

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136788 **Instrument: SV-7** **Method: SW8270**

MBLK Sample ID: **MBLK-136788** Units: **ug/L** Analysis Date: **21-Jan-2019 13:59**
Client ID: Run ID: **SV-7_331418** SeqNo: **4917420** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*2.898*	*0.20*	*5*	*0*	*58.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.603*	*0.20*	*5*	*0*	*72.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.68*	*0.20*	*5*	*0*	*73.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.745*	*0.20*	*5*	*0*	*74.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.674*	*0.20*	*5*	*0*	*73.5*	*41 - 120*				
Surr: Phenol-d6	*3.986*	*0.20*	*5*	*0*	*79.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136788 **Instrument: SV-7** **Method: SW8270**

LCS Sample ID: **LCS-136788** Units: **ug/L** Analysis Date: **21-Jan-2019 11:49**
Client ID: Run ID: **SV-7_331418** SeqNo: **4917414** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.422	0.20	5	0	68.4	39 - 127				
2,4-Dimethylphenol	2.686	0.20	5	0	53.7	35 - 120				
2,4-Dinitrotoluene	2.839	0.20	5	0	56.8	50 - 122				
2,6-Dinitrotoluene	2.657	0.20	5	0	53.1	50 - 120				
2-Chloronaphthalene	2.793	0.20	5	0	55.9	50 - 120				
2-Methylnaphthalene	2.701	0.10	5	0	54.0	50 - 120				
4,6-Dinitro-2-methylphenol	3.216	0.20	5	0	64.3	25 - 121				
4-Nitrophenol	2.876	1.0	5	0	57.5	30 - 130				
Acenaphthene	2.551	0.10	5	0	51.0	45 - 120				
Acenaphthylene	2.798	0.10	5	0	56.0	47 - 120				
Anthracene	2.879	0.10	5	0	57.6	45 - 120				
Benz(a)anthracene	3.118	0.10	5	0	62.4	40 - 120				
Benzo(a)pyrene	3.157	0.10	5	0	63.1	45 - 120				
Bis(2-chloroethoxy)methane	2.899	0.20	5	0	58.0	45 - 120				
Bis(2-ethylhexyl)phthalate	3.648	0.20	5	0	73.0	40 - 139				
Chrysene	3.084	0.10	5	0	61.7	43 - 120				
Dibenzofuran	2.76	0.10	5	0	55.2	50 - 120				
Di-n-butyl phthalate	3.227	0.20	5	0	64.5	45 - 123				
Fluoranthene	2.789	0.10	5	0	55.8	45 - 125				
Fluorene	2.693	0.10	5	0	53.9	49 - 120				
Naphthalene	2.829	0.10	5	0	56.6	45 - 120				
Nitrobenzene	3.005	0.20	5	0	60.1	44 - 120				
N-Nitrosodiphenylamine	2.991	0.20	5	0	59.8	40 - 125				
Pentachlorophenol	2.717	0.20	5	0	54.3	19 - 121				
Phenanthrene	2.842	0.10	5	0	56.8	45 - 121				
Phenol	2.879	0.20	5	0	57.6	20 - 124				
Pyrene	3.207	0.10	5	0	64.1	40 - 130				
Surr: 2,4,6-Tribromophenol	*2.456*	*0.20*	*5*	*0*	*49.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.838*	*0.20*	*5*	*0*	*56.8*	*40 - 125*				
Surr: 2-Fluorophenol	*2.861*	*0.20*	*5*	*0*	*57.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.232*	*0.20*	*5*	*0*	*64.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.985*	*0.20*	*5*	*0*	*59.7*	*41 - 120*				
Surr: Phenol-d6	*3.079*	*0.20*	*5*	*0*	*61.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136788 **Instrument: SV-7** **Method: SW8270**

LCSD Sample ID: **LCSD-136788** Units: **ug/L** Analysis Date: **21-Jan-2019 12:41**
Client ID: Run ID: **SV-7_331418** SeqNo: **4917415** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.353	0.20	5	0	67.1	39 - 127	3.422	2.01	20	
2,4-Dimethylphenol	2.758	0.20	5	0	55.2	35 - 120	2.686	2.63	20	
2,4-Dinitrotoluene	2.779	0.20	5	0	55.6	50 - 122	2.839	2.15	20	
2,6-Dinitrotoluene	2.714	0.20	5	0	54.3	50 - 120	2.657	2.11	20	
2-Chloronaphthalene	2.886	0.20	5	0	57.7	50 - 120	2.793	3.26	20	
2-Methylnaphthalene	2.737	0.10	5	0	54.7	50 - 120	2.701	1.33	20	
4,6-Dinitro-2-methylphenol	3.149	0.20	5	0	63.0	25 - 121	3.216	2.11	30	
4-Nitrophenol	2.947	1.0	5	0	58.9	30 - 130	2.876	2.45	20	
Acenaphthene	2.725	0.10	5	0	54.5	45 - 120	2.551	6.59	20	
Acenaphthylene	2.872	0.10	5	0	57.4	47 - 120	2.798	2.61	20	
Anthracene	2.867	0.10	5	0	57.3	45 - 120	2.879	0.413	20	
Benz(a)anthracene	3.041	0.10	5	0	60.8	40 - 120	3.118	2.51	20	
Benzo(a)pyrene	3.1	0.10	5	0	62.0	45 - 120	3.157	1.81	20	
Bis(2-chloroethoxy)methane	2.974	0.20	5	0	59.5	45 - 120	2.899	2.56	20	
Bis(2-ethylhexyl)phthalate	3.5	0.20	5	0	70.0	40 - 139	3.648	4.15	20	
Chrysene	3.064	0.10	5	0	61.3	43 - 120	3.084	0.64	20	
Dibenzofuran	2.795	0.10	5	0	55.9	50 - 120	2.76	1.25	20	
Di-n-butyl phthalate	3.2	0.20	5	0	64.0	45 - 123	3.227	0.834	20	
Fluoranthene	2.846	0.10	5	0	56.9	45 - 125	2.789	2.04	20	
Fluorene	2.746	0.10	5	0	54.9	49 - 120	2.693	1.97	20	
Naphthalene	2.877	0.10	5	0	57.5	45 - 120	2.829	1.68	20	
Nitrobenzene	3.082	0.20	5	0	61.6	44 - 120	3.005	2.52	20	
N-Nitrosodiphenylamine	2.98	0.20	5	0	59.6	40 - 125	2.991	0.372	20	
Pentachlorophenol	2.655	0.20	5	0	53.1	19 - 121	2.717	2.32	20	
Phenanthrene	2.915	0.10	5	0	58.3	45 - 121	2.842	2.52	20	
Phenol	2.994	0.20	5	0	59.9	20 - 124	2.879	3.92	20	
Pyrene	3.256	0.10	5	0	65.1	40 - 130	3.207	1.52	20	
Surr: 2,4,6-Tribromophenol	*2.462*	*0.20*	*5*	*0*	*49.2*	*34 - 129*	*2.456*	*0.244*	*20*	
Surr: 2-Fluorobiphenyl	*2.963*	*0.20*	*5*	*0*	*59.3*	*40 - 125*	*2.838*	*4.3*	*20*	
Surr: 2-Fluorophenol	*2.957*	*0.20*	*5*	*0*	*59.1*	*20 - 120*	*2.861*	*3.29*	*20*	
Surr: 4-Terphenyl-d14	*3.116*	*0.20*	*5*	*0*	*62.3*	*40 - 135*	*3.232*	*3.66*	*20*	
Surr: Nitrobenzene-d5	*3.007*	*0.20*	*5*	*0*	*60.1*	*41 - 120*	*2.985*	*0.741*	*20*	
Surr: Phenol-d6	*3.234*	*0.20*	*5*	*0*	*64.7*	*20 - 120*	*3.079*	*4.93*	*20*	

The following samples were analyzed in this batch: HS19010754-01 HS19010754-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-136815** Units: **ug/L** Analysis Date: **30-Jan-2019 11:05**
Client ID: Run ID: **SV-6_331994** SeqNo: **4931051** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.22*	*0.20*	*5*	*0*	*64.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.703*	*0.20*	*5*	*0*	*74.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.586*	*0.20*	*5*	*0*	*71.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.062*	*0.20*	*5*	*0*	*81.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.583*	*0.20*	*5*	*0*	*71.7*	*41 - 120*				
Surr: Phenol-d6	*3.349*	*0.20*	*5*	*0*	*67.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-136815** Units: **ug/L** Analysis Date: **30-Jan-2019 11:24**
Client ID: Run ID: **SV-6_331994** SeqNo: **4931052** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.837	0.20	5	0	96.7	39 - 127				
2,4-Dimethylphenol	3.101	0.20	5	0	62.0	35 - 120				
2,4-Dinitrotoluene	3.397	0.20	5	0	67.9	50 - 122				
2,6-Dinitrotoluene	4.023	0.20	5	0	80.5	50 - 120				
2-Chloronaphthalene	3.701	0.20	5	0	74.0	50 - 120				
2-Methylnaphthalene	3.519	0.10	5	0	70.4	50 - 120				
4,6-Dinitro-2-methylphenol	3.778	0.20	5	0	75.6	25 - 121				
4-Nitrophenol	2.95	1.0	5	0	59.0	30 - 130				
Acenaphthene	3.491	0.10	5	0	69.8	45 - 120				
Acenaphthylene	3.708	0.10	5	0	74.2	47 - 120				
Anthracene	3.768	0.10	5	0	75.4	45 - 120				
Benz(a)anthracene	3.679	0.10	5	0	73.6	40 - 120				
Benzo(a)pyrene	3.778	0.10	5	0	75.6	45 - 120				
Bis(2-chloroethoxy)methane	3.388	0.20	5	0	67.8	45 - 120				
Bis(2-ethylhexyl)phthalate	4.069	0.20	5	0	81.4	40 - 139				
Chrysene	3.955	0.10	5	0	79.1	43 - 120				
Dibenzofuran	3.507	0.10	5	0	70.1	50 - 120				
Di-n-butyl phthalate	4.152	0.20	5	0	83.0	45 - 123				
Fluoranthene	3.807	0.10	5	0	76.1	45 - 125				
Fluorene	3.702	0.10	5	0	74.0	49 - 120				
Naphthalene	3.478	0.10	5	0	69.6	45 - 120				
Nitrobenzene	3.524	0.20	5	0	70.5	44 - 120				
N-Nitrosodiphenylamine	4.584	0.20	5	0	91.7	40 - 125				
Pentachlorophenol	2.858	0.20	5	0	57.2	19 - 121				
Phenanthrene	3.787	0.10	5	0	75.7	45 - 121				
Phenol	3.567	0.20	5	0	71.3	20 - 124				
Pyrene	3.651	0.10	5	0	73.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.846*	*0.20*	*5*	*0*	*76.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.827*	*0.20*	*5*	*0*	*76.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.616*	*0.20*	*5*	*0*	*72.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.004*	*0.20*	*5*	*0*	*80.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.595*	*0.20*	*5*	*0*	*71.9*	*41 - 120*				
Surr: Phenol-d6	*3.866*	*0.20*	*5*	*0*	*77.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-136815** Units: **ug/L** Analysis Date: **30-Jan-2019 14:22**
Client ID: Run ID: **SV-6_331994** SeqNo: **4931060** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.285	0.20	5	0	85.7	39 - 127	4.837	12.1	20	
2,4-Dimethylphenol	2.952	0.20	5	0	59.0	35 - 120	3.101	4.93	20	
2,4-Dinitrotoluene	3.637	0.20	5	0	72.7	50 - 122	3.397	6.84	20	
2,6-Dinitrotoluene	4.215	0.20	5	0	84.3	50 - 120	4.023	4.65	20	
2-Chloronaphthalene	4.015	0.20	5	0	80.3	50 - 120	3.701	8.14	20	
2-Methylnaphthalene	3.784	0.10	5	0	75.7	50 - 120	3.519	7.26	20	
4,6-Dinitro-2-methylphenol	3.274	0.20	5	0	65.5	25 - 121	3.778	14.3	30	
4-Nitrophenol	3.045	1.0	5	0	60.9	30 - 130	2.95	3.19	20	
Acenaphthene	3.393	0.10	5	0	67.9	45 - 120	3.491	2.85	20	
Acenaphthylene	3.708	0.10	5	0	74.2	47 - 120	3.708	0.00804	20	
Anthracene	3.652	0.10	5	0	73.0	45 - 120	3.768	3.13	20	
Benz(a)anthracene	3.663	0.10	5	0	73.3	40 - 120	3.679	0.438	20	
Benzo(a)pyrene	3.898	0.10	5	0	78.0	45 - 120	3.778	3.12	20	
Bis(2-chloroethoxy)methane	3.616	0.20	5	0	72.3	45 - 120	3.388	6.51	20	
Bis(2-ethylhexyl)phthalate	3.661	0.20	5	0	73.2	40 - 139	4.069	10.6	20	
Chrysene	3.713	0.10	5	0	74.3	43 - 120	3.955	6.31	20	
Dibenzofuran	3.452	0.10	5	0	69.0	50 - 120	3.507	1.58	20	
Di-n-butyl phthalate	4.284	0.20	5	0	85.7	45 - 123	4.152	3.11	20	
Fluoranthene	3.693	0.10	5	0	73.9	45 - 125	3.807	3.04	20	
Fluorene	3.657	0.10	5	0	73.1	49 - 120	3.702	1.22	20	
Naphthalene	3.434	0.10	5	0	68.7	45 - 120	3.478	1.28	20	
Nitrobenzene	3.443	0.20	5	0	68.9	44 - 120	3.524	2.32	20	
N-Nitrosodiphenylamine	4.024	0.20	5	0	80.5	40 - 125	4.584	13	20	
Pentachlorophenol	2.961	0.20	5	0	59.2	19 - 121	2.858	3.54	20	
Phenanthrene	3.894	0.10	5	0	77.9	45 - 121	3.787	2.79	20	
Phenol	3.701	0.20	5	0	74.0	20 - 124	3.567	3.7	20	
Pyrene	3.005	0.10	5	0	60.1	40 - 130	3.651	19.4	20	
Surr: 2,4,6-Tribromophenol	*3.706*	*0.20*	*5*	*0*	*74.1*	*34 - 129*	*3.846*	*3.69*	*20*	
Surr: 2-Fluorobiphenyl	*3.868*	*0.20*	*5*	*0*	*77.4*	*40 - 125*	*3.827*	*1.07*	*20*	
Surr: 2-Fluorophenol	*3.885*	*0.20*	*5*	*0*	*77.7*	*20 - 120*	*3.616*	*7.19*	*20*	
Surr: 4-Terphenyl-d14	*3.9*	*0.20*	*5*	*0*	*78.0*	*40 - 135*	*4.004*	*2.65*	*20*	
Surr: Nitrobenzene-d5	*3.734*	*0.20*	*5*	*0*	*74.7*	*41 - 120*	*3.595*	*3.81*	*20*	
Surr: Phenol-d6	*3.742*	*0.20*	*5*	*0*	*74.8*	*20 - 120*	*3.866*	*3.26*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

MS Sample ID: **HS19010754-06MS** Units: **ug/L** Analysis Date: **01-Feb-2019 12:30**
Client ID: **WG-1620-MW28C-20190114** Run ID: **SV-6_332191** SeqNo: **4938709** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.994	0.20	5.051	0	59.3	39 - 127				
2,4-Dimethylphenol	2.278	0.20	5.051	0	45.1	35 - 120				
2,4-Dinitrotoluene	3.249	0.20	5.051	0	64.3	50 - 122				
2,6-Dinitrotoluene	2.871	0.20	5.051	0	56.8	50 - 120				
2-Chloronaphthalene	2.634	0.20	5.051	0	52.1	50 - 120				
2-Methylnaphthalene	2.688	0.10	5.051	0	53.2	50 - 120				
4,6-Dinitro-2-methylphenol	3.52	0.20	5.051	0	69.7	25 - 121				
4-Nitrophenol	3.364	1.0	5.051	0	66.6	30 - 130				
Acenaphthene	2.372	0.10	5.051	0	47.0	45 - 120				
Acenaphthylene	2.412	0.10	5.051	0	47.8	47 - 120				
Anthracene	3.258	0.10	5.051	0	64.5	45 - 120				
Benz(a)anthracene	3.55	0.10	5.051	0	70.3	40 - 120				
Benzo(a)pyrene	3.494	0.10	5.051	0	69.2	45 - 120				
Bis(2-chloroethoxy)methane	2.382	0.20	5.051	0	47.2	45 - 120				
Bis(2-ethylhexyl)phthalate	3.943	0.20	5.051	0	78.1	40 - 139				
Chrysene	3.958	0.10	5.051	0	78.4	43 - 120				
Dibenzofuran	2.783	0.10	5.051	0	55.1	50 - 120				
Di-n-butyl phthalate	4.075	0.20	5.051	0	80.7	45 - 123				
Fluoranthene	3.869	0.10	5.051	0	76.6	45 - 125				
Fluorene	2.744	0.10	5.051	0	54.3	49 - 120				
Naphthalene	2.483	0.10	5.051	0	49.2	45 - 120				
Nitrobenzene	2.696	0.20	5.051	0	53.4	44 - 120				
N-Nitrosodiphenylamine	3.297	0.20	5.051	0	65.3	40 - 125				
Pentachlorophenol	3.211	0.20	5.051	0	63.6	19 - 121				
Phenanthrene	3.012	0.10	5.051	0	59.6	45 - 121				
Phenol	2.727	0.20	5.051	0	54.0	20 - 124				
Pyrene	4.055	0.10	5.051	0	80.3	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.898*	*0.20*	*5.051*	*0*	*77.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.64*	*0.20*	*5.051*	*0*	*52.3*	*40 - 125*				
Surr: 2-Fluorophenol	*2.237*	*0.20*	*5.051*	*0*	*44.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.361*	*0.20*	*5.051*	*0*	*86.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.762*	*0.20*	*5.051*	*0*	*54.7*	*41 - 120*				
Surr: Phenol-d6	*2.751*	*0.20*	*5.051*	*0*	*54.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

MSD Sample ID: **HS19010754-06MSD** Units: **ug/L** Analysis Date: **05-Feb-2019 15:49**
Client ID: **WG-1620-MW28C-20190114** Run ID: **SV-6_332348** SeqNo: **4938706** PrepDate: **18-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.841	0.20	5	0	56.8	39 - 127	2.994	5.25	20	
2,4-Dimethylphenol	2.186	0.20	5	0	43.7	35 - 120	2.278	4.11	20	
2,4-Dinitrotoluene	3.158	0.20	5	0	63.2	50 - 122	3.249	2.84	20	
2,6-Dinitrotoluene	2.858	0.20	5	0	57.2	50 - 120	2.871	0.46	20	
2-Chloronaphthalene	2.593	0.20	5	0	51.9	50 - 120	2.634	1.55	20	
2-Methylnaphthalene	2.636	0.10	5	0	52.7	50 - 120	2.688	1.93	20	
4,6-Dinitro-2-methylphenol	4.017	0.20	5	0	80.3	25 - 121	3.52	13.2	30	
4-Nitrophenol	3.524	1.0	5	0	70.5	30 - 130	3.364	4.65	20	
Acenaphthene	2.365	0.10	5	0	47.3	45 - 120	2.372	0.294	20	
Acenaphthylene	2.505	0.10	5	0	50.1	47 - 120	2.412	3.81	20	
Anthracene	3.275	0.10	5	0	65.5	45 - 120	3.258	0.54	20	
Benz(a)anthracene	3.62	0.10	5	0	72.4	40 - 120	3.55	1.95	20	
Benzo(a)pyrene	3.842	0.10	5	0	76.8	45 - 120	3.494	9.49	20	
Bis(2-chloroethoxy)methane	2.366	0.20	5	0	47.3	45 - 120	2.382	0.685	20	
Bis(2-ethylhexyl)phthalate	3.648	0.20	5	0	73.0	40 - 139	3.943	7.78	20	
Chrysene	3.884	0.10	5	0	77.7	43 - 120	3.958	1.88	20	
Dibenzofuran	2.683	0.10	5	0	53.7	50 - 120	2.783	3.66	20	
Di-n-butyl phthalate	3.639	0.20	5	0	72.8	45 - 123	4.075	11.3	20	
Fluoranthene	3.725	0.10	5	0	74.5	45 - 125	3.869	3.79	20	
Fluorene	2.786	0.10	5	0	55.7	49 - 120	2.744	1.52	20	
Naphthalene	2.466	0.10	5	0	49.3	45 - 120	2.483	0.718	20	
Nitrobenzene	2.369	0.20	5	0	47.4	44 - 120	2.696	12.9	20	
N-Nitrosodiphenylamine	3.226	0.20	5	0	64.5	40 - 125	3.297	2.17	20	
Pentachlorophenol	3.832	0.20	5	0	76.6	19 - 121	3.211	17.6	20	
Phenanthrene	3.289	0.10	5	0	65.8	45 - 121	3.012	8.78	20	
Phenol	2.657	0.20	5	0	53.1	20 - 124	2.727	2.59	20	
Pyrene	3.66	0.10	5	0	73.2	40 - 130	4.055	10.3	20	
Surr: 2,4,6-Tribromophenol	*4.006*	*0.20*	*5*	*0*	*80.1*	*34 - 129*	*3.898*	*2.75*	*20*	
Surr: 2-Fluorobiphenyl	*2.613*	*0.20*	*5*	*0*	*52.3*	*40 - 125*	*2.64*	*1.01*	*20*	
Surr: 2-Fluorophenol	*2.056*	*0.20*	*5*	*0*	*41.1*	*20 - 120*	*2.237*	*8.44*	*20*	
Surr: 4-Terphenyl-d14	*3.907*	*0.20*	*5*	*0*	*78.1*	*40 - 135*	*4.361*	*11*	*20*	
Surr: Nitrobenzene-d5	*2.43*	*0.20*	*5*	*0*	*48.6*	*41 - 120*	*2.762*	*12.8*	*20*	
Surr: Phenol-d6	*2.639*	*0.20*	*5*	*0*	*52.8*	*20 - 120*	*2.751*	*4.14*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: 136815 **Instrument: SV-6** **Method: SW8270**

The following samples were analyzed in this batch:

HS19010754-03	HS19010754-04	HS19010754-05	HS19010754-06
HS19010754-07	HS19010754-08	HS19010754-09	HS19010754-10
HS19010754-11	HS19010754-12	HS19010754-13	HS19010754-14
HS19010754-15	HS19010754-16	HS19010754-17	HS19010754-18
HS19010754-19	HS19010754-20	HS19010754-21	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331619 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190123** Units: **ug/L** Analysis Date: **24-Jan-2019 00:03**
Client ID: Run ID: **VOA2_331619** SeqNo: **4922571** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.14*	*1.0*	*50*	*0*	*94.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.13*	*1.0*	*50*	*0*	*96.3*	*82 - 115*				
Surr: Dibromofluoromethane	*51.98*	*1.0*	*50*	*0*	*104*	*73 - 126*				
Surr: Toluene-d8	*51.26*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190123** Units: **ug/L** Analysis Date: **23-Jan-2019 23:15**
Client ID: Run ID: **VOA2_331619** SeqNo: **4922570** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.47	1.0	20	0	87.4	70 - 124				
Benzene	20.89	1.0	20	0	104	74 - 120				
Chlorobenzene	20.18	1.0	20	0	101	76 - 113				
Ethylbenzene	20.1	1.0	20	0	101	77 - 117				
Methylene chloride	20.15	2.0	20	0	101	70 - 127				
Toluene	20.02	1.0	20	0	100	77 - 118				
Vinyl chloride	20.51	1.0	20	0	103	70 - 130				
Xylenes, Total	62.08	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.98*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.05*	*1.0*	*50*	*0*	*98.1*	*82 - 115*				
Surr: Dibromofluoromethane	*50.34*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.59*	*1.0*	*50*	*0*	*99.2*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331619 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS19010754-06MS** Units: **ug/L** Analysis Date: **24-Jan-2019 01:15**
Client ID: **WG-1620-MW28C-20190114** Run ID: **VOA2_331619** SeqNo: **4922574** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.02	1.0	20	0	80.1	70 - 127				
Benzene	19.74	1.0	20	0	98.7	70 - 127				
Chlorobenzene	18.76	1.0	20	0	93.8	70 - 114				
Ethylbenzene	19.43	1.0	20	0	97.2	70 - 124				
Methylene chloride	18.53	2.0	20	0	92.6	70 - 128				
Toluene	19.08	1.0	20	0	95.4	70 - 123				
Vinyl chloride	21.45	1.0	20	0	107	70 - 130				
Xylenes, Total	57.82	1.0	60	0	96.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.26*	*1.0*	*50*	*0*	*101*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.46*	*1.0*	*50*	*0*	*98.9*	*81 - 113*				
Surr: Dibromofluoromethane	*50.66*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*82 - 127*				

MSD Sample ID: **HS19010754-06MSD** Units: **ug/L** Analysis Date: **24-Jan-2019 01:39**
Client ID: **WG-1620-MW28C-20190114** Run ID: **VOA2_331619** SeqNo: **4922575** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.91	1.0	20	0	79.5	70 - 127	16.02	0.718	20	
Benzene	19.41	1.0	20	0	97.0	70 - 127	19.74	1.69	20	
Chlorobenzene	19.03	1.0	20	0	95.2	70 - 114	18.76	1.43	20	
Ethylbenzene	19.54	1.0	20	0	97.7	70 - 124	19.43	0.541	20	
Methylene chloride	17.63	2.0	20	0	88.1	70 - 128	18.53	4.98	20	
Toluene	19.17	1.0	20	0	95.9	70 - 123	19.08	0.457	20	
Vinyl chloride	21.64	1.0	20	0	108	70 - 130	21.45	0.849	20	
Xylenes, Total	58.8	1.0	60	0	98.0	70 - 130	57.82	1.67	20	
Surr: 1,2-Dichloroethane-d4	*48.5*	*1.0*	*50*	*0*	*97.0*	*70 - 126*	*50.26*	*3.57*	*20*	
Surr: 4-Bromofluorobenzene	*49.5*	*1.0*	*50*	*0*	*99.0*	*81 - 113*	*49.46*	*0.0812*	*20*	
Surr: Dibromofluoromethane	*50.73*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.66*	*0.129*	*20*	
Surr: Toluene-d8	*50.55*	*1.0*	*50*	*0*	*101*	*82 - 127*	*49.99*	*1.11*	*20*	

The following samples were analyzed in this batch:

HS19010754-01	HS19010754-02	HS19010754-03	HS19010754-05
HS19010754-06	HS19010754-07	HS19010754-09	HS19010754-10
HS19010754-11	HS19010754-12	HS19010754-13	HS19010754-14
HS19010754-17	HS19010754-18		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331648 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190124** Units: **ug/L** Analysis Date: **24-Jan-2019 11:58**
Client ID: Run ID: **VOA2_331648** SeqNo: **4923362** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*46.85*	*1.0*	*50*	*0*	*93.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.41*	*1.0*	*50*	*0*	*96.8*	*82 - 115*				
Surr: Dibromofluoromethane	*50.64*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-190124** Units: **ug/L** Analysis Date: **24-Jan-2019 11:10**
Client ID: Run ID: **VOA2_331648** SeqNo: **4923361** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.83	1.0	20	0	79.2	70 - 124				
Benzene	19.38	1.0	20	0	96.9	74 - 120				
Chlorobenzene	18.86	1.0	20	0	94.3	76 - 113				
Ethylbenzene	18.9	1.0	20	0	94.5	77 - 117				
Methylene chloride	18.98	2.0	20	0	94.9	70 - 127				
Toluene	18.88	1.0	20	0	94.4	77 - 118				
Vinyl chloride	20.57	1.0	20	0	103	70 - 130				
Xylenes, Total	58.3	1.0	60	0	97.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.88*	*1.0*	*50*	*0*	*99.8*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.38*	*1.0*	*50*	*0*	*98.8*	*82 - 115*				
Surr: Dibromofluoromethane	*50.05*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*50.16*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331648 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19011106-02MS** Units: **ug/L** Analysis Date: **24-Jan-2019 14:49**
Client ID: Run ID: **VOA2_331648** SeqNo: **4923703** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	13.36	1.0	20	0	66.8	70 - 127				S
Benzene	17.38	1.0	20	0	86.9	70 - 127				
Chlorobenzene	15.01	1.0	20	0	75.0	70 - 114				
Ethylbenzene	15.92	1.0	20	1.296	73.1	70 - 124				
Methylene chloride	13.61	2.0	20	0	68.1	70 - 128				S
Toluene	19.61	1.0	20	5.484	70.7	70 - 123				
Vinyl chloride	15.52	1.0	20	0	77.6	70 - 130				
Xylenes, Total	50.34	1.0	60	1.99	80.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.7*	*1.0*	*50*	*0*	*99.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.32*	*1.0*	*50*	*0*	*98.6*	*81 - 113*				
Surr: Dibromofluoromethane	*49.83*	*1.0*	*50*	*0*	*99.7*	*77 - 123*				
Surr: Toluene-d8	*50.35*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19011106-02MSD** Units: **ug/L** Analysis Date: **24-Jan-2019 15:13**
Client ID: Run ID: **VOA2_331648** SeqNo: **4923704** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.21	1.0	20	0	81.1	70 - 127	13.36	19.3	20	
Benzene	21.85	1.0	20	0	109	70 - 127	17.38	22.8	20	R
Chlorobenzene	18.97	1.0	20	0	94.9	70 - 114	15.01	23.4	20	R
Ethylbenzene	20.8	1.0	20	1.296	97.5	70 - 124	15.92	26.6	20	R
Methylene chloride	18.01	2.0	20	0	90.0	70 - 128	13.61	27.8	20	R
Toluene	24.39	1.0	20	5.484	94.5	70 - 123	19.61	21.7	20	R
Vinyl chloride	20.56	1.0	20	0	103	70 - 130	15.52	27.9	20	R
Xylenes, Total	65.84	1.0	60	1.99	106	70 - 130	50.34	26.7	20	R
Surr: 1,2-Dichloroethane-d4	*47.64*	*1.0*	*50*	*0*	*95.3*	*70 - 126*	*49.7*	*4.24*	*20*	
Surr: 4-Bromofluorobenzene	*50.1*	*1.0*	*50*	*0*	*100*	*81 - 113*	*49.32*	*1.57*	*20*	
Surr: Dibromofluoromethane	*49.78*	*1.0*	*50*	*0*	*99.6*	*77 - 123*	*49.83*	*0.107*	*20*	
Surr: Toluene-d8	*50.45*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.35*	*0.194*	*20*	

The following samples were analyzed in this batch: HS19010754-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331734 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190124** Units: **ug/L** Analysis Date: **24-Jan-2019 23:38**
Client ID: Run ID: **VOA2_331734** SeqNo: **4925366** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*46.42*	*1.0*	*50*	*0*	*92.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.86*	*1.0*	*50*	*0*	*97.7*	*82 - 115*				
Surr: Dibromofluoromethane	*50.18*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*51.6*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190124** Units: **ug/L** Analysis Date: **24-Jan-2019 22:50**
Client ID: Run ID: **VOA2_331734** SeqNo: **4925365** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.91	1.0	20	0	99.5	74 - 120				
Ethylbenzene	19.69	1.0	20	0	98.5	77 - 117				
Xylenes, Total	60.58	1.0	60	0	101	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.4*	*1.0*	*50*	*0*	*101*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*51.11*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*50.39*	*1.0*	*50*	*0*	*101*	*81 - 120*				

MS Sample ID: **HS19011017-01MS** Units: **ug/L** Analysis Date: **25-Jan-2019 00:50**
Client ID: Run ID: **VOA2_331734** SeqNo: **4925369** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.79	1.0	20	0	94.0	70 - 127				
Ethylbenzene	23.67	1.0	20	6.039	88.2	70 - 124				
Xylenes, Total	55.74	1.0	60	0	92.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.2*	*1.0*	*50*	*0*	*94.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.18*	*1.0*	*50*	*0*	*100*	*81 - 113*				
Surr: Dibromofluoromethane	*50.51*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: **R331734** **Instrument:** **VOA2** **Method:** **SW8260**

MSD Sample ID: **HS19011017-01MSD** Units: **ug/L** Analysis Date: **25-Jan-2019 01:14**
Client ID: Run ID: **VOA2_331734** SeqNo: **4925370** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.29	1.0	20	0	96.5	70 - 127	18.79	2.64	20	
Ethylbenzene	24.2	1.0	20	6.039	90.8	70 - 124	23.67	2.2	20	
Xylenes, Total	58.46	1.0	60	0	97.4	70 - 130	55.74	4.77	20	
Surr: 1,2-Dichloroethane-d4	*49.47*	*1.0*	*50*	*0*	*98.9*	*70 - 126*	*47.2*	*4.7*	*20*	
Surr: 4-Bromofluorobenzene	*49.81*	*1.0*	*50*	*0*	*99.6*	*81 - 113*	*50.18*	*0.741*	*20*	
Surr: Dibromofluoromethane	*49.6*	*1.0*	*50*	*0*	*99.2*	*77 - 123*	*50.51*	*1.82*	*20*	
Surr: Toluene-d8	*50.36*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.61*	*0.492*	*20*	

The following samples were analyzed in this batch: HS19010754-07 HS19010754-09 HS19010754-10 HS19010754-11 HS19010754-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331781 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190125** Units: **ug/L** Analysis Date: **25-Jan-2019 14:19**
Client ID: Run ID: **VOA6_331781** SeqNo: **4926447** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*46.76*	*1.0*	*50*	*0*	*93.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.76*	*1.0*	*50*	*0*	*99.5*	*82 - 115*				
Surr: Dibromofluoromethane	*47.9*	*1.0*	*50*	*0*	*95.8*	*73 - 126*				
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-190125** Units: **ug/L** Analysis Date: **25-Jan-2019 13:31**
Client ID: Run ID: **VOA6_331781** SeqNo: **4926446** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.9	1.0	20	0	94.5	70 - 124				
Benzene	18.62	1.0	20	0	93.1	74 - 120				
Chlorobenzene	18.52	1.0	20	0	92.6	76 - 113				
Ethylbenzene	17.98	1.0	20	0	89.9	77 - 117				
Methylene chloride	18.65	2.0	20	0	93.2	70 - 127				
Toluene	18.15	1.0	20	0	90.8	77 - 118				
Vinyl chloride	16.31	1.0	20	0	81.5	70 - 130				
Xylenes, Total	53.3	1.0	60	0	88.8	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.68*	*1.0*	*50*	*0*	*91.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.09*	*1.0*	*50*	*0*	*98.2*	*82 - 115*				
Surr: Dibromofluoromethane	*48.06*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				
Surr: Toluene-d8	*49.92*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19010754

QC BATCH REPORT

Batch ID: R331781 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19010884-01MS** Units: **ug/L** Analysis Date: **25-Jan-2019 17:07**
Client ID: Run ID: **VOA6_331781** SeqNo: **4926454** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.56	1.0	20	0	92.8	70 - 127				
Benzene	19.34	1.0	20	0	96.7	70 - 127				
Chlorobenzene	21.3	1.0	20	1.276	100	70 - 114				
Ethylbenzene	20.37	1.0	20	0	102	70 - 124				
Methylene chloride	18.53	2.0	20	0	92.6	70 - 128				
Toluene	20.08	1.0	20	0	100	70 - 123				
Vinyl chloride	16	1.0	20	0	80.0	70 - 130				
Xylenes, Total	60.74	1.0	60	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.29*	*1.0*	*50*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.58*	*1.0*	*50*	*0*	*99.2*	*81 - 113*				
Surr: Dibromofluoromethane	*48.7*	*1.0*	*50*	*0*	*97.4*	*77 - 123*				
Surr: Toluene-d8	*50.64*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19010884-01MSD** Units: **ug/L** Analysis Date: **25-Jan-2019 17:31**
Client ID: Run ID: **VOA6_331781** SeqNo: **4926455** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.64	1.0	20	0	93.2	70 - 127	18.56	0.448	20	
Benzene	18.97	1.0	20	0	94.8	70 - 127	19.34	1.93	20	
Chlorobenzene	19.99	1.0	20	1.276	93.6	70 - 114	21.3	6.34	20	
Ethylbenzene	19.15	1.0	20	0	95.7	70 - 124	20.37	6.16	20	
Methylene chloride	18.04	2.0	20	0	90.2	70 - 128	18.53	2.69	20	
Toluene	18.73	1.0	20	0	93.6	70 - 123	20.08	7	20	
Vinyl chloride	15.27	1.0	20	0	76.4	70 - 130	16	4.62	20	
Xylenes, Total	57.68	1.0	60	0	96.1	70 - 130	60.74	5.17	20	
Surr: 1,2-Dichloroethane-d4	*48.31*	*1.0*	*50*	*0*	*96.6*	*70 - 126*	*46.29*	*4.28*	*20*	
Surr: 4-Bromofluorobenzene	*50.24*	*1.0*	*50*	*0*	*100*	*81 - 113*	*49.58*	*1.32*	*20*	
Surr: Dibromofluoromethane	*49.15*	*1.0*	*50*	*0*	*98.3*	*77 - 123*	*48.7*	*0.934*	*20*	
Surr: Toluene-d8	*48.79*	*1.0*	*50*	*0*	*97.6*	*82 - 127*	*50.64*	*3.71*	*20*	

The following samples were analyzed in this batch: HS19010754-04 HS19010754-15 HS19010754-16 HS19010754-19 HS19010754-20 HS19010754-21 HS19010754-22

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19010754**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19010754

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19010754-01	WG-1620-MW53C-20190114	Login	1/17/2019 8:47:30 AM	JRM	EXT138
HS19010754-01	WG-1620-MW53C-20190114	Login	1/17/2019 8:47:30 AM	JRM	MET057
HS19010754-01	WG-1620-MW53C-20190114	Login	1/17/2019 8:47:30 AM	JRM	VOA105

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19010754

Date/Time Received: **17-Jan-2019 08:27**
Received by: **NDD**

Checklist completed by: *Jared R. Makan* eSignature 17-Jan-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 23-Jan-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	3 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:194310, 194320, 194324
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): 1.1c/1.5c, 1.6c/2.0c, 1.3c/1.7c, 1.4c/1.8c, 1.0c/1.4, 0.9c/1.3 UC/C | IR11

Cooler(s)/Kit(s): 4077, 42775, 43015, 42625, 24932, 44439

Date/Time sample(s) sent to storage: 01/17/2019 10:15

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: Sample collection time not listed on any vials for sample WG-1620-MW71B-20190115, logged in per COC.

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 2

COC ID: 194310

HS19010754

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	MS/MSD
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 201801~~			Water	1	2											
2	WG-1620-MW53C-20190114	1-14-19	1205	W		6	X		X	X							
3	WG-1620-MW54C-20190114		1300	W		6	X		X	X							
4	WG-1620-MW36B-20190114		1405	W		6		X	X	X							
5	WG-1620-MW36A-20190114		1455	W		6		X	X	X							
6	WG-1620-MW28A-20190114		1550	W		6	X		X	X							
7	WG-1620-MW28C-20190114		1635	W		12	X		X	X	X						
8	WG-1620-MW63B-20190114		1740	W		6	X		X	X							
9	WG-1620-FB04-20190114		1800	W		6		X	X	X							
10	WG-1620 MW26A-20190115	1-15-19	0740	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-17-19	Time: 07:27	Received by:
Relinquished by:	Date: 01/17/19	Time: 08:27	Received by (Laboratory): NOlson
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	u/c
42775	1.6
43015	1.3
42625	1.4
24932	1.0
44429	0.9

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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: 194320

HS19010754

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 201801~~	1-15-19		Water	1	2											
2	WG-1620-MW68B-20190115		0855	W		6	X		X	X							
3	WG-1620-FD03-20190115		0855	W		6	X		X	X							
4	WG-1620-MW68C-20190115		0945	W		6	X		X	X							
5	WG-1620-MW83B-20190115		1040	W		6	X		X	X							
6	WG-1620-MW83C-20190115		1115	W		6	X		X	X							
7	WG-1620-MW35A-20190115		1245	W		6	X		X	X							
8	WG-1620-MW35B-20190115		1325	W		6	X		X	X							
9	WG-1620-MW25A-20190115		1425	W		6		X	X	X							
10	WG-1620-MW25C-20190115		1510	W		6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BEAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-17-19	Time: 08:22	Received by:
Relinquished by:	Date: 01/17/19	Time: 08:27	Received by (Laboratory): Nelson
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	u/c
42775	1.6
43015	1.3
42625	1.4
24932	1.0
44639	0.5

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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 3 of 3

COC ID: 194324

HS19010754

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__ 201801__~~			Water	1	2											
2	WG-1620-MW34CR-20190115	1-15-19	1555	W		6	X		X	X							
3	WG-1620-MW71B-20190115	↓	1650	W		6	X		X	X							
4	WG-1620-FB05-20190115	↓	1715	W		6		X	X	X							
5	WG-1620-TB04-20190115			W		2	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BERTRONE

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-17-19 Time: 08:27 Received by:

Relinquished by: Date: 01/17/19 Time: 08:27 Received by (Laboratory): Nelson

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

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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

February 13, 2019

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

Work Order: **HS19011117**

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

Dear Eric,

ALS Environmental received 19 sample(s) on Jan 23, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19011117**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19011117**	

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: 02/13/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011117
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137036, 137135,137136,R331844,R331938,R331946,R332011

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/13/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011117
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137036, 137135,137136,R331844,R331938,R331946,R332011

#[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			3
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: 02/13/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011117
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137036, 137135,137136,R331844,R331938,R331946,R332011

ER#[5]	Description
1	Batch R331938, Volatile Organics Method SW8260, sample HS19011125-01, MS and MSD were performed on unrelated sample
2	Batch 137036, Semivolatile Organics Method SW8270, sample WG-1620-MW82B-20190122, MS/MSD RPD recovered above the RPD limit for surrogate 2-Fluorophenol due to possible matrix effects.
3	See Run Log and CCB Exceptions Report.

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).

FORM 13 - ANALYSIS RUN LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117
Start Date: 30-Jan-2019 End Date: 30-Jan-2019

Run ID:ICPMS05_331929
Instrument:ICPMS05
Method:SW6020

Sample No.	D/F	Time	FileID	Analytes
ICV	1	30-Jan-2019 12:01	016_ICV.d	AS PB
LLICV2	1	30-Jan-2019 12:03	017SMPL.d	AS PB
LLICV5	1	30-Jan-2019 12:05	018LICV.d	AS PB
ICB	1	30-Jan-2019 12:07	019_ICB.d	AS PB
ICSA	1	30-Jan-2019 12:10	020ICSA.d	AS PB
ICSAB	1	30-Jan-2019 12:12	021ICSB.d	AS PB
CCV 1	1	30-Jan-2019 12:44	033_CCV.d	AS PB
CCB 1	1	30-Jan-2019 12:46	034_CCB.d	AS PB
CCV 2	1	30-Jan-2019 13:10	043_CCV.d	AS PB
CCB 2	1	30-Jan-2019 13:12	044_CCB.d	AS PB
WG-1620-MW82B-20190122	1	30-Jan-2019 13:17	046SMPL.d	AS PB
WG-1620-MW82B-20190122SD	5	30-Jan-2019 13:20	047SMPL.d	AS PB
WG-1620-MW82B-20190122MS	1	30-Jan-2019 13:22	048SMPL.d	AS PB
WG-1620-MW82B-20190122MSD	1	30-Jan-2019 13:24	049SMPL.d	AS PB
WG-1620-MW82B-20190122PDS	1	30-Jan-2019 13:26	050SMPL.d	AS PB
WG-1620-MW44A-20190122	1	30-Jan-2019 13:29	051SMPL.d	AS PB
WG-1620-MW87C-20190122	1	30-Jan-2019 13:31	052SMPL.d	AS PB
WG-1620-MW33BR-20190122	1	30-Jan-2019 13:33	053SMPL.d	AS PB
WG-1620-MW33A-20190122	1	30-Jan-2019 13:35	054SMPL.d	AS PB
CCV 3	1	30-Jan-2019 13:40	056_CCV.d	AS PB
CCB 3	1	30-Jan-2019 13:42	057_CCB.d	AS PB
WG-1620-FD04-20190122	1	30-Jan-2019 13:45	058SMPL.d	AS PB
WG-1620-MW38B-20190122	1	30-Jan-2019 13:47	059SMPL.d	AS PB
WG-1620-MW22AR-20190122	1	30-Jan-2019 13:49	060SMPL.d	AS PB
WG-1620-MW22BR-20190122	1	30-Jan-2019 13:52	061SMPL.d	AS PB
WG-1620-MW38A-20190122	1	30-Jan-2019 13:54	062SMPL.d	AS PB
WG-1620-MW90B-20190122	1	30-Jan-2019 13:56	063SMPL.d	AS PB
WG-1620-MW89B-20190122	1	30-Jan-2019 13:58	064SMPL.d	AS PB
WG-1620-MW27C-20190122	1	30-Jan-2019 14:01	065SMPL.d	AS PB
WQ-1620-FB06-20190122	1	30-Jan-2019 14:03	066SMPL.d	AS PB
CCV 4	1	30-Jan-2019 14:07	068_CCV.d	AS PB
CCB 4	1	30-Jan-2019 14:10	069_CCB.d	AS PB
WG-1620-MW62B-20190123	1	30-Jan-2019 14:27	072SMPL.d	AS PB
WG-1620-MW64A-20190123	1	30-Jan-2019 14:30	073SMPL.d	AS PB
WG-1620-MW47C-20190123	1	30-Jan-2019 14:32	074SMPL.d	AS PB
CCV 5	1	30-Jan-2019 14:43	079_CCV.d	AS PB
CCB 5	1	30-Jan-2019 14:45	080_CCB.d	AS PB
ICCV 6	1	30-Jan-2019 15:35	097_ICV.d	AS PB
LLCCV2	1	30-Jan-2019 15:38	098SMPL.d	AS PB
LLCCV5	1	30-Jan-2019 15:40	099LICV.d	AS PB
ICCB 6	1	30-Jan-2019 15:42	100_ICB.d	AS PB
CCV 7	1	30-Jan-2019 16:14	110_CCV.d	AS PB
CCB 7	1	30-Jan-2019 16:16	111_CCB.d	AS PB
CCV 8	1	30-Jan-2019 16:45	122_CCV.d	AS PB
CCB 8	1	30-Jan-2019 16:55	124_CCB.d	AS PB
CCV 9	1	30-Jan-2019 17:56	135_CCV.d	AS PB
CCB 9	1	30-Jan-2019 17:59	136_CCB.d	AS PB
CCV 10	1	30-Jan-2019 18:24	147_CCV.d	AS PB
CCB 10	1	30-Jan-2019 18:26	148_CCB.d	AS PB
CCV 11	1	30-Jan-2019 18:51	159_CCV.d	AS PB
CCB 11	1	30-Jan-2019 18:53	160_CCB.d	AS PB

CCB EXCEPTIONS REPORT

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

Run ID:ICPMS05_331929
Instrument:ICPMS05
Method:SW6020

CCB 4 Date: 30-Jan-2019 14:10 Seq: 4930654 D/F: 1 Units: ug/L

Analyte	Result	MDL	Report Limit
Arsenic	0.414	0.4	2

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19011117

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19011117-01	WG-1620-MW44A-20190122	Groundwater		22-Jan-2019 07:25	23-Jan-2019 17:40	☐
HS19011117-02	WG-1620-MW87C-20190122	Groundwater		22-Jan-2019 08:15	23-Jan-2019 17:40	☐
HS19011117-03	WG-1620-MW33BR-20190122	Groundwater		22-Jan-2019 09:05	23-Jan-2019 17:40	☐
HS19011117-04	WG-1620-MW33A-20190122	Groundwater		22-Jan-2019 10:00	23-Jan-2019 17:40	☐
HS19011117-05	WG-1620-FD04-20190122	Groundwater		22-Jan-2019 10:00	23-Jan-2019 17:40	☐
HS19011117-06	WG-1620-MW38B-20190122	Groundwater		22-Jan-2019 11:00	23-Jan-2019 17:40	☐
HS19011117-07	WG-1620-MW22AR-20190122	Groundwater		22-Jan-2019 11:50	23-Jan-2019 17:40	☐
HS19011117-08	WG-1620-MW22BR-20190122	Groundwater		22-Jan-2019 12:35	23-Jan-2019 17:40	☐
HS19011117-09	WG-1620-MW38A-20190122	Groundwater		22-Jan-2019 13:40	23-Jan-2019 17:40	☐
HS19011117-10	WQ-1620-TB05-20190123	Water	ALS-121118-84	23-Jan-2019 00:00	23-Jan-2019 17:40	☐
HS19011117-11	WG-1620-MW82B-20190122	Groundwater		22-Jan-2019 14:55	23-Jan-2019 17:40	☐
HS19011117-12	WG-1620-MW90B-20190122	Groundwater		22-Jan-2019 16:00	23-Jan-2019 17:40	☐
HS19011117-13	WG-1620-MW89B-20190122	Groundwater		22-Jan-2019 16:50	23-Jan-2019 17:40	☐
HS19011117-14	WG-1620-MW27C-20190122	Groundwater		22-Jan-2019 17:45	23-Jan-2019 17:40	☐
HS19011117-15	WQ-1620-FB06-20190122	Water		22-Jan-2019 18:00	23-Jan-2019 17:40	☐
HS19011117-16	WG-1620-MW62B-20190123	Groundwater		23-Jan-2019 07:15	23-Jan-2019 17:40	☐
HS19011117-17	WG-1620-MW64A-20190123	Groundwater		23-Jan-2019 08:10	23-Jan-2019 17:40	☐
HS19011117-18	WG-1620-MW61A-20190123	Groundwater		23-Jan-2019 09:20	23-Jan-2019 17:40	☐
HS19011117-19	WG-1620-MW47C-20190123	Groundwater		23-Jan-2019 10:15	23-Jan-2019 17:40	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW44A-20190122	Lab ID:HS19011117-01
Collection Date:	22-Jan-2019 07:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:30
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:30
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:30
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:30
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 06:30
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:30
Vinyl chloride		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:30
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:30
Surr: 1,2-Dichloroethane-d4	*94.7*			*70-126*	*%REC*	*1*	*29-Jan-2019 06:30*
Surr: 4-Bromofluorobenzene	*98.1*			*81-113*	*%REC*	*1*	*29-Jan-2019 06:30*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*29-Jan-2019 06:30*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*29-Jan-2019 06:30*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW44A-20190122	Lab ID:HS19011117-01
Collection Date:	22-Jan-2019 07:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 11:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 11:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 11:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 11:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 11:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 11:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 11:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 11:48
Acenaphthene	**0.037**		**0.00027**	**0.0010**	**mg/L**	10	12-Feb-2019 15:16
Acenaphthylene	**0.00036**		**0.000015**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Anthracene	**0.00044**		**0.000014**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 11:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 11:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 11:48
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 11:48
Chrysene	**0.000026**	J	**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 11:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 11:48
Fluoranthene	**0.0058**		**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Fluorene	**0.0097**		**0.000030**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Naphthalene	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 11:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 11:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 11:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 11:48
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 11:48
Pyrene	**0.0033**		**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 11:48
Surr: 2,4,6-Tribromophenol	*78.2*			*34-129*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: 2,4,6-Tribromophenol	*74.2*			*34-129*	*%REC*	*10*	*12-Feb-2019 15:16*
Surr: 2-Fluorobiphenyl	*57.0*			*40-125*	*%REC*	*10*	*12-Feb-2019 15:16*
Surr: 2-Fluorobiphenyl	*59.9*			*40-125*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: 2-Fluorophenol	*49.5*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:16*
Surr: 2-Fluorophenol	*52.8*			*20-120*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: 4-Terphenyl-d14	*65.6*			*40-135*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: 4-Terphenyl-d14	*64.6*			*40-135*	*%REC*	*10*	*12-Feb-2019 15:16*
Surr: Nitrobenzene-d5	*54.9*			*41-120*	*%REC*	*10*	*12-Feb-2019 15:16*
Surr: Nitrobenzene-d5	*54.7*			*41-120*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: Phenol-d6	*55.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 11:48*
Surr: Phenol-d6	*54.3*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:16*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW44A-20190122	Lab ID:HS19011117-01
Collection Date:	22-Jan-2019 07:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.0101**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:29
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:29

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW87C-20190122	Lab ID:HS19011117-02
Collection Date:	22-Jan-2019 08:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:54
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:54
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:54
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:54
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 06:54
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 06:54
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 06:54
Surr: 1,2-Dichloroethane-d4	*95.0*			*70-126*	*%REC*	*1*	*29-Jan-2019 06:54*
Surr: 4-Bromofluorobenzene	*96.8*			*81-113*	*%REC*	*1*	*29-Jan-2019 06:54*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*29-Jan-2019 06:54*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*29-Jan-2019 06:54*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW87C-20190122	Lab ID:HS19011117-02
Collection Date:	22-Jan-2019 08:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:08
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 12:08
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 12:08
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 12:08
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:08
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 12:08
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:08
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 12:08
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 12:08
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 12:08
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 12:08
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 12:08
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:08
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 12:08
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 12:08
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 12:08
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:08
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:08
Fluoranthene	U		0.000010	0.00010	mg/L	1	11-Feb-2019 12:08
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 12:08
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:08
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 12:08
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 12:08
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 12:08
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 12:08
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 12:08
Pyrene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 12:08
Surr: 2,4,6-Tribromophenol	*51.1*			*34-129*	*%REC*	*1*	*11-Feb-2019 12:08*
Surr: 2-Fluorobiphenyl	*42.7*			*40-125*	*%REC*	*1*	*11-Feb-2019 12:08*
Surr: 2-Fluorophenol	*43.9*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:08*
Surr: 4-Terphenyl-d14	*65.6*			*40-135*	*%REC*	*1*	*11-Feb-2019 12:08*
Surr: Nitrobenzene-d5	*41.1*			*41-120*	*%REC*	*1*	*11-Feb-2019 12:08*
Surr: Phenol-d6	*49.4*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:08*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.000587**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:31
Lead	**0.00124**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jan-2019 13:31

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW33BR-20190122	Lab ID:HS19011117-03
Collection Date:	22-Jan-2019 09:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	29-Jan-2019 07:18
Benzene	**0.0025**		**0.00020**	**0.0010**	**mg/L**	1	29-Jan-2019 07:18
Chlorobenzene	U		0.00030	0.0010	mg/L	1	29-Jan-2019 07:18
Ethylbenzene	**0.013**		**0.00030**	**0.0010**	**mg/L**	1	29-Jan-2019 07:18
Methylene chloride	U		0.0010	0.0020	mg/L	1	29-Jan-2019 07:18
Toluene	U		0.00020	0.0010	mg/L	1	29-Jan-2019 07:18
Vinyl chloride	U		0.00020	0.0010	mg/L	1	29-Jan-2019 07:18
Xylenes, Total	U		0.00030	0.0010	mg/L	1	29-Jan-2019 07:18
Surr: 1,2-Dichloroethane-d4	*96.6*			*70-126*	*%REC*	*1*	*29-Jan-2019 07:18*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*29-Jan-2019 07:18*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*29-Jan-2019 07:18*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*29-Jan-2019 07:18*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW33BR-20190122	Lab ID:HS19011117-03
Collection Date:	22-Jan-2019 09:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:28
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 12:28
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 12:28
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 12:28
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:28
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 12:28
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:28
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 12:28
Acenaphthene	**0.0013**		**0.000027**	**0.00010**	**mg/L**	1	11-Feb-2019 12:28
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 12:28
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 12:28
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 12:28
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 12:28
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 12:28
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 12:28
Dibenzofuran	**0.000079**	J	**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 12:28
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:28
Fluoranthene	**0.000053**	J	**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 12:28
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 12:28
Naphthalene	**0.000040**	J	**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 12:28
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 12:28
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 12:28
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 12:28
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 12:28
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 12:28
Pyrene	**0.000030**	J	**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 12:28
Surr: 2,4,6-Tribromophenol	*83.3*			*34-129*	*%REC*	*1*	*11-Feb-2019 12:28*
Surr: 2-Fluorobiphenyl	*62.8*			*40-125*	*%REC*	*1*	*11-Feb-2019 12:28*
Surr: 2-Fluorophenol	*58.7*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:28*
Surr: 4-Terphenyl-d14	*77.1*			*40-135*	*%REC*	*1*	*11-Feb-2019 12:28*
Surr: Nitrobenzene-d5	*57.6*			*41-120*	*%REC*	*1*	*11-Feb-2019 12:28*
Surr: Phenol-d6	*64.8*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:28*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.00143**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:33
Lead	**0.000636**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jan-2019 13:33

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW33A-20190122	Lab ID:HS19011117-04
Collection Date:	22-Jan-2019 10:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 07:42
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 07:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 07:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 07:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 07:42
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 07:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 07:42
Surr: 1,2-Dichloroethane-d4	*94.9*			*70-126*	*%REC*	*1*	*29-Jan-2019 07:42*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*1*	*29-Jan-2019 07:42*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*29-Jan-2019 07:42*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*29-Jan-2019 07:42*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117	
Sample ID:	WG-1620-MW33A-20190122	Lab ID:HS19011117-04	
Collection Date:	22-Jan-2019 10:00	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 12:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 12:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 12:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 12:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 12:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 12:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 12:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 12:48
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 12:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 12:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 12:48
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 12:48
Chrysene	**0.000025**	J	**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 12:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 12:48
Fluoranthene	**0.00033**		**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 12:48
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 12:48
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 12:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 12:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 12:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 12:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 12:48
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 12:48
Pyrene	**0.00015**		**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 12:48
Surr: 2,4,6-Tribromophenol	*80.1*			*34-129*	*%REC*	*1*	*11-Feb-2019 12:48*
Surr: 2-Fluorobiphenyl	*64.8*			*40-125*	*%REC*	*1*	*11-Feb-2019 12:48*
Surr: 2-Fluorophenol	*64.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:48*
Surr: 4-Terphenyl-d14	*74.8*			*40-135*	*%REC*	*1*	*11-Feb-2019 12:48*
Surr: Nitrobenzene-d5	*61.2*			*41-120*	*%REC*	*1*	*11-Feb-2019 12:48*
Surr: Phenol-d6	*72.2*			*20-120*	*%REC*	*1*	*11-Feb-2019 12:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.0100**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:35
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:35

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-FD04-20190122	Lab ID:HS19011117-05
Collection Date:	22-Jan-2019 10:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:06
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:06
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:06
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:06
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 08:06
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:06
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:06
Surr: 1,2-Dichloroethane-d4	*94.0*			*70-126*	*%REC*	*1*	*29-Jan-2019 08:06*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*29-Jan-2019 08:06*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*1*	*29-Jan-2019 08:06*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*29-Jan-2019 08:06*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-FD04-20190122	Lab ID:HS19011117-05
Collection Date:	22-Jan-2019 10:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 13:07
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 13:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 13:07
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 13:07
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 13:07
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 13:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 13:07
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 13:07
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 13:07
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 13:07
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 13:07
Benz(a)anthracene	**0.000062**	J	**0.000050**	**0.00010**	**mg/L**	1	11-Feb-2019 13:07
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 13:07
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 13:07
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 13:07
Chrysene	**0.000034**	J	**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 13:07
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 13:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 13:07
Fluoranthene	**0.00044**		**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 13:07
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 13:07
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 13:07
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 13:07
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 13:07
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 13:07
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 13:07
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 13:07
Pyrene	**0.00034**		**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 13:07
Surr: 2,4,6-Tribromophenol	*81.6*			*34-129*	*%REC*	*1*	*11-Feb-2019 13:07*
Surr: 2-Fluorobiphenyl	*66.5*			*40-125*	*%REC*	*1*	*11-Feb-2019 13:07*
Surr: 2-Fluorophenol	*61.1*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:07*
Surr: 4-Terphenyl-d14	*76.6*			*40-135*	*%REC*	*1*	*11-Feb-2019 13:07*
Surr: Nitrobenzene-d5	*59.4*			*41-120*	*%REC*	*1*	*11-Feb-2019 13:07*
Surr: Phenol-d6	*66.8*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.00995**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:45
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:45

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW38B-20190122	Lab ID:HS19011117-06
Collection Date:	22-Jan-2019 11:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:31
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 08:31
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 08:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 08:31
Surr: 1,2-Dichloroethane-d4	*94.7*			*70-126*	*%REC*	*1*	*29-Jan-2019 08:31*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*29-Jan-2019 08:31*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*29-Jan-2019 08:31*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*29-Jan-2019 08:31*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW38B-20190122	Lab ID:HS19011117-06
Collection Date:	22-Jan-2019 11:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	11-Feb-2019 13:27
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	11-Feb-2019 13:27
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	11-Feb-2019 13:27
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	11-Feb-2019 13:27
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	11-Feb-2019 13:27
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 13:27
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	11-Feb-2019 13:27
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	11-Feb-2019 13:27
Acenaphthene		U	0.000027	0.00010	mg/L	1	11-Feb-2019 13:27
Acenaphthylene		U	0.000015	0.00010	mg/L	1	11-Feb-2019 13:27
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	11-Feb-2019 13:27
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	11-Feb-2019 13:27
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 13:27
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	11-Feb-2019 13:27
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	11-Feb-2019 13:27
Chrysene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 13:27
Dibenzofuran		U	0.000020	0.00010	mg/L	1	11-Feb-2019 13:27
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	11-Feb-2019 13:27
Fluoranthene		U	0.000010	0.00010	mg/L	1	11-Feb-2019 13:27
Fluorene		U	0.000030	0.00010	mg/L	1	11-Feb-2019 13:27
Naphthalene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 13:27
Nitrobenzene		U	0.000024	0.00020	mg/L	1	11-Feb-2019 13:27
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	11-Feb-2019 13:27
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	11-Feb-2019 13:27
Phenanthrene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 13:27
Phenol		U	0.000035	0.00020	mg/L	1	11-Feb-2019 13:27
Pyrene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 13:27
Surr: 2,4,6-Tribromophenol	*72.8*			*34-129*	*%REC*	*1*	*11-Feb-2019 13:27*
Surr: 2-Fluorobiphenyl	*46.9*			*40-125*	*%REC*	*1*	*11-Feb-2019 13:27*
Surr: 2-Fluorophenol	*47.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:27*
Surr: 4-Terphenyl-d14	*76.1*			*40-135*	*%REC*	*1*	*11-Feb-2019 13:27*
Surr: Nitrobenzene-d5	*42.5*			*41-120*	*%REC*	*1*	*11-Feb-2019 13:27*
Surr: Phenol-d6	*54.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	30-Jan-2019 13:47
Lead		U	0.000600	0.00200	mg/L	1	30-Jan-2019 13:47

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW22AR-20190122	Lab ID:HS19011117-07
Collection Date:	22-Jan-2019 11:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 21:20
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 21:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 21:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 21:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 21:20
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 21:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 21:20
Surr: 1,2-Dichloroethane-d4	*86.5*			*70-126*	*%REC*	*1*	*29-Jan-2019 21:20*
Surr: 4-Bromofluorobenzene	*95.4*			*81-113*	*%REC*	*1*	*29-Jan-2019 21:20*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*29-Jan-2019 21:20*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*29-Jan-2019 21:20*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW22AR-20190122	Lab ID:HS19011117-07
Collection Date:	22-Jan-2019 11:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 13:47
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 13:47
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 13:47
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 13:47
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 13:47
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 13:47
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 13:47
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 13:47
Acenaphthene	**0.00071**		**0.000027**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 13:47
Anthracene	**0.000028**	J	**0.000014**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 13:47
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 13:47
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 13:47
Bis(2-ethylhexyl)phthalate	**0.000065**	J	**0.000037**	**0.00020**	**mg/L**	1	11-Feb-2019 13:47
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 13:47
Dibenzofuran	**0.000029**	J	**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Di-n-butyl phthalate	**0.00051**		**0.000020**	**0.00020**	**mg/L**	1	11-Feb-2019 13:47
Fluoranthene	**0.000079**	J	**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Fluorene	**0.00014**		**0.000030**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 13:47
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 13:47
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 13:47
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 13:47
Phenanthrene	**0.000068**	J	**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 13:47
Pyrene	**0.000084**	J	**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 13:47
Surr: 2,4,6-Tribromophenol	*88.5*			*34-129*	*%REC*	*1*	*11-Feb-2019 13:47*
Surr: 2-Fluorobiphenyl	*58.3*			*40-125*	*%REC*	*1*	*11-Feb-2019 13:47*
Surr: 2-Fluorophenol	*48.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:47*
Surr: 4-Terphenyl-d14	*79.0*			*40-135*	*%REC*	*1*	*11-Feb-2019 13:47*
Surr: Nitrobenzene-d5	*54.0*			*41-120*	*%REC*	*1*	*11-Feb-2019 13:47*
Surr: Phenol-d6	*56.7*			*20-120*	*%REC*	*1*	*11-Feb-2019 13:47*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.00488**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:49
Lead	**0.00526**		**0.000600**	**0.00200**	**mg/L**	1	30-Jan-2019 13:49

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW22BR-20190122	Lab ID:HS19011117-08
Collection Date:	22-Jan-2019 12:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 22:45
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 22:45
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 22:45
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 22:45
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 22:45
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 22:45
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 22:45
Surr: 1,2-Dichloroethane-d4	*87.3*			*70-126*	*%REC*	*1*	*30-Jan-2019 22:45*
Surr: 4-Bromofluorobenzene	*98.3*			*81-113*	*%REC*	*1*	*30-Jan-2019 22:45*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*30-Jan-2019 22:45*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*30-Jan-2019 22:45*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW22BR-20190122	Lab ID:HS19011117-08
Collection Date:	22-Jan-2019 12:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:07
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 14:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 14:07
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 14:07
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:07
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 14:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 14:07
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 14:07
Acenaphthene	**0.022**		**0.00027**	**0.0010**	**mg/L**	10	12-Feb-2019 15:36
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 14:07
Anthracene	**0.00048**		**0.000014**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 14:07
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 14:07
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 14:07
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 14:07
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 14:07
Dibenzofuran	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 14:07
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Fluorene	**0.0025**		**0.000030**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 14:07
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 14:07
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 14:07
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 14:07
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 14:07
Pyrene	**0.00046**		**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 14:07
Surr: 2,4,6-Tribromophenol	*76.5*			*34-129*	*%REC*	*1*	*11-Feb-2019 14:07*
Surr: 2,4,6-Tribromophenol	*80.6*			*34-129*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: 2-Fluorobiphenyl	*64.7*			*40-125*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: 2-Fluorobiphenyl	*63.5*			*40-125*	*%REC*	*1*	*11-Feb-2019 14:07*
Surr: 2-Fluorophenol	*61.4*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:07*
Surr: 2-Fluorophenol	*50.2*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: 4-Terphenyl-d14	*68.7*			*40-135*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: 4-Terphenyl-d14	*70.7*			*40-135*	*%REC*	*1*	*11-Feb-2019 14:07*
Surr: Nitrobenzene-d5	*62.7*			*41-120*	*%REC*	*1*	*11-Feb-2019 14:07*
Surr: Nitrobenzene-d5	*56.2*			*41-120*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: Phenol-d6	*64.5*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:36*
Surr: Phenol-d6	*67.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:07*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW22BR-20190122	Lab ID:HS19011117-08
Collection Date:	22-Jan-2019 12:35	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.0535**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:52
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:52

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW38A-20190122	Lab ID:HS19011117-09
Collection Date:	22-Jan-2019 13:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 03:44
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 03:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 03:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 03:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 03:44
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 03:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 03:44
Surr: 1,2-Dichloroethane-d4	*87.6*			*70-126*	*%REC*	*1*	*30-Jan-2019 03:44*
Surr: 4-Bromofluorobenzene	*97.6*			*81-113*	*%REC*	*1*	*30-Jan-2019 03:44*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*30-Jan-2019 03:44*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*30-Jan-2019 03:44*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW38A-20190122	Lab ID:HS19011117-09
Collection Date:	22-Jan-2019 13:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:27
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 14:27
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 14:27
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 14:27
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:27
2-Methylnaphthalene	**0.000055**	J	**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 14:27
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 14:27
Acenaphthene	**0.014**		**0.00027**	**0.0010**	**mg/L**	10	12-Feb-2019 15:56
Acenaphthylene	**0.00020**		**0.000015**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Anthracene	**0.00017**		**0.000014**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 14:27
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 14:27
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 14:27
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 14:27
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 14:27
Dibenzofuran	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Di-n-butyl phthalate	**0.000068**	J	**0.000020**	**0.00020**	**mg/L**	1	11-Feb-2019 14:27
Fluoranthene	**0.0013**		**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Fluorene	**0.0024**		**0.000030**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Naphthalene	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 14:27
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 14:27
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 14:27
Phenanthrene	**0.00058**		**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 14:27
Pyrene	**0.0011**		**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 14:27
Surr: 2,4,6-Tribromophenol	*81.0*			*34-129*	*%REC*	*10*	*12-Feb-2019 15:56*
Surr: 2,4,6-Tribromophenol	*76.2*			*34-129*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: 2-Fluorobiphenyl	*54.9*			*40-125*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: 2-Fluorobiphenyl	*58.2*			*40-125*	*%REC*	*10*	*12-Feb-2019 15:56*
Surr: 2-Fluorophenol	*58.2*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:56*
Surr: 2-Fluorophenol	*52.5*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: 4-Terphenyl-d14	*75.5*			*40-135*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: 4-Terphenyl-d14	*72.7*			*40-135*	*%REC*	*10*	*12-Feb-2019 15:56*
Surr: Nitrobenzene-d5	*56.7*			*41-120*	*%REC*	*10*	*12-Feb-2019 15:56*
Surr: Nitrobenzene-d5	*51.8*			*41-120*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: Phenol-d6	*56.5*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:27*
Surr: Phenol-d6	*60.0*			*20-120*	*%REC*	*10*	*12-Feb-2019 15:56*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW38A-20190122	Lab ID:HS19011117-09
Collection Date:	22-Jan-2019 13:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.0186**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:54
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:54

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WQ-1620-TB05-20190123	Lab ID:HS19011117-10
Collection Date:	23-Jan-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 00:56
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 00:56
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 00:56
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 00:56
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 00:56
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 00:56
Vinyl chloride		U	0.00020	0.0010	mg/L	1	30-Jan-2019 00:56
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 00:56
Surr: 1,2-Dichloroethane-d4	*87.2*			*70-126*	*%REC*	*1*	*30-Jan-2019 00:56*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*30-Jan-2019 00:56*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*30-Jan-2019 00:56*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*30-Jan-2019 00:56*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW82B-20190122	Lab ID:HS19011117-11
Collection Date:	22-Jan-2019 14:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2019 00:05
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 00:05
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 00:05
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2019 00:05
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2019 00:05
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2019 00:05
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2019 00:05
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*29-Jan-2019 00:05*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*29-Jan-2019 00:05*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*29-Jan-2019 00:05*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*29-Jan-2019 00:05*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW82B-20190122	Lab ID:HS19011117-11
Collection Date:	22-Jan-2019 14:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2019 16:28
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2019 16:28
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2019 16:28
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2019 16:28
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2019 16:28
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	29-Jan-2019 16:28
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2019 16:28
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2019 16:28
Acenaphthene	U		0.000027	0.00010	mg/L	1	29-Jan-2019 16:28
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2019 16:28
Anthracene	**0.000042**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2019 16:28
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2019 16:28
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-Jan-2019 16:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2019 16:28
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2019 16:28
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2019 16:28
Dibenzofuran	U		0.000020	0.00010	mg/L	1	29-Jan-2019 16:28
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2019 16:28
Fluoranthene	U		0.000010	0.00010	mg/L	1	29-Jan-2019 16:28
Fluorene	U		0.000030	0.00010	mg/L	1	29-Jan-2019 16:28
Naphthalene	U		0.000020	0.00010	mg/L	1	29-Jan-2019 16:28
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2019 16:28
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2019 16:28
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2019 16:28
Phenanthrene	U		0.000021	0.00010	mg/L	1	29-Jan-2019 16:28
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2019 16:28
Pyrene	U		0.000019	0.00010	mg/L	1	29-Jan-2019 16:28
Surr: 2,4,6-Tribromophenol	*72.0*			*34-129*	*%REC*	*1*	*29-Jan-2019 16:28*
Surr: 2-Fluorobiphenyl	*57.8*			*40-125*	*%REC*	*1*	*29-Jan-2019 16:28*
Surr: 2-Fluorophenol	*50.2*			*20-120*	*%REC*	*1*	*29-Jan-2019 16:28*
Surr: 4-Terphenyl-d14	*81.5*			*40-135*	*%REC*	*1*	*29-Jan-2019 16:28*
Surr: Nitrobenzene-d5	*54.4*			*41-120*	*%REC*	*1*	*29-Jan-2019 16:28*
Surr: Phenol-d6	*62.3*			*20-120*	*%REC*	*1*	*29-Jan-2019 16:28*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.00838**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:17
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:17

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW90B-20190122	Lab ID:HS19011117-12
Collection Date:	22-Jan-2019 16:00	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:09
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 04:09
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:09
Surr: 1,2-Dichloroethane-d4	*84.0*			*70-126*	*%REC*	*1*	*30-Jan-2019 04:09*
Surr: 4-Bromofluorobenzene	*94.4*			*81-113*	*%REC*	*1*	*30-Jan-2019 04:09*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*30-Jan-2019 04:09*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 04:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117	
Sample ID:	WG-1620-MW90B-20190122	Lab ID:HS19011117-12	
Collection Date:	22-Jan-2019 16:00	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:46
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 14:46
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 14:46
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 14:46
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 14:46
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 14:46
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 14:46
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 14:46
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 14:46
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 14:46
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 14:46
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 14:46
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 14:46
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 14:46
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 14:46
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 14:46
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 14:46
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 14:46
Fluoranthene	U		0.000010	0.00010	mg/L	1	11-Feb-2019 14:46
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 14:46
Naphthalene	**0.000045**	J	**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 14:46
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 14:46
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 14:46
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 14:46
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 14:46
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 14:46
Pyrene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 14:46
Surr: 2,4,6-Tribromophenol	*84.3*			*34-129*	*%REC*	*1*	*11-Feb-2019 14:46*
Surr: 2-Fluorobiphenyl	*68.1*			*40-125*	*%REC*	*1*	*11-Feb-2019 14:46*
Surr: 2-Fluorophenol	*56.1*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:46*
Surr: 4-Terphenyl-d14	*76.6*			*40-135*	*%REC*	*1*	*11-Feb-2019 14:46*
Surr: Nitrobenzene-d5	*60.7*			*41-120*	*%REC*	*1*	*11-Feb-2019 14:46*
Surr: Phenol-d6	*64.4*			*20-120*	*%REC*	*1*	*11-Feb-2019 14:46*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.00346**		**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:56
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:56

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW89B-20190122	Lab ID:HS19011117-13
Collection Date:	22-Jan-2019 16:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:32
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:32
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:32
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:32
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 04:32
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:32
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:32
Surr: 1,2-Dichloroethane-d4	*87.6*			*70-126*	*%REC*	*1*	*30-Jan-2019 04:32*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*30-Jan-2019 04:32*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*30-Jan-2019 04:32*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 04:32*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW89B-20190122	Lab ID:HS19011117-13
Collection Date:	22-Jan-2019 16:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 15:06
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 15:06
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	11-Feb-2019 15:06
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 15:06
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 15:06
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 15:06
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 15:06
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 15:06
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 15:06
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 15:06
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 15:06
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	11-Feb-2019 15:06
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 15:06
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 15:06
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 15:06
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 15:06
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 15:06
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 15:06
Fluoranthene	U		0.000010	0.00010	mg/L	1	11-Feb-2019 15:06
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 15:06
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 15:06
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 15:06
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 15:06
Pentachlorophenol	U		0.000080	0.00020	mg/L	1	11-Feb-2019 15:06
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 15:06
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 15:06
Pyrene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 15:06
Surr: 2,4,6-Tribromophenol	*81.7*			*34-129*	*%REC*	*1*	*11-Feb-2019 15:06*
Surr: 2-Fluorobiphenyl	*62.5*			*40-125*	*%REC*	*1*	*11-Feb-2019 15:06*
Surr: 2-Fluorophenol	*60.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:06*
Surr: 4-Terphenyl-d14	*78.7*			*40-135*	*%REC*	*1*	*11-Feb-2019 15:06*
Surr: Nitrobenzene-d5	*56.0*			*41-120*	*%REC*	*1*	*11-Feb-2019 15:06*
Surr: Phenol-d6	*64.5*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:06*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.000683**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 13:58
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 13:58

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW27C-20190122	Lab ID:HS19011117-14
Collection Date:	22-Jan-2019 17:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:57
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:57
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:57
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:57
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 04:57
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 04:57
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 04:57
Surr: 1,2-Dichloroethane-d4	*87.7*			*70-126*	*%REC*	*1*	*30-Jan-2019 04:57*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*30-Jan-2019 04:57*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*30-Jan-2019 04:57*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 04:57*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW27C-20190122	Lab ID:HS19011117-14
Collection Date:	22-Jan-2019 17:45	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	11-Feb-2019 15:26
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	11-Feb-2019 15:26
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	11-Feb-2019 15:26
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	11-Feb-2019 15:26
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	11-Feb-2019 15:26
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 15:26
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	11-Feb-2019 15:26
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	11-Feb-2019 15:26
Acenaphthene		U	0.000027	0.00010	mg/L	1	11-Feb-2019 15:26
Acenaphthylene		U	0.000015	0.00010	mg/L	1	11-Feb-2019 15:26
Anthracene		U	0.000014	0.00010	mg/L	1	11-Feb-2019 15:26
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	11-Feb-2019 15:26
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:26
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	11-Feb-2019 15:26
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	11-Feb-2019 15:26
Chrysene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 15:26
Dibenzofuran		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:26
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	11-Feb-2019 15:26
Fluoranthene		U	0.000010	0.00010	mg/L	1	11-Feb-2019 15:26
Fluorene		U	0.000030	0.00010	mg/L	1	11-Feb-2019 15:26
Naphthalene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:26
Nitrobenzene		U	0.000024	0.00020	mg/L	1	11-Feb-2019 15:26
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	11-Feb-2019 15:26
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	11-Feb-2019 15:26
Phenanthrene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 15:26
Phenol		U	0.000035	0.00020	mg/L	1	11-Feb-2019 15:26
Pyrene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 15:26
Surr: 2,4,6-Tribromophenol	*69.6*			*34-129*	*%REC*	*1*	*11-Feb-2019 15:26*
Surr: 2-Fluorobiphenyl	*62.6*			*40-125*	*%REC*	*1*	*11-Feb-2019 15:26*
Surr: 2-Fluorophenol	*49.5*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:26*
Surr: 4-Terphenyl-d14	*76.5*			*40-135*	*%REC*	*1*	*11-Feb-2019 15:26*
Surr: Nitrobenzene-d5	*54.8*			*41-120*	*%REC*	*1*	*11-Feb-2019 15:26*
Surr: Phenol-d6	*56.9*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:26*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	**0.000786**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 14:01
Lead	**0.000831**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jan-2019 14:01

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WQ-1620-FB06-20190122	Lab ID:HS19011117-15
Collection Date:	22-Jan-2019 18:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 01:20
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 01:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 01:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 01:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 01:20
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 01:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 01:20
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*30-Jan-2019 01:20*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*30-Jan-2019 01:20*
Surr: Dibromofluoromethane	*98.0*			*77-123*	*%REC*	*1*	*30-Jan-2019 01:20*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 01:20*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WQ-1620-FB06-20190122	Lab ID:HS19011117-15
Collection Date:	22-Jan-2019 18:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	11-Feb-2019 15:46
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	11-Feb-2019 15:46
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	11-Feb-2019 15:46
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	11-Feb-2019 15:46
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	11-Feb-2019 15:46
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 15:46
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	11-Feb-2019 15:46
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	11-Feb-2019 15:46
Acenaphthene		U	0.000027	0.00010	mg/L	1	11-Feb-2019 15:46
Acenaphthylene		U	0.000015	0.00010	mg/L	1	11-Feb-2019 15:46
Anthracene		U	0.000014	0.00010	mg/L	1	11-Feb-2019 15:46
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	11-Feb-2019 15:46
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:46
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	11-Feb-2019 15:46
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	11-Feb-2019 15:46
Chrysene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 15:46
Dibenzofuran		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:46
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	11-Feb-2019 15:46
Fluoranthene		U	0.000010	0.00010	mg/L	1	11-Feb-2019 15:46
Fluorene		U	0.000030	0.00010	mg/L	1	11-Feb-2019 15:46
Naphthalene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 15:46
Nitrobenzene		U	0.000024	0.00020	mg/L	1	11-Feb-2019 15:46
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	11-Feb-2019 15:46
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	11-Feb-2019 15:46
Phenanthrene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 15:46
Phenol		U	0.000035	0.00020	mg/L	1	11-Feb-2019 15:46
Pyrene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 15:46
Surr: 2,4,6-Tribromophenol	*85.5*			*34-129*	*%REC*	*1*	*11-Feb-2019 15:46*
Surr: 2-Fluorobiphenyl	*69.5*			*40-125*	*%REC*	*1*	*11-Feb-2019 15:46*
Surr: 2-Fluorophenol	*62.7*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:46*
Surr: 4-Terphenyl-d14	*80.9*			*40-135*	*%REC*	*1*	*11-Feb-2019 15:46*
Surr: Nitrobenzene-d5	*65.8*			*41-120*	*%REC*	*1*	*11-Feb-2019 15:46*
Surr: Phenol-d6	*73.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 15:46*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	30-Jan-2019 14:03
Lead		U	0.000600	0.00200	mg/L	1	30-Jan-2019 14:03

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW62B-20190123	Lab ID:HS19011117-16
Collection Date:	23-Jan-2019 07:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:21
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:21
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:21
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:21
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 05:21
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:21
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:21
Surr: 1,2-Dichloroethane-d4	*85.6*			*70-126*	*%REC*	*1*	*30-Jan-2019 05:21*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*30-Jan-2019 05:21*
Surr: Dibromofluoromethane	*99.5*			*77-123*	*%REC*	*1*	*30-Jan-2019 05:21*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*30-Jan-2019 05:21*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW62B-20190123	Lab ID:HS19011117-16
Collection Date:	23-Jan-2019 07:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	11-Feb-2019 16:05
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	11-Feb-2019 16:05
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	11-Feb-2019 16:05
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	11-Feb-2019 16:05
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	11-Feb-2019 16:05
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 16:05
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	11-Feb-2019 16:05
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	11-Feb-2019 16:05
Acenaphthene		U	0.000027	0.00010	mg/L	1	11-Feb-2019 16:05
Acenaphthylene		U	0.000015	0.00010	mg/L	1	11-Feb-2019 16:05
Anthracene		U	0.000014	0.00010	mg/L	1	11-Feb-2019 16:05
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	11-Feb-2019 16:05
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:05
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	11-Feb-2019 16:05
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	11-Feb-2019 16:05
Chrysene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 16:05
Dibenzofuran		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:05
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	11-Feb-2019 16:05
Fluoranthene		U	0.000010	0.00010	mg/L	1	11-Feb-2019 16:05
Fluorene		U	0.000030	0.00010	mg/L	1	11-Feb-2019 16:05
Naphthalene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:05
Nitrobenzene		U	0.000024	0.00020	mg/L	1	11-Feb-2019 16:05
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	11-Feb-2019 16:05
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	11-Feb-2019 16:05
Phenanthrene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 16:05
Phenol		U	0.000035	0.00020	mg/L	1	11-Feb-2019 16:05
Pyrene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 16:05
Surr: 2,4,6-Tribromophenol	*60.7*			*34-129*	*%REC*	*1*	*11-Feb-2019 16:05*
Surr: 2-Fluorobiphenyl	*60.7*			*40-125*	*%REC*	*1*	*11-Feb-2019 16:05*
Surr: 2-Fluorophenol	*55.2*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:05*
Surr: 4-Terphenyl-d14	*76.6*			*40-135*	*%REC*	*1*	*11-Feb-2019 16:05*
Surr: Nitrobenzene-d5	*54.9*			*41-120*	*%REC*	*1*	*11-Feb-2019 16:05*
Surr: Phenol-d6	*58.9*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	30-Jan-2019 14:27
Lead		U	0.000600	0.00200	mg/L	1	30-Jan-2019 14:27

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW64A-20190123	Lab ID:HS19011117-17
Collection Date:	23-Jan-2019 08:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:45
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:45
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:45
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:45
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 05:45
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 05:45
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 05:45
Surr: 1,2-Dichloroethane-d4	*86.6*			*70-126*	*%REC*	*1*	*30-Jan-2019 05:45*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*30-Jan-2019 05:45*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*30-Jan-2019 05:45*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 05:45*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW64A-20190123	Lab ID:HS19011117-17
Collection Date:	23-Jan-2019 08:10	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	11-Feb-2019 16:25
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	11-Feb-2019 16:25
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	11-Feb-2019 16:25
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	11-Feb-2019 16:25
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	11-Feb-2019 16:25
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 16:25
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	11-Feb-2019 16:25
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	11-Feb-2019 16:25
Acenaphthene		U	0.000027	0.00010	mg/L	1	11-Feb-2019 16:25
Acenaphthylene		U	0.000015	0.00010	mg/L	1	11-Feb-2019 16:25
Anthracene		U	0.000014	0.00010	mg/L	1	11-Feb-2019 16:25
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	11-Feb-2019 16:25
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:25
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	11-Feb-2019 16:25
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	11-Feb-2019 16:25
Chrysene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 16:25
Dibenzofuran		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:25
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	11-Feb-2019 16:25
Fluoranthene		U	0.000010	0.00010	mg/L	1	11-Feb-2019 16:25
Fluorene		U	0.000030	0.00010	mg/L	1	11-Feb-2019 16:25
Naphthalene		U	0.000020	0.00010	mg/L	1	11-Feb-2019 16:25
Nitrobenzene		U	0.000024	0.00020	mg/L	1	11-Feb-2019 16:25
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	11-Feb-2019 16:25
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	11-Feb-2019 16:25
Phenanthrene		U	0.000021	0.00010	mg/L	1	11-Feb-2019 16:25
Phenol		U	0.000035	0.00020	mg/L	1	11-Feb-2019 16:25
Pyrene		U	0.000019	0.00010	mg/L	1	11-Feb-2019 16:25
Surr: 2,4,6-Tribromophenol	*63.8*			*34-129*	*%REC*	*1*	*11-Feb-2019 16:25*
Surr: 2-Fluorobiphenyl	*54.1*			*40-125*	*%REC*	*1*	*11-Feb-2019 16:25*
Surr: 2-Fluorophenol	*49.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:25*
Surr: 4-Terphenyl-d14	*76.8*			*40-135*	*%REC*	*1*	*11-Feb-2019 16:25*
Surr: Nitrobenzene-d5	*51.3*			*41-120*	*%REC*	*1*	*11-Feb-2019 16:25*
Surr: Phenol-d6	*54.5*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	30-Jan-2019 14:30
Lead		U	0.000600	0.00200	mg/L	1	30-Jan-2019 14:30

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW61A-20190123	Lab ID:HS19011117-18
Collection Date:	23-Jan-2019 09:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 02:32
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 02:32
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 02:32
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 02:32
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 02:32
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 02:32
Vinyl chloride		U	0.00020	0.0010	mg/L	1	30-Jan-2019 02:32
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 02:32
Surr: 1,2-Dichloroethane-d4	*85.8*			*70-126*	*%REC*	*1*	*30-Jan-2019 02:32*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*30-Jan-2019 02:32*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*30-Jan-2019 02:32*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 02:32*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW61A-20190123	Lab ID:HS19011117-18
Collection Date:	23-Jan-2019 09:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 16:45
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	11-Feb-2019 16:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 16:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 16:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 16:45
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 16:45
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 16:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 16:45
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 16:45
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 16:45
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 16:45
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 16:45
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 16:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 16:45
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	11-Feb-2019 16:45
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 16:45
Dibenzofuran	U		0.000020	0.00010	mg/L	1	11-Feb-2019 16:45
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 16:45
Fluoranthene	U		0.000010	0.00010	mg/L	1	11-Feb-2019 16:45
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 16:45
Naphthalene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 16:45
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 16:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 16:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 16:45
Phenanthrene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 16:45
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 16:45
Pyrene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 16:45
Surr: 2,4,6-Tribromophenol	*65.9*			*34-129*	*%REC*	*1*	*11-Feb-2019 16:45*
Surr: 2-Fluorobiphenyl	*52.8*			*40-125*	*%REC*	*1*	*11-Feb-2019 16:45*
Surr: 2-Fluorophenol	*45.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:45*
Surr: 4-Terphenyl-d14	*76.1*			*40-135*	*%REC*	*1*	*11-Feb-2019 16:45*
Surr: Nitrobenzene-d5	*48.5*			*41-120*	*%REC*	*1*	*11-Feb-2019 16:45*
Surr: Phenol-d6	*51.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 16:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JCJ
Arsenic	**0.000690**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jan-2019 19:52
Lead	U		0.000600	0.00200	mg/L	1	30-Jan-2019 19:52

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW47C-20190123	Lab ID:HS19011117-19
Collection Date:	23-Jan-2019 10:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2019 06:09
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 06:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 06:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2019 06:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2019 06:09
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2019 06:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2019 06:09
Surr: 1,2-Dichloroethane-d4	*88.3*			*70-126*	*%REC*	*1*	*30-Jan-2019 06:09*
Surr: 4-Bromofluorobenzene	*95.5*			*81-113*	*%REC*	*1*	*30-Jan-2019 06:09*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*30-Jan-2019 06:09*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-Jan-2019 06:09*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011117
Sample ID:	WG-1620-MW47C-20190123	Lab ID:HS19011117-19
Collection Date:	23-Jan-2019 10:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	11-Feb-2019 17:05
2,4-Dimethylphenol	**0.000095**	J	**0.000040**	**0.00020**	**mg/L**	1	11-Feb-2019 17:05
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	11-Feb-2019 17:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	11-Feb-2019 17:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	11-Feb-2019 17:05
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	11-Feb-2019 17:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	11-Feb-2019 17:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	11-Feb-2019 17:05
Acenaphthene	U		0.000027	0.00010	mg/L	1	11-Feb-2019 17:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	11-Feb-2019 17:05
Anthracene	U		0.000014	0.00010	mg/L	1	11-Feb-2019 17:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	11-Feb-2019 17:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	11-Feb-2019 17:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	11-Feb-2019 17:05
Bis(2-ethylhexyl)phthalate	**0.000056**	J	**0.000037**	**0.00020**	**mg/L**	1	11-Feb-2019 17:05
Chrysene	U		0.000021	0.00010	mg/L	1	11-Feb-2019 17:05
Dibenzofuran	**0.000034**	J	**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 17:05
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	11-Feb-2019 17:05
Fluoranthene	**0.000028**	J	**0.000010**	**0.00010**	**mg/L**	1	11-Feb-2019 17:05
Fluorene	U		0.000030	0.00010	mg/L	1	11-Feb-2019 17:05
Naphthalene	**0.00083**		**0.000020**	**0.00010**	**mg/L**	1	11-Feb-2019 17:05
Nitrobenzene	U		0.000024	0.00020	mg/L	1	11-Feb-2019 17:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	11-Feb-2019 17:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	11-Feb-2019 17:05
Phenanthrene	**0.000052**	J	**0.000021**	**0.00010**	**mg/L**	1	11-Feb-2019 17:05
Phenol	U		0.000035	0.00020	mg/L	1	11-Feb-2019 17:05
Pyrene	**0.000021**	J	**0.000019**	**0.00010**	**mg/L**	1	11-Feb-2019 17:05
Surr: 2,4,6-Tribromophenol	*91.1*			*34-129*	*%REC*	*1*	*11-Feb-2019 17:05*
Surr: 2-Fluorobiphenyl	*69.6*			*40-125*	*%REC*	*1*	*11-Feb-2019 17:05*
Surr: 2-Fluorophenol	*65.6*			*20-120*	*%REC*	*1*	*11-Feb-2019 17:05*
Surr: 4-Terphenyl-d14	*74.8*			*40-135*	*%REC*	*1*	*11-Feb-2019 17:05*
Surr: Nitrobenzene-d5	*67.4*			*41-120*	*%REC*	*1*	*11-Feb-2019 17:05*
Surr: Phenol-d6	*76.3*			*20-120*	*%REC*	*1*	*11-Feb-2019 17:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jan-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jan-2019 14:32
Lead	**0.000859**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jan-2019 14:32

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

Batch ID: 137036 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011117-01	1	1000	1 (mL)	0.001
HS19011117-02	1	1000	1 (mL)	0.001
HS19011117-03	1	1000	1 (mL)	0.001
HS19011117-04	1	1000	1 (mL)	0.001
HS19011117-05	1	1000	1 (mL)	0.001
HS19011117-06	1	1000	1 (mL)	0.001
HS19011117-07	1	1000	1 (mL)	0.001
HS19011117-08	1	1000	1 (mL)	0.001
HS19011117-09	1	1000	1 (mL)	0.001
HS19011117-11	1	1000	1 (mL)	0.001
HS19011117-12	1	1000	1 (mL)	0.001
HS19011117-13	1	990	1 (mL)	0.00101
HS19011117-14	1	1000	1 (mL)	0.001
HS19011117-15	1	1000	1 (mL)	0.001
HS19011117-16	1	1000	1 (mL)	0.001
HS19011117-17	1	1000	1 (mL)	0.001
HS19011117-18	1	1000	1 (mL)	0.001
HS19011117-19	1	1000	1 (mL)	0.001

Batch ID: 137135 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011117-01	1	10	10 (mL)	1
HS19011117-02	1	10	10 (mL)	1
HS19011117-03	1	10	10 (mL)	1
HS19011117-04	1	10	10 (mL)	1
HS19011117-05	1	10	10 (mL)	1
HS19011117-06	1	10	10 (mL)	1
HS19011117-07	1	10	10 (mL)	1
HS19011117-08	1	10	10 (mL)	1
HS19011117-09	1	10	10 (mL)	1
HS19011117-11	1	10	10 (mL)	1
HS19011117-12	1	10	10 (mL)	1
HS19011117-13	1	10	10 (mL)	1
HS19011117-14	1	10	10 (mL)	1
HS19011117-15	1	10	10 (mL)	1
HS19011117-16	1	10	10 (mL)	1
HS19011117-17	1	10	10 (mL)	1
HS19011117-19	1	10	10 (mL)	1

Batch ID: 137136 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011117-18	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 137036	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Water		
HS19011117-15	WQ-1620-FB06-20190122	22 Jan 2019 18:00		25 Jan 2019 11:27	11 Feb 2019 15:46	1
Batch ID 137036	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Groundwater		
HS19011117-01	WG-1620-MW44A-20190122	22 Jan 2019 07:25		25 Jan 2019 11:27	12 Feb 2019 15:16	10
HS19011117-01	WG-1620-MW44A-20190122	22 Jan 2019 07:25		25 Jan 2019 11:27	11 Feb 2019 11:48	1
HS19011117-02	WG-1620-MW87C-20190122	22 Jan 2019 08:15		25 Jan 2019 11:27	11 Feb 2019 12:08	1
HS19011117-03	WG-1620-MW33BR-20190122	22 Jan 2019 09:05		25 Jan 2019 11:27	11 Feb 2019 12:28	1
HS19011117-04	WG-1620-MW33A-20190122	22 Jan 2019 10:00		25 Jan 2019 11:27	11 Feb 2019 12:48	1
HS19011117-05	WG-1620-FD04-20190122	22 Jan 2019 10:00		25 Jan 2019 11:27	11 Feb 2019 13:07	1
HS19011117-06	WG-1620-MW38B-20190122	22 Jan 2019 11:00		25 Jan 2019 11:27	11 Feb 2019 13:27	1
HS19011117-07	WG-1620-MW22AR-20190122	22 Jan 2019 11:50		25 Jan 2019 11:27	11 Feb 2019 13:47	1
HS19011117-08	WG-1620-MW22BR-20190122	22 Jan 2019 12:35		25 Jan 2019 11:27	12 Feb 2019 15:36	10
HS19011117-08	WG-1620-MW22BR-20190122	22 Jan 2019 12:35		25 Jan 2019 11:27	11 Feb 2019 14:07	1
HS19011117-09	WG-1620-MW38A-20190122	22 Jan 2019 13:40		25 Jan 2019 11:27	12 Feb 2019 15:56	10
HS19011117-09	WG-1620-MW38A-20190122	22 Jan 2019 13:40		25 Jan 2019 11:27	11 Feb 2019 14:27	1
HS19011117-11	WG-1620-MW82B-20190122	22 Jan 2019 14:55		25 Jan 2019 11:27	29 Jan 2019 16:28	1
HS19011117-12	WG-1620-MW90B-20190122	22 Jan 2019 16:00		25 Jan 2019 11:27	11 Feb 2019 14:46	1
HS19011117-13	WG-1620-MW89B-20190122	22 Jan 2019 16:50		25 Jan 2019 11:27	11 Feb 2019 15:06	1
HS19011117-14	WG-1620-MW27C-20190122	22 Jan 2019 17:45		25 Jan 2019 11:27	11 Feb 2019 15:26	1
HS19011117-16	WG-1620-MW62B-20190123	23 Jan 2019 07:15		25 Jan 2019 11:27	11 Feb 2019 16:05	1
HS19011117-17	WG-1620-MW64A-20190123	23 Jan 2019 08:10		25 Jan 2019 11:27	11 Feb 2019 16:25	1
HS19011117-18	WG-1620-MW61A-20190123	23 Jan 2019 09:20		25 Jan 2019 11:27	11 Feb 2019 16:45	1
HS19011117-19	WG-1620-MW47C-20190123	23 Jan 2019 10:15		25 Jan 2019 11:27	11 Feb 2019 17:05	1
Batch ID 137135	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19011117-15	WQ-1620-FB06-20190122	22 Jan 2019 18:00		29 Jan 2019 10:30	30 Jan 2019 14:03	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 137135	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19011117-01	WG-1620-MW44A-20190122	22 Jan 2019 07:25		29 Jan 2019 10:30	30 Jan 2019 13:29	1
HS19011117-02	WG-1620-MW87C-20190122	22 Jan 2019 08:15		29 Jan 2019 10:30	30 Jan 2019 13:31	1
HS19011117-03	WG-1620-MW33BR-20190122	22 Jan 2019 09:05		29 Jan 2019 10:30	30 Jan 2019 13:33	1
HS19011117-04	WG-1620-MW33A-20190122	22 Jan 2019 10:00		29 Jan 2019 10:30	30 Jan 2019 13:35	1
HS19011117-05	WG-1620-FD04-20190122	22 Jan 2019 10:00		29 Jan 2019 10:30	30 Jan 2019 13:45	1
HS19011117-06	WG-1620-MW38B-20190122	22 Jan 2019 11:00		29 Jan 2019 10:30	30 Jan 2019 13:47	1
HS19011117-07	WG-1620-MW22AR-20190122	22 Jan 2019 11:50		29 Jan 2019 10:30	30 Jan 2019 13:49	1
HS19011117-08	WG-1620-MW22BR-20190122	22 Jan 2019 12:35		29 Jan 2019 10:30	30 Jan 2019 13:52	1
HS19011117-09	WG-1620-MW38A-20190122	22 Jan 2019 13:40		29 Jan 2019 10:30	30 Jan 2019 13:54	1
HS19011117-11	WG-1620-MW82B-20190122	22 Jan 2019 14:55		29 Jan 2019 10:30	30 Jan 2019 13:17	1
HS19011117-12	WG-1620-MW90B-20190122	22 Jan 2019 16:00		29 Jan 2019 10:30	30 Jan 2019 13:56	1
HS19011117-13	WG-1620-MW89B-20190122	22 Jan 2019 16:50		29 Jan 2019 10:30	30 Jan 2019 13:58	1
HS19011117-14	WG-1620-MW27C-20190122	22 Jan 2019 17:45		29 Jan 2019 10:30	30 Jan 2019 14:01	1
HS19011117-16	WG-1620-MW62B-20190123	23 Jan 2019 07:15		29 Jan 2019 10:30	30 Jan 2019 14:27	1
HS19011117-17	WG-1620-MW64A-20190123	23 Jan 2019 08:10		29 Jan 2019 10:30	30 Jan 2019 14:30	1
HS19011117-19	WG-1620-MW47C-20190123	23 Jan 2019 10:15		29 Jan 2019 10:30	30 Jan 2019 14:32	1
Batch ID 137136	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19011117-18	WG-1620-MW61A-20190123	23 Jan 2019 09:20		29 Jan 2019 10:30	30 Jan 2019 19:52	1
Batch ID R331844	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011117-01	WG-1620-MW44A-20190122	22 Jan 2019 07:25			29 Jan 2019 06:30	1
HS19011117-02	WG-1620-MW87C-20190122	22 Jan 2019 08:15			29 Jan 2019 06:54	1
HS19011117-03	WG-1620-MW33BR-20190122	22 Jan 2019 09:05			29 Jan 2019 07:18	1
HS19011117-04	WG-1620-MW33A-20190122	22 Jan 2019 10:00			29 Jan 2019 07:42	1
HS19011117-05	WG-1620-FD04-20190122	22 Jan 2019 10:00			29 Jan 2019 08:06	1
HS19011117-06	WG-1620-MW38B-20190122	22 Jan 2019 11:00			29 Jan 2019 08:31	1
HS19011117-11	WG-1620-MW82B-20190122	22 Jan 2019 14:55			29 Jan 2019 00:05	1
Batch ID R331938	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011117-07	WG-1620-MW22AR-20190122	22 Jan 2019 11:50			29 Jan 2019 21:20	1
Batch ID R331946	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19011117-10	WQ-1620-TB05-20190123	23 Jan 2019 00:00			30 Jan 2019 00:56	1
HS19011117-15	WQ-1620-FB06-20190122	22 Jan 2019 18:00			30 Jan 2019 01:20	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R331946	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011117-09	WG-1620-MW38A-20190122	22 Jan 2019 13:40			30 Jan 2019 03:44	1
HS19011117-12	WG-1620-MW90B-20190122	22 Jan 2019 16:00			30 Jan 2019 04:09	1
HS19011117-13	WG-1620-MW89B-20190122	22 Jan 2019 16:50			30 Jan 2019 04:32	1
HS19011117-14	WG-1620-MW27C-20190122	22 Jan 2019 17:45			30 Jan 2019 04:57	1
HS19011117-16	WG-1620-MW62B-20190123	23 Jan 2019 07:15			30 Jan 2019 05:21	1
HS19011117-17	WG-1620-MW64A-20190123	23 Jan 2019 08:10			30 Jan 2019 05:45	1
HS19011117-18	WG-1620-MW61A-20190123	23 Jan 2019 09:20			30 Jan 2019 02:32	1
HS19011117-19	WG-1620-MW47C-20190123	23 Jan 2019 10:15			30 Jan 2019 06:09	1
Batch ID R332011	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011117-08	WG-1620-MW22BR-20190122	22 Jan 2019 12:35			30 Jan 2019 22:45	1

WorkOrder: HS19011117
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19011117
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	Arsenic	7440-38-2	0.000500	0.000340	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.000916	0.000600	0.00200

WorkOrder: HS19011117
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	0.000082	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000034	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000039	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000062	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000072	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000058	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000024	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000024	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000067	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000062	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000069	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000070	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000070	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000063	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000085	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000058	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000070	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000073	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000067	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000073	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000088	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000071	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000072	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000075	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000079	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: HS19011117
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000041	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000052	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000052	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000061	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000056	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000022	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00020	0.00019	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000066	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000072	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000074	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000074	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000066	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000069	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000083	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000082	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000060	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000080	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000074	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000073	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000065	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000083	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000068	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00016	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000066	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000074	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: HS19011117
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00054	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137135 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-137135** Units: **mg/L** Analysis Date: **29-Jan-2019 21:57**
Client ID: Run ID: **ICPMS05_331852** SeqNo: **4929419** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-137135** Units: **mg/L** Analysis Date: **29-Jan-2019 21:59**
Client ID: Run ID: **ICPMS05_331852** SeqNo: **4929420** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04988	0.00200	0.05	0	99.8	80 - 120				
Lead	0.04872	0.00200	0.05	0	97.4	80 - 120				

MS Sample ID: **HS19011117-11MS** Units: **mg/L** Analysis Date: **30-Jan-2019 13:22**
Client ID: **WG-1620-MW82B-20190122** Run ID: **ICPMS05_331929** SeqNo: **4930633** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05965	0.00200	0.05	0.00838	103	80 - 120				
Lead	0.04978	0.00200	0.05	0.000016	99.5	80 - 120				

MSD Sample ID: **HS19011117-11MSD** Units: **mg/L** Analysis Date: **30-Jan-2019 13:24**
Client ID: **WG-1620-MW82B-20190122** Run ID: **ICPMS05_331929** SeqNo: **4930634** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05924	0.00200	0.05	0.00838	102	80 - 120	0.05965	0.681	20	
Lead	0.05038	0.00200	0.05	0.000016	101	80 - 120	0.04978	1.19	20	

PDS Sample ID: **HS19011117-11PDS** Units: **mg/L** Analysis Date: **30-Jan-2019 13:26**
Client ID: **WG-1620-MW82B-20190122** Run ID: **ICPMS05_331929** SeqNo: **4930635** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1234	0.00200	0.1	0.00838	115	75 - 125				
Lead	0.1133	0.00200	0.1	0.000016	113	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: **137135** **Instrument:** **ICPMS05** **Method:** **SW6020**

SD Sample ID: **HS19011117-11SD** Units: **mg/L** Analysis Date: **30-Jan-2019 13:20**
Client ID: **WG-1620-MW82B-20190122** Run ID: **ICPMS05_331929** SeqNo: **4930632** PrepDate: **29-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.009162	0.0100					0.00838	0	10	J
Lead	U	0.0100					0.000016	0	10	

The following samples were analyzed in this batch:

HS19011117-01	HS19011117-02	HS19011117-03	HS19011117-04
HS19011117-05	HS19011117-06	HS19011117-07	HS19011117-08
HS19011117-09	HS19011117-11	HS19011117-12	HS19011117-13
HS19011117-14	HS19011117-15	HS19011117-16	HS19011117-17
HS19011117-19			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137136 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-137136** Units: **mg/L** Analysis Date: **30-Jan-2019 19:43**
Client ID: Run ID: **ICPMS04_331931** SeqNo: **4931362** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-137136** Units: **mg/L** Analysis Date: **30-Jan-2019 19:45**
Client ID: Run ID: **ICPMS04_331931** SeqNo: **4931363** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04983	0.00200	0.05	0	99.7	80 - 120				
Lead	0.04872	0.00200	0.05	0	97.4	80 - 120				

MS Sample ID: **HS19011117-18MS** Units: **mg/L** Analysis Date: **30-Jan-2019 19:56**
Client ID: **WG-1620-MW61A-20190123** Run ID: **ICPMS04_331931** SeqNo: **4931368** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04787	0.00200	0.05	0.000637	94.5	80 - 120				
Lead	0.04626	0.00200	0.05	0.000333	91.8	80 - 120				

MSD Sample ID: **HS19011117-18MSD** Units: **mg/L** Analysis Date: **30-Jan-2019 19:58**
Client ID: **WG-1620-MW61A-20190123** Run ID: **ICPMS04_331931** SeqNo: **4931369** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05016	0.00200	0.05	0.000637	99.1	80 - 120	0.04886	2.63	20	
Lead	0.04683	0.00200	0.05	0.000333	93.0	80 - 120	0.04625	1.23	20	

PDS Sample ID: **HS19011117-18PDS** Units: **mg/L** Analysis Date: **30-Jan-2019 20:01**
Client ID: **WG-1620-MW61A-20190123** Run ID: **ICPMS04_331931** SeqNo: **4931370** PrepDate: **29-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09624	0.00200	0.1	0.000637	95.6	75 - 125				
Lead	0.09092	0.00200	0.1	0.000333	90.6	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: **137136** **Instrument:** **ICPMS04** **Method:** **SW6020**

SD Sample ID: **HS19011117-18SD** Units: **mg/L** Analysis Date: **30-Jan-2019 19:54**
Client ID: **WG-1620-MW61A-20190123** Run ID: **ICPMS04_331931** SeqNo: **4931367** PrepDate: **29-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000637	0	10	
Lead	U	0.0100					0.000333	0	10	

The following samples were analyzed in this batch: HS19011117-18

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-137036** Units: **ug/L** Analysis Date: **29-Jan-2019 13:31**
Client ID: Run ID: **SV-6_331877** SeqNo: **4928544** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*2.566*	*0.20*	*5*	*0*	*51.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.084*	*0.20*	*5*	*0*	*61.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.075*	*0.20*	*5*	*0*	*61.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.366*	*0.20*	*5*	*0*	*67.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.806*	*0.20*	*5*	*0*	*56.1*	*41 - 120*				
Surr: Phenol-d6	*3.304*	*0.20*	*5*	*0*	*66.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-137036** Units: **ug/L** Analysis Date: **29-Jan-2019 13:51**
Client ID: Run ID: **SV-6_331877** SeqNo: **4928545** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.025	0.20	5	0	60.5	39 - 127				
2,4-Dimethylphenol	3.058	0.20	5	0	61.2	35 - 120				
2,4-Dinitrotoluene	2.802	0.20	5	0	56.0	50 - 122				
2,6-Dinitrotoluene	3.198	0.20	5	0	64.0	50 - 120				
2-Chloronaphthalene	3.134	0.20	5	0	62.7	50 - 120				
2-Methylnaphthalene	3.239	0.10	5	0	64.8	50 - 120				
4,6-Dinitro-2-methylphenol	2.587	0.20	5	0	51.7	25 - 121				
4-Nitrophenol	2.785	1.0	5	0	55.7	30 - 130				
Acenaphthene	2.887	0.10	5	0	57.7	45 - 120				
Acenaphthylene	2.896	0.10	5	0	57.9	47 - 120				
Anthracene	3.132	0.10	5	0	62.6	45 - 120				
Benz(a)anthracene	3.255	0.10	5	0	65.1	40 - 120				
Benzo(a)pyrene	3.467	0.10	5	0	69.3	45 - 120				
Bis(2-chloroethoxy)methane	2.977	0.20	5	0	59.5	45 - 120				
Bis(2-ethylhexyl)phthalate	3.273	0.20	5	0	65.5	40 - 139				
Chrysene	3.356	0.10	5	0	67.1	43 - 120				
Dibenzofuran	2.866	0.10	5	0	57.3	50 - 120				
Di-n-butyl phthalate	3.281	0.20	5	0	65.6	45 - 123				
Fluoranthene	3.315	0.10	5	0	66.3	45 - 125				
Fluorene	2.97	0.10	5	0	59.4	49 - 120				
Naphthalene	3.019	0.10	5	0	60.4	45 - 120				
Nitrobenzene	2.956	0.20	5	0	59.1	44 - 120				
N-Nitrosodiphenylamine	3.241	0.20	5	0	64.8	40 - 125				
Pentachlorophenol	2.696	0.20	5	0	53.9	19 - 121				
Phenanthrene	3.135	0.10	5	0	62.7	45 - 121				
Phenol	2.792	0.20	5	0	55.8	20 - 124				
Pyrene	3.312	0.10	5	0	66.2	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.334*	*0.20*	*5*	*0*	*66.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.379*	*0.20*	*5*	*0*	*67.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.418*	*0.20*	*5*	*0*	*68.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.859*	*0.20*	*5*	*0*	*77.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.215*	*0.20*	*5*	*0*	*64.3*	*41 - 120*				
Surr: Phenol-d6	*3.579*	*0.20*	*5*	*0*	*71.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

MS Sample ID: **HS19011117-18MS** Units: **ug/L** Analysis Date: **11-Feb-2019 17:24**
Client ID: **WG-1620-MW61A-20190123** Run ID: **SV-7_332624** SeqNo: **4945822** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.423	0.20	5	0	48.5	39 - 127				
2,4-Dimethylphenol	2.608	0.20	5	0	52.2	35 - 120				
2,4-Dinitrotoluene	3.083	0.20	5	0	61.7	50 - 122				
2,6-Dinitrotoluene	2.903	0.20	5	0	58.1	50 - 120				
2-Chloronaphthalene	2.904	0.20	5	0	58.1	50 - 120				
2-Methylnaphthalene	2.802	0.10	5	0	56.0	50 - 120				
4,6-Dinitro-2-methylphenol	3.635	0.20	5	0	72.7	25 - 121				
4-Nitrophenol	3.16	1.0	5	0	63.2	30 - 130				
Acenaphthene	2.443	0.10	5	0	48.9	45 - 120				
Acenaphthylene	2.633	0.10	5	0	52.7	47 - 120				
Anthracene	3.124	0.10	5	0	62.5	45 - 120				
Benz(a)anthracene	3.743	0.10	5	0	74.9	40 - 120				
Benzo(a)pyrene	3.604	0.10	5	0	72.1	45 - 120				
Bis(2-chloroethoxy)methane	2.432	0.20	5	0	48.6	45 - 120				
Bis(2-ethylhexyl)phthalate	3.271	0.20	5	0	65.4	40 - 139				
Chrysene	3.747	0.10	5	0	74.9	43 - 120				
Dibenzofuran	2.735	0.10	5	0	54.7	50 - 120				
Di-n-butyl phthalate	3.134	0.20	5	0	62.7	45 - 123				
Fluoranthene	3.418	0.10	5	0	68.4	45 - 125				
Fluorene	2.833	0.10	5	0	56.7	49 - 120				
Naphthalene	2.722	0.10	5	0	54.4	45 - 120				
Nitrobenzene	2.529	0.20	5	0	50.6	44 - 120				
N-Nitrosodiphenylamine	3.022	0.20	5	0	60.4	40 - 125				
Pentachlorophenol	3.933	0.20	5	0	78.7	19 - 121				
Phenanthrene	3.023	0.10	5	0	60.5	45 - 121				
Phenol	2.451	0.20	5	0	49.0	20 - 124				
Pyrene	3.657	0.10	5	0	73.1	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.275*	*0.20*	*5*	*0*	*85.5*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.906*	*0.20*	*5*	*0*	*58.1*	*40 - 125*				
Surr: 2-Fluorophenol	*2.421*	*0.20*	*5*	*0*	*48.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.132*	*0.20*	*5*	*0*	*82.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.624*	*0.20*	*5*	*0*	*52.5*	*41 - 120*				
Surr: Phenol-d6	*2.817*	*0.20*	*5*	*0*	*56.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

MS Sample ID: **HS19011117-11MS** Units: **ug/L** Analysis Date: **29-Jan-2019 16:48**
Client ID: **WG-1620-MW82B-20190122** Run ID: **SV-6_331877** SeqNo: **4930593** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.355	0.20	5	0	67.1	39 - 127				
2,4-Dimethylphenol	3.096	0.20	5	0	61.9	35 - 120				
2,4-Dinitrotoluene	3.243	0.20	5	0	64.9	50 - 122				
2,6-Dinitrotoluene	3.269	0.20	5	0	65.4	50 - 120				
2-Chloronaphthalene	3.161	0.20	5	0	63.2	50 - 120				
2-Methylnaphthalene	3.11	0.10	5	0	62.2	50 - 120				
4,6-Dinitro-2-methylphenol	3.299	0.20	5	0	66.0	25 - 121				
4-Nitrophenol	2.827	1.0	5	0	56.5	30 - 130				
Acenaphthene	2.902	0.10	5	0	58.0	45 - 120				
Acenaphthylene	3.039	0.10	5	0	60.8	47 - 120				
Anthracene	3.565	0.10	5	0.04179	70.5	45 - 120				
Benz(a)anthracene	3.756	0.10	5	0	75.1	40 - 120				
Benzo(a)pyrene	3.63	0.10	5	0	72.6	45 - 120				
Bis(2-chloroethoxy)methane	3.027	0.20	5	0	60.5	45 - 120				
Bis(2-ethylhexyl)phthalate	3.57	0.20	5	0	71.4	40 - 139				
Chrysene	3.767	0.10	5	0	75.3	43 - 120				
Dibenzofuran	3.004	0.10	5	0	60.1	50 - 120				
Di-n-butyl phthalate	3.787	0.20	5	0	75.7	45 - 123				
Fluoranthene	3.896	0.10	5	0	77.9	45 - 125				
Fluorene	3.24	0.10	5	0	64.8	49 - 120				
Naphthalene	2.922	0.10	5	0	58.4	45 - 120				
Nitrobenzene	2.874	0.20	5	0	57.5	44 - 120				
N-Nitrosodiphenylamine	3.63	0.20	5	0	72.6	40 - 125				
Pentachlorophenol	3.463	0.20	5	0	69.3	19 - 121				
Phenanthrene	3.492	0.10	5	0	69.8	45 - 121				
Phenol	2.755	0.20	5	0	55.1	20 - 124				
Pyrene	3.62	0.10	5	0	72.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.91*	*0.20*	*5*	*0*	*78.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.186*	*0.20*	*5*	*0*	*63.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.276*	*0.20*	*5*	*0*	*65.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.085*	*0.20*	*5*	*0*	*81.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.082*	*0.20*	*5*	*0*	*61.6*	*41 - 120*				
Surr: Phenol-d6	*3.253*	*0.20*	*5*	*0*	*65.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

MSD Sample ID: **HS19011117-18MSD** Units: **ug/L** Analysis Date: **11-Feb-2019 17:44**
Client ID: **WG-1620-MW61A-20190123** Run ID: **SV-7_332624** SeqNo: **4945823** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.36	0.20	5	0	47.2	39 - 127	2.423	2.63	20	
2,4-Dimethylphenol	2.419	0.20	5	0	48.4	35 - 120	2.608	7.5	20	
2,4-Dinitrotoluene	2.741	0.20	5	0	54.8	50 - 122	3.083	11.7	20	
2,6-Dinitrotoluene	2.704	0.20	5	0	54.1	50 - 120	2.903	7.11	20	
2-Chloronaphthalene	2.861	0.20	5	0	57.2	50 - 120	2.904	1.49	20	
2-Methylnaphthalene	2.658	0.10	5	0	53.2	50 - 120	2.802	5.29	20	
4,6-Dinitro-2-methylphenol	3.279	0.20	5	0	65.6	25 - 121	3.635	10.3	30	
4-Nitrophenol	3.306	1.0	5	0	66.1	30 - 130	3.16	4.52	20	
Acenaphthene	2.469	0.10	5	0	49.4	45 - 120	2.443	1.06	20	
Acenaphthylene	2.478	0.10	5	0	49.6	47 - 120	2.633	6.09	20	
Anthracene	2.898	0.10	5	0	58.0	45 - 120	3.124	7.5	20	
Benz(a)anthracene	3.703	0.10	5	0	74.1	40 - 120	3.743	1.08	20	
Benzo(a)pyrene	3.625	0.10	5	0	72.5	45 - 120	3.604	0.583	20	
Bis(2-chloroethoxy)methane	2.271	0.20	5	0	45.4	45 - 120	2.432	6.86	20	
Bis(2-ethylhexyl)phthalate	3.228	0.20	5	0	64.6	40 - 139	3.271	1.32	20	
Chrysene	3.634	0.10	5	0	72.7	43 - 120	3.747	3.06	20	
Dibenzofuran	2.586	0.10	5	0	51.7	50 - 120	2.735	5.58	20	
Di-n-butyl phthalate	3.137	0.20	5	0	62.7	45 - 123	3.134	0.113	20	
Fluoranthene	3.488	0.10	5	0	69.8	45 - 125	3.418	2.02	20	
Fluorene	2.612	0.10	5	0	52.2	49 - 120	2.833	8.12	20	
Naphthalene	2.676	0.10	5	0	53.5	45 - 120	2.722	1.69	20	
Nitrobenzene	2.487	0.20	5	0	49.7	44 - 120	2.529	1.68	20	
N-Nitrosodiphenylamine	2.85	0.20	5	0	57.0	40 - 125	3.022	5.89	20	
Pentachlorophenol	3.636	0.20	5	0	72.7	19 - 121	3.933	7.85	20	
Phenanthrene	2.86	0.10	5	0	57.2	45 - 121	3.023	5.51	20	
Phenol	2.423	0.20	5	0	48.5	20 - 124	2.451	1.15	20	
Pyrene	3.646	0.10	5	0	72.9	40 - 130	3.657	0.292	20	
Surr: 2,4,6-Tribromophenol	*3.832*	*0.20*	*5*	*0*	*76.6*	*34 - 129*	*4.275*	*10.9*	*20*	
Surr: 2-Fluorobiphenyl	*2.73*	*0.20*	*5*	*0*	*54.6*	*40 - 125*	*2.906*	*6.26*	*20*	
Surr: 2-Fluorophenol	*2.409*	*0.20*	*5*	*0*	*48.2*	*20 - 120*	*2.421*	*0.515*	*20*	
Surr: 4-Terphenyl-d14	*4.017*	*0.20*	*5*	*0*	*80.3*	*40 - 135*	*4.132*	*2.82*	*20*	
Surr: Nitrobenzene-d5	*2.443*	*0.20*	*5*	*0*	*48.9*	*41 - 120*	*2.624*	*7.14*	*20*	
Surr: Phenol-d6	*2.739*	*0.20*	*5*	*0*	*54.8*	*20 - 120*	*2.817*	*2.79*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

MSD Sample ID: **HS19011117-11MSD** Units: **ug/L** Analysis Date: **29-Jan-2019 17:08**
Client ID: **WG-1620-MW82B-20190122** Run ID: **SV-6_331877** SeqNo: **4930594** PrepDate: **25-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.985	0.20	5	0	59.7	39 - 127	3.355	11.7	20	
2,4-Dimethylphenol	2.891	0.20	5	0	57.8	35 - 120	3.096	6.86	20	
2,4-Dinitrotoluene	2.904	0.20	5	0	58.1	50 - 122	3.243	11	20	
2,6-Dinitrotoluene	3.139	0.20	5	0	62.8	50 - 120	3.269	4.06	20	
2-Chloronaphthalene	3.074	0.20	5	0	61.5	50 - 120	3.161	2.79	20	
2-Methylnaphthalene	3.355	0.10	5	0	67.1	50 - 120	3.11	7.59	20	
4,6-Dinitro-2-methylphenol	2.776	0.20	5	0	55.5	25 - 121	3.299	17.2	30	
4-Nitrophenol	2.645	1.0	5	0	52.9	30 - 130	2.827	6.64	20	
Acenaphthene	2.807	0.10	5	0	56.1	45 - 120	2.902	3.34	20	
Acenaphthylene	2.867	0.10	5	0	57.3	47 - 120	3.039	5.85	20	
Anthracene	3.277	0.10	5	0.04179	64.7	45 - 120	3.565	8.41	20	
Benz(a)anthracene	3.593	0.10	5	0	71.9	40 - 120	3.756	4.42	20	
Benzo(a)pyrene	3.768	0.10	5	0	75.4	45 - 120	3.63	3.73	20	
Bis(2-chloroethoxy)methane	3.085	0.20	5	0	61.7	45 - 120	3.027	1.9	20	
Bis(2-ethylhexyl)phthalate	3.647	0.20	5	0	72.9	40 - 139	3.57	2.12	20	
Chrysene	3.695	0.10	5	0	73.9	43 - 120	3.767	1.92	20	
Dibenzofuran	2.842	0.10	5	0	56.8	50 - 120	3.004	5.54	20	
Di-n-butyl phthalate	3.683	0.20	5	0	73.7	45 - 123	3.787	2.78	20	
Fluoranthene	3.617	0.10	5	0	72.3	45 - 125	3.896	7.42	20	
Fluorene	2.948	0.10	5	0	59.0	49 - 120	3.24	9.46	20	
Naphthalene	3.017	0.10	5	0	60.3	45 - 120	2.922	3.19	20	
Nitrobenzene	2.921	0.20	5	0	58.4	44 - 120	2.874	1.62	20	
N-Nitrosodiphenylamine	3.303	0.20	5	0	66.1	40 - 125	3.63	9.41	20	
Pentachlorophenol	2.969	0.20	5	0	59.4	19 - 121	3.463	15.4	20	
Phenanthrene	3.292	0.10	5	0	65.8	45 - 121	3.492	5.91	20	
Phenol	2.812	0.20	5	0	56.2	20 - 124	2.755	2.06	20	
Pyrene	3.51	0.10	5	0	70.2	40 - 130	3.62	3.07	20	
Surr: 2,4,6-Tribromophenol	*3.267*	*0.20*	*5*	*0*	*65.3*	*34 - 129*	*3.91*	*17.9*	*20*	
Surr: 2-Fluorobiphenyl	*2.918*	*0.20*	*5*	*0*	*58.4*	*40 - 125*	*3.186*	*8.78*	*20*	
Surr: 2-Fluorophenol	*2.579*	*0.20*	*5*	*0*	*51.6*	*20 - 120*	*3.276*	*23.8*	*20*	R
Surr: 4-Terphenyl-d14	*3.715*	*0.20*	*5*	*0*	*74.3*	*40 - 135*	*4.085*	*9.48*	*20*	
Surr: Nitrobenzene-d5	*3.043*	*0.20*	*5*	*0*	*60.9*	*41 - 120*	*3.082*	*1.25*	*20*	
Surr: Phenol-d6	*2.962*	*0.20*	*5*	*0*	*59.2*	*20 - 120*	*3.253*	*9.35*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: 137036 **Instrument: SV-6** **Method: SW8270**

The following samples were analyzed in this batch:

HS19011117-01	HS19011117-02	HS19011117-03	HS19011117-04
HS19011117-05	HS19011117-06	HS19011117-07	HS19011117-08
HS19011117-09	HS19011117-11	HS19011117-12	HS19011117-13
HS19011117-14	HS19011117-15	HS19011117-16	HS19011117-17
HS19011117-18	HS19011117-19		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R331844 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190128** Units: **ug/L** Analysis Date: **28-Jan-2019 23:41**
Client ID: Run ID: **VOA2_331844** SeqNo: **4927949** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.73*	*1.0*	*50*	*0*	*91.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.46*	*1.0*	*50*	*0*	*94.9*	*82 - 115*				
Surr: Dibromofluoromethane	*51.78*	*1.0*	*50*	*0*	*104*	*73 - 126*				
Surr: Toluene-d8	*51.5*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190128** Units: **ug/L** Analysis Date: **28-Jan-2019 22:53**
Client ID: Run ID: **VOA2_331844** SeqNo: **4927948** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.74	1.0	20	0	83.7	70 - 124				
Benzene	20.94	1.0	20	0	105	74 - 120				
Chlorobenzene	20.19	1.0	20	0	101	76 - 113				
Ethylbenzene	20.29	1.0	20	0	101	77 - 117				
Methylene chloride	20.8	2.0	20	0	104	70 - 127				
Toluene	20.05	1.0	20	0	100	77 - 118				
Vinyl chloride	20.82	1.0	20	0	104	70 - 130				
Xylenes, Total	62.37	1.0	60	0	104	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.17*	*1.0*	*50*	*0*	*96.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.35*	*1.0*	*50*	*0*	*98.7*	*82 - 115*				
Surr: Dibromofluoromethane	*50.48*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.88*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: **R331844** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS19011117-11MS** Units: **ug/L** Analysis Date: **29-Jan-2019 00:29**
Client ID: **WG-1620-MW82B-20190122** Run ID: **VOA2_331844** SeqNo: **4927951** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.32	1.0	20	0	76.6	70 - 127				
Benzene	19.32	1.0	20	0	96.6	70 - 127				
Chlorobenzene	18.51	1.0	20	0	92.5	70 - 114				
Ethylbenzene	19.18	1.0	20	0	95.9	70 - 124				
Methylene chloride	17.35	2.0	20	0	86.8	70 - 128				
Toluene	18.67	1.0	20	0	93.4	70 - 123				
Vinyl chloride	20.97	1.0	20	0	105	70 - 130				
Xylenes, Total	57.78	1.0	60	0	96.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.6*	*1.0*	*50*	*0*	*97.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.83*	*1.0*	*50*	*0*	*99.7*	*81 - 113*				
Surr: Dibromofluoromethane	*51.92*	*1.0*	*50*	*0*	*104*	*77 - 123*				
Surr: Toluene-d8	*50.01*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS19011117-11MSD** Units: **ug/L** Analysis Date: **29-Jan-2019 00:53**
Client ID: **WG-1620-MW82B-20190122** Run ID: **VOA2_331844** SeqNo: **4927952** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.68	1.0	20	0	78.4	70 - 127	15.32	2.36	20	
Benzene	19.19	1.0	20	0	95.9	70 - 127	19.32	0.679	20	
Chlorobenzene	18.72	1.0	20	0	93.6	70 - 114	18.51	1.15	20	
Ethylbenzene	19.22	1.0	20	0	96.1	70 - 124	19.18	0.194	20	
Methylene chloride	17.99	2.0	20	0	90.0	70 - 128	17.35	3.61	20	
Toluene	18.9	1.0	20	0	94.5	70 - 123	18.67	1.18	20	
Vinyl chloride	20.3	1.0	20	0	101	70 - 130	20.97	3.26	20	
Xylenes, Total	58.55	1.0	60	0	97.6	70 - 130	57.78	1.32	20	
Surr: 1,2-Dichloroethane-d4	*48.13*	*1.0*	*50*	*0*	*96.3*	*70 - 126*	*48.6*	*0.984*	*20*	
Surr: 4-Bromofluorobenzene	*49.27*	*1.0*	*50*	*0*	*98.5*	*81 - 113*	*49.83*	*1.12*	*20*	
Surr: Dibromofluoromethane	*51.62*	*1.0*	*50*	*0*	*103*	*77 - 123*	*51.92*	*0.588*	*20*	
Surr: Toluene-d8	*50.34*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.01*	*0.667*	*20*	

The following samples were analyzed in this batch: HS19011117-01 HS19011117-02 HS19011117-03 HS19011117-04 HS19011117-05 HS19011117-06 HS19011117-11

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R331938 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190129** Units: **ug/L** Analysis Date: **29-Jan-2019 12:55**
Client ID: Run ID: **VOA2_331938** SeqNo: **4929928** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.61*	*1.0*	*50*	*0*	*87.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.13*	*1.0*	*50*	*0*	*94.3*	*82 - 115*				
Surr: Dibromofluoromethane	*49.99*	*1.0*	*50*	*0*	*100.0*	*73 - 126*				
Surr: Toluene-d8	*52.38*	*1.0*	*50*	*0*	*105*	*81 - 120*				

LCS Sample ID: **VLCSW-190129** Units: **ug/L** Analysis Date: **29-Jan-2019 12:07**
Client ID: Run ID: **VOA2_331938** SeqNo: **4929927** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.13	1.0	20	0	80.7	70 - 124				
Benzene	20.8	1.0	20	0	104	74 - 120				
Chlorobenzene	20.16	1.0	20	0	101	76 - 113				
Ethylbenzene	20.49	1.0	20	0	102	77 - 117				
Methylene chloride	17.64	2.0	20	0	88.2	70 - 127				
Toluene	19.97	1.0	20	0	99.9	77 - 118				
Xylenes, Total	63.15	1.0	60	0	105	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.96*	*1.0*	*50*	*0*	*93.9*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.73*	*1.0*	*50*	*0*	*97.5*	*82 - 115*				
Surr: Dibromofluoromethane	*49.01*	*1.0*	*50*	*0*	*98.0*	*73 - 126*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R331938 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19011125-01MS** Units: **ug/L** Analysis Date: **29-Jan-2019 15:19**
Client ID: Run ID: **VOA2_331938** SeqNo: **4929934** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	13.85	1.0	20	0	69.3	70 - 127				S
Benzene	18.31	1.0	20	0	91.6	70 - 127				
Chlorobenzene	18.44	1.0	20	0	92.2	70 - 114				
Ethylbenzene	19.18	1.0	20	0	95.9	70 - 124				
Methylene chloride	16.63	2.0	20	0	83.2	70 - 128				
Toluene	18.75	1.0	20	0	93.7	70 - 123				
Xylenes, Total	57.09	1.0	60	0	95.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.46*	*1.0*	*50*	*0*	*88.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.2*	*1.0*	*50*	*0*	*98.4*	*81 - 113*				
Surr: Dibromofluoromethane	*49.45*	*1.0*	*50*	*0*	*98.9*	*77 - 123*				
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS19011125-01MSD** Units: **ug/L** Analysis Date: **29-Jan-2019 15:43**
Client ID: Run ID: **VOA2_331938** SeqNo: **4929935** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	13.94	1.0	20	0	69.7	70 - 127	13.85	0.617	20	S
Benzene	18.01	1.0	20	0	90.1	70 - 127	18.31	1.65	20	
Chlorobenzene	17.68	1.0	20	0	88.4	70 - 114	18.44	4.22	20	
Ethylbenzene	18.42	1.0	20	0	92.1	70 - 124	19.18	4.06	20	
Methylene chloride	15.81	2.0	20	0	79.0	70 - 128	16.63	5.07	20	
Toluene	18.15	1.0	20	0	90.8	70 - 123	18.75	3.22	20	
Xylenes, Total	55.26	1.0	60	0	92.1	70 - 130	57.09	3.26	20	
Surr: 1,2-Dichloroethane-d4	*46.35*	*1.0*	*50*	*0*	*92.7*	*70 - 126*	*44.46*	*4.16*	*20*	
Surr: 4-Bromofluorobenzene	*48.52*	*1.0*	*50*	*0*	*97.0*	*81 - 113*	*49.2*	*1.4*	*20*	
Surr: Dibromofluoromethane	*49.48*	*1.0*	*50*	*0*	*99.0*	*77 - 123*	*49.45*	*0.0607*	*20*	
Surr: Toluene-d8	*50.1*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.88*	*1.55*	*20*	

The following samples were analyzed in this batch: HS19011117-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R331946 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190129** Units: **ug/L** Analysis Date: **30-Jan-2019 00:32**
Client ID: Run ID: **VOA2_331946** SeqNo: **4930130** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.24*	*1.0*	*50*	*0*	*86.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.99*	*1.0*	*50*	*0*	*96.0*	*82 - 115*				
Surr: Dibromofluoromethane	*48.96*	*1.0*	*50*	*0*	*97.9*	*73 - 126*				
Surr: Toluene-d8	*51.47*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190129** Units: **ug/L** Analysis Date: **29-Jan-2019 23:44**
Client ID: Run ID: **VOA2_331946** SeqNo: **4930129** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.14	1.0	20	0	80.7	70 - 124				
Benzene	20.59	1.0	20	0	103	74 - 120				
Chlorobenzene	20.38	1.0	20	0	102	76 - 113				
Ethylbenzene	19.84	1.0	20	0	99.2	77 - 117				
Methylene chloride	19.54	2.0	20	0	97.7	70 - 127				
Toluene	19.73	1.0	20	0	98.6	77 - 118				
Vinyl chloride	20.42	1.0	20	0	102	70 - 130				
Xylenes, Total	61.49	1.0	60	0	102	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.12*	*1.0*	*50*	*0*	*90.2*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.26*	*1.0*	*50*	*0*	*98.5*	*82 - 115*				
Surr: Dibromofluoromethane	*49.49*	*1.0*	*50*	*0*	*99.0*	*73 - 126*				
Surr: Toluene-d8	*50.07*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: **R331946** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS19011117-18MS** Units: **ug/L** Analysis Date: **30-Jan-2019 02:56**
Client ID: **WG-1620-MW61A-20190123** Run ID: **VOA2_331946** SeqNo: **4930196** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.23	1.0	20	0	76.2	70 - 127				
Benzene	19.02	1.0	20	0	95.1	70 - 127				
Chlorobenzene	18.75	1.0	20	0	93.7	70 - 114				
Ethylbenzene	19.01	1.0	20	0	95.1	70 - 124				
Methylene chloride	17.15	2.0	20	0	85.7	70 - 128				
Toluene	18.86	1.0	20	0	94.3	70 - 123				
Vinyl chloride	20.64	1.0	20	0	103	70 - 130				
Xylenes, Total	58.14	1.0	60	0	96.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.65*	*1.0*	*50*	*0*	*91.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.49*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*49.45*	*1.0*	*50*	*0*	*98.9*	*77 - 123*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19011117-18MSD** Units: **ug/L** Analysis Date: **30-Jan-2019 03:20**
Client ID: **WG-1620-MW61A-20190123** Run ID: **VOA2_331946** SeqNo: **4930197** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.84	1.0	20	0	74.2	70 - 127	15.23	2.59	20	
Benzene	18.86	1.0	20	0	94.3	70 - 127	19.02	0.849	20	
Chlorobenzene	18.88	1.0	20	0	94.4	70 - 114	18.75	0.725	20	
Ethylbenzene	19.23	1.0	20	0	96.2	70 - 124	19.01	1.15	20	
Methylene chloride	17.02	2.0	20	0	85.1	70 - 128	17.15	0.774	20	
Toluene	18.81	1.0	20	0	94.1	70 - 123	18.86	0.271	20	
Vinyl chloride	19.99	1.0	20	0	99.9	70 - 130	20.64	3.21	20	
Xylenes, Total	58.26	1.0	60	0	97.1	70 - 130	58.14	0.214	20	
Surr: 1,2-Dichloroethane-d4	*46.63*	*1.0*	*50*	*0*	*93.3*	*70 - 126*	*45.65*	*2.13*	*20*	
Surr: 4-Bromofluorobenzene	*49.51*	*1.0*	*50*	*0*	*99.0*	*81 - 113*	*50.49*	*1.96*	*20*	
Surr: Dibromofluoromethane	*49.35*	*1.0*	*50*	*0*	*98.7*	*77 - 123*	*49.45*	*0.2*	*20*	
Surr: Toluene-d8	*50.35*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.61*	*0.526*	*20*	

The following samples were analyzed in this batch:

HS19011117-09	HS19011117-10	HS19011117-12	HS19011117-13
HS19011117-14	HS19011117-15	HS19011117-16	HS19011117-17
HS19011117-18	HS19011117-19		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R332011 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190130** Units: **ug/L** Analysis Date: **30-Jan-2019 14:44**
Client ID: Run ID: **VOA2_332011** SeqNo: **4931480** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*42.74*	*1.0*	*50*	*0*	*85.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.59*	*1.0*	*50*	*0*	*95.2*	*82 - 115*				
Surr: Dibromofluoromethane	*50.02*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*51.36*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190130** Units: **ug/L** Analysis Date: **30-Jan-2019 13:55**
Client ID: Run ID: **VOA2_332011** SeqNo: **4931479** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16	1.0	20	0	80.0	70 - 124				
Benzene	19.83	1.0	20	0	99.2	74 - 120				
Chlorobenzene	19.8	1.0	20	0	99.0	76 - 113				
Ethylbenzene	19.48	1.0	20	0	97.4	77 - 117				
Methylene chloride	18.46	2.0	20	0	92.3	70 - 127				
Toluene	19.45	1.0	20	0	97.2	77 - 118				
Xylenes, Total	60.61	1.0	60	0	101	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.34*	*1.0*	*50*	*0*	*92.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.33*	*1.0*	*50*	*0*	*98.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.41*	*1.0*	*50*	*0*	*98.8*	*73 - 126*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011117

QC BATCH REPORT

Batch ID: R332011 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19011301-02MS** Units: **ug/L** Analysis Date: **30-Jan-2019 16:44**
Client ID: Run ID: **VOA2_332011** SeqNo: **4931485** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.82	1.0	20	0	74.1	70 - 127				
Benzene	18.03	1.0	20	0	90.1	70 - 127				
Chlorobenzene	17.82	1.0	20	0	89.1	70 - 114				
Ethylbenzene	18.33	1.0	20	0	91.7	70 - 124				
Methylene chloride	17.28	2.0	20	0	86.4	70 - 128				
Toluene	17.82	1.0	20	0	89.1	70 - 123				
Xylenes, Total	54.85	1.0	60	0	91.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.31*	*1.0*	*50*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.72*	*1.0*	*50*	*0*	*99.4*	*81 - 113*				
Surr: Dibromofluoromethane	*49.87*	*1.0*	*50*	*0*	*99.7*	*77 - 123*				
Surr: Toluene-d8	*50.09*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS19011301-02MSD** Units: **ug/L** Analysis Date: **30-Jan-2019 17:08**
Client ID: Run ID: **VOA2_332011** SeqNo: **4931486** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.25	1.0	20	0	71.3	70 - 127	14.82	3.93	20	
Benzene	17.96	1.0	20	0	89.8	70 - 127	18.03	0.401	20	
Chlorobenzene	17.94	1.0	20	0	89.7	70 - 114	17.82	0.708	20	
Ethylbenzene	18.28	1.0	20	0	91.4	70 - 124	18.33	0.305	20	
Methylene chloride	16.93	2.0	20	0	84.6	70 - 128	17.28	2.06	20	
Toluene	17.86	1.0	20	0	89.3	70 - 123	17.82	0.251	20	
Xylenes, Total	55.2	1.0	60	0	92.0	70 - 130	54.85	0.634	20	
Surr: 1,2-Dichloroethane-d4	*45.39*	*1.0*	*50*	*0*	*90.8*	*70 - 126*	*46.31*	*2*	*20*	
Surr: 4-Bromofluorobenzene	*49.79*	*1.0*	*50*	*0*	*99.6*	*81 - 113*	*49.72*	*0.139*	*20*	
Surr: Dibromofluoromethane	*49.56*	*1.0*	*50*	*0*	*99.1*	*77 - 123*	*49.87*	*0.634*	*20*	
Surr: Toluene-d8	*49.98*	*1.0*	*50*	*0*	*100.0*	*82 - 127*	*50.09*	*0.217*	*20*	

The following samples were analyzed in this batch: HS19011117-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19011117**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19011117

Date/Time Received: **23-Jan-2019 17:40**
Received by: **PMG**

Checklist completed by: *Pablo Marinez* eSignature — 23-Jan-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 28-Jan-2019 Date

Matrices: **WATER**

Carrier name: **Client**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☐	☐	☑
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	☑
Chain of custody present?	☑	☐	2 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:194327, 194323
Samplers name present on COC?	☐	☑	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 0.6C/0.9C, 1.2C/1.5C, 0.4C/0.7C, 0.9C/1.2C, 1.1C/1.4C UC/C — IR # 25

Cooler(s)/Kit(s): 24950, 43905, 43899, 43681, 44426

Date/Time sample(s) sent to storage: 1/23/19 19:00

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	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 2

COC ID: 194327

HS19011117

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0-201801~~			Water	1	2											
2	WG-1620-MW44A-20190122	1-22-19	0725	W		6		X	X	X							
3	WG-1620-MW87C-20190122		0815	W		6	X		X	X							
4	WG-1620-MW33BR-20190122		0905	W		6		X	X	X							
5	WG-1620-MW33A-20190122		1000	W		6	X		X	X							
6	WG-1620-FD04-20190122		1000	W		6	X		X	X							
7	WG-1620-MW38B-20190122		1100	W		6	X		X	X							
8	WG-1620-MW22AR-20190122		1150	W		6	X		X	X							
9	WG-1620-MW22BR-20190122		1235	W		6	X		X	X							
10	WG-1620-MW38A-20190122		1340	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BEAUMONT John Be

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: John Be — Date: 1/23/19 Time: 17:40 — Received by: —

Relinquished by: — Date: — Time: — Received by (Laboratory): 1/23/19 17:40

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory): ✓

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	41C
34950	0-6
43905	1-2
43899	0-4
43031	0-4
44426	1-1

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other _____
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

2021-25 CNF 0.3

Copyright 2011 by ALS Environmental.

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: 194323

HS19011117

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	MS/MSD
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB05~~ WG-1620-TB05-20190123			Water	1	2											
2	WG-1620-MW82B-20190122	1-22-19	1455	W		6	X		X	X	X						
3	WG-1620-MW90B-20190122		1600	W		6	X		X	X							
4	WG-1620-MW89B-20190122		1650	W		6	X		X	X							
5	WG-1620-MW27C-20190122		1745	W		6	X		X	X							
6	WG-1620-FB06-20190122		1800	W		6	X		X	X							
7	WG-1620-MW62B-20190123	1-23-19	0715	W		6	X		X	X							
8	WG-1620-MW64A-20190123		0810	W		6	X		X	X							
9	WG-1620-MW61A-20190123		0920	W		6		X	X	X	X						
10	WG-1620-MW47C-20190123		1015	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRATTON

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-23-19	Time: 17:40	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory): 1-23-19 17:40
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
21950	0-6
43905	1-2
43899	0-4
43681	0-4
44426	1-1

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

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

February 15, 2019

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

Work Order: **HS19011199**

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

Dear Eric,

ALS Environmental received 20 sample(s) on Jan 25, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19011199**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19011199**	

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: 02/15/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011199
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137100, 137198, 137313, R332110, R332113, R332226

#[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				3
		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: 02/15/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011199
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137100, 137198, 137313, R332110, R332113, R332226

#[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: 02/15/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19011199
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137100, 137198, 137313, R332110, R332113, R332226

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW74B-20190123, WG-1620-MW79A-20190123, WG-1620-MW72B-20190124, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 137100, Semivolatile Organics Method SW8270, sample WG-1620-MW67B-20190124, MS and or MSD recovered outside the control limits for some compounds due to suspect matrix effect.
3	Batch 137100, Semivolatile Organics Method SW8260, samples WG-1620-MW74B-20190123, WG-1620-MW79A-20190123, WG-1620-MW72B-20190124, the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference. Batch R332113, Volatile Organics Method SW8260, samples WG-1620-MW74B-20190123, WG-1620-MW79A-20190123 and WG-1620-MW72B-20190124; lowest practical dilution due to high concentration of non-target analyte(s).

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: HS19011199

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19011199-01	WQ-1620-FB08-20190124	Water		24-Jan-2019 16:15	25-Jan-2019 09:07	☐
HS19011199-02	WG-1620-MW58A-20190123	Groundwater		23-Jan-2019 11:20	25-Jan-2019 09:07	☐
HS19011199-03	WG-1620-MW32AR-20190123	Groundwater		23-Jan-2019 12:15	25-Jan-2019 09:07	☐
HS19011199-04	WG-1620-MW76C-20190123	Groundwater		23-Jan-2019 13:20	25-Jan-2019 09:07	☐
HS19011199-05	WG-1620-MW74B-20190123	Groundwater		23-Jan-2019 14:15	25-Jan-2019 09:07	☐
HS19011199-06	WG-1620-MW79A-20190123	Groundwater		23-Jan-2019 15:05	25-Jan-2019 09:07	☐
HS19011199-07	WG-1620-MW49A-20190123	Groundwater		23-Jan-2019 15:50	25-Jan-2019 09:07	☐
HS19011199-08	WG-1620-MW59A-20190123	Groundwater		23-Jan-2019 16:40	25-Jan-2019 09:07	☐
HS19011199-09	WG-1620-MW59B-20190123	Groundwater		23-Jan-2019 17:30	25-Jan-2019 09:07	☐
HS19011199-10	WQ-1620-FB07-20190123	Water		23-Jan-2019 17:00	25-Jan-2019 09:07	☐
HS19011199-11	WQ-1620-TB06-20190124	Water	ALS-121118-56	24-Jan-2019 00:00	25-Jan-2019 09:07	☐
HS19011199-12	WG-1620-MW59D-20190124	Groundwater		24-Jan-2019 07:20	25-Jan-2019 09:07	☐
HS19011199-13	WG-1620-FD05-20190124	Groundwater		24-Jan-2019 07:20	25-Jan-2019 09:07	☐
HS19011199-14	WG-1620-MW36D-20190124	Groundwater		24-Jan-2019 08:25	25-Jan-2019 09:07	☐
HS19011199-15	WG-1620-MW65D-20190124	Groundwater		24-Jan-2019 09:25	25-Jan-2019 09:07	☐
HS19011199-16	WG-1620-MW66D-20190124	Groundwater		24-Jan-2019 10:30	25-Jan-2019 09:07	☐
HS19011199-17	WG-1620-MW84B-20190124	Groundwater		24-Jan-2019 11:40	25-Jan-2019 09:07	☐
HS19011199-18	WG-1620-MW67B-20190124	Groundwater		24-Jan-2019 12:50	25-Jan-2019 09:07	☐
HS19011199-19	WG-1620-MW19C-20190124	Groundwater		24-Jan-2019 13:50	25-Jan-2019 09:07	☐
HS19011199-20	WG-1620-MW72B-20190124	Groundwater		24-Jan-2019 14:55	25-Jan-2019 09:07	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WQ-1620-FB08-20190124	Lab ID:HS19011199-01
Collection Date:	24-Jan-2019 16:15	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:00
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:00
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:00
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:00
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 03:00
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:00
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:00
Surr: 1,2-Dichloroethane-d4	*87.5*			*70-126*	*%REC*	*1*	*01-Feb-2019 03:00*
Surr: 4-Bromofluorobenzene	*93.4*			*81-113*	*%REC*	*1*	*01-Feb-2019 03:00*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*01-Feb-2019 03:00*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*01-Feb-2019 03:00*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WQ-1620-FB08-20190124	Lab ID:HS19011199-01	
Collection Date:	24-Jan-2019 16:15	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	13-Feb-2019 13:36
2,4-Dimethylphenol	**0.00057**		**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 13:36
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	13-Feb-2019 13:36
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	13-Feb-2019 13:36
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	13-Feb-2019 13:36
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 13:36
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	13-Feb-2019 13:36
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	13-Feb-2019 13:36
Acenaphthene		U	0.000027	0.00010	mg/L	1	13-Feb-2019 13:36
Acenaphthylene		U	0.000015	0.00010	mg/L	1	13-Feb-2019 13:36
Anthracene		U	0.000014	0.00010	mg/L	1	13-Feb-2019 13:36
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	13-Feb-2019 13:36
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 13:36
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	13-Feb-2019 13:36
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	13-Feb-2019 13:36
Chrysene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 13:36
Dibenzofuran		U	0.000020	0.00010	mg/L	1	13-Feb-2019 13:36
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	13-Feb-2019 13:36
Fluoranthene		U	0.000010	0.00010	mg/L	1	13-Feb-2019 13:36
Fluorene		U	0.000030	0.00010	mg/L	1	13-Feb-2019 13:36
Naphthalene	**0.00075**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 13:36
Nitrobenzene		U	0.000024	0.00020	mg/L	1	13-Feb-2019 13:36
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	13-Feb-2019 13:36
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	13-Feb-2019 13:36
Phenanthrene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 13:36
Phenol	**0.00041**		**0.000035**	**0.00020**	**mg/L**	1	13-Feb-2019 13:36
Pyrene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 13:36
Surr: 2,4,6-Tribromophenol	*77.8*			*34-129*	*%REC*	*1*	*13-Feb-2019 13:36*
Surr: 2-Fluorobiphenyl	*64.9*			*40-125*	*%REC*	*1*	*13-Feb-2019 13:36*
Surr: 2-Fluorophenol	*59.5*			*20-120*	*%REC*	*1*	*13-Feb-2019 13:36*
Surr: 4-Terphenyl-d14	*73.9*			*40-135*	*%REC*	*1*	*13-Feb-2019 13:36*
Surr: Nitrobenzene-d5	*64.6*			*41-120*	*%REC*	*1*	*13-Feb-2019 13:36*
Surr: Phenol-d6	*64.5*			*20-120*	*%REC*	*1*	*13-Feb-2019 13:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	06-Feb-2019 20:16
Lead		U	0.000600	0.00200	mg/L	1	06-Feb-2019 20:16

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW58A-20190123	Lab ID:HS19011199-02
Collection Date:	23-Jan-2019 11:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	01-Feb-2019 05:00
Benzene	**0.0011**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 05:00
Chlorobenzene	**0.00046**	J	**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 05:00
Ethylbenzene	**0.0032**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 05:00
Methylene chloride	U		0.0010	0.0020	mg/L	1	01-Feb-2019 05:00
Toluene	**0.0014**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 05:00
Vinyl chloride	U		0.00020	0.0010	mg/L	1	01-Feb-2019 05:00
Xylenes, Total	**0.0050**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 05:00
Surr: 1,2-Dichloroethane-d4	*86.5*			*70-126*	*%REC*	*1*	*01-Feb-2019 05:00*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*01-Feb-2019 05:00*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*01-Feb-2019 05:00*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*01-Feb-2019 05:00*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WG-1620-MW58A-20190123	Lab ID:HS19011199-02	
Collection Date:	23-Jan-2019 11:20	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 13:56
2,4-Dimethylphenol	**0.00010**	J	**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 13:56
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 13:56
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 13:56
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 13:56
2-Methylnaphthalene	**0.000072**	J	**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 13:56
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 13:56
Acenaphthene	**0.023**		**0.00027**	**0.0010**	**mg/L**	10	14-Feb-2019 13:48
Acenaphthylene	**0.00038**		**0.000015**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Anthracene	**0.0020**		**0.000014**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 13:56
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 13:56
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 13:56
Bis(2-ethylhexyl)phthalate	**0.000070**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 13:56
Chrysene	**0.000030**	J	**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Dibenzofuran	**0.013**		**0.00020**	**0.0010**	**mg/L**	10	14-Feb-2019 13:48
Di-n-butyl phthalate	**0.000032**	J	**0.000020**	**0.00020**	**mg/L**	1	13-Feb-2019 13:56
Fluoranthene	**0.0020**		**0.000010**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Fluorene	**0.015**		**0.00030**	**0.0010**	**mg/L**	10	14-Feb-2019 13:48
Naphthalene	**0.00042**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 13:56
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 13:56
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 13:56
Phenanthrene	**0.0038**		**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Phenol	**0.000074**	J	**0.000035**	**0.00020**	**mg/L**	1	13-Feb-2019 13:56
Pyrene	**0.00088**		**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 13:56
Surr: 2,4,6-Tribromophenol	*48.0*			*34-129*	*%REC*	*10*	*14-Feb-2019 13:48*
Surr: 2,4,6-Tribromophenol	*83.8*			*34-129*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: 2-Fluorobiphenyl	*54.8*			*40-125*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: 2-Fluorobiphenyl	*44.6*			*40-125*	*%REC*	*10*	*14-Feb-2019 13:48*
Surr: 2-Fluorophenol	*30.5*	*J*		*20-120*	*%REC*	*10*	*14-Feb-2019 13:48*
Surr: 2-Fluorophenol	*50.7*			*20-120*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: 4-Terphenyl-d14	*73.2*			*40-135*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: 4-Terphenyl-d14	*43.7*			*40-135*	*%REC*	*10*	*14-Feb-2019 13:48*
Surr: Nitrobenzene-d5	*43.2*			*41-120*	*%REC*	*10*	*14-Feb-2019 13:48*
Surr: Nitrobenzene-d5	*52.7*			*41-120*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: Phenol-d6	*58.2*			*20-120*	*%REC*	*1*	*13-Feb-2019 13:56*
Surr: Phenol-d6	*33.0*	*J*		*20-120*	*%REC*	*10*	*14-Feb-2019 13:48*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW58A-20190123	Lab ID:HS19011199-02
Collection Date:	23-Jan-2019 11:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00232**		**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:19
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 20:19

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW32AR-20190123	Lab ID:HS19011199-03
Collection Date:	23-Jan-2019 12:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:24
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 05:24
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:24
Surr: 1,2-Dichloroethane-d4	*85.0*			*70-126*	*%REC*	*1*	*01-Feb-2019 05:24*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*01-Feb-2019 05:24*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*01-Feb-2019 05:24*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*01-Feb-2019 05:24*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW32AR-20190123	Lab ID:HS19011199-03
Collection Date:	23-Jan-2019 12:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 14:15
2,4-Dimethylphenol	**0.00013**	J	**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 14:15
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 14:15
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 14:15
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 14:15
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 14:15
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 14:15
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 14:15
Acenaphthene	**0.00010**		**0.000027**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 14:15
Anthracene	**0.000020**	J	**0.000014**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 14:15
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 14:15
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 14:15
Bis(2-ethylhexyl)phthalate	**0.000044**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 14:15
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 14:15
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 14:15
Di-n-butyl phthalate	**0.000020**	J	**0.000020**	**0.00020**	**mg/L**	1	13-Feb-2019 14:15
Fluoranthene	**0.000051**	J	**0.000010**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 14:15
Naphthalene	**0.000067**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 14:15
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 14:15
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 14:15
Phenanthrene	**0.000034**	J	**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 14:15
Pyrene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 14:15
Surr: 2,4,6-Tribromophenol	*77.3*			*34-129*	*%REC*	*1*	*13-Feb-2019 14:15*
Surr: 2-Fluorobiphenyl	*50.5*			*40-125*	*%REC*	*1*	*13-Feb-2019 14:15*
Surr: 2-Fluorophenol	*41.2*			*20-120*	*%REC*	*1*	*13-Feb-2019 14:15*
Surr: 4-Terphenyl-d14	*72.6*			*40-135*	*%REC*	*1*	*13-Feb-2019 14:15*
Surr: Nitrobenzene-d5	*41.6*			*41-120*	*%REC*	*1*	*13-Feb-2019 14:15*
Surr: Phenol-d6	*48.8*			*20-120*	*%REC*	*1*	*13-Feb-2019 14:15*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.0316**		**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:32
Lead	**0.000644**	J	**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:32

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW76C-20190123	Lab ID:HS19011199-04
Collection Date:	23-Jan-2019 13:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:48
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 05:48
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:48
Surr: 1,2-Dichloroethane-d4	*87.3*			*70-126*	*%REC*	*1*	*01-Feb-2019 05:48*
Surr: 4-Bromofluorobenzene	*98.4*			*81-113*	*%REC*	*1*	*01-Feb-2019 05:48*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*01-Feb-2019 05:48*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*01-Feb-2019 05:48*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW76C-20190123	Lab ID:HS19011199-04
Collection Date:	23-Jan-2019 13:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 14:35
2,4-Dimethylphenol	**0.0041**		**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 14:35
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 14:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 14:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 14:35
2-Methylnaphthalene	**0.00031**		**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 14:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 14:35
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 14:35
Anthracene	**0.000041**	J	**0.000014**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 14:35
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 14:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 14:35
Bis(2-ethylhexyl)phthalate	**0.000091**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 14:35
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 14:35
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Di-n-butyl phthalate	**0.000027**	J	**0.000020**	**0.00020**	**mg/L**	1	13-Feb-2019 14:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 14:35
Fluorene	**0.000076**	J	**0.000030**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Naphthalene	**0.0070**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 14:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 14:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 14:35
Phenanthrene	**0.000086**	J	**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 14:35
Phenol	**0.0012**		**0.000035**	**0.00020**	**mg/L**	1	13-Feb-2019 14:35
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 14:35
Surr: 2,4,6-Tribromophenol	*87.6*			*34-129*	*%REC*	*1*	*13-Feb-2019 14:35*
Surr: 2-Fluorobiphenyl	*63.1*			*40-125*	*%REC*	*1*	*13-Feb-2019 14:35*
Surr: 2-Fluorophenol	*57.3*			*20-120*	*%REC*	*1*	*13-Feb-2019 14:35*
Surr: 4-Terphenyl-d14	*76.5*			*40-135*	*%REC*	*1*	*13-Feb-2019 14:35*
Surr: Nitrobenzene-d5	*59.6*			*41-120*	*%REC*	*1*	*13-Feb-2019 14:35*
Surr: Phenol-d6	*66.6*			*20-120*	*%REC*	*1*	*13-Feb-2019 14:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.000579**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:34
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 20:34

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW74B-20190123	Lab ID:HS19011199-05
Collection Date:	23-Jan-2019 14:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	01-Feb-2019 06:14
Benzene	**0.83**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 06:14
Chlorobenzene	U		0.0030	0.010	mg/L	10	01-Feb-2019 06:14
Ethylbenzene	**0.22**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 06:14
Methylene chloride	U		0.010	0.020	mg/L	10	01-Feb-2019 06:14
Toluene	**0.69**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 06:14
Xylenes, Total	**0.63**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 06:14
Surr: 1,2-Dichloroethane-d4	*87.1*			*70-126*	*%REC*	*10*	*01-Feb-2019 06:14*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*10*	*01-Feb-2019 06:14*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*10*	*01-Feb-2019 06:14*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*10*	*01-Feb-2019 06:14*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW74B-20190123	Lab ID:HS19011199-05
Collection Date:	23-Jan-2019 14:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	13-Feb-2019 14:54
2,4-Dimethylphenol	**9.0**		**0.040**	**0.20**	**mg/L**	1000	14-Feb-2019 15:45
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	13-Feb-2019 14:54
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	13-Feb-2019 14:54
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	13-Feb-2019 14:54
2-Methylnaphthalene	**0.22**		**0.0019**	**0.010**	**mg/L**	100	14-Feb-2019 13:28
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	13-Feb-2019 14:54
4-Nitrophenol	U		0.00047	0.010	mg/L	10	13-Feb-2019 14:54
Acenaphthene	**0.098**		**0.00027**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Acenaphthylene	**0.0032**		**0.00015**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Anthracene	**0.0074**		**0.00014**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	13-Feb-2019 14:54
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	13-Feb-2019 14:54
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	13-Feb-2019 14:54
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	13-Feb-2019 14:54
Chrysene	U		0.00021	0.0010	mg/L	10	13-Feb-2019 14:54
Dibenzofuran	**0.079**		**0.00020**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	13-Feb-2019 14:54
Fluoranthene	**0.0038**		**0.00010**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Fluorene	**0.056**		**0.00030**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Naphthalene	**4.0**		**0.020**	**0.10**	**mg/L**	1000	14-Feb-2019 15:45
Nitrobenzene	U		0.0024	0.020	mg/L	100	14-Feb-2019 13:28
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	13-Feb-2019 14:54
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	13-Feb-2019 14:54
Phenanthrene	**0.046**		**0.00021**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Phenol	**5.0**		**0.035**	**0.20**	**mg/L**	1000	14-Feb-2019 15:45
Pyrene	**0.0020**		**0.00019**	**0.0010**	**mg/L**	10	13-Feb-2019 14:54
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*14-Feb-2019 13:28*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: 2,4,6-Tribromophenol	*80.0*			*34-129*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: 2-Fluorobiphenyl	*63.9*			*40-125*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*14-Feb-2019 13:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 13:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: 2-Fluorophenol	*59.7*			*20-120*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: 4-Terphenyl-d14	*70.9*			*40-135*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*14-Feb-2019 13:28*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW74B-20190123	Lab ID:HS19011199-05
Collection Date:	23-Jan-2019 14:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*14-Feb-2019 13:28*
Surr: Nitrobenzene-d5	*96.7*			*41-120*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 15:45*
Surr: Phenol-d6	*76.7*			*20-120*	*%REC*	*10*	*13-Feb-2019 14:54*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 13:28*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00140**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Feb-2019 13:22
Lead	U		0.000600	0.00200	mg/L	1	07-Feb-2019 13:22

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW79A-20190123	Lab ID:HS19011199-06
Collection Date:	23-Jan-2019 15:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	01-Feb-2019 06:41
Benzene	**0.45**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 06:41
Chlorobenzene	U		0.0030	0.010	mg/L	10	01-Feb-2019 06:41
Ethylbenzene	**0.19**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 06:41
Methylene chloride	U		0.010	0.020	mg/L	10	01-Feb-2019 06:41
Toluene	**0.55**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 06:41
Xylenes, Total	**0.54**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 06:41
Surr: 1,2-Dichloroethane-d4	*87.3*			*70-126*	*%REC*	*10*	*01-Feb-2019 06:41*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*10*	*01-Feb-2019 06:41*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*10*	*01-Feb-2019 06:41*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*10*	*01-Feb-2019 06:41*

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

Client:	Golder Associates Inc.		**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works		WorkOrder:HS19011199
Sample ID:	WG-1620-MW79A-20190123		Lab ID:HS19011199-06
Collection Date:	23-Jan-2019 15:05		Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	13-Feb-2019 15:14
2,4-Dimethylphenol	**2.5**		**0.040**	**0.20**	**mg/L**	1000	14-Feb-2019 17:43
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	13-Feb-2019 15:14
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	13-Feb-2019 15:14
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	13-Feb-2019 15:14
2-Methylnaphthalene	**0.10**		**0.0019**	**0.010**	**mg/L**	100	14-Feb-2019 16:05
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	13-Feb-2019 15:14
4-Nitrophenol	U		0.00047	0.010	mg/L	10	13-Feb-2019 15:14
Acenaphthene	**0.039**		**0.00027**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Acenaphthylene	**0.0015**		**0.00015**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Anthracene	**0.0021**		**0.00014**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	13-Feb-2019 15:14
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	13-Feb-2019 15:14
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	13-Feb-2019 15:14
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	13-Feb-2019 15:14
Chrysene	U		0.00021	0.0010	mg/L	10	13-Feb-2019 15:14
Dibenzofuran	**0.037**		**0.00020**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	13-Feb-2019 15:14
Fluoranthene	**0.0010**		**0.00010**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Fluorene	**0.022**		**0.00030**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Naphthalene	**1.9**		**0.020**	**0.10**	**mg/L**	1000	14-Feb-2019 17:43
Nitrobenzene	U		0.00024	0.0020	mg/L	10	13-Feb-2019 15:14
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	13-Feb-2019 15:14
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	13-Feb-2019 15:14
Phenanthrene	**0.012**		**0.00021**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Phenol	**0.51**		**0.0035**	**0.020**	**mg/L**	100	14-Feb-2019 16:05
Pyrene	**0.00063**	J	**0.00019**	**0.0010**	**mg/L**	10	13-Feb-2019 15:14
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*14-Feb-2019 16:05*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*14-Feb-2019 17:43*
Surr: 2,4,6-Tribromophenol	*62.8*			*34-129*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: 2-Fluorobiphenyl	*52.2*			*40-125*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*14-Feb-2019 17:43*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*14-Feb-2019 16:05*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 16:05*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 17:43*
Surr: 2-Fluorophenol	*56.4*			*20-120*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: 4-Terphenyl-d14	*54.4*			*40-135*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*14-Feb-2019 17:43*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*14-Feb-2019 16:05*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW79A-20190123	Lab ID:HS19011199-06
Collection Date:	23-Jan-2019 15:05	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*14-Feb-2019 16:05*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*14-Feb-2019 17:43*
Surr: Nitrobenzene-d5	*51.7*			*41-120*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: Phenol-d6	*53.9*			*20-120*	*%REC*	*10*	*13-Feb-2019 15:14*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 16:05*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 17:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.0133**		**0.000400**	**0.00200**	**mg/L**	1	07-Feb-2019 13:24
Lead	U		0.000600	0.00200	mg/L	1	07-Feb-2019 13:24

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW49A-20190123	Lab ID:HS19011199-07
Collection Date:	23-Jan-2019 15:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	01-Feb-2019 05:14
Benzene	**0.0040**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 05:14
Chlorobenzene	U		0.00030	0.0010	mg/L	1	01-Feb-2019 05:14
Ethylbenzene	**0.0031**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 05:14
Methylene chloride	U		0.0010	0.0020	mg/L	1	01-Feb-2019 05:14
Toluene	**0.0023**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 05:14
Vinyl chloride	U		0.00020	0.0010	mg/L	1	01-Feb-2019 05:14
Xylenes, Total	**0.0087**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 05:14
Surr: 1,2-Dichloroethane-d4	*99.6*			*70-126*	*%REC*	*1*	*01-Feb-2019 05:14*
Surr: 4-Bromofluorobenzene	*98.5*			*81-113*	*%REC*	*1*	*01-Feb-2019 05:14*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*01-Feb-2019 05:14*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*01-Feb-2019 05:14*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WG-1620-MW49A-20190123	Lab ID:HS19011199-07	
Collection Date:	23-Jan-2019 15:50	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 15:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 15:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 15:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 15:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 15:33
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 15:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 15:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 15:33
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 15:33
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 15:33
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 15:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 15:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 15:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 15:33
Bis(2-ethylhexyl)phthalate	**0.000055**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 15:33
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 15:33
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 15:33
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 15:33
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 15:33
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 15:33
Naphthalene	**0.000089**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 15:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 15:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 15:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 15:33
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 15:33
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 15:33
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 15:33
Surr: 2,4,6-Tribromophenol	*57.5*			*34-129*	*%REC*	*1*	*13-Feb-2019 15:33*
Surr: 2-Fluorobiphenyl	*52.0*			*40-125*	*%REC*	*1*	*13-Feb-2019 15:33*
Surr: 2-Fluorophenol	*40.9*			*20-120*	*%REC*	*1*	*13-Feb-2019 15:33*
Surr: 4-Terphenyl-d14	*75.1*			*40-135*	*%REC*	*1*	*13-Feb-2019 15:33*
Surr: Nitrobenzene-d5	*48.0*			*41-120*	*%REC*	*1*	*13-Feb-2019 15:33*
Surr: Phenol-d6	*48.2*			*20-120*	*%REC*	*1*	*13-Feb-2019 15:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00120**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:41
Lead	**0.00778**		**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:41

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59A-20190123	Lab ID:HS19011199-08
Collection Date:	23-Jan-2019 16:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:38
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:38
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:38
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:38
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 05:38
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:38
Vinyl chloride		U	0.00020	0.0010	mg/L	1	01-Feb-2019 05:38
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 05:38
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*01-Feb-2019 05:38*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*01-Feb-2019 05:38*
Surr: Dibromofluoromethane	*94.7*			*77-123*	*%REC*	*1*	*01-Feb-2019 05:38*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*01-Feb-2019 05:38*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59A-20190123	Lab ID:HS19011199-08
Collection Date:	23-Jan-2019 16:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	13-Feb-2019 15:53
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	13-Feb-2019 15:53
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	13-Feb-2019 15:53
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	13-Feb-2019 15:53
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	13-Feb-2019 15:53
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 15:53
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	13-Feb-2019 15:53
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	13-Feb-2019 15:53
Acenaphthene		U	0.000027	0.00010	mg/L	1	13-Feb-2019 15:53
Acenaphthylene		U	0.000015	0.00010	mg/L	1	13-Feb-2019 15:53
Anthracene		U	0.000014	0.00010	mg/L	1	13-Feb-2019 15:53
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	13-Feb-2019 15:53
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 15:53
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	13-Feb-2019 15:53
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	13-Feb-2019 15:53
Chrysene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 15:53
Dibenzofuran		U	0.000020	0.00010	mg/L	1	13-Feb-2019 15:53
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	13-Feb-2019 15:53
Fluoranthene		U	0.000010	0.00010	mg/L	1	13-Feb-2019 15:53
Fluorene		U	0.000030	0.00010	mg/L	1	13-Feb-2019 15:53
Naphthalene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 15:53
Nitrobenzene		U	0.000024	0.00020	mg/L	1	13-Feb-2019 15:53
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	13-Feb-2019 15:53
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	13-Feb-2019 15:53
Phenanthrene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 15:53
Phenol		U	0.000035	0.00020	mg/L	1	13-Feb-2019 15:53
Pyrene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 15:53
Surr: 2,4,6-Tribromophenol	*34.2*			*34-129*	*%REC*	*1*	*13-Feb-2019 15:53*
Surr: 2-Fluorobiphenyl	*44.8*			*40-125*	*%REC*	*1*	*13-Feb-2019 15:53*
Surr: 2-Fluorophenol	*29.6*			*20-120*	*%REC*	*1*	*13-Feb-2019 15:53*
Surr: 4-Terphenyl-d14	*62.2*			*40-135*	*%REC*	*1*	*13-Feb-2019 15:53*
Surr: Nitrobenzene-d5	*41.1*			*41-120*	*%REC*	*1*	*13-Feb-2019 15:53*
Surr: Phenol-d6	*37.0*			*20-120*	*%REC*	*1*	*13-Feb-2019 15:53*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00243**		**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:43
Lead		U	0.000600	0.00200	mg/L	1	06-Feb-2019 20:43

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59B-20190123	Lab ID:HS19011199-09
Collection Date:	23-Jan-2019 17:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:03
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:03
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:03
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:03
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 06:03
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:03
Vinyl chloride		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:03
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:03
Surr: 1,2-Dichloroethane-d4	*99.3*			*70-126*	*%REC*	*1*	*01-Feb-2019 06:03*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*01-Feb-2019 06:03*
Surr: Dibromofluoromethane	*97.3*			*77-123*	*%REC*	*1*	*01-Feb-2019 06:03*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*01-Feb-2019 06:03*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59B-20190123	Lab ID:HS19011199-09
Collection Date:	23-Jan-2019 17:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 16:12
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 16:12
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 16:12
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 16:12
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 16:12
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 16:12
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 16:12
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 16:12
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 16:12
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 16:12
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 16:12
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 16:12
Benzo(a)pyrene	**0.000033**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 16:12
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 16:12
Bis(2-ethylhexyl)phthalate	**0.000056**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 16:12
Chrysene	**0.000036**	J	**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 16:12
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 16:12
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 16:12
Fluoranthene	**0.000051**	J	**0.000010**	**0.00010**	**mg/L**	1	13-Feb-2019 16:12
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 16:12
Naphthalene	**0.000072**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 16:12
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 16:12
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 16:12
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 16:12
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 16:12
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 16:12
Pyrene	**0.000053**	J	**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 16:12
Surr: 2,4,6-Tribromophenol	*54.4*			*34-129*	*%REC*	*1*	*13-Feb-2019 16:12*
Surr: 2-Fluorobiphenyl	*41.4*			*40-125*	*%REC*	*1*	*13-Feb-2019 16:12*
Surr: 2-Fluorophenol	*36.7*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:12*
Surr: 4-Terphenyl-d14	*65.0*			*40-135*	*%REC*	*1*	*13-Feb-2019 16:12*
Surr: Nitrobenzene-d5	*42.1*			*41-120*	*%REC*	*1*	*13-Feb-2019 16:12*
Surr: Phenol-d6	*41.4*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:12*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.000983**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:46
Lead	**0.00108**	J	**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:46

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WQ-1620-FB07-20190123	Lab ID:HS19011199-10
Collection Date:	23-Jan-2019 17:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:27
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 06:27
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:27
Vinyl chloride		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:27
Surr: 1,2-Dichloroethane-d4	*97.6*			*70-126*	*%REC*	*1*	*01-Feb-2019 06:27*
Surr: 4-Bromofluorobenzene	*98.9*			*81-113*	*%REC*	*1*	*01-Feb-2019 06:27*
Surr: Dibromofluoromethane	*96.8*			*77-123*	*%REC*	*1*	*01-Feb-2019 06:27*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*01-Feb-2019 06:27*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WQ-1620-FB07-20190123	Lab ID:HS19011199-10	
Collection Date:	23-Jan-2019 17:00	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 16:32
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 16:32
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 16:32
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 16:32
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 16:32
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 16:32
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 16:32
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 16:32
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 16:32
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 16:32
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 16:32
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 16:32
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 16:32
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 16:32
Bis(2-ethylhexyl)phthalate	**0.000053**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 16:32
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 16:32
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 16:32
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 16:32
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 16:32
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 16:32
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 16:32
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 16:32
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 16:32
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 16:32
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 16:32
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 16:32
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 16:32
Surr: 2,4,6-Tribromophenol	*73.4*			*34-129*	*%REC*	*1*	*13-Feb-2019 16:32*
Surr: 2-Fluorobiphenyl	*62.1*			*40-125*	*%REC*	*1*	*13-Feb-2019 16:32*
Surr: 2-Fluorophenol	*53.7*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:32*
Surr: 4-Terphenyl-d14	*67.2*			*40-135*	*%REC*	*1*	*13-Feb-2019 16:32*
Surr: Nitrobenzene-d5	*57.3*			*41-120*	*%REC*	*1*	*13-Feb-2019 16:32*
Surr: Phenol-d6	*59.0*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:32*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	06-Feb-2019 20:48
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 20:48

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WQ-1620-TB06-20190124	Lab ID:HS19011199-11
Collection Date:	24-Jan-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:36
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 03:36
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:36
Vinyl chloride		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:36
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*01-Feb-2019 03:36*
Surr: 4-Bromofluorobenzene	*97.6*			*81-113*	*%REC*	*1*	*01-Feb-2019 03:36*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*1*	*01-Feb-2019 03:36*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*01-Feb-2019 03:36*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59D-20190124	Lab ID:HS19011199-12
Collection Date:	24-Jan-2019 07:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:52
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:52
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:52
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:52
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 06:52
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 06:52
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 06:52
Surr: 1,2-Dichloroethane-d4	*98.4*			*70-126*	*%REC*	*1*	*01-Feb-2019 06:52*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*01-Feb-2019 06:52*
Surr: Dibromofluoromethane	*95.5*			*77-123*	*%REC*	*1*	*01-Feb-2019 06:52*
Surr: Toluene-d8	*98.7*			*82-127*	*%REC*	*1*	*01-Feb-2019 06:52*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW59D-20190124	Lab ID:HS19011199-12
Collection Date:	24-Jan-2019 07:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	13-Feb-2019 16:52
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	13-Feb-2019 16:52
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	13-Feb-2019 16:52
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	13-Feb-2019 16:52
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	13-Feb-2019 16:52
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 16:52
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	13-Feb-2019 16:52
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	13-Feb-2019 16:52
Acenaphthene		U	0.000027	0.00010	mg/L	1	13-Feb-2019 16:52
Acenaphthylene		U	0.000015	0.00010	mg/L	1	13-Feb-2019 16:52
Anthracene		U	0.000014	0.00010	mg/L	1	13-Feb-2019 16:52
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	13-Feb-2019 16:52
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 16:52
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	13-Feb-2019 16:52
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	13-Feb-2019 16:52
Chrysene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 16:52
Dibenzofuran		U	0.000020	0.00010	mg/L	1	13-Feb-2019 16:52
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	13-Feb-2019 16:52
Fluoranthene		U	0.000010	0.00010	mg/L	1	13-Feb-2019 16:52
Fluorene		U	0.000030	0.00010	mg/L	1	13-Feb-2019 16:52
Naphthalene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 16:52
Nitrobenzene		U	0.000024	0.00020	mg/L	1	13-Feb-2019 16:52
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	13-Feb-2019 16:52
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	13-Feb-2019 16:52
Phenanthrene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 16:52
Phenol		U	0.000035	0.00020	mg/L	1	13-Feb-2019 16:52
Pyrene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 16:52
Surr: 2,4,6-Tribromophenol	*60.1*			*34-129*	*%REC*	*1*	*13-Feb-2019 16:52*
Surr: 2-Fluorobiphenyl	*41.1*			*40-125*	*%REC*	*1*	*13-Feb-2019 16:52*
Surr: 2-Fluorophenol	*36.8*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:52*
Surr: 4-Terphenyl-d14	*67.6*			*40-135*	*%REC*	*1*	*13-Feb-2019 16:52*
Surr: Nitrobenzene-d5	*43.7*			*41-120*	*%REC*	*1*	*13-Feb-2019 16:52*
Surr: Phenol-d6	*41.4*			*20-120*	*%REC*	*1*	*13-Feb-2019 16:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.000765**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:57
Lead	**0.000917**	J	**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:57

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-FD05-20190124	Lab ID:HS19011199-13
Collection Date:	24-Jan-2019 07:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:16
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 07:16
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:16
Surr: 1,2-Dichloroethane-d4	*99.4*			*70-126*	*%REC*	*1*	*01-Feb-2019 07:16*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*01-Feb-2019 07:16*
Surr: Dibromofluoromethane	*96.7*			*77-123*	*%REC*	*1*	*01-Feb-2019 07:16*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*01-Feb-2019 07:16*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-FD05-20190124	Lab ID:HS19011199-13
Collection Date:	24-Jan-2019 07:20	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	13-Feb-2019 17:11
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	13-Feb-2019 17:11
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	13-Feb-2019 17:11
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	13-Feb-2019 17:11
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	13-Feb-2019 17:11
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 17:11
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	13-Feb-2019 17:11
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	13-Feb-2019 17:11
Acenaphthene		U	0.000027	0.00010	mg/L	1	13-Feb-2019 17:11
Acenaphthylene		U	0.000015	0.00010	mg/L	1	13-Feb-2019 17:11
Anthracene		U	0.000014	0.00010	mg/L	1	13-Feb-2019 17:11
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	13-Feb-2019 17:11
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 17:11
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	13-Feb-2019 17:11
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	13-Feb-2019 17:11
Chrysene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 17:11
Dibenzofuran		U	0.000020	0.00010	mg/L	1	13-Feb-2019 17:11
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	13-Feb-2019 17:11
Fluoranthene		U	0.000010	0.00010	mg/L	1	13-Feb-2019 17:11
Fluorene		U	0.000030	0.00010	mg/L	1	13-Feb-2019 17:11
Naphthalene		U	0.000020	0.00010	mg/L	1	13-Feb-2019 17:11
Nitrobenzene		U	0.000024	0.00020	mg/L	1	13-Feb-2019 17:11
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	13-Feb-2019 17:11
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	13-Feb-2019 17:11
Phenanthrene		U	0.000021	0.00010	mg/L	1	13-Feb-2019 17:11
Phenol		U	0.000035	0.00020	mg/L	1	13-Feb-2019 17:11
Pyrene		U	0.000019	0.00010	mg/L	1	13-Feb-2019 17:11
Surr: 2,4,6-Tribromophenol	*64.0*			*34-129*	*%REC*	*1*	*13-Feb-2019 17:11*
Surr: 2-Fluorobiphenyl	*48.3*			*40-125*	*%REC*	*1*	*13-Feb-2019 17:11*
Surr: 2-Fluorophenol	*43.3*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:11*
Surr: 4-Terphenyl-d14	*74.6*			*40-135*	*%REC*	*1*	*13-Feb-2019 17:11*
Surr: Nitrobenzene-d5	*44.1*			*41-120*	*%REC*	*1*	*13-Feb-2019 17:11*
Surr: Phenol-d6	*49.4*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:11*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.000637**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 20:59
Lead	**0.000727**	J	**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:59

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW36D-20190124	Lab ID:HS19011199-14
Collection Date:	24-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:41
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:41
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:41
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:41
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 07:41
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 07:41
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 07:41
Surr: 1,2-Dichloroethane-d4	*96.4*			*70-126*	*%REC*	*1*	*01-Feb-2019 07:41*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*01-Feb-2019 07:41*
Surr: Dibromofluoromethane	*96.8*			*77-123*	*%REC*	*1*	*01-Feb-2019 07:41*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*01-Feb-2019 07:41*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW36D-20190124	Lab ID:HS19011199-14
Collection Date:	24-Jan-2019 08:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 17:31
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 17:31
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 17:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 17:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 17:31
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 17:31
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 17:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 17:31
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 17:31
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 17:31
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 17:31
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 17:31
Benzo(a)pyrene	**0.000027**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 17:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 17:31
Bis(2-ethylhexyl)phthalate	**0.000055**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 17:31
Chrysene	**0.000031**	J	**0.000021**	**0.00010**	**mg/L**	1	13-Feb-2019 17:31
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 17:31
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 17:31
Fluoranthene	**0.000048**	J	**0.000010**	**0.00010**	**mg/L**	1	13-Feb-2019 17:31
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 17:31
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 17:31
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 17:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 17:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 17:31
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 17:31
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 17:31
Pyrene	**0.000042**	J	**0.000019**	**0.00010**	**mg/L**	1	13-Feb-2019 17:31
Surr: 2,4,6-Tribromophenol	*64.6*			*34-129*	*%REC*	*1*	*13-Feb-2019 17:31*
Surr: 2-Fluorobiphenyl	*52.8*			*40-125*	*%REC*	*1*	*13-Feb-2019 17:31*
Surr: 2-Fluorophenol	*45.1*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:31*
Surr: 4-Terphenyl-d14	*65.9*			*40-135*	*%REC*	*1*	*13-Feb-2019 17:31*
Surr: Nitrobenzene-d5	*47.1*			*41-120*	*%REC*	*1*	*13-Feb-2019 17:31*
Surr: Phenol-d6	*50.4*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.000417**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 21:01
Lead	**0.000910**	J	**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 21:01

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW65D-20190124	Lab ID:HS19011199-15
Collection Date:	24-Jan-2019 09:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:48
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 03:48
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 03:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 03:48
Surr: 1,2-Dichloroethane-d4	*86.5*			*70-126*	*%REC*	*1*	*01-Feb-2019 03:48*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*01-Feb-2019 03:48*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*01-Feb-2019 03:48*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*01-Feb-2019 03:48*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW65D-20190124	Lab ID:HS19011199-15
Collection Date:	24-Jan-2019 09:25	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2019 20:50
2,4-Dimethylphenol	**0.000090**	J	**0.000040**	**0.00020**	**mg/L**	1	12-Feb-2019 20:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2019 20:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2019 20:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	12-Feb-2019 20:50
2-Methylnaphthalene	**0.00016**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2019 20:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2019 20:50
Acenaphthene	U		0.000027	0.00010	mg/L	1	12-Feb-2019 20:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Feb-2019 20:50
Anthracene	U		0.000014	0.00010	mg/L	1	12-Feb-2019 20:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	12-Feb-2019 20:50
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	12-Feb-2019 20:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2019 20:50
Bis(2-ethylhexyl)phthalate	**0.000060**	J	**0.000037**	**0.00020**	**mg/L**	1	12-Feb-2019 20:50
Chrysene	U		0.000021	0.00010	mg/L	1	12-Feb-2019 20:50
Dibenzofuran	**0.000039**	J	**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	12-Feb-2019 20:50
Fluoranthene	**0.000027**	J	**0.000010**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Fluorene	U		0.000030	0.00010	mg/L	1	12-Feb-2019 20:50
Naphthalene	**0.0026**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2019 20:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2019 20:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2019 20:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2019 20:50
Phenanthrene	U		0.000021	0.00010	mg/L	1	12-Feb-2019 20:50
Phenol	**0.00019**	J	**0.000035**	**0.00020**	**mg/L**	1	12-Feb-2019 20:50
Pyrene	U		0.000019	0.00010	mg/L	1	12-Feb-2019 20:50
Surr: 2,4,6-Tribromophenol	*80.4*			*34-129*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 2-Fluorobiphenyl	*62.7*			*40-125*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 2-Fluorophenol	*53.7*			*20-120*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: 4-Terphenyl-d14	*74.5*			*40-135*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: Nitrobenzene-d5	*57.6*			*41-120*	*%REC*	*1*	*12-Feb-2019 20:50*
Surr: Phenol-d6	*59.5*			*20-120*	*%REC*	*1*	*12-Feb-2019 20:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jan-2019		Analyst: JHD
Arsenic	**0.00202**		**0.000400**	**0.00200**	**mg/L**	1	31-Jan-2019 18:59
Lead	U		0.000600	0.00200	mg/L	1	31-Jan-2019 18:59

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW66D-20190124	Lab ID:HS19011199-16
Collection Date:	24-Jan-2019 10:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 08:05
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 08:05
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 08:05
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 08:05
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 08:05
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 08:05
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 08:05
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*1*	*01-Feb-2019 08:05*
Surr: 4-Bromofluorobenzene	*98.1*			*81-113*	*%REC*	*1*	*01-Feb-2019 08:05*
Surr: Dibromofluoromethane	*96.0*			*77-123*	*%REC*	*1*	*01-Feb-2019 08:05*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*01-Feb-2019 08:05*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW66D-20190124	Lab ID:HS19011199-16
Collection Date:	24-Jan-2019 10:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 17:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	13-Feb-2019 17:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 17:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 17:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 17:50
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 17:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 17:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 17:50
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Feb-2019 17:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 17:50
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 17:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 17:50
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 17:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 17:50
Bis(2-ethylhexyl)phthalate	**0.00017**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 17:50
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 17:50
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 17:50
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 17:50
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 17:50
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 17:50
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 17:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 17:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 17:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 17:50
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 17:50
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 17:50
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 17:50
Surr: 2,4,6-Tribromophenol	*77.1*			*34-129*	*%REC*	*1*	*13-Feb-2019 17:50*
Surr: 2-Fluorobiphenyl	*56.7*			*40-125*	*%REC*	*1*	*13-Feb-2019 17:50*
Surr: 2-Fluorophenol	*50.2*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:50*
Surr: 4-Terphenyl-d14	*67.0*			*40-135*	*%REC*	*1*	*13-Feb-2019 17:50*
Surr: Nitrobenzene-d5	*56.1*			*41-120*	*%REC*	*1*	*13-Feb-2019 17:50*
Surr: Phenol-d6	*58.7*			*20-120*	*%REC*	*1*	*13-Feb-2019 17:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00204**		**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 21:04
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 21:04

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW84B-20190124	Lab ID:HS19011199-17
Collection Date:	24-Jan-2019 11:40	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	01-Feb-2019 08:29
Benzene	**0.0024**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 08:29
Chlorobenzene	U		0.00030	0.0010	mg/L	1	01-Feb-2019 08:29
Ethylbenzene	**0.0051**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 08:29
Methylene chloride	U		0.0010	0.0020	mg/L	1	01-Feb-2019 08:29
Toluene	**0.00056**	J	**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 08:29
Xylenes, Total	**0.0033**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 08:29
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*01-Feb-2019 08:29*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*01-Feb-2019 08:29*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*01-Feb-2019 08:29*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*01-Feb-2019 08:29*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WG-1620-MW84B-20190124	Lab ID:HS19011199-17	
Collection Date:	24-Jan-2019 11:40	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 18:10
2,4-Dimethylphenol	**0.00016**	J	**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 18:10
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 18:10
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 18:10
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 18:10
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:10
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 18:10
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 18:10
Acenaphthene	**0.000032**	J	**0.000027**	**0.00010**	**mg/L**	1	13-Feb-2019 18:10
Acenaphthylene	**0.000043**	J	**0.000015**	**0.00010**	**mg/L**	1	13-Feb-2019 18:10
Anthracene	U		0.000014	0.00010	mg/L	1	13-Feb-2019 18:10
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 18:10
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:10
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 18:10
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	13-Feb-2019 18:10
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:10
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 18:10
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 18:10
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 18:10
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 18:10
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 18:10
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 18:10
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:10
Phenol	U		0.000035	0.00020	mg/L	1	13-Feb-2019 18:10
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:10
Surr: 2,4,6-Tribromophenol	*70.5*			*34-129*	*%REC*	*1*	*13-Feb-2019 18:10*
Surr: 2-Fluorobiphenyl	*47.5*			*40-125*	*%REC*	*1*	*13-Feb-2019 18:10*
Surr: 2-Fluorophenol	*42.1*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:10*
Surr: 4-Terphenyl-d14	*65.9*			*40-135*	*%REC*	*1*	*13-Feb-2019 18:10*
Surr: Nitrobenzene-d5	*43.5*			*41-120*	*%REC*	*1*	*13-Feb-2019 18:10*
Surr: Phenol-d6	*46.7*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:10*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00219**		**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 21:06
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 21:06

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW67B-20190124	Lab ID:HS19011199-18
Collection Date:	24-Jan-2019 12:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	01-Feb-2019 04:00
Benzene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 04:00
Chlorobenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 04:00
Ethylbenzene		U	0.00030	0.0010	mg/L	1	01-Feb-2019 04:00
Methylene chloride		U	0.0010	0.0020	mg/L	1	01-Feb-2019 04:00
Toluene		U	0.00020	0.0010	mg/L	1	01-Feb-2019 04:00
Xylenes, Total		U	0.00030	0.0010	mg/L	1	01-Feb-2019 04:00
Surr: 1,2-Dichloroethane-d4	*98.9*			*70-126*	*%REC*	*1*	*01-Feb-2019 04:00*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*01-Feb-2019 04:00*
Surr: Dibromofluoromethane	*96.4*			*77-123*	*%REC*	*1*	*01-Feb-2019 04:00*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*01-Feb-2019 04:00*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WG-1620-MW67B-20190124	Lab ID:HS19011199-18	
Collection Date:	24-Jan-2019 12:50	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2019 21:49
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	12-Feb-2019 21:49
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2019 21:49
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2019 21:49
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	12-Feb-2019 21:49
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	12-Feb-2019 21:49
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2019 21:49
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2019 21:49
Acenaphthene	U		0.000027	0.00010	mg/L	1	12-Feb-2019 21:49
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Feb-2019 21:49
Anthracene	U		0.000014	0.00010	mg/L	1	12-Feb-2019 21:49
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	12-Feb-2019 21:49
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	12-Feb-2019 21:49
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2019 21:49
Bis(2-ethylhexyl)phthalate	**0.000051**	J	**0.000037**	**0.00020**	**mg/L**	1	12-Feb-2019 21:49
Chrysene	U		0.000021	0.00010	mg/L	1	12-Feb-2019 21:49
Dibenzofuran	U		0.000020	0.00010	mg/L	1	12-Feb-2019 21:49
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	12-Feb-2019 21:49
Fluoranthene	U		0.000010	0.00010	mg/L	1	12-Feb-2019 21:49
Fluorene	U		0.000030	0.00010	mg/L	1	12-Feb-2019 21:49
Naphthalene	U		0.000020	0.00010	mg/L	1	12-Feb-2019 21:49
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2019 21:49
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2019 21:49
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2019 21:49
Phenanthrene	U		0.000021	0.00010	mg/L	1	12-Feb-2019 21:49
Phenol	U		0.000035	0.00020	mg/L	1	12-Feb-2019 21:49
Pyrene	U		0.000019	0.00010	mg/L	1	12-Feb-2019 21:49
Surr: 2,4,6-Tribromophenol	*62.6*			*34-129*	*%REC*	*1*	*12-Feb-2019 21:49*
Surr: 2-Fluorobiphenyl	*48.7*			*40-125*	*%REC*	*1*	*12-Feb-2019 21:49*
Surr: 2-Fluorophenol	*43.3*			*20-120*	*%REC*	*1*	*12-Feb-2019 21:49*
Surr: 4-Terphenyl-d14	*64.2*			*40-135*	*%REC*	*1*	*12-Feb-2019 21:49*
Surr: Nitrobenzene-d5	*47.2*			*41-120*	*%REC*	*1*	*12-Feb-2019 21:49*
Surr: Phenol-d6	*50.1*			*20-120*	*%REC*	*1*	*12-Feb-2019 21:49*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	06-Feb-2019 20:05
Lead	**0.00331**		**0.000600**	**0.00200**	**mg/L**	1	06-Feb-2019 20:05

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW19C-20190124	Lab ID:HS19011199-19
Collection Date:	24-Jan-2019 13:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	01-Feb-2019 08:54
Benzene	**0.0044**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 08:54
Chlorobenzene	U		0.00030	0.0010	mg/L	1	01-Feb-2019 08:54
Ethylbenzene	**0.0040**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 08:54
Methylene chloride	U		0.0010	0.0020	mg/L	1	01-Feb-2019 08:54
Toluene	**0.0057**		**0.00020**	**0.0010**	**mg/L**	1	01-Feb-2019 08:54
Vinyl chloride	U		0.00020	0.0010	mg/L	1	01-Feb-2019 08:54
Xylenes, Total	**0.0037**		**0.00030**	**0.0010**	**mg/L**	1	01-Feb-2019 08:54
Surr: 1,2-Dichloroethane-d4	*98.0*			*70-126*	*%REC*	*1*	*01-Feb-2019 08:54*
Surr: 4-Bromofluorobenzene	*99.0*			*81-113*	*%REC*	*1*	*01-Feb-2019 08:54*
Surr: Dibromofluoromethane	*94.8*			*77-123*	*%REC*	*1*	*01-Feb-2019 08:54*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*01-Feb-2019 08:54*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW19C-20190124	Lab ID:HS19011199-19
Collection Date:	24-Jan-2019 13:50	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	13-Feb-2019 18:29
2,4-Dimethylphenol	**0.00032**		**0.000040**	**0.00020**	**mg/L**	1	13-Feb-2019 18:29
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	13-Feb-2019 18:29
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	13-Feb-2019 18:29
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	13-Feb-2019 18:29
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:29
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	13-Feb-2019 18:29
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	13-Feb-2019 18:29
Acenaphthene	**0.00078**		**0.000027**	**0.00010**	**mg/L**	1	13-Feb-2019 18:29
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Feb-2019 18:29
Anthracene	**0.000057**	J	**0.000014**	**0.00010**	**mg/L**	1	13-Feb-2019 18:29
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	13-Feb-2019 18:29
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:29
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	13-Feb-2019 18:29
Bis(2-ethylhexyl)phthalate	**0.000096**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Feb-2019 18:29
Chrysene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:29
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Feb-2019 18:29
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Feb-2019 18:29
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Feb-2019 18:29
Fluorene	U		0.000030	0.00010	mg/L	1	13-Feb-2019 18:29
Naphthalene	**0.00036**		**0.000020**	**0.00010**	**mg/L**	1	13-Feb-2019 18:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	13-Feb-2019 18:29
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	13-Feb-2019 18:29
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	13-Feb-2019 18:29
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Feb-2019 18:29
Phenol	**0.00013**	J	**0.000035**	**0.00020**	**mg/L**	1	13-Feb-2019 18:29
Pyrene	U		0.000019	0.00010	mg/L	1	13-Feb-2019 18:29
Surr: 2,4,6-Tribromophenol	*105*			*34-129*	*%REC*	*1*	*13-Feb-2019 18:29*
Surr: 2-Fluorobiphenyl	*79.6*			*40-125*	*%REC*	*1*	*13-Feb-2019 18:29*
Surr: 2-Fluorophenol	*73.3*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:29*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*13-Feb-2019 18:29*
Surr: Nitrobenzene-d5	*76.7*			*41-120*	*%REC*	*1*	*13-Feb-2019 18:29*
Surr: Phenol-d6	*80.0*			*20-120*	*%REC*	*1*	*13-Feb-2019 18:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00149**	J	**0.000400**	**0.00200**	**mg/L**	1	06-Feb-2019 21:08
Lead	U		0.000600	0.00200	mg/L	1	06-Feb-2019 21:08

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW72B-20190124	Lab ID:HS19011199-20
Collection Date:	24-Jan-2019 14:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane	**0.011**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 19:59
Benzene	**0.63**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 19:59
Chlorobenzene	U		0.0030	0.010	mg/L	10	01-Feb-2019 19:59
Ethylbenzene	**0.20**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 19:59
Methylene chloride	U		0.010	0.020	mg/L	10	01-Feb-2019 19:59
Toluene	**0.58**		**0.0020**	**0.010**	**mg/L**	10	01-Feb-2019 19:59
Xylenes, Total	**0.63**		**0.0030**	**0.010**	**mg/L**	10	01-Feb-2019 19:59
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*10*	*01-Feb-2019 19:59*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*10*	*01-Feb-2019 19:59*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*10*	*01-Feb-2019 19:59*
Surr: Toluene-d8	*98.1*			*82-127*	*%REC*	*10*	*01-Feb-2019 19:59*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199	
Sample ID:	WG-1620-MW72B-20190124	Lab ID:HS19011199-20	
Collection Date:	24-Jan-2019 14:55	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	13-Feb-2019 18:49
2,4-Dimethylphenol	**2.0**		**0.040**	**0.20**	**mg/L**	1000	14-Feb-2019 18:23
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	13-Feb-2019 18:49
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	13-Feb-2019 18:49
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	13-Feb-2019 18:49
2-Methylnaphthalene	**0.071**		**0.00019**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	13-Feb-2019 18:49
4-Nitrophenol	**0.0073**	J	**0.00047**	**0.010**	**mg/L**	10	13-Feb-2019 18:49
Acenaphthene	**0.019**		**0.00027**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Acenaphthylene	**0.00069**	J	**0.00015**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Anthracene	**0.0015**		**0.00014**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	13-Feb-2019 18:49
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	13-Feb-2019 18:49
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	13-Feb-2019 18:49
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	13-Feb-2019 18:49
Chrysene	U		0.00021	0.0010	mg/L	10	13-Feb-2019 18:49
Dibenzofuran	**0.017**		**0.00020**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	13-Feb-2019 18:49
Fluoranthene	U		0.00010	0.0010	mg/L	10	13-Feb-2019 18:49
Fluorene	**0.0091**		**0.00030**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Naphthalene	**1.2**		**0.020**	**0.10**	**mg/L**	1000	14-Feb-2019 18:23
Nitrobenzene	U		0.00024	0.0020	mg/L	10	13-Feb-2019 18:49
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	13-Feb-2019 18:49
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	13-Feb-2019 18:49
Phenanthrene	**0.0042**		**0.00021**	**0.0010**	**mg/L**	10	13-Feb-2019 18:49
Phenol	**0.58**		**0.0035**	**0.020**	**mg/L**	100	14-Feb-2019 18:03
Pyrene	U		0.00019	0.0010	mg/L	10	13-Feb-2019 18:49
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*14-Feb-2019 18:23*
Surr: 2,4,6-Tribromophenol	*75.5*			*34-129*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: 2-Fluorobiphenyl	*54.0*			*40-125*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*14-Feb-2019 18:23*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 18:23*
Surr: 2-Fluorophenol	*57.9*			*20-120*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: 4-Terphenyl-d14	*67.5*			*40-135*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*14-Feb-2019 18:23*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19011199
Sample ID:	WG-1620-MW72B-20190124	Lab ID:HS19011199-20
Collection Date:	24-Jan-2019 14:55	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-Jan-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*14-Feb-2019 18:23*
Surr: Nitrobenzene-d5	*46.1*			*41-120*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: Phenol-d6	*56.1*			*20-120*	*%REC*	*10*	*13-Feb-2019 18:49*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*14-Feb-2019 18:03*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*14-Feb-2019 18:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 01-Feb-2019		Analyst: JHD
Arsenic	**0.00106**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Feb-2019 13:26
Lead	U		0.000600	0.00200	mg/L	1	07-Feb-2019 13:26

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

Batch ID: 137100 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011199-01	1	1000	1 (mL)	0.001
HS19011199-02	1	1000	1 (mL)	0.001
HS19011199-03	1	1000	1 (mL)	0.001
HS19011199-04	1	1000	1 (mL)	0.001
HS19011199-05	1	1000	1 (mL)	0.001
HS19011199-06	1	1000	1 (mL)	0.001
HS19011199-07	1	1000	1 (mL)	0.001
HS19011199-08	1	1000	1 (mL)	0.001
HS19011199-09	1	1000	1 (mL)	0.001
HS19011199-10	1	1000	1 (mL)	0.001
HS19011199-12	1	1000	1 (mL)	0.001
HS19011199-13	1	1000	1 (mL)	0.001
HS19011199-14	1	1000	1 (mL)	0.001
HS19011199-15	1	1000	1 (mL)	0.001
HS19011199-16	1	1000	1 (mL)	0.001
HS19011199-17	1	1000	1 (mL)	0.001
HS19011199-18	1	1000	1 (mL)	0.001
HS19011199-19	1	1000	1 (mL)	0.001
HS19011199-20	1	1000	1 (mL)	0.001

Batch ID: 137198 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011199-15	1	10	10 (mL)	1

Batch ID: 137313 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19011199-01	1	10	10 (mL)	1
HS19011199-02	1	10	10 (mL)	1
HS19011199-03	1	10	10 (mL)	1
HS19011199-04	1	10	10 (mL)	1
HS19011199-05	1	10	10 (mL)	1
HS19011199-06	1	10	10 (mL)	1
HS19011199-07	1	10	10 (mL)	1
HS19011199-08	1	10	10 (mL)	1
HS19011199-09	1	10	10 (mL)	1
HS19011199-10	1	10	10 (mL)	1
HS19011199-12	1	10	10 (mL)	1
HS19011199-13	1	10	10 (mL)	1
HS19011199-14	1	10	10 (mL)	1
HS19011199-16	1	10	10 (mL)	1
HS19011199-17	1	10	10 (mL)	1
HS19011199-18	1	10	10 (mL)	1
HS19011199-19	1	10	10 (mL)	1
HS19011199-20	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 137100	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Groundwater		
HS19011199-02	WG-1620-MW58A-20190123	23 Jan 2019 11:20		28 Jan 2019 13:30	14 Feb 2019 13:48	10
HS19011199-02	WG-1620-MW58A-20190123	23 Jan 2019 11:20		28 Jan 2019 13:30	13 Feb 2019 13:56	1
HS19011199-03	WG-1620-MW32AR-20190123	23 Jan 2019 12:15		28 Jan 2019 13:30	13 Feb 2019 14:15	1
HS19011199-04	WG-1620-MW76C-20190123	23 Jan 2019 13:20		28 Jan 2019 13:30	13 Feb 2019 14:35	1
HS19011199-05	WG-1620-MW74B-20190123	23 Jan 2019 14:15		28 Jan 2019 13:30	14 Feb 2019 15:45	1000
HS19011199-05	WG-1620-MW74B-20190123	23 Jan 2019 14:15		28 Jan 2019 13:30	14 Feb 2019 13:28	100
HS19011199-05	WG-1620-MW74B-20190123	23 Jan 2019 14:15		28 Jan 2019 13:30	13 Feb 2019 14:54	10
HS19011199-06	WG-1620-MW79A-20190123	23 Jan 2019 15:05		28 Jan 2019 13:30	14 Feb 2019 17:43	1000
HS19011199-06	WG-1620-MW79A-20190123	23 Jan 2019 15:05		28 Jan 2019 13:30	14 Feb 2019 16:05	100
HS19011199-06	WG-1620-MW79A-20190123	23 Jan 2019 15:05		28 Jan 2019 13:30	13 Feb 2019 15:14	10
HS19011199-07	WG-1620-MW49A-20190123	23 Jan 2019 15:50		28 Jan 2019 13:30	13 Feb 2019 15:33	1
HS19011199-08	WG-1620-MW59A-20190123	23 Jan 2019 16:40		28 Jan 2019 13:30	13 Feb 2019 15:53	1
HS19011199-09	WG-1620-MW59B-20190123	23 Jan 2019 17:30		28 Jan 2019 13:30	13 Feb 2019 16:12	1
HS19011199-12	WG-1620-MW59D-20190124	24 Jan 2019 07:20		28 Jan 2019 13:30	13 Feb 2019 16:52	1
HS19011199-13	WG-1620-FD05-20190124	24 Jan 2019 07:20		28 Jan 2019 13:30	13 Feb 2019 17:11	1
HS19011199-14	WG-1620-MW36D-20190124	24 Jan 2019 08:25		28 Jan 2019 13:30	13 Feb 2019 17:31	1
HS19011199-15	WG-1620-MW65D-20190124	24 Jan 2019 09:25		28 Jan 2019 13:30	12 Feb 2019 20:50	1
HS19011199-16	WG-1620-MW66D-20190124	24 Jan 2019 10:30		28 Jan 2019 13:30	13 Feb 2019 17:50	1
HS19011199-17	WG-1620-MW84B-20190124	24 Jan 2019 11:40		28 Jan 2019 13:30	13 Feb 2019 18:10	1
HS19011199-18	WG-1620-MW67B-20190124	24 Jan 2019 12:50		28 Jan 2019 13:30	12 Feb 2019 21:49	1
HS19011199-19	WG-1620-MW19C-20190124	24 Jan 2019 13:50		28 Jan 2019 13:30	13 Feb 2019 18:29	1
HS19011199-20	WG-1620-MW72B-20190124	24 Jan 2019 14:55		28 Jan 2019 13:30	14 Feb 2019 18:23	1000
HS19011199-20	WG-1620-MW72B-20190124	24 Jan 2019 14:55		28 Jan 2019 13:30	14 Feb 2019 18:03	100
HS19011199-20	WG-1620-MW72B-20190124	24 Jan 2019 14:55		28 Jan 2019 13:30	13 Feb 2019 18:49	10
Batch ID 137100	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Water		
HS19011199-01	WQ-1620-FB08-20190124	24 Jan 2019 16:15		28 Jan 2019 13:30	13 Feb 2019 13:36	1
HS19011199-10	WQ-1620-FB07-20190123	23 Jan 2019 17:00		28 Jan 2019 13:30	13 Feb 2019 16:32	1
Batch ID 137198	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19011199-15	WG-1620-MW65D-20190124	24 Jan 2019 09:25		30 Jan 2019 11:00	31 Jan 2019 18:59	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 137313	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19011199-02	WG-1620-MW58A-20190123	23 Jan 2019 11:20		01 Feb 2019 11:00	06 Feb 2019 20:19	1
HS19011199-03	WG-1620-MW32AR-20190123	23 Jan 2019 12:15		01 Feb 2019 11:00	06 Feb 2019 20:32	1
HS19011199-04	WG-1620-MW76C-20190123	23 Jan 2019 13:20		01 Feb 2019 11:00	06 Feb 2019 20:34	1
HS19011199-05	WG-1620-MW74B-20190123	23 Jan 2019 14:15		01 Feb 2019 11:00	07 Feb 2019 13:22	1
HS19011199-06	WG-1620-MW79A-20190123	23 Jan 2019 15:05		01 Feb 2019 11:00	07 Feb 2019 13:24	1
HS19011199-07	WG-1620-MW49A-20190123	23 Jan 2019 15:50		01 Feb 2019 11:00	06 Feb 2019 20:41	1
HS19011199-08	WG-1620-MW59A-20190123	23 Jan 2019 16:40		01 Feb 2019 11:00	06 Feb 2019 20:43	1
HS19011199-09	WG-1620-MW59B-20190123	23 Jan 2019 17:30		01 Feb 2019 11:00	06 Feb 2019 20:46	1
HS19011199-12	WG-1620-MW59D-20190124	24 Jan 2019 07:20		01 Feb 2019 11:00	06 Feb 2019 20:57	1
HS19011199-13	WG-1620-FD05-20190124	24 Jan 2019 07:20		01 Feb 2019 11:00	06 Feb 2019 20:59	1
HS19011199-14	WG-1620-MW36D-20190124	24 Jan 2019 08:25		01 Feb 2019 11:00	06 Feb 2019 21:01	1
HS19011199-16	WG-1620-MW66D-20190124	24 Jan 2019 10:30		01 Feb 2019 11:00	06 Feb 2019 21:04	1
HS19011199-17	WG-1620-MW84B-20190124	24 Jan 2019 11:40		01 Feb 2019 11:00	06 Feb 2019 21:06	1
HS19011199-18	WG-1620-MW67B-20190124	24 Jan 2019 12:50		01 Feb 2019 11:00	06 Feb 2019 20:05	1
HS19011199-19	WG-1620-MW19C-20190124	24 Jan 2019 13:50		01 Feb 2019 11:00	06 Feb 2019 21:08	1
HS19011199-20	WG-1620-MW72B-20190124	24 Jan 2019 14:55		01 Feb 2019 11:00	07 Feb 2019 13:26	1
Batch ID 137313	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19011199-01	WQ-1620-FB08-20190124	24 Jan 2019 16:15		01 Feb 2019 11:00	06 Feb 2019 20:16	1
HS19011199-10	WQ-1620-FB07-20190123	23 Jan 2019 17:00		01 Feb 2019 11:00	06 Feb 2019 20:48	1
Batch ID R332110	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19011199-10	WQ-1620-FB07-20190123	23 Jan 2019 17:00			01 Feb 2019 06:27	1
HS19011199-11	WQ-1620-TB06-20190124	24 Jan 2019 00:00			01 Feb 2019 03:36	1
Batch ID R332110	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011199-07	WG-1620-MW49A-20190123	23 Jan 2019 15:50			01 Feb 2019 05:14	1
HS19011199-08	WG-1620-MW59A-20190123	23 Jan 2019 16:40			01 Feb 2019 05:38	1
HS19011199-09	WG-1620-MW59B-20190123	23 Jan 2019 17:30			01 Feb 2019 06:03	1
HS19011199-12	WG-1620-MW59D-20190124	24 Jan 2019 07:20			01 Feb 2019 06:52	1
HS19011199-13	WG-1620-FD05-20190124	24 Jan 2019 07:20			01 Feb 2019 07:16	1
HS19011199-14	WG-1620-MW36D-20190124	24 Jan 2019 08:25			01 Feb 2019 07:41	1
HS19011199-16	WG-1620-MW66D-20190124	24 Jan 2019 10:30			01 Feb 2019 08:05	1
HS19011199-17	WG-1620-MW84B-20190124	24 Jan 2019 11:40			01 Feb 2019 08:29	1
HS19011199-18	WG-1620-MW67B-20190124	24 Jan 2019 12:50			01 Feb 2019 04:00	1
HS19011199-19	WG-1620-MW19C-20190124	24 Jan 2019 13:50			01 Feb 2019 08:54	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R332113	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011199-02	WG-1620-MW58A-20190123	23 Jan 2019 11:20			01 Feb 2019 05:00	1
HS19011199-03	WG-1620-MW32AR-20190123	23 Jan 2019 12:15			01 Feb 2019 05:24	1
HS19011199-04	WG-1620-MW76C-20190123	23 Jan 2019 13:20			01 Feb 2019 05:48	1
HS19011199-05	WG-1620-MW74B-20190123	23 Jan 2019 14:15			01 Feb 2019 06:14	10
HS19011199-06	WG-1620-MW79A-20190123	23 Jan 2019 15:05			01 Feb 2019 06:41	10
HS19011199-15	WG-1620-MW65D-20190124	24 Jan 2019 09:25			01 Feb 2019 03:48	1
Batch ID R332113	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19011199-01	WQ-1620-FB08-20190124	24 Jan 2019 16:15			01 Feb 2019 03:00	1
Batch ID R332226	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19011199-20	WG-1620-MW72B-20190124	24 Jan 2019 14:55			01 Feb 2019 19:59	10

WorkOrder: HS19011199
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19011199
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	0.000082	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000034	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000039	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000062	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000072	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000041	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000024	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000024	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000036	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000056	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000051	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000067	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000076	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000070	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000063	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000070	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000047	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000070	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000061	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000045	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000088	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000071	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000072	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000051	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000075	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000066	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: HS19011199
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00054	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	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: HS19011199
InstrumentID: VOA4
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	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00050	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00054	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00046	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.0017	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00057	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00049	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00044	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137198 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-137198** Units: **mg/L** Analysis Date: **31-Jan-2019 18:55**
Client ID: Run ID: **ICPMS05_332031** SeqNo: **4933298** PrepDate: **30-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-137198** Units: **mg/L** Analysis Date: **31-Jan-2019 18:57**
Client ID: Run ID: **ICPMS05_332031** SeqNo: **4933299** PrepDate: **30-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0523	0.00200	0.05	0	105	80 - 120				
Lead	0.05089	0.00200	0.05	0	102	80 - 120				

MS Sample ID: **HS19011199-15MS** Units: **mg/L** Analysis Date: **31-Jan-2019 19:04**
Client ID: **WG-1620-MW65D-20190124** Run ID: **ICPMS05_332031** SeqNo: **4933302** PrepDate: **30-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05265	0.00200	0.05	0.002025	101	80 - 120				
Lead	0.0502	0.00200	0.05	0.00059	99.2	80 - 120				

MSD Sample ID: **HS19011199-15MSD** Units: **mg/L** Analysis Date: **31-Jan-2019 19:06**
Client ID: **WG-1620-MW65D-20190124** Run ID: **ICPMS05_332031** SeqNo: **4933303** PrepDate: **30-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04915	0.00200	0.05	0.002025	94.3	80 - 120	0.05265	6.88	20	
Lead	0.05058	0.00200	0.05	0.00059	100.0	80 - 120	0.0502	0.752	20	

PDS Sample ID: **HS19011199-15PDS** Units: **mg/L** Analysis Date: **31-Jan-2019 19:08**
Client ID: **WG-1620-MW65D-20190124** Run ID: **ICPMS05_332031** SeqNo: **4933304** PrepDate: **30-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1061	0.00200	0.1	0.002025	104	75 - 125				
Lead	0.1009	0.00200	0.1	0.00059	100	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: **137198** **Instrument:** **ICPMS05** **Method:** **SW6020**

SD Sample ID: **HS19011199-15SD** Units: **mg/L** Analysis Date: **31-Jan-2019 19:01**
Client ID: **WG-1620-MW65D-20190124** Run ID: **ICPMS05_332031** SeqNo: **4933301** PrepDate: **30-Jan-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002692	0.0100					0.002025	0	10	J
Lead	U	0.0100					0.00059	0	10	

The following samples were analyzed in this batch: HS19011199-15

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137313 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-137313** Units: **mg/L** Analysis Date: **06-Feb-2019 20:01**
Client ID: Run ID: **ICPMS05_332384** SeqNo: **4941148** PrepDate: **01-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-137313** Units: **mg/L** Analysis Date: **06-Feb-2019 20:03**
Client ID: Run ID: **ICPMS05_332384** SeqNo: **4941149** PrepDate: **01-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05434	0.00200	0.05	0	109	80 - 120				
Lead	0.0523	0.00200	0.05	0	105	80 - 120				

MS Sample ID: **HS19011199-18MS** Units: **mg/L** Analysis Date: **06-Feb-2019 20:10**
Client ID: **WG-1620-MW67B-20190124** Run ID: **ICPMS05_332384** SeqNo: **4941152** PrepDate: **01-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05236	0.00200	0.05	0.000218	104	80 - 120				
Lead	0.05204	0.00200	0.05	0.003306	97.5	80 - 120				

MSD Sample ID: **HS19011199-18MSD** Units: **mg/L** Analysis Date: **06-Feb-2019 20:12**
Client ID: **WG-1620-MW67B-20190124** Run ID: **ICPMS05_332384** SeqNo: **4941153** PrepDate: **01-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05146	0.00200	0.05	0.000218	102	80 - 120	0.05236	1.73	20	
Lead	0.05215	0.00200	0.05	0.003306	97.7	80 - 120	0.05204	0.2	20	

PDS Sample ID: **HS19011199-18PDS** Units: **mg/L** Analysis Date: **06-Feb-2019 20:14**
Client ID: **WG-1620-MW67B-20190124** Run ID: **ICPMS05_332384** SeqNo: **4941154** PrepDate: **01-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1088	0.00200	0.1	0	109	75 - 125				
Lead	0.1061	0.00200	0.1	0.003306	103	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: **137313** **Instrument:** **ICPMS05** **Method:** **SW6020**

SD Sample ID: **HS19011199-18SD** Units: **mg/L** Analysis Date: **06-Feb-2019 20:08**
Client ID: **WG-1620-MW67B-20190124** Run ID: **ICPMS05_332384** SeqNo: **4941151** PrepDate: **01-Feb-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000218	0	10	
Lead	0.003298	0.0100					0.003306	0	10	J

The following samples were analyzed in this batch:

HS19011199-01	HS19011199-02	HS19011199-03	HS19011199-04
HS19011199-05	HS19011199-06	HS19011199-07	HS19011199-08
HS19011199-09	HS19011199-10	HS19011199-12	HS19011199-13
HS19011199-14	HS19011199-16	HS19011199-17	HS19011199-18
HS19011199-19	HS19011199-20		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

MBLK Sample ID: **MBLK-137100** Units: **ug/L** Analysis Date: **12-Feb-2019 13:19**
Client ID: Run ID: **SV-7_332710** SeqNo: **4948031** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.994*	*0.20*	*5*	*0*	*79.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.584*	*0.20*	*5*	*0*	*71.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.517*	*0.20*	*5*	*0*	*70.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.832*	*0.20*	*5*	*0*	*76.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.271*	*0.20*	*5*	*0*	*65.4*	*41 - 120*				
Surr: Phenol-d6	*3.794*	*0.20*	*5*	*0*	*75.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

LCS Sample ID: **LCS-137100** Units: **ug/L** Analysis Date: **12-Feb-2019 13:38**
Client ID: Run ID: **SV-7_332710** SeqNo: **4948032** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.105	0.20	5	0	62.1	39 - 127				
2,4-Dimethylphenol	2.853	0.20	5	0	57.1	35 - 120				
2,4-Dinitrotoluene	3.773	0.20	5	0	75.5	50 - 122				
2,6-Dinitrotoluene	3.432	0.20	5	0	68.6	50 - 120				
2-Chloronaphthalene	3.616	0.20	5	0	72.3	50 - 120				
2-Methylnaphthalene	3.546	0.10	5	0	70.9	50 - 120				
4,6-Dinitro-2-methylphenol	4.243	0.20	5	0	84.9	25 - 121				
4-Nitrophenol	3.608	1.0	5	0	72.2	30 - 130				
Acenaphthene	3.084	0.10	5	0	61.7	45 - 120				
Acenaphthylene	3.382	0.10	5	0	67.6	47 - 120				
Anthracene	3.719	0.10	5	0	74.4	45 - 120				
Benz(a)anthracene	3.996	0.10	5	0	79.9	40 - 120				
Benzo(a)pyrene	3.976	0.10	5	0	79.5	45 - 120				
Bis(2-chloroethoxy)methane	3.059	0.20	5	0	61.2	45 - 120				
Bis(2-ethylhexyl)phthalate	3.289	0.20	5	0	65.8	40 - 139				
Chrysene	3.975	0.10	5	0	79.5	43 - 120				
Dibenzofuran	3.54	0.10	5	0	70.8	50 - 120				
Di-n-butyl phthalate	3.552	0.20	5	0	71.0	45 - 123				
Fluoranthene	4.151	0.10	5	0	83.0	45 - 125				
Fluorene	3.691	0.10	5	0	73.8	49 - 120				
Naphthalene	3.314	0.10	5	0	66.3	45 - 120				
Nitrobenzene	3.196	0.20	5	0	63.9	44 - 120				
N-Nitrosodiphenylamine	3.633	0.20	5	0	72.7	40 - 125				
Pentachlorophenol	4.089	0.20	5	0	81.8	19 - 121				
Phenanthrene	3.833	0.10	5	0	76.7	45 - 121				
Phenol	3.127	0.20	5	0	62.5	20 - 124				
Pyrene	3.72	0.10	5	0	74.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.001*	*0.20*	*5*	*0*	*100*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.542*	*0.20*	*5*	*0*	*70.8*	*40 - 125*				
Surr: 2-Fluorophenol	*3.125*	*0.20*	*5*	*0*	*62.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.074*	*0.20*	*5*	*0*	*81.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.216*	*0.20*	*5*	*0*	*64.3*	*41 - 120*				
Surr: Phenol-d6	*3.531*	*0.20*	*5*	*0*	*70.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

MS Sample ID: **HS19011199-18MS** Units: **ug/L** Analysis Date: **12-Feb-2019 22:08**
Client ID: **WG-1620-MW67B-20190124** Run ID: **SV-7_332710** SeqNo: **4948037** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	1.699	0.20	5	0	34.0	39 - 127				S
2,4-Dimethylphenol	1.764	0.20	5	0	35.3	35 - 120				
2,4-Dinitrotoluene	1.953	0.20	5	0	39.1	50 - 122				S
2,6-Dinitrotoluene	1.975	0.20	5	0	39.5	50 - 120				S
2-Chloronaphthalene	2.171	0.20	5	0	43.4	50 - 120				S
2-Methylnaphthalene	2.221	0.10	5	0	44.4	50 - 120				S
4,6-Dinitro-2-methylphenol	2.571	0.20	5	0	51.4	25 - 121				
4-Nitrophenol	2.514	1.0	5	0	50.3	30 - 130				
Acenaphthene	1.705	0.10	5	0	34.1	45 - 120				S
Acenaphthylene	1.869	0.10	5	0	37.4	47 - 120				S
Anthracene	2.253	0.10	5	0	45.1	45 - 120				
Benz(a)anthracene	3.528	0.10	5	0	70.6	40 - 120				
Benzo(a)pyrene	3.288	0.10	5	0	65.8	45 - 120				
Bis(2-chloroethoxy)methane	1.817	0.20	5	0	36.3	45 - 120				S
Bis(2-ethylhexyl)phthalate	2.857	0.20	5	0.05071	56.1	40 - 139				
Chrysene	3.537	0.10	5	0	70.7	43 - 120				
Dibenzofuran	1.939	0.10	5	0	38.8	50 - 120				S
Di-n-butyl phthalate	2.686	0.20	5	0	53.7	45 - 123				
Fluoranthene	3.252	0.10	5	0	65.0	45 - 125				
Fluorene	1.858	0.10	5	0	37.2	49 - 120				S
Naphthalene	2.148	0.10	5	0	43.0	45 - 120				S
Nitrobenzene	2.1	0.20	5	0	42.0	44 - 120				S
N-Nitrosodiphenylamine	2.082	0.20	5	0	41.6	40 - 125				
Pentachlorophenol	3.096	0.20	5	0	61.9	19 - 121				
Phenanthrene	2.443	0.10	5	0	48.9	45 - 121				
Phenol	2.003	0.20	5	0	40.1	20 - 124				
Pyrene	3.084	0.10	5	0	61.7	40 - 130				
Surr: 2,4,6-Tribromophenol	*2.667*	*0.20*	*5*	*0*	*53.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.046*	*0.20*	*5*	*0*	*40.9*	*40 - 125*				
Surr: 2-Fluorophenol	*1.891*	*0.20*	*5*	*0*	*37.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.311*	*0.20*	*5*	*0*	*66.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.183*	*0.20*	*5*	*0*	*43.7*	*41 - 120*				
Surr: Phenol-d6	*2.164*	*0.20*	*5*	*0*	*43.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

MS Sample ID: **HS19011199-15MS** Units: **ug/L** Analysis Date: **12-Feb-2019 21:10**
Client ID: **WG-1620-MW65D-20190124** Run ID: **SV-7_332710** SeqNo: **4948034** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.488	0.20	5	0	49.8	39 - 127				
2,4-Dimethylphenol	2.329	0.20	5	0.09028	44.8	35 - 120				
2,4-Dinitrotoluene	3.009	0.20	5	0	60.2	50 - 122				
2,6-Dinitrotoluene	2.807	0.20	5	0	56.1	50 - 120				
2-Chloronaphthalene	2.958	0.20	5	0	59.2	50 - 120				
2-Methylnaphthalene	3.255	0.10	5	0.1627	61.8	50 - 120				
4,6-Dinitro-2-methylphenol	3.674	0.20	5	0	73.5	25 - 121				
4-Nitrophenol	3.52	1.0	5	0	70.4	30 - 130				
Acenaphthene	2.583	0.10	5	0	51.7	45 - 120				
Acenaphthylene	2.76	0.10	5	0	55.2	47 - 120				
Anthracene	3.118	0.10	5	0	62.4	45 - 120				
Benz(a)anthracene	3.534	0.10	5	0	70.7	40 - 120				
Benzo(a)pyrene	3.292	0.10	5	0	65.8	45 - 120				
Bis(2-chloroethoxy)methane	2.604	0.20	5	0	52.1	45 - 120				
Bis(2-ethylhexyl)phthalate	2.992	0.20	5	0.05994	58.6	40 - 139				
Chrysene	3.63	0.10	5	0	72.6	43 - 120				
Dibenzofuran	2.964	0.10	5	0.03937	58.5	50 - 120				
Di-n-butyl phthalate	3.153	0.20	5	0	63.1	45 - 123				
Fluoranthene	3.663	0.10	5	0.0266	72.7	45 - 125				
Fluorene	3.004	0.10	5	0	60.1	49 - 120				
Naphthalene	5.042	0.10	5	2.596	48.9	45 - 120				
Nitrobenzene	2.776	0.20	5	0	55.5	44 - 120				
N-Nitrosodiphenylamine	2.868	0.20	5	0	57.4	40 - 125				
Pentachlorophenol	3.82	0.20	5	0	76.4	19 - 121				
Phenanthrene	3.371	0.10	5	0	67.4	45 - 121				
Phenol	2.796	0.20	5	0.1887	52.2	20 - 124				
Pyrene	3.277	0.10	5	0.01826	65.2	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.459*	*0.20*	*5*	*0*	*89.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.073*	*0.20*	*5*	*0*	*61.5*	*40 - 125*				
Surr: 2-Fluorophenol	*2.705*	*0.20*	*5*	*0*	*54.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.826*	*0.20*	*5*	*0*	*76.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.864*	*0.20*	*5*	*0*	*57.3*	*41 - 120*				
Surr: Phenol-d6	*3.076*	*0.20*	*5*	*0*	*61.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

MSD Sample ID: **HS19011199-18MSD** Units: **ug/L** Analysis Date: **12-Feb-2019 22:28**
Client ID: **WG-1620-MW67B-20190124** Run ID: **SV-7_332710** SeqNo: **4948038** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	1.659	0.20	5	0	33.2	39 - 127	1.699	2.39	20	S
2,4-Dimethylphenol	1.605	0.20	5	0	32.1	35 - 120	1.764	9.4	20	S
2,4-Dinitrotoluene	1.964	0.20	5	0	39.3	50 - 122	1.953	0.551	20	S
2,6-Dinitrotoluene	2.014	0.20	5	0	40.3	50 - 120	1.975	1.96	20	S
2-Chloronaphthalene	2.115	0.20	5	0	42.3	50 - 120	2.171	2.6	20	S
2-Methylnaphthalene	2.219	0.10	5	0	44.4	50 - 120	2.221	0.089	20	S
4,6-Dinitro-2-methylphenol	2.609	0.20	5	0	52.2	25 - 121	2.571	1.48	30	
4-Nitrophenol	2.853	1.0	5	0	57.1	30 - 130	2.514	12.6	20	
Acenaphthene	1.706	0.10	5	0	34.1	45 - 120	1.705	0.0831	20	S
Acenaphthylene	1.868	0.10	5	0	37.4	47 - 120	1.869	0.0763	20	S
Anthracene	2.144	0.10	5	0	42.9	45 - 120	2.253	4.96	20	S
Benz(a)anthracene	3.485	0.10	5	0	69.7	40 - 120	3.528	1.22	20	
Benzo(a)pyrene	3.374	0.10	5	0	67.5	45 - 120	3.288	2.58	20	
Bis(2-chloroethoxy)methane	1.834	0.20	5	0	36.7	45 - 120	1.817	0.922	20	S
Bis(2-ethylhexyl)phthalate	2.905	0.20	5	0.05071	57.1	40 - 139	2.857	1.67	20	
Chrysene	3.488	0.10	5	0	69.8	43 - 120	3.537	1.41	20	
Dibenzofuran	1.952	0.10	5	0	39.0	50 - 120	1.939	0.66	20	S
Di-n-butyl phthalate	2.844	0.20	5	0	56.9	45 - 123	2.686	5.69	20	
Fluoranthene	3.271	0.10	5	0	65.4	45 - 125	3.252	0.585	20	
Fluorene	1.889	0.10	5	0	37.8	49 - 120	1.858	1.66	20	S
Naphthalene	2.178	0.10	5	0	43.6	45 - 120	2.148	1.39	20	S
Nitrobenzene	2.044	0.20	5	0	40.9	44 - 120	2.1	2.72	20	S
N-Nitrosodiphenylamine	2.04	0.20	5	0	40.8	40 - 125	2.082	2.02	20	
Pentachlorophenol	3.153	0.20	5	0	63.1	19 - 121	3.096	1.8	20	
Phenanthrene	2.35	0.10	5	0	47.0	45 - 121	2.443	3.89	20	
Phenol	2	0.20	5	0	40.0	20 - 124	2.003	0.125	20	
Pyrene	3.045	0.10	5	0	60.9	40 - 130	3.084	1.26	20	
Surr: 2,4,6-Tribromophenol	*2.76*	*0.20*	*5*	*0*	*55.2*	*34 - 129*	*2.667*	*3.45*	*20*	
Surr: 2-Fluorobiphenyl	*2.122*	*0.20*	*5*	*0*	*42.4*	*40 - 125*	*2.046*	*3.65*	*20*	
Surr: 2-Fluorophenol	*2.043*	*0.20*	*5*	*0*	*40.9*	*20 - 120*	*1.891*	*7.76*	*20*	
Surr: 4-Terphenyl-d14	*3.607*	*0.20*	*5*	*0*	*72.1*	*40 - 135*	*3.311*	*8.56*	*20*	
Surr: Nitrobenzene-d5	*2.092*	*0.20*	*5*	*0*	*41.8*	*41 - 120*	*2.183*	*4.24*	*20*	
Surr: Phenol-d6	*2.345*	*0.20*	*5*	*0*	*46.9*	*20 - 120*	*2.164*	*8.02*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

MSD Sample ID: **HS19011199-15MSD** Units: **ug/L** Analysis Date: **12-Feb-2019 21:29**
Client ID: **WG-1620-MW65D-20190124** Run ID: **SV-7_332710** SeqNo: **4948035** PrepDate: **28-Jan-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.64	0.20	5	0	52.8	39 - 127	2.488	5.93	20	
2,4-Dimethylphenol	2.262	0.20	5	0.09028	43.4	35 - 120	2.329	2.92	20	
2,4-Dinitrotoluene	3.071	0.20	5	0	61.4	50 - 122	3.009	2.02	20	
2,6-Dinitrotoluene	2.985	0.20	5	0	59.7	50 - 120	2.807	6.14	20	
2-Chloronaphthalene	3.308	0.20	5	0	66.2	50 - 120	2.958	11.2	20	
2-Methylnaphthalene	3.503	0.10	5	0.1627	66.8	50 - 120	3.255	7.32	20	
4,6-Dinitro-2-methylphenol	3.437	0.20	5	0	68.7	25 - 121	3.674	6.65	30	
4-Nitrophenol	3.088	1.0	5	0	61.8	30 - 130	3.52	13.1	20	
Acenaphthene	2.872	0.10	5	0	57.4	45 - 120	2.583	10.6	20	
Acenaphthylene	2.988	0.10	5	0	59.8	47 - 120	2.76	7.93	20	
Anthracene	3.134	0.10	5	0	62.7	45 - 120	3.118	0.496	20	
Benz(a)anthracene	3.334	0.10	5	0	66.7	40 - 120	3.534	5.82	20	
Benzo(a)pyrene	3.359	0.10	5	0	67.2	45 - 120	3.292	2.01	20	
Bis(2-chloroethoxy)methane	2.923	0.20	5	0	58.5	45 - 120	2.604	11.6	20	
Bis(2-ethylhexyl)phthalate	2.849	0.20	5	0.05994	55.8	40 - 139	2.992	4.87	20	
Chrysene	3.397	0.10	5	0	67.9	43 - 120	3.63	6.64	20	
Dibenzofuran	3.202	0.10	5	0.03937	63.3	50 - 120	2.964	7.72	20	
Di-n-butyl phthalate	3.011	0.20	5	0	60.2	45 - 123	3.153	4.6	20	
Fluoranthene	3.407	0.10	5	0.0266	67.6	45 - 125	3.663	7.23	20	
Fluorene	3.198	0.10	5	0	64.0	49 - 120	3.004	6.25	20	
Naphthalene	5.52	0.10	5	2.596	58.5	45 - 120	5.042	9.04	20	
Nitrobenzene	3.031	0.20	5	0	60.6	44 - 120	2.776	8.78	20	
N-Nitrosodiphenylamine	3.06	0.20	5	0	61.2	40 - 125	2.868	6.48	20	
Pentachlorophenol	3.674	0.20	5	0	73.5	19 - 121	3.82	3.91	20	
Phenanthrene	3.325	0.10	5	0	66.5	45 - 121	3.371	1.37	20	
Phenol	3.072	0.20	5	0.1887	57.7	20 - 124	2.796	9.4	20	
Pyrene	3.224	0.10	5	0.01826	64.1	40 - 130	3.277	1.64	20	
Surr: 2,4,6-Tribromophenol	*4.333*	*0.20*	*5*	*0*	*86.7*	*34 - 129*	*4.459*	*2.86*	*20*	
Surr: 2-Fluorobiphenyl	*3.404*	*0.20*	*5*	*0*	*68.1*	*40 - 125*	*3.073*	*10.2*	*20*	
Surr: 2-Fluorophenol	*2.92*	*0.20*	*5*	*0*	*58.4*	*20 - 120*	*2.705*	*7.65*	*20*	
Surr: 4-Terphenyl-d14	*3.451*	*0.20*	*5*	*0*	*69.0*	*40 - 135*	*3.826*	*10.3*	*20*	
Surr: Nitrobenzene-d5	*3.051*	*0.20*	*5*	*0*	*61.0*	*41 - 120*	*2.864*	*6.33*	*20*	
Surr: Phenol-d6	*3.329*	*0.20*	*5*	*0*	*66.6*	*20 - 120*	*3.076*	*7.92*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: 137100 **Instrument: SV-7** **Method: SW8270**

The following samples were analyzed in this batch:

HS19011199-01	HS19011199-02	HS19011199-03	HS19011199-04
HS19011199-05	HS19011199-06	HS19011199-07	HS19011199-08
HS19011199-09	HS19011199-10	HS19011199-12	HS19011199-13
HS19011199-14	HS19011199-15	HS19011199-16	HS19011199-17
HS19011199-18	HS19011199-19	HS19011199-20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: R332110 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-190131** Units: **ug/L** Analysis Date: **01-Feb-2019 03:11**
Client ID: Run ID: **VOA4_332110** SeqNo: **4933749** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.75*	*1.0*	*50*	*0*	*99.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.38*	*1.0*	*50*	*0*	*98.8*	*82 - 115*				
Surr: Dibromofluoromethane	*49.77*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*49.64*	*1.0*	*50*	*0*	*99.3*	*81 - 120*				

LCS Sample ID: **VLCSW-190131** Units: **ug/L** Analysis Date: **01-Feb-2019 02:22**
Client ID: Run ID: **VOA4_332110** SeqNo: **4933748** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.9	1.0	20	0	104	70 - 124				
Benzene	18.93	1.0	20	0	94.6	74 - 120				
Chlorobenzene	18.75	1.0	20	0	93.8	76 - 113				
Ethylbenzene	19.22	1.0	20	0	96.1	77 - 117				
Methylene chloride	19.97	2.0	20	0	99.9	70 - 127				
Toluene	18.66	1.0	20	0	93.3	77 - 118				
Vinyl chloride	19.46	1.0	20	0	97.3	70 - 130				
Xylenes, Total	58.87	1.0	60	0	98.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.47*	*1.0*	*50*	*0*	*98.9*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.63*	*1.0*	*50*	*0*	*97.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.85*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*50.12*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: R332110 **Instrument:** VOA4 **Method:** SW8260

MS Sample ID: **HS19011199-18MS** Units: **ug/L** Analysis Date: **01-Feb-2019 04:25**
Client ID: **WG-1620-MW67B-20190124** Run ID: **VOA4_332110** SeqNo: **4933752** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.24	1.0	20	0	91.2	70 - 127				
Benzene	17.42	1.0	20	0	87.1	70 - 127				
Chlorobenzene	17.15	1.0	20	0	85.8	70 - 114				
Ethylbenzene	19.25	1.0	20	0	96.2	70 - 124				
Methylene chloride	17.37	2.0	20	0	86.9	70 - 128				
Toluene	17.34	1.0	20	0	86.7	70 - 123				
Vinyl chloride	16.95	1.0	20	0	84.7	70 - 130				
Xylenes, Total	55.55	1.0	60	0	92.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.42*	*1.0*	*50*	*0*	*98.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.54*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*50.19*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19011199-18MSD** Units: **ug/L** Analysis Date: **01-Feb-2019 04:49**
Client ID: **WG-1620-MW67B-20190124** Run ID: **VOA4_332110** SeqNo: **4933753** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.02	1.0	20	0	90.1	70 - 127	18.24	1.24	20	
Benzene	17.17	1.0	20	0	85.9	70 - 127	17.42	1.45	20	
Chlorobenzene	16.66	1.0	20	0	83.3	70 - 114	17.15	2.95	20	
Ethylbenzene	17.54	1.0	20	0	87.7	70 - 124	19.25	9.28	20	
Methylene chloride	17.92	2.0	20	0	89.6	70 - 128	17.37	3.08	20	
Toluene	17.01	1.0	20	0	85.0	70 - 123	17.34	1.95	20	
Vinyl chloride	16.31	1.0	20	0	81.6	70 - 130	16.95	3.83	20	
Xylenes, Total	54.77	1.0	60	0	91.3	70 - 130	55.55	1.42	20	
Surr: 1,2-Dichloroethane-d4	*49.35*	*1.0*	*50*	*0*	*98.7*	*70 - 126*	*49.42*	*0.141*	*20*	
Surr: 4-Bromofluorobenzene	*50.21*	*1.0*	*50*	*0*	*100*	*81 - 113*	*50.54*	*0.655*	*20*	
Surr: Dibromofluoromethane	*49.88*	*1.0*	*50*	*0*	*99.8*	*77 - 123*	*50.19*	*0.608*	*20*	
Surr: Toluene-d8	*50.99*	*1.0*	*50*	*0*	*102*	*82 - 127*	*50.29*	*1.39*	*20*	

The following samples were analyzed in this batch:

HS19011199-07	HS19011199-08	HS19011199-09	HS19011199-10
HS19011199-11	HS19011199-12	HS19011199-13	HS19011199-14
HS19011199-16	HS19011199-17	HS19011199-18	HS19011199-19

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: R332113 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190131** Units: **ug/L** Analysis Date: **01-Feb-2019 02:11**
Client ID: Run ID: **VOA2_332113** SeqNo: **4933801** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*44.42*	*1.0*	*50*	*0*	*88.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.1*	*1.0*	*50*	*0*	*94.2*	*82 - 115*				
Surr: Dibromofluoromethane	*50.1*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*51.94*	*1.0*	*50*	*0*	*104*	*81 - 120*				

LCS Sample ID: **VLCSW-190131** Units: **ug/L** Analysis Date: **01-Feb-2019 01:23**
Client ID: Run ID: **VOA2_332113** SeqNo: **4933800** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.41	1.0	20	0	82.0	70 - 124				
Benzene	19.95	1.0	20	0	99.7	74 - 120				
Chlorobenzene	19.65	1.0	20	0	98.2	76 - 113				
Ethylbenzene	19.88	1.0	20	0	99.4	77 - 117				
Methylene chloride	18.88	2.0	20	0	94.4	70 - 127				
Toluene	19.7	1.0	20	0	98.5	77 - 118				
Vinyl chloride	18.72	1.0	20	0	93.6	70 - 130				
Xylenes, Total	60.87	1.0	60	0	101	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.16*	*1.0*	*50*	*0*	*92.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*82 - 115*				
Surr: Dibromofluoromethane	*49.89*	*1.0*	*50*	*0*	*99.8*	*73 - 126*				
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: **R332113** **Instrument:** **VOA2** **Method:** **SW8260**

MS Sample ID: **HS19011199-15MS** Units: **ug/L** Analysis Date: **01-Feb-2019 04:12**
Client ID: **WG-1620-MW65D-20190124** Run ID: **VOA2_332113** SeqNo: **4933806** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.81	1.0	20	0	74.0	70 - 127				
Benzene	18.79	1.0	20	0	93.9	70 - 127				
Chlorobenzene	18.92	1.0	20	0	94.6	70 - 114				
Ethylbenzene	19.44	1.0	20	0	97.2	70 - 124				
Methylene chloride	18.1	2.0	20	0	90.5	70 - 128				
Toluene	19.19	1.0	20	0	95.9	70 - 123				
Vinyl chloride	20.51	1.0	20	0	103	70 - 130				
Xylenes, Total	57.72	1.0	60	0	96.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.42*	*1.0*	*50*	*0*	*88.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.18*	*1.0*	*50*	*0*	*100*	*81 - 113*				
Surr: Dibromofluoromethane	*49.64*	*1.0*	*50*	*0*	*99.3*	*77 - 123*				
Surr: Toluene-d8	*50.38*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19011199-15MSD** Units: **ug/L** Analysis Date: **01-Feb-2019 04:36**
Client ID: **WG-1620-MW65D-20190124** Run ID: **VOA2_332113** SeqNo: **4933807** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.59	1.0	20	0	77.9	70 - 127	14.81	5.13	20	
Benzene	18.81	1.0	20	0	94.0	70 - 127	18.79	0.115	20	
Chlorobenzene	18.69	1.0	20	0	93.4	70 - 114	18.92	1.23	20	
Ethylbenzene	19.21	1.0	20	0	96.0	70 - 124	19.44	1.18	20	
Methylene chloride	17.79	2.0	20	0	89.0	70 - 128	18.1	1.7	20	
Toluene	18.64	1.0	20	0	93.2	70 - 123	19.19	2.9	20	
Vinyl chloride	19.91	1.0	20	0	99.6	70 - 130	20.51	2.95	20	
Xylenes, Total	57.81	1.0	60	0	96.3	70 - 130	57.72	0.149	20	
Surr: 1,2-Dichloroethane-d4	*47.21*	*1.0*	*50*	*0*	*94.4*	*70 - 126*	*44.42*	*6.09*	*20*	
Surr: 4-Bromofluorobenzene	*48.79*	*1.0*	*50*	*0*	*97.6*	*81 - 113*	*50.18*	*2.81*	*20*	
Surr: Dibromofluoromethane	*49.38*	*1.0*	*50*	*0*	*98.8*	*77 - 123*	*49.64*	*0.528*	*20*	
Surr: Toluene-d8	*50.07*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.38*	*0.615*	*20*	

The following samples were analyzed in this batch: HS19011199-01 HS19011199-02 HS19011199-03 HS19011199-04 HS19011199-05 HS19011199-06 HS19011199-15

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: R332226 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-190201** Units: **ug/L** Analysis Date: **01-Feb-2019 15:25**
Client ID: Run ID: **VOA4_332226** SeqNo: **4936393** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.66*	*1.0*	*50*	*0*	*97.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.38*	*1.0*	*50*	*0*	*98.8*	*82 - 115*				
Surr: Dibromofluoromethane	*46.91*	*1.0*	*50*	*0*	*93.8*	*73 - 126*				
Surr: Toluene-d8	*50.23*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-190201** Units: **ug/L** Analysis Date: **01-Feb-2019 14:36**
Client ID: Run ID: **VOA4_332226** SeqNo: **4936392** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.77	1.0	20	0	104	70 - 124				
Benzene	18.48	1.0	20	0	92.4	74 - 120				
Chlorobenzene	18.92	1.0	20	0	94.6	76 - 113				
Ethylbenzene	19.02	1.0	20	0	95.1	77 - 117				
Methylene chloride	18.44	2.0	20	0	92.2	70 - 127				
Toluene	18.4	1.0	20	0	92.0	77 - 118				
Xylenes, Total	59.46	1.0	60	0	99.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.34*	*1.0*	*50*	*0*	*98.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.73*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*49.87*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19011199

QC BATCH REPORT

Batch ID: R332226 **Instrument: VOA4** **Method: SW8260**

MS Sample ID: **HS19011333-01MS** Units: **ug/L** Analysis Date: **01-Feb-2019 17:30**
Client ID: Run ID: **VOA4_332226** SeqNo: **4936396** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.96	1.0	20	0	99.8	70 - 127				
Benzene	18.43	1.0	20	0	92.1	70 - 127				
Chlorobenzene	17.94	1.0	20	0	89.7	70 - 114				
Ethylbenzene	19.12	1.0	20	0	95.6	70 - 124				
Methylene chloride	17.05	2.0	20	0	85.2	70 - 128				
Toluene	17.69	1.0	20	0	88.4	70 - 123				
Xylenes, Total	61.45	1.0	60	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.61*	*1.0*	*50*	*0*	*99.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.62*	*1.0*	*50*	*0*	*99.2*	*81 - 113*				
Surr: Dibromofluoromethane	*48.22*	*1.0*	*50*	*0*	*96.4*	*77 - 123*				
Surr: Toluene-d8	*48.87*	*1.0*	*50*	*0*	*97.7*	*82 - 127*				

MSD Sample ID: **HS19011333-01MSD** Units: **ug/L** Analysis Date: **01-Feb-2019 17:54**
Client ID: Run ID: **VOA4_332226** SeqNo: **4936397** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.03	1.0	20	0	100	70 - 127	19.96	0.336	20	
Benzene	17.45	1.0	20	0	87.3	70 - 127	18.43	5.44	20	
Chlorobenzene	17.75	1.0	20	0	88.7	70 - 114	17.94	1.11	20	
Ethylbenzene	18.24	1.0	20	0	91.2	70 - 124	19.12	4.71	20	
Methylene chloride	16.29	2.0	20	0	81.4	70 - 128	17.05	4.57	20	
Toluene	17.47	1.0	20	0	87.4	70 - 123	17.69	1.21	20	
Xylenes, Total	59.67	1.0	60	0	99.4	70 - 130	61.45	2.95	20	
Surr: 1,2-Dichloroethane-d4	*49.48*	*1.0*	*50*	*0*	*99.0*	*70 - 126*	*49.61*	*0.261*	*20*	
Surr: 4-Bromofluorobenzene	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 113*	*49.62*	*0.484*	*20*	
Surr: Dibromofluoromethane	*48.45*	*1.0*	*50*	*0*	*96.9*	*77 - 123*	*48.22*	*0.491*	*20*	
Surr: Toluene-d8	*49.21*	*1.0*	*50*	*0*	*98.4*	*82 - 127*	*48.87*	*0.691*	*20*	

The following samples were analyzed in this batch: HS19011199-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19011199**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19011199

Date/Time Received: **25-Jan-2019 09:07**
Received by: **PMG**

Checklist completed by: *Pablo Marinez* 25-Jan-2019
eSignature | Date

Reviewed by:
eSignature | Date

Matrices: **WATER**

Carrier name: **Client**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☐	☐	☑
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	☑
Chain of custody present?	☑	☐	2 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:194326, 194312
Samplers name present on COC?	☐	☑	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 0.2C/0.5C, 0.1C/0.4C, 0.8C/1.1C, 0.6C/0.9C, 0.1C/0.4C UC/C | IR # 25

Cooler(s)/Kit(s): 43020, 43161, 44439, 25768, 42702

Date/Time sample(s) sent to storage: 1/25/19 12:30

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: All Sample Labels missing Collection Date/Time, logged per CoC

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 2

COC ID: 194326

HS19011199

WV

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	1620-06-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As, Pb)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-FB08-20190124 ~~WG-1620-TB0 201801~~	1-24-19	1615	W		6											
2	WG-1620-MW58A-20190123	1-25-19	1120	W		6		X	X	X							
3	WG-1620-MW32AR-20190123		1215	W		6	X		X	X							
4	WG-1620-MW76C-20190123		1320	W		6	X		X	X							
5	WG-1620-MW74B-20190123		1415	W		6	X		X	X							
6	WG-1620-MW79A-20190123		1505	W		6	X		X	X							
7	WG-1620-MW49A-20190123		1550	W		6		X	X	X							
8	WG-1620-MW59A-20190123		1640	W		6		X	X	X							
9	WG-1620-MW59B-20190123		1730	W		6		X	X	X							
10	WG-1620-FB07-20190123		1700	W		6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-25-19 Time: 09:07 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 1/25/19 09:07

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

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	UC
43020	0.2C
43161	0.1C
44439	0.8C
25766	0.6C
42702	0.1C

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

IR 7C CFLA

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

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

Copyright 2011 by ALS Environmental.

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: 194312

HS19011199 WV

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	MS/MSD
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0~~ WG-1620-TB06-20190124	1-24-19		Water	1	2											
2	WG-1620-MW59D-20190124	1-24-19	0720	W		6											
3	WG-1620-FD05-20190124		0720	W		6											
4	WG-1620-MW36D-20190124		0825	W		6											
5	WG-1620-MW65D-20190124		0925	W		6					X						
6	WG-1620-MW66D-20190124		1030	W		6											
7	WG-1620-MW84B-20190124		1140	W		6											
8	WG-1620-MW67B-20190124		1250	W		6					X						
9	WG-1620-MW19C-20190124		1350	W		6											
10	WG-1620-MW72B-20190124		1455	W		6											

Sampler(s) Please Print & Sign: JOHN BEAUTONE

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-25-19	Time: 09:07	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory): 1/25/19 09:07
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

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

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

Copyright 2011 by ALS Environmental.

HS19011199

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS

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 1 of 2

COC ID: 194326

ALS Project Manager:

Customer Information		Project Information			Parameter/Method Request for Analysis
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

REVISED

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB08-201801~~ WG-1620-FB08-20190124	1-24-19	1615	W		6	X		X	X	MeOH						
2	WG-1620-MW58A-20190123	1-25-19	1120	W		6		X	X	X							
3	WG-1620-MW32AR-20190123		1215	W		6	X		X	X							
4	WG-1620-MW76C-20190123		1320	W		6	X		X	X							
5	WG-1620-MW74B-20190123		1415	W		6	X		X	X							
6	WG-1620-MW79A-20190123		1505	W		6	X		X	X							
7	WG-1620-MW49A-20190123		1550	W		6		X	X	X							
8	WG-1620-MW59A-20190123		1640	W		6		X	X	X							
9	WG-1620-MW59B-20190123		1730	W		6		X	X	X							
10	WG-1620-FB07-20190123		1700	W		6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BEAUTON

Shipment Method: HAND DELIVERED

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

Results Due Date:

Relinquished by:	Date: 1-25-19	Time: 09:01	Received by:	Notes: UPRR Houston MWPW
Relinquished by:	Date:	Time:	Received by (Laboratory): 1/25/19 09:01	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.
43020	0.2C
43161	0.1C
44439	0.8C
25766	0.6C
42702	0.1C

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

IR25 CF+0.3

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

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

Copyright 2011 by ALS Environmental.

HS19011199

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS

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

Chain of Custody Form

Page 2 of 2

COC ID: 194312

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-06-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

Parameter/Method Request for Analysis

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As, Pb)
E	MS/MSD
F	
G	
H	
I	
J	

REVISED

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB01-20190124~~ WG-1620-TB06-20190124	1-24-19		Water	1	2	X				MAHR						
2	WG-1620-MW59D-20190124	1-24-19	0720	W		6	X		X	X							
3	WG-1620-FD05-20190124		0720	W		6	X		X	X							
4	WG-1620-MW36D-20190124		0825	W		6	X		X	X							
5	WG-1620-MW65D-20190124		0925	W		6	X		X	X	X						
6	WG-1620-MW66D-20190124		1030	W		6	X		X	X							
7	WG-1620-MW84B-20190124		1140	W		6	X		X	X							
8	WG-1620-MW67B-20190124		1250	W		6	X		X	X	X						
9	WG-1620-MW19C-20190124		1350	W		6		X	X	X							
10	WG-1620-MW72B-20190124		1455	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BEGYTOLE

Shipment Method: HAND DELIVERED

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

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	1-25-19	09:07	
Relinquished by:	Date:	Time:	Received by (Laboratory): 1/25/19 09:07
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

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

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

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

Copyright 2011 by ALS Environmental.

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

February 15, 2019

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

Work Order: **HS19020155**

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

Dear Eric,

ALS Environmental received 3 sample(s) on Feb 02, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19020155**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19020155**	

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: 02/15/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19020155					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 137448,137737,R332708					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			1
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/15/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19020155				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 137448,137737,R332708				
#[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: 02/15/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19020155
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 137448,137737,R332708

ER#[5]	Description
1	Batch 137448, Semivolatile Organics Method SW8270, LCS/LCSD RPD was above the RPD limit for select compounds. The individual recoveries were in control.
2	Batch 137448, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch

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: HS19020155

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19020155-01	WG-1620-MW77A-201290201	Water		01-Feb-2019 13:05	02-Feb-2019 09:22	☐
HS19020155-02	WG-1620-MW85C-201290201	Water		01-Feb-2019 14:00	02-Feb-2019 09:22	☐
HS19020155-03	WG-1620-TB07-20190201	Water	ALS-121118-65	01-Feb-2019 00:00	02-Feb-2019 09:22	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19020155
Sample ID:	WG-1620-MW77A-201290201	Lab ID:HS19020155-01
Collection Date:	01-Feb-2019 13:05	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:11
Benzene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:11
Chlorobenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:11
Ethylbenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:11
Methylene chloride		U	0.0010	0.0020	mg/L	1	11-Feb-2019 17:11
Toluene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:11
Xylenes, Total		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:11
Surr: 1,2-Dichloroethane-d4	*94.2*			*70-126*	*%REC*	*1*	*11-Feb-2019 17:11*
Surr: 4-Bromofluorobenzene	*94.3*			*81-113*	*%REC*	*1*	*11-Feb-2019 17:11*
Surr: Dibromofluoromethane	*107*			*77-123*	*%REC*	*1*	*11-Feb-2019 17:11*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*11-Feb-2019 17:11*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19020155
Sample ID:	WG-1620-MW77A-201290201	Lab ID:HS19020155-01
Collection Date:	01-Feb-2019 13:05	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 06-Feb-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000022	0.00021	mg/L	1	14-Feb-2019 01:48
2,4-Dimethylphenol	U		0.000042	0.00021	mg/L	1	14-Feb-2019 01:48
2,4-Dinitrotoluene	U		0.000060	0.00021	mg/L	1	14-Feb-2019 01:48
2,6-Dinitrotoluene	U		0.000044	0.00021	mg/L	1	14-Feb-2019 01:48
2-Chloronaphthalene	U		0.000022	0.00021	mg/L	1	14-Feb-2019 01:48
2-Methylnaphthalene	U		0.000020	0.00010	mg/L	1	14-Feb-2019 01:48
4,6-Dinitro-2-methylphenol	U		0.000021	0.00021	mg/L	1	14-Feb-2019 01:48
4-Nitrophenol	U		0.000049	0.0010	mg/L	1	14-Feb-2019 01:48
Acenaphthene	U		0.000028	0.00010	mg/L	1	14-Feb-2019 01:48
Acenaphthylene	U		0.000016	0.00010	mg/L	1	14-Feb-2019 01:48
Anthracene	U		0.000015	0.00010	mg/L	1	14-Feb-2019 01:48
Benz(a)anthracene	U		0.000052	0.00010	mg/L	1	14-Feb-2019 01:48
Benzo(a)pyrene	U		0.000021	0.00010	mg/L	1	14-Feb-2019 01:48
Bis(2-chloroethoxy)methane	U		0.000031	0.00021	mg/L	1	14-Feb-2019 01:48
Bis(2-ethylhexyl)phthalate	**0.00010**	J	**0.000039**	**0.00021**	**mg/L**	1	14-Feb-2019 01:48
Chrysene	U		0.000022	0.00010	mg/L	1	14-Feb-2019 01:48
Dibenzofuran	U		0.000021	0.00010	mg/L	1	14-Feb-2019 01:48
Di-n-butyl phthalate	**0.000081**	J	**0.000021**	**0.00021**	**mg/L**	1	14-Feb-2019 01:48
Fluoranthene	U		0.000010	0.00010	mg/L	1	14-Feb-2019 01:48
Fluorene	U		0.000031	0.00010	mg/L	1	14-Feb-2019 01:48
Naphthalene	U		0.000021	0.00010	mg/L	1	14-Feb-2019 01:48
Nitrobenzene	U		0.000025	0.00021	mg/L	1	14-Feb-2019 01:48
N-Nitrosodiphenylamine	U		0.000026	0.00021	mg/L	1	14-Feb-2019 01:48
Pentachlorophenol	U		0.000082	0.00021	mg/L	1	14-Feb-2019 01:48
Phenanthrene	U		0.000022	0.00010	mg/L	1	14-Feb-2019 01:48
Phenol	U		0.000036	0.00021	mg/L	1	14-Feb-2019 01:48
Pyrene	U		0.000020	0.00010	mg/L	1	14-Feb-2019 01:48
Surr: 2,4,6-Tribromophenol	*40.2*			*34-129*	*%REC*	*1*	*14-Feb-2019 01:48*
Surr: 2-Fluorobiphenyl	*40.9*			*40-125*	*%REC*	*1*	*14-Feb-2019 01:48*
Surr: 2-Fluorophenol	*26.6*			*20-120*	*%REC*	*1*	*14-Feb-2019 01:48*
Surr: 4-Terphenyl-d14	*55.7*			*40-135*	*%REC*	*1*	*14-Feb-2019 01:48*
Surr: Nitrobenzene-d5	*43.6*			*41-120*	*%REC*	*1*	*14-Feb-2019 01:48*
Surr: Phenol-d6	*36.6*			*20-120*	*%REC*	*1*	*14-Feb-2019 01:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Feb-2019		Analyst: JHD
Arsenic	**0.00207**		**0.000400**	**0.00200**	**mg/L**	1	14-Feb-2019 18:33
Lead	U		0.000600	0.00200	mg/L	1	14-Feb-2019 18:33

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19020155
Sample ID:	WG-1620-MW85C-201290201	Lab ID:HS19020155-02
Collection Date:	01-Feb-2019 14:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:35
Benzene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	11-Feb-2019 17:35
Toluene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 17:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	11-Feb-2019 17:35
Surr: 1,2-Dichloroethane-d4	*93.4*			*70-126*	*%REC*	*1*	*11-Feb-2019 17:35*
Surr: 4-Bromofluorobenzene	*94.4*			*81-113*	*%REC*	*1*	*11-Feb-2019 17:35*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*1*	*11-Feb-2019 17:35*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*11-Feb-2019 17:35*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19020155	
Sample ID:	WG-1620-MW85C-201290201	Lab ID:HS19020155-02	
Collection Date:	01-Feb-2019 14:00	Matrix:Water	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 06-Feb-2019		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	14-Feb-2019 02:08
2,4-Dimethylphenol	U		0.000041	0.00020	mg/L	1	14-Feb-2019 02:08
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	14-Feb-2019 02:08
2,6-Dinitrotoluene	U		0.000043	0.00020	mg/L	1	14-Feb-2019 02:08
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	14-Feb-2019 02:08
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	14-Feb-2019 02:08
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	14-Feb-2019 02:08
4-Nitrophenol	U		0.000048	0.0010	mg/L	1	14-Feb-2019 02:08
Acenaphthene	U		0.000028	0.00010	mg/L	1	14-Feb-2019 02:08
Acenaphthylene	U		0.000015	0.00010	mg/L	1	14-Feb-2019 02:08
Anthracene	U		0.000014	0.00010	mg/L	1	14-Feb-2019 02:08
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	14-Feb-2019 02:08
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	14-Feb-2019 02:08
Bis(2-chloroethoxy)methane	U		0.000031	0.00020	mg/L	1	14-Feb-2019 02:08
Bis(2-ethylhexyl)phthalate	U		0.000038	0.00020	mg/L	1	14-Feb-2019 02:08
Chrysene	U		0.000021	0.00010	mg/L	1	14-Feb-2019 02:08
Dibenzofuran	U		0.000020	0.00010	mg/L	1	14-Feb-2019 02:08
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	14-Feb-2019 02:08
Fluoranthene	U		0.000010	0.00010	mg/L	1	14-Feb-2019 02:08
Fluorene	U		0.000031	0.00010	mg/L	1	14-Feb-2019 02:08
Naphthalene	U		0.000020	0.00010	mg/L	1	14-Feb-2019 02:08
Nitrobenzene	U		0.000024	0.00020	mg/L	1	14-Feb-2019 02:08
N-Nitrosodiphenylamine	U		0.000026	0.00020	mg/L	1	14-Feb-2019 02:08
Pentachlorophenol	U		0.000081	0.00020	mg/L	1	14-Feb-2019 02:08
Phenanthrene	U		0.000021	0.00010	mg/L	1	14-Feb-2019 02:08
Phenol	U		0.000036	0.00020	mg/L	1	14-Feb-2019 02:08
Pyrene	U		0.000019	0.00010	mg/L	1	14-Feb-2019 02:08
Surr: 2,4,6-Tribromophenol	*34.1*			*34-129*	*%REC*	*1*	*14-Feb-2019 02:08*
Surr: 2-Fluorobiphenyl	*40.6*			*40-125*	*%REC*	*1*	*14-Feb-2019 02:08*
Surr: 2-Fluorophenol	*24.6*			*20-120*	*%REC*	*1*	*14-Feb-2019 02:08*
Surr: 4-Terphenyl-d14	*58.0*			*40-135*	*%REC*	*1*	*14-Feb-2019 02:08*
Surr: Nitrobenzene-d5	*43.4*			*41-120*	*%REC*	*1*	*14-Feb-2019 02:08*
Surr: Phenol-d6	*31.5*			*20-120*	*%REC*	*1*	*14-Feb-2019 02:08*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Feb-2019		Analyst: JHD
Arsenic	**0.00136**	J	**0.000400**	**0.00200**	**mg/L**	1	14-Feb-2019 18:35
Lead	U		0.000600	0.00200	mg/L	1	14-Feb-2019 18:35

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

Client:	Golder Associates Inc.		**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:	HS19020155
Sample ID:	WG-1620-TB07-20190201	Lab ID:	HS19020155-03
Collection Date:	01-Feb-2019 00:00	Matrix:	Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	11-Feb-2019 16:23
Benzene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 16:23
Chlorobenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 16:23
Ethylbenzene		U	0.00030	0.0010	mg/L	1	11-Feb-2019 16:23
Methylene chloride		U	0.0010	0.0020	mg/L	1	11-Feb-2019 16:23
Toluene		U	0.00020	0.0010	mg/L	1	11-Feb-2019 16:23
Xylenes, Total		U	0.00030	0.0010	mg/L	1	11-Feb-2019 16:23
Surr: 1,2-Dichloroethane-d4	*94.3*			*70-126*	*%REC*	*1*	*11-Feb-2019 16:23*
Surr: 4-Bromofluorobenzene	*93.1*			*81-113*	*%REC*	*1*	*11-Feb-2019 16:23*
Surr: Dibromofluoromethane	*107*			*77-123*	*%REC*	*1*	*11-Feb-2019 16:23*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*11-Feb-2019 16:23*

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

Batch ID: 137448 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19020155-01	1	960	1 (mL)	0.001042
HS19020155-02	1	980	1 (mL)	0.00102

Batch ID: 137737 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19020155-01	1	10	10 (mL)	1
HS19020155-02	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 137448	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Water		
HS19020155-01	WG-1620-MW77A-201290201	01 Feb 2019 13:05		06 Feb 2019 09:27	14 Feb 2019 01:48	1
HS19020155-02	WG-1620-MW85C-201290201	01 Feb 2019 14:00		06 Feb 2019 09:27	14 Feb 2019 02:08	1
Batch ID 137737	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS19020155-01	WG-1620-MW77A-201290201	01 Feb 2019 13:05		14 Feb 2019 10:00	14 Feb 2019 18:33	1
HS19020155-02	WG-1620-MW85C-201290201	01 Feb 2019 14:00		14 Feb 2019 10:00	14 Feb 2019 18:35	1
Batch ID R332708	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19020155-01	WG-1620-MW77A-201290201	01 Feb 2019 13:05			11 Feb 2019 17:11	1
HS19020155-02	WG-1620-MW85C-201290201	01 Feb 2019 14:00			11 Feb 2019 17:35	1
HS19020155-03	WG-1620-TB07-20190201	01 Feb 2019 00:00			11 Feb 2019 16:23	1

WorkOrder: HS19020155
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	Arsenic	7440-38-2	0.000500	0.000460	0.000400	0.00200
A	Lead	7439-92-1	0.00100	0.00100	0.000600	0.00200

WorkOrder: HS19020155
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000041	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000052	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000052	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000061	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000056	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000022	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00020	0.00019	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000066	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000072	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000074	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000074	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000066	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000069	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000083	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000082	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000060	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000080	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000074	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000073	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000065	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000083	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000068	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00016	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000077	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000066	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000074	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: HS19020155
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	0.00066	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00063	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00051	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00065	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00056	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: 137737 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-137737** Units: **mg/L** Analysis Date: **14-Feb-2019 18:06**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950662** PrepDate: **14-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Lead	U	0.00200								

LCS Sample ID: **LCS-137737** Units: **mg/L** Analysis Date: **14-Feb-2019 18:08**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950663** PrepDate: **14-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0547	0.00200	0.05	0	109	80 - 120				
Lead	0.05513	0.00200	0.05	0	110	80 - 120				

MS Sample ID: **HS19020360-06MS** Units: **mg/L** Analysis Date: **14-Feb-2019 18:15**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950666** PrepDate: **14-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05653	0.00200	0.05	0.001329	110	80 - 120				
Lead	0.05239	0.00200	0.05	0	105	80 - 120				

MSD Sample ID: **HS19020360-06MSD** Units: **mg/L** Analysis Date: **14-Feb-2019 18:17**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950667** PrepDate: **14-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05641	0.00200	0.05	0.001329	110	80 - 120	0.05653	0.212	20	
Lead	0.05378	0.00200	0.05	0	108	80 - 120	0.05239	2.63	20	

PDS Sample ID: **HS19020360-06PDS** Units: **mg/L** Analysis Date: **14-Feb-2019 18:19**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950668** PrepDate: **14-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1054	0.00200	0.1	0.001329	104	75 - 125				
Lead	0.1015	0.00200	0.1	0.000121	101	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: **137737** **Instrument:** **ICPMS05** **Method:** **SW6020**

SD Sample ID: **HS19020360-06SD** Units: **mg/L** Analysis Date: **14-Feb-2019 18:12**
Client ID: Run ID: **ICPMS05_332852** SeqNo: **4950665** PrepDate: **14-Feb-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.001329	0	10	
Lead	U	0.0100					0.000121	0	10	

The following samples were analyzed in this batch: HS19020155-01 HS19020155-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: 137448 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-137448** Units: **ug/L** Analysis Date: **08-Feb-2019 11:26**
Client ID: Run ID: **SV-6_332610** SeqNo: **4944276** PrepDate: **06-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*2.907*	*0.20*	*5*	*0*	*58.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.789*	*0.20*	*5*	*0*	*55.8*	*40 - 125*				
Surr: 2-Fluorophenol	*2.854*	*0.20*	*5*	*0*	*57.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.062*	*0.20*	*5*	*0*	*61.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.578*	*0.20*	*5*	*0*	*51.6*	*41 - 120*				
Surr: Phenol-d6	*3.103*	*0.20*	*5*	*0*	*62.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: 137448 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-137448** Units: **ug/L** Analysis Date: **08-Feb-2019 18:13**
Client ID: Run ID: **SV-6_332612** SeqNo: **4944310** PrepDate: **06-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.611	0.20	5	0	52.2	39 - 127				
2,4-Dimethylphenol	2.518	0.20	5	0	50.4	35 - 120				
2,4-Dinitrotoluene	2.659	0.20	5	0	53.2	50 - 122				
2,6-Dinitrotoluene	2.949	0.20	5	0	59.0	50 - 120				
2-Chloronaphthalene	2.976	0.20	5	0	59.5	50 - 120				
2-Methylnaphthalene	2.817	0.10	5	0	56.3	50 - 120				
4,6-Dinitro-2-methylphenol	2.638	0.20	5	0	52.8	25 - 121				
4-Nitrophenol	1.883	1.0	5	0	37.7	30 - 130				
Acenaphthene	2.641	0.10	5	0	52.8	45 - 120				
Acenaphthylene	2.731	0.10	5	0	54.6	47 - 120				
Anthracene	2.843	0.10	5	0	56.9	45 - 120				
Benz(a)anthracene	2.826	0.10	5	0	56.5	40 - 120				
Benzo(a)pyrene	3.019	0.10	5	0	60.4	45 - 120				
Bis(2-chloroethoxy)methane	2.696	0.20	5	0	53.9	45 - 120				
Bis(2-ethylhexyl)phthalate	2.851	0.20	5	0	57.0	40 - 139				
Chrysene	2.815	0.10	5	0	56.3	43 - 120				
Dibenzofuran	2.757	0.10	5	0	55.1	50 - 120				
Di-n-butyl phthalate	2.838	0.20	5	0	56.8	45 - 123				
Fluoranthene	2.883	0.10	5	0	57.7	45 - 125				
Fluorene	2.833	0.10	5	0	56.7	49 - 120				
Naphthalene	2.664	0.10	5	0	53.3	45 - 120				
Nitrobenzene	2.517	0.20	5	0	50.3	44 - 120				
N-Nitrosodiphenylamine	3.039	0.20	5	0	60.8	40 - 125				
Pentachlorophenol	2.403	0.20	5	0	48.1	19 - 121				
Phenanthrene	2.782	0.10	5	0	55.6	45 - 121				
Phenol	3.217	0.20	5	0	64.3	20 - 124				
Pyrene	2.85	0.10	5	0	57.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.392*	*0.20*	*5*	*0*	*67.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.97*	*0.20*	*5*	*0*	*59.4*	*40 - 125*				
Surr: 2-Fluorophenol	*2.727*	*0.20*	*5*	*0*	*54.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.222*	*0.20*	*5*	*0*	*64.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.623*	*0.20*	*5*	*0*	*52.5*	*41 - 120*				
Surr: Phenol-d6	*3.09*	*0.20*	*5*	*0*	*61.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: 137448 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-137448** Units: **ug/L** Analysis Date: **08-Feb-2019 10:47**
Client ID: Run ID: **SV-6_332610** SeqNo: **4944275** PrepDate: **06-Feb-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.89	0.20	5	0	57.8	39 - 127	2.611	10.2	20	
2,4-Dimethylphenol	3.153	0.20	5	0	63.1	35 - 120	2.518	22.4	20	R
2,4-Dinitrotoluene	3.088	0.20	5	0	61.8	50 - 122	2.659	14.9	20	
2,6-Dinitrotoluene	3.151	0.20	5	0	63.0	50 - 120	2.949	6.61	20	
2-Chloronaphthalene	3.338	0.20	5	0	66.8	50 - 120	2.976	11.5	20	
2-Methylnaphthalene	3.264	0.10	5	0	65.3	50 - 120	2.817	14.7	20	
4,6-Dinitro-2-methylphenol	4.105	0.20	5	0	82.1	25 - 121	2.638	43.5	30	R
4-Nitrophenol	3.228	1.0	5	0	64.6	30 - 130	1.883	52.6	20	R
Acenaphthene	2.907	0.10	5	0	58.1	45 - 120	2.641	9.56	20	
Acenaphthylene	3.114	0.10	5	0	62.3	47 - 120	2.731	13.1	20	
Anthracene	3.188	0.10	5	0	63.8	45 - 120	2.843	11.4	20	
Benz(a)anthracene	3.115	0.10	5	0	62.3	40 - 120	2.826	9.71	20	
Benzo(a)pyrene	3.388	0.10	5	0	67.8	45 - 120	3.019	11.5	20	
Bis(2-chloroethoxy)methane	3.015	0.20	5	0	60.3	45 - 120	2.696	11.2	20	
Bis(2-ethylhexyl)phthalate	3.041	0.20	5	0	60.8	40 - 139	2.851	6.45	20	
Chrysene	3.358	0.10	5	0	67.2	43 - 120	2.815	17.6	20	
Dibenzofuran	3.08	0.10	5	0	61.6	50 - 120	2.757	11.1	20	
Di-n-butyl phthalate	3.255	0.20	5	0	65.1	45 - 123	2.838	13.7	20	
Fluoranthene	3.271	0.10	5	0	65.4	45 - 125	2.883	12.6	20	
Fluorene	3.155	0.10	5	0	63.1	49 - 120	2.833	10.8	20	
Naphthalene	3.073	0.10	5	0	61.5	45 - 120	2.664	14.3	20	
Nitrobenzene	2.676	0.20	5	0	53.5	44 - 120	2.517	6.12	20	
N-Nitrosodiphenylamine	3.3	0.20	5	0	66.0	40 - 125	3.039	8.23	20	
Pentachlorophenol	3.405	0.20	5	0	68.1	19 - 121	2.403	34.5	20	R
Phenanthrene	3.143	0.10	5	0	62.9	45 - 121	2.782	12.2	20	
Phenol	3.33	0.20	5	0	66.6	20 - 124	3.217	3.43	20	
Pyrene	3.275	0.10	5	0	65.5	40 - 130	2.85	13.9	20	
Surr: 2,4,6-Tribromophenol	*3.758*	*0.20*	*5*	*0*	*75.2*	*34 - 129*	*3.392*	*10.2*	*20*	
Surr: 2-Fluorobiphenyl	*3.216*	*0.20*	*5*	*0*	*64.3*	*40 - 125*	*2.97*	*7.93*	*20*	
Surr: 2-Fluorophenol	*3.227*	*0.20*	*5*	*0*	*64.5*	*20 - 120*	*2.727*	*16.8*	*20*	
Surr: 4-Terphenyl-d14	*3.491*	*0.20*	*5*	*0*	*69.8*	*40 - 135*	*3.222*	*8.03*	*20*	
Surr: Nitrobenzene-d5	*2.813*	*0.20*	*5*	*0*	*56.3*	*41 - 120*	*2.623*	*7.01*	*20*	
Surr: Phenol-d6	*3.491*	*0.20*	*5*	*0*	*69.8*	*20 - 120*	*3.09*	*12.2*	*20*	

The following samples were analyzed in this batch: HS19020155-01 HS19020155-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: R332708 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-190211** Units: **ug/L** Analysis Date: **11-Feb-2019 11:56**
Client ID: Run ID: **VOA2_332708** SeqNo: **4946341** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.67*	*1.0*	*50*	*0*	*91.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*45.83*	*1.0*	*50*	*0*	*91.7*	*82 - 115*				
Surr: Dibromofluoromethane	*52.39*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*50.71*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-190211** Units: **ug/L** Analysis Date: **11-Feb-2019 10:44**
Client ID: Run ID: **VOA2_332708** SeqNo: **4946340** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.52	1.0	20	0	87.6	70 - 124				
Benzene	18.99	1.0	20	0	94.9	74 - 120				
Chlorobenzene	20.07	1.0	20	0	100	76 - 113				
Ethylbenzene	20.86	1.0	20	0	104	77 - 117				
Methylene chloride	19.08	2.0	20	0	95.4	70 - 127				
Toluene	19.54	1.0	20	0	97.7	77 - 118				
Xylenes, Total	59.46	1.0	60	0	99.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.08*	*1.0*	*50*	*0*	*96.2*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.66*	*1.0*	*50*	*0*	*95.3*	*82 - 115*				
Surr: Dibromofluoromethane	*48.95*	*1.0*	*50*	*0*	*97.9*	*73 - 126*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19020155

QC BATCH REPORT

Batch ID: R332708 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS19020162-01MS** Units: **ug/L** Analysis Date: **11-Feb-2019 15:11**
Client ID: Run ID: **VOA2_332708** SeqNo: **4946349** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.91	1.0	20	0	84.6	70 - 127				
Benzene	18.5	1.0	20	0	92.5	70 - 127				
Chlorobenzene	18.97	1.0	20	0	94.9	70 - 114				
Ethylbenzene	20.21	1.0	20	0	101	70 - 124				
Methylene chloride	18.41	2.0	20	0	92.1	70 - 128				
Toluene	18.96	1.0	20	0	94.8	70 - 123				
Xylenes, Total	56.98	1.0	60	0	95.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.8*	*1.0*	*50*	*0*	*97.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.71*	*1.0*	*50*	*0*	*97.4*	*81 - 113*				
Surr: Dibromofluoromethane	*48.74*	*1.0*	*50*	*0*	*97.5*	*77 - 123*				
Surr: Toluene-d8	*48.91*	*1.0*	*50*	*0*	*97.8*	*82 - 127*				

MSD Sample ID: **HS19020162-01MSD** Units: **ug/L** Analysis Date: **11-Feb-2019 15:35**
Client ID: Run ID: **VOA2_332708** SeqNo: **4946350** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.19	1.0	20	0	85.9	70 - 127	16.91	1.61	20	
Benzene	18.89	1.0	20	0	94.4	70 - 127	18.5	2.07	20	
Chlorobenzene	19.19	1.0	20	0	95.9	70 - 114	18.97	1.12	20	
Ethylbenzene	20.55	1.0	20	0	103	70 - 124	20.21	1.67	20	
Methylene chloride	19	2.0	20	0	95.0	70 - 128	18.41	3.14	20	
Toluene	19.05	1.0	20	0	95.3	70 - 123	18.96	0.466	20	
Xylenes, Total	57.51	1.0	60	0	95.8	70 - 130	56.98	0.927	20	
Surr: 1,2-Dichloroethane-d4	*48.56*	*1.0*	*50*	*0*	*97.1*	*70 - 126*	*48.8*	*0.487*	*20*	
Surr: 4-Bromofluorobenzene	*48.03*	*1.0*	*50*	*0*	*96.1*	*81 - 113*	*48.71*	*1.4*	*20*	
Surr: Dibromofluoromethane	*48.7*	*1.0*	*50*	*0*	*97.4*	*77 - 123*	*48.74*	*0.0752*	*20*	
Surr: Toluene-d8	*48.71*	*1.0*	*50*	*0*	*97.4*	*82 - 127*	*48.91*	*0.415*	*20*	

The following samples were analyzed in this batch: HS19020155-01 HS19020155-02 HS19020155-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19020155**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19020155

Date/Time Received: **02-Feb-2019 09:22**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 5-Feb-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 13-Feb-2019 Date

Matrices: **Water**

Carrier name: **Client**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☐	☐	Not Present ☑
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:194314
Samplers name present on COC?	☐	☑	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	0.9C / 1.2C UC/C	IR # 25
Cooler(s)/Kit(s):	44538	
Date/Time sample(s) sent to storage:	02/02/2019 13:00	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☐	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: 194314

HS19020155

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 Site Specific)
Work Order		Project Number	1620-06-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.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	WQ-1620-TB0__-201801____			Water	1	2	~~X~~		~~X~~	~~X~~							
2	WG-1620-MW77A-20190201	2-1-19	1305	W		6	X		X	X							
3	WG-1620-MW85C-20190201	2-1-19	1400	W		6	X		X	X							
4	WG-1620-TB07-20190201	2-1-19	-	W		2	X										
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BEAUDOIN

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	2-2-19	09:22	
Relinquished by:	Date:	Time:	Received by (Laboratory): 2/2/19 09:22
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
44538	0.9
3718	RETURN

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

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

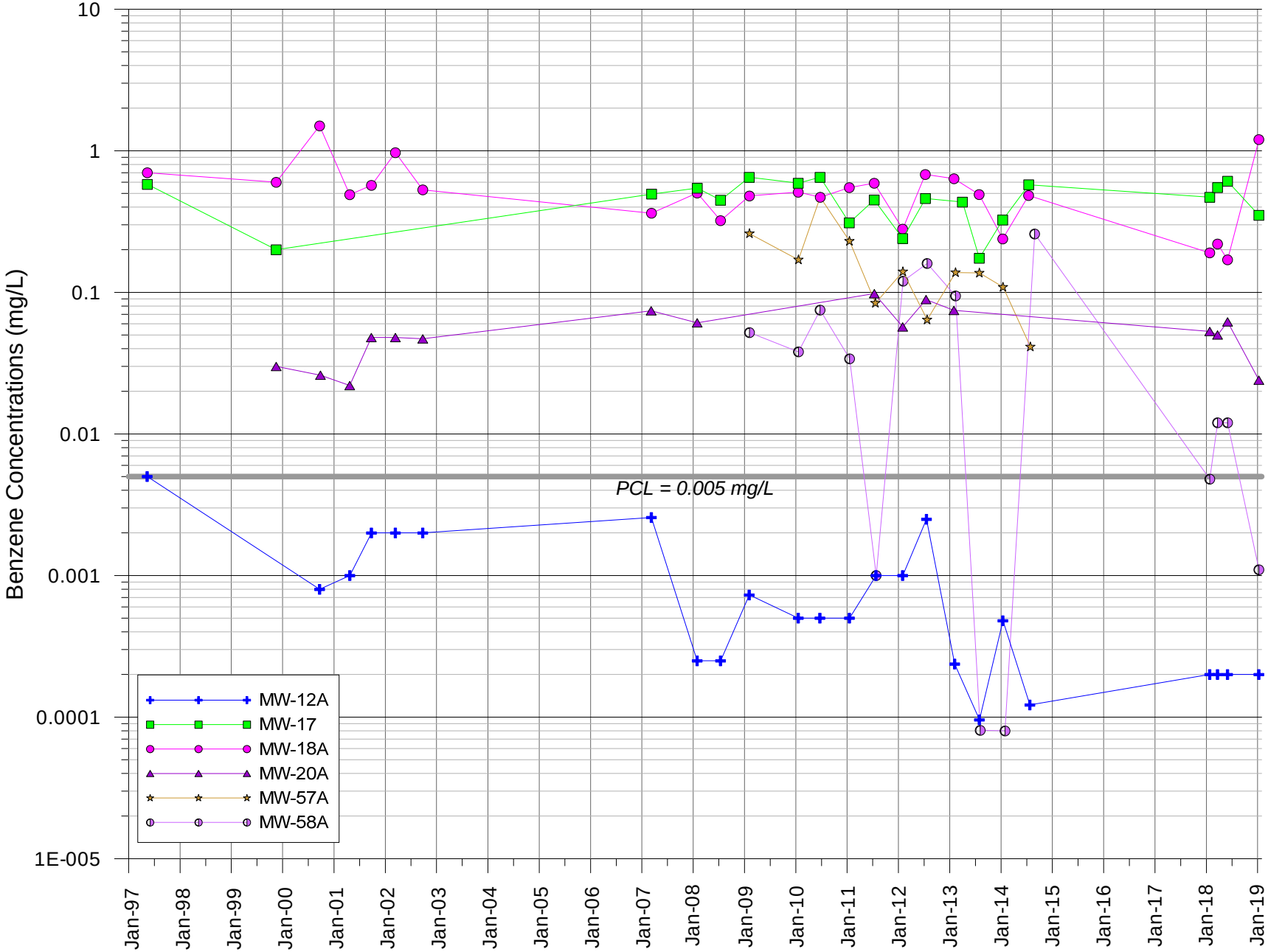
Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is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

Copyright 2011 by ALS Environmental.

ATTACHMENT B

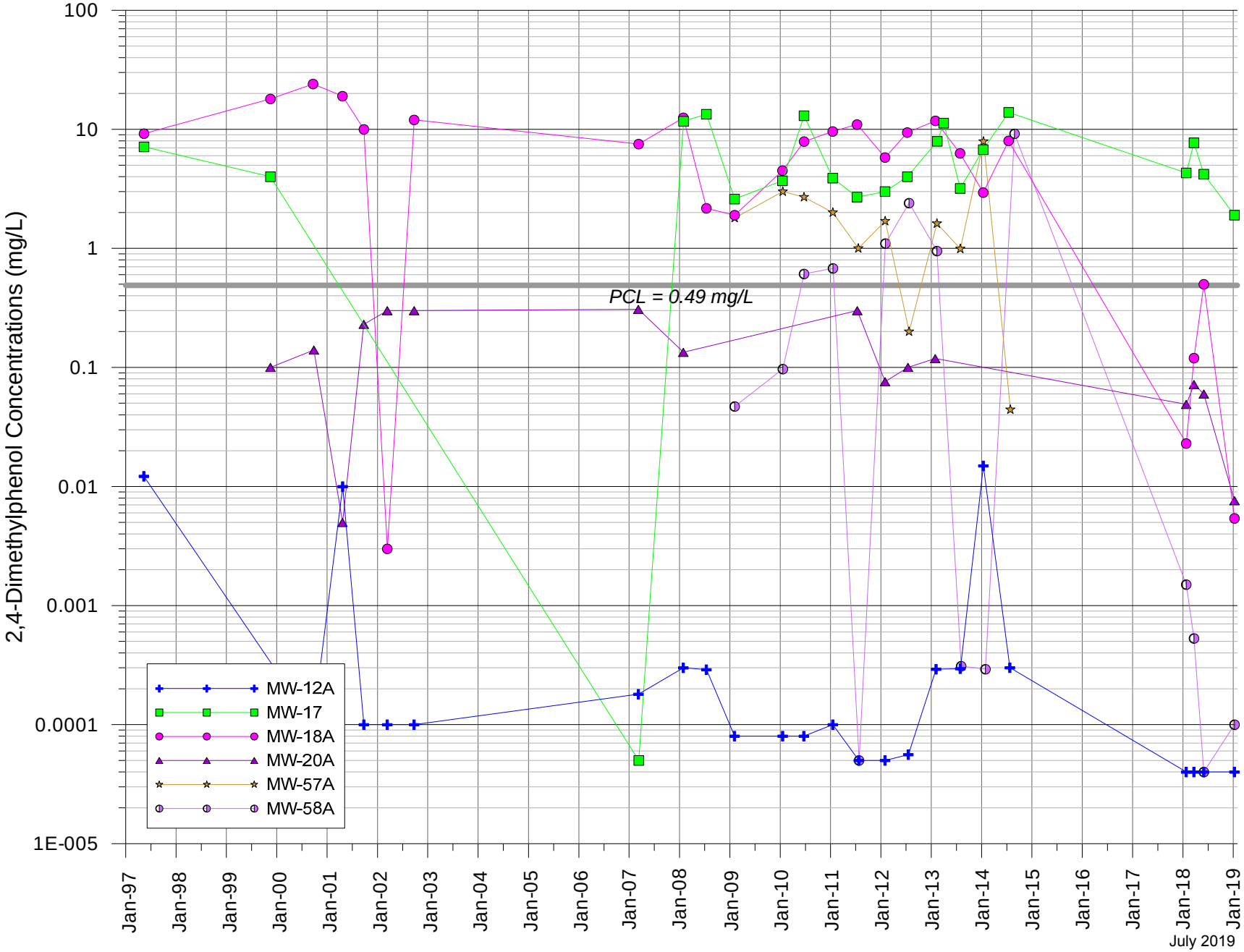
COC Concentration Graphs

ATTACHMENT 1B-1
Benzene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



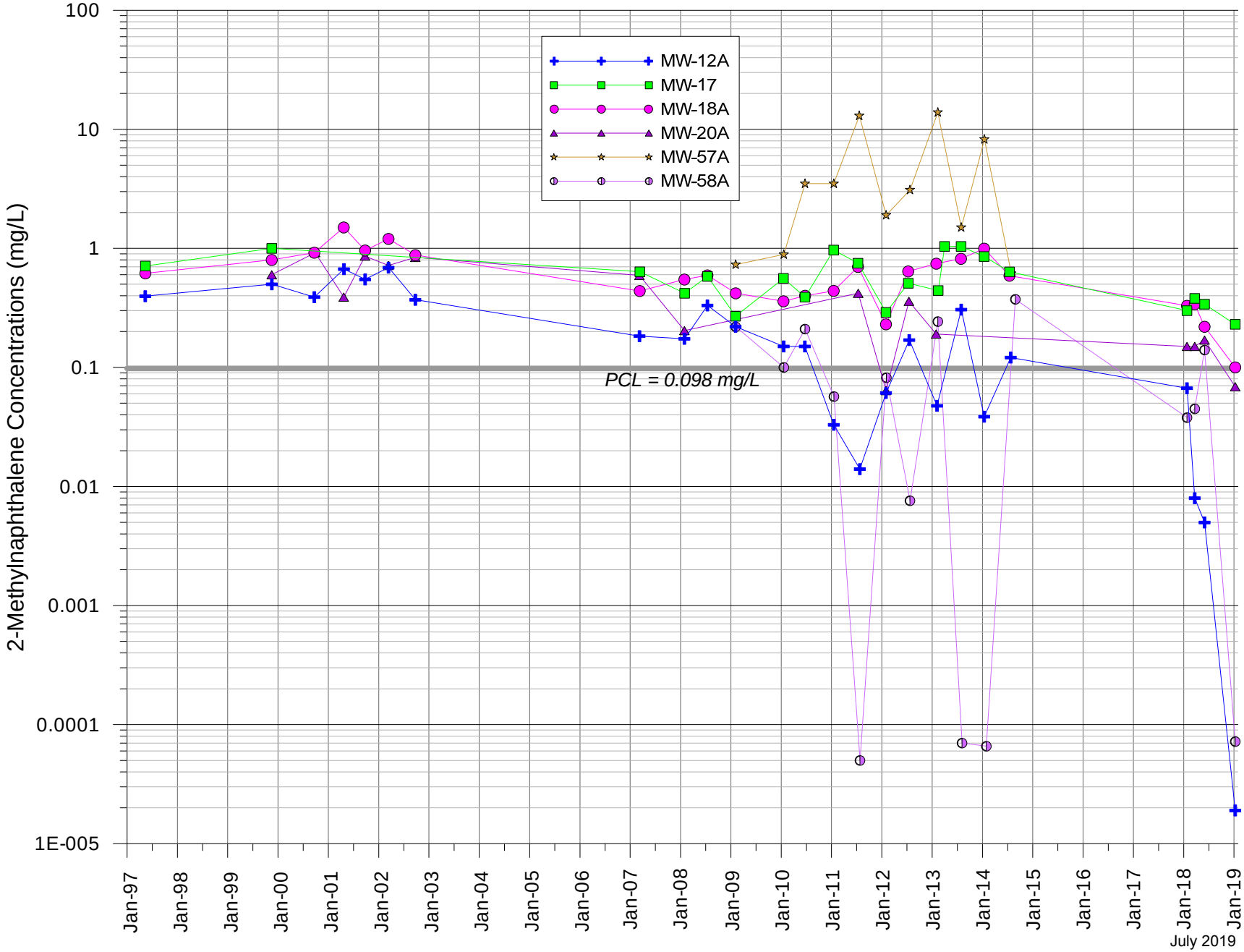
July 2019

ATTACHMENT 1B-2
2,4-Dimethylphenol Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



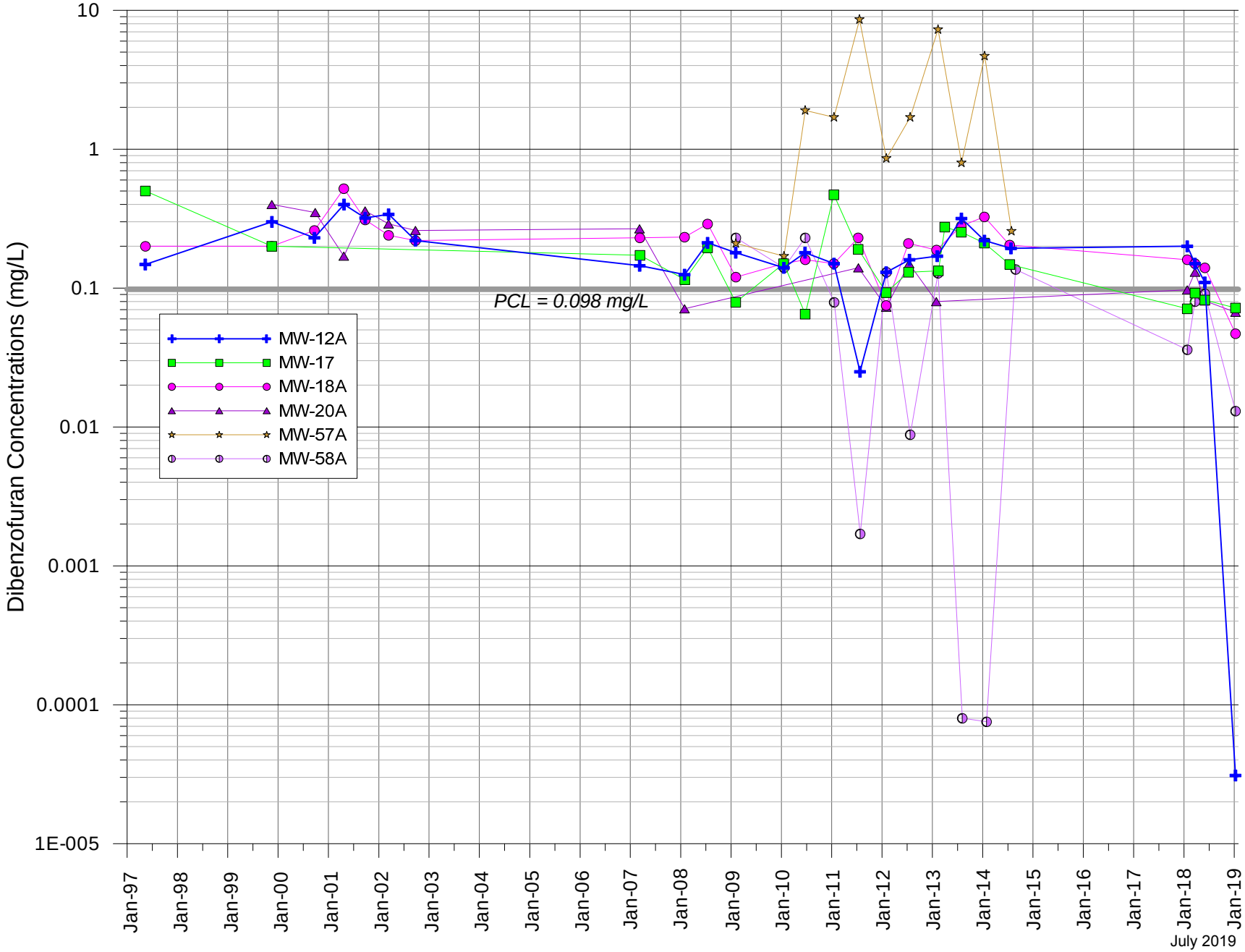
July 2019

ATTACHMENT 1B-3
2-Methylnaphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



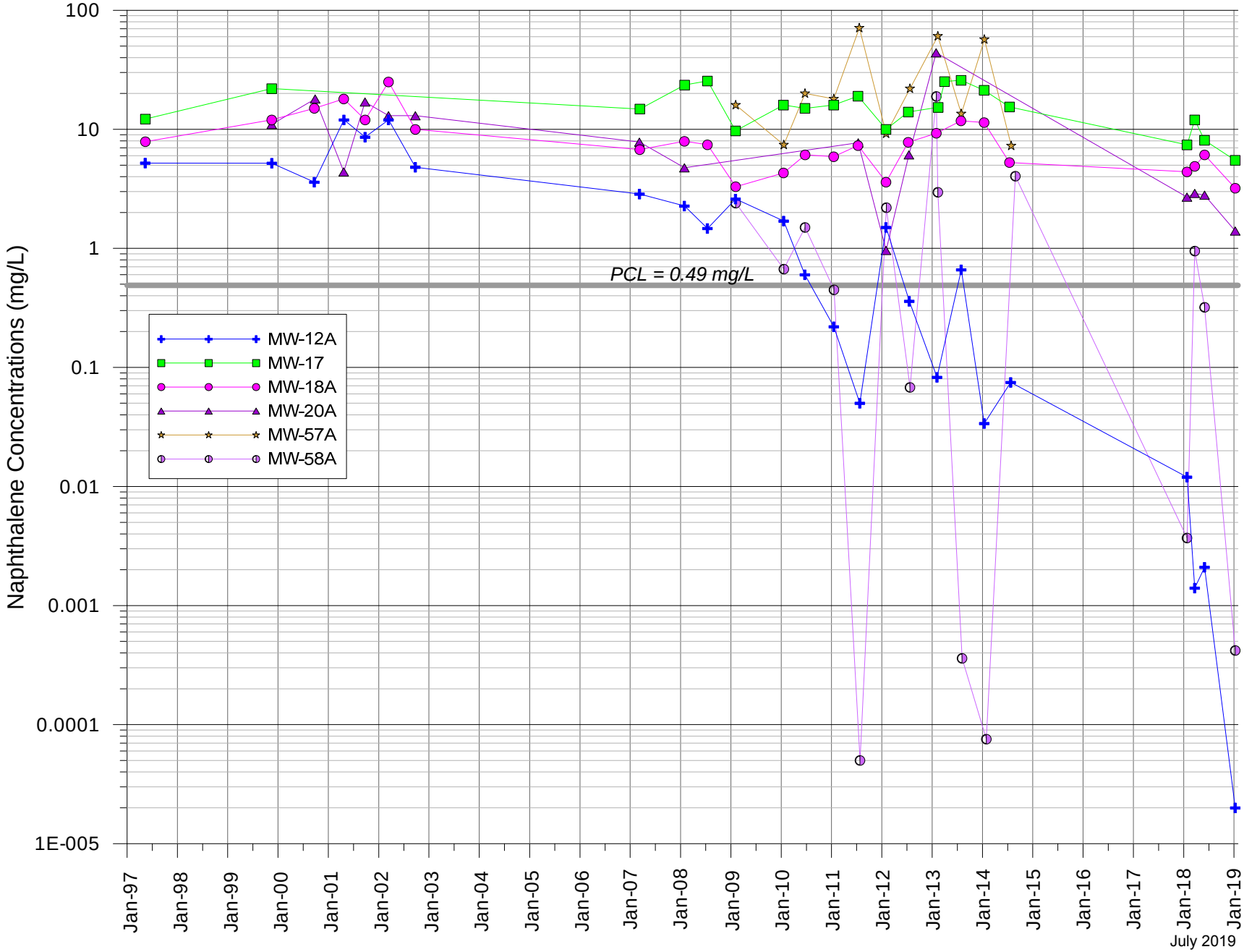
July 2019

ATTACHMENT 1B-4
Dibenzofuran Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



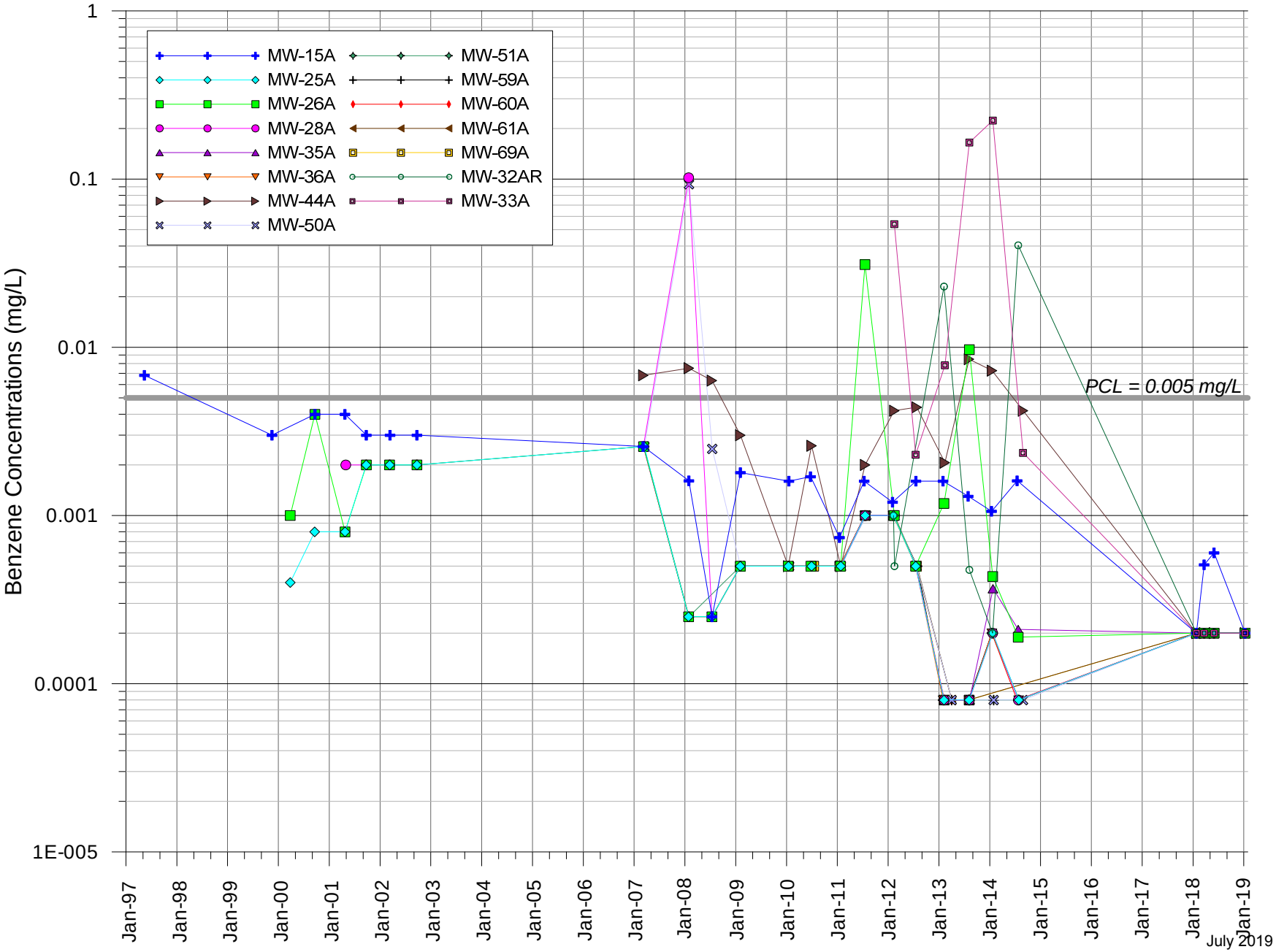
July 2019

ATTACHMENT 1B-5
Naphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



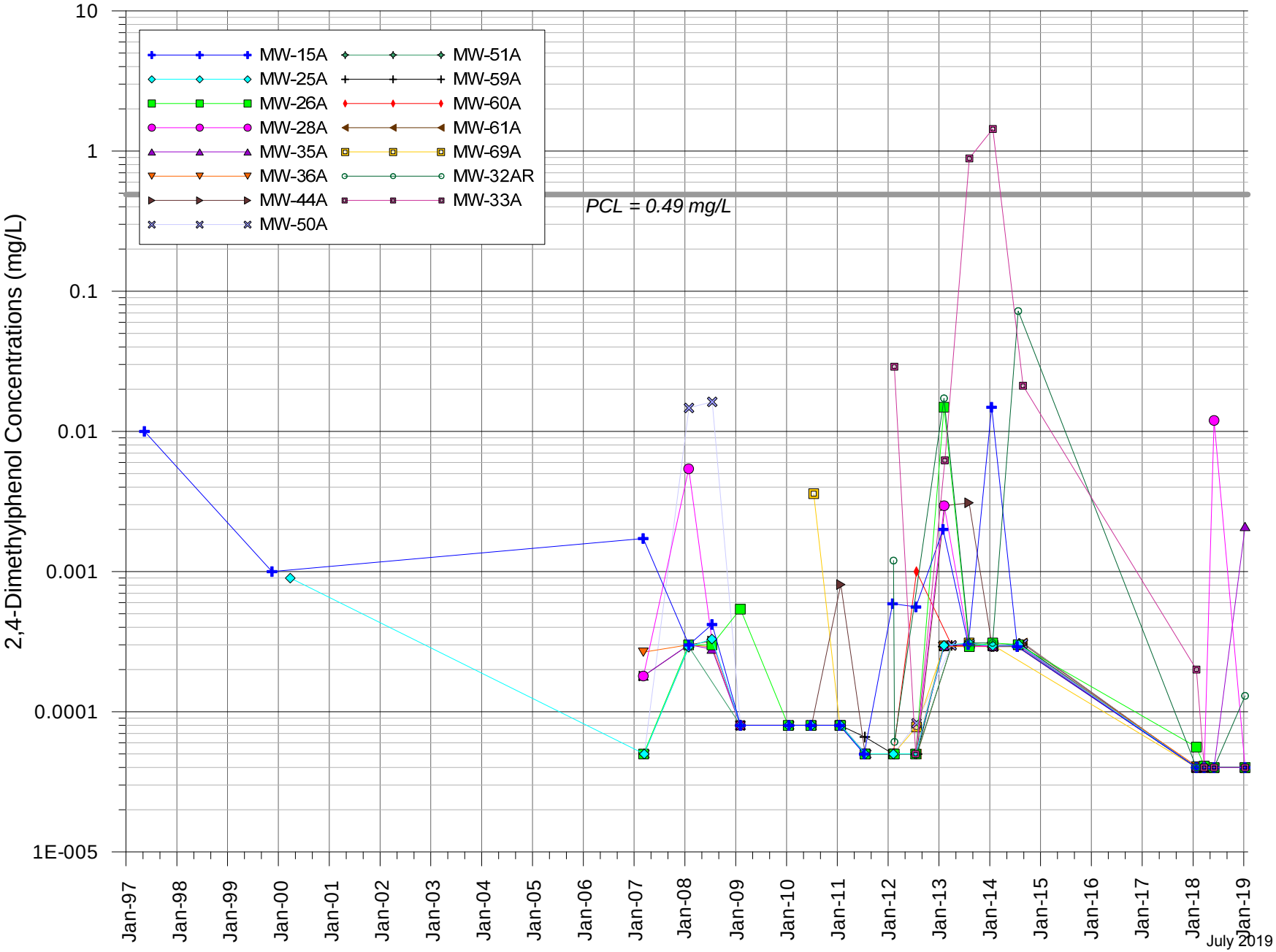
July 2019

ATTACHMENT 1B-6
Benzene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



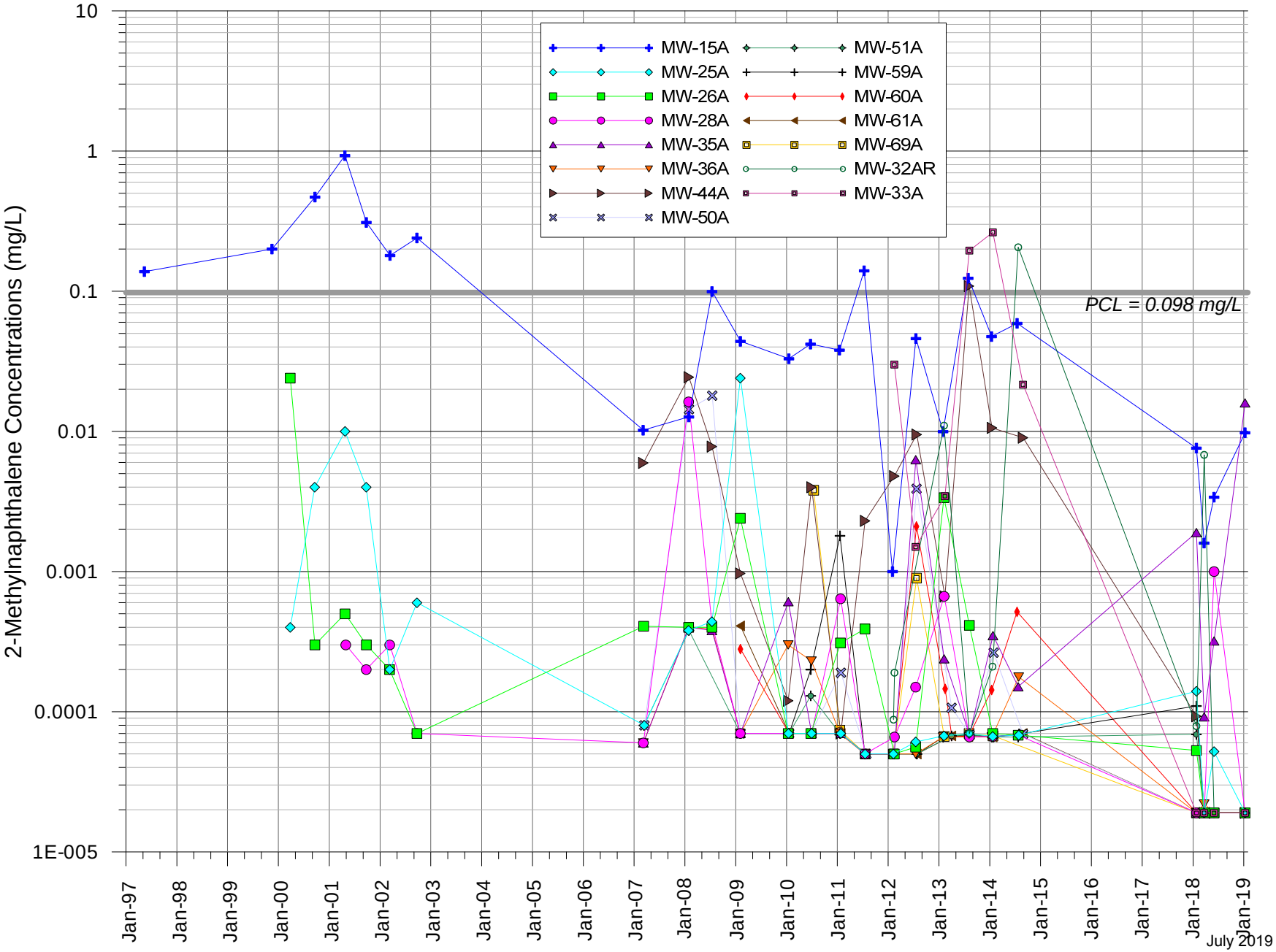
July 2019

ATTACHMENT 1B-7
2,4-Dimethylphenol Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



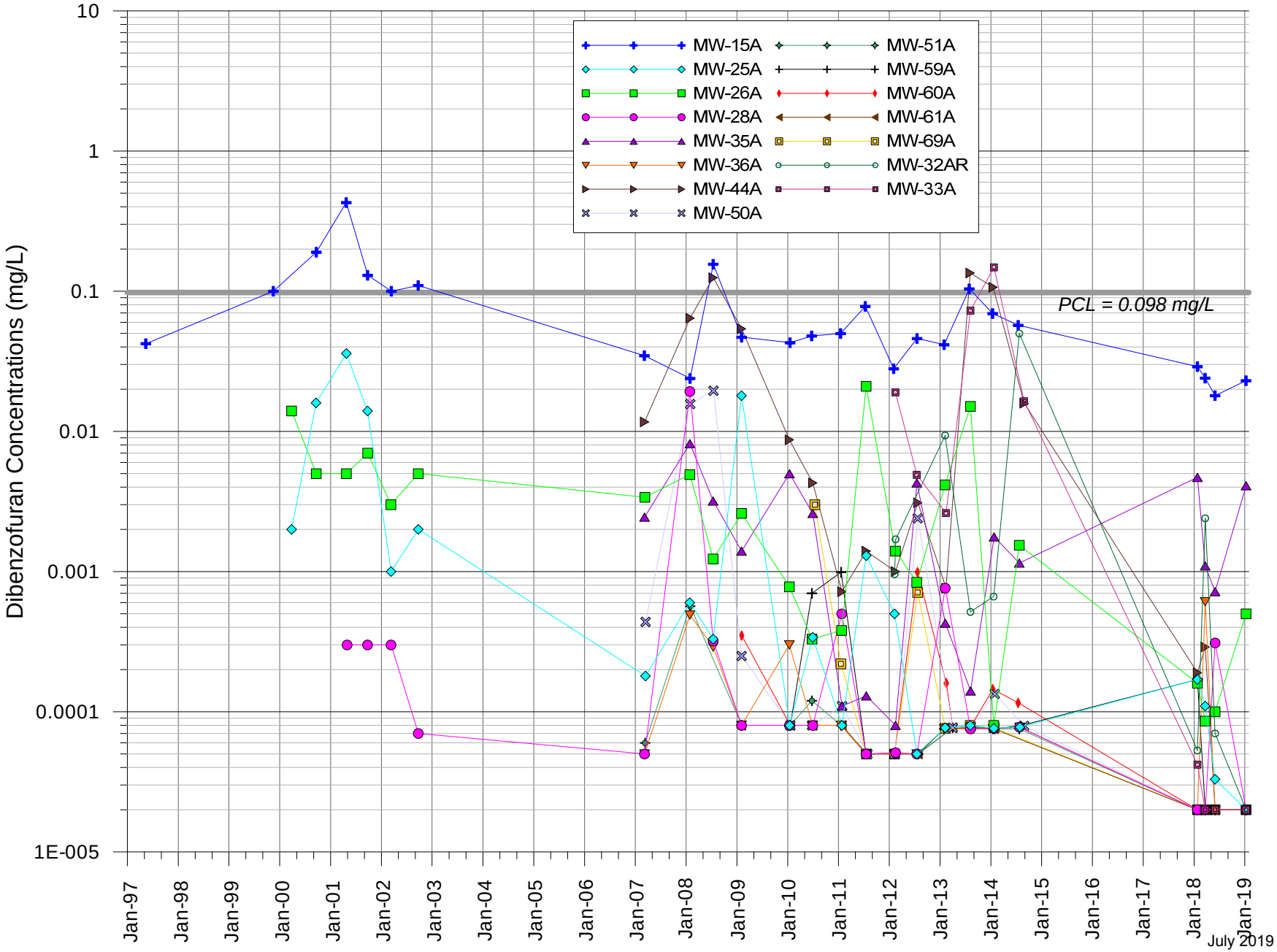
July 2019

ATTACHMENT 1B-8
2-Methylnapthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



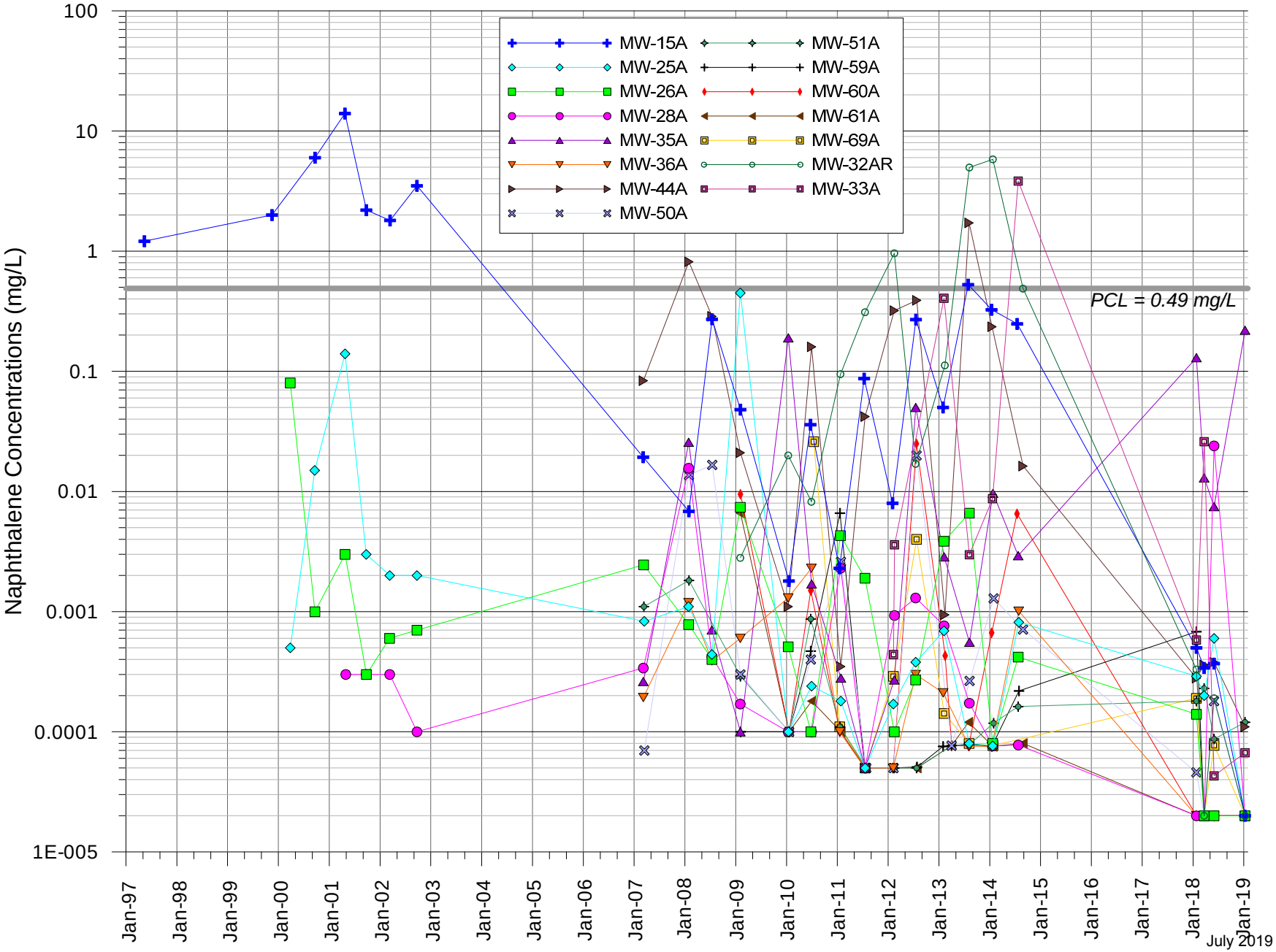
July 2019

ATTACHMENT 1B-9
Dibenzofuran Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



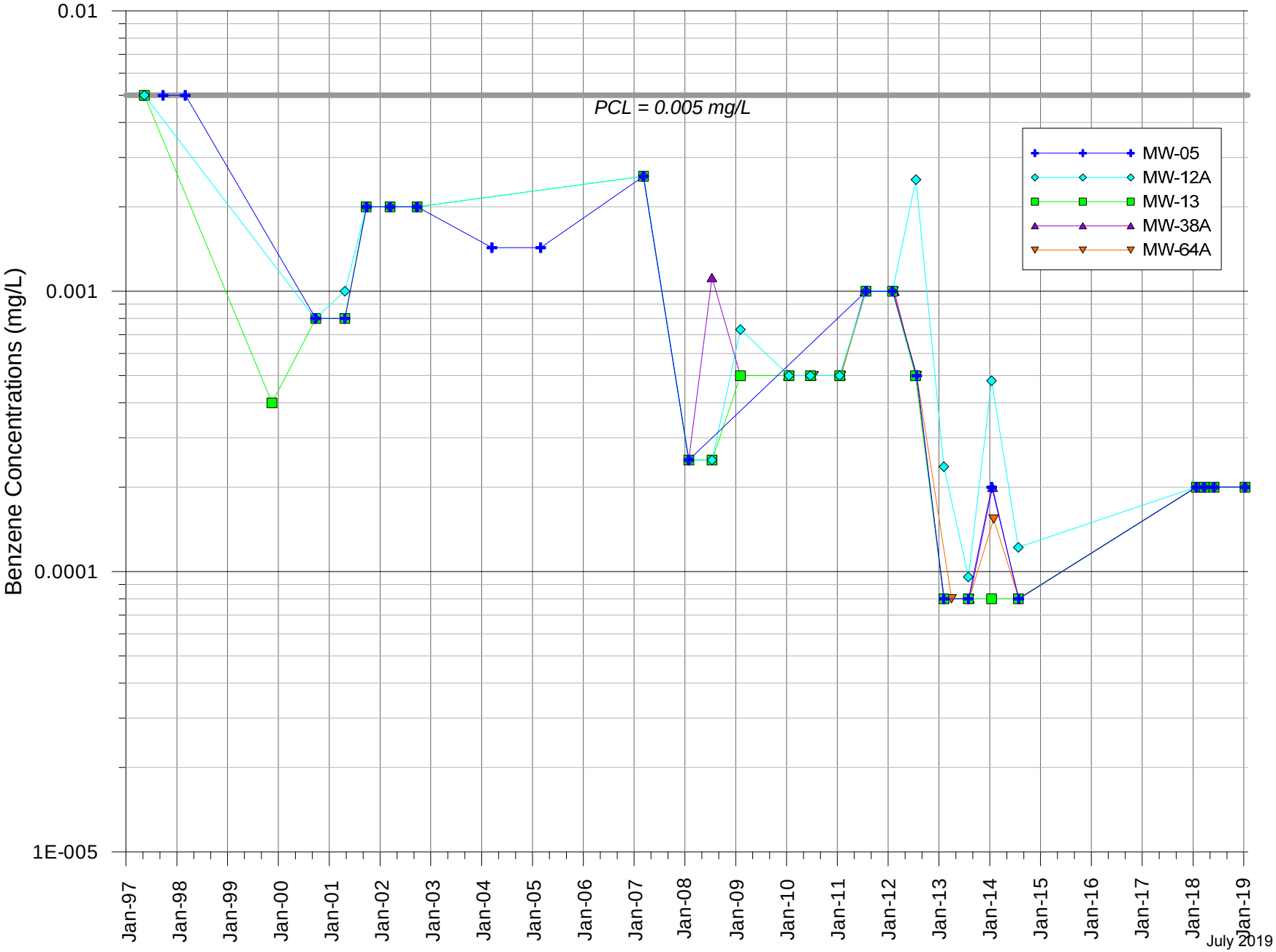
July 2019

ATTACHMENT 1B-10
Naphthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



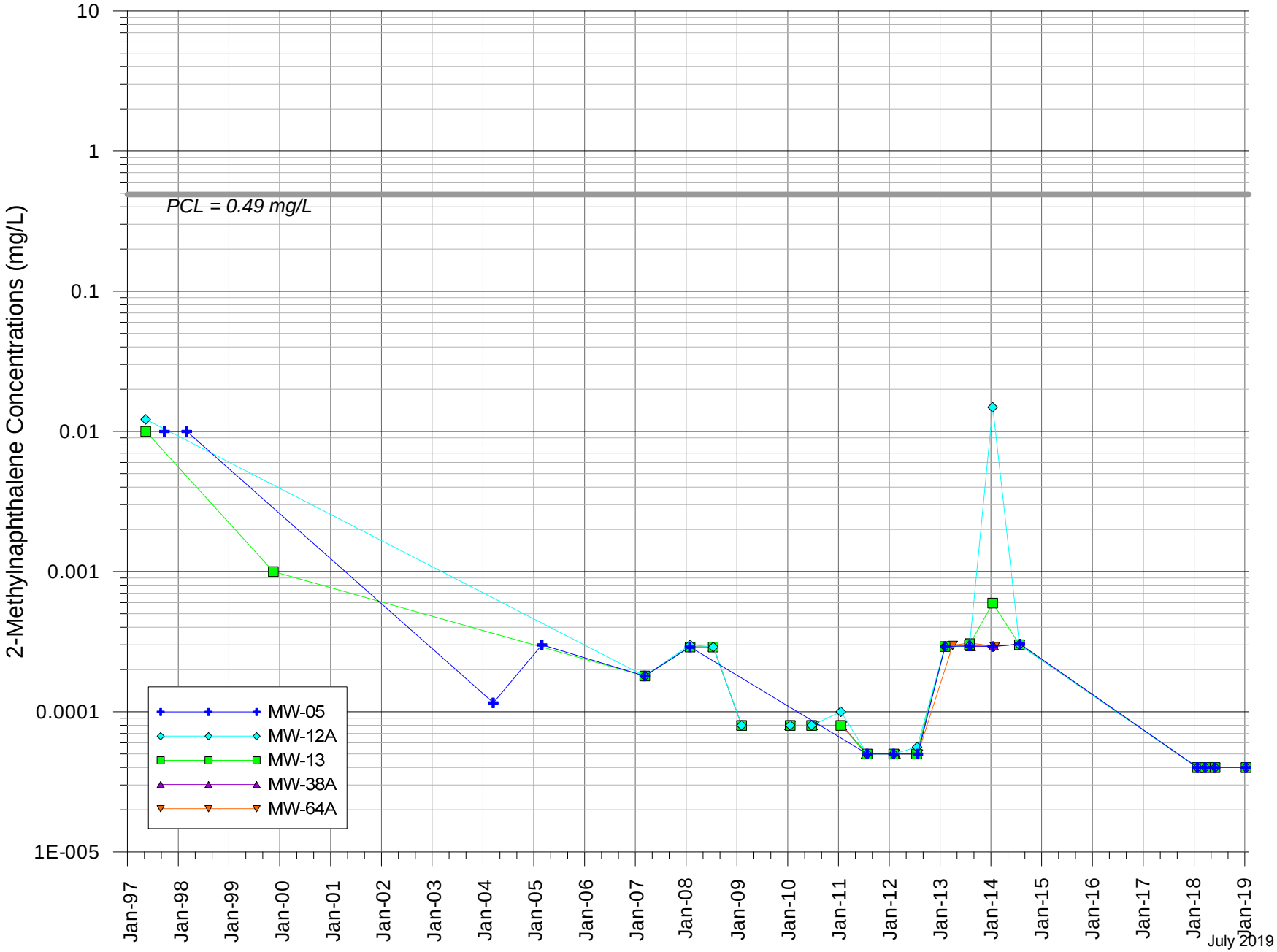
July 2019

ATTACHMENT 1B-11
Benzene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



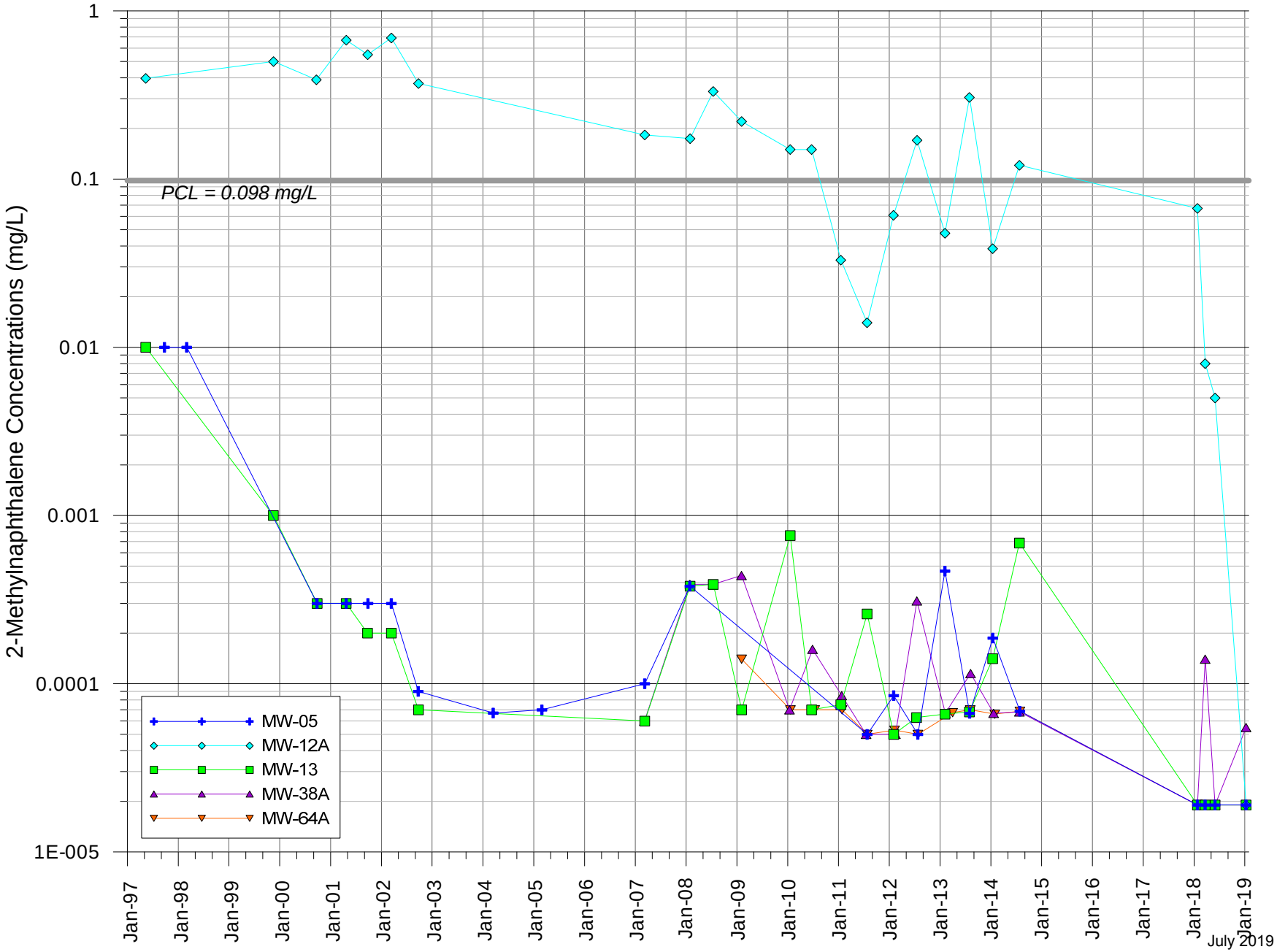
July 2019

ATTACHMENT 1B-12
2,4-Dimethylphenol Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



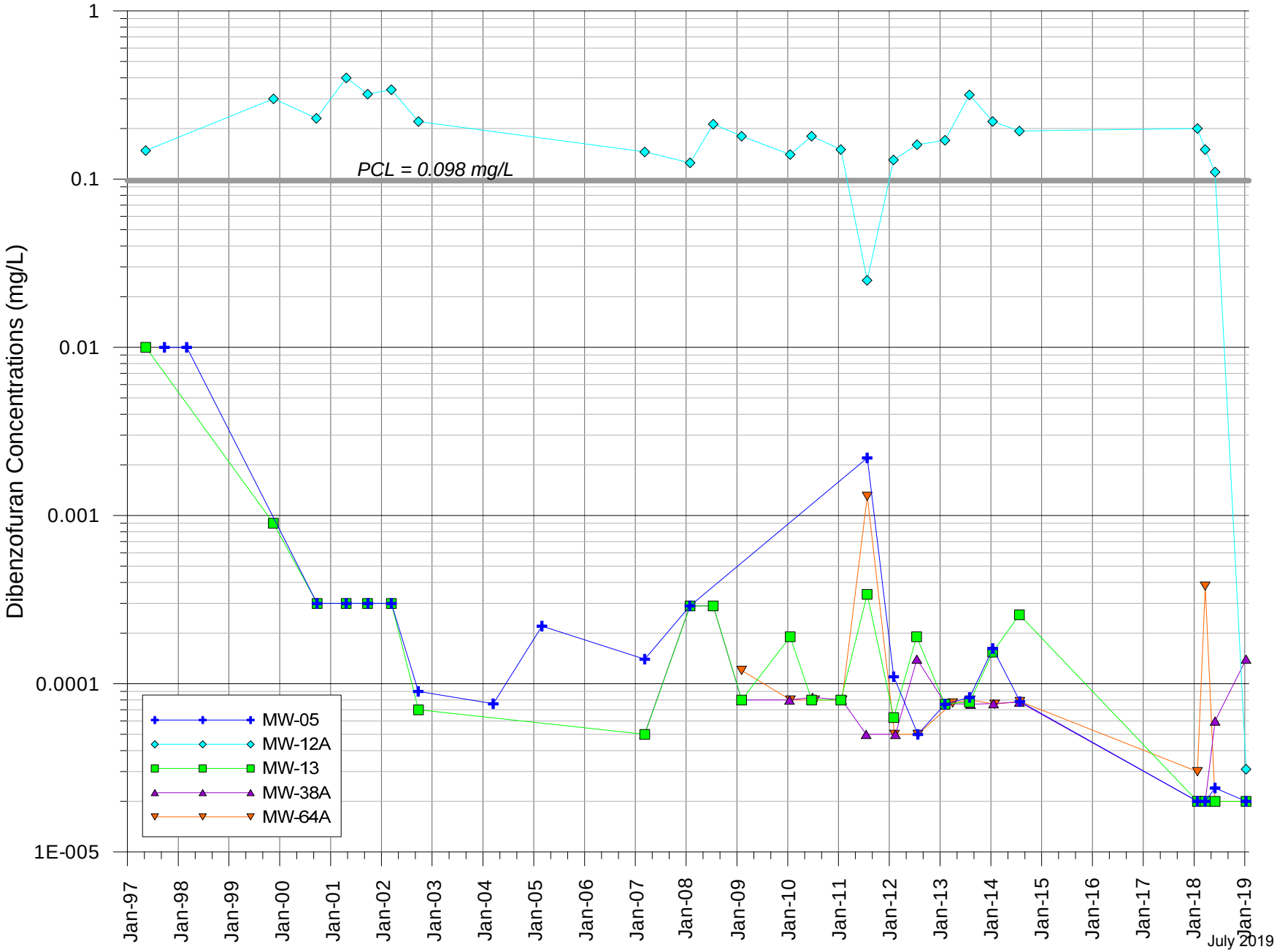
July 2019

ATTACHMENT 1B-13
2-Methylnaphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



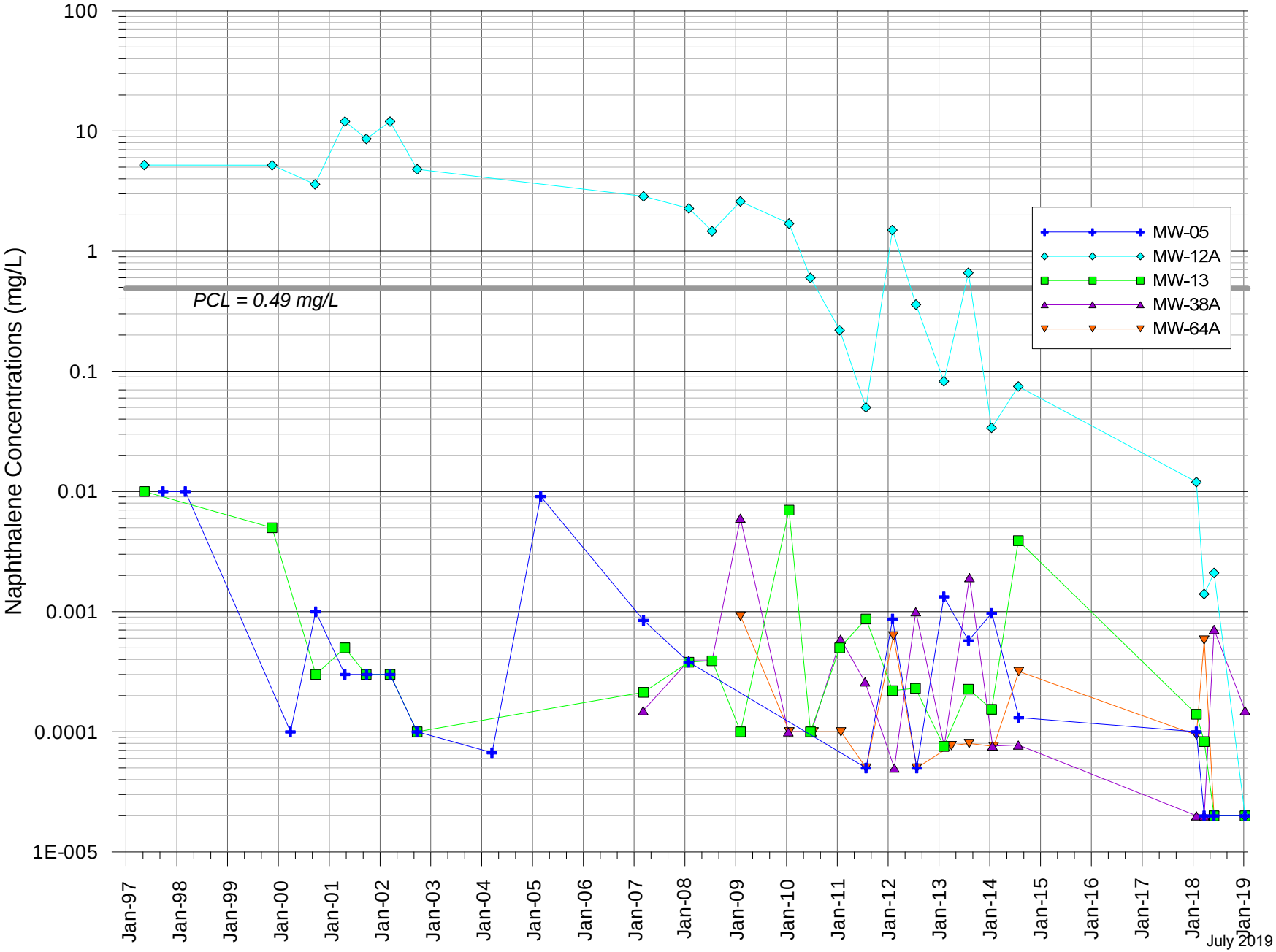
July 2019

ATTACHMENT 1B-14
Dibenzofuran Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



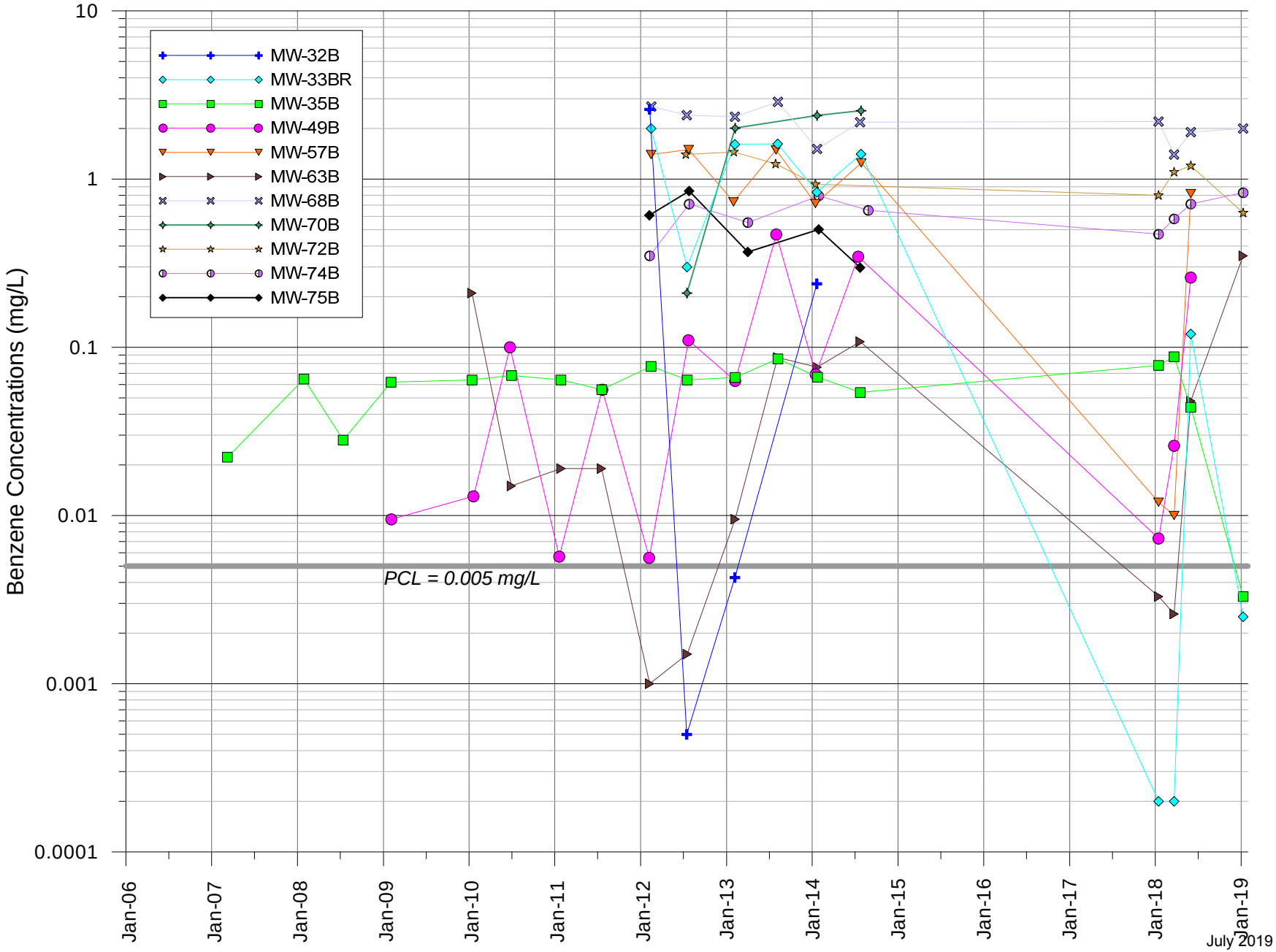
July 2019

ATTACHMENT 1B-15
Naphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



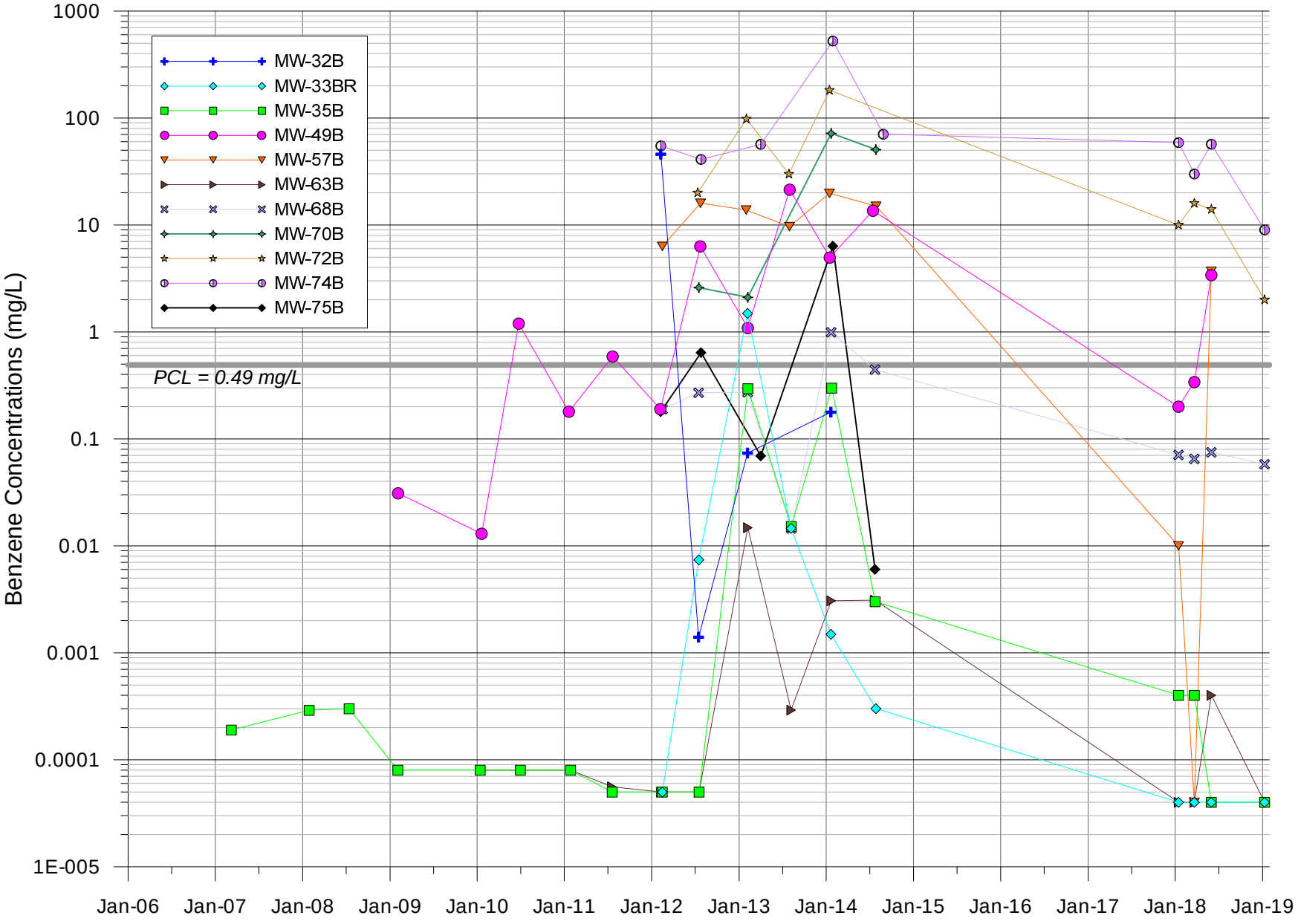
July 2019

ATTACHMENT 1B-16
Benzene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



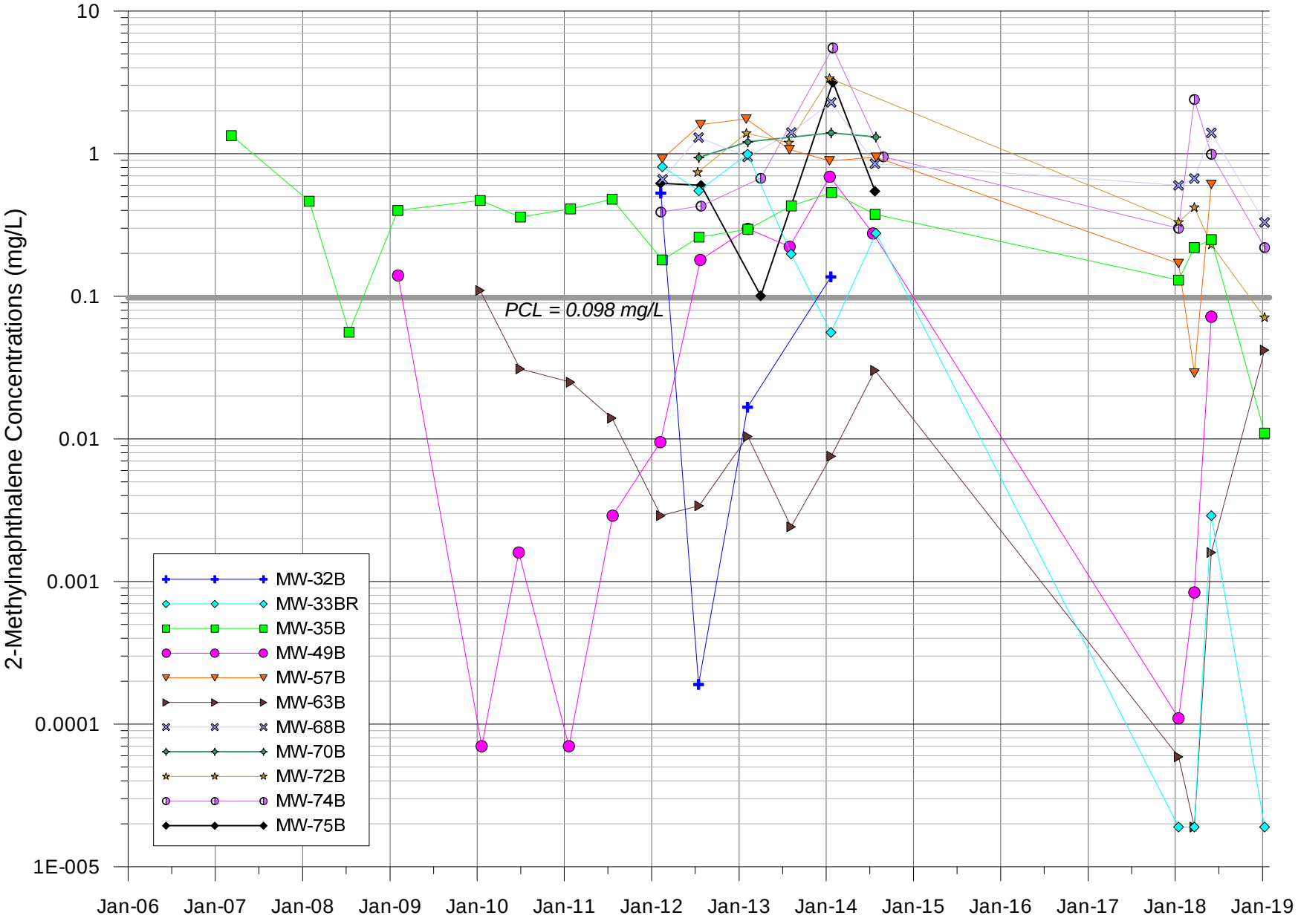
July 2019

ATTACHMENT 1B-17
2,4-Dimethylphenol Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



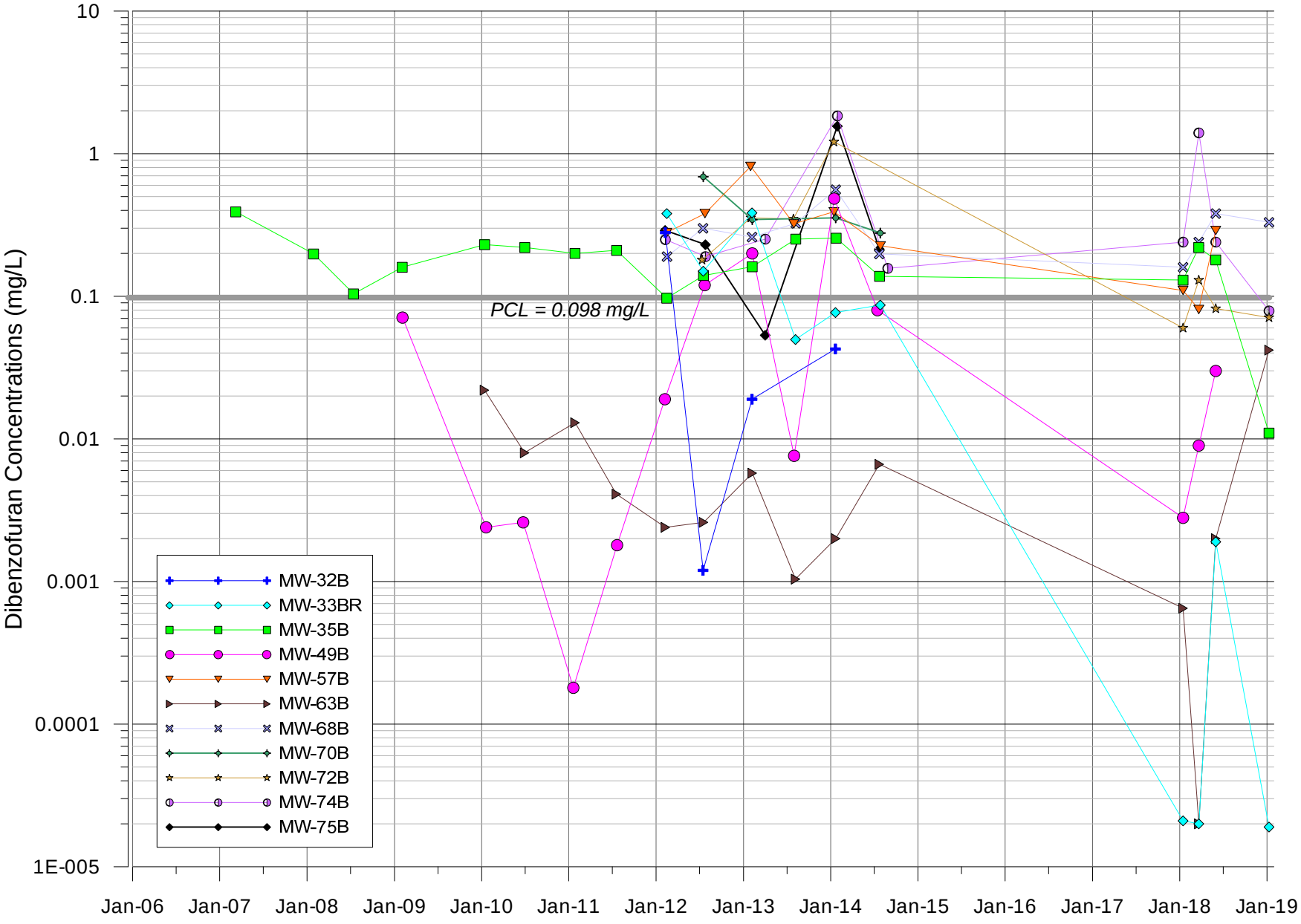
July 2019

ATTACHMENT 1B-18
2-Methylnaphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



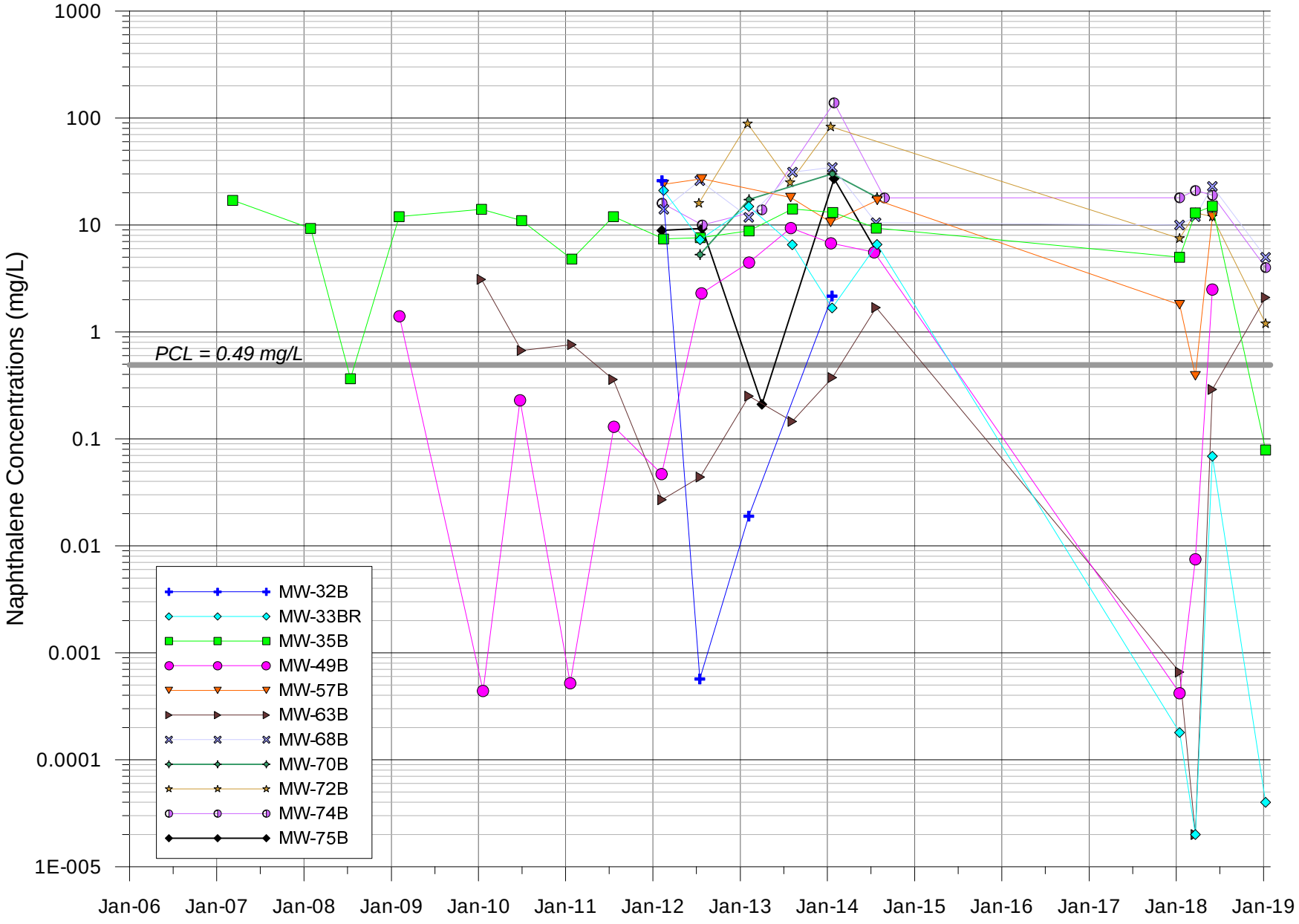
July 2019

ATTACHMENT 1B-19
Dibenzofuran Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



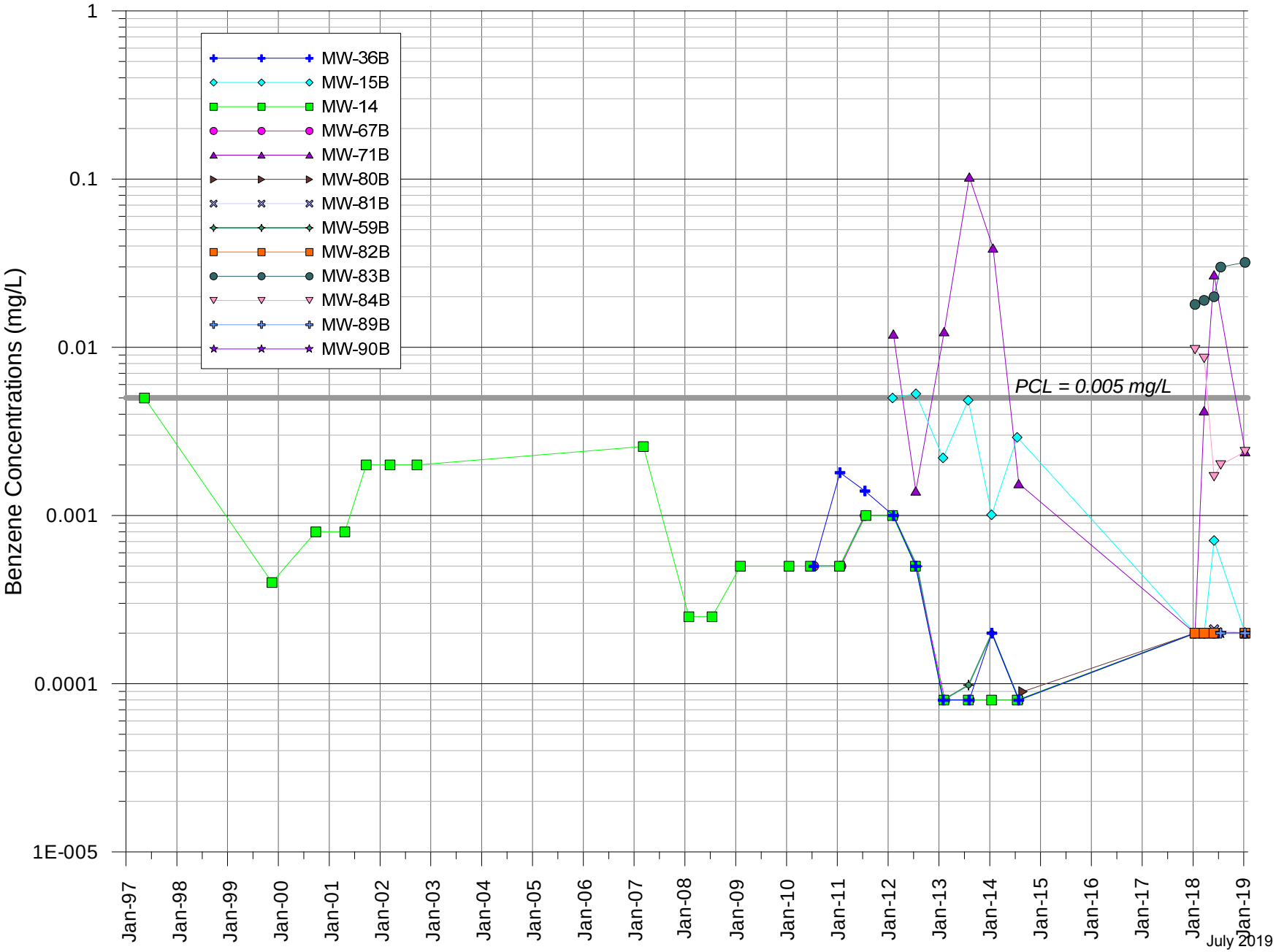
July 2019

ATTACHMENT 1B-20
Naphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



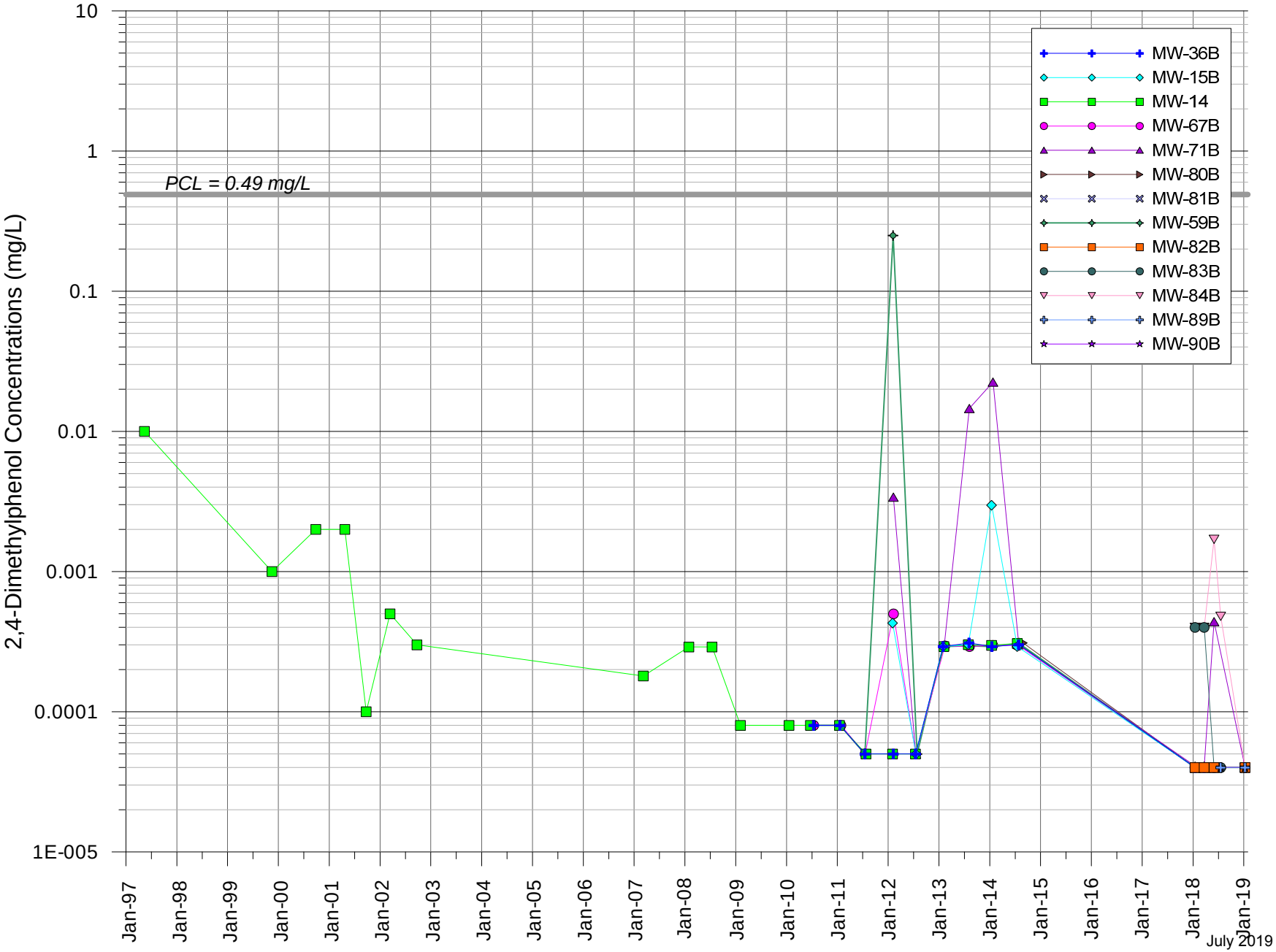
July 2019

ATTACHMENT 1B-21
Benzene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



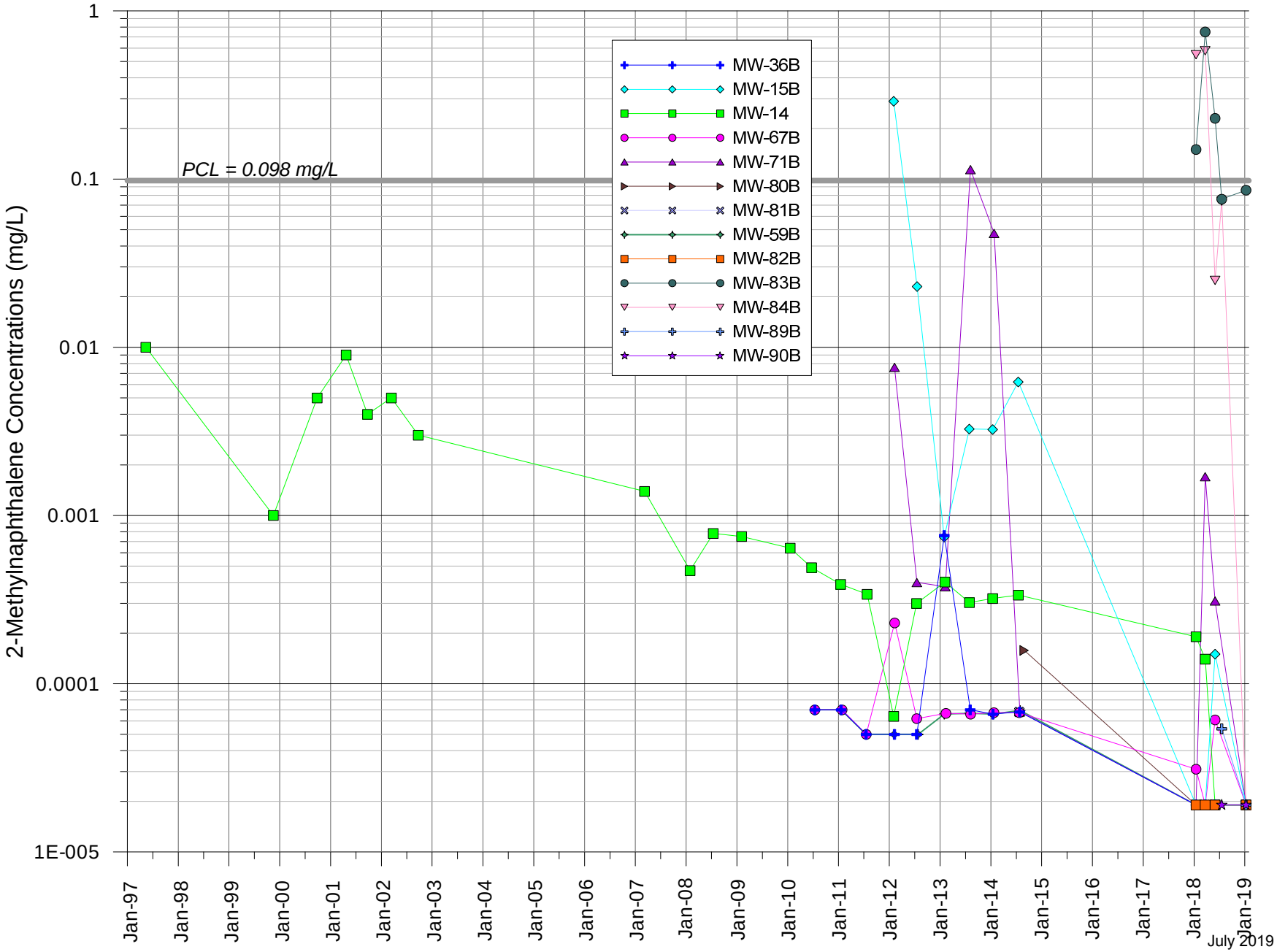
July 2019

ATTACHMENT 1B-22
2,4-Dimethylphenol Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



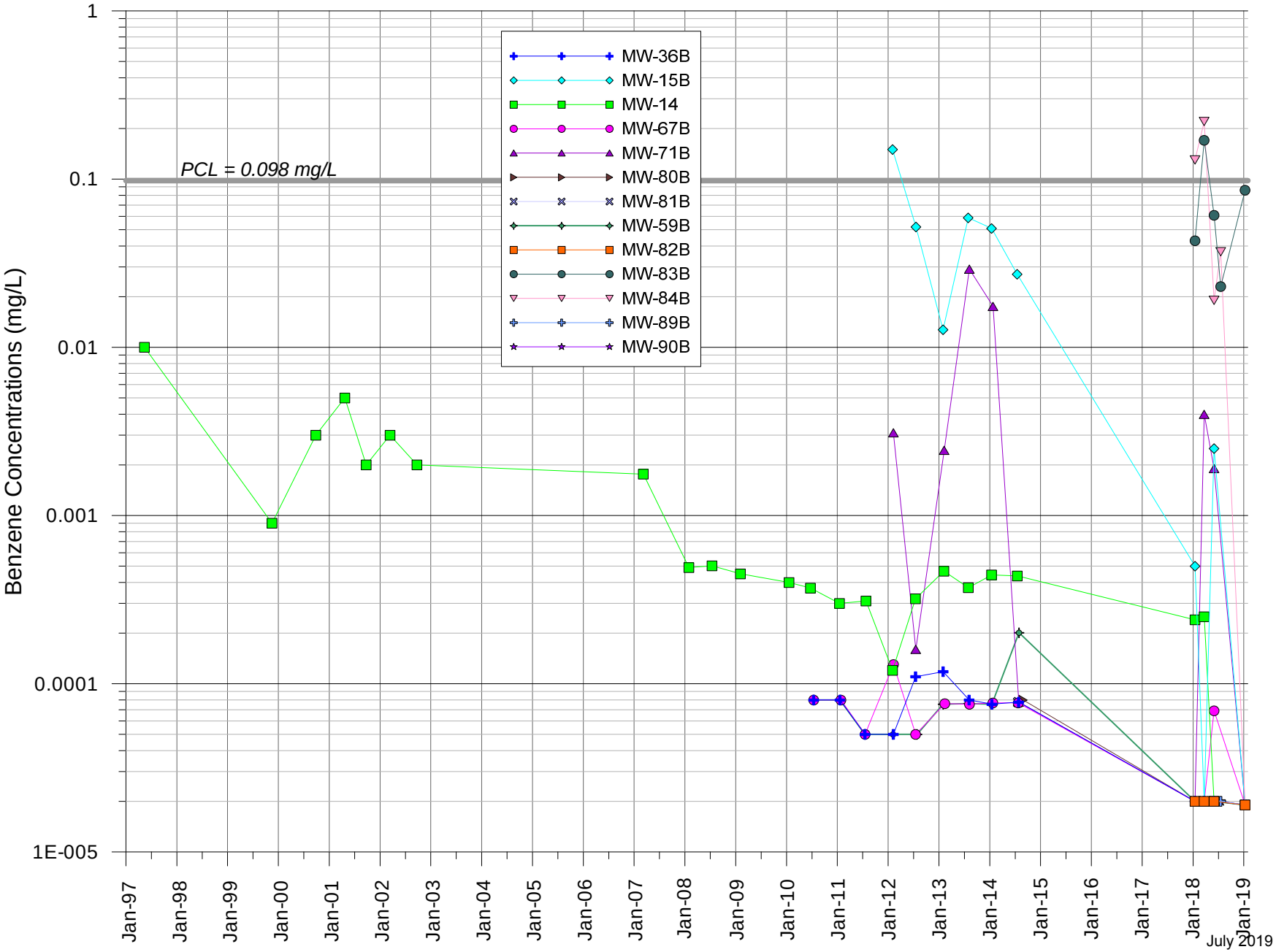
July 2019

ATTACHMENT 1B-23
2-Methylnaphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



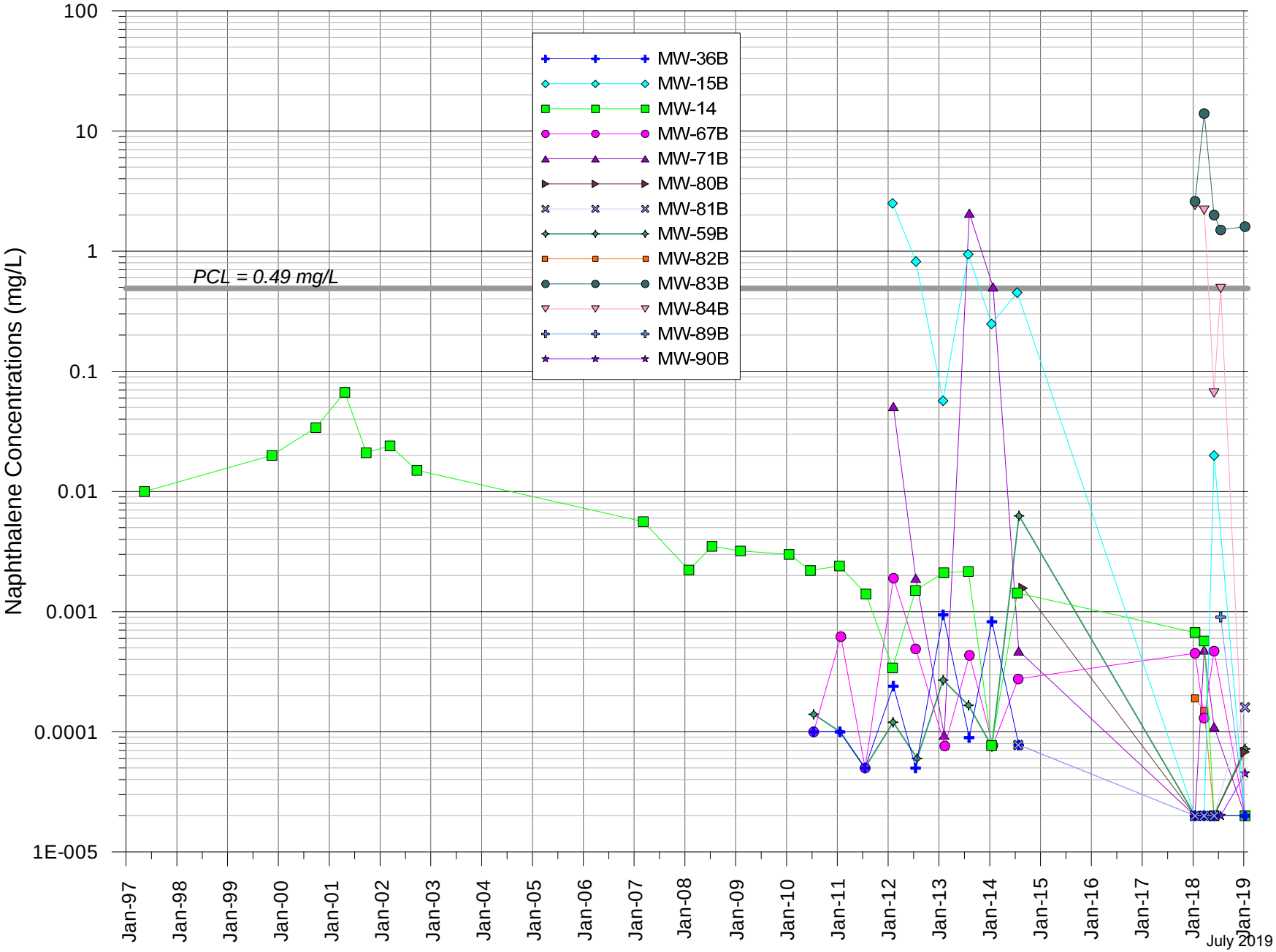
July 2019

ATTACHMENT 1B-24
Dibenzofuran Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



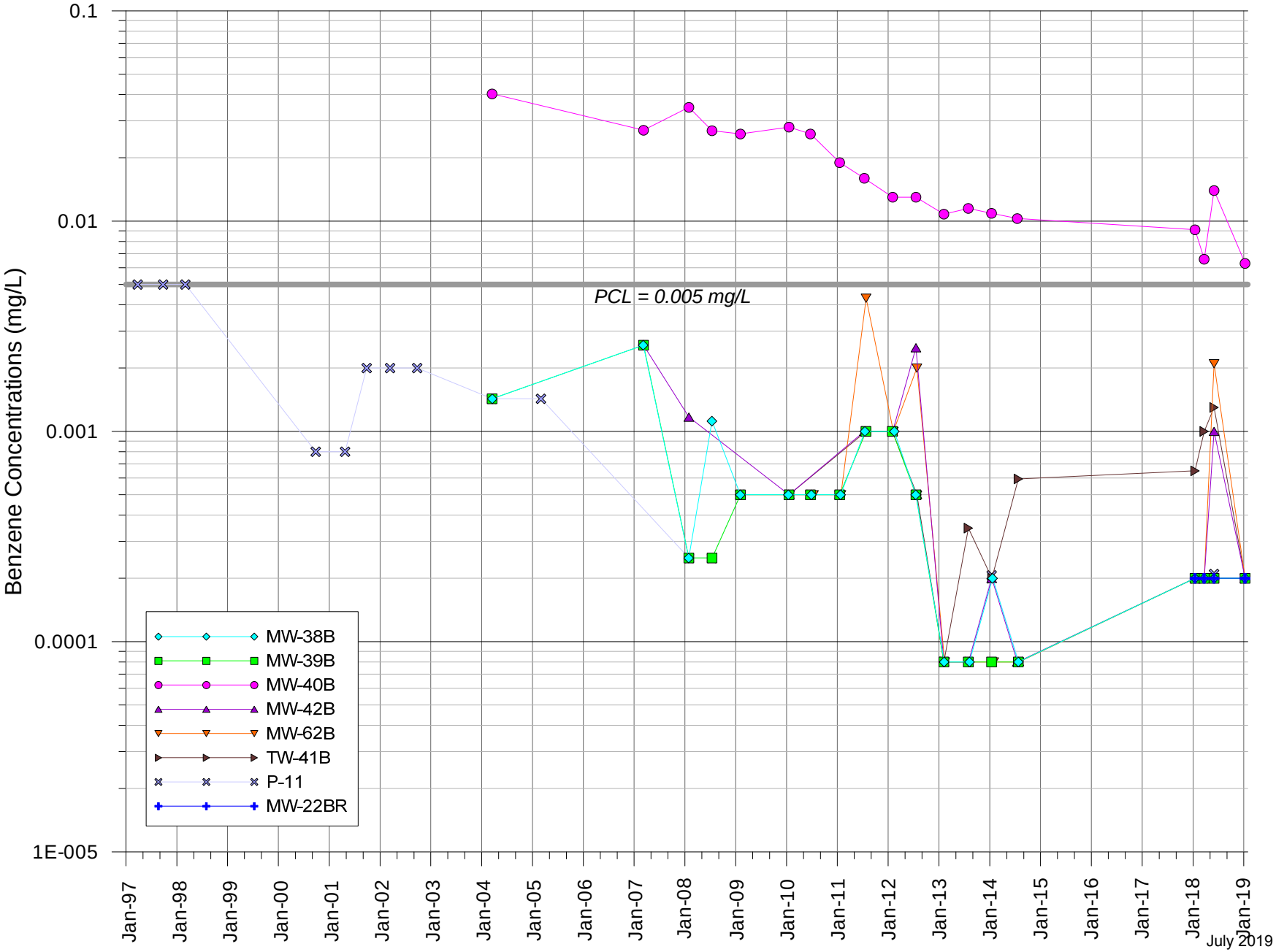
July 2019

ATTACHMENT 1B-25
Naphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



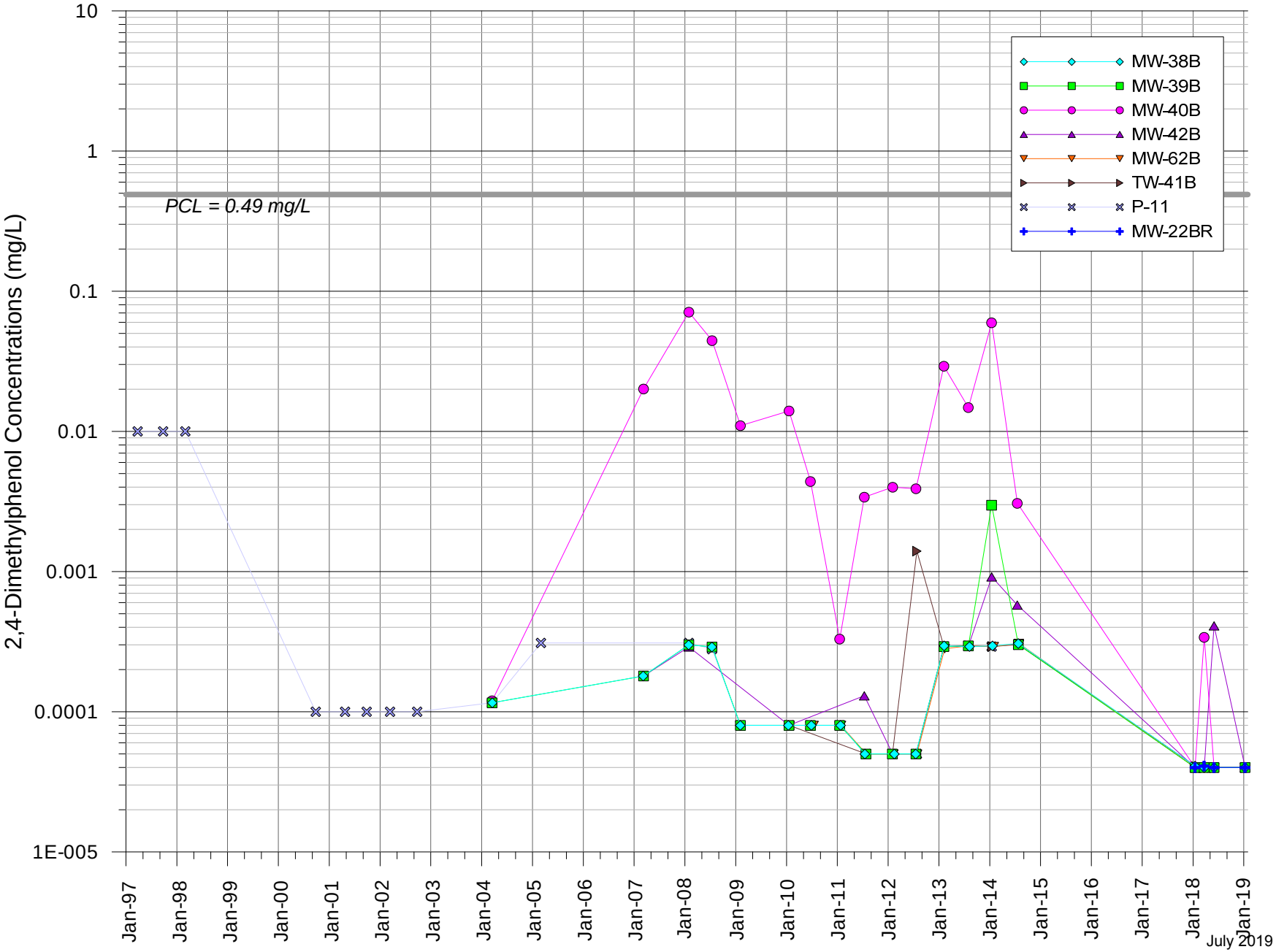
July 2019

ATTACHMENT 1B-26
Benzene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



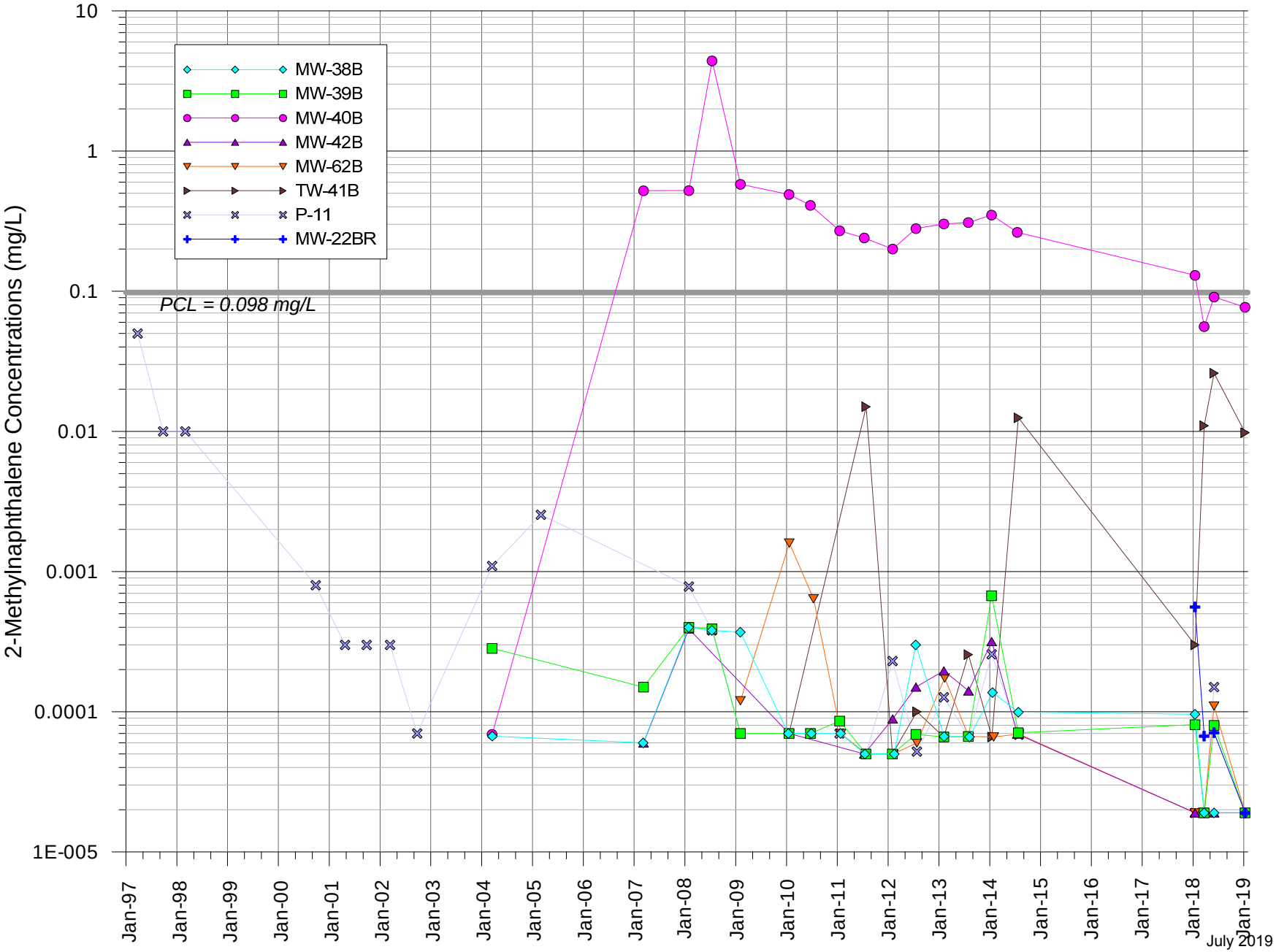
July 2019

ATTACHMENT 1B-27
2,4-Dimethylphenol Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



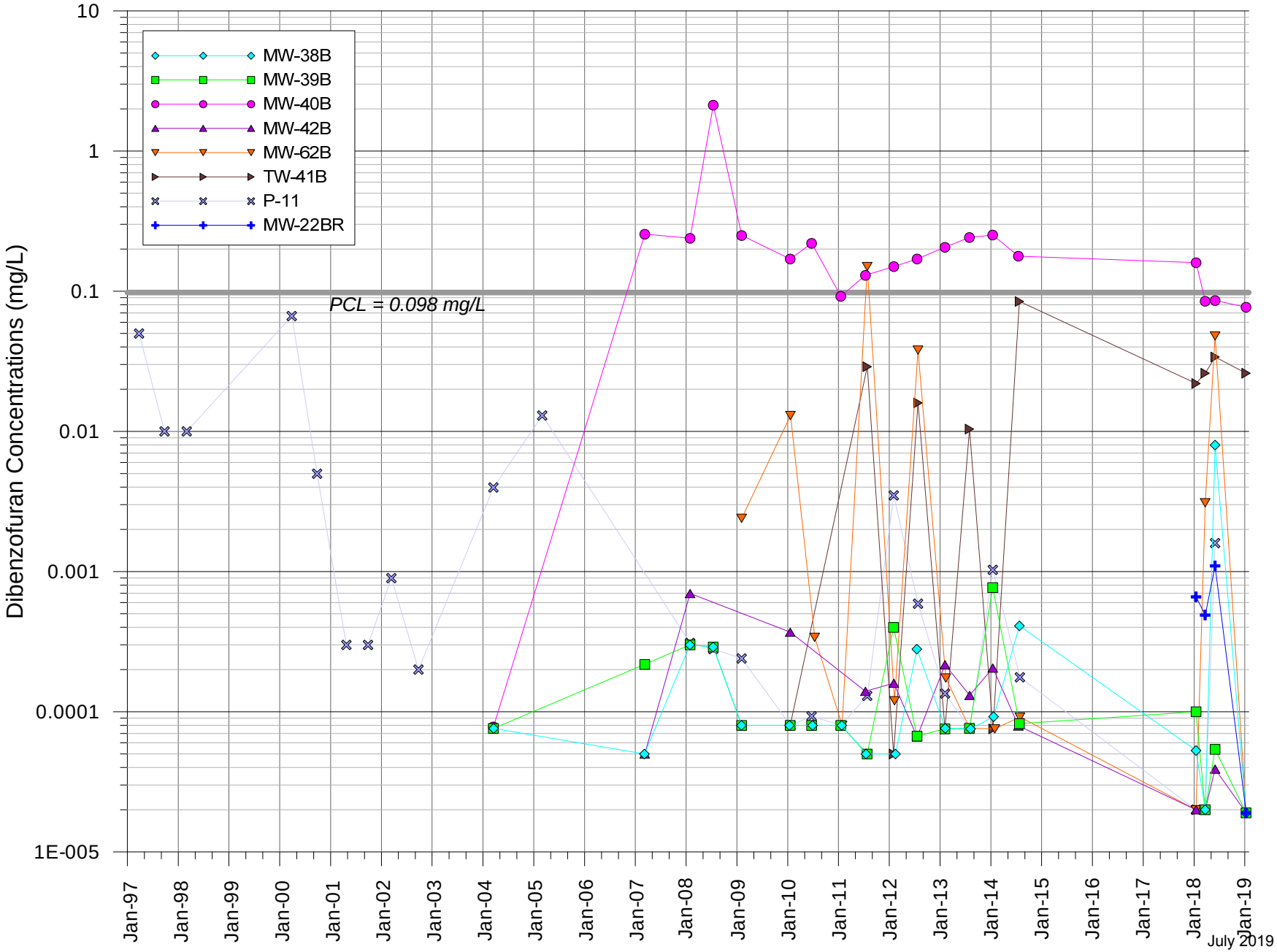
July 2019

ATTACHMENT 1B-28
2-Methylnaphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



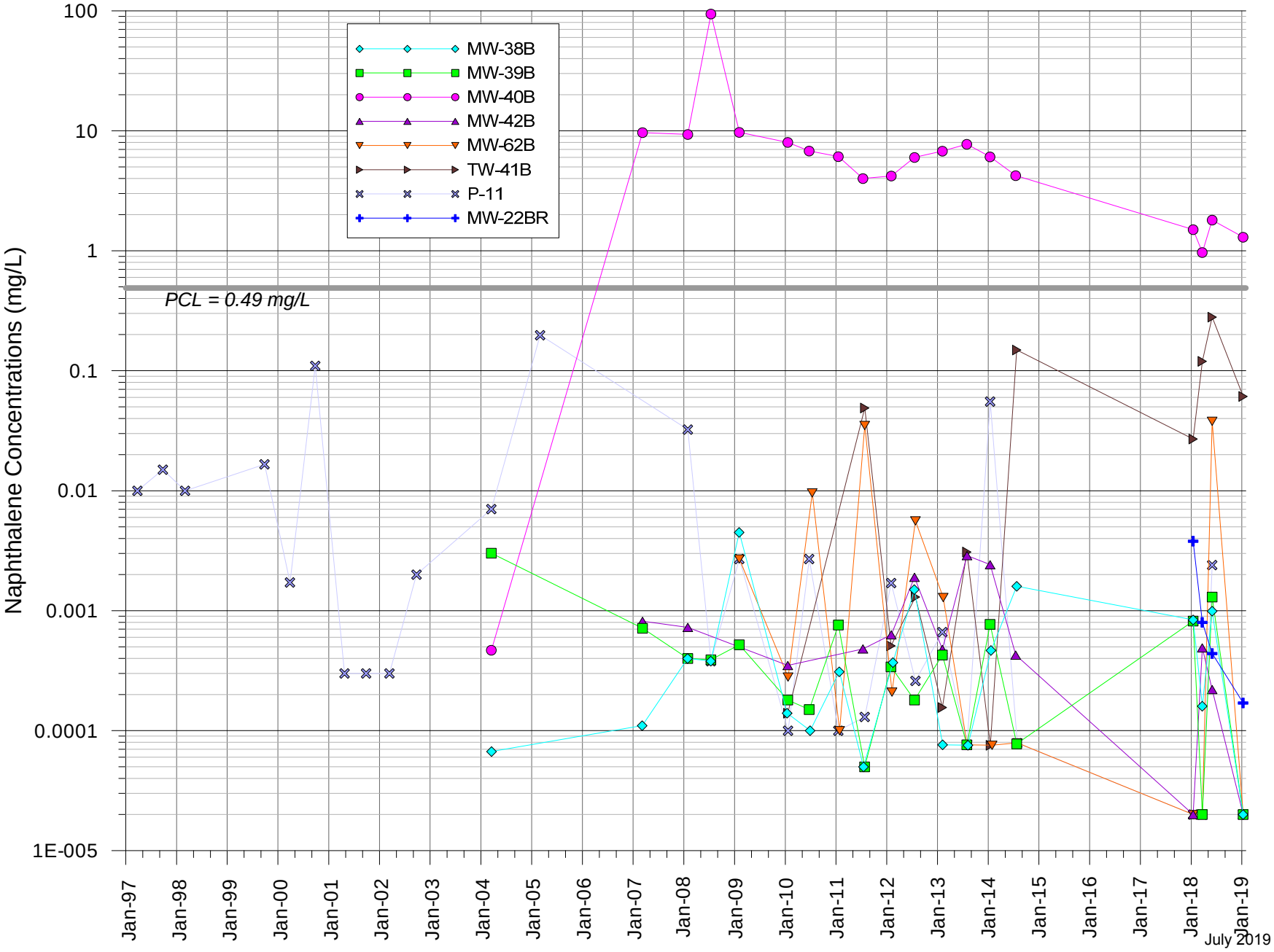
July 2019

ATTACHMENT 1B-29
Dibenzofuran Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



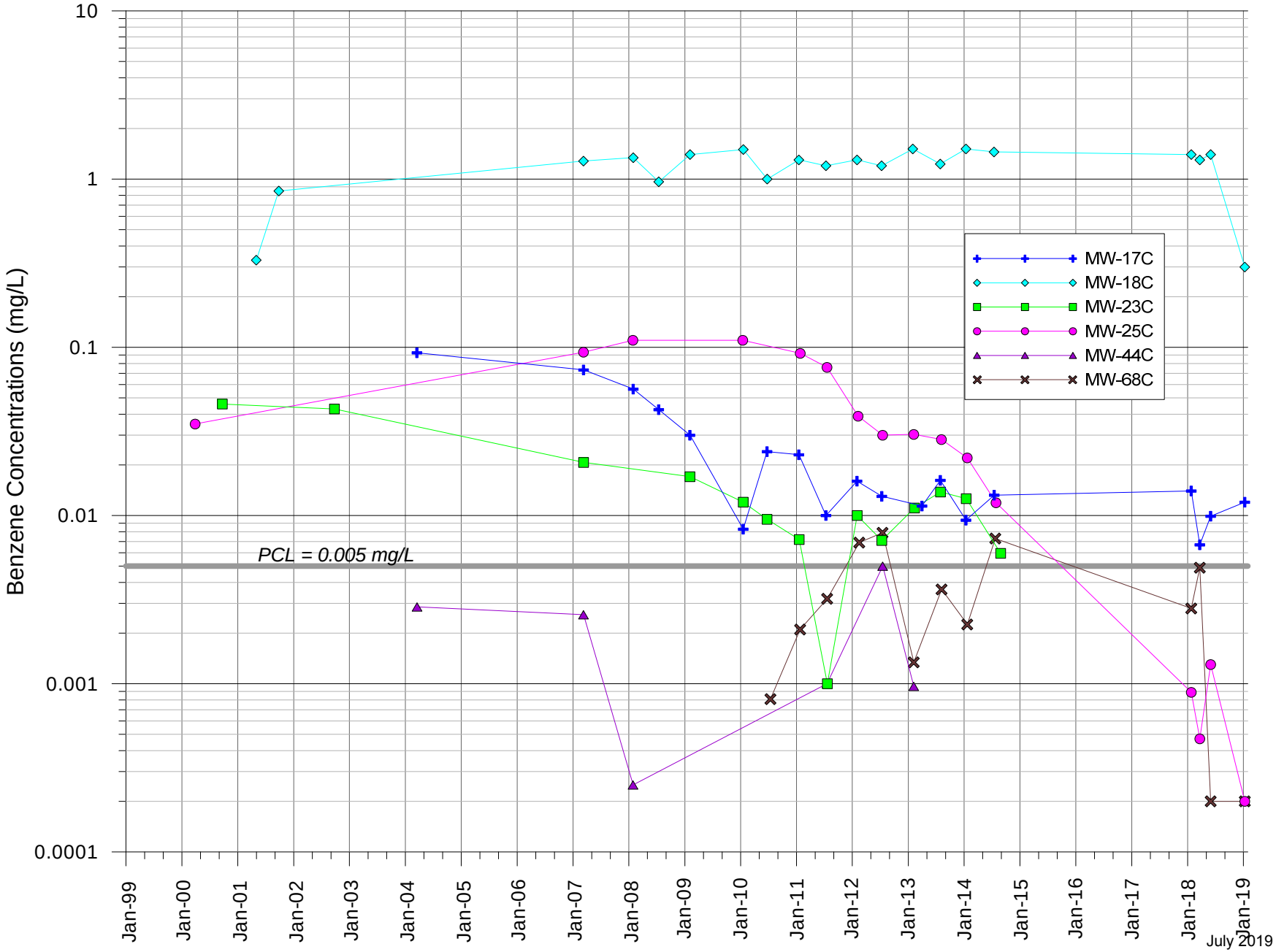
July 2019

ATTACHMENT 1B-30
Naphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



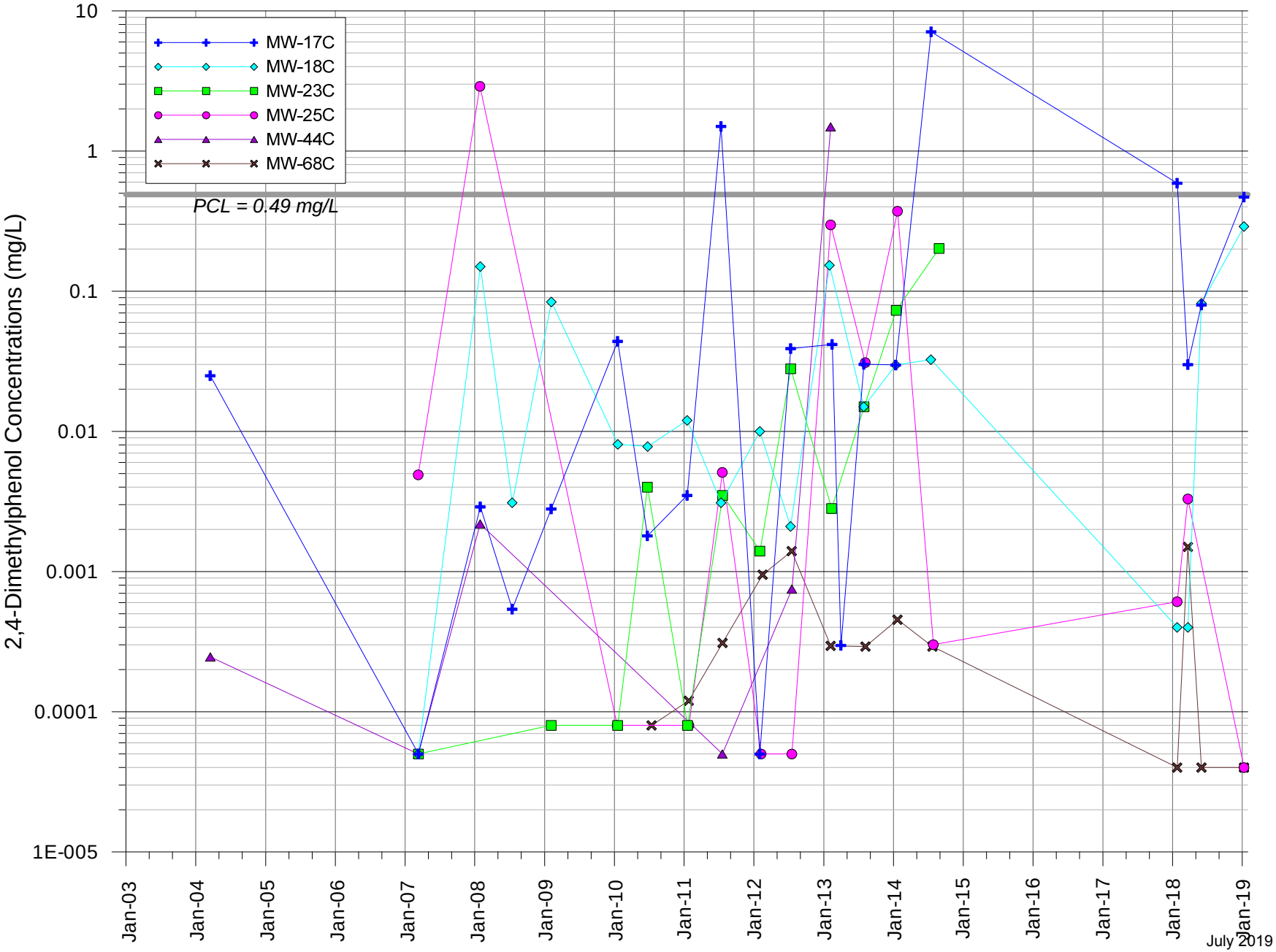
July 2019

ATTACHMENT 1B-31
Benzene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



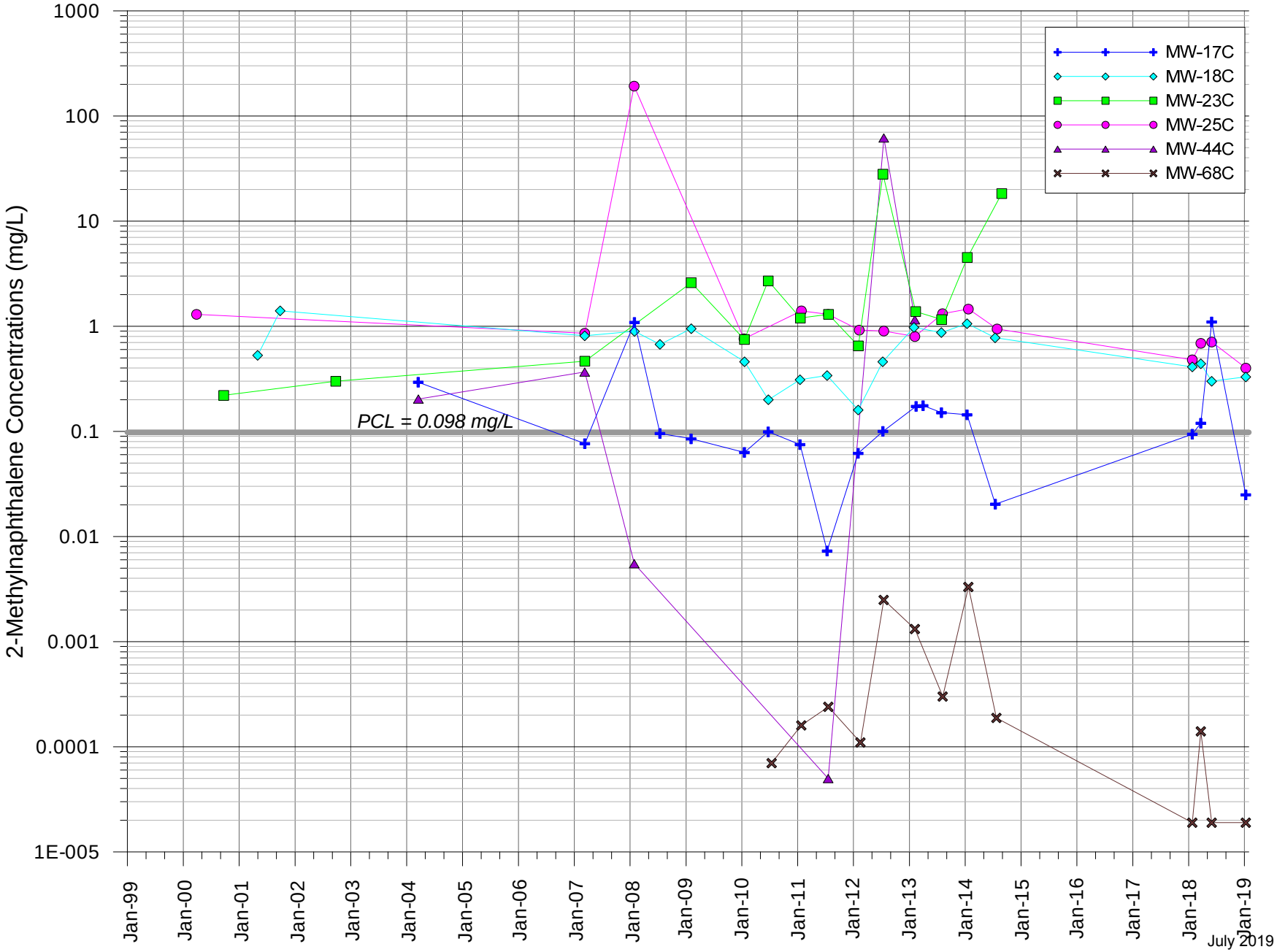
July 2019

ATTACHMENT 1B-32
2,4-Dimethylphenol Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



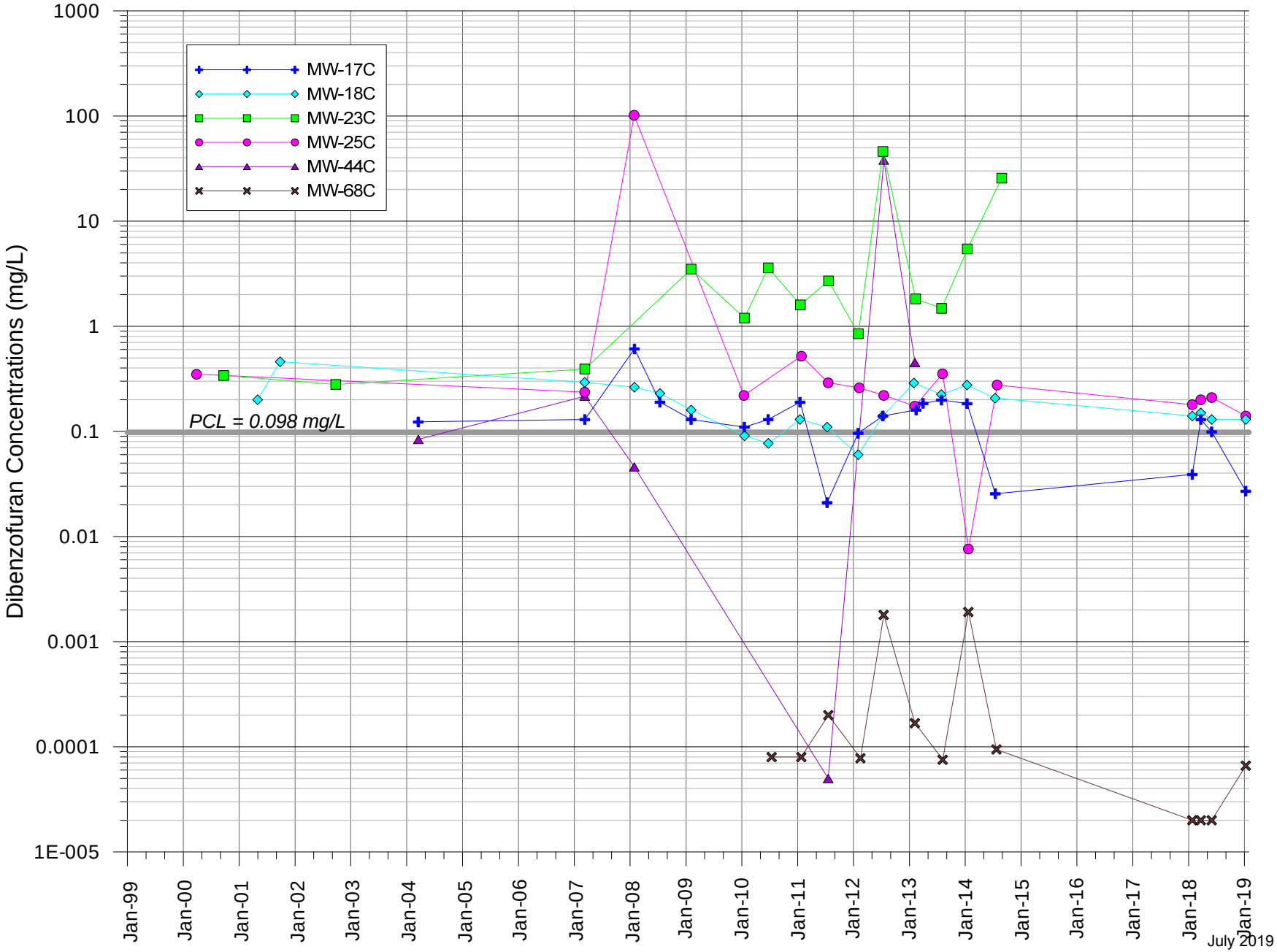
July 2019

ATTACHMENT 1B-33
2-Methylnaphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



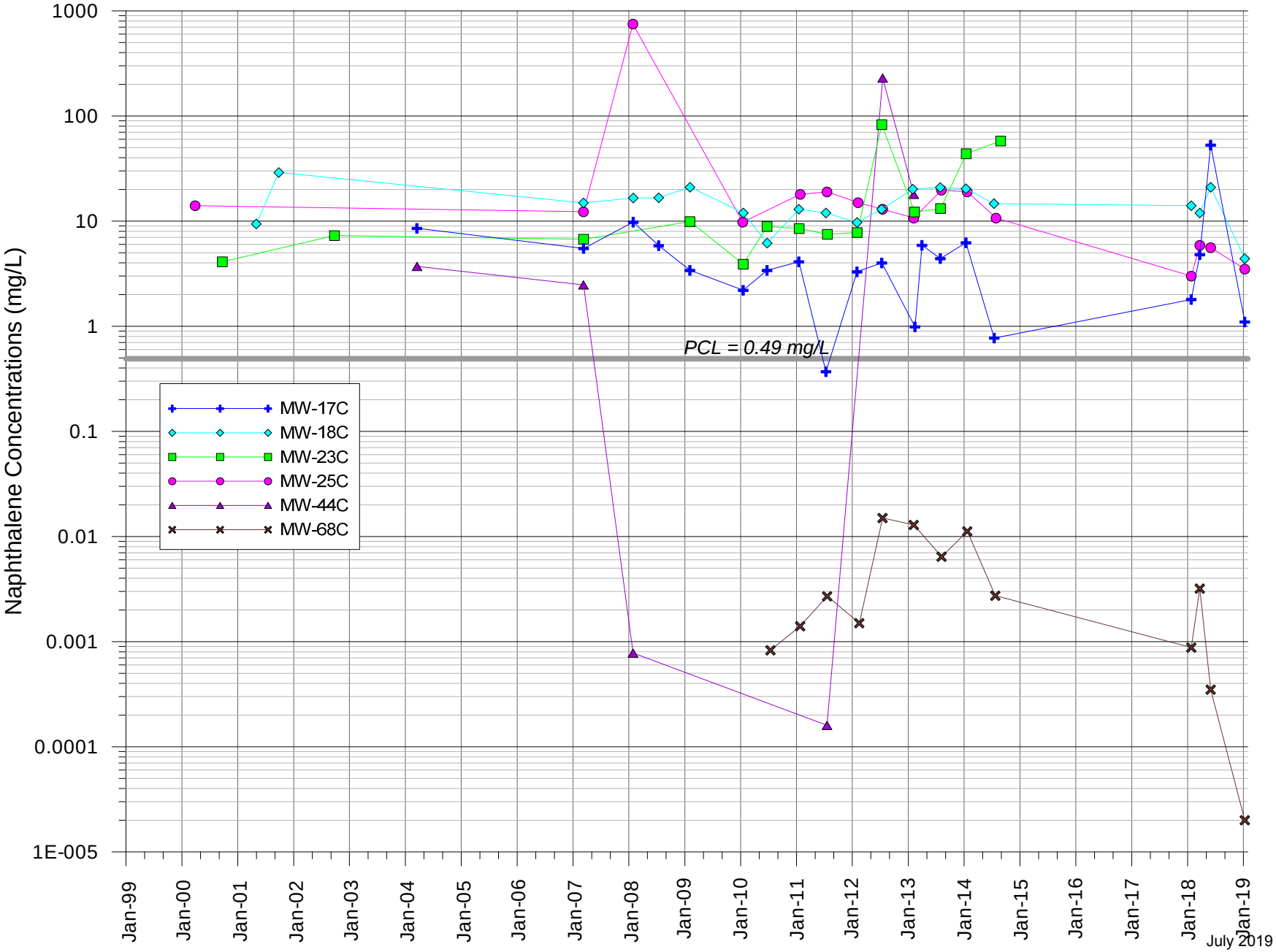
July 2019

ATTACHMENT 1B-34
Dibenzofuran Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



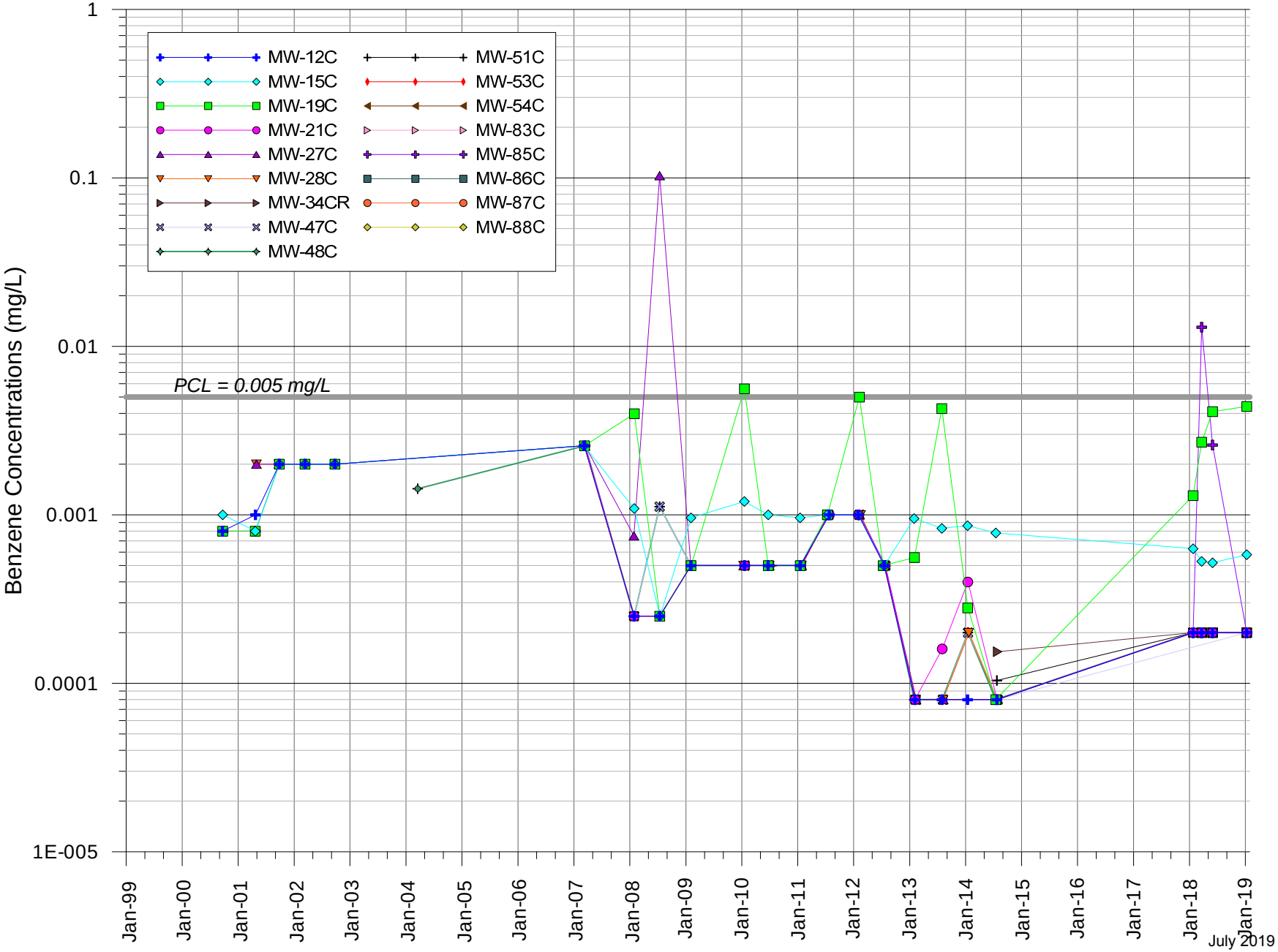
July 2019

ATTACHMENT 1B-35
Naphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



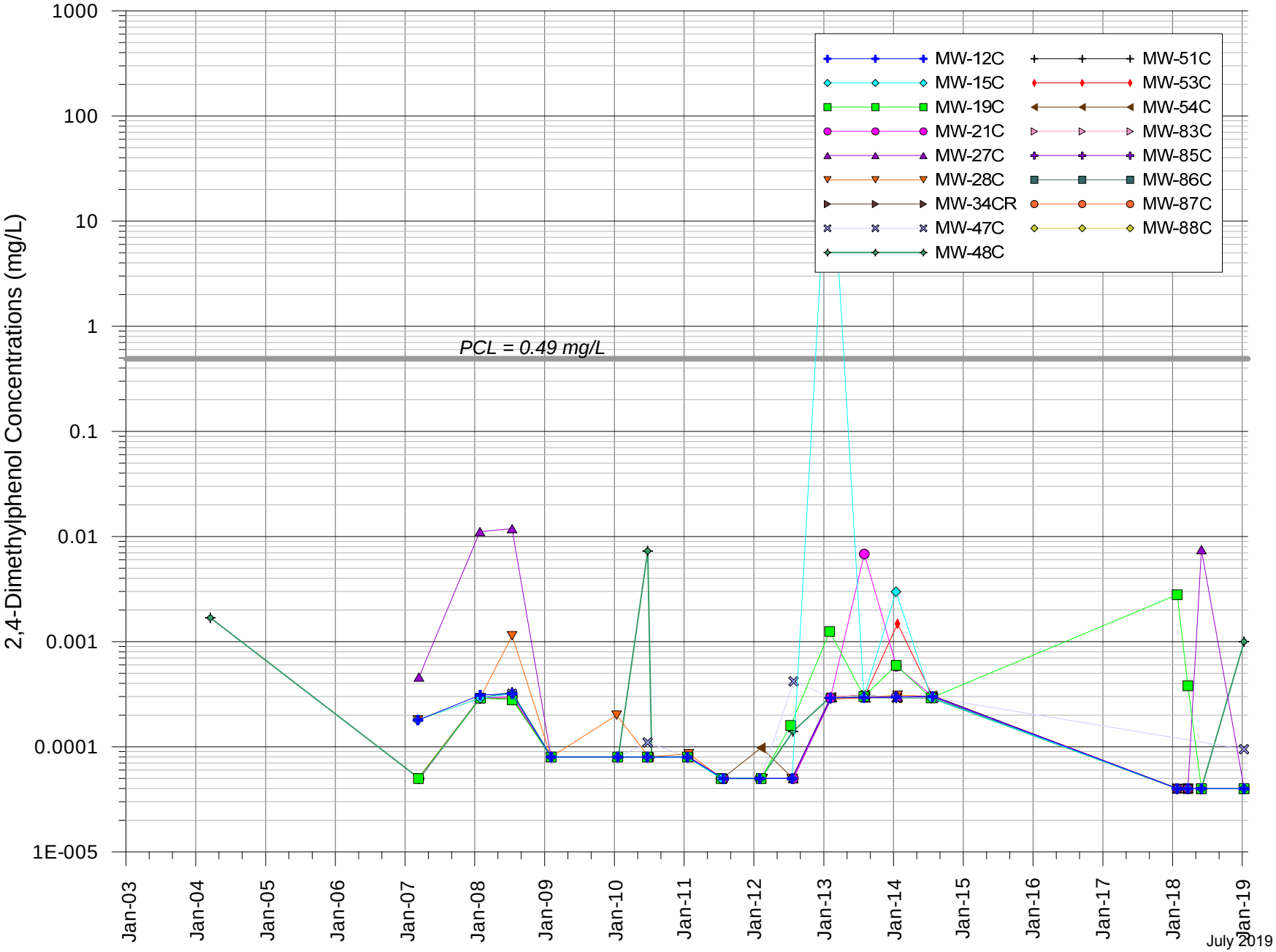
July 2019

ATTACHMENT 1B-36
Benzene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



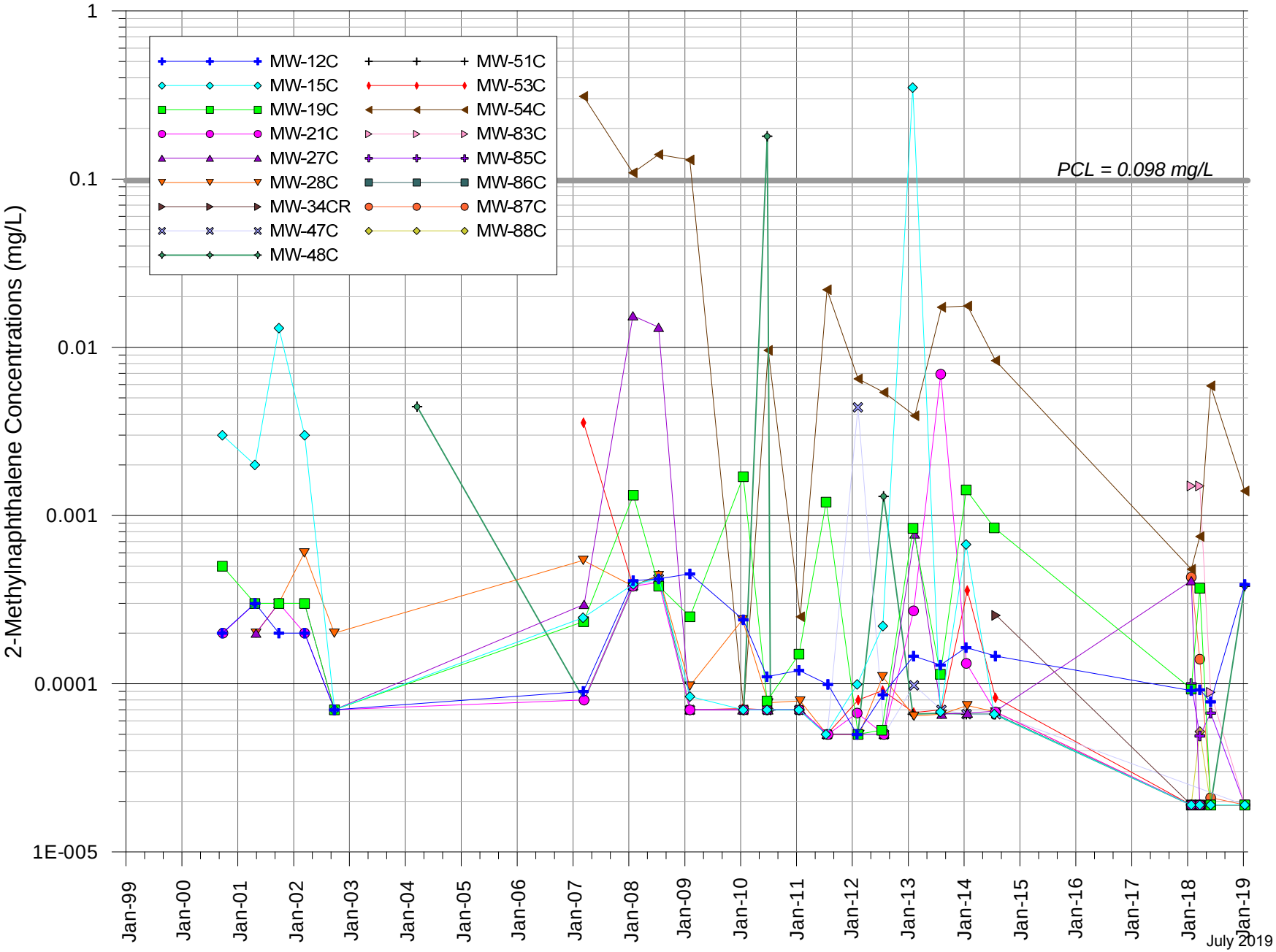
July 2019

ATTACHMENT 1B-37
2,4-Dimethylphenol Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



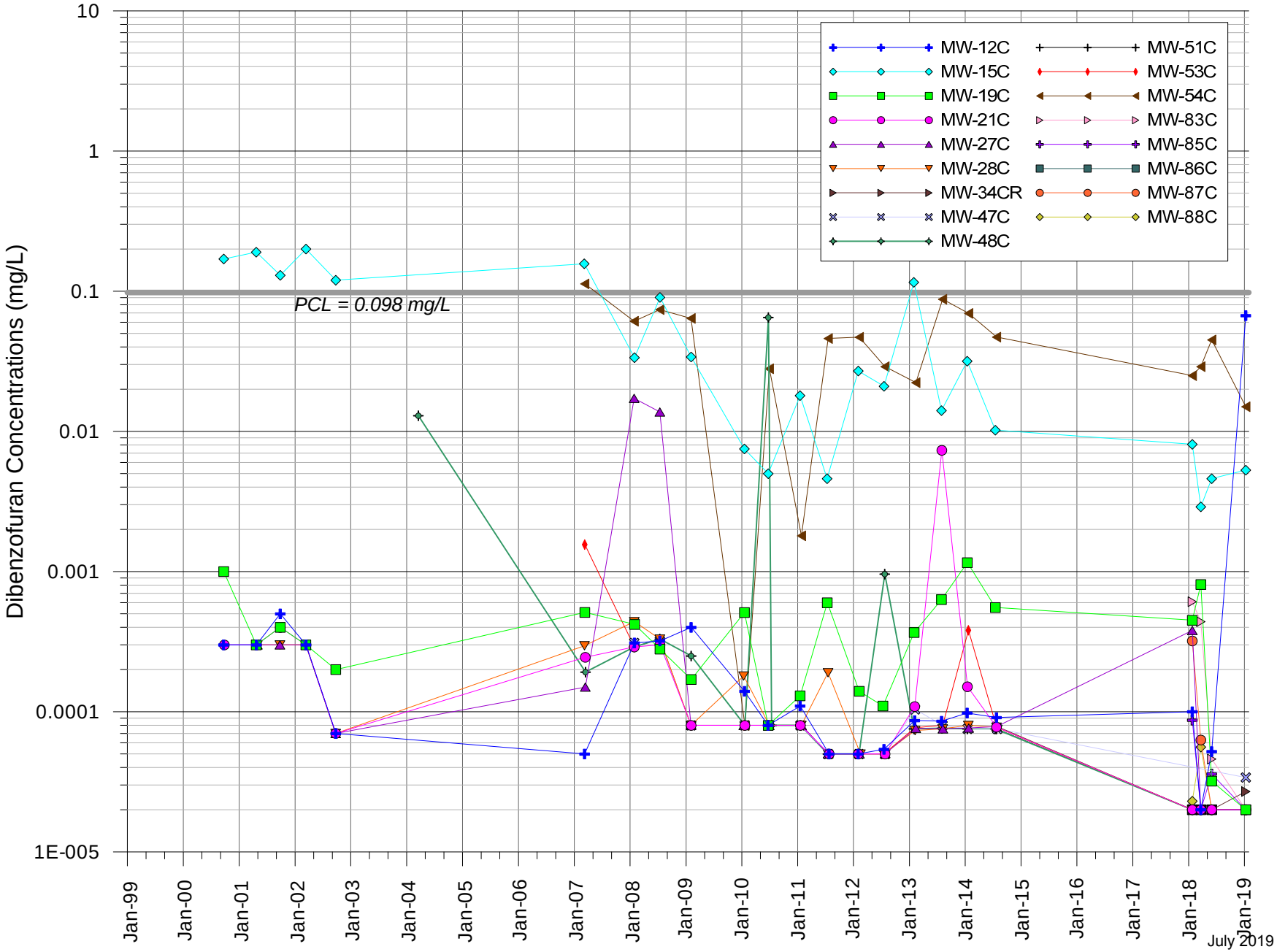
July 2019

ATTACHMENT 1B-38
2-Methylnaphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



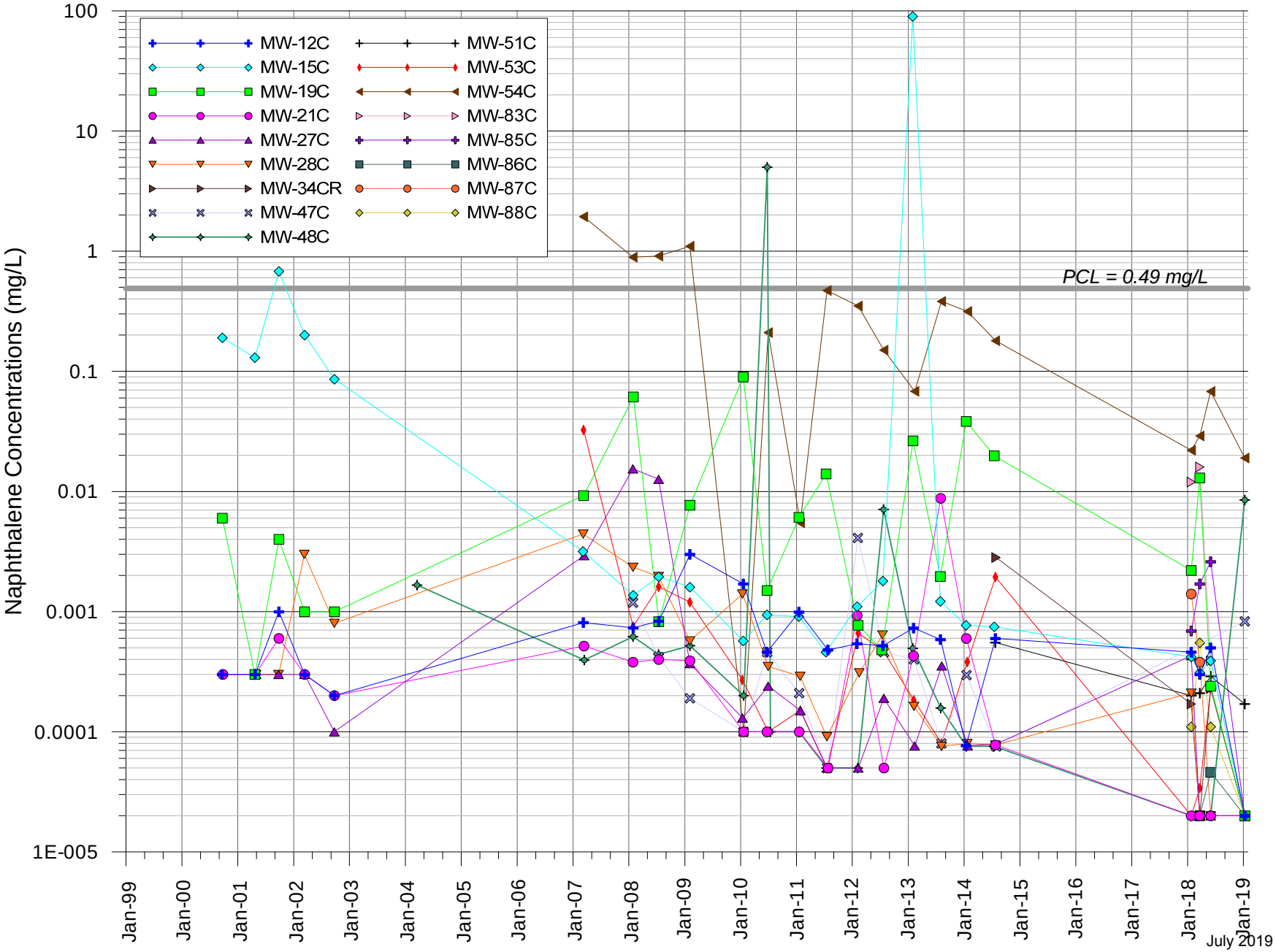
July 2019

ATTACHMENT 1B-39
Dibenzofuran Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



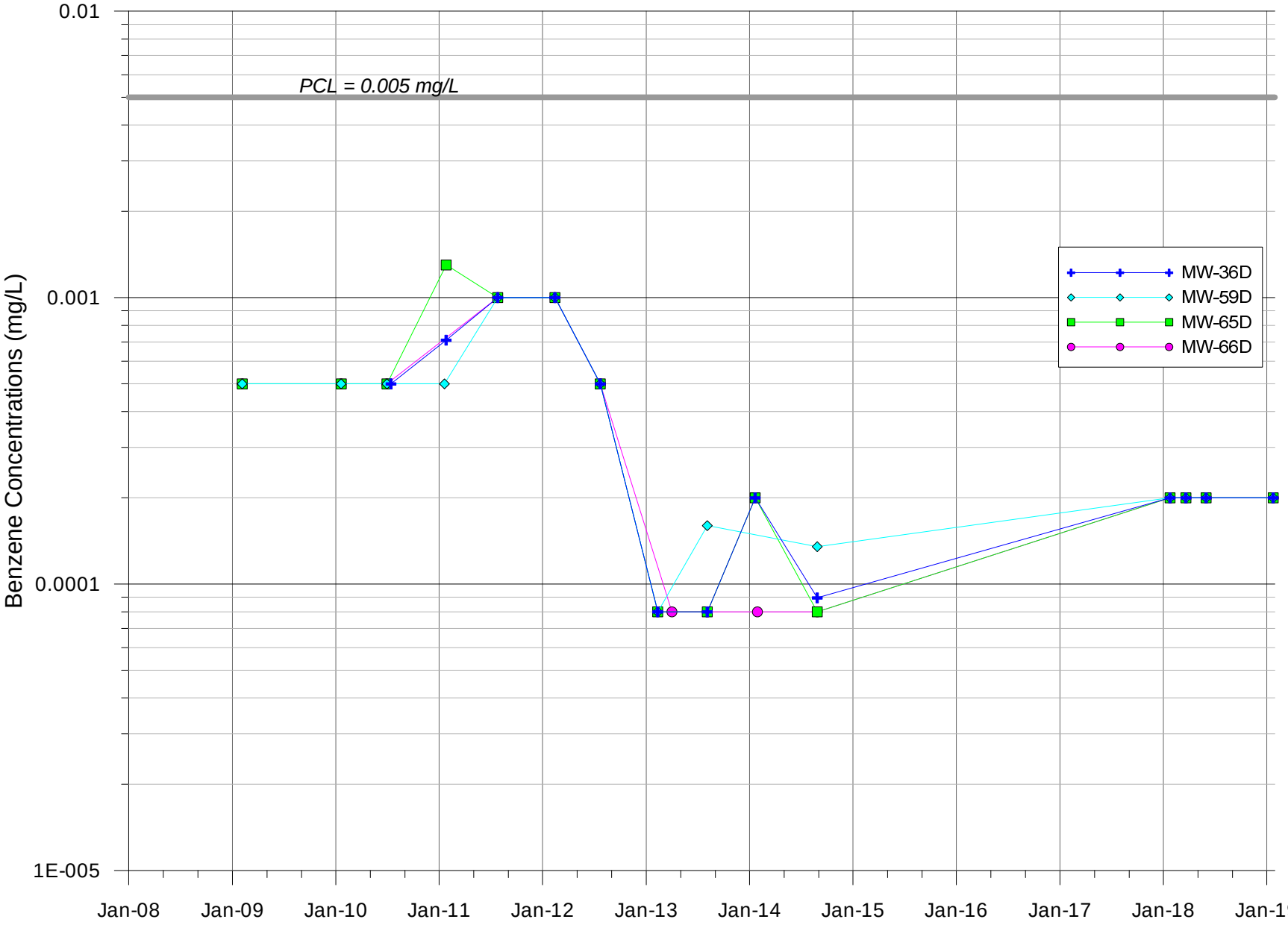
July 2019

ATTACHMENT 1B-40
Naphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



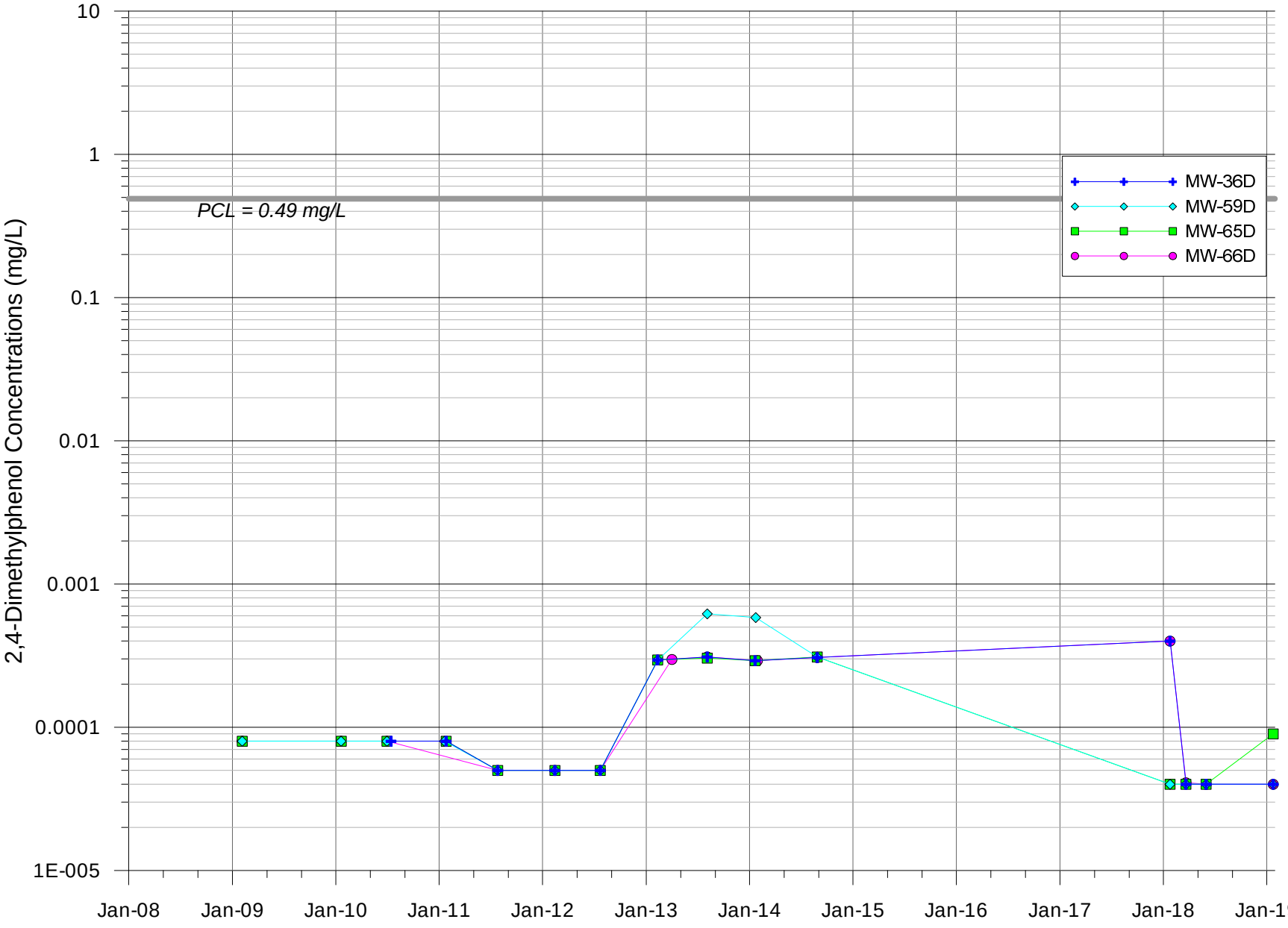
July 2019

ATTACHMENT 1B-41
Benzene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



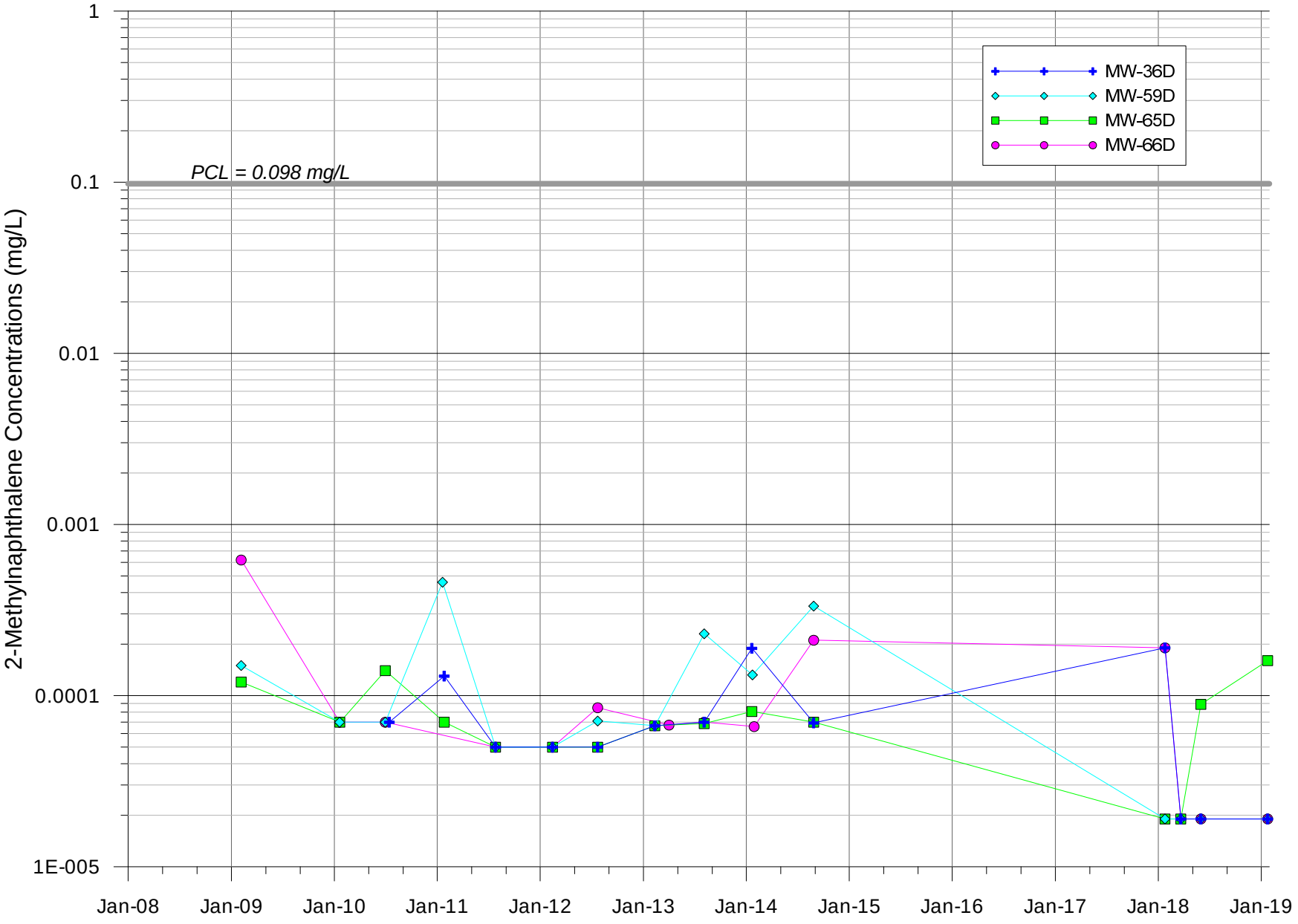
July 2019

ATTACHMENT 1B-42
2,4-Dimethylphenol Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



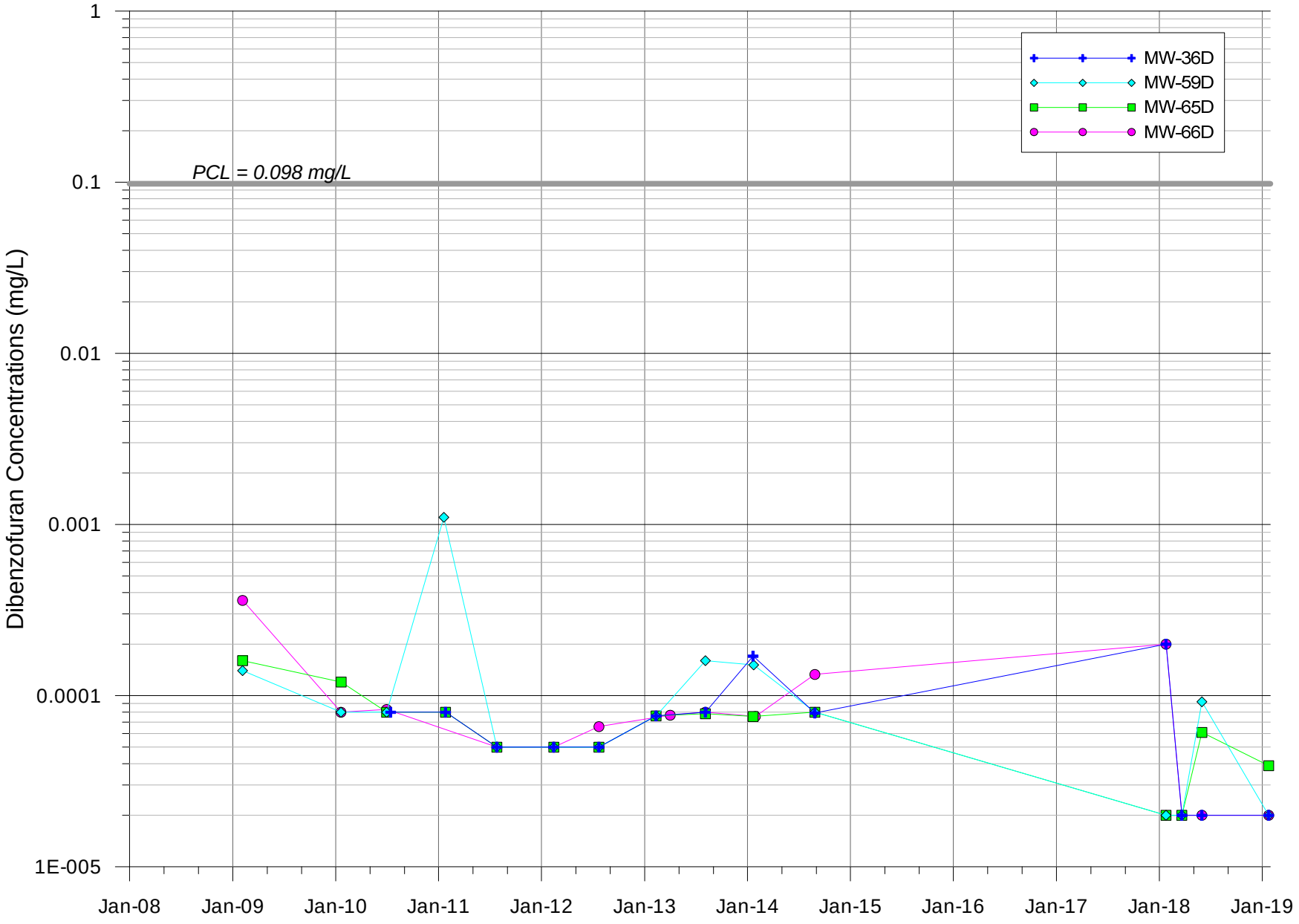
July 2019

ATTACHMENT 1B-43
2-Methylnaphthatlene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



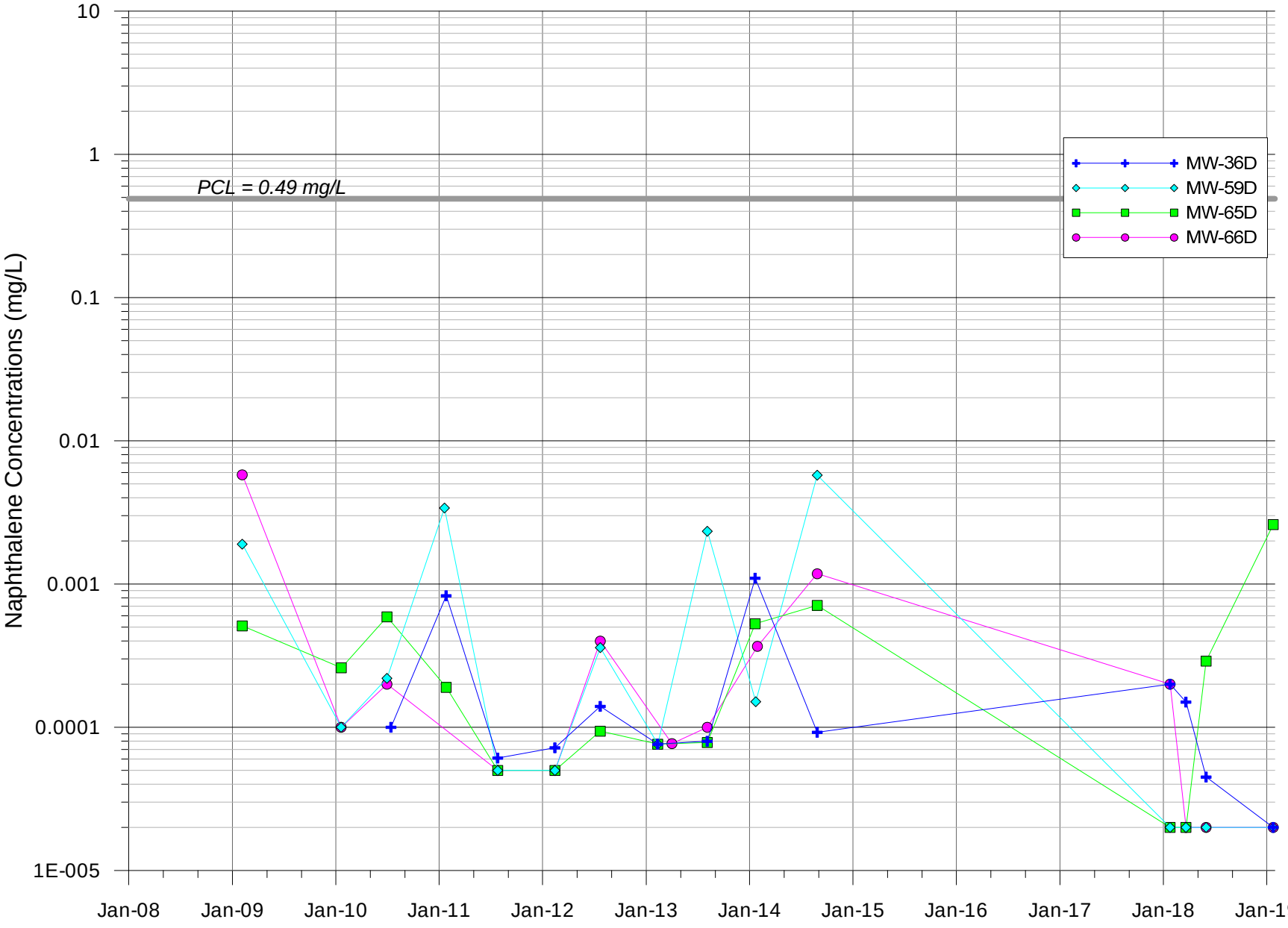
July 2019

ATTACHMENT 1B-44
Dibenzofuran Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



July 2019

ATTACHMENT 1B-45
Naphthalene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



July 2019

APPENDIX 3

STUDIES AND TESTS DOCUMENTATION

RESPONSE TO 4TH TECHNICAL NOTICE OF DEFICIENCY – DEFICIENCY NO. SPECIFIC T59 – LETTER DATED JULY 3, 2019

GOLDER

July 3, 2019 Project No. 19119232

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

RE: RESPONSE TO 4TH TECHNICAL NOTICE OF DEFICIENCY – DEFICIENCY NO. SPECIFIC T59
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 Company (UPRR), is providing this letter detailing the response to Deficiency No. Specific T59 provided in the Texas Commission on Environmental Quality (TCEQ) 4th Technical Notice of Deficiency (TNOD) for Permit Renewal dated April 11, 2019 for the UPRR Houston Wood Preserving Works Facility (the Site). A supplemental groundwater evaluation of the potential for vapor intrusion (VI) was conducted in the residential area north of the Site in response to the TCEQ Deficiency ID T59. Details of the assessment and response to the TCEQ deficiency is attached with this letter.

If you have any questions or need additional information, please feel free to call me at (512) 671-3434 or Mr. Kevin Peterburs of UPRR at (414) 267-4164.

Sincerely,

Golder Associates Inc.

Tim Nickels
Senior Consultant

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

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/3/19

CC: Waste Program Manager, TCEQ Region 12, Houston

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664 T: +1 512 671-3434 F: +1 512 671-3446

Golder and the G logo are trademarks of Golder Associates Corporation. golder.com

Response to Deficiency No. Specific T59 in the Texas Commission on Environmental Quality (TCEQ) 4th Technical Notice of Deficiency (TNOD) for Permit Renewal dated April 11, 2019

TCEQ Deficiency No. Specific T59

Based on review of the August 13, 2018 Monitoring Report, UPRR needs to conduct further assessment to evaluate the potential in-door air VI pathways into structures located north of the HWPW Facility near the intersection of Clementine and Wylie Street. The highest concentration of naphthalene in off-site wells screened in the second transmissive unit, B- CZ/B-TZ, was reported in monitoring well MW-68B (23 mg/l). Concentrations of COCs in off- site monitoring wells screened in the uppermost transmissive unit, A-TZ, were either non- detect or less than the residential Tier 1 PCLs for Class 1 groundwater. However, there are no wells near MW-68B that are screened in the ATZ to determine if the ATZ has been affected in this area.

Considering that naphthalene is a petroleum hydrocarbon and the vertical separation distance between the ground surface and observed water table at well location MW-68B, if the uppermost transmissive zone (A-TZ) at MW-68B is not impacted, the VI pathway would be incomplete for the off-site affected properties. However, there are no wells near MW-68B that are screened in the A-TZ to determine if the groundwater in Zone A-TZ has been affected in this area. Therefore, UPRR should install additional monitoring wells screened in the ATZ at well location MW-68B. Please submit an interim assessment work plan and schedule that describes a proposed assessment strategy for the VI pathway.

UPRR Response:

Per the meeting with the TCEQ on April 24, 2019 and as provided in the letter from UPRR to the TCEQ dated May 8, 2019, UPRR proposed to expedite the potential petroleum vapor intrusion (PVI) assessment to address the TCEQ's noted deficiency. Details of the assessment are provided below.

Supplemental Groundwater Evaluation – MW-68A

Monitoring well MW-68A was installed in the uppermost water-bearing zone A-TZ near monitoring well MW-68B, as shown on Figure 1, on May 21, 2019 to evaluate potential PVI impacts from the A-TZ. The monitoring well was completed to the base of the A-TZ and constructed with a 10-foot screened interval. The boring log and monitoring well completion information is provided in Attachment A. Following the well installation and development activities, a groundwater sample and field duplicate groundwater sample were collected at MW-68A on May 29, 2019 and analyzed for site-specific chemicals of concern (COCs). Groundwater sampling field records and the laboratory analytical report with data usability summary are provided in Attachments B and C, respectively. Details of the preliminary VI assessment are provided below.

EPA VISL Calculator

As part of the preliminary assessment, the U.S. Environmental Protection Agency's (EPA's) vapor intrusion screening level (VISL) calculator (EPA, 2015, EPA, 2019) was used to calculate conservative, non-site specific, risk-based potential VI screening values for the identified COCs. The EPA tool calculates the COC concentration in groundwater, based on certain default conditions, at which the COC is not expected to pose an unacceptable VI risk and, as such, can be eliminated from further consideration.

The VISL calculator (EPA, 2019) provides a screening level based on several basic inputs, including a residential or commercial exposure scenario, target hazard quotient, target carcinogenic risk, and groundwater temperature. For this evaluation, the selected inputs were – residential scenario, hazard quotient of 0.1, carcinogenic risk of 10^{-5} (consistent with the Texas Risk Reduction Program, or TRRP, criteria), and groundwater temperature of 25°C. Based on these inputs, the calculated groundwater screening concentrations were estimated. These values were compared with the MW-68A groundwater sample COC concentrations from the May 21, 2019 sampling event for the Site-specific COCs below:

Table 1 – EPA VISL Screening Tool

COC	VISL Screening Level for Elimination from Further Consideration (mg/L)	Measured COC Concentration in MW-68A and Field Duplicate May 2019 Samples (mg/L)
Benzene	0.014	<0.0002 / <0.0002
Chlorobenzene	0.041	<0.0003 / <0.0003
Ethylbenzene	0.035	<0.0003 / <0.0003
Methylene Chloride	0.471	<0.001 / <0.001
Toluene	1.92	<0.0002 / <0.0002
Xylenes	0.0385	<0.0003 / <0.0003
Benzo(a)anthracene	0.344	<0.00005 / <0.000051
Naphthalene	0.0174	0.00019 / 0.00025
Nitrobenzene	0.715	<0.000024 / <0.000024

EPA's VISL calculator uses a conservative default attenuation factor of 0.001 for the attenuation of vapors between the groundwater source and the overlying receptor. This attenuation factor is not adjusted for the more rapid attenuation observed in petroleum hydrocarbon vapors and is therefore likely overly conservative for these compounds. Nevertheless, as indicated above, the MW-68A COC concentrations were well below the conservative EPA VISL-calculated screening levels.

Summary

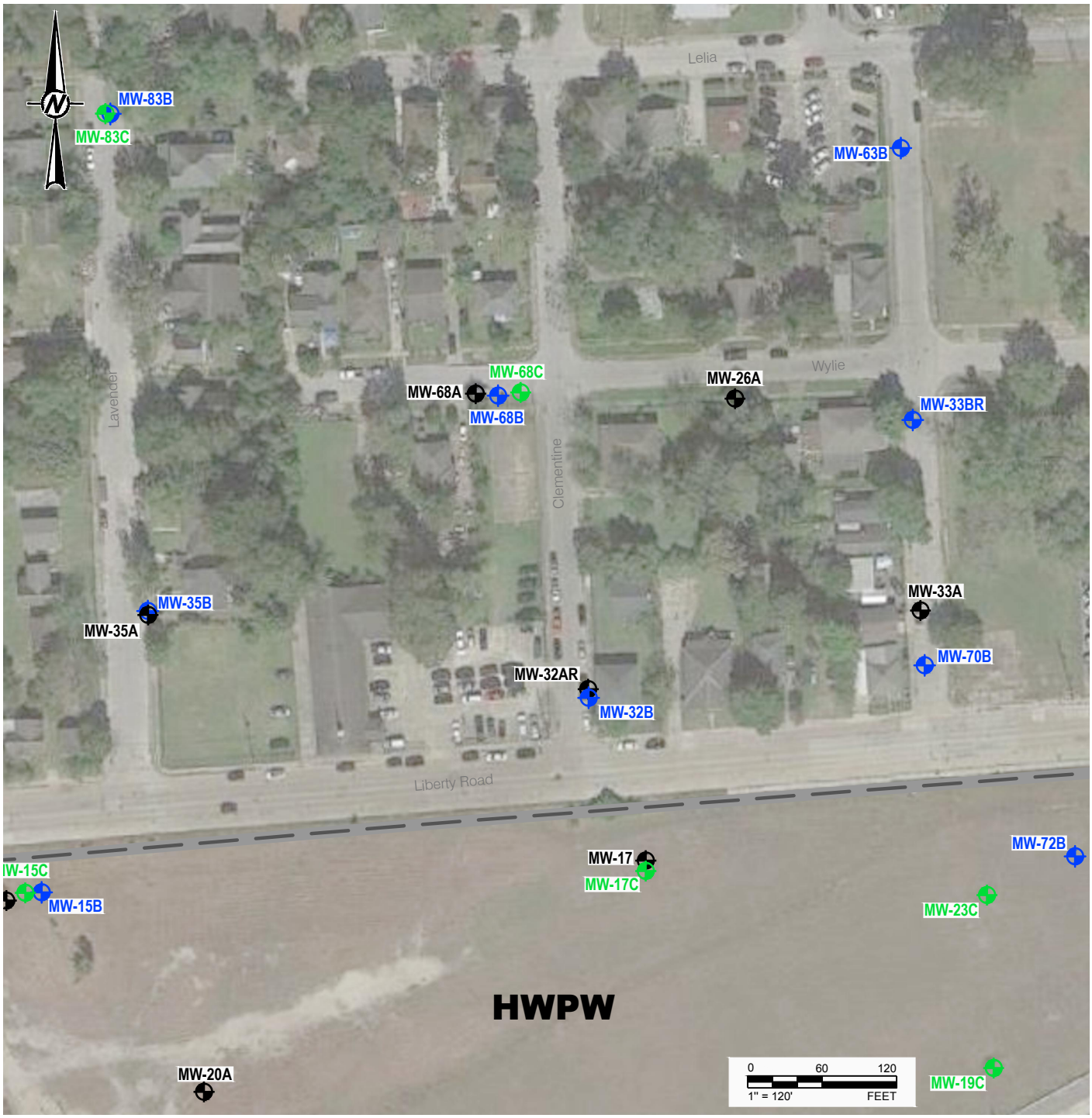
Based on the results summarized in Table 1, groundwater COC concentrations at monitoring well MW-68A from the May 2019 sampling event are below the screening values estimated by EPA's VISL calculator (EPA, 2019) and indicate the VI pathway is incomplete.

References:

United States Environmental Protection Agency (EPA). 2019. Vapor Intrusion Screening Level (VISL) calculator, https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator. Accessed April 2019.

United States Environmental Protection Agency (EPA). 2015. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air.* OSWER 9200.2-154. Office of Solid Waste and Emergency Response, Environmental Protection Agency, Washington, D.C. June.

Figure 1



LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION

NOTE(S)

1. LOCATION OF MW-68A IS APPROXIMATE, PENDING AS-BUILT SURVEY.

REFERENCE(S)

BASE MAP FROM GOOGLE EARTH, IMAGERY DATED 10/28/17.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
MONITORING WELL LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2019-06-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	1

Last Edited By: adiamond Date: 2019-06-06 Time:1:54:30 PM | Printed By: adiamond Date: 2019-06-06 Time:1:58:10 PM
Path: \\texarkanadata\Projects - Round Rock\19119232 - HWPW\2019-5 May\ | File Name: FIG 1 - MW Location Map.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0

ATTACHMENT A

Monitoring Well MW-68A Boring Log

LOG OF BORING:
MW-68A

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8.25'
	Completion Date:	5/21/2019	Total Depth (ft):	25
	Driller:	Davis Ocana/ TJ Haley	Water Level (ft bgl):	5.33
	Driller's License:	59380M	Northing:	
	Logged By:	M. Hermiston	Easting:	
Project No. 19119232	Drilling Method:	HSA	TOC Elev. (ft AMSL):	
	Sampling Method:	2.25" x 5'	Ground Elev. (ft AMSL):	

STATE OF TEXAS
MICHELLE H. HERMISTON
GEOLOGY
No. 12322
LICENSED
PROFESSIONAL GEOSCIENTIST
7/2/19
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
5		NR	NA	NR	
10		2.5/5.0	1.5	SM	(10 - 18.3) Silty SAND, SM, light gray and bluish-gray, wet, fine-grained sand, no odor.
15		5.0/5.0	0.4		
			0.3		
			0.0	CL	(18.3 - 19.3) CLAY, CL, light gray and reddish brown mottling, low to moderate plasticity, firm, no odor.
20		2.5/2.5	0.1	SP	(19.3 - 23) SAND, SP, light brown with some light gray, moist to wet, fine-grained (slighly larger grain-size than sand above), no odor.
		2.5/2.5	0.2	CL	(23 - 25) CLAY, CL, light gray and reddish brown mottling with olive brown, calcareous nodules observed at approximately 24 feet, firm, no odor.
25					

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 13.0) 2" SCH-40 PVC Casing
(13.0 - 23.0) 2" SCH-40 PVC 0.010" Slotted Screen
(23.0 - 23.4) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 11.0) 3/8" Bentonite Chips
(11.0 - 23.0) 16/30 Silica Sand

ATTACHMENT B

Groundwater Sampling Field Records

WELL DEVELOPMENT RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR - HWPW Date: 5-28-19

Well Location (well ID, etc.): MW-68A	Starting Water Level (ft. BMP): 5.51
Developed by: JTB	Casing Stickup (ft.): AT GRADE
Measuring Point (MP) of Well: TOC/PVC	Starting Water Level (ft. BGL): 5.51
Screened Interval (ft. BGL): —	Total Depth (ft. BGL): 22.95
Filter Pack Interval (ft. BGL): —	Casing Diameter (In ID): 2.0
	Casing Volume (gal.): 2.8

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: new equipment

Purging: Wattera Surge Equipment: Wattera

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Other: —

DEVELOPMENT MEASUREMENTS

Time	Flow: Cum. Vol. (gal./L)	Flow: Purge Rate (gal./L pm)	Water Quality: Temp. (°C)	Water Quality: pH	Water Quality: Spec. Cond. (µmhos/cm)	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
0733	5	hand pump	22.9	6.77	1870	tan	silty	
0749	10		23.1	6.79	1890	"	"	
0802	15		23.4	6.81	1890	lt tan	cloudy	
0813	20		23.1	6.80	1910	"	"	
0829	25		23.2	6.81	1910	"	slt. cloudy	
0841	30		23.2	6.82	1900	neutral	slt. cloudy	

Total Discharge (gallons): 30

Observations/Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR-HWPW Date: 5-29-19

Sample Number: WG-1620-MW68A-20190529

Sampling Location (well ID, etc.): MW68A

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 5.33

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 5.33

Total Depth (ft. BGL): 23.10

Casing Diameter (In ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic pump Sampling: bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: Solinst Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1036									
1047	—	.2	21.9	6.84	1970	0.56	-21	12	5.51
1052		↓	22.3	6.85	1950	0.39	-24	8.8	5.50
1057		↓	22.4	6.85	1950	0.41	-25	9.2	5.50

Water Level (ft. BMP) at End of Purge: 5.50 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1115	40mL	G	3	N	HCL	VOC
1115	1L	G	2	N	—	SVOC
1115	250mL	G	1	N	HNO_3	METALS

Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

ATTACHMENT C

Laboratory Report and Data Usability Summary (DUS)

Memorandum

June 5, 2019

To:	Eric Matzner	Ref. No.:	11183954-1620
	CK		
From:	Chris G. Knight/cs/272-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Monitoring Well Installation and Sampling Event
Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works
Houston, Texas
May 2019

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the Monitoring Well Installation and Sampling Event at the Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works site during May 2019. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS19051771. The intended use of the data is to support the Monitoring Well Installation and Sampling Event at the site by providing current concentration of chemicals of concern.

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

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

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

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

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

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

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

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

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

4.2 Sample Containers

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

4.3 Calibrations

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

4.4 Laboratory Method Blank Analyses

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

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

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

4.5 Internal Standard and Surrogate Spike Recoveries

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

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

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

4.6 Laboratory Control Sample Analysis

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

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

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

4.7 Matrix Spike/Matrix Spike Duplicate 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/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

The laboratory performed MS/MSD 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.

The laboratory performed a duplicate analysis on a non-site sample. This cannot be used to assess precision for the site samples.

4.9 Field QA/QC Samples

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

Trip Blank Sample Analysis

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

Field Duplicate Sample Analysis

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

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.10 Field Procedures

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

4.11 Analyte Reporting

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

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

5. Conclusion

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

Table 1

Sample Collection and Analysis Summary
Monitoring Well Installation and Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW68A-20190529	MW-68A	Water	05/29/2019	11:15	X	X	X	
WG-1620-FD01-20190529	MW-68A	Water	05/29/2019	11:15	X	X	X	Field duplicate of MW-68A
WQ-1620-TB01-20190529	Trip Blank	Water	05/29/2019	-	X	X	X	Trip Blank

Notes:

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

Table 2

Monitoring Well Installation and Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May 2019

Location ID:		**MW-68A**	**MW-68A**
Sample Name:		**WG-1620-MW68A-20190529**	**WG-1620-FD01-20190529**
Sample Date:		**05/29/2019**	**05/29/2019**
			Duplicate
Parameters	**Unit**		
Volatile Organic Compounds			
1,2-Dichloroethane	mg/L	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030
Semivolatile Organic Compounds			
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000059
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.000026 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047
Acenaphthene	mg/L	0.0012	0.0011
Acenaphthylene	mg/L	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000051
Benzo(a)pyrene	mg/L	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00015 J	0.000074 J
Chrysene	mg/L	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00087	0.00064
Dibenzofuran	mg/L	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010
Fluorene	mg/L	0.000044 J	0.000042 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025
Naphthalene	mg/L	0.00019	0.00025
Nitrobenzene	mg/L	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000080
Phenanthrene	mg/L	<0.000021	<0.000021
Phenol	mg/L	0.000041 J	<0.000035
Pyrene	mg/L	<0.000019	<0.000019
Metals			
Arsenic	mg/L	0.00966	0.00894

Notes:

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

Table 3

Analytical Methods
Monitoring Well Installation and Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May 2019

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270	Water	7	40
Arsenic	SW-846 6020A	Water	-	180

Notes:

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

Method References:

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

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

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

Expiration Date: 4/30/2020

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

Issue Date: 5/1/2019

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

Matrix: ***Drinking Water***

Method EPA 1613

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

Method EPA 200.8

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

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

June 03, 2019

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

Work Order: **HS19051771**

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

Dear Eric,

ALS Environmental received 3 sample(s) on May 29, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19051771**	

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.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19051771**	

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: 6/3/19
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19051771
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 141401, 141478, R339435, R339533

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		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: 6/3/19
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19051771
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 141401, 141478, R339435, R339533

#[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: 6/3/19
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19051771
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 141401, 141478, R339435, R339533

ER#[5]	Description
	No Exceptions

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: HS19051771

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19051771-01	WQ-1620-TB01-20190529	Water	C&G-052219-12	29-May-2019 00:00	29-May-2019 14:55	☐
HS19051771-02	WG-1620-MW68A-20190529	Groundwater		29-May-2019 11:15	29-May-2019 14:55	☐
HS19051771-03	WG-1620-FD01-20190529	Groundwater		29-May-2019 11:15	29-May-2019 14:55	☐

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19051771
Sample ID:	WQ-1620-TB01-20190529	Lab ID:HS19051771-01
Collection Date:	29-May-2019 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-May-2019 23:51
Benzene		U	0.00020	0.0010	mg/L	1	29-May-2019 23:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-May-2019 23:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-May-2019 23:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-May-2019 23:51
Toluene		U	0.00020	0.0010	mg/L	1	29-May-2019 23:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-May-2019 23:51
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*29-May-2019 23:51*
Surr: 4-Bromofluorobenzene	*99.7*			*81-113*	*%REC*	*1*	*29-May-2019 23:51*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*29-May-2019 23:51*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*29-May-2019 23:51*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19051771
Sample ID:	WG-1620-MW68A-20190529	Lab ID:HS19051771-02
Collection Date:	29-May-2019 11:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-May-2019 18:17
Benzene		U	0.00020	0.0010	mg/L	1	30-May-2019 18:17
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-May-2019 18:17
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-May-2019 18:17
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-May-2019 18:17
Toluene		U	0.00020	0.0010	mg/L	1	30-May-2019 18:17
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-May-2019 18:17
Surr: 1,2-Dichloroethane-d4	*86.5*			*70-126*	*%REC*	*1*	*30-May-2019 18:17*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*30-May-2019 18:17*
Surr: Dibromofluoromethane	*90.7*			*77-123*	*%REC*	*1*	*30-May-2019 18:17*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*30-May-2019 18:17*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19051771	
Sample ID:	WG-1620-MW68A-20190529	Lab ID:HS19051771-02	
Collection Date:	29-May-2019 11:15	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 30-May-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	31-May-2019 18:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	31-May-2019 18:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	31-May-2019 18:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	31-May-2019 18:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	31-May-2019 18:16
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	31-May-2019 18:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	31-May-2019 18:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	31-May-2019 18:16
Acenaphthene	**0.0012**		**0.000027**	**0.00010**	**mg/L**	1	31-May-2019 18:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	31-May-2019 18:16
Anthracene	U		0.000014	0.00010	mg/L	1	31-May-2019 18:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	31-May-2019 18:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	31-May-2019 18:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	31-May-2019 18:16
Bis(2-ethylhexyl)phthalate	**0.00015**	J	**0.000037**	**0.00020**	**mg/L**	1	31-May-2019 18:16
Chrysene	U		0.000021	0.00010	mg/L	1	31-May-2019 18:16
Dibenzofuran	U		0.000020	0.00010	mg/L	1	31-May-2019 18:16
Di-n-butyl phthalate	**0.00087**		**0.000020**	**0.00020**	**mg/L**	1	31-May-2019 18:16
Fluoranthene	U		0.000010	0.00010	mg/L	1	31-May-2019 18:16
Fluorene	**0.000044**	J	**0.000030**	**0.00010**	**mg/L**	1	31-May-2019 18:16
Naphthalene	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	31-May-2019 18:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	31-May-2019 18:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	31-May-2019 18:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	31-May-2019 18:16
Phenanthrene	U		0.000021	0.00010	mg/L	1	31-May-2019 18:16
Phenol	**0.000041**	J	**0.000035**	**0.00020**	**mg/L**	1	31-May-2019 18:16
Pyrene	U		0.000019	0.00010	mg/L	1	31-May-2019 18:16
Surr: 2,4,6-Tribromophenol	*66.8*			*34-129*	*%REC*	*1*	*31-May-2019 18:16*
Surr: 2-Fluorobiphenyl	*60.8*			*40-125*	*%REC*	*1*	*31-May-2019 18:16*
Surr: 2-Fluorophenol	*56.8*			*20-120*	*%REC*	*1*	*31-May-2019 18:16*
Surr: 4-Terphenyl-d14	*94.2*			*40-135*	*%REC*	*1*	*31-May-2019 18:16*
Surr: Nitrobenzene-d5	*59.8*			*41-120*	*%REC*	*1*	*31-May-2019 18:16*
Surr: Phenol-d6	*60.6*			*20-120*	*%REC*	*1*	*31-May-2019 18:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 31-May-2019		Analyst: JHD
Arsenic	**0.00966**		**0.000400**	**0.00200**	**mg/L**	1	01-Jun-2019 00:08

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19051771
Sample ID:	WG-1620-FD01-20190529	Lab ID:HS19051771-03
Collection Date:	29-May-2019 11:15	Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-May-2019 18:41
Benzene		U	0.00020	0.0010	mg/L	1	30-May-2019 18:41
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-May-2019 18:41
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-May-2019 18:41
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-May-2019 18:41
Toluene		U	0.00020	0.0010	mg/L	1	30-May-2019 18:41
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-May-2019 18:41
Surr: 1,2-Dichloroethane-d4	*86.0*			*70-126*	*%REC*	*1*	*30-May-2019 18:41*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*30-May-2019 18:41*
Surr: Dibromofluoromethane	*90.0*			*77-123*	*%REC*	*1*	*30-May-2019 18:41*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*30-May-2019 18:41*

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

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**	
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19051771	
Sample ID:	WG-1620-FD01-20190529	Lab ID:HS19051771-03	
Collection Date:	29-May-2019 11:15	Matrix:Groundwater	

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 30-May-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	01-Jun-2019 15:05
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	01-Jun-2019 15:05
2,4-Dinitrotoluene	U		0.000059	0.00020	mg/L	1	01-Jun-2019 15:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	01-Jun-2019 15:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	01-Jun-2019 15:05
2-Methylnaphthalene	**0.000026**	J	**0.000019**	**0.00010**	**mg/L**	1	01-Jun-2019 15:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	01-Jun-2019 15:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	01-Jun-2019 15:05
Acenaphthene	**0.0011**		**0.000027**	**0.00010**	**mg/L**	1	01-Jun-2019 15:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	01-Jun-2019 15:05
Anthracene	U		0.000014	0.00010	mg/L	1	01-Jun-2019 15:05
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	01-Jun-2019 15:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	01-Jun-2019 15:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	01-Jun-2019 15:05
Bis(2-ethylhexyl)phthalate	**0.000074**	J	**0.000037**	**0.00020**	**mg/L**	1	01-Jun-2019 15:05
Chrysene	U		0.000021	0.00010	mg/L	1	01-Jun-2019 15:05
Dibenzofuran	U		0.000020	0.00010	mg/L	1	01-Jun-2019 15:05
Di-n-butyl phthalate	**0.00064**		**0.000020**	**0.00020**	**mg/L**	1	01-Jun-2019 15:05
Fluoranthene	U		0.000010	0.00010	mg/L	1	01-Jun-2019 15:05
Fluorene	**0.000042**	J	**0.000030**	**0.00010**	**mg/L**	1	01-Jun-2019 15:05
Naphthalene	**0.00025**		**0.000020**	**0.00010**	**mg/L**	1	01-Jun-2019 15:05
Nitrobenzene	U		0.000024	0.00020	mg/L	1	01-Jun-2019 15:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	01-Jun-2019 15:05
Pentachlorophenol	U		0.000080	0.00020	mg/L	1	01-Jun-2019 15:05
Phenanthrene	U		0.000021	0.00010	mg/L	1	01-Jun-2019 15:05
Phenol	U		0.000035	0.00020	mg/L	1	01-Jun-2019 15:05
Pyrene	U		0.000019	0.00010	mg/L	1	01-Jun-2019 15:05
Surr: 2,4,6-Tribromophenol	*59.3*			*34-129*	*%REC*	*1*	*01-Jun-2019 15:05*
Surr: 2-Fluorobiphenyl	*76.9*			*40-125*	*%REC*	*1*	*01-Jun-2019 15:05*
Surr: 2-Fluorophenol	*66.7*			*20-120*	*%REC*	*1*	*01-Jun-2019 15:05*
Surr: 4-Terphenyl-d14	*93.9*			*40-135*	*%REC*	*1*	*01-Jun-2019 15:05*
Surr: Nitrobenzene-d5	*63.2*			*41-120*	*%REC*	*1*	*01-Jun-2019 15:05*
Surr: Phenol-d6	*69.3*			*20-120*	*%REC*	*1*	*01-Jun-2019 15:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 31-May-2019		Analyst: JHD
Arsenic	**0.00894**		**0.000400**	**0.00200**	**mg/L**	1	01-Jun-2019 00:09

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

Batch ID: 141401 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19051771-02	1	1000	1 (mL)	0.001
HS19051771-03	1	990	1 (mL)	0.00101

Batch ID: 141478 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19051771-02	1	10	10 (mL)	1
HS19051771-03	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 141401	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D			**Matrix:** Groundwater		
HS19051771-02	WG-1620-MW68A-20190529	29 May 2019 11:15		30 May 2019 10:22	31 May 2019 18:16	1
HS19051771-03	WG-1620-FD01-20190529	29 May 2019 11:15		30 May 2019 10:22	01 Jun 2019 15:05	1
Batch ID 141478	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19051771-02	WG-1620-MW68A-20190529	29 May 2019 11:15		31 May 2019 11:00	01 Jun 2019 00:08	1
HS19051771-03	WG-1620-FD01-20190529	29 May 2019 11:15		31 May 2019 11:00	01 Jun 2019 00:09	1
Batch ID R339435	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS19051771-01	WQ-1620-TB01-20190529	29 May 2019 00:00			29 May 2019 23:51	1
Batch ID R339533	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS19051771-02	WG-1620-MW68A-20190529	29 May 2019 11:15			30 May 2019 18:17	1
HS19051771-03	WG-1620-FD01-20190529	29 May 2019 11:15			30 May 2019 18:41	1

WorkOrder: HS19051771
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	0.000500	0.000438	0.000400	0.00200

WorkOrder: HS19051771
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	0.000086	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000058	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000066	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000071	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000033	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000015	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000066	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000044	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000042	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000043	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000044	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000036	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000070	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000095	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000041	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000035	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000084	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000041	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000042	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000045	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00010	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000072	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00040	0.00024	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000045	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000085	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: HS19051771
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	0.00065	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00060	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00062	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00067	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00066	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00076	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: HS19051771
InstrumentID: VOA6
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00072	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00066	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00072	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00073	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00080	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00072	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00072	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: 141478 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-141478** Units: **mg/L** Analysis Date: **31-May-2019 23:28**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102626** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

MBLK Sample ID: **MBLK-141478** Units: **mg/L** Analysis Date: **31-May-2019 23:26**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102625** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-141478** Units: **mg/L** Analysis Date: **31-May-2019 23:30**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102627** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04876	0.00200	0.05	0	97.5	80 - 120				

MS Sample ID: **HS19051850-03MS** Units: **mg/L** Analysis Date: **31-May-2019 23:39**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102632** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05055	0.00200	0.05	0.000794	99.5	80 - 120				

MSD Sample ID: **HS19051850-03MSD** Units: **mg/L** Analysis Date: **31-May-2019 23:41**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102633** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05277	0.00200	0.05	0.000794	104	80 - 120	0.05055	4.3	20	

PDS Sample ID: **HS19051850-03PDS** Units: **mg/L** Analysis Date: **31-May-2019 23:43**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102634** PrepDate: **31-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1244	0.00200	0.1	0.000794	124	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: **141478 (0)** **Instrument:** **ICPMS06** **Method:** **ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19051850-03SD** Units: **mg/L** Analysis Date: **31-May-2019 23:38**
Client ID: Run ID: **ICPMS06_339538** SeqNo: **5102631** PrepDate: **31-May-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000794	0	10	

The following samples were analyzed in this batch: HS19051771-02 HS19051771-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: 141401 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-141401** Units: **ug/L** Analysis Date: **30-May-2019 15:27**
Client ID: Run ID: **SV-7_339394** SeqNo: **5099150** PrepDate: **30-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.553*	*0.20*	*5*	*0*	*71.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.08*	*0.20*	*5*	*0*	*81.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.361*	*0.20*	*5*	*0*	*67.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.517*	*0.20*	*5*	*0*	*90.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.733*	*0.20*	*5*	*0*	*74.7*	*41 - 120*				
Surr: Phenol-d6	*3.819*	*0.20*	*5*	*0*	*76.4*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: 141401 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-141401** Units: **ug/L** Analysis Date: **30-May-2019 13:30**
Client ID: Run ID: **SV-7_339394** SeqNo: **5098683** PrepDate: **30-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.977	0.20	5	0	99.5	39 - 127				
2,4-Dimethylphenol	4.835	0.20	5	0	96.7	35 - 120				
2,4-Dinitrotoluene	5.449	0.20	5	0	109	50 - 122				
2,6-Dinitrotoluene	5.582	0.20	5	0	112	50 - 120				
2-Chloronaphthalene	5.501	0.20	5	0	110	50 - 120				
2-Methylnaphthalene	5.078	0.10	5	0	102	50 - 120				
4,6-Dinitro-2-methylphenol	3.974	0.20	5	0	79.5	25 - 121				
4-Nitrophenol	5.316	1.0	5	0	106	30 - 130				
Acenaphthene	4.926	0.10	5	0	98.5	45 - 120				
Acenaphthylene	5.12	0.10	5	0	102	47 - 120				
Anthracene	5.16	0.10	5	0	103	45 - 120				
Benz(a)anthracene	5.056	0.10	5	0	101	40 - 120				
Benzo(a)pyrene	5.469	0.10	5	0	109	45 - 120				
Bis(2-chloroethoxy)methane	5.07	0.20	5	0	101	45 - 120				
Bis(2-ethylhexyl)phthalate	5.83	0.20	5	0	117	40 - 139				
Chrysene	5.629	0.10	5	0	113	43 - 120				
Dibenzofuran	5.42	0.10	5	0	108	50 - 120				
Di-n-butyl phthalate	5.539	0.20	5	0	111	45 - 123				
Fluoranthene	5.61	0.10	5	0	112	45 - 125				
Fluorene	5.441	0.10	5	0	109	49 - 120				
Naphthalene	4.947	0.10	5	0	98.9	45 - 120				
Nitrobenzene	4.969	0.20	5	0	99.4	44 - 120				
N-Nitrosodiphenylamine	5.296	0.20	5	0	106	40 - 125				
Pentachlorophenol	3.378	0.20	5	0	67.6	19 - 121				
Phenanthrene	5.071	0.10	5	0	101	45 - 121				
Phenol	5.075	0.20	5	0	102	20 - 124				
Pyrene	5.601	0.10	5	0	112	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.472*	*0.20*	*5*	*0*	*109*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.379*	*0.20*	*5*	*0*	*108*	*40 - 125*				
Surr: 2-Fluorophenol	*4.04*	*0.20*	*5*	*0*	*80.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.653*	*0.20*	*5*	*0*	*113*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.905*	*0.20*	*5*	*0*	*98.1*	*41 - 120*				
Surr: Phenol-d6	*4.883*	*0.20*	*5*	*0*	*97.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: 141401 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-141401** Units: **ug/L** Analysis Date: **30-May-2019 13:49**
Client ID: Run ID: **SV-7_339394** SeqNo: **5098684** PrepDate: **30-May-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.214	0.20	5	0	104	39 - 127	4.977	4.66	20	
2,4-Dimethylphenol	5.081	0.20	5	0	102	35 - 120	4.835	4.96	20	
2,4-Dinitrotoluene	5.44	0.20	5	0	109	50 - 122	5.449	0.152	20	
2,6-Dinitrotoluene	5.388	0.20	5	0	108	50 - 120	5.582	3.54	20	
2-Chloronaphthalene	5.372	0.20	5	0	107	50 - 120	5.501	2.36	20	
2-Methylnaphthalene	5.501	0.10	5	0	110	50 - 120	5.078	8.01	20	
4,6-Dinitro-2-methylphenol	3.792	0.20	5	0	75.8	25 - 121	3.974	4.68	30	
4-Nitrophenol	5.08	1.0	5	0	102	30 - 130	5.316	4.54	20	
Acenaphthene	4.759	0.10	5	0	95.2	45 - 120	4.926	3.46	20	
Acenaphthylene	5.045	0.10	5	0	101	47 - 120	5.12	1.47	20	
Anthracene	5.429	0.10	5	0	109	45 - 120	5.16	5.08	20	
Benz(a)anthracene	5.174	0.10	5	0	103	40 - 120	5.056	2.3	20	
Benzo(a)pyrene	4.775	0.10	5	0	95.5	45 - 120	5.469	13.5	20	
Bis(2-chloroethoxy)methane	5.443	0.20	5	0	109	45 - 120	5.07	7.09	20	
Bis(2-ethylhexyl)phthalate	5.895	0.20	5	0	118	40 - 139	5.83	1.1	20	
Chrysene	5.776	0.10	5	0	116	43 - 120	5.629	2.59	20	
Dibenzofuran	5.305	0.10	5	0	106	50 - 120	5.42	2.14	20	
Di-n-butyl phthalate	5.783	0.20	5	0	116	45 - 123	5.539	4.31	20	
Fluoranthene	5.515	0.10	5	0	110	45 - 125	5.61	1.71	20	
Fluorene	5.122	0.10	5	0	102	49 - 120	5.441	6.04	20	
Naphthalene	5.255	0.10	5	0	105	45 - 120	4.947	6.03	20	
Nitrobenzene	5.014	0.20	5	0	100	44 - 120	4.969	0.908	20	
N-Nitrosodiphenylamine	5.548	0.20	5	0	111	40 - 125	5.296	4.65	20	
Pentachlorophenol	3.302	0.20	5	0	66.0	19 - 121	3.378	2.29	20	
Phenanthrene	5.171	0.10	5	0	103	45 - 121	5.071	1.95	20	
Phenol	4.753	0.20	5	0	95.1	20 - 124	5.075	6.56	20	
Pyrene	5.823	0.10	5	0	116	40 - 130	5.601	3.88	20	
Surr: 2,4,6-Tribromophenol	*5.111*	*0.20*	*5*	*0*	*102*	*34 - 129*	*5.472*	*6.81*	*20*	
Surr: 2-Fluorobiphenyl	*5.229*	*0.20*	*5*	*0*	*105*	*40 - 125*	*5.379*	*2.82*	*20*	
Surr: 2-Fluorophenol	*4.486*	*0.20*	*5*	*0*	*89.7*	*20 - 120*	*4.04*	*10.5*	*20*	
Surr: 4-Terphenyl-d14	*5.825*	*0.20*	*5*	*0*	*117*	*40 - 135*	*5.653*	*2.99*	*20*	
Surr: Nitrobenzene-d5	*5.076*	*0.20*	*5*	*0*	*102*	*41 - 120*	*4.905*	*3.42*	*20*	
Surr: Phenol-d6	*4.579*	*0.20*	*5*	*0*	*91.6*	*20 - 120*	*4.883*	*6.44*	*20*	

The following samples were analyzed in this batch: HS19051771-02 HS19051771-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: R339435 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-190529** Units: **ug/L** Analysis Date: **29-May-2019 23:02**
Client ID: Run ID: **VOA2_339435** SeqNo: **5098155** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*50.91*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.42*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*51.09*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*52*	*1.0*	*50*	*0*	*104*	*81 - 120*				

LCS Sample ID: **VLCSW-190529** Units: **ug/L** Analysis Date: **29-May-2019 22:38**
Client ID: Run ID: **VOA2_339435** SeqNo: **5098154** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.01	1.0	20	0	95.0	70 - 124				
Benzene	18.23	1.0	20	0	91.2	74 - 120				
Chlorobenzene	19.17	1.0	20	0	95.9	76 - 113				
Ethylbenzene	19.08	1.0	20	0	95.4	77 - 117				
Methylene chloride	19.16	2.0	20	0	95.8	70 - 127				
Toluene	17.88	1.0	20	0	89.4	77 - 118				
Vinyl chloride	20.11	1.0	20	0	101	70 - 130				
Xylenes, Total	56.28	1.0	60	0	93.8	75 - 122				
Surr: 1,2-Dichloroethane-d4	*53.47*	*1.0*	*50*	*0*	*107*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.74*	*1.0*	*50*	*0*	*99.5*	*82 - 115*				
Surr: Dibromofluoromethane	*49.89*	*1.0*	*50*	*0*	*99.8*	*73 - 126*				
Surr: Toluene-d8	*50.69*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: R339435 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS19051379-03MS** Units: **ug/L** Analysis Date: **30-May-2019 01:05**
Client ID: Run ID: **VOA2_339435** SeqNo: **5098160** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.5	1.0	20	0	87.5	70 - 127				
Benzene	18.18	1.0	20	0	90.9	70 - 127				
Chlorobenzene	19.21	1.0	20	0	96.1	70 - 114				
Ethylbenzene	19.46	1.0	20	0	97.3	70 - 124				
Methylene chloride	19.24	2.0	20	0	96.2	70 - 128				
Toluene	18.19	1.0	20	0	91.0	70 - 123				
Vinyl chloride	21.92	1.0	20	0	110	70 - 130				
Xylenes, Total	57.59	1.0	60	0	96.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*53.2*	*1.0*	*50*	*0*	*106*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.17*	*1.0*	*50*	*0*	*98.3*	*81 - 113*				
Surr: Dibromofluoromethane	*50.37*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*51.25*	*1.0*	*50*	*0*	*103*	*82 - 127*				

MSD Sample ID: **HS19051379-03MSD** Units: **ug/L** Analysis Date: **30-May-2019 01:29**
Client ID: Run ID: **VOA2_339435** SeqNo: **5098161** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.79	1.0	20	0	88.9	70 - 127	17.5	1.59	20	
Benzene	17.43	1.0	20	0	87.2	70 - 127	18.18	4.23	20	
Chlorobenzene	18.66	1.0	20	0	93.3	70 - 114	19.21	2.95	20	
Ethylbenzene	18.87	1.0	20	0	94.3	70 - 124	19.46	3.13	20	
Methylene chloride	18.1	2.0	20	0	90.5	70 - 128	19.24	6.11	20	
Toluene	17.44	1.0	20	0	87.2	70 - 123	18.19	4.23	20	
Vinyl chloride	20.42	1.0	20	0	102	70 - 130	21.92	7.05	20	
Xylenes, Total	55.16	1.0	60	0	91.9	70 - 130	57.59	4.32	20	
Surr: 1,2-Dichloroethane-d4	*53.52*	*1.0*	*50*	*0*	*107*	*70 - 126*	*53.2*	*0.585*	*20*	
Surr: 4-Bromofluorobenzene	*50.21*	*1.0*	*50*	*0*	*100*	*81 - 113*	*49.17*	*2.09*	*20*	
Surr: Dibromofluoromethane	*49.9*	*1.0*	*50*	*0*	*99.8*	*77 - 123*	*50.37*	*0.939*	*20*	
Surr: Toluene-d8	*51.76*	*1.0*	*50*	*0*	*104*	*82 - 127*	*51.25*	*0.978*	*20*	

The following samples were analyzed in this batch: HS19051771-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: R339533 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-190530** Units: **ug/L** Analysis Date: **30-May-2019 13:53**
Client ID: Run ID: **VOA6_339533** SeqNo: **5100302** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.79*	*1.0*	*50*	*0*	*87.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.42*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*45.23*	*1.0*	*50*	*0*	*90.5*	*73 - 126*				
Surr: Toluene-d8	*52.3*	*1.0*	*50*	*0*	*105*	*81 - 120*				

LCS Sample ID: **VLCSW-190530** Units: **ug/L** Analysis Date: **30-May-2019 13:05**
Client ID: Run ID: **VOA6_339533** SeqNo: **5100301** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.88	1.0	20	0	104	70 - 124				
Benzene	23.17	1.0	20	0	116	74 - 120				
Chlorobenzene	21.12	1.0	20	0	106	76 - 113				
Ethylbenzene	20.62	1.0	20	0	103	77 - 117				
Methylene chloride	24.41	2.0	20	0	122	70 - 127				
Toluene	21.12	1.0	20	0	106	77 - 118				
Xylenes, Total	64.07	1.0	60	0	107	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.32*	*1.0*	*50*	*0*	*96.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.13*	*1.0*	*50*	*0*	*114*	*82 - 115*				
Surr: Dibromofluoromethane	*54.93*	*1.0*	*50*	*0*	*110*	*73 - 126*				
Surr: Toluene-d8	*43.15*	*1.0*	*50*	*0*	*86.3*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19051771

QC BATCH REPORT

Batch ID: R339533 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS19051504-02MS** Units: **ug/L** Analysis Date: **30-May-2019 15:53**
Client ID: Run ID: **VOA6_339533** SeqNo: **5100305** PrepDate: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	775.3	50	1000	0	77.5	70 - 127				
Benzene	1169	50	1000	284.9	88.4	70 - 127				
Chlorobenzene	890.6	50	1000	0	89.1	70 - 114				
Ethylbenzene	954.4	50	1000	57.57	89.7	70 - 124				
Methylene chloride	879.4	100	1000	0	87.9	70 - 128				
Toluene	979.6	50	1000	105.7	87.4	70 - 123				
Xylenes, Total	2953	50	3000	159.2	93.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*2136*	*50*	*2500*	*0*	*85.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*2586*	*50*	*2500*	*0*	*103*	*81 - 113*				
Surr: Dibromofluoromethane	*2254*	*50*	*2500*	*0*	*90.2*	*77 - 123*				
Surr: Toluene-d8	*2559*	*50*	*2500*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS19051504-02MSD** Units: **ug/L** Analysis Date: **30-May-2019 16:17**
Client ID: Run ID: **VOA6_339533** SeqNo: **5100306** PrepDate: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	769.4	50	1000	0	76.9	70 - 127	775.3	0.757	20	
Benzene	1126	50	1000	284.9	84.1	70 - 127	1169	3.8	20	
Chlorobenzene	863.1	50	1000	0	86.3	70 - 114	890.6	3.13	20	
Ethylbenzene	912.8	50	1000	57.57	85.5	70 - 124	954.4	4.46	20	
Methylene chloride	861.5	100	1000	0	86.2	70 - 128	879.4	2.05	20	
Toluene	958.3	50	1000	105.7	85.3	70 - 123	979.6	2.2	20	
Xylenes, Total	2826	50	3000	159.2	88.9	70 - 130	2953	4.4	20	
Surr: 1,2-Dichloroethane-d4	*2172*	*50*	*2500*	*0*	*86.9*	*70 - 126*	*2136*	*1.68*	*20*	
Surr: 4-Bromofluorobenzene	*2667*	*50*	*2500*	*0*	*107*	*81 - 113*	*2586*	*3.1*	*20*	
Surr: Dibromofluoromethane	*2285*	*50*	*2500*	*0*	*91.4*	*77 - 123*	*2254*	*1.39*	*20*	
Surr: Toluene-d8	*2590*	*50*	*2500*	*0*	*104*	*82 - 127*	*2559*	*1.2*	*20*	

The following samples were analyzed in this batch: HS19051771-02 HS19051771-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19051771**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19051771

Date/Time Received: **29-May-2019 14:55**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* (eSignature) 29-May-2019 (Date)

Reviewed by: *Dane J. Wacasey* (eSignature) 31-May-2019 (Date)

Matrices: **Groundwater/Water**

Carrier name: **Client**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☐	☐	Not Present ☑
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:205441
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.5c U/C	IR25
Cooler(s)/Kit(s):	43942	
Date/Time sample(s) sent to storage:	5/29/19 16:20	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: 5/31/19: Per email from Ms. Hermiston, Report arsenic only for metals and remove V.C. from VOC list.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS

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 1 of 1

COC ID: 205441

Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific + V.C.)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8270_LOW_S (5632532 SemiVolatiles Site Specific)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	ICP_TW (5636002 5652646 Metals - As, Pb)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F	HS19051771 Golder Associates Inc. Houston TX-Wood Preserving Works
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB01-2019 0529	5-29-19	—	Water	1,8	2	X										
2	WG-1620-MW 6BA -20190529	5-29-19	1115	Water	1,2,8	6	X	X	X								
3	WG-1620-FD01-2019 0529	5-29-19	1115	Groundwa	1,2,8	6	X	X	X								
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] 3 [ ] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	5-29-19	14:55	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	5/29/19	14:55	J. Hartman
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston HWPW 1620

Cooler ID	Cooler Temp.
43942	1.5
	1125
	CFO.0

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

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

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

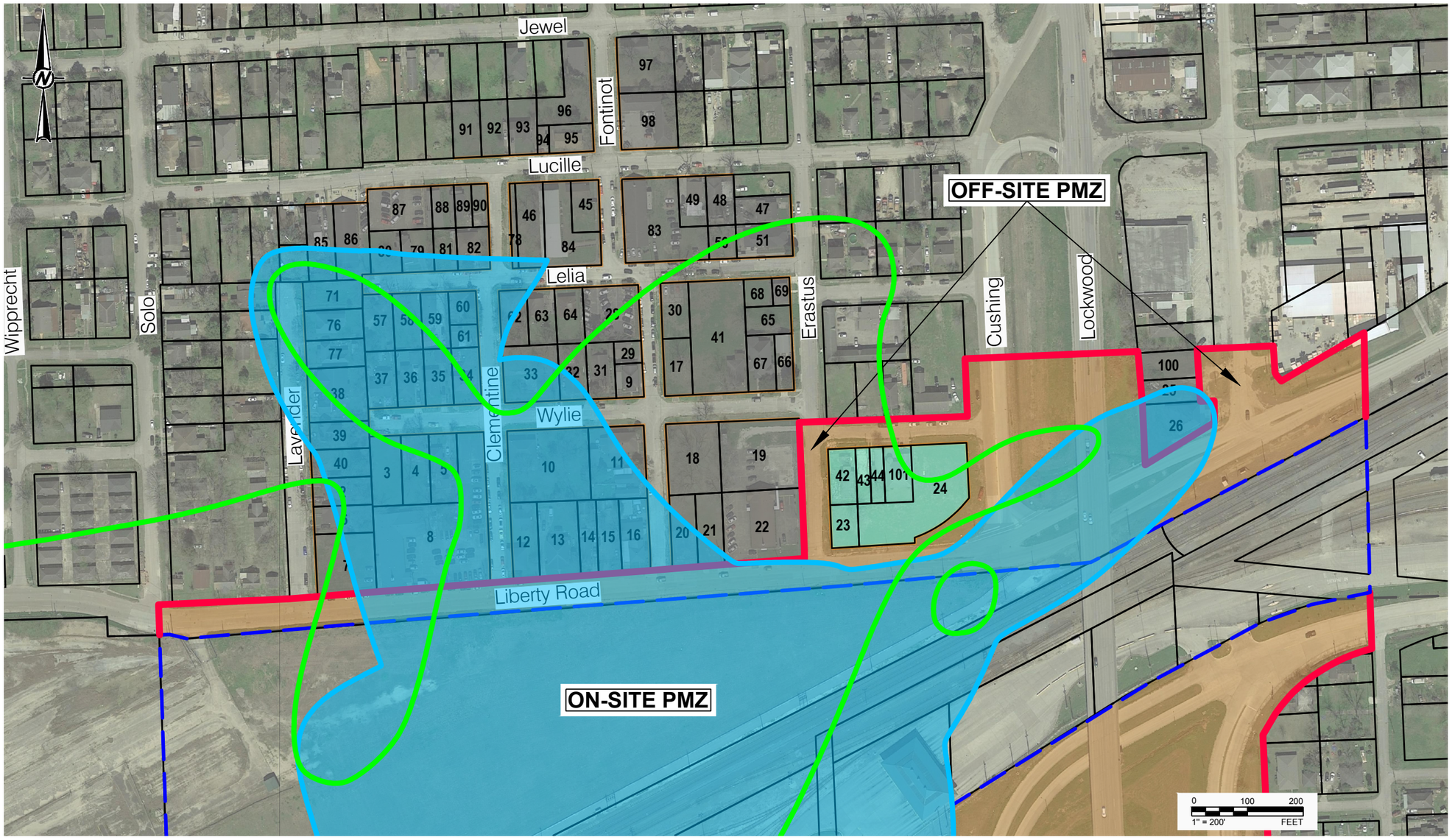
Copyright 2011 by ALS Environmental.

APPENDIX 5

LANDOWNER CONCURRENCE

SIGNED RESTRICTIVE COVENANTS – CITY OF HOUSTON AND OFF-SITE PROPERTIES FOR PRELIMINARY PMZ

Map ID	Parcel Address	Parcel Owner
2	2910 Lavender St	Ray Carrington
3	0 Wylie St	Greater Mt Nebo Baptist Church
4	5006 Wylie St	Greater Mt Nebo Baptist Church
5	5010 Wylie	Alberta Smith
6	2906 Lavender St	Jessie and Eloise Beal
7	2904 Lavender St	Clark Investment Co
8	505 Liberty	Greater Mount Nebo Baptist Church
9	5119 Wylie St	Martha Gilliam
10	2820 Clementine St	Estate Of Tillie Potts Benson
11	2813 Fontinot St	Jose Alexander & Reina Isabel Coto
12	5101 Liberty Rd	Wallace & Janie Longoria
13	5105 Liberty Rd	Alejandro Gonzalez
14	5109 Liberty Rd	Joe H. Martinez
15	5113 Liberty Rd	Harris County Cause No 2003-22512
16	5117 Liberty Rd	Jorge D Rivera
17	5201 Wylie St	Santos Marin
18	5201 Wylie St	Charity Baptist Church
19	2809 Erastus St	Charity Baptist Church C/O Rev F W Mcilveen
20	5201 Liberty Rd	Full Gospel Christian Assn.
21	5201 Liberty Rd	Charity Baptist Church
22	2809 Erastus St	Charity Baptist Church C/O Rev F W Mcilveen
23	5301 Liberty Rd	Geneva Henry, a/k/a Geneva Crump
24	5311 Liberty Rd	Elmer Preston Trust
25	3300 E Lockwood Dr	Eliuth Jimenez Damian - et al.
26	3300 E Lockwood Dr	Eliuth Jimenez Damian - et al.
28	5118 Lelia St	Greater True Vine Baptist Church
29	2913 Fontinot St	The heirs and devisees of Perez Paul M
30	0 Lelia St	Greater True Vine Missionary Baptist Church
31	5111 Wylie St	Aquilina Perez
32	5107 Wylie St	Reginald & Leticia Tolbert
33	5105 Wylie St	Maryland Potts Estate
34	2901 Clementine St	Mary Bass Ross
35	5011 Wylie St	Estate of Carrie Mae Carr
36	5007 Wylie St	Andrew Jerry & Rebecca Johnson
37	5005 Wylie St	Monico Duque & Martha Zuiga Banda
38	2926 Lavender St	Clark Investment Co
39	2924 Lavender St	Clark Investment Co
40	2922 Lavender St	Greater MT. Nebo Baptist Church
41	5202 Lelia St	Greater True Vine Mbc
42	2806 Erastus St	Margaret Roberts, Etal
43	5304 Wylie St	Irene Perez Juarez
44	5304-1/2 Wylie St	Saturnino Delgado and Susie I Delgado
45	3013 Fontinot St	Lenora Young and Clifton Scott
46	705 Lucille	Joyce Marie Taylor
47	3009 Erastus St	Mary Elizabeth Crowley
48	5212 Lucille St	Jose F & Yolanda Ruiz
49	5210 Lucille St	Alfred B & Freddie Randolph
50	0 Lelia St	Percy Vital
51	3005 Erastus St	Hugo Guerra & Margarita Morales Sanchez
57	5008 Lelia St	Emitt Holmes
58	5010 Lelia St	Dickson Investment Company
59	5014 Leila	Guadalupe Rivera Jr. & Flor Estela Rivera
60	2421 Clementine	Rogelio Ruiz & Olivia Pineda
61	0 Lelia St	Guadalupe Rivera
62	2920 Clementine St	Amidee Capital Group, Inc. f/k/a Amidee Capital Group, LLC
63	5116 Lelia St	Elizabeth Thomas
64	5112 Lelia St	Estate of Francis Potts
65	0 Lelia St	Mallie Pittman Jr. & Belinda Pittman
66	5211 Wylie	Sterling Trust for benefit of Charles Mock
67	0 Wylie	Sterling Trust for benefit of Charles Mock
68	0 Lelia St	Leroy Mock
69	2925 Erastus St	Leroy Mock
71	2942 Lavender St	Sandra Rena Thompson
76	2938 Lavender St	Essie Lee Hutchins
77	2934 Lavender St	Clark Investment Co
78	Leila St	Frank Lippow
79	5009 Lelia St	Clara Christinar Humphrey
80	5007 Lelia St	Johnnie M York
81	0 Lelia St	Herbert Hall
82	5015 Lelia St	Manuel Castillo
83	3010 Fontinot	Greater True Vine Baptist Church
84	3011 Fontinot	Greater True Vine Baptist Church
85	5006 Lucille St	Eine Barrientos
86	5008 Lucille St	Norton Memorial Temple Cogic
87	0 Lucille St	Norton Memorial Temple Cogic
88	5014 Lucille St	Catherine Hall Lawrence
89	5016 Lucille St	On Time LP
90	0 Lucille St	Bela Wahsh
91	5015 Lucille St	Norton Memorial Temple Cogic
92	5017 Lucille St	Norton Memorial Temple Cogic
93	5019 Lucille St	Herbert L Stewart
94	5023 Lucille St	Leticia Serna, Jose A Martinez
95	3101 Fontinot St	Frank Lee & Alean D Dorn
96	5120 Jewel St	Jorge E. Bastard, Sr. Alma C. Bastard
97	3120 Fontinot St	Arlene Lee - et al.
98	5203 Lucille St # 10	Thomas & Gay Blodgett
100	3300 E Lockwood Dr	Robert Damian - et al.
101	5308 Wylie St	Audrea Brown



LEGEND

- UPRR PROPERTY BOUNDARY
- GROUNDWATER PCLE ZONES (A-TZ, B-CZ/B-TZ AND C-TZ)
- GROUNDWATER PCLE ZONE - ARSENIC (A-TZ, B-CZ/B-TZ AND C-TZ)
- PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ AND C-TZ)
- PRELIMINARY ON-SITE PMZ
- PRELIMINARY OFF-SITE PMZ
- PRELIMINARY OFF-SITE PMZ CITY OF HOUSTON ROW
- RESTRICTIVE COVENANT SIGNED & RECEIVED

REFERENCE(S)

AERIAL PHOTO FROM GOOGLE EARTH, IMAGERY DATED 2/23/19.
PROPERTY INFORMATION FROM HARRIS COUNTY APPRAISAL DISTRICT (HCAD), 2014.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PROPOSED OFF-SITE PROPERTIES FOR RESTRICTIVE COVENANTS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-07-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 APPENDIX 5 FIGURE 1

Path: \\texarkana\data\Projects - Round Rock\19119232 - HWPW\2019-6 RAP Revision\ | File Name: Appendix 5 - Figure 1 Proposed Off-Site Properties for Restrictive Covenants.dwg | Last Edited By: adiamond Date: 2019-07-10 Time:11:18:33 AM | Printed By: adiamond Date: 2019-07-10 Time:1:46:52 PM

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

RESTRICTIVE COVENANT

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS THAT:
COUNTY OF HARRIS §

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the **City of Houston Right-of-Way (ROW) (Property)** presented in Exhibits A-1 and A-2 attached hereto and incorporated herein by reference.

Portions of the groundwater underlying the Property contain certain identified chemicals of concern (COCs) causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property and plume management zone, as those terms are defined in the TRRP, is shown on Exhibit B attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

Plume Management Zone

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of COCs exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the COCs in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit B provides the location and extent of the plume management zone. Exhibit C describes the maintenance and monitoring required and Table C-2 lists the COCs that exceed the TCEQ's Protective Concentration Levels. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the City of Houston with an address of 901 Bagby Street, Houston, Texas 77002 owns municipal right-of-way easements over the Property. Fee title underlying the easements is owned by the abutting property owners. In consideration of the Response Actions by Union Pacific Railroad (Responder) at the Former Houston Wood Preserving Works Site at 4910 Liberty Road, Houston, Texas, approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City of Houston has agreed, to the extent of its ownership interest, to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit C is required to be performed by the Responder. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 6th day of June, 2017.

ATTEST:

Anna Russell
City Secretary

CITY OF HOUSTON, TEXAS

Sylvester Turner
Mayor of the City of Houston

APPROVED AS TO FORM:

Phillip M. Goodwin, P.G.
Assistant City Attorney
LD#067-1600017-001

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This instrument was acknowledged before me on the 9th day of June, 2017, by **Sylvester Turner, Mayor** of the **CITY OF HOUSTON, TEXAS,** a municipal corporation, on behalf of said corporation.

NOTARY PUBLIC STATE OF TEXAS
ANNA RUSSELL
Notary Public State of Texas
Notary ID 686478-9
My Commission Expires:
07-08-2017

(Notary Seal)

Anna Russell
Notary Public, State of Texas

Union Pacific Railroad Company [RESPONDER]

By: Tony L Love
Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §

DOUGLAS COUNTY §

BEFORE ME, on this the 25th day of May, Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation [**responder**], known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 25th day of May, 2017.

General Notary - State of Nebraska
GREGG A. LARSEN
My Comm. Exp. Aug. 28, 2020.

Notary Public in and for the State of Nebraska
County of Douglas
My Commission Expires: August 28, 2020

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
(_____) COUNTY §

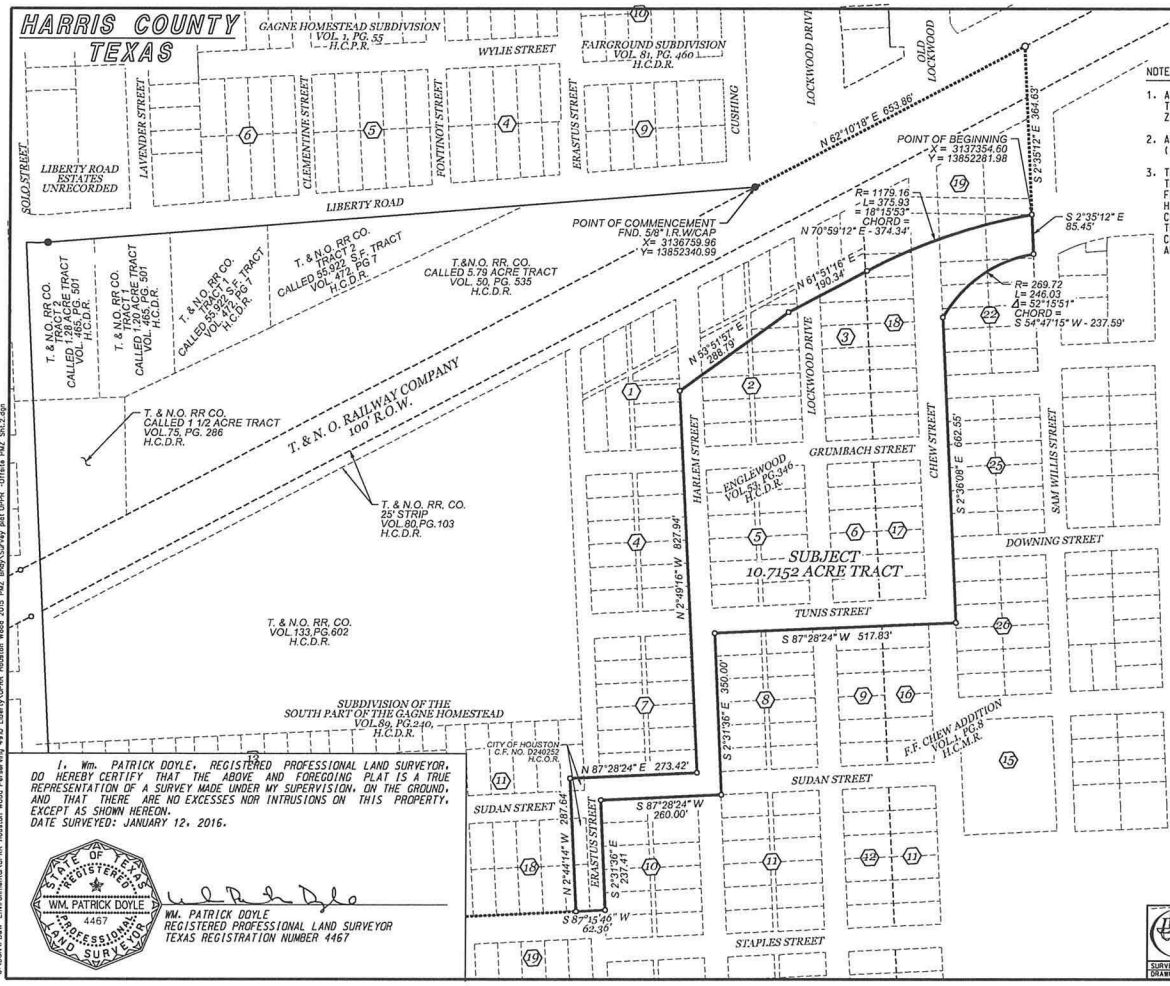
BEFORE ME, on this the ___ day of _____, _____ personally appeared _____ [name], _____ [title], of The Texas Commission of Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 20____.

_____
Notary Public in and for the State of Texas,
County of _____
My Commission Expires: _____

EXHIBIT A -1

SURVEY PLAT AND LEGAL DESCRIPTION OF CITY OF HOUSTON RIGHT-OF-WAY INSTITUTIONAL CONTROL BOUNDARY – EASTERN PROPERTY



HARRIS & WILSON 2 LEAGUE GRANT
ABSTRACT 32

NOTES:

1. ALL COORDINATES AND BEARINGS ARE RELATIVE TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83).
2. ALL DISTANCES ARE HORIZONTAL SURFACE LEVEL LENGTHS (SF= 0.999895480017).
3. THIS SURVEY DID NOT RELY ON A CURRENT TITLE COMMITMENT, THE INFORMATION CONTAINED ON THIS SURVEY WAS COMPILED FROM DATA BOTH PRIVATE AND PUBLIC, AND FROM THE HARRIS COUNTY COURTHOUSE. IT DOES NOT REPRESENT A COMPLETE DEED RESEARCH AND THIS PROPERTY MAY BE SUBJECT TO ADDITIONAL EASEMENTS, ENCUMBERANCES, RESTRICTIVE COVENANTS, OR OWNERSHIP TITLE EVIDENCE THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE

0 150 300
1" = 300'

I, Wm. PATRICK DOYLE, REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT THE ABOVE AND FOREGOING PLAT IS A TRUE REPRESENTATION OF A SURVEY MADE UNDER MY SUPERVISION, ON THE GROUND, AND THAT THERE ARE NO EXCESSES NOR INTRUSIONS ON THIS PROPERTY, EXCEPT AS SHOWN HEREON.
DATE SURVEYED: JANUARY 12, 2016.

STATE OF TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR
WM. PATRICK DOYLE
4467

WM. PATRICK DOYLE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NUMBER 4467

EXHIBIT OF
OFFSITE PMZ
10.7152 ACRE TRACT

IN THE
HARRIS & WILSON 2 LEAGUE GRANT
ABSTRACT 32
HARRIS COUNTY, TEXAS
FOR
UNION PACIFIC RAILROAD COMPANY

PROJ. NO. 1075-15-05
SHEET 2 OF 2

Doyle & Wachtstetter, Inc.
Surveying and Mapping GPS/GIS
131 COMMERCE STREET, CLUTE, TEXAS 77531
OFFICE: 979.265.3622 FAX: 979.265.9940 FIRM NO.:10024500

SURVEYED:	1-12-16	BOOK:	BOOK:	IMAGE:	NONE
DRAWN BY:	JAM	CHECKED:	JAM	REVISED:	

USER: jmitting, Mmapapa
DATE: 6/30/2016 TIME: 7:35:40 AM
DWGN:\PBW Environmental\UPRR Houston Wood Preserving 4310 Liberty\UPRR Houston Wood 2015 PMZ Bndy\Survey plat UPRR - Offsite PMZ Sht.2.dgn

Doyle & Wachtstetter, Inc
Surveying and Mapping • GPS/GIS

UNION PACIFIC RAILROAD COMPANY
10.7152 ACRE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

BEING ALL THAT CERTAIN 10.7152 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Block 2 and Block 3, all of Block 5 and Block 6, a portion of 50 foot wide Grumbach Street, a portion of 50 foot wide Tunis Street (Jones Street), a portion of Erastus Street (Sunset Avenue), a portion of 50 foot wide Harlem Street (Baer Avenue), and a portion of 50 foot wide Lockwood Drive (Cushing Avenue) as shown on the map of Englewood Subdivision, according to the map or plat recorded in Volume 53, Page 346 of the Harris County Deed Records (H.C.D.R.) a portion of Block 22, a portion of 50 foot wide Chew Avenue, and a portion of 50 foot wide Tunis Street (Jones Street), as shown on the map of F. F. Chew Addition, according to the map or plat recorded in Volume 1, Page 8 of the Harris County Map Records (H.C.M.R.), and a portion of Block 11 and Block 18 as shown of the map of the Subdivision of the South Part of the Gagne Homesteads, according to the map or plat thereof recorded in Volume 89, Page 240 of the H.C.D.R., the herein described 10.7152 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at 5/8" iron rod found marking the intersection of the southeastern right-of-way boundary line of said 60 foot wide Liberty Road with the northwestern right-of-way boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, same being the southeastern boundary line of all that certain called 5.79 acre tract of land conveyed by deed recorded on July 24, 1890 from R. B. Baer to Texas & New Orleans Railroad Company as recorded in Volume 50, Page 535 of the H.C.D.R., said Point of Commencement being located at Texas State Plane coordinate X=3136759.96 and Y=13852340.99;

THENCE North 62°10'18" East, coincident with the southeastern right-of-way boundary line of said 60 foot wide Liberty Road, same being the northwestern boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, a distance of 653.86 feet to an angle point at the intersection of the southeastern right-of-way boundary line of said 60 foot wide Liberty Road with the northern extension of the western right-of-way boundary line of 50 foot wide Sam Willis Street, at position X=3137338.15 and Y=13852646.20;

THENCE South 2°35'12" East, coincident with the northern extension of the western right-of-way boundary line of said 50 foot wide Sam Willis Street, a distance of 364.63 feet to a point located on the eastern boundary line of said Block 22 of the F. F. Chew Addition, for the northeast corner and the **POINT OF BEGINNING** of the herein described 10.7152 acre tract, at position X=3137354.60 and Y=13852281.98;

THENCE South 2°35'12" East, coincident with the western right-of-way boundary line of said 50 foot wide Sam Willis Street, same begin the eastern boundary line of said Block 22 of the F. F. Chew Addition, a distance of 85.45 feet to the point of curvature of a non-tangent curve to the left, having a radius of 269.72 feet, at position X=3137358.46 and Y=13852196.62;

131 Commerce Street • Clute, Texas 77531-5601
Phone: 979-265-3622 • Fax: 979-265-9940 • Email: DW-Surveyor.com

THENCE in an southwesterly direction, along said curve to left, having a radius of 269.72 feet, an arc length of 246.03 feet, a central angle of 52°15'51", a chord bearing and distance of South 54°47'15" West – 237.59 feet to a point for corner, located on the eastern right-of-way boundary line of 60 foot wide Chew Street, same being the western boundary line of said Block 22 of the F. F. Chew Addition, for an angle corner of the herein described 10.7152 acre tract, at position X=3137164.36 and Y=1385259.64;

THENCE South 2°36'08" East, coincident with the eastern right-of-way boundary line of 60 foot wide Chew Street, same being the western boundary line of said Block 22, Block 25 and Block 26 of the F. F. Chew Addition, a distance of 662.55 feet to a point at the intersection of the eastern right-of-way boundary line of said 60 foot wide Chew Street with easterly extension of the southern boundary line of 55 foot wide Tunis Street (not open), for the southeast corner of the herein described 10.7152 acre tract, at position X=3137194.44 and Y=13851397.84;

THENCE South 87°28'24" West, coincident with the southern right-of-way boundary line of said 55 foot wide Tunis Street (not open), same being northern boundary line of Block 16 of said F. F. Chew Addition, the northern boundary line of Block 9 and Block 8 of said Englewood Subdivision, a distance of 517.83 feet to a point located on the eastern right-of-way boundary line of said 50 foot wide Harlem Street, for the northwest corner of said Block 8 of said Englewood Addition and an interior corner of the herein described 10.7152 acre tract, at position X=3136677.16 and Y=13851375.01;

THENCE South 2°31'36" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Harlem Street, same being the western boundary line of said Block 8 of said Englewood Subdivision, a distance of 350.00 feet to the intersection of the eastern boundary line of said 50 foot wide Harlem Street with the southern right-of-way boundary line of 50 foot wide Sudan Street, for the northwest corner of Block 11 of said Englewood Subdivision, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136692.59 and Y=13851025.39;

THENCE South 87°28'24" West, coincident with the southern right-of-way boundary line f said 50 foot wide Sudan Street, the northern boundary line of Block 10 of said Englewood Subdivision, a distance of 260.00 feet to a point located on the eastern right-of-way boundary line Erastus Street, right-of-way varies, for an interior corner of the herein described 10.7152 acre tract, at position X=3136432.87 and Y=13851013.93;

THENCE South 2°31'36" East, coincident with the eastern right-of-way boundary line Erastus Street, right-of-way varies, same being the western boundary line of said Block 10 of said Englewood Subdivision, a distance of 237.41 feet to a point at the intersection of the easterly extension of the southern boundary line of Block 18 of said Subdivision of the South Part of the Gagne Homestead, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136443.34 and Y=13850776.78;

THENCE South 87°15'46" West, a distance of 62.36 feet to a point located on western right-of-way boundary line of said Erastus Street, right-of-way varies and the southern boundary line of said Block 18 of the said Subdivision of the South Part of the Gagne Subdivision, for an the southwest corner of the herein described 10.7152 acre tract, at position X=3136381.05 and Y=13850773.80;

UNION PACIFIC RAILROAD COMPANY
10.7152 ACRE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

THENCE North 2°44'14" West, coincident with the western right-of-way boundary line of said Erastus Street, right-of-way varies, a distance of 287.64 feet to a point located within Block 11 of said Subdivision of the South Part of the Gagne Homestead, at the intersection of the western right-of-way boundary line of said Erastus Street with the northern right-of-way boundary line of said 50 foot wide Sudan Street, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136367.32 and Y=13851061.08;

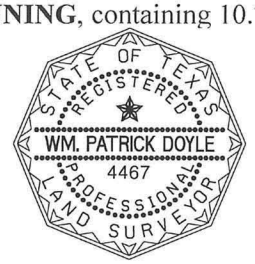
THENCE North 87°28'24" East, coincident with the northern right-of-way boundary line of said 50 foot wide Sudan Street, same being the southern boundary line of said Block 7 of said Englewood Subdivision, a distance of 273.42 feet to a point located on the western right-of-way boundary line of said 50 foot wide Harlem Street, for the southeast corner of said Block 7 and an interior corner of the herein described 10.7152 acre tract, at position X=3136640.44 and Y=13851073.13;

THENCE North 2°49'16" West, coincident with the western right-of-way boundary line of said 50 foot wide Harlem Street, same being the eastern boundary line of Block 7, Block 4 and Block 1, of said Englewood Subdivision, a distance of 827.94 feet to the northwest corner of the herein described 10.7152 acre tract, at position X=3136599.69 and Y=13851899.99;

THENCE North 53°51'57" East, a distance of 288.79 feet to the a angle corner of the herein described 10.7152 acre tract, at position X=3136832.90 and Y=13852070.26;

THENCE North 61°51'16" East, a distance of 190.34 feet to an angle corner of the herein described 10.7152 acre tract, located on curve to the right, having a radius of 1179.16 feet, at position X=3137000.72 and Y=13852160.04;

THENCE in an easterly direction, along said curve to the right, having a radius of 1179.16 feet, an arc length of 375.93 feet, a central angle of 18°15'53", and a chord bearing and distance of North 70°59'12" East – 374.34 feet to the **POINT OF BEGINNING**, containing 10.7152 acres of land, more or less.

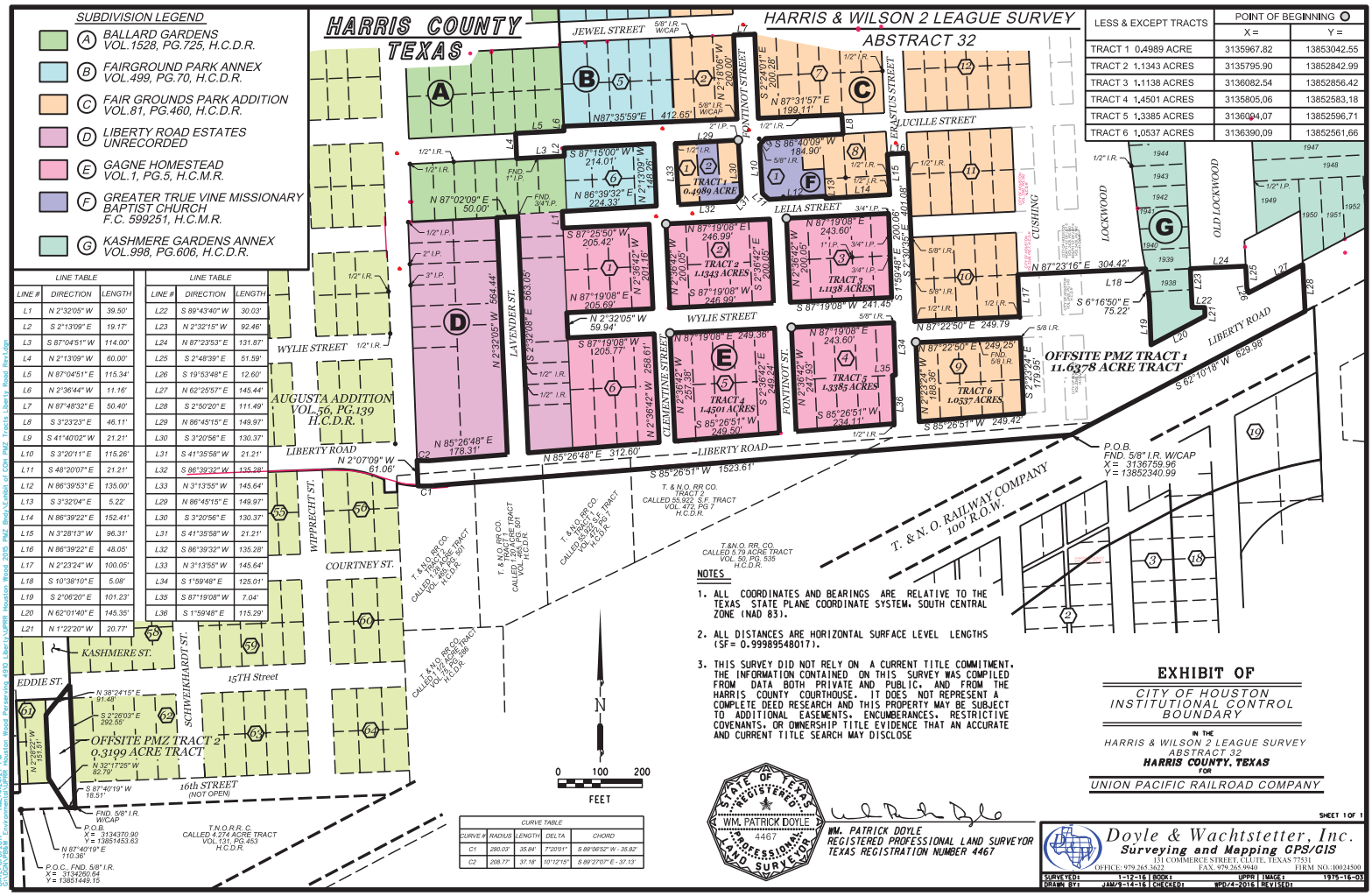


Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
June 29, 2016

This description is based on plat dated June 28, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ 10.7152 acre tract.doc

EXHIBIT A - 2

SURVEY PLAT AND LEGAL DESCRIPTION OF CITY OF HOUSTON RIGHT-OF-WAY INSTITUTIONAL CONTROL BOUNDARY – NORTHERN AND WESTERN PROPERTIES



LESS & EXCEPT TRACTS	POINT OF BEGINNING	
	X =	Y =
TRACT 1 0.4989 ACRE	3135967.82	13853042.55
TRACT 2 1.1343 ACRES	3135795.90	13852842.99
TRACT 3 1.1138 ACRES	3136082.54	13852856.42
TRACT 4 1.4501 ACRES	3135805.06	13852583.18
TRACT 5 1.3385 ACRES	3136094.07	13852596.71
TRACT 6 1.0537 ACRES	3136390.09	13852561.66

LINE TABLE

LINE #	DIRECTION	LENGTH
L1	N 2°32'05" W	39.50'
L2	S 2°13'09" E	19.17'
L3	S 87°04'51" W	114.00'
L4	N 2°13'09" W	60.00'
L5	N 87°04'51" E	115.34'
L6	N 2°36'44" W	11.16'
L7	N 87°48'32" E	50.40'
L8	S 3°23'23" E	46.11'
L9	S 41°40'02" W	21.21'
L10	S 3°20'11" E	115.26'
L11	S 48°20'07" E	21.21'
L12	N 86°39'53" E	135.00'
L13	S 3°32'04" E	5.22'
L14	N 86°39'22" E	152.41'
L15	N 3°28'13" W	96.31'
L16	N 86°39'22" E	48.05'
L17	N 2°23'24" W	100.05'
L18	S 10°38'10" E	5.08'
L19	S 2°06'20" E	101.23'
L20	N 62°01'40" E	145.35'
L21	N 1°22'20" W	20.77'

LINE TABLE

LINE #	DIRECTION	LENGTH
L22	S 89°43'40" W	30.03'
L23	N 2°32'15" W	92.46'
L24	N 87°23'53" E	131.87'
L25	S 2°48'39" E	51.59'
L26	S 19°53'48" E	12.60'
L27	N 62°25'57" E	145.44'
L28	S 2°50'20" E	111.49'
L29	N 86°45'15" E	149.97'
L30	S 3°20'56" E	130.37'
L31	S 41°35'58" W	21.21'
L32	S 86°39'32" W	135.28'
L33	N 3°13'55" W	145.64'
L29	N 86°45'15" E	149.97'
L30	S 3°20'56" E	130.37'
L31	S 41°35'58" W	21.21'
L32	S 86°39'32" W	135.28'
L33	N 3°13'55" W	145.64'
L34	S 1°59'48" E	125.01'
L35	S 87°19'08" W	7.04'
L36	S 1°59'48" E	115.29'

CURVE TABLE

CURVE #	RADIUS	LENGTH	DELTA	CHORD
C1	280.03'	35.84'	7°20'01"	S 89°08'52" W - 35.82'
C2	208.77'	37.18'	10°12'15"	S 89°27'07" E - 37.13'

NOTES

1. ALL COORDINATES AND BEARINGS ARE RELATIVE TO THE TEXAS STATE PLANE COORDINATE SYSTEM. SOUTH CENTRAL ZONE (NAD 83).
2. ALL DISTANCES ARE HORIZONTAL SURFACE LEVEL LENGTHS (SF= 0.999895480 17).
3. THIS SURVEY DID NOT RELY ON A CURRENT TITLE COMMITMENT. THE INFORMATION CONTAINED ON THIS SURVEY WAS COMPILED FROM DATA BOTH PRIVATE AND PUBLIC, AND FROM THE HARRIS COUNTY COURTHOUSE. IT DOES NOT REPRESENT A COMPLETE DEED RESEARCH AND THIS PROPERTY MAY BE SUBJECT TO ADDITIONAL EASEMENTS, ENCUMBERANCES, RESTRICTIVE COVENANTS, OR OWNERSHIP TITLE EVIDENCE THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE

STATE OF TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR WM. PATRICK DOYLE 4467

WM. PATRICK DOYLE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NUMBER 4467

EXHIBIT OF

CITY OF HOUSTON INSTITUTIONAL CONTROL BOUNDARY

IN THE HARRIS & WILSON 2 LEAGUE SURVEY ABSTRACT 32 HARRIS COUNTY, TEXAS

FOR

UNION PACIFIC RAILROAD COMPANY

SHEET 1 OF 1

Doyle & Wachtstetter, Inc.
Surveying and Mapping GPS/GIS
131 COMMERCE STREET, CULITE, TEXAS 77551
OFFICE: 979.265.3622 FAX: 979.265.9940 FIRM NO.: 10024500

SURVEYED:	1-12-16	BOOK:		UPPR	IMAGE:	1975-16-03
DRAWN BY:	JAM/9-14-16	CHECKED:		WPD/4-2016	REVISED:	

USER: (unlited) Workspace
DATE: 6/6/2017 TIME: 4:34:27 PM
COORDINATE SYSTEM: NAD83 Texas Central Environmental Wood Persecving 490 Liberty\UPRR Houston Wood 2015 PMZ Beds\Exhibit of COH PMZ Tracts Liberty Road Rev1.dwg

UNION PACIFIC RAILROAD COMPANY
11.6378 ACRE CITY OF HOUSTON OFFSITE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

BEING ALL THAT CERTAIN 11.6378 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Liberty Road, right-of-way varies, all of 30 foot wide Lelia Street (11th Street), all of 60 foot wide Wylie Street (12th Street), all of 40 foot wide Clementine Street and all of 40 foot wide Fontinot Street, as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records (H.C.M.R.), a portion of 60 foot wide Lucille Street, as shown on the map of Ballard Gardens Addition, according to the map or plat thereof recorded in Volume 1528, Page 725 of the Harris County Deed Records (H.C.D.R.), a portion of 50 foot wide Lucille Street and a portion of 50 foot wide Clementine Street (formerly Lots 1 and 10, Block 6) as shown on the map of Fairgrounds Park Annex according to the map or plat thereof recorded in Volume 499, Page 70 of the H.C.D.R., a portion of 50 foot wide Lucille Street, a portion of 50 foot wide Fontinot Street, and a portion of 50 foot wide Erastus Street as shown on the Map of Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the H.C.D.R., a portion of Old Lockwood Drive (right-of-way varies) as shown on the map of Kashmere Gardens Annex, according to the map or plat thereof recorded in Volume 996, Page 606 of the H.C.D.R., a portion of Cushing Street, a portion of Lockwood Drive, all of Lavender Street conveyed by deed recorded on May 24, 1948 from Carl S. Smith, et al to Harris County, as recorded in Volume 1740, Page 359 of the H.C.D.R., a portion of all that certain called 1.28 acre tract and a portion of all that certain called 1.20 acre tract of land conveyed by deed recorded on February 8, 1921 from W. N. Reece to Texas & New Orleans Railroad Company as recorded in Volume 465, Page 501 of the H.C.D.R.,; a portion of all that certain called 55,922 square foot tract of land and a portion of all that certain called 55,922 square foot tract of land conveyed by deed recorded on February 7, 1921 from W. N. Reece to Texas & New Orleans Railroad Company as recorded in Volume 472, Page 7 of the H.C.D.R., and a portion of all that certain called 5.79 acre tract of land conveyed by deed recorded on July 24, 1890 from R. B. Baer to Texas & New Orleans Railroad Company as recorded in Volume 50, Page 535 of the H.C.D.R., the herein described 11.6378 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

BEGINNING at 5/8" iron rod found marking the intersection of the southern right-of-way boundary line of said Liberty Road, right-of-way varies, with the northwestern right-of-way boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, same being the southeastern boundary line of said Texas and New Orleans Rail Road Company called 5.79 acre tract, said Point of Beginning being located at Texas State Plane coordinate X=3136759.96 and Y=13852340.99;

THENCE South 85°26'51" West, coincident with the southern boundary line of said Liberty Road, right-of-way varies, a distance of 1523.61 feet to a 5/8" iron rod found marking the point of curvature of a curve to the right, having a radius of 280.03 feet;

THENCE in a westerly direction, coincident with the southern boundary line of said Liberty Road, right-of-way varies, along said curve to the right, having a radius of 280.03 feet, an arc length of 35.84 feet, a central angle of 7°20'01", a chord bearing and distance of South 89°06'52" West – 35.82 feet to the southwest corner of the herein described 11.6378 acre tract;

THENCE North 2°07'09" West, crossing said Liberty Road, right-of-way varies, a distance of 61.06 feet to a point located on the northern right-of-way boundary line of said Liberty Road, right-of-way varies, for the southwest corner of Tract 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, being the same tract conveyed by deed recorded on March 27, 2014 from Harris County, et al to 2013 Cottage, LLC, as recorded in Clerk's File No. 20140123340 of the H.C.O.R., located on a curve to the left, having a radius of 208.77 feet, for an angle corner of the herein described 11.6378 acre tract,

131 Commerce Street • Clute, Texas 77531-5601
Phone: 979-265-3622 • Fax: 979-265-9940 • Email: DW-Surveyor.com

THENCE in an easterly direction, coincident with northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, along said curve to the left, having a radius of 208.77 feet, an arc length of 37.18 feet, a central angle of 10°12'15", a chord bearing and distance of South 89°27'07" East – 37.13 feet to a point for corner;

THENCE North 85°26'48" East, coincident with northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1, Block of the unrecorded subdivision of Liberty Road Estates, a distance of 178.31 feet to the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, and the western right-of-way boundary line of said Lavender Street, for the southeast corner of said Lot 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the western right-of-way boundary line of said Lavender Street, same being the eastern boundary line of Tract 1, the eastern boundary line of Lot 16, being the same tract conveyed by deed recorded on July 2, 1952 from Clark Investment Company to John Ellis, etux as recorded in Volume 2458, page 665 of the H.C.D.R., the eastern boundary line of Tract 14, being the same tract conveyed by deed recorded on March 27, 2014 from Harris County, et al to 2013 Cottage, LLC, as recorded in Clerk's File No. 20140123340 of the H.C.O.R., the eastern boundary line of Tract 13, being the same tract conveyed by deed recorded on May 11, 2001 from Larry Charles Wyatt to Francis A. Wyatt, as recorded in Clerk's File No. V045715 of the H.C.O.R., and the eastern boundary line of Tract 12, being the same tract conveyed by deed recorded on February 16, 1950 from Clark Investment Company to Arthur Brooks, etux as recorded in Volume 2035, Page 571 of the H.C.D.R., all being out of Block 2, of the unrecorded subdivision of Liberty Road Estates, a distance of 564.44 feet to a point located on the southern boundary line of Lot 5 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°02'09" East, coincident with the southern boundary line of Lot 5 and Lot 6 of said Ballard Gardens Addition, a distance of 50.00 feet to the northwest corner of Tract 11 of the unrecorded subdivision of Liberty Road Estates, being the same tract conveyed by deed recorded on January 28, 2003 from Harris County, et al to Sandra Rena Thompson, as recorded in Clerk's File NO. W386946 of the H.C.O.R., for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°32'08" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Lavender Street, same being the western boundary line of said Tract 11, Tract 6A, being the same tract conveyed by deed recorded on September 24, 1993 from Clark Investment Company, Inc. to Essie Lee Hutchins as recorded in Clerk's File No. P469225 of the H.C.O.R., Tract 6B, in the name of Zearlene Osborne, recordation information not found, Tract 6 and Tract 6C, in the name of Lucille Long, recordation information not found, Tract 5, being the same tract conveyed by deed recorded on March 1, 2011 from Constable Jack F. Abercia, Precinct 1, Harris County, Texas to Greater Mount Nebo Baptist Church as recorded in Clerk's File No. 2011-083443 of the H.C.O.R., Tract 4, being the same tract conveyed by deed recorded on August 14, 2009 from Jack Anthony Coachman to Ray Carrington as recorded in Clerk's File No. 2009-0369151 of the H.C.O.R., Tract 3, being the same tract described in deed recorded on November 22, 1951 from Clark Investment Company to Jessie Beal, et al, as recorded in Volume 2344, Page 164 of the H.C.D.R., and Tract 1, being the same tract conveyed by deed recorded on August 5, 2013 from Constable Alan Rosen Precinct 1, Harris County, Texas to Greater Mount Nebo Missionary Baptist Church, as recorded in Clerk's File No. 2013-0394211 of the H.C.O.R., all being out of Block 2 of the unrecorded subdivision of Liberty Road Estates, a distance of 563.05 feet to the intersection of the eastern right-of-way boundary line of said 50 foot wide Lavender Street with the northern right-of-way boundary line Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 85°26'48" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1 of the unrecorded subdivision of Liberty Road Estates and the southern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 312.60 feet to the southeast corner of said Block 6, same being the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the western right-of-way boundary line of 40 foot wide Clementine Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'42" West, coincident with the western right-of-way boundary line of said 40 foot wide Clementine Street, same being the eastern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 258.61 feet to the northeast corner of said Block 6, same being the intersection of said western right-of-way boundary line of 40 foot wide Clementine Street with the southern right-of-way boundary line of 60 foot wide Wylie Street (12th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°19'08" West, coincident with the southern right-of-way boundary line of 60 foot wide Wylie Street (12th Street), same being the northern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.77 feet to the northwest corner of said Block 6, located on the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, a distance of 59.94 feet to the southwest corner of Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, located on the northern boundary line of said 60 foot wide Wylie Street (12th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°19'08" East, coincident with the northern boundary line of said 60 foot wide Wylie Street (12th Street), same being the southern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.69 feet, to the southeast corner of said Block 1, at the intersection of the northern right-of-way boundary line of said Wylie Street (12th Street) with the western right-of-way boundary line of said 40 foot wide Clementine Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'42" West, coincident with the western right-of-way boundary line of said 40 foot wide Clementine Street, same being the eastern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 201.16 feet to the northeast corner of said Block 1, at the intersection of the western boundary line of said 40 foot wide Clementine Street with the southern right-of-way boundary line of called 30 foot wide Lelia Street (11th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°25'50" West, coincident with the southern right-of-way boundary line of called 30 foot wide Lelia Street (11th Street), same being the northern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.42 feet, to the northwest corner of said Block 1, located on the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, a distance of 39.50 feet, to a point located on the northern right-of-way boundary line of said called 30 foot wide Lelia Street (11th Street), same being the southern boundary line of Lot 8 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'32" East, coincident with the northern right-of-way boundary line of said called 30 foot wide Lelia Street (11th Street), same being the southern boundary line of said Lot 8 of Ballard Gardens Subdivision and the southern boundary line of Block 6 of said Fairgrounds Park Annex, a distance of 224.33 feet to the intersection of the northern right-of-way boundary line of said called 30 foot wide Lelia Street with the western right-of-way boundary line 50 foot wide Clementine Street, formerly Lots 1 and 10, Block 6, Fairgrounds Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°13'09" West, coincident with the western right-of-way boundary line 50 foot wide Clementine Street, a distance of 148.26 feet, to a point located at the intersection of the western right-of-way boundary line of said 50 foot wide Clementine Street with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 6 of said Fairground Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°15'00" West, coincident with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 6 of said Fairground Park Annex, a distance of 214.01 feet, to the northwest corner of said Block 6 of Fairground Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°13'09" East, coincident with the western boundary line of said Block 6 of Fairground Park Annex, a distance of 19.17 feet, to the northeast corner of Lot 8 of said Ballard Gardens Addition, located on the southern right-of-way boundary line of 60 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°04'51" West, coincident with the southern right-of-way boundary line of 60 foot wide Lucille Street, same being the northern boundary line of Lot 8 and Lot 7 of said Ballard Gardens Addition, a distance of 114.00 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°13'09" West, a distance of 60.00 feet to a point located on the northern right-of-way boundary line of said 60 foot wide Lucille Street, same being the southern boundary line of Lot 15 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°04'51" East, coincident with the northern right-of-way boundary line of said 60 foot wide Lucille Street, same being the southern boundary line of Lots 15 and 16 of said Ballard Gardens Addition, a distance of 115.34 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'44" West, coincident with the eastern boundary line of said Lot 16 of Ballard Gardens Addition, a distance of 11.16 feet to the southwest corner of Block 5 of said Fairgrounds Park Annex, located on the northern right-of-way boundary line of said 50 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°35'59" East, coincident with the northern right-of-way boundary line of said 50 foot wide Lucille Street, same being the southern boundary line of Block 5 of said Fairgrounds Park Annex and the southern boundary line of Block 2 of Fair Ground Park Addition, a distance of 412.65 feet to the southeast corner of said Block 2 of said Fair Ground Park Addition at the intersection of the northern right-of-way boundary line of said 50 foot wide Lucille Street with western right-of-way boundary line of 50 foot wide Fontinot Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°18'06" West, coincident with the western right-of-way boundary line of said 50 foot wide Fontinot Street, same being the eastern boundary line Block 2 of said Fair Ground Park Addition, a distance of 200.00 feet, to the intersection of the western right-of-way boundary line of said 50 foot wide Fontinot Street with the southern right-of-way boundary line of 50 foot wide Jewel Street, for angle corner;

THENCE North 87°48'32" East, coincident with the southern right-of-way boundary line of 50 foot wide Jewel Street, a distance of 50.40 feet, to a point located at the intersection of the southern right-of-way boundary line of said 50 foot wide Jewel Street with the eastern right-of-way boundary line of 50 foot wide Fontinot Street, for the northwest corner of Block 7 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°24'01" East, coincident with the eastern right-of-way boundary line of 50 foot wide Fontinot Street, same being the western boundary line of Block 7 of said Fair Ground Park Addition, a distance of 200.28 feet to the southwest corner of said Block 7, at the intersection of the eastern right-of-way boundary line of 50 foot wide Fontinot Street with the northern right-of-way boundary line of said 50 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°31'57" East, coincident with the northern right-of-way boundary line of 50 foot wide Lucille Street, same being the southern boundary line of Block 7 of said Fair Ground Park Addition, a distance of 199.11 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°23'23" East, a distance of 46.11 feet, to a point located southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 8 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 86°40'09" West, coincident with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 8 of said Fair Ground Park Addition, and the northern boundary line of Block 1 as shown on the map of the Greater True Vine Missionary Baptist Church recorded in Film Code 599251 of the H.C.M.R., a distance of 184.90 feet the north corner of a cutback at the intersection of the southern right-of-way boundary line of said 50 foot wide Lucille Street with the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 41°40'02" West, coincident with the said cutback, a distance of 21.21 feet, to a point located on the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, same being the western boundary line of Block 1 of said Greater True Vine Missionary Baptist Church, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°20'11" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, same being the western boundary line of Block 1 of said Greater True Vine Missionary Baptist Church, a distance of 115.26 feet, to a point located at the North corner of a cutback at the intersection of the eastern right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of 50 foot wide Lelia Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 48°20'07" East, coincident with said cutback, a distance of 21.21 feet, to the intersection of the eastern right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of 50 foot wide Lelia Street, located on the southern boundary line of said Block 1 of said Greater True Vine Missionary Baptist Church, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'53" East, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary line of said Block 1 of said Greater True Vine Missionary Baptist Church, a distance of 135.00 feet, to a point located on the western boundary line of Lot 3, Block 8 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°32'04" East, coincident with the western boundary line of said Lot 3, Block 8 of Fair Ground Park Addition, a distance of 5.22 feet, to a point located on the northern right-of-way boundary line of called 30 foot wide Lelia Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'22" East, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary line of Block 8, Fair Ground Park Addition, a distance of 152.41 feet to the southeast corner of said Block 8, located at the intersection of the northern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of called 50 foot wide Erastus Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 3°28'13" West, coincident with the western right-of-way boundary line of called 50 foot wide Erastus Street, same being the eastern boundary line of Block 8 of Fair Ground Park Addition, a distance of 96.31 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'22" East, a distance of 48.05 feet, to a point located on the eastern right-of-way said called 50 foot wide Erastus Street, same being the western boundary line of Block 11 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°30'35" East, coincident with the eastern right-of-way of said called 50 foot wide Erastus Street, the western boundary line of Block 11 and the western boundary line of Block 10 of said Fair Ground Park Addition, a distance of 401.08 feet, to the southwest corner of said Block 10, located at the intersection of the eastern right-of-way boundary line of said called 50 foot wide Erastus Street with the northern boundary line of 50 foot wide Wylie Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°22'50" East, coincident with the northern right-of-way boundary line of said 50 foot wide Wylie Street, same being the southern boundary line of said Block 10, Fair Ground Park Addition, a distance of 249.79 feet, to a point located on the western right-of-way boundary line of Cushing Street, located on the eastern boundary line of Lot 11, Block 10 of Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°23'24" West, coincident with the western boundary right-of-way boundary line of said Cushing Street, same being the eastern boundary line of Lot 11, Block 10 of Fair Ground Park Addition, a distance of 100.05 feet, to the northeast corner of said Lot 11, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°23'16" East, crossing said Cushing Street and Lockwood Drive, a distance of 304.42 feet, to a point located on the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of Lot 1939 of Kashmere Gardens Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 10°38'10" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of said Lot 1939 of Kashmere Gardens Annex, a distance of 5.08 feet, to the southwest corner of the residual of said Lot 1939 and the northwest corner of the residual of Lot 1938, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 6°16'50" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of said Lot 1938 of Kashmere Gardens Annex, and the western boundary line of all that certain called 0.3790 acre tract conveyed by deed recorded on August 31, 1979 from Larry Edward, et al to Martin Damian,. Sr., et al as recorded in Clerk's File No. G222792 of the H.C.O.R., a distance of 75.22 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°06'20" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 101.23 feet, to a point located on the northern right-of-way boundary line of said Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 62°01'40" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 145.35 feet to the southeast corner of said Martin Damian, Sr., et al called 0.3790 acre tract, located at the intersection of the northern right-of-way boundary line of said Liberty Road with the western right-of-way boundary line of Old Lockwood Drive, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 1°22'20" West, coincident with the western right-of-way boundary line of Old Lockwood Drive, right-of-way varies, same being the eastern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 20.77 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 89°43'40" West, coincident with the northern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 30.03 feet, to a point located on the western right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'15" West, coincident with the western right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the eastern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract and the residual of said Lot 1938 of Kashmere Gardens Annex, a distance of 92.46 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°23'53" East, crossing said Old Lockwood Drive, right-of-way varies, a distance of 131.87 feet, to a point located on the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of all certain called 1.0467 acre tract, conveyed by deed recorded on October 20, 2006 from Elmer Preston, trustee to Rosendo H. Hernandez ass recorded in Clerk's File No. 2006-0140564 of the H.C.O.R., for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°48'39" East, coincident with the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 51.59 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 19°53'48" East, coincident with the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 12.60 feet to the southwest corner of said Rosendo H. Hernandez called 1.0467 acre tract, at the intersection of the eastern right-of-way boundary line of said Old Lockwood Drive right-of-way varies, with the northern right-of-way boundary line of Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 62°25'57" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 145.44 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°50'20" East, crossing said Liberty Road, right-of-way varies, a distance of 111.49 feet, to a point located on the southern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the northern right-of-way boundary line of said 100 foot wide Texas and New Orleans Rail Road Company right-of-way, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 62°10'18" West, coincident with the southern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the northern right-of-way boundary line of said 100 foot wide Texas and New Orleans Rail Road Company right-of-way, a distance of 629.98 feet to the **POINT OF BEGINNING,** containing within this description 18.2271 acres of land, less and except the following tracts, being more particularly described as follow: Tract 1 – 0.4989 acre tract, Tract 2 – 1.1343 acre tract, Tract 3 – 1.1138 acre tract, Tract 4 – 1.4501 acre tract, Tract 5, 1.3385 acre tract, Tract 6 – 1.0537 acre tract, leaving a net acreage of 11.6378 acres, more or less.

LESS & EXCEPT TRACT 1 – 0.4989 ACRE

BEING ALL THAT CERTAIN 0.4989 ACRE tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Lot 1 and all of Lot 3 of Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the Harris County Deed Records (H.C.D.R.), and being all of Block 2 of the Greater True Vine Missionary Baptist Church according to the map or plat thereof recorded in Film Code 599251 of the Harris County Map Records, the herein described 0.4989 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the southeast corner of Block 2 of said Fair Ground Park Addition, located on the intersection of the northern right-of-way boundary line 50 foot wide Lucille Street and the western boundary line of 50 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135965.22 and Y=13853093.15;

THENCE South 2°57'04" East, crossing said 50 foot wide Lucille Street, a distance of 50.68 feet to the northeast corner of said Block 1 Fair Grounds Park Addition for the northeast corner and the **POINT OF BEGINNING** of the herein described 0.4989 acre tract, at position X=3135967.82 and Y=13853042.55;

THENCE South 3°20'56" East, coincident with the western boundary line of said 50 foot wide Fontinot Street, same being the eastern boundary line of said Block 1, Fair Ground Park Addition, and the eastern boundary line of said Block 2 of the subdivision of the Greater True Vine Missionary Baptist Church, a distance of 130.37 feet to the North corner of a cutback at the southeast corner of said Block 2, located at the intersection of the western boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of Lelia Street, for an angle corner of the herein described 0.4989 acre tract;

THENCE South 41°35'58" West, coincident with said cutback, a distance of 21.21 feet to the intersection of the western right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of called 30 foot wide Lelia Street, for an angle corner of the herein described 0.4989 acre tract;

THENCE South 86°39'32" West, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary of said Block 2 of the subdivision of the Greater True Vine Missionary Baptist Church and the southern boundary line of Block 1 of said Fair Ground Park Addition, a distance of 135.28 feet to the southwest corner of said Block 1 of said Fair Ground Park, located at the intersection of the northern right-of-way boundary line of said called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 50 foot wide Clementine Street, for the southwest corner of the herein described 0.4989 acre tract;

THENCE North 3°13'55" West, coincident with the eastern right-of-way boundary line of 50 foot wide Clementine Street, a distance of 145.64 feet to the northwest corner of Block 1 of Fair Ground Park Addition, located at the intersection of the eastern right-of-way boundary line of said 50 foot wide Clementine Street with the southern right-of-way boundary line of said 50 foot wide Lucille Street, for the northwest corner of the herein described 0.4989 acre tract;

THENCE North 86°45'15" East, coincident with the southern right-of-way boundary line of said 50 foot wide Lucille Street, a distance of 149.97 feet to the **POINT OF BEGINNING,** containing 0.4989 acre of land, more or less.

LESS & EXCEPT TRACT 2 – 1.1343 ACRE TRACT

BEING ALL THAT CERTAIN 1.1343 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 2 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.1343 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 40 foot wide Clementine Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135755.89 and Y=13852842.23;

THENCE North 88°54'44" East, crossing said 40 foot wide Clementine Street, a distance of 40.01 feet to the northwest corner of said Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of 40 foot wide Clementine Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.1343 acre tract, at position X=3135795.90 and Y=13852842.99;

THENCE North 87°19'08" East, coincident with the southern boundary line of said called 30 foot wide Lelia Street, same being the northern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 246.99 feet to the northeast corner of said Block 1, at the intersection of the southern boundary line of said called 30 foot wide Lelia Street, with the western boundary line of 40 foot wide Fontinot Street, for the northeast corner of the herein described 1.1343 acre tract

THENCE South 2°36'42" East, coincident with the western boundary line of 40 foot wide Fontinot Street, same being the eastern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the southeast corner of said Block 1, located at the intersection of the western boundary line of 40 foot wide Fontinot Street with the northern right-of-way boundary line 50 foot wide Wylie Street, for the southeast corner of the herein described 1.1343 acre tract

THENCE South 87°19'08" West, coincident with the northern right-of-way boundary line 50 foot wide Wylie Street, same being the southern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 246.99 feet to the southwest corner of said Block 1, at the intersection of the northern right-of-way boundary line of said 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Clementine Street, for the southwest corner of the herein described 1.1343 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Clementine Street, same being the western boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the **POINT OF BEGINNING**, containing 1.1343 acres of land, more or less.

LESS & EXCEPT TRACT 3– 1.1138 ACRE TRACT

BEING ALL THAT CERTAIN 1.1138 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 3 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.1138 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 2 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3136042.59 and Y=13852854.55;

THENCE North 87°19'08" East, crossing said 40 foot wide Fontinot Street, a distance of 40.00 feet to the northwest corner of said Block 3 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of 40 foot wide Fontinot Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.1138 acre tract, at position X=3136082.54 and Y=13852856.42;

THENCE North 87°19'08" East, coincident with the southern boundary line of said called 30 foot wide Lelia Street, same being the northern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 243.60 feet to the northeast corner of said Block 3, at the intersection of the southern boundary line of said called 30 foot wide Lelia Street, with the western boundary line of Erastus Street, right-of-way varies, for the northeast corner of the herein described 1.1138 acre tract

THENCE South 1°59'48" East, coincident with the western boundary line of Erastus Street, right-of-way varies, same being the eastern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.06 feet to the southeast corner of said Block 3, located at the intersection of the western boundary line of Erastus Street, right-of-way varies, with the northern right-of-way boundary line 50 foot wide Wylie Street, for the southeast corner of the herein described 1.1138 acre tract

THENCE South 87°19'08" West, coincident with the northern right-of-way boundary line 50 foot wide Wylie Street, same being the southern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 241.45 feet to the southwest corner of said Block 3, at the intersection of the northern right-of-way boundary line of said 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, for the southwest corner of the herein described 1.1138 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, same being the western boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the **POINT OF BEGINNING**, containing 1.1138 acres of land, more or less.

LESS & EXCEPT TRACT 4- 1.4501 ACRE TRACT

BEING ALL THAT CERTAIN 1.4501 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 5 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.4501 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Clementine Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135767.79 and Y=13852581.43;

THENCE North 87°19'08" East, crossing said 40 foot wide Clementine, a distance of 37.63 feet to the northwest corner of said Block 5 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of 40 foot wide Clementine Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.4501 acre tract, at position X=3135805.06 and Y=13852583.18;

THENCE North 87°19'08" East, coincident with the southern boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.36 feet to the northeast corner of said Block 5, at the intersection of the southern boundary line of said 50 foot wide Wylie Street, with the western boundary line of 40 foot wide Fontinot Street, for the northeast corner of the herein described 1.4501 acre tract;

THENCE South 2°36'42" East, coincident with the western boundary line of 40 foot wide Fontinot Street, same being the eastern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.24 feet to the southeast corner of said Block 5, located at the intersection of the western boundary line of 40 foot wide Fontinot Street with the northern right-of-way boundary line Liberty Road, right-of-way varies, for the southeast corner of the herein described 1.4501 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.50 feet to the southwest corner of said Block 5, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of 40 foot wide Clementine Street, for the southwest corner of the herein described 1.4501 acre tract;

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Clementine Street, same being the western boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 257.38 feet to the **POINT OF BEGINNING**, containing 1.4501 acres of land, more or less.

LESS & EXCEPT TRACT 5 – 1.3385 ACRE TRACT

BEING ALL THAT CERTAIN 1.3385 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 4 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.3385 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 5 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3136054.43 and Y=13852594.86;

THENCE North 87°19'08" East, crossing said 40 foot wide Fontinot Street, a distance of 39.68 feet to the northwest corner of said Block 4 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of 40 foot wide Fontinot Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.3385 acre tract, at position X=3136094.07 and Y=13852596.71;

THENCE North 87°19'08" East, coincident with the southern right-of-way boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 243.60 feet to the northeast corner of Lot 5 of said Block 4, at the intersection of the southern right-of-way boundary line of said 50 foot wide Wylie Street, with the western right-of-way boundary line of Erastus Street, right-of-way varies, for the northeast corner of the herein described 1.3385 acre tract

THENCE South 1°59'48" East, coincident with the western right-of-way boundary line of Erastus Street, right-of-way varies, same being the eastern boundary line of said Lot 5, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 125.01 feet to an angle point;

THENCE South 87°19'08" West, coincident with the southern boundary line of said Lot 5, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 7.04 feet to a point located in the northern boundary line of said Lot 6, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, for an angle corner of the herein described 1.3385 acre tract,

THENCE South 1°59'48" East, coincident with the western right-of-way boundary line of Erastus Street, right-of-way varies, a distance of 115.29 feet to a point located on the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Lot 6, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, for the southeast corner of the herein described 1.3385 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 234.11 feet to the southwest corner of said Block 4, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of Fontinot Street, right-of-way varies, for the southwest corner of the herein described 1.3385 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, same being the western boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 247.93 feet to the **POINT OF BEGINNING**, containing 1.3385 acres of land, more or less.

LESS & EXCEPT TRACT 6 – 1.0537 ACRE TRACT

BEING ALL THAT CERTAIN 1.0537 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Block 9 as shown on the map of the Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the Harris County Deed Records, the herein described 1.0537 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the southwest corner of Block 10 of said Fair Ground Park Addition, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, said Point of Commencement being located at Texas State Plane coordinate position X=3136388.03 and Y=13852610.99;

THENCE South 2°09'23" East, crossing said 50 foot wide Wylie Street, a distance of 50.54 feet to the northwest corner of said Block 9 of said Fair Ground Park Addition, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of Erastus Street, right-of-way varies, for the northwest corner and the **POINT OF BEGINNING** herein described 1.0537 acre tract, at position X=3136390.09 and Y=13852561.66;

THENCE North 87°22'50" East, coincident with the southern boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 249.25 feet to the northeast corner of Lot 5 of said Block 9, at the intersection of the southern boundary line of said 50 foot wide Wylie Street, with the western boundary line of Cushing Street, right-of-way varies, for the northeast corner of the herein described 1.0537 acre tract

THENCE South 2°23'24" East, coincident with the western boundary line of Cushing Street, right-of-way varies, same being the eastern boundary line of said Lots 2 and 11, Block 9 of said Fair Ground Park Addition, a distance of 179.95 feet to a point located on the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 9 of said Fair Ground Park Addition, for the southeast corner of the herein described 1.0537 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 249.42 feet to the southwest corner of said Block 9, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, for the southwest corner of the herein described 1.0537 acre tract

THENCE North 2°23'24" West, coincident with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, same being the western boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 188.36 feet to the **POINT OF BEGINNING**, containing 1.0537 acres of land, more or less.

STATE OF TEXAS
REGISTERED
WM. PATRICK DOYLE
4467
PROFESSIONAL
LAND SURVEYOR

Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
September 10, 2016
Revised September 14, 2016

This description is based on a plat dated June 30, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ C.O.H. Right-of-way.doc

Doyle & Wachtstetter, Inc
Surveying and Mapping • GPS/GIS

UNION PACIFIC RAILROAD COMPANY
0.3199 ACRE CITY OF HOUSTON OFFSITE PMZ TRACT 2
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

BEING ALL THAT CERTAIN 0.3199 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of 60 foot wide Kashmere Street, a portion of 60 foot wide 15th Street and 60 foot wide 16th Street, as shown on the plat of Augusta Addition, according to the map or plat thereof recorded in Volume 56, Page 139 of the Harris County Deed Records (H.C.D.R.), the herein described 0.3199 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at a 5/8" iron rod found marking the northwest corner of all that certain called 4.274 acre tract conveyed by deed recorded on October 29, 1901, from Ida Japhet to Texas and New Orleans Rail Road Company as recorded in Volume 131, Page 453 of the H.C.D.R., located on the northern boundary line of 60 foot wide 16th Street (not open), said Point of Commencement being located at Texas State Plane coordinate position X=3134260.64 and Y=13851449.15;

THENCE North 87°40'19" East, coincident with the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street, a distance of 110.36 feet to the southwest corner and the **POINT OF BEGINNING,** of the herein described 0.3199 acre tract, at position X=3134370.90 and Y= 13851453.63;

THENCE North 32°17'25" West, a distance of 82.79 feet to a point located on the eastern boundary line of Block 61 of said Augusta Addition, same being the western right-of-way of said 60 foot wide Kashmere Street, for an angle corner of the herein described 0.3199 acre tract;

THENCE North 2°28'22" West, coincident with the eastern boundary line of Block 61 of said Augusta Addition, same being the western right-of-way of said 60 foot wide Kashmere Street, a distance of 151.51 feet to an angle corner of the herein described 0.3199 acre tract;

THENCE North 38°24'15" East, a distance of 91.48 feet to a point located on the eastern right-of-way of said 60 foot wide Kashmere, within the right-of-way of said 60 foot wide 15th Street (Eddie Street), for the northeast corner of the herein described 0.3199 acre tract;

THENCE South 2°26'03" East, coincident with the eastern right-of-way of said Kashmere Street and the western boundary line of Block 62 of said Augusta Addition, a distance of 292.55 feet to a point located on the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street for the southeast corner of the herein described 0.3199 acre tract;

THENCE South 87°40'19" West, coincident with the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street, a distance of 18.51 feet to the **POINT OF BEGINNING**, containing 0.3199 acre of land, more or less.

STATE OF TEXAS
REGISTERED
WM. PATRICK DOYLE
4467
PROFESSIONAL
LAND SURVEYOR

Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
September 15, 2016

This description is based on a plat dated June 30, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ C.O.H. Right-of-way 0.3199 acre.doc

131 Commerce Street • Clute, Texas 77531-5601
Phone: 979-265-3622 • Fax: 979-265-9940 • Email: DW-Surveyor.com

EXHIBIT B

AFFECTED PROPERTY AND PLUME MANAGEMENT ZONE MAP

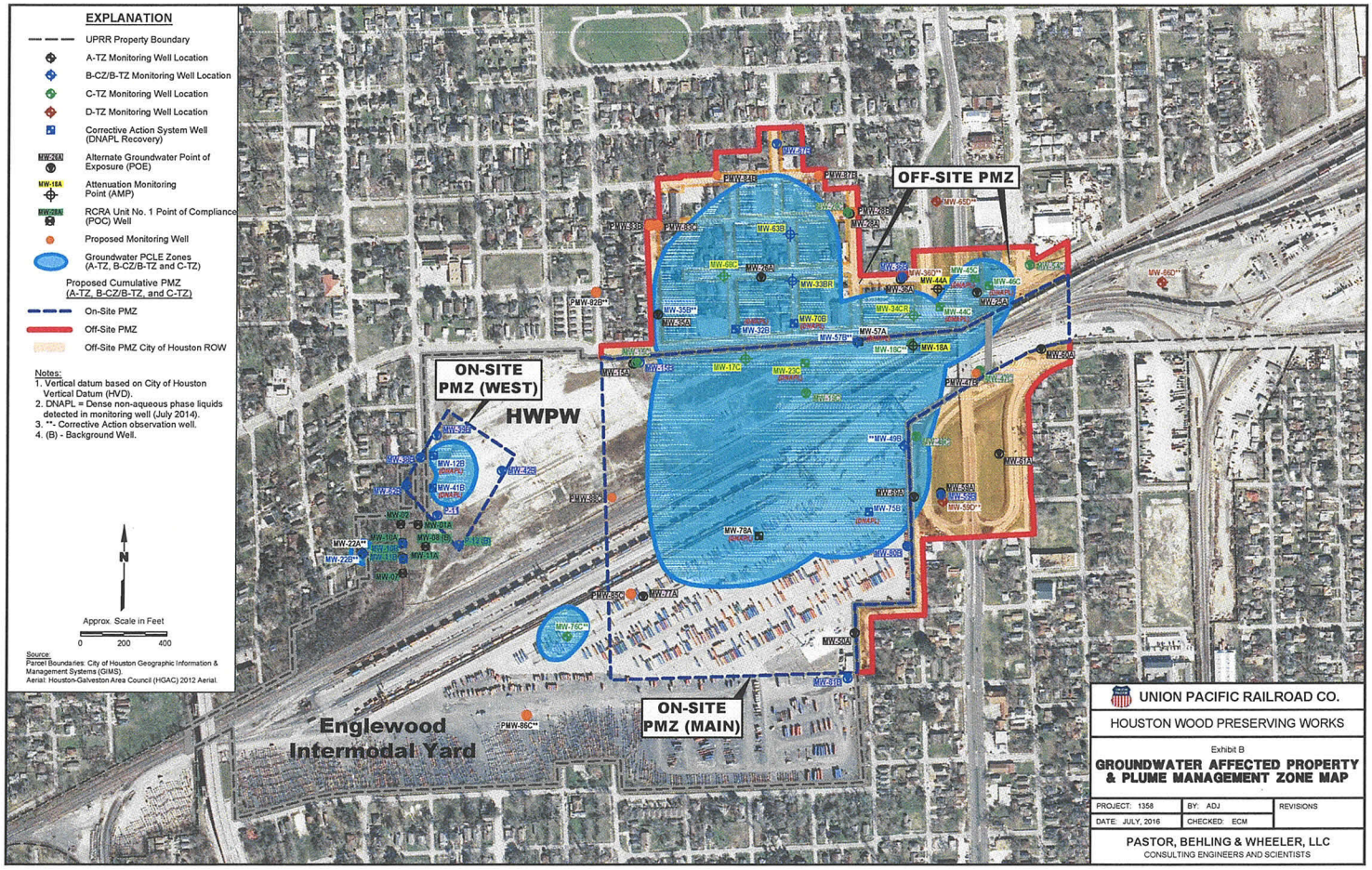

EXPLANATION
UPRR Property Boundary
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Corrective Action System Well (DNAPL Recovery)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Proposed Cumulative PMZ (A-TZ, B-CZ/B-TZ, and C-TZ)
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action observation well.
4. (B) - Background Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit B
GROUNDWATER AFFECTED PROPERTY & PLUME MANAGEMENT ZONE MAP
PROJECT: 1358
BY: ADJ
REVISIONS
DATE: JULY, 2016
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT C

PLUME MANAGEMENT ZONE MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "C"
MAINTENANCE AND MONITORING REQUIRMENTS

Union Pacific Railroad (UPRR), listed as the Responder under this Restrictive Covenant, will conduct regular sampling of monitoring wells located within the City of Houston Right-Of-Way and listed in the table below (Table C-1) for chemicals of concern (COCs) (see Table C-2) in accordance with the groundwater monitoring requirements established under the Texas Commission on Environmental Quality (TCEQ) Hazardous Waste Permit/Compliance Plan No. 50343. Monitoring and reporting activities are detailed in the Groundwater Sampling and Analysis Plan (SAP) and related compliance tables within the TCEQ Hazardous Waste Permit/Compliance Plan No. 50343.

Monitoring wells listed below will be inspected for signs of damage, including well pads, casing, locks, and, protective covers. Repairs will be made as necessary to ensure the integrity of the monitoring wells.

TABLE C-1

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-28A	***MW-35B***	***MW-44C***
MW-35A	***MW-36B***	***MW-45C***
MW-36A	***MW-59B***	***MW-46C***
MW-44A	***MW-63B***	***MW-48C***
MW-59A	***MW-67B***	***MW-54C***
MW-60A	***MW-70B***	***MW-68C***
MW-61A	***PMW-28B (proposed)***	***PMW-83C (proposed)***
MW-69A	***PMW-82B (proposed)***	
	PMW-83B (proposed)	
	PMW-84B (proposed)	
	PMW-87B (proposed)	

Note: Additional monitoring wells may be added or subtracted from the list above as necessary to satisfy the TCEQ Plume Management Zone (PMZ) monitoring requirements. Any changes to the list of monitoring wells, sampling procedures, and management of investigation-derived wastes (IDW) as part of the Groundwater SAP will be provided to the TCEQ as part of the annual reporting requirements.

EXHIBIT "C"
MAINTENANCE AND MONITORING REQUIRMENTS

TABLE C-2

Chemicals of Concern (COCs)	Groundwater Protection Standards (GWPS) at Alternate Point of Exposure (POE) $^{GW}GW_{Ing}$ (mg/L) (Res)
Benzene	0.005 [PCL]
2,4-Dimethylphenol	0.49 [PCL]
2 Methylnaphthalene	0.098 [PCL]
Dibenzofuran	0.098 [PCL]
Naphthalene	0.49 [PCL]
Vinyl Chloride	0.002 [PCL]

Note:
$^{GW}GW_{Ing}$ Protective Concentration Levels (PCLs), Residential land use assuming Class 2 Groundwater.

The list of COCs may be revised as necessary to satisfy the Plume Management Zone (PMZ) monitoring requirements and will be provided to the TCEQ as part of the annual reporting requirements.

MAP ID - 23

HCAD ID - 0140410000007

Restrictive Covenant

STATE OF TEXAS

COUNTY OF HARRIS

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

Lots Seven (7) in Block Nine (9), of Fairground Park Addition, subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, page 357 of the Deed Records of Harris County, Texas.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was 57so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is Geneva Crump (Owner) with an address of 5301 Liberty Road, Houston, Texas 77026. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 10th day of March, 2015.

Name: Geneva Crump, Owner

STATE OF TEXAS
HARRIS COUNTY

BEFORE ME, on this the _ day of March, 2015, personally appeared Geneva Crump, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10TH day of March, 2015.

Notary Public in and for the State of Texas,
County of Harris

My Commission Expires

PAUL A SHANKLIN
My Commission Expires
December 11, 2018

Executed this 14th day of June, 2017.

Union Pacific Railroad [RESPONDER]

By: Tony K Love

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the 14th day of June, 2017 Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 14th day of June, 2017.

David C. LaPlante

GENERAL NOTARY - State of Nebraska
DAVID C LAPLANTE
My Comm. Exp. Sept. 18, 2017

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
TRAVIS COUNTY §

BEFORE ME, on this the _____ day of _____, 20___, personally appeared _____ , _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

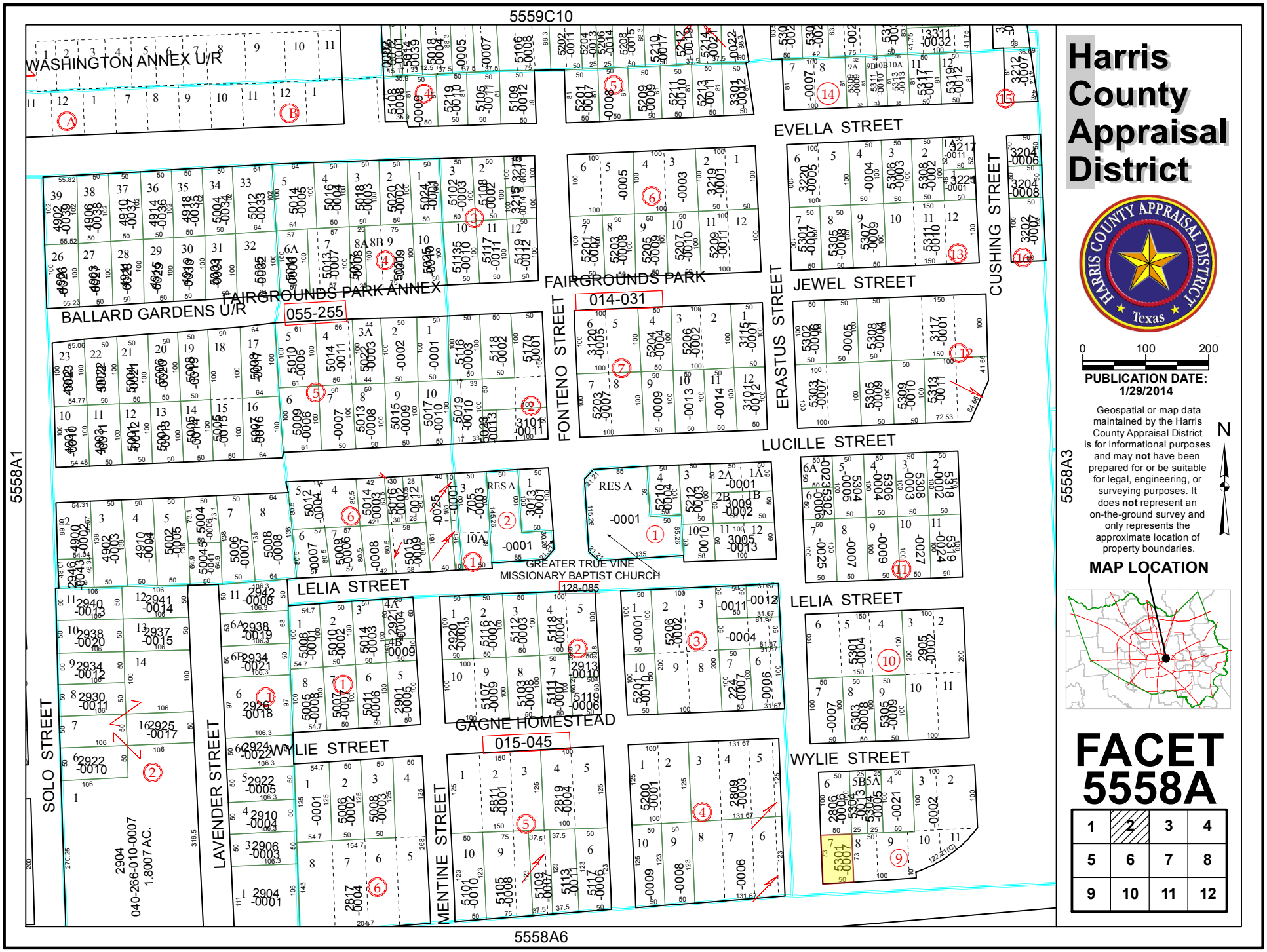
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this __ day of_____, 20___.

Notary Public in and for the State of Texas,
County of Travis
My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
5558A1
5558A3
5558A6
WASHINGTON ANNEX U/R
EVELLA STREET
CUSHING STREET
FAIRGROUNDS PARK
FAIRGROUNDS PARK ANNEX
BALLARD GARDENS U/R
055-255
014-031
FONTENO STREET
JEWEL STREET
ERASTUS STREET
LUCILLE STREET
GREATER TRUE VINE
MISSIONARY BAPTIST CHURCH
128-085
LELIA STREET
GAGNE HOMESTEAD
015-045
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
2904
040-266-010-0007
1.8007 AC.
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0 100 200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
N
MAP LOCATION
FACET
5558A
1 2 3 4
5 6 7 8
9 10 11 12

Texas American Title Company
2000 Bering, Suite 1000
Houston, Texas 77057
713-988-9999

Title Report

GF Number: 7910-12-9064
Date: December 5, 2012

Texas American Title Company ("Title Company") certifies that a diligent search of the real property records of Texas American Title Company's title plant has been made, as to the herein described property, and as of 8:00 AM on the 3rd day of December, 2012, we find the following:

Title Vested In:

Geneva Henry, a/k/a Geneva Crump (by Deed filed for record under Harris County Clerk's File No. C159988)

Property Description: (Map ID# 23) (Tax ID# 014-041-000-0007)

Lot Seven (7), in Block Nine (9), of Fairground Park, a subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, Page 357 of the Deed Records of Harris County, Texas, SAVE AND EXCEPT the South 3 feet thereof as conveyed to Harris County by deed filed for record under Volume 959, Page 357 of the Deed Records of Harris County, Texas.

SUBJECT TO: Claims of present occupants; discrepancies in area and boundaries; unpaid bills for Labor or Material in connection with recent repairs or new improvements; Unpaid Taxes; changes in Marital or Corporate Status of owner(s) since date of purchase; Homestead Rights or Claims.

Restrictions:

None of record.

Exceptions:

a) Subject property is located within the City of Houston or within its extra territorial jurisdiction (within 5 miles of the city limits but outside another municipality) and is subject to the terms, conditions, and provision of City of Houston Ordinance No. 85-1878 and 99-262, pertaining to, among other things the platting and re-platting of real property and to the establishment of building lines. A certified copy of said ordinance was filed of record on August 1, 1991, under Harris County Clerk's File No. N253886.

Property Liens:

1) Notice of Public Hearing filed December 12, 2011, under Harris County Clerk's File No. 20110517152, pursuant of said notice a "Building and Standards Commission Order" dated January 11, 2012 and filed for record January 13, 2012, under Harris County Clerk's file No. 20120018233, it was determined that subject property be posted as a dangerous building and must be either repaired or demolished. Pursuant thereto, the following: Notice of Intent to File Lien in connection with demolition, filed on August 28, 2012 , under Harris County Clerk's file No. 20120395123.

Involuntary Liens:

1) We find reference to Cause No. 2009-42807, in the District Court of Harris County, Texas, styled Houston ISD, etal vs. Geneva Henry, etal. It is assumed that said cause of action is for delinquent taxes due on subject property.

2) Abstract of Judgment filed May 12, 2009, under Harris County Clerk's File No. 20090200226, styled Reed Credit Union, vs. Geneva Crump, in the principal amount of $4,012.00, plus cost, interest and attorney's fees.

3) Abstract of Judgment filed December 22, 2010, under Harris County Clerk's File No. 20100543048, styled Houston ISD, etal, vs. Geneva Henry, in the principal amount as set out therein, plus cost, interest and attorney's fees.

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED TITLE INSURANCE POLICY. TEXAS AMERICAN TITLE COMPANY (AND ITS UNDERWRITERS OF TITLE INSURANCE) ASSUME NO LIABILITY FOR ERRORS OR OMISSIONS IN HIS REPORT OR FOR VERBAL STATEMENTS.

This is a copy of a preliminary report made for the use of Texas American Title Company only, to determine whether a title insurance policy can be issued. If a copy is furnished to the parties to the transaction, it is to facilitate preparation of the necessary instruments, to point out curative requirements, if any, and to show the results of the Company's title search (upon which only the Company may rely.) None of the information contained herein, or the absence of other information, constitutes a representation to any party, other than the Company, as to the status of the title. If a title defect or encumbrance should exist which is not disclosed hereon, the Company should not be liable by reason of furnishing this report or for any verbal statements related thereto. Neither the Company nor its underwriters shall be liable for any title defect unless a title insurance policy is issued by the Company insuring against such defect, and the applicable premium paid therefore. The liability shall then exist only under the terms of the policy (as prescribed by the State Board of Insurance of the State of Texas) and as measured and limited thereby.

Notice: Texas American Title Company disclaims any warranties, expressed or implied, concerning this information. This information is solely for the use of the party requesting it and no one else. Texas American Title Company liability for errors and/or omissions in this information shall be limited to the amount paid for this report. By accepting this form the party requesting the information agrees that the disclaimer of warranties, and liability limitation contained in this paragraph is a part of its contract with Texas American Title Company and shall cover all actions whether arising hereunder by statue, in contract, or in tort.

Texas American Title Company

Darrell Stone
Title Examiner

EXHIBIT 2

AFFECTED PROPERTY MAP

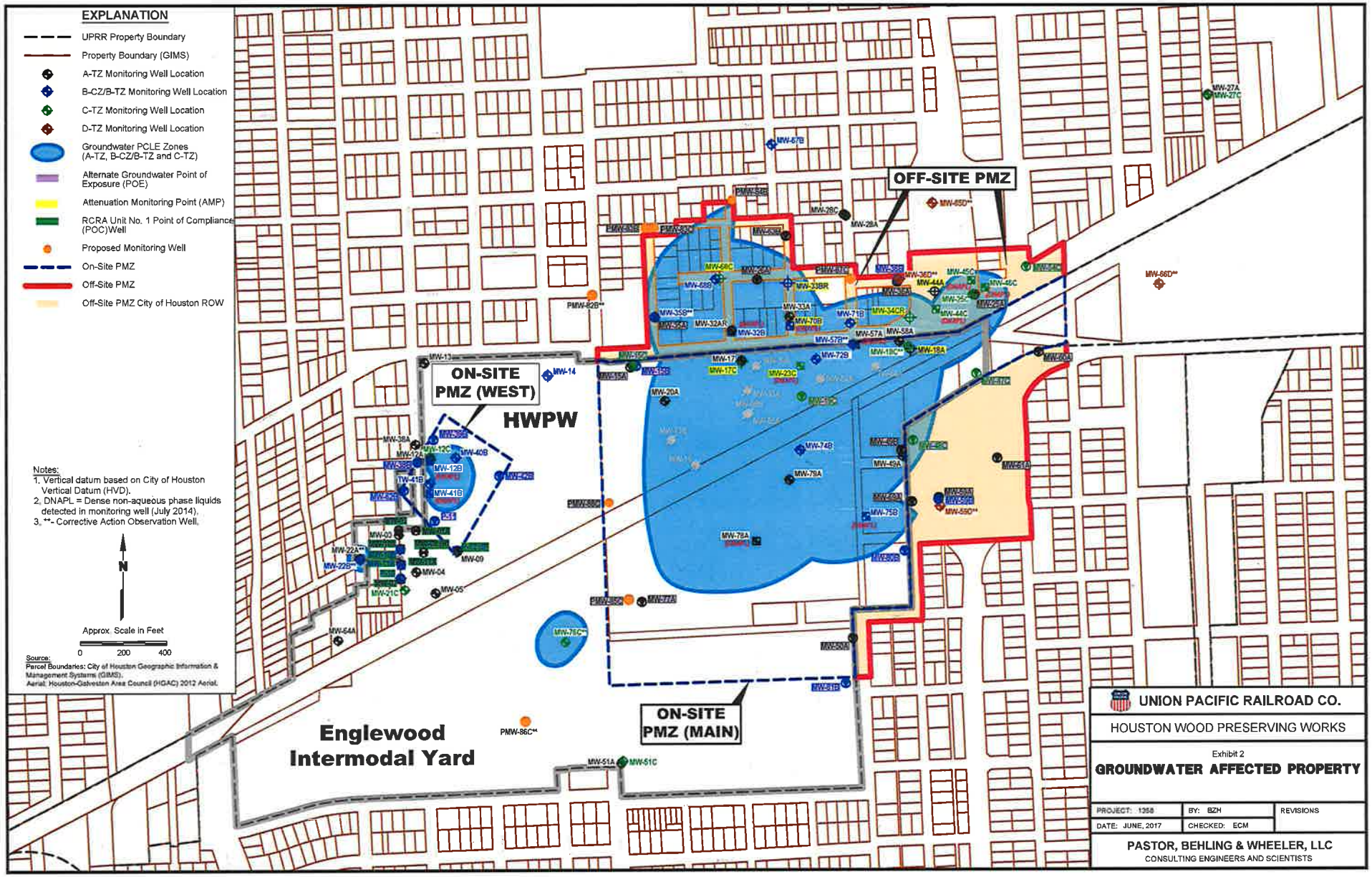

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

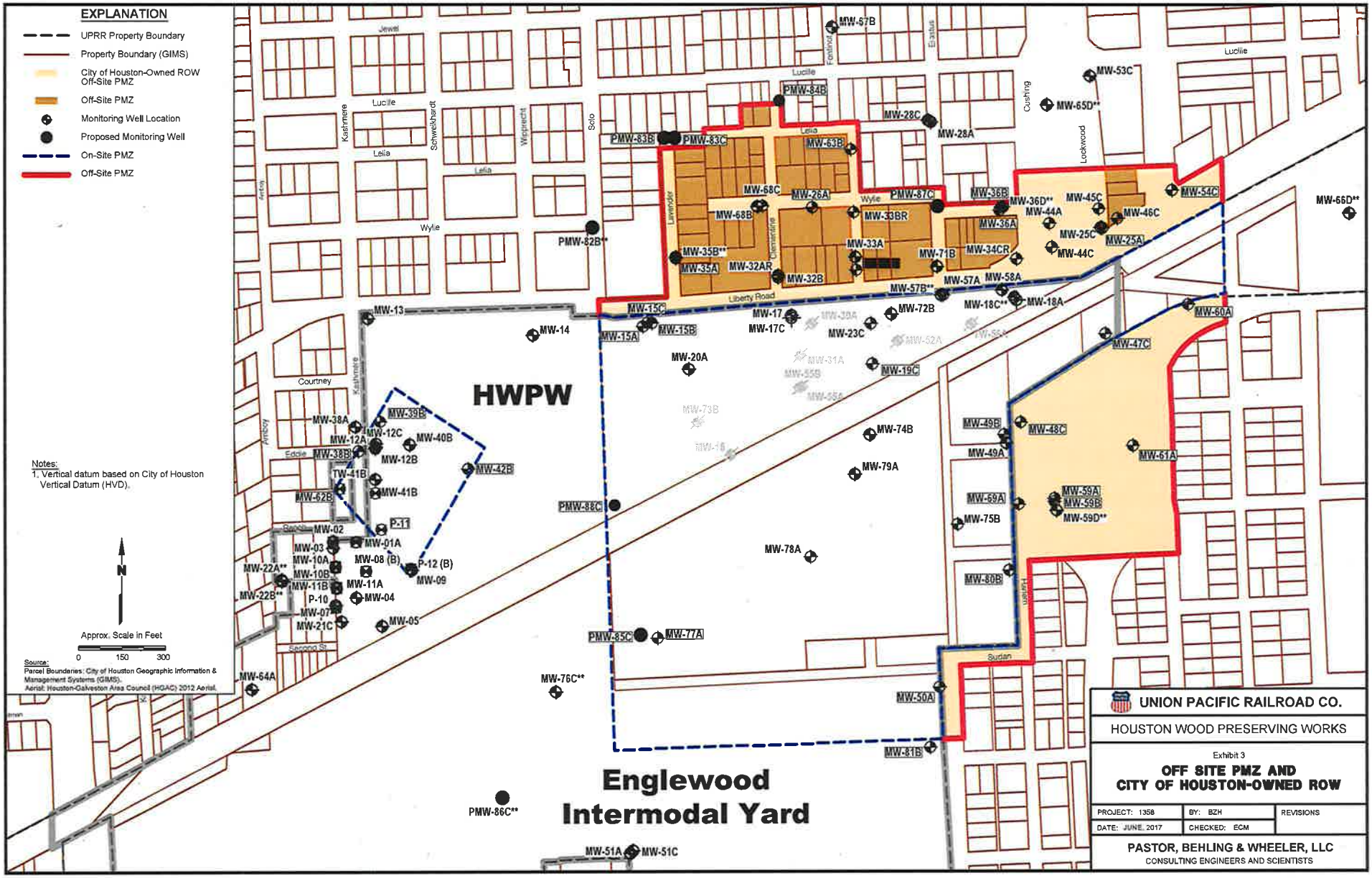

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	

MAP ID - 24

HCAD ID - 0140410000002

EXHIBIT A

Restrictive Covenant

STATE OF TEXAS §

§

COUNTY OF HARRIS §

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

Lots two (2), three (3) and ~~Four (4)~~ and tracts eight (8), nine (9), ten (10) and eleven (11) in Block nine (9) of Fairground Park Edition, a subdivision in Harris County, Texas.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a ***pending*** TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is James Singleterry as the representative for the Elmer Preston Trust (Owner) with an address of 3323 Liberty Road, Houston, Texas 77026. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 26th day of June, 2017.

James Singleterry as the representative for the Elmer Preston Trust

Title: Trustee

STATE OF TEXAS

HARRIS COUNTY

BEFORE ME, on this the 26th day of June, 2017, personally appeared James Singleterry as the representative for the Elmer Preston Trust, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 26th day of June, 2017.

LISA K. WHITE
Notary Public, State of Texas
My Commission Expires
July 18, 2018

Notary Public in and for the State of Texas,
County of Harris
My Commission Expires: 7-18-18

Executed this _____day of _____, 20___.

Union Pacific Railroad [RESPONDER]

By:_____

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the _____ day of _____, 20_____ Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ___ day of _____, 20____.

_____

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 2017.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS

HARRIS COUNTY

BEFORE ME, on this the _____ day of _____, 2017, personally appeared _____ , _____,of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, 2017.

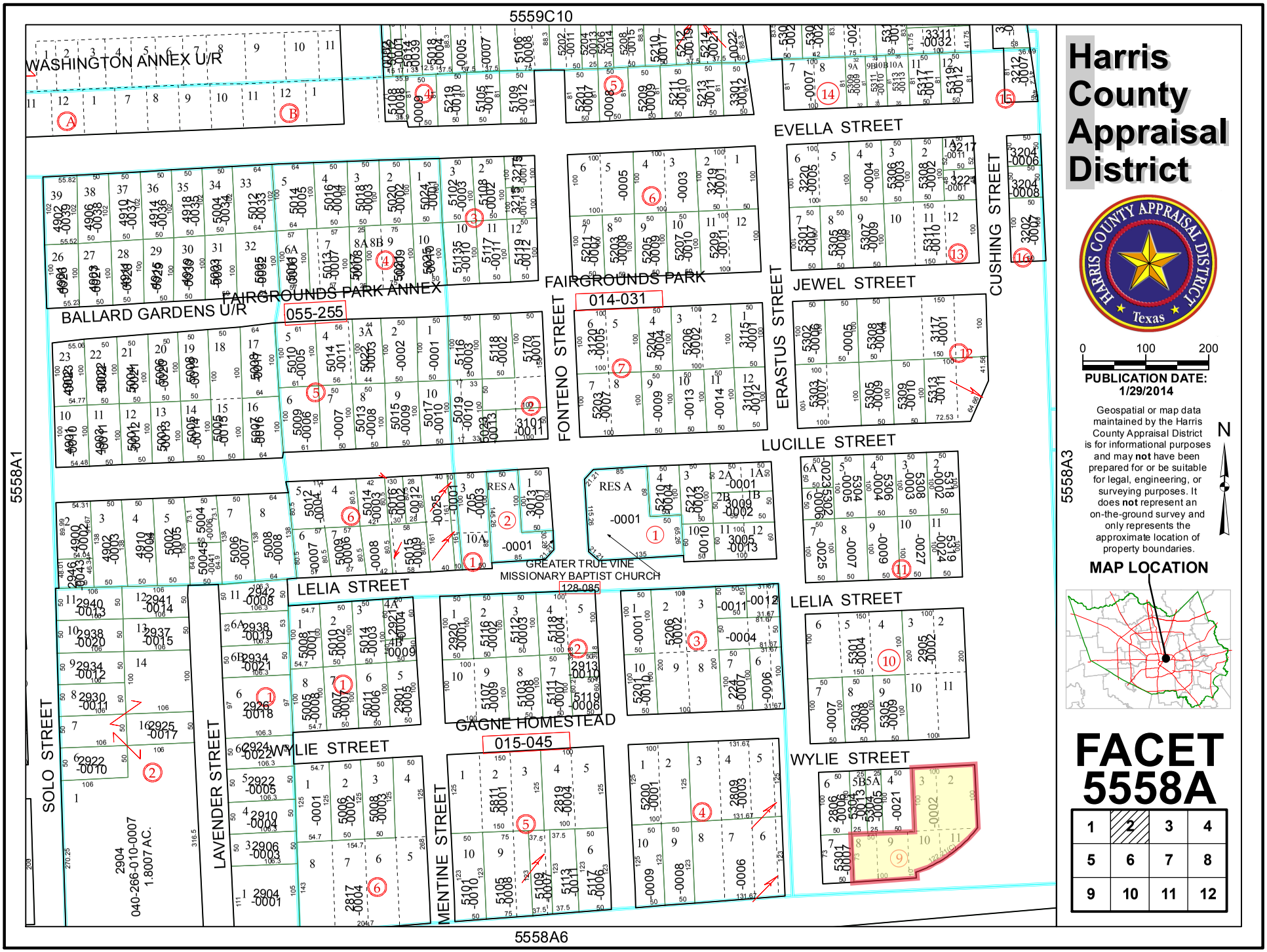
_____
Notary Public in and for the State of Texas,
County of Harris

My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
5558A1
5558A3
5558A6
WASHINGTON ANNEX U/R
EVELLA STREET
CUSHING STREET
FAIRGROUNDS PARK
FAIRGROUNDS PARK ANNEX
BALLARD GARDENS U/R
055-255
014-031
FONTENO STREET
ERASTUS STREET
JEWEL STREET
LUCILLE STREET
LELIA STREET
GREATER TRUE VINE MISSIONARY BAPTIST CHURCH
128-085
GAGNE HOMESTEAD
015-045
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
2904
040-266-010-0007
1.8007 AC.
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0
100
200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
N
MAP LOCATION
FACET
5558A
1
2
3
4
5
6
7
8
9
10
11
12

Texas American Title Company
2000 Bering, Suite 1000
Houston, Texas 77057
713-988-9999

Title Report

GF Number: 7910-16-8950
Date: October 17, 2016

Texas American Title Company has examined the real property records, the state district court, and the county court records for the county in which the real property is located. The time period examined extended from September 15, 1967 to October 10, 2016. If you desire different or additional examination, please contact us immediately.

Title Vested In:

Elmer Preston Trust of Texas (by Warranty Deed filed for record under Harris County Clerk's File No. Y825900)

Property Description: (Map ID# 24) (Tax ID# 014-041-000-0002)

Lots Two (2), Three (3), Eight (8), Nine (9), Ten (10) and Eleven (11), in Block Nine (9), of Fairground Park Addition, a subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, Page 460 of the Deed Records of Harris County, Texas, SAVE AND EXCEPT those portions as conveyed to Harris County by deeds filed for record under Volume 961, Page 108 and Volume 2308, Page 434, both of the Deed Records of Harris County, Texas.

SUBJECT TO: Claims of present occupants; discrepancies in area and boundaries; unpaid bills for Labor or Material in connection with recent repairs or new improvements; Unpaid Taxes; changes in Marital or Corporate Status of owner(s) since date of purchase; Homestead Rights or Claims.

Restrictions:

None of record.

Easements and other Encumbrances:

a) Subject property is located within the City of Houston or within its extra territorial jurisdiction (within 5 miles of the city limits but outside another municipality) and is subject to the terms, conditions, and provision of City of Houston Ordinance No. 85-1878 and 99-262, pertaining to, among other things the platting and re-platting of real property and to the establishment of building lines. A certified copy of said ordinance was filed of record on August 1, 1991, under Harris County Clerk's File No. N253886.

Texas American Title Company

Property Liens:

We find no outstanding mortgage liens of record affecting the subject property. An inquiry should be made concerning the existence of any unrecorded lien or other indebtedness, which could give rise to any security interest in the subject property.

Involuntary Liens:

None of record.

NOTICE: Texas American Title Company (the "Company") has provided this report or certificate to you under the terms set forth below. By accepting this report or certificate, you agree to these terms and you agree that the Company has no liability to you, except as expressly limited herein. To the maximum extent allowed by law, the Company disclaims any and all warranties, express or implied, concerning this report or certificate and the information contained therein. Your only remedy for any mistake, misstatement, inaccuracy, error, or omission made or occurring in this report or certificate, or made or occurring in its delivery or non-delivery, is expressly limited to an action to recover damages, which damages you expressly agree are limited to an amount equal to the sum actually paid for this report or certificate plus the sum of $100.00. You further agree that: the Company is not liable for consequential or special damages; the limitation of damages set forth herein is reasonable considering the amount paid, the limited services requested, and the intended use of this report or certificate; the Company would not provide the requested report or certificate without this limitation of damages; the limitation of damages applies to all claims, whether the claim arises under contract, tort or other law; and the Company has no liability to any third person arising from or related to this report or certificate. **This report or certificate is not a title insurance policy or title opinion and is not a guaranty or warranty of title.** In its role as a title insurance agent, the Company sells policies of title insurance. If you desire protection against title defects, you should purchase a title insurance policy. Liability will then exist only under the terms of the policy, will be measured and limited by the policy, and the liability will be that of the title insurance company named in the policy. No representative of the Company has the authority to make any oral statements correcting, contradicting, revising, amending or supplementing this report or certificate, including the terms of this notice.

When preparing this report or certificate the Company used only the information contained in the public records specifically identified above. (If none is identified, the Company used only the Real Property Records of the county in which the property is located.) Documents not recorded and events and other matters not reflected in the public records may affect ownership and title but will not be reflected on this report or certificate. No inspection has been made of the property. Matters that may be shown by an inspection or on a survey may also affect ownership and title but will not be reflected on this report or certificate.

The Company may identify a document listed above by a term commonly used to describe similar documents. By way of illustration, a document titled "Restrictive Covenants" may be referred to as "Deed Restrictions" or as "Covenants, Conditions and Restrictions." The Company may also identify a document using its actual title. The Company, however, makes no warranty or representation that the term, title or other name used to describe the document accurately reflects the legal effect of the document. For example, a document titled "Restrictive Covenants" may also establish a lien, an easement, or some other interest.

Texas American Title Company

In order to determine the effect of a document, the document must be carefully reviewed. The Company does not provide legal advice concerning the effect or significance of documents shown on this report or certificate. If you have a question as to the effect or significance of a document, you should obtain the assistance of a qualified professional.

Texas American Title Company

Darrell Stone

_____

Darrell Stone
Title Examiner

Texas American Title Company

WD
20
S

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

Y825900
10/13/05 200976719 $20.00

GENERAL WARRANTY DEED

THE STATE OF TEXAS :
: KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF HARRIS :

THAT I/WE, JESUS THE LIGHT OF THE WORLD MINISTRIES, INC., a Louisiana Non-Profit Corporation, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other valuable consideration to the undersigned paid by the Grantee herein named, the receipt of which is hereby acknowledged, have GRANTED, SOLD AND CONVEYED, and by these presents do GRANT, SELL AND CONVEY, unto the ELMER PRESTON TRUST OF TEXAS, 3319 Liberty Road, Houston, of the County of Harris, State of Texas 77026, all that certain real property in Harris County, Texas, to-wit:

Lee

Lots Two (2), Three (3), and Four (4) and Tracts Eight (8), Nine (9), Ten (10), and Eleven (11) in Block Nine (9) of FAIRGROUND PARK ADDITION, a subdivision in Harris County, Texas, according to the map thereof recorded in Volume 81, Page 460 of the Deed Records of Harris County, Texas. SAVE AND EXCEPT that part conveyed to Harris County in instruments recorded in Volume 961, Page 108, Deed Records and Volume 2308, Page 434, Deed Records of Harris County, Texas.

D

THIS CONVEYANCE is made and accepted expressly subject to any and all restrictions, covenants, conditions, agreements, assessments, maintenance charges, leases, easements, and previously conveyed or reserved mineral and royalty interest, if any, relating to the hereinabove described property, but only to the extent they are still in effect and shown of record and the regulations, and ordinances of municipal and/or governmental authorities, if any, but only to the extent they are still in effect relating to the hereinabove described property.

TO HAVE AND TO HOLD the above described premises, together with all and singular the rights and appurtenances thereto in anywise belonging unto the said Grantee, its successors and assigns forever and it do(es) hereby bind itself, its successors, to WARRANT AND FOREVER DEFEND, all and singular the said premises unto the said Grantee, its successors and assigns, against every person whomsoever lawfully claiming, or to claim the same, or part thereof.

Executed this 5th day of October, 2005.

JESUS THE LIGHT OF THE WORLD MINISTRIES, INC.

NOBLE ENIME, Pastor/President

FILED
2005 OCT 13 PM 2:20
COUNTY CLERK
HARRIS COUNTY, TEXAS

STATE OF LOUISIANA :

PARISH OF East Baton Rouge :

BEFORE ME, the undersigned authority, on this day personally appeared NOBLE ENIME, Pastor/President, of JESUS THE LIGHT OF THE WORLD MINISTRIES, INC., known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as his/her free act and deed and for the purposes and consideration therein expressed and as the act and deed of said non-profit corporation.

Given under my hand and seal of office this 5th day of October, 2005.

Notary Public in and for the
State of LOUISIANA

MARK D. MILEY
Notary Public, LSBA #27576
My Commission is for Life

RETURN TO:
ELMER PRESTON TRUST OF TEXAS
3319 LIBERTY RD.
HOUSTON, TX 77026
GF 578438-A

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.
THE STATE OF TEXAS
COUNTY OF HARRIS
I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me; and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on

OCT 13 2005

COUNTY CLERK
HARRIS COUNTY, TEXAS

EXHIBIT 2

AFFECTED PROPERTY MAP

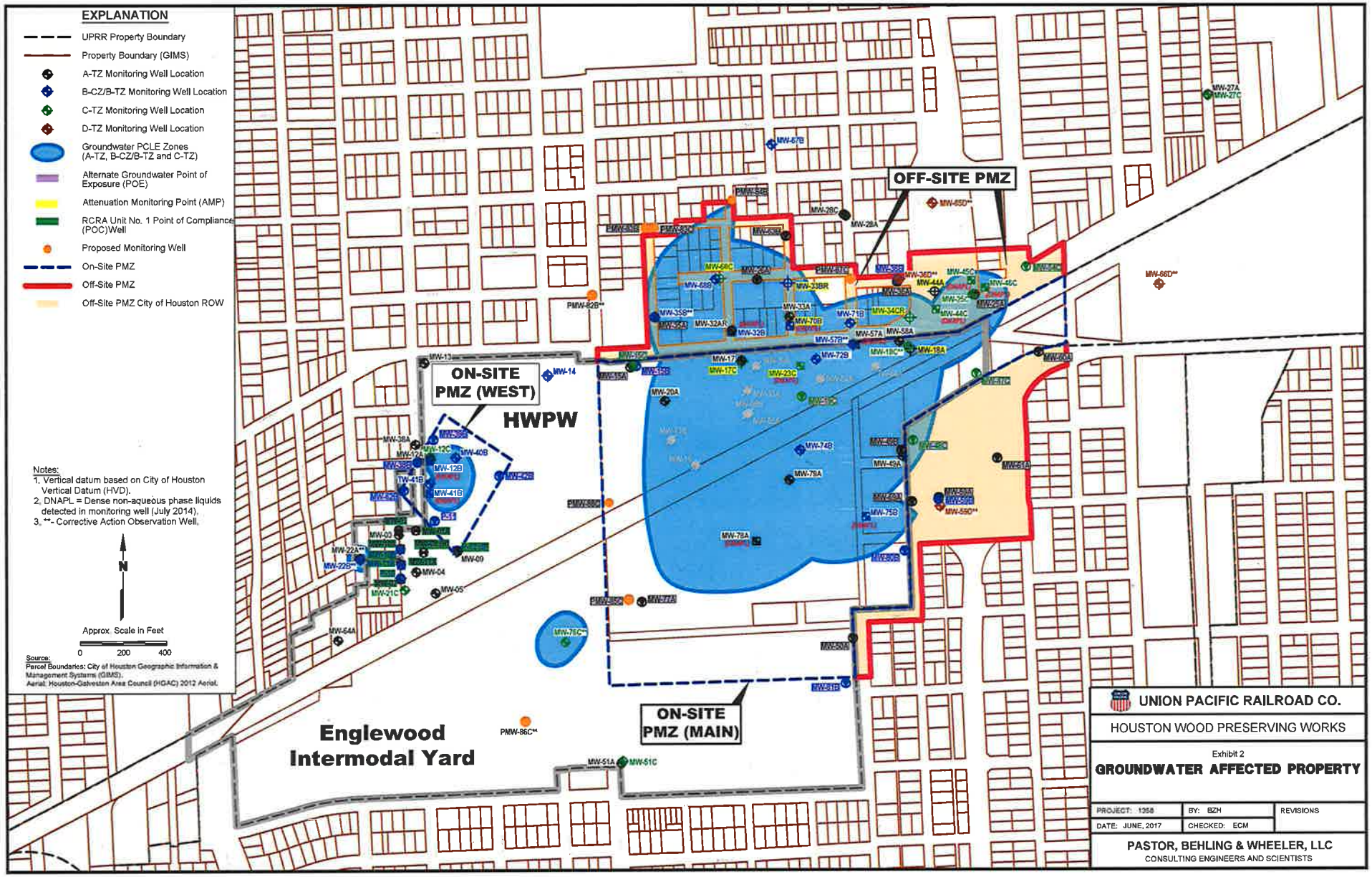

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

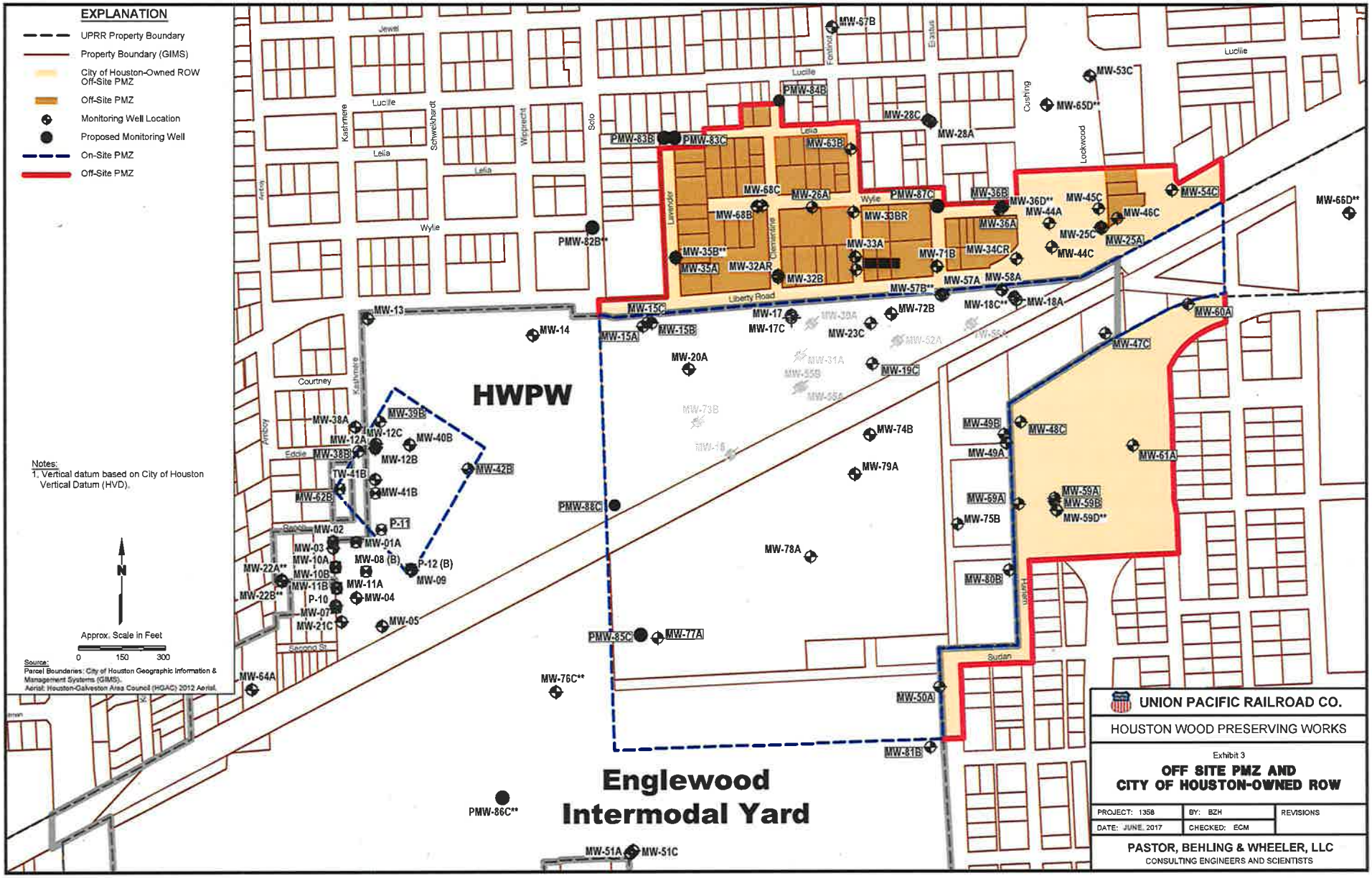

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	

MAP ID - 42

HCAD ID - 0140410000006

Restrictive Covenant

STATE OF TEXAS

COUNTY OF HARRIS

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

Lot Six (6) in Block (9) one, of Fairground Park a Subdivision, a subdivision I n Harris County, Texas according to the Map or Plat records thereof.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is Clara Scruggs (Owner) with an address of 5151 CR 181, Alvin, Texas 77511. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their

respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 7th day of April, 2015.

By: _____
Clara Scruggs

STATE OF TEXAS
HARRIS COUNTY

BEFORE ME, on this the 7th day of April, 2015, personally appeared Clara Scruggs, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 7th day of April, 2015.

_____
Notary Public in and for the State of Texas,
County of Harris

My Commission Expires: 12-11-2018

PAUL A SHAUGHNESSY
My Commission Expires
December 11, 2018

Executed this 14th day of June, 2017.

Union Pacific Railroad [RESPONDER]

By: Tony K. Love

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the 14th day of June, 2017 Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 14th day of June, 2017.

David C. LaPlante

GENERAL NOTARY - State of Nebraska
DAVID C LAPLANTE
My Comm. Exp. Sept. 18, 2017

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
TRAVIS COUNTY §

BEFORE ME, on this the _____ day of _____, 20___, personally appeared _____ , _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

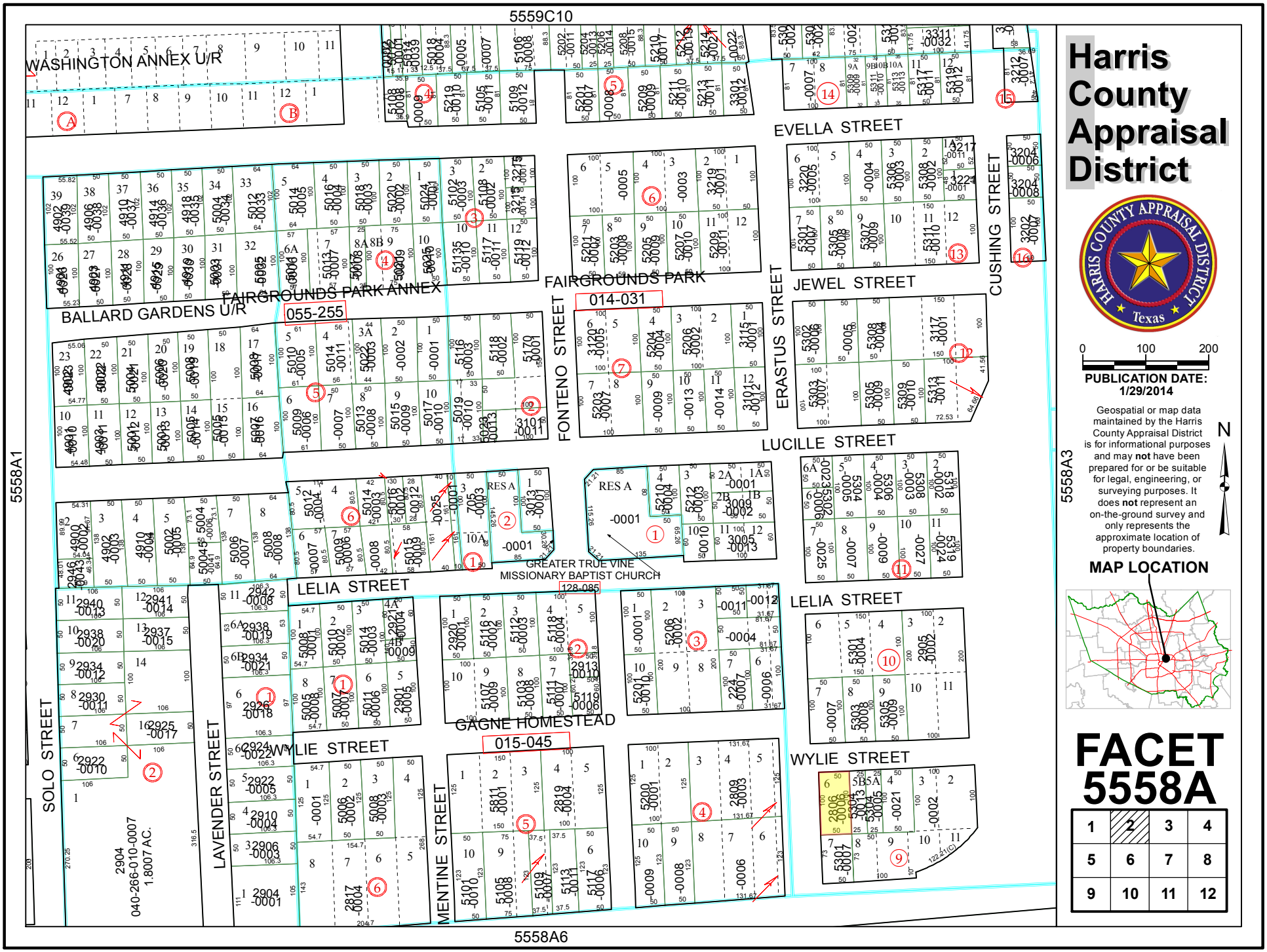
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this __ day of_____, 20___.

Notary Public in and for the State of Texas,
County of Travis
My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
5558A1
5558A3
5558A6
WASHINGTON ANNEX U/R
EVELLA STREET
CUSHING STREET
FAIRGROUNDS PARK
FAIRGROUNDS PARK ANNEX
BALLARD GARDENS U/R
055-255
014-031
FONTENO STREET
JEWEL STREET
ERASTUS STREET
LUCILLE STREET
GREATER TRUE VINE
MISSIONARY BAPTIST CHURCH
128-085
LELIA STREET
GAGNE HOMESTEAD
015-045
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
2904
040-266-010-0007
1.8007 AC.
Harris County Appraisal District
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
MAP LOCATION
N
FACET
5558A
1 2 3 4
5 6 7 8
9 10 11 12

Texas American Title Company
2000 Bering, Suite 1000
Houston, Texas 77057
713-988-9999

Title Report

GF Number: 7910-12-9065
Date: December 5, 2012

Texas American Title Company ("Title Company") certifies that a diligent search of the real property records of Texas American Title Company's title plant has been made, as to the herein described property, and as of 8:00 AM on the 3rd day of December, 2012, we find the following:

Title Vested In:

Margaret Roberts, Clara Scruggs, Leroy Mock and Charles Mock (by Warranty Deed filed for record under Harris County Clerk's File No. U754245)

Property Description: (Map ID# 42) (Tax ID# 014-041-000-0006)

Lot Six (6), in Block Nine (9), of Fairground Park, a subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, Page 460 of the Deed Records of Harris County, Texas.

SUBJECT TO: Claims of present occupants; discrepancies in area and boundaries; unpaid bills for Labor or Material in connection with recent repairs or new improvements; Unpaid Taxes; changes in Marital or Corporate Status of owner(s) since date of purchase; Homestead Rights or Claims.

Restrictions:

None of record.

Exceptions:

a) Subject property is located within the City of Houston or within its extra territorial jurisdiction (within 5 miles of the city limits but outside another municipality) and is subject to the terms, conditions, and provision of City of Houston Ordinance No. 85-1878 and 99-262, pertaining to, among other things the platting and re-platting of real property and to the establishment of building lines. A certified copy of said ordinance was filed of record on August 1, 1991, under Harris County Clerk's File No. N253886.

Property Liens:

None of record.

Involuntary Liens:

1) We find reference to Cause No. 2011-14300, in the District Court of Harris County, Texas, styled Harris County, etal vs. Margaret Roberts, Clara Scruggs, Leroy Mock and Charles Mock. It is assumed that said cause of action is for delinquent taxes due on subject property. Said suit includes a Final Judgment dated December 13, 2011.

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED TITLE INSURANCE POLICY. TEXAS AMERICAN TITLE COMPANY (AND ITS UNDERWRITERS OF TITLE INSURANCE) ASSUME NO LIABILITY FOR ERRORS OR OMISSIONS IN HIS REPORT OR FOR VERBAL STATEMENTS.

This is a copy of a preliminary report made for the use of Texas American Title Company only, to determine whether a title insurance policy can be issued. If a copy is furnished to the parties to the transaction, it is to facilitate preparation of the necessary instruments, to point out curative requirements, if any, and to show the results of the Company's title search (upon which only the Company may rely.) None of the information contained herein, or the absence of other information, constitutes a representation to any party, other than the Company, as to the status of the title. If a title defect or encumbrance should exist which is not disclosed hereon, the Company should not be liable by reason of furnishing this report or for any verbal statements related thereto. Neither the Company nor its underwriters shall be liable for any title defect unless a title insurance policy is issued by the Company insuring against such defect, and the applicable premium paid therefore. The liability shall then exist only under the terms of the policy (as prescribed by the State Board of Insurance of the State of Texas) and as measured and limited thereby.

Notice: Texas American Title Company disclaims any warranties, expressed or implied, concerning this information. This information is solely for the use of the party requesting it and no one else. Texas American Title Company liability for errors and/or omissions in this information shall be limited to the amount paid for this report. By accepting this form the party requesting the information agrees that the disclaimer of warranties, and liability limitation contained in this paragraph is a part of its contract with Texas American Title Company and shall cover all actions whether arising hereunder by statue, in contract, or in tort.

Texas American Title Company

Darrell Stone
Title Examiner

EXHIBIT 2

AFFECTED PROPERTY MAP

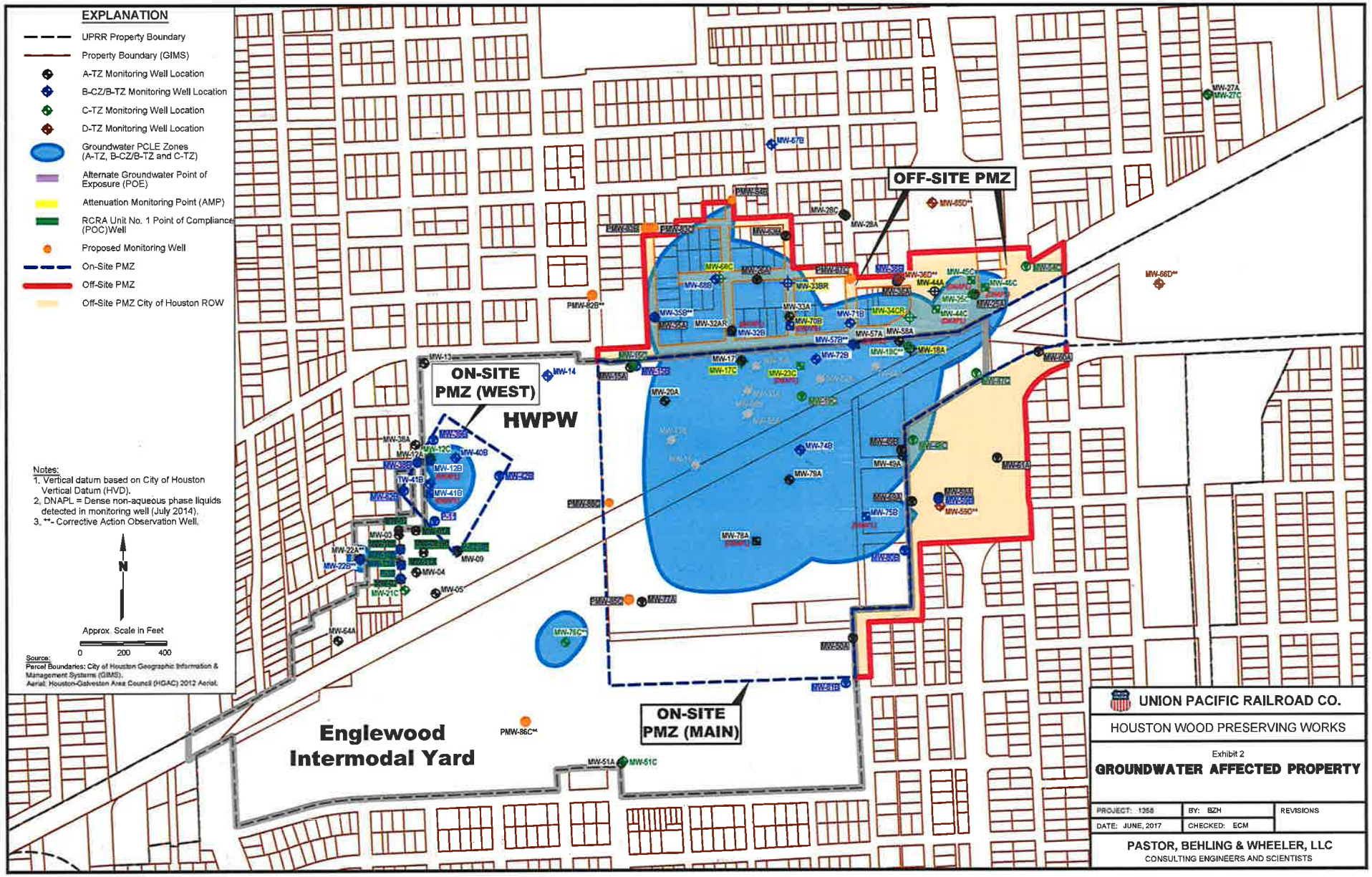

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

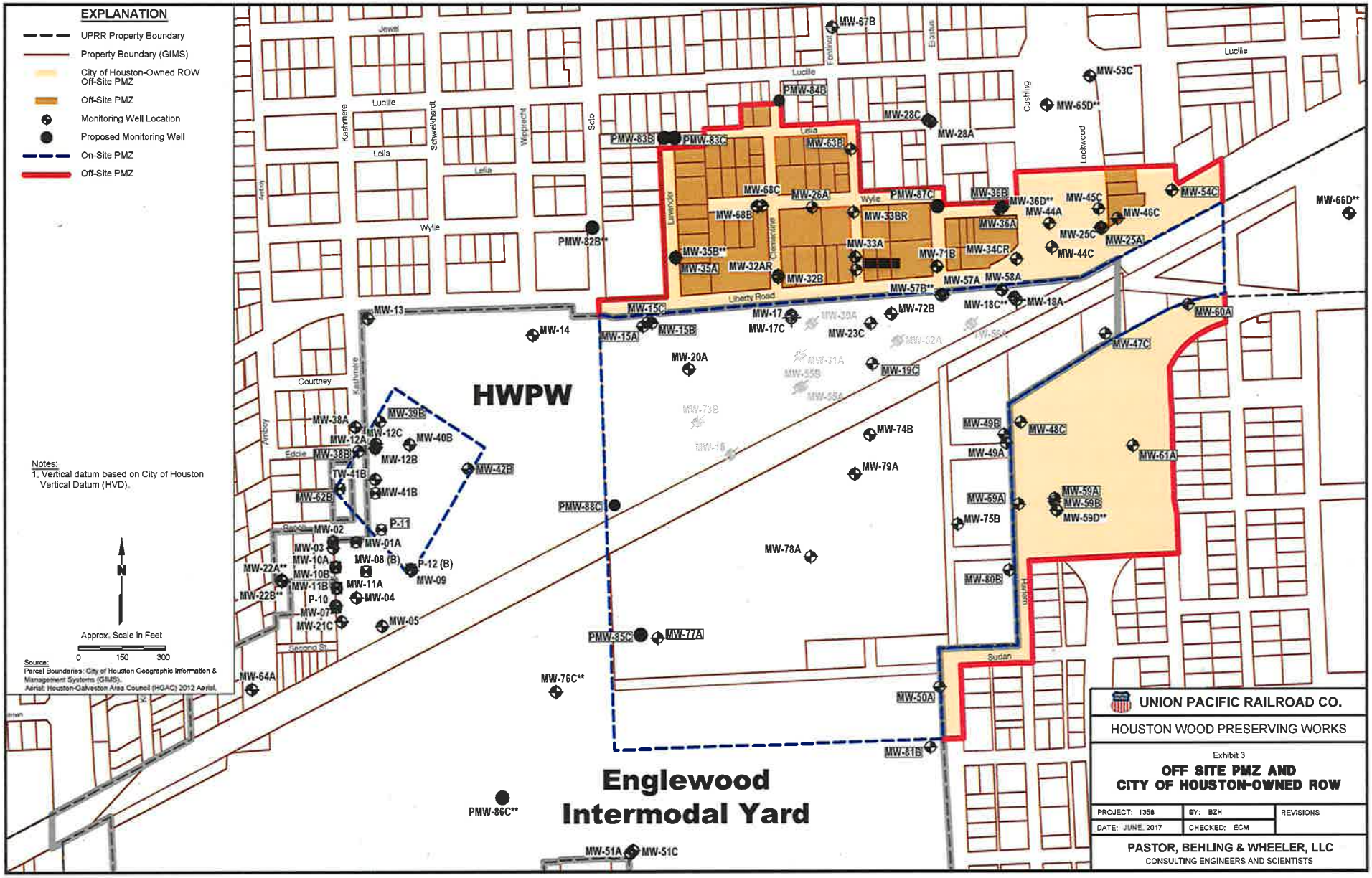

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	

MAP ID - 43

HCAD ID - 0140410000013

Restrictive Covenant

STATE OF TEXAS	§
	§
COUNTY OF HARRIS	§

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

The West One half (W-1/2) of Lot Five (5) in Block Nine (9), Of Fairground Park a Subdivision, a subdivision in Harris County, Texas, according to the Map or plat records thereof.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is Irene Juarez (Owner) with an address of 5304 Wylie Street, Houston, Texas 77026. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 31st day of March, 2015.

By: Irene Juarez
Name: Irene Juarez

STATE OF TEXAS

HARRIS COUNTY

BEFORE ME, on this the 31st day of March, 2015, personally appeared Irene Juarez, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 31st day of March, 2015.

Notary Public in and for the State of Texas,
County of Harris

My Commission Expires:

PAUL A SHANKLIN
My Commission Expires
December 11, 2018

Executed this 14th day of June, 2017.

Union Pacific Railroad [RESPONDER]

By: Tony L Love

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the 14th day of June, 2017 Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 14th day of June, 2017.

David C. Laplante

GENERAL NOTARY - State of Nebraska
DAVID C LAPLANTE
My Comm. Exp. Sept. 18, 2017

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
TRAVIS COUNTY §

BEFORE ME, on this the _____ day of _____, 20___, personally appeared _____ , _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

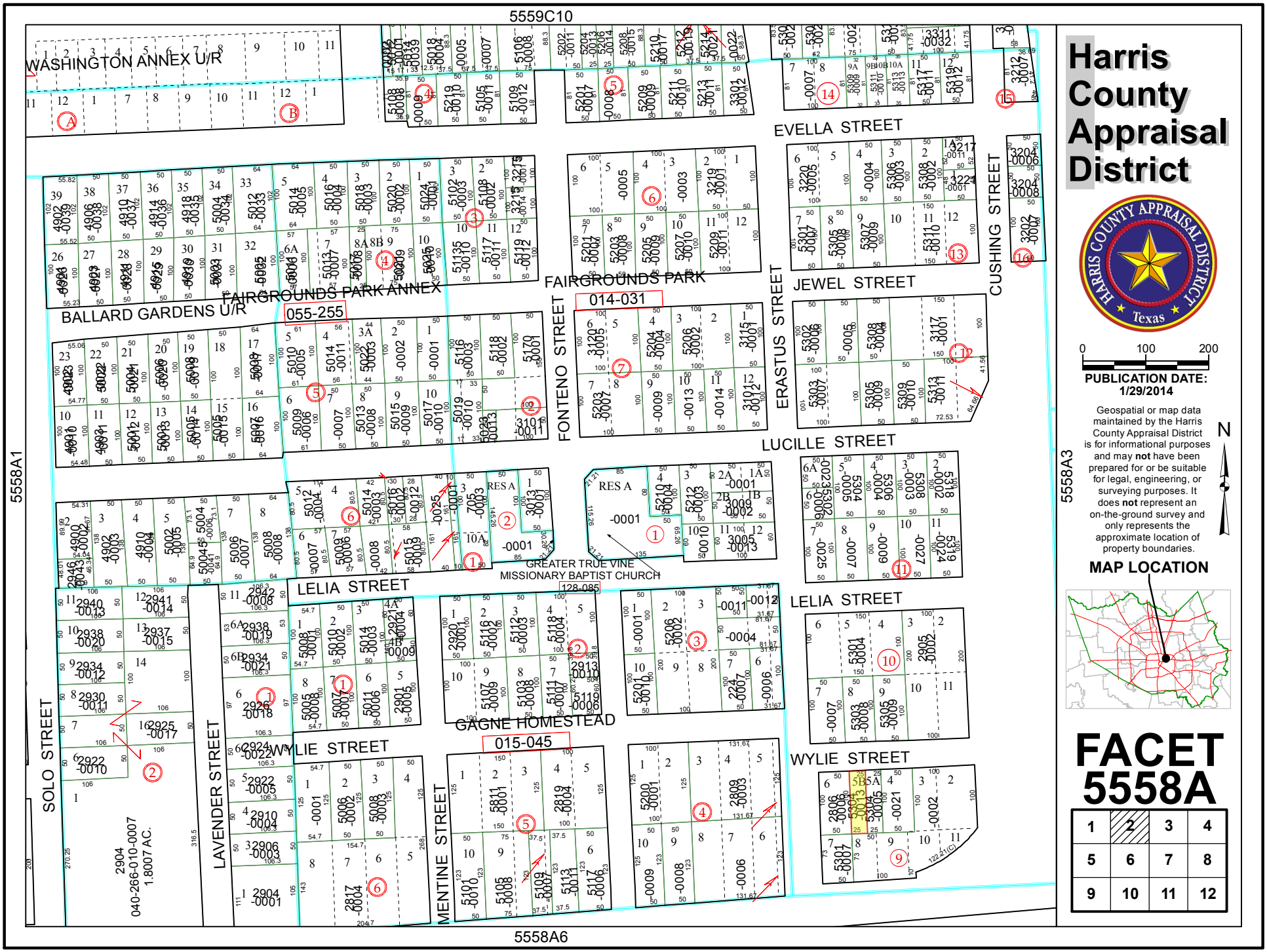
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this __ day of_____, 20___.

Notary Public in and for the State of Texas,
County of Travis
My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
5558A1
5558A3
5558A6
WASHINGTON ANNEX U/R
BALLARD GARDENS U/R
FAIRGROUNDS PARK ANNEX
FAIRGROUNDS PARK
055-255
014-031
128-085
015-045
FONTENO STREET
ERASTUS STREET
CUSHING STREET
EVELLA STREET
JEWEL STREET
LUCILLE STREET
LELIA STREET
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
GAGNE HOMESTEAD
GREATER TRUE VINE MISSIONARY BAPTIST CHURCH
RES A
2904
040-266-010-0007
1.8007 AC.
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0
100
200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
N
MAP LOCATION
FACET
5558A
1
2
3
4
5
6
7
8
9
10
11
12

Texas American Title Company
2000 Bering, Suite 1000
Houston, Texas 77057
713-988-9999

Title Report

GF Number: 7910-12-9210
Date: December 5, 2012

Texas American Title Company ("Title Company") certifies that a diligent search of the real property records of Texas American Title Company's title plant has been made, as to the herein described property, and as of 8:00 AM on the 3rd day of December, 2012, we find the following:

Title Vested In:

Irene Perez Juarez (by Warranty Deed filed for record under Harris County Clerk's File No. L292177)

Property Description: (Map ID# 43) (Tax ID# 014-041-000-0013)

The West One-half (W ½) of Lot Five (5), in Block Nine (9), of Fairground Park, a subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, Page 461 of the Map Records of Harris County, Texas.

SUBJECT TO: Claims of present occupants; discrepancies in area and boundaries; unpaid bills for Labor or Material in connection with recent repairs or new improvements; Unpaid Taxes; changes in Marital or Corporate Status of owner(s) since date of purchase; Homestead Rights or Claims.

Restrictions:

None of record.

Exceptions:

a) Subject property is located within the City of Houston or within its extra territorial jurisdiction (within 5 miles of the city limits but outside another municipality) and is subject to the terms, conditions, and provision of City of Houston Ordinance No. 85-1878 and 99-262, pertaining to, among other things the platting and re-platting of real property and to the establishment of building lines. A certified copy of said ordinance was filed of record on August 1, 1991, under Harris County Clerk's File No. N253886.

Property Liens:

1) Paving Lien Notice filed on January 31, 1977, (topping project no. 303), filed under Harris County Clerk's File No. F029142, (Film Code No. 157-20-1662), executed by City of Houston, showing portions of Wylie Street, and assessing a portion of the cost thereof, against the owners of the property abutting thereon.

Involuntary Liens:

1) Abstract of Judgment filed November 24, 2009, under Harris County Clerk's File No. 20090534997, styled Freddy's Auto Sales, vs. Irene Juarez, in the principal amount of $1,225.00, plus cost, interest and attorney's fees.

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED TITLE INSURANCE POLICY. TEXAS AMERICAN TITLE COMPANY (AND ITS UNDERWRITERS OF TITLE INSURANCE) ASSUME NO LIABILITY FOR ERRORS OR OMISSIONS IN HIS REPORT OR FOR VERBAL STATEMENTS.

This is a copy of a preliminary report made for the use of Texas American Title Company only, to determine whether a title insurance policy can be issued. If a copy is furnished to the parties to the transaction, it is to facilitate preparation of the necessary instruments, to point out curative requirements, if any, and to show the results of the Company's title search (upon which only the Company may rely.) None of the information contained herein, or the absence of other information, constitutes a representation to any party, other than the Company, as to the status of the title. If a title defect or encumbrance should exist which is not disclosed hereon, the Company should not be liable by reason of furnishing this report or for any verbal statements related thereto. Neither the Company nor its underwriters shall be liable for any title defect unless a title insurance policy is issued by the Company insuring against such defect, and the applicable premium paid therefore. The liability shall then exist only under the terms of the policy (as prescribed by the State Board of Insurance of the State of Texas) and as measured and limited thereby.

Notice: Texas American Title Company disclaims any warranties, expressed or implied, concerning this information. This information is solely for the use of the party requesting it and no one else. Texas American Title Company liability for errors and/or omissions in this information shall be limited to the amount paid for this report. By accepting this form the party requesting the information agrees that the disclaimer of warranties, and liability limitation contained in this paragraph is a part of its contract with Texas American Title Company and shall cover all actions whether arising hereunder by statue, in contract, or in tort.

Texas American Title Company

Darrell Stone

Darrell Stone
Title Examiner

EXHIBIT 2

AFFECTED PROPERTY MAP

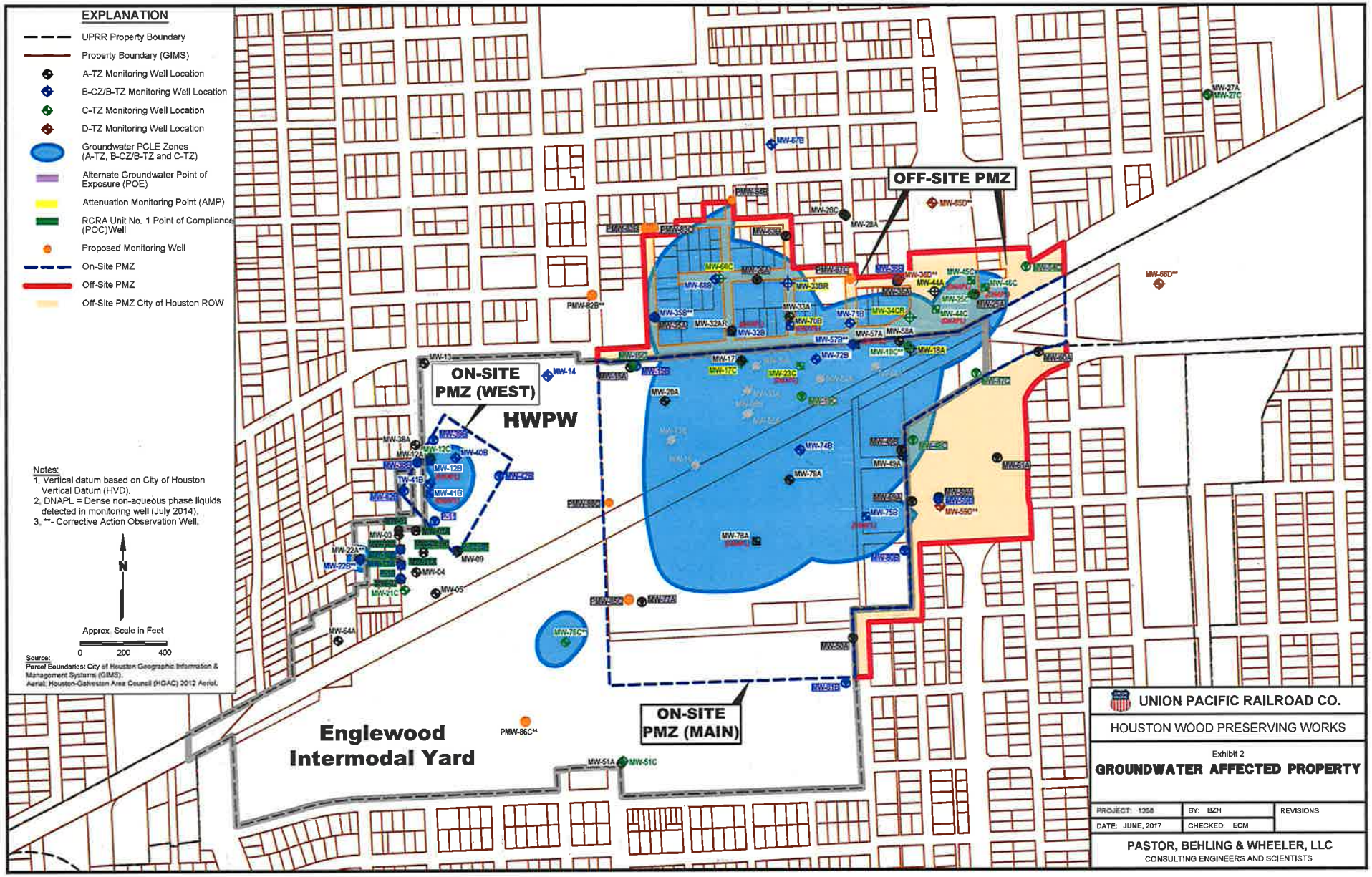

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

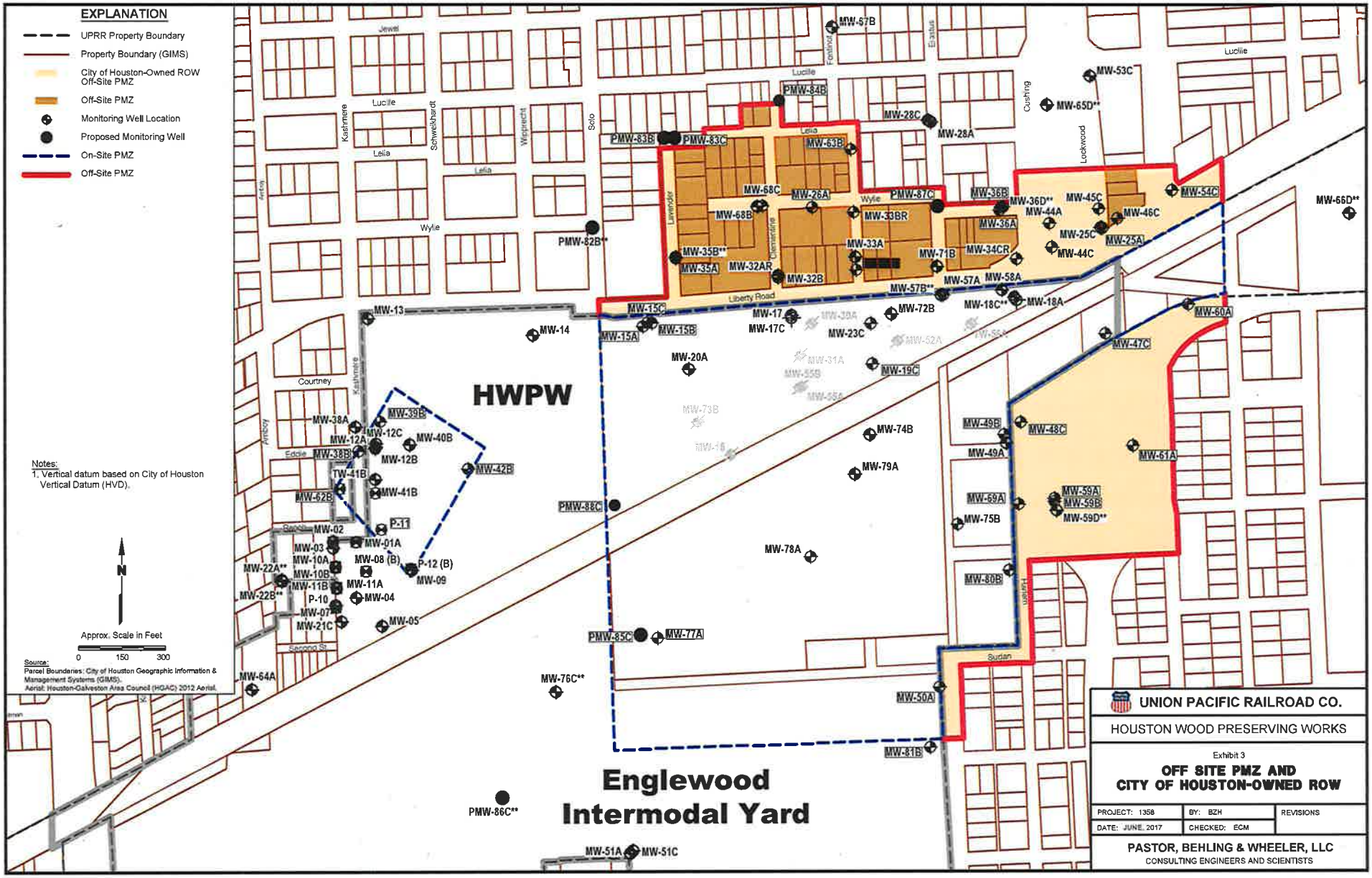

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	

MAP ID - 44

HCAD ID - 0140410000005

Restrictive Covenant

STATE OF TEXAS

COUNTY OF HARRIS

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

The East one half (E1/2) of Lot five Of Fairground Park Addition Subdivision, A subdivision in Harris County, Texas according to the map or plat thereof.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is Ernest I. Delgado heir and devisee of the estate of Susie Delgado with an address of 5304 ½ Wylie, Houston, Texas 77026. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their

respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 22 day of April, 2015.

[OWNER]
By: Ernest I. Delgado
Name: Ernest I. Delgado

STATE OF TEXAS
HARRIS COUNTY

BEFORE ME, on this the 22nd day of April, 2015, personally appeared , Ernest I. Delgado, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 22nd day of April, 2015.

Notary Public in and for the State of Texas,
County of Harris

My Commission Expires

NOTARY PUBLIC STATE OF TEXAS
PAUL A SHANKLIN
My Commission Expires
December 11, 2018

Executed this 14th day of June, 2017.

Union Pacific Railroad [RESPONDER]

By: Tony Love

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the 14th day of June, 2017 Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 14th day of June, 2017.

David C. LaPlante

GENERAL NOTARY - State of Nebraska
DAVID C LAPLANTE
My Comm. Exp. Sept. 18, 2017

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
TRAVIS COUNTY §

BEFORE ME, on this the _____ day of _____, 20___, personally appeared _____ , _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

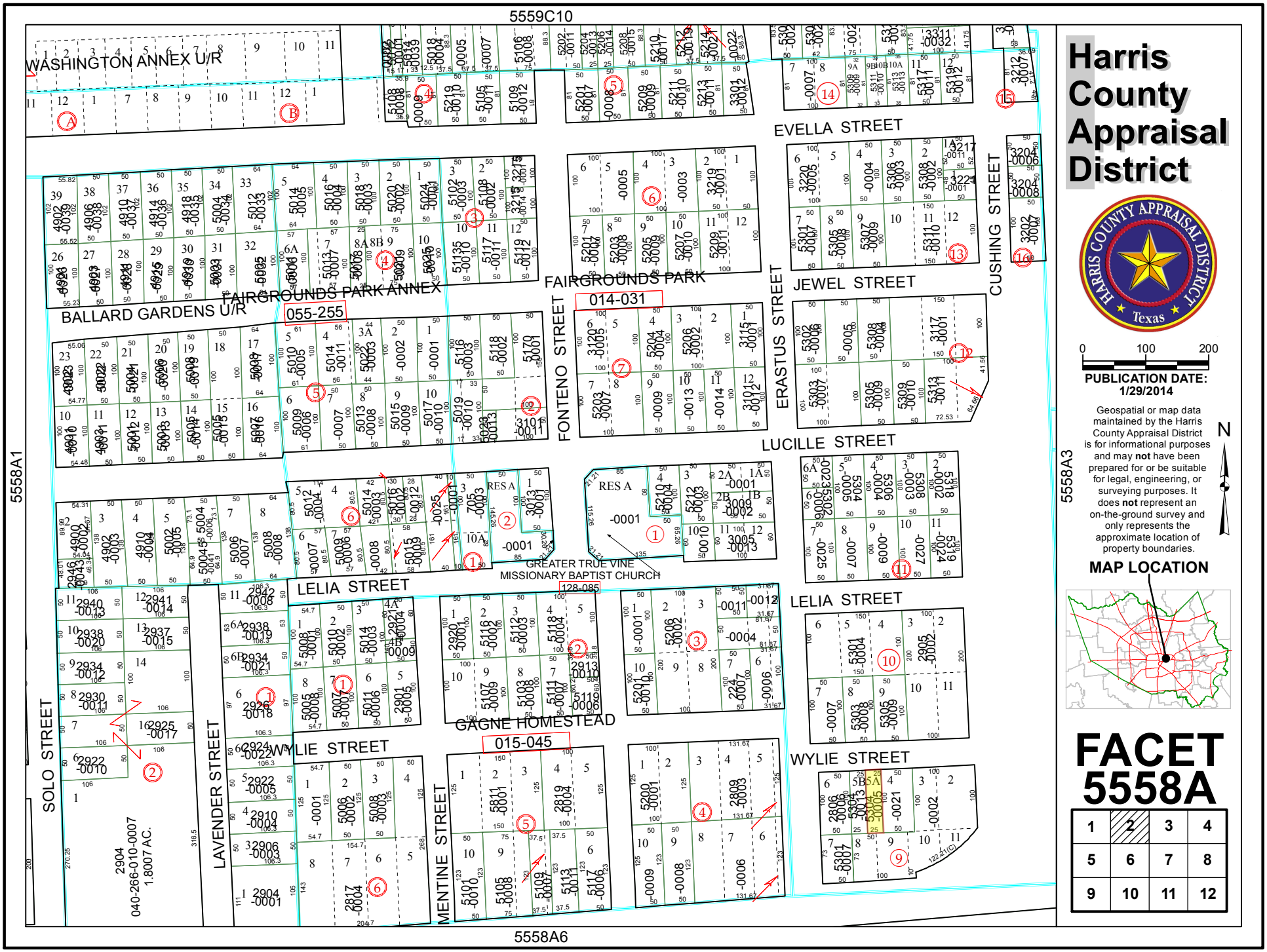
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this __ day of_____, 20___.

Notary Public in and for the State of Texas,
County of Travis
My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
WASHINGTON ANNEX U/R
EVELLA STREET
CUSHING STREET
FAIRGROUNDS PARK
FAIRGROUNDS PARK ANNEX
BALLARD GARDENS U/R
055-255
014-031
FONTENO STREET
ERASTUS STREET
JEWEL STREET
LUCILLE STREET
RES A
GREATER TRUE VINE
MISSIONARY BAPTIST CHURCH
128-085
LELIA STREET
GAGNE HOMESTEAD
015-045
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
2904
040-266-010-0007
1.8007 AC.
5558A1
5558A3
5558A6
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0 100 200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
N
MAP LOCATION
FACET
5558A
1 2 3 4
5 6 7 8
9 10 11 12

Texas American Title Company
2000 Bering, Suite 1000
Houston, Texas 77057
713-988-9999

Title Report

GF Number: 7910-12-9211
Date: December 5, 2012

Texas American Title Company ("Title Company") certifies that a diligent search of the real property records of Texas American Title Company's title plant has been made, as to the herein described property, and as of 8:00 AM on the 3rd day of December, 2012, we find the following:

Title Vested In:

Saturnino P. Delgado and wife, Susie Delgado (by Warranty Deed filed for record under Harris County Clerk's File No. C769798)

Property Description: (Map ID# 44) (Tax ID# 014-041-000-0005)

The East One-half (E ½) of Lot Five (5), in Block Nine (9), of Fairground Park, a subdivision in Harris County, Texas according to the map or plat thereof, recorded in Volume 81, Page 461 of the Map Records of Harris County, Texas.

SUBJECT TO: Claims of present occupants; discrepancies in area and boundaries; unpaid bills for Labor or Material in connection with recent repairs or new improvements; Unpaid Taxes; changes in Marital or Corporate Status of owner(s) since date of purchase; Homestead Rights or Claims.

Restrictions:

None of record.

Exceptions:

a) Subject property is located within the City of Houston or within its extra territorial jurisdiction (within 5 miles of the city limits but outside another municipality) and is subject to the terms, conditions, and provision of City of Houston Ordinance No. 85-1878 and 99-262, pertaining to, among other things the platting and re-platting of real property and to the establishment of building lines. A certified copy of said ordinance was filed of record on August 1, 1991, under Harris County Clerk's File No. N253886.

Property Liens:

1) Paving Lien Notice filed on January 31, 1977, (topping project no. 303), filed under Harris County Clerk's File No. F029142, (Film Code No. 157-20-1662), executed by City of Houston, showing portions of Wylie Street, and assessing a portion of the cost thereof, against the owners of the property abutting thereon.

Involuntary Liens:

None of record.

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED TITLE INSURANCE POLICY. TEXAS AMERICAN TITLE COMPANY (AND ITS UNDERWRITERS OF TITLE INSURANCE) ASSUME NO LIABILITY FOR ERRORS OR OMISSIONS IN HIS REPORT OR FOR VERBAL STATEMENTS.

This is a copy of a preliminary report made for the use of Texas American Title Company only, to determine whether a title insurance policy can be issued. If a copy is furnished to the parties to the transaction, it is to facilitate preparation of the necessary instruments, to point out curative requirements, if any, and to show the results of the Company's title search (upon which only the Company may rely.) None of the information contained herein, or the absence of other information, constitutes a representation to any party, other than the Company, as to the status of the title. If a title defect or encumbrance should exist which is not disclosed hereon, the Company should not be liable by reason of furnishing this report or for any verbal statements related thereto. Neither the Company nor its underwriters shall be liable for any title defect unless a title insurance policy is issued by the Company insuring against such defect, and the applicable premium paid therefore. The liability shall then exist only under the terms of the policy (as prescribed by the State Board of Insurance of the State of Texas) and as measured and limited thereby.

Notice: Texas American Title Company disclaims any warranties, expressed or implied, concerning this information. This information is solely for the use of the party requesting it and no one else. Texas American Title Company liability for errors and/or omissions in this information shall be limited to the amount paid for this report. By accepting this form the party requesting the information agrees that the disclaimer of warranties, and liability limitation contained in this paragraph is a part of its contract with Texas American Title Company and shall cover all actions whether arising hereunder by statue, in contract, or in tort.

Texas American Title Company

Darrell Stone

Darrell Stone
Title Examiner

EXHIBIT 2

AFFECTED PROPERTY MAP

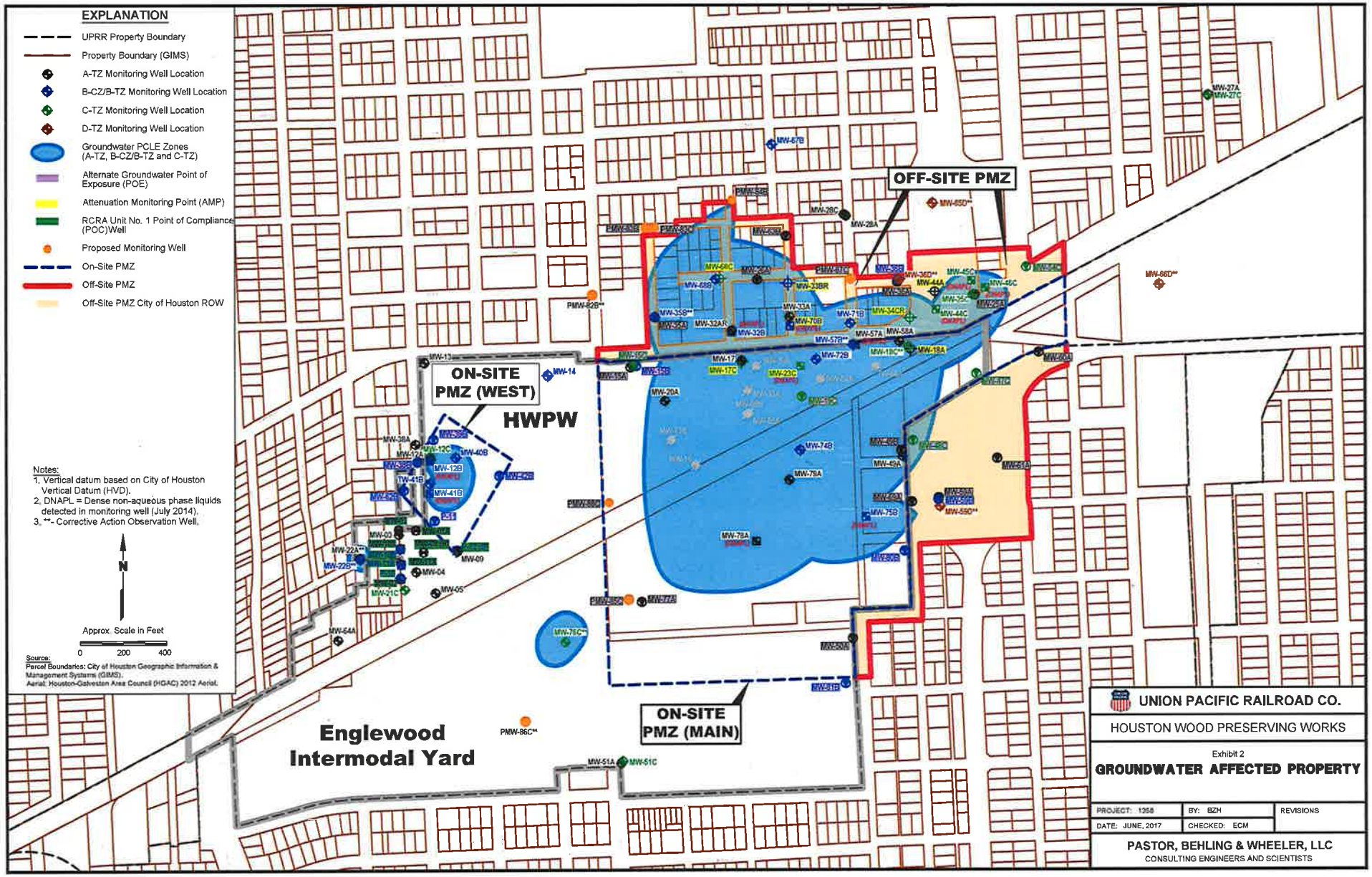

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

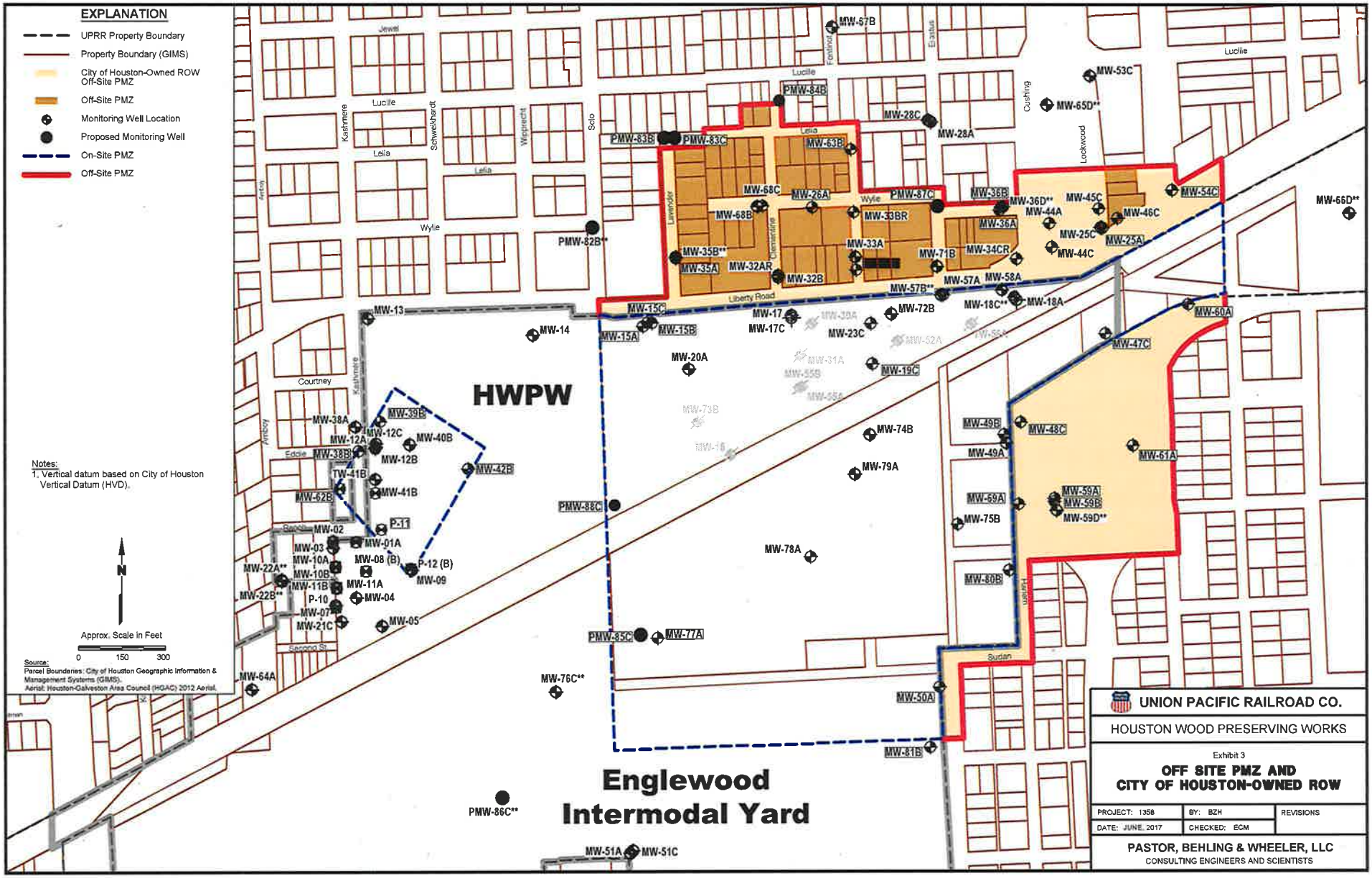

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	

MAP ID - 101

HCAD ID - 0140410000021

EXHIBIT A

Restrictive Covenant

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described in Exhibit 1 attached hereto and incorporated herein by reference.

Lot Four (4) Block nine (9) of Fairground Park Edition, a subdivision in Harris County, Texas.

Portions of the soils and/or groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP.

The portion considered to be Affected Property is described on Exhibit 2, which is part of the plume management zone shown in Exhibit 3 attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

The Affected Property is subject to the TRRP requirements for properties with an area overlying a ***pending*** TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit 3 provides the location and extent of the plume management zone and describes the maintenance and monitoring required. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is Audrey M. Brown,(Owner) with an address of 5308 Wylie Street, Houston, Texas 77026. In consideration of the Response Actions by Union Pacific (Responder), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit 4 is required. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 21 day of June, 2017.

Audrey M. Brown
Audrey M. Brown
Title: Owner

STATE OF TEXAS

HARRIS COUNTY

BEFORE ME, on this the _____ day of June, 2017, personally appeared Audrey Brown, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of June, 2017.

PAUL A SHANKLIN
My Commission Expires
December 11, 2018
NOTARY PUBLIC
STATE OF TEXAS

Notary Public in and for the State of Texas,
County of Harris

My Commission Expires: _____

Executed this _____day of _____, 20___.

Union Pacific Railroad [RESPONDER]

By:_____

Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the _____ day of _____, 20_____ Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation **[RESPONDER]**, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed on behalf of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ___ day of _____, 20____.

_____

Notary Public in and for the State of Nebraska
County of _____
My Commission Expires: _____

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
TRAVIS COUNTY §

BEFORE ME, on this the _____ day of _____, 20___, personally appeared _____ , _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

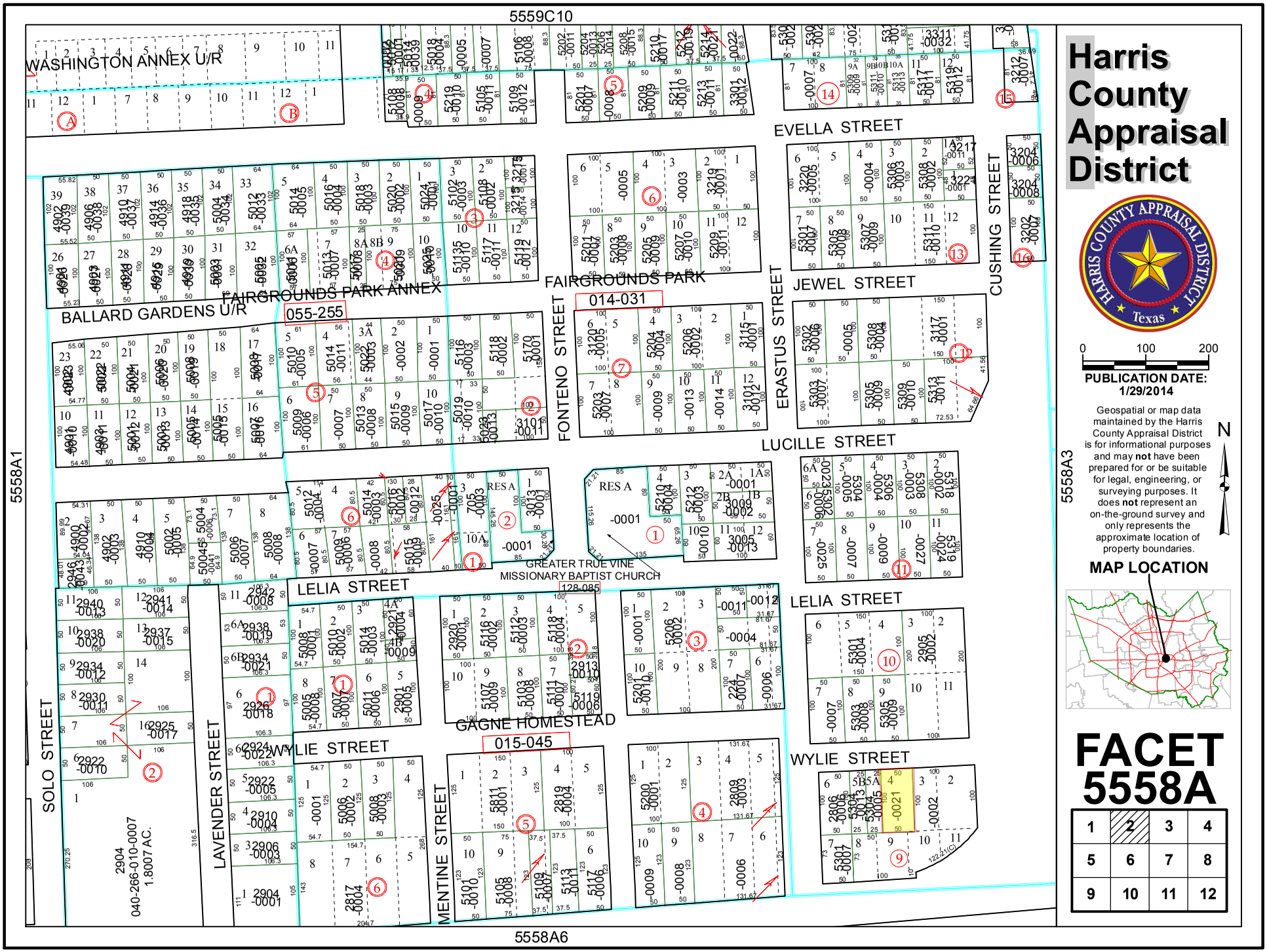
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this __ day of_____, 20___.

Notary Public in and for the State of Texas,
County of Travis
My Commission Expires: _____

EXHIBIT 1

PROPERTY LEGAL DESCRIPTION AND TITLE INFORMATION

EXHIBIT 1


5559C10
5558A1
5558A3
5558A6
WASHINGTON ANNEX U/R
EVELLA STREET
CUSHING STREET
FAIRGROUNDS PARK
FAIRGROUNDS PARK ANNEX
BALLARD GARDENS U/R
055-255
014-031
FONTENO STREET
ERASTUS STREET
JEWEL STREET
LUCILLE STREET
RES A
GREATER TRUE VINE
MISSIONARY BAPTIST CHURCH
128-085
LELIA STREET
GAGNE HOMESTEAD
015-045
WYLIE STREET
SOLO STREET
LAVENDER STREET
MENTINE STREET
2904
040-266-010-0007
1.8007 AC.
Harris County Appraisal District
HARRIS COUNTY APPRAISAL DISTRICT
Texas
0 100 200
PUBLICATION DATE:
1/29/2014
Geospatial or map data maintained by the Harris County Appraisal District is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and only represents the approximate location of property boundaries.
N
MAP LOCATION
FACET
5558A
1 2 3 4
5 6 7 8
9 10 11 12

HARRIS COUNTY APPRAISAL DISTRICT
REAL PROPERTY ACCOUNT INFORMATION
0140410000021

Tax Year: 2017

Print

Owner and Property Information			
Owner Name & Mailing Address:	**BROWN AUDREY M** **5308 WYLIE ST** **HOUSTON TX 77026-5322**	Legal Description: Property Address:	**LT 4 BLK 9** **FAIRGROUNDS PARK** **5308 WYLIE ST** **HOUSTON TX 77026**

State Class Code	Land Use Code	Land Area	Total Living Area	Neighborhood	Neighborhood Group	Map Facet	Key Map®
A1 -- Real, Residential, Single-Family	1001 -- Residential Improved	5,000 SF	1,850 SF	7081	1540	5558A	494C

Value Status Information

Value Status	Notice Date	Shared CAD
Noticed	03/31/2017	No

Exemptions and Jurisdictions

Exemption Type	Districts	Jurisdictions	Exemption Value	ARB Status	2016 Rate	2017 Rate
Residential Homestead	001	HOUSTON ISD	53,880	Not Certified	1.206700	
	040	HARRIS COUNTY	28,880	Not Certified	0.416560	
	041	HARRIS CO FLOOD CNTRL	28,880	Not Certified	0.028290	
	042	PORT OF HOUSTON AUTHY	28,880	Not Certified	0.013340	
	043	HARRIS CO HOSP DIST	28,880	Not Certified	0.171790	
	044	HARRIS CO EDUC DEPT	28,880	Not Certified	0.005200	
	048	HOU COMMUNITY COLLEGE	14,440	Not Certified	0.100263	
	061	CITY OF HOUSTON	28,880	Not Certified	0.586420	

Texas law prohibits us from displaying residential photographs, sketches, floor plans, or information indicating the age of a property owner on our website. You can inspect this information or get a copy at **HCAD's information center at 13013 NW Freeway**.

Valuations

Value as of January 1, 2016			Value as of January 1, 2017		
	Market	Appraised		Market	Appraised
Land	13,750		Land	16,250	
Improvement	123,959		Improvement	128,151	
Total	137,709	137,709	Total	144,401	144,401

Land

Market Value Land

Line	Description	Site Code	Unit Type	Units	Size Factor	Site Factor	Appr O/R Factor	Appr O/R Reason	Total Adj	Unit Price	Adj Unit Price	Value
1	1001 -- Res Improved Table Value	SF5	SF	5,000	1.00	1.00	1.00	--	1.00	3.25	3.25	16,250.00

Building

Building	Year Built	Type	Style	Quality	Impr Sq Ft	Building Details
1	2007	Residential Single Family	Residential 1 Family	Average	1,850 *	Displayed

* All HCAD residential building measurements are done from the exterior, with individual measurements rounded to the closest foot. This measurement includes all closet space, hallways, and interior staircases. Attached garages are not included in the square footage of living area, but valued separately. Living area above *attached* garages is included in the square footage living area of the dwelling. Living area above *detached* garages is not included in the square footage living area of the dwelling but is valued separately. This method is used on all residential properties in Harris County to ensure the uniformity of square footage of living area measurements district-wide. There can be a reasonable variance between the HCAD square footage and your square footage measurement, especially if your square footage measurement was an interior measurement or an exterior measurement to the inch.

Building Details (1)

Building Data	Building Areas

Element	Detail
Foundation Type	Slab
Exterior Wall	Frame / Concrete Blk
Exterior Wall	Brick / Veneer
Heating / AC	Central Heat/AC
Cost and Design	New / Rebuilt
Grade Adjustment	C+
Physical Condition	Average
Cond / Desir / Util	Average
Element	Units
Room: Bedroom	3
Room: Total	6
Room: Full Bath	2

Description	Area
OPEN FRAME PORCH PRI	50
MAS/BRK GARAGE PRI	420
BASE AREA PRI	1,850

EXHIBIT 2

AFFECTED PROPERTY MAP

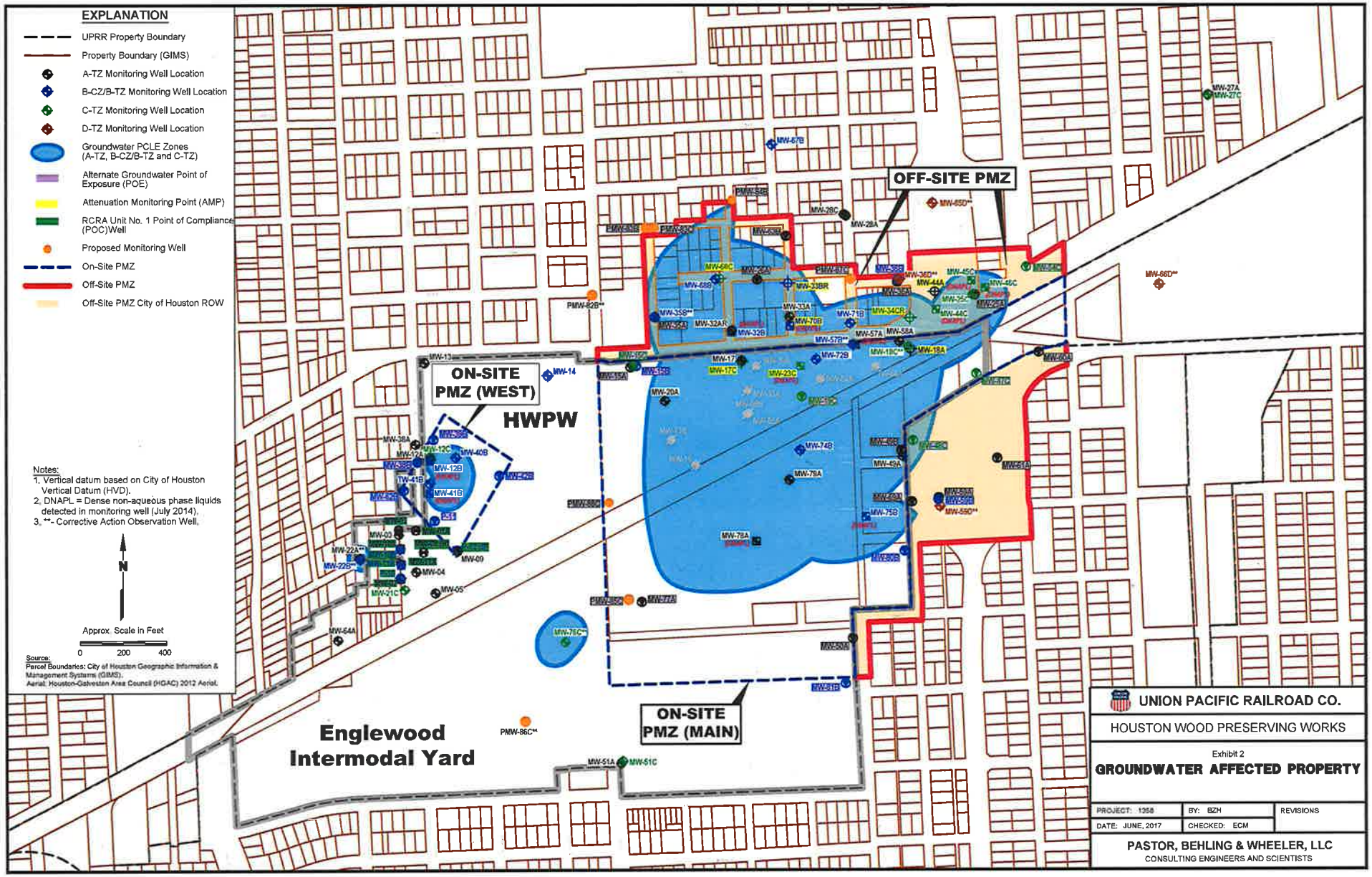

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
A-TZ Monitoring Well Location
B-CZ/B-TZ Monitoring Well Location
C-TZ Monitoring Well Location
D-TZ Monitoring Well Location
Groundwater PCLE Zones (A-TZ, B-CZ/B-TZ and C-TZ)
Alternate Groundwater Point of Exposure (POE)
Attenuation Monitoring Point (AMP)
RCRA Unit No. 1 Point of Compliance (POC) Well
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Off-Site PMZ City of Houston ROW
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
2. DNAPL = Dense non-aqueous phase liquids detected in monitoring well (July 2014).
3. **- Corrective Action Observation Well.
N
Approx. Scale in Feet
0 200 400
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
OFF-SITE PMZ
ON-SITE PMZ (WEST)
HWPW
ON-SITE PMZ (MAIN)
Englewood Intermodal Yard
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 2
GROUNDWATER AFFECTED PROPERTY
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 3

PLUME MANAGEMENT ZONE MAP

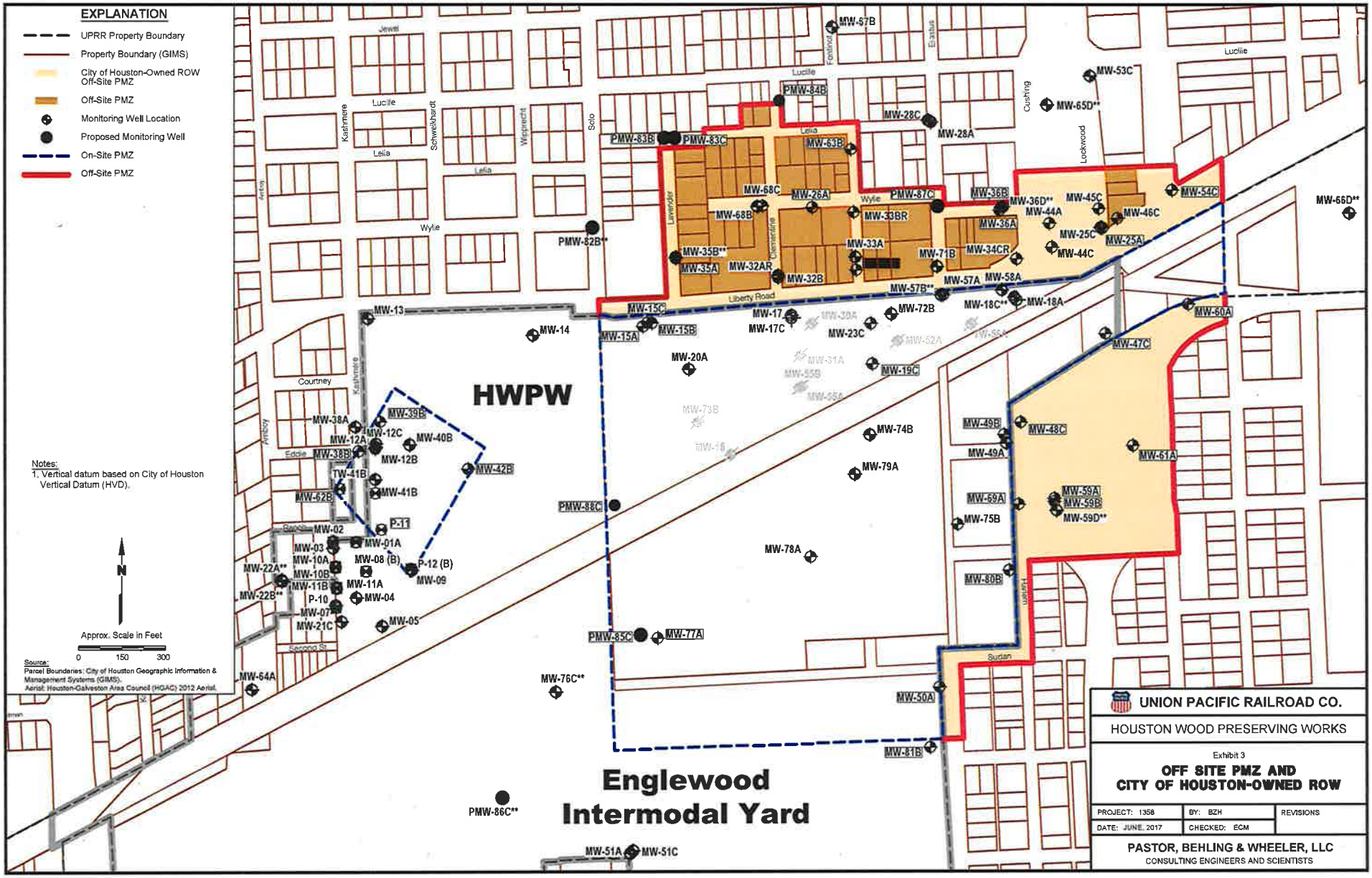

EXPLANATION
UPRR Property Boundary
Property Boundary (GIMS)
City of Houston-Owned ROW Off-Site PMZ
Off-Site PMZ
Monitoring Well Location
Proposed Monitoring Well
On-Site PMZ
Off-Site PMZ
Notes:
1. Vertical datum based on City of Houston Vertical Datum (HVD).
Approx. Scale in Feet
0 150 300
Source:
Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
Aerial: Houston-Galveston Area Council (HGAC) 2012 Aerial.
HWPW
Englewood Intermodal Yard
Jewel
Lucille
Leila
Wylie
Liberty Road
Courtney
Eddie
Second St.
Sudan
Kashmere
Schweikhardt
Weprecht
Solo
Lawndale
Clementine
Ferdinand
Estabus
Cushing
Lockwood
Harlem
Antoy
Anthony
MW-57B
PMW-84B
MW-53C
MW-65D**
MW-28C
MW-28A
PMW-83B
PMW-83C
MW-63B
MW-68C
MW-26A
PMW-87C
MW-36B
MW-36D**
MW-44A
MW-45C
MW-46C
MW-54C
MW-66D**
MW-68B
MW-33BR
MW-36A
MW-25C
MW-25A
PMW-82B**
MW-35B**
MW-35A
MW-32AR
MW-32B
MW-33A
MW-71B
MW-34CR
MW-44C
MW-57A
MW-58A
MW-57B**
MW-18C**
MW-18A
MW-60A
MW-13
MW-14
MW-15C
MW-15A
MW-15B
MW-17
MW-17C
MW-72B
MW-23C
MW-47C
MW-20A
MW-19C
MW-39B
MW-38A
MW-12C
MW-12A
MW-40B
MW-38B
MW-12B
MW-42B
TW-41B
MW-41B
MW-62B
P-11
MW-02
MW-01A
MW-03
MW-10A
MW-08 (B)
P-12 (B)
MW-09
MW-22A**
MW-10B
MW-11B
MW-11A
MW-22B**
P-10
MW-04
MW-07
MW-21C
MW-05
MW-64A
PMW-88C
MW-74B
MW-79A
MW-49B
MW-48C
MW-49A
MW-61A
MW-69A
MW-59A
MW-59B
MW-59D**
MW-75B
MW-78A
MW-80B
PMW-85C
MW-77A
MW-76C**
MW-50A
MW-81B
PMW-86C**
MW-51A
MW-51C
UNION PACIFIC RAILROAD CO.
HOUSTON WOOD PRESERVING WORKS
Exhibit 3
OFF SITE PMZ AND
CITY OF HOUSTON-OWNED ROW
PROJECT: 1358
BY: BZH
REVISIONS
DATE: JUNE, 2017
CHECKED: ECM
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT 4

MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "4"
MAINTENANCE AND MONITORING

Monitoring wells located near the property in the City of Houston right of way (ROW) listed in the table below will be sampled for chemicals of concern (COCs) (see Table C-1) on a semi-annual basis. At each well, the presence of light and dense non-aqueous phase liquids (LNAPL and DNAPL, respectively) will be measured using a decontaminated oil-water interface probe, or equivalent measuring device. The probe will be lowered into the well until the instrument indicates contact of the probe with the NAPL surface, if present, then the top of the water surface, and to the total depth of the well to evaluate for the presence of DNAPL. The depth to NAPL and water measurements will be referenced to the surveyed reference point at the top of the well casing. Levels will be measured to the nearest 0.01 foot and recorded on the water level measurement form. A peristaltic pump with dedicated tubing will be used to purge groundwater from each monitoring well using micro-purging techniques (anticipated purge rate of 0.1 L/min or less). Purge water will be monitored for specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential (Redox), and turbidity. Purging will be continued until the field parameters have stabilized per the sampling plan, after which a groundwater sample will be collected for laboratory analysis. Groundwater purged from monitoring wells will be containerized and removed from the property and stored on the Union Pacific Railroad Company property at 4910 Liberty Road. Laboratory analysis will be performed for the COCs on a standard turnaround basis. Analytical results from the groundwater sampling will be submitted to the TCEQ on an annual basis.

Monitoring wells will be inspected on a semi-annual basis for signs of damage, including well pads, casing, locks, and, protective covers.

List of Monitoring Wells Located within City of Houston ROW

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-36A	***MW-35B***	***MW-44C***
MW-44A	***MW-36B***	***MW-45C***
MW-59A	***MW-59B***	***MW-46C***
MW-60A	***MW-63B***	***MW-48C***
MW-61A	***MW-67B***	***MW-54C***
MW-69A	***MW-70B***	***MW-68C***
	PMW-83B (proposed)	***PMW-83C (proposed)***
	PMW-84B (proposed)	