Final

Quarterly Report

January through March 2017

Penta Wood Products Superfund Site

Wisconsin Department of Natural Resources

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1. Introduction

GHD Services Inc. (GHD) prepared this Quarterly Report (Report) for the Penta Woods Products Superfund Site (Site) in Siren, Wisconsin on behalf of Wisconsin Department of Natural Resources (WDNR). The Site location is shown on Figure 1.1, and the Site plan is shown on Figure 1.2. This Report presents the results of the activities conducted at the Site during January through March 2017 including:

- Groundwater monitoring and sampling (Section 2)
- Residential well and on-site supply well sampling (Section 3)
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2. Groundwater Monitoring and Sampling

Groundwater monitoring and sampling was conducted at the Site in January 2017 based on the modified scope of work provided in a GHD letter to EPA dated June 30, 2016. Sampling was completed in general accordance with the Field Sampling Plan (FSP) (CH2M HILL, November 1999 and November 2010) and Quality Assurance Project Plan (QAPP) (CH2M HILL, February 2005) with subsequent addendums (most recent is Addendum No. 6 dated July 2014). The primary purpose of the baseline event was to confirm the dissolved plume size and extent and the concentration distribution at the Site after operation of the remediation system. The objectives of the groundwater monitoring at the Site included:

- To monitor flow direction and hydraulic gradient through the measurement and assessment of groundwater levels
- To monitor the natural attenuation of the plume through collection and chemical analysis of groundwater samples from monitoring wells
- To monitor long term improvement in groundwater quality through the collection and chemical analysis of groundwater samples from monitoring wells
- To monitor compliance with groundwater cleanup standards for the Site (State of Wisconsin ch. NR 140 Enforcement Standards)
- To monitor potential impact to residential wells through collection and chemical analysis of water samples from targeted residential wells

2.1 Groundwater and LNAPL Level Monitoring

Groundwater and Light Non-Aqueous Phase Liquid (LNAPL) levels were measured in thirty-three (33) monitoring wells and twenty-two (22) extraction well casings at the Site on January 11, 2017. Due to a faulty oil/water interface probe, eight wells were re-measured on January 23, 2017. The LNAPL thickness was unable to be determined at five locations. The groundwater and LNAPL elevation data along with recent well survey data are summarized in Table 2.1. Historical LNAPL thickness data are included in Appendix A.

On January 17, 2017, Thein Well (Thein) repaired wells MW4 and MW14. Polyethylene tubing, obstructing the well MW4 casing, was removed, and the well was re-developed. The bent well casing was removed and replaced at well MW14.

MW28 was previously classified as a semiconfined aquifer (lower) well. Based on reported construction details and the subsurface stratigraphy, GHD and WDNR now classify well MW28 as an unconfined aquifer (upper) well. This determination is based on the well screen being more than 50 feet higher than the screens for nearby monitoring wells MW4 and MW14 and residential well RW2. Although the MW28 well screen does not straddle the groundwater table in the unconfined aquifer, the screen elevation is more representative of the unconfined aquifer conditions than the semiconfined aquifer conditions. A cross section showing the MW28 screen with respect to other well screens is included in Appendix B.

Groundwater elevation contours were inferred from the January 2017 measurement data. Unconfined aquifer (upper portion) contours are shown on Figure 2.1. Semiconfined aquifer (lower portion) groundwater contours are shown on Figure 2.2. The contours indicate that the groundwater gradient is relatively flat at less than 0.0007 ft/ft (as calculated between wells MW6S and MW26) and represent non-pumping conditions following shutdown of the remediation system and groundwater extraction pumps (November 2015).

Historically, LNAPL has been present in measurable quantities in four monitoring wells (MW10S, MW18, MW19, and MW20). During the January 2017 event, LNAPL was present in monitoring wells MW18, MW19, and MW20 at measurable thicknesses, and LNAPL was not present in well MW10S. LNAPL was present in six extraction wells (EW05S, EW06S, EW07S, EW10S, EW12S, and EW14S) with casings screened in the unconfined (upper) aquifer during the January 2017 monitoring event. This is consistent with previous monitoring. LNAPL was not observed in any monitoring wells with casings screened in the semiconfined (lower) aquifer during January 2017. LNAPL thickness measurements are shown on Figure 2.3.

During April 2016, LNAPL was present in one extraction well (EW06D) with a casing screened in the semiconfined (lower) aquifer. Groundwater and LNAPL levels were not previously measured in the extraction wells screened in the semiconfined (lower) aquifer since the casings were not accessible due to the presence of the submersible pumps and piping. An absorbent sock was installed in the well casing to recover the LNAPL and confirm whether LNAPL re-enters the well without pumping. The absorbent sock was removed from the well in May 2016. LNAPL was not observed in well EW06D during July 2016. LNAPL was observed in well EW06D during October 2016. LNAPL was not observed in well EW06D during January 2017. The initial presence

of LNAPL in well EW06D may be attributed to being trapped in the casing when groundwater levels rose above the screen interval following shutdown of the remediation system pumping in 2015.

2.1.1 Vertical Gradients

Vertical hydraulic gradients were calculated between the semiconfined and unconfined aquifers to evaluate vertical flow between the two aquifers. The vertical gradient was calculated at monitoring wells MW10/MW10S, MW12/MW16, and MW23/MW9 (see Figures 2.1 and 2.2). The vertical gradient was determined by taking the difference in groundwater elevations divided by the difference in mid screen elevations of the wells listed above.

Groundwater at the Site flows from the unconfined aquifer downward to the semiconfined aquifer. The vertical gradients at the site range from 0.007 ft/ft (MW10/MW10S) to 0.016 ft/ft (MW12/MW16). As expected, these values are less than historical values since groundwater elevations are not influenced by groundwater extraction from the semiconfined aquifer.

2.2 Groundwater Sampling

This groundwater sampling event was conducted from January 17 through 24, 2017 and consisted of collecting groundwater samples from nineteen (19) monitoring wells (MW1, MW3, MW4, MW6S, MW10, MW10S, MW12, MW13, MW14, MW16, MW17, MW21, MW22, MW23, MW25, MW28, MW29, MW30, and MW31) and four (4) extraction wells (EW6D, EW11D, EW11S, and EW13S). wells MW20 and EW07S were not sampled due to the presence of LNAPL in the wells. Groundwater samples were collected using low flow purge and sample protocol. As part of the well stabilization process, the groundwater was measured in the field for the following parameters: pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), iron, and sulfide. The parameters DO, ORP, iron and sulfide are used to help evaluate the groundwater geochemical conditions at the well. The groundwater purging and sampling data are summarized in Table 2.2.

The groundwater samples were collected and analyzed for the following compounds: pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); natural attenuation parameters; and select dissolved metals. The natural attenuation parameters included alkalinity, chloride, hardness, nitrate, sulfate, total organic carbon, and methane. The results of the natural attenuation parameters were evaluated to confirm the groundwater reduction-oxidation conditions at the Site and if the groundwater conditions are favorable for biodegradation. The select dissolved metals included arsenic, copper, iron, manganese, and zinc. The metals samples were filtered in the field through a 0.54 micron filter. The groundwater sample analytical data are summarized in Table 2.3.

All groundwater samples were shipped via commercial courier under standard chain of custody procedures to TestAmerica Laboratories (TestAmerica) in North Canton, Ohio for analysis. Copies of laboratory reports are included in Appendix C.

The following sections present a discussion of the groundwater sample analytical data and the Wisconsin Chapter NR140 preventative action limits (PAL) and enforcement standards (ES). Historical data are included in Appendix A.

2.2.1 Naphthalene and BTEX Analytical Data

The January 2017 naphthalene and BTEX analytical data are summarized in Table 2.3. Naphthalene was detected in one monitoring well (MW29) and one extraction well (EW13S) at a concentration that exceeded the PAL of 10 micrograms per liter (µg/L) (Table 2.3). Naphthalene concentrations did not exceed the ES of 100 µg/L.

BTEX was not detected at concentrations that exceeded the ESs or PALs.

2.2.2 PCP Analytical Data

The January 2017 PCP analytical data are summarized in Table 2.3. PCP was detected in eighteen (18) wells (MW1, MW3, MW4, MW10, MW10S, MW12, MW13, MW14, MW21, MW25, MW28, MW29, MW30, MW31, EW6D, EW11D, EW11S, and EW13S) at concentrations exceeding the PAL of 0.1 µg/L. Of those eighteen wells, the PCP concentrations in eleven (11) wells (MW4, MW10, MW10S, MW12, MW21, MW25, MW28, MW29, MW30, EW6D, and EW13S) exceeded the ES of 1.0 µg/L. Figure 2.4 shows the PCP concentrations in the unconfined (upper) aquifer wells. Figure 2.5 shows the PCP concentrations in the semiconfined (lower) aquifer wells.

A rinsate blank was collected in conjunction with sampling of well MW21. PCP was detected in the rinsate blank sample at a concentration of 7.3 µg/L. The sample from well MW25 was also collected on that day and had a concentration less than the rinsate blank. If this data were to be validated, neither the MW21 nor MW25 results would be considered detections due to the concentration detected in the rinsate blank. These concentrations may be attributed to cross-contamination of the sampling equipment used during this event.

Based on a review of the January 2017 analytical data, it appears that the elevated PCP concentrations (i.e., greater than 1,000 µg/L) are limited to the immediate vicinity of the LNAPL area in the unconfined and semiconfined aquifers, which is consistent with baseline sampling in April 2016.

The extent of PCP concentrations exceeding the ES (1 µg/L) is not currently delineated to the west, south, and east with the existing monitoring well network in the unconfined (upper) aquifer and to the southeast with the existing network in the semiconfined (lower) aquifer. However, based on the PCP concentration distribution in the wells at the Site with significantly lower concentrations detected in wells located outside of the immediate LNAPL area, the current monitoring well network is sufficient to assess the plume.

2.2.3 Dissolved Arsenic Analytical Data

The January 2017 dissolved arsenic analytical data are summarized in Table 2.3. Arsenic was detected in three wells (MW4, MW14, and EW13S) at concentrations exceeding the PAL (1 µg/L). Of those three wells, the PCP concentrations in one well (EW13S) exceeded the ES (10 µg/L). Figure 2.6 shows the arsenic concentrations in the unconfined (upper) aquifer wells. Figure 2.7 shows the arsenic concentrations in the semiconfined (lower) aquifer wells.

2.2.4 Other Dissolved Metals Analytical Data

The January 2017 dissolved metals analytical data are summarized in Table 2.3. Zinc and copper were not detected above the PALs or ESs in any of the nineteen monitoring wells and four extraction wells.

Iron was detected in nine wells at concentrations exceeding the PAL (150 µg/L) and six wells at concentrations exceeding the ES (300 µg/L). Manganese was detected in ten wells at concentrations exceeding the PAL (25 µg/L) and eight wells at concentrations exceeding the ES (50 µg/L). The ES for iron and manganese are considered secondary health based standards that are based on aesthetics (i.e., odor and taste).

2.2.5 Natural Attenuation Parameters Analytical Data

The natural attenuation results are provided in Table 2.3. The results generally show elevated levels of nitrate and sulfate and low concentrations of TOC and methane. These results in combination with the field stabilization parameters of DO, ORP, iron, and sulfide (Table 2.2) show that the groundwater beneath the Site is aerobic to slightly anaerobic because DO values are greater than 1 mg/L and ORP values are positive at the majority of wells outside the immediate vicinity of the LNAPL area in both the unconfined and semiconfined aquifers. A more detailed assessment of natural attenuation will be conducted following completion of the microcosm and bio-trap studies in 2017.

3. Residential Well and Onsite Supply Well Sampling

Residential well sampling is conducted on a semi-annual basis. Sampling was not conducted during January through March 2017 and will be conducted in April 2017. The six residential wells sampled during semi-annual sampling events are:

- 8713 Daniels 70 (RW1)
- 8627 Daniels 70 (RW2)
- 8454 Daniels 70 (RW3)
- 8526 Daniels 70 (RW4)
- 8783 Daniels 70 (RW5)
- 8542 West Doctor Lake Road (RW6)

The onsite water supply well serves the remediation equipment building. The water is used for sanitary facilities in the building and maintaining the remediation equipment but is not ingested by workers. The residential well and onsite water supply well locations are shown on Figure 3.1.

4. Microcosm Study

A microcosm study was initiated in accordance with the Remediation System Shutdown Pilot Study Work Plan (GHD; November 2015). The objectives of this laboratory study are to gather the data necessary to:

- Determine whether natural attenuation of PCP is occurring at the Site
- Determine whether natural attenuation is occurring under aerobic conditions, anaerobic conditions, or both
- Determine a Site-specific biodegradation rate for PCP

During the drilling and well installation activities in November and December 2015, soil and groundwater samples were collected at borehole SB1. Borehole SB1 is located downgradient of the LNAPL where the groundwater is expected within the aerobic (i.e., oxygen rich) zone. Borehole/well MW29 is located closer to the LNAPL and elevated PCP concentrations where the groundwater is expected within the anaerobic (i.e., oxygen poor) zone. Both locations are shown on Figure 1.2. All samples were submitted to the GHD Innovative Technology Group (ITG) laboratory located in Niagara Falls, New York for the microcosm study.

Upon arrival at the laboratory, the soil and groundwater samples were analyzed for the following parameters to provide a characterization of baseline conditions for the study:

- pH
- PCP
- Diesel range organics
- Ammonia-nitrogen
- Orthophosphate-phosphorus
- Total and dissolved metals (groundwater)
- Total metals (soil)

Microcosms were set up to assess the potential for natural attenuation of PCP under aerobic and aerobic conditions using soil and groundwater samples collected at the Site. After 0, 3, 6, and 12 months, duplicate microcosms for each treatment will be sacrificed and the soil and groundwater samples would be analyzed for PCP. Depending on the results, additional testing may be conducted at extended durations.

4.1 Initial Groundwater and Soil Microcosm Tests

The results from the initial analysis of groundwater SB1, the groundwater from the aerobic area, showed 87 µg/L of PCP and 0.176 milligrams per liter (mg/L) of TPH (C_9-C_{36}). The pH was in the neutral range at 6.72, ammonia-nitrogen was below the analytical detection limit, and orthophosphate-phosphorus was present at 1.85 mg/L. Total iron was present at 27,600 µg/L and dissolved iron at 1,010 µg/L. Total manganese was present at 4,480 µg/L and dissolved

manganese at 3,340 µg/L. These ratios of total to dissolved iron and manganese are consistent with the aerobic conditions known to exist in the area from which this sample was collected.

The results from the initial analysis of groundwater MW29, the groundwater from the anaerobic area, showed 1,430 µg/L of PCP and 1,540 mg/L of TPH (C_9-C_{36}). The pH was again in the neutral range at 6.71, ammonia-nitrogen was below the analytical detection limit, and orthophosphate-phosphorus was present at 1.45 mg/L. Total iron was present at 10,500 µg/L and dissolved iron was present at 270 µg/L. Total manganese was present at 2,530 µg/L and dissolved manganese at 2,350 µg/L. The manganese results are typical of anaerobic conditions; however, the dissolved iron concentration is lower than would be expected. These data are summarized in Table 4.1.

The results from the initial analysis of soil SB1, the soil sample collected from the aerobic area, showed 0.502 milligram per kilogram (mg/kg) of PCP and TPH(C_9-C_{36}) below the analytical detection limit. The pH of the soil was 7.14, ammonia-nitrogen was below the analytical detection limit, and orthophosphate-phosphorus was present at 27.8 mg/kg. The soil contained 6,880 mg/kg of total iron and 79.9 mg/kg of total manganese.

The results from the initial analysis of soil MW29, the soil sample collected from the anaerobic area, showed 61.0 mg/kg of PCP and 153 mg/kg of TPH (C_9-C_{36}). The pH of the soil was 6.65, ammonia-nitrogen was below the analytical detection limit, and orthophosphate-phosphorus was present at 20.5 mg/kg. The soil contained 8,330 mg/kg of total iron and 94.6 mg/kg of total manganese. These data are shown in Table 4.2.

4.2 Aerobic Microcosm Tests

Microcosms were set up to assess the potential for natural attenuation of PCP and petroleum hydrocarbons under aerobic conditions using soil SB1 and groundwater SB1.

The following treatments were performed:

1. Soil and groundwater only (biotic control)
2. Soil, groundwater, oxygen
3. Soil/sand, groundwater, oxygen, and sodium azide (abiotic control)

After 0, 3, 6, and 12 months, duplicate microcosms for each treatment were to be sacrificed and analyzed for PCP and petroleum hydrocarbons in the soil and groundwater. After 3 months, significant treatment of the PCP was observed in the microcosms that contained soil and groundwater, and TPH(C_9-C_{36}) was removed to non-detect levels. Treatment of PCP was observed in microcosms that received oxygen. TPH(C_9-C_{36}) was also removed to non-detect levels in these microcosms. These data suggests that natural attenuation is effective for treatment of PCP and TPH in the aerobic zone of the Site. These data are shown in Tables 4.3 and 4.4.

After 6 months, PCP and TPH(C_9-C_{36}) were not detected in any of the biological microcosms. These data show that natural attenuation is effective for treatment of PCP and TPH in the aerobic zone of the Site. These data are shown in Tables 4.5 and 4.6.

PCP and TPH(C_9-C_{36}) concentrations did not decrease in sodium azide treatment samples (abiotic control), which confirms that the decreased concentrations in the soil and groundwater (biotic control) and soil, groundwater, and oxygen treatments are due to biological degradation.

Since both PCP and TPH(C_9-C_{36}) have been reduced to non-detect levels, no further analyses of these microcosms will be performed.

4.3 Anaerobic Microcosm Tests

Microcosms were set up to assess the potential for natural attenuation of PCP and TPH(C_9-C_{36}) under anaerobic conditions using soil and groundwater collected from the anaerobic zone of the Site. Microcosms were set up in the anaerobic hood.

The following treatments were performed:

1. Soil and groundwater only (biotic control)
2. Soil, groundwater, and emulsified vegetable oil (EVO)
3. Soil/sand, groundwater, and sodium azide (abiotic control)

After 0, 3, 6, and 12 months, duplicate microcosms for each treatment were to be sacrificed and analyzed for PCP in the soil and groundwater. Additional testing will be performed after 18 and 24 months, if required.

After 3 months, no reduction in the concentration of PCP was observed in any of the microcosms. An increase in the aqueous concentration of PCP was observed in some of the microcosms, which is likely associated with PCP partitioning out of the soil into the groundwater. Treatment of TPH(C_9-C_{36}) was observed in all microcosms. In microcosms containing soil and groundwater, removal of TPH(C_9-C_{36}) was observed. Removal of TPH(C_9-C_{36}) was also observed in the microcosms that received EVO. These data suggest that anaerobic biodegradation of the TPH has occurred; however 3 months is not enough time for anaerobic biodegradation of PCP to occur. These data are shown on Tables 4.7 and 4.8.

After 6 months, 35 percent removal of PCP was observed in the microcosms that received EVO. No removal of PCP was observed in any of the other microcosms, and the increases in aqueous PCP combined with decreases in soil PCP were again observed suggesting that PCP is partitioning out of the soil. Treatment of TPH(C_9-C_{36}) was again observed in all microcosms. In microcosms containing soil and groundwater, treatment of TPH(C_9-C_{36}) had increased to 42 percent, and 51 percent removal of TPH(C_9-C_{36}) was observed in the microcosms that received EVO. These data suggest that after 6 months some anaerobic degradation of the PCP has occurred in microcosms where anaerobic conditions were optimized with EVO. Anaerobic degradation of the TPH is continuing but appears to be slow. These data are shown in Tables 4.9 and 4.10.

5. Bio-Trap Study

A bio-trap study was initiated in accordance with the Remediation System Shutdown Pilot Study Work Plan (GHD; November 2015) in April 2016. The objectives of the bio-trap study were the gather the data necessary to:

1. Determine whether bacteria capable of degrading PCP are present at the Site
2. Demonstrate in situ biodegradation of PCP using a bio-trap

The bio-trap data are summarized in Table 5.1.

5.1 Bio-Trap Study

Bio-traps baited with ^{13}C labelled PCP were obtained from Microbial Insights. They were installed in two wells in the source area (wells MW20 and MW29) and two wells in the downgradient area (wells MW9 and EW11S). The bio-traps were left in place for 32 days and then were removed and analyzed for the following:

- ^{13}C PCP concentration
- Phospholipid Fatty Acids (PLFA)
- Stable Isotope Probing
- Dissolved ^{13}C Inorganic Carbon

5.1.1 ^{13}C Pentachlorophenol Concentration

An attempt to quantify ^{13}C PCP in the bio-traps after deployment was made; however, the phenol group on the PCP has been found to chemisorb to the beads. Therefore, quantitative extraction of the PCP was not possible, and it was not possible to compare the concentration of PCP after the bio-traps were retrieved from the wells to the initial concentration of PCP in the bio-traps.

5.1.2 Phospholipid Fatty Acids

The biomass collected in the bio-traps was analyzed for PLFA. The biomass in the four bio-traps was similar with the source area. Bio-traps from source area wells MW20 and MW29 had counts of 3.8×10^5 cells per bead and 1.9×10^6 cells per bead, respectively. Bio-traps from downgradient wells MW9 and EW11S had counts of 2.3×10^6 cells per bead and 1.1×10^6 cells per bead, respectively.

The PLFA analysis showed that the dominant class of organism in the well MW20 bio-trap was Proteobacteria, which are fast growing gram negative bacteria and utilize many carbon sources and adapt quickly to a variety of environments. The dominant class of organism in the well MW29 bio-trap was Fimicutes, which are anaerobic fermenting bacteria. The well MW20 BioTrap also contained Fimicutes.

In the downgradient wells, the dominant type of organism in both wells was the Proteobacteria with very low percentage of Fimicutes. These data show that anaerobic bacteria were dominant in well

MW29 and also present in well MW20 but not present in the downgradient wells. This is consistent with the source area being anaerobic while the downgradient area is more aerobic.

5.1.3 Stable Isotope Probing

Stable isotope probing demonstrated that ^{13}C was incorporated into the microbial biomass. The ^{13}C enriched biomass was between 1.1 and 2.0 x 10^4 cells per bead for wells MW9, MW29, and EW11S and 2.2 x 10^3 cells per bead for well MW20.

The ratio between the heavier and lighter isotopes is expressed as a delta value (δ). The δ value is calculated according to the following equation:

δ(‰) = (R(sample)/R(standard-1)X1000

R= ratio of heavy to light isotope

This ratio was calculated for the PLFA to determine the extent to which they were enriched in ^{13}C. The average $\delta^{13}C$ values for the PLFA in wells MW9 and EW11S, as well as well MW20, ranged from 257 to 360 percent, which is in the moderate range indicating a moderate incorporation of ^{13}C-labeled PCP into microbial biomass. The average $\delta^{13}C$ value for well MW29 was 94 percent, which is in the low range indicating low incorporation of ^{13}C-labeled PCP into microbial biomass. well MW29 had the greatest concentration of Fimicutes, which are anaerobic bacteria and a lower concentration of Proteobacteria, which are bacteria that can utilize a wide range of carbon sources. It is possible that Proteobacteria have a greater capacity to degrade PCP than Fimicutes.

5.1.4 Dissolved ^{13}C Inorganic Carbon

δ13C value for dissolved inorganic carbon was also measured in the bio-traps. If inorganic carbon was enriched in 13C, it would indicate that complete mineralization of the PCP to CO2 had occurred. The natural abundance of 13C is approximately 1 percent, and the percent 13C in the inorganic carbon in the four bio-traps ranged from 1.08 to 1.09, which is very close to the natural abundance. δ13C values ranged from -21 to -14 percent, which are near background levels; therefore, it appears that little to no PCP mineralization occurred during the 32 days in which the bio-traps were in place.

6. Microcosm and Bio-Trap Study Conclusions and Recommendations

The results from the microcosm tests indicate that PCP and TPH(C_9-C_{36}) are readily degradable under aerobic conditions and that TPH(C_9-C_{36}) is also degradable under anaerobic conditions. PCP degradation under anaerobic conditions is slower.

These conclusions are supported by the data from the bio-traps. In the bio-traps deployed in the downgradient area in wells MW9 and EW11S, the dominant class of organisms, the Proteobacteria degraded PCP and incorporated it into the biomass at a moderate rate. In the source area in wells MW20 and MW29, the bio-trap data appears to indicate that well MW20 may be in a transitional zone where some aerobic and some anaerobic processes are occurring. Although the

bio-trap from MW20 contained the anaerobic Fimicutes, which were the dominant class of organisms in MW29, Proteobacteria were the dominant class of organisms in MW20, and the rate of incorporation of PCP into biomass was similar to the aerobic wells. In MW29, which was likely highly anaerobic, the Fimicutes dominated, and slower incorporation of PCP into biomass was observed.

No mineralization of PCP (i.e., degradation into CO_2) was observed in the bio-trap study; however, the bio-traps were deployed for only 32 days which may not be long enough for mineralization of PCP to occur.

Overall, the data suggests that monitored natural attenuation (MNA) would be an effective treatment for the downgradient area, and biodegradation of PCP and TPH(C_9-C_{36}) is expected to occur at a moderate rate. MNA may be effective for the source area and may be enhanced with the addition of EVO. The bio-trap data shows that PCP degradation does occur under anaerobic conditions; however, slower biodegradation rates are expected. Analysis of the microcosm after more time has elapsed will provide information about the rates that can be expected.

7. Waste Management and Disposal

Historical hazardous waste disposal is summarized in Appendix A. GHD continues to collect and containerize PPE and other waste produced during sampling events onsite.

7.1 Sodium Hydroxide

More than 5,000 gallons of sodium hydroxide remained after remediation system decommissioning was completed in January 2016. On March 20, 2017, 5,000 gallons of sodium hydroxide were removed from the Site and transported to the Advanced Waste Services of Wisconsin, ChemWorks Treatment Facility located in Milwaukee, Wisconsin under Profile CHE1000137125 for reclamation and reuse as part of the facility treatment operations. Waste disposal documentation including the bill of lading (BL2789232000) and waste profile is provided in Appendix D.

8. Continuing Obligations and Inspections

The WDNR has implemented Institutional Controls (ICs) at the Site in the form of Continuing Obligations (COs). COs are legal requirements designed to protect public health and the environment in regard to contamination that remains on a property, and COs still apply after a property is sold. The Long-Term Response Action Operation and Maintenance Plan (O&M Plan) – Addendum No. 1 (GHD; November 9, 2015) effectively serves as an Institutional Control Implementation and Assurance Plan (ICIAP). This section documents the COs in addition to inspections required by the O&M Plan (GHD; July 22, 2015).

8.1 Continuing Obligations

On July 6, 2015 the WDNR provided a letter approving the Remedial Actions with Continuing Obligations (WDNR BRRTS Activity #02-07-000532, FID #: 807050310). That letter approved the

remedies which have been implemented at the Site and specified the condition with which any current or future owner of the property must comply to ensure that the Site does not pose a threat. These conditions or COs meet the intent of the ICs required by the Record of Decision for the Site.

CO maintenance consists of periodic monitoring and reporting to confirm that Site security is in place and providing protection as intended and that use of the land is restricted to maintain the integrity and functional effectiveness of the Site remedy.

Maintenance activities consist of periodic review of the property and COs by WDNR, notifications to new land owners or lessees, and continuing education for land owners and property users through annual updates and information. There was no transfer of ownership during the current monitoring period.

To facilitate monitoring of the COs, roles and responsibilities, schedules, corrective actions, and reporting requirements were performed as follows:

1. Periodic monitoring was conducted whenever WDNR or its contractors or other representatives were present at the Site.
2. Prohibition of use of the Site real estate is evaluated and updated on an annual basis (minimum frequency). This evaluation determined:
    a. The selected remedy (i.e. remediation system shutdown pilot study and associated monitoring) remains in place and remains effective
    b. Site security remains effective and real estate use meets the stated objectives and performance goals and provides protection required by the response
3. Evidence was not observed of the following improper uses:
    a. Removal of the existing barrier or cover
    b. Replacement with another barrier or cover
    c. Excavating or grading of the land surface
    d. Filling on covered or paved areas
    e. Plowing for agricultural cultivation
    f. Construction or placement of a building or other structure
    g. Changing the use or occupancy of the property to a residential exposure setting, which may include certain uses, such as single or multiple family residences, a school, day care, senior center, hospital, or similar residential exposure setting

An inspection of continuing obligations items was completed on January 16, 2017 and a copy of the continuing obligations inspection form is included in Appendix E.

8.2 Inspections

Additional inspections required by the O&M Plan (GHD; July 22, 2015) were conducted during this monitoring period. The results of the inspections are as follows:

- The CAMU area fence is in satisfactory condition and does not require repairs; the CAMU fence gates remain closed and locked when GHD and/or WDNR are not at the Site
- The CAMU area surface soils/vegetation were in good condition during this monitoring period and did not require repairs; erosion, subsidence, and ponding water were not observed on the CAMU

A site well inspection was completed on January 16, 2017 and a copy of the well inspection form is included in Appendix E.

9. Conclusions and Recommendations

Based on the pilot study data obtained since April 2016, the following conclusions are made:

- LNAPL is stable and not migrating
- The dissolved PCP plume is stable and not migrating
- Dissolved PCP concentrations greater than 1,000 µg/L are limited to the immediate vicinity of the LNAPL area
- Dissolved PCP degrades naturally in the aerobic zone
- Dissolved PCP degrades in the anaerobic zone (LNAPL source area) at a slow rate
- The current monitoring well network is sufficient to monitor plume conditions

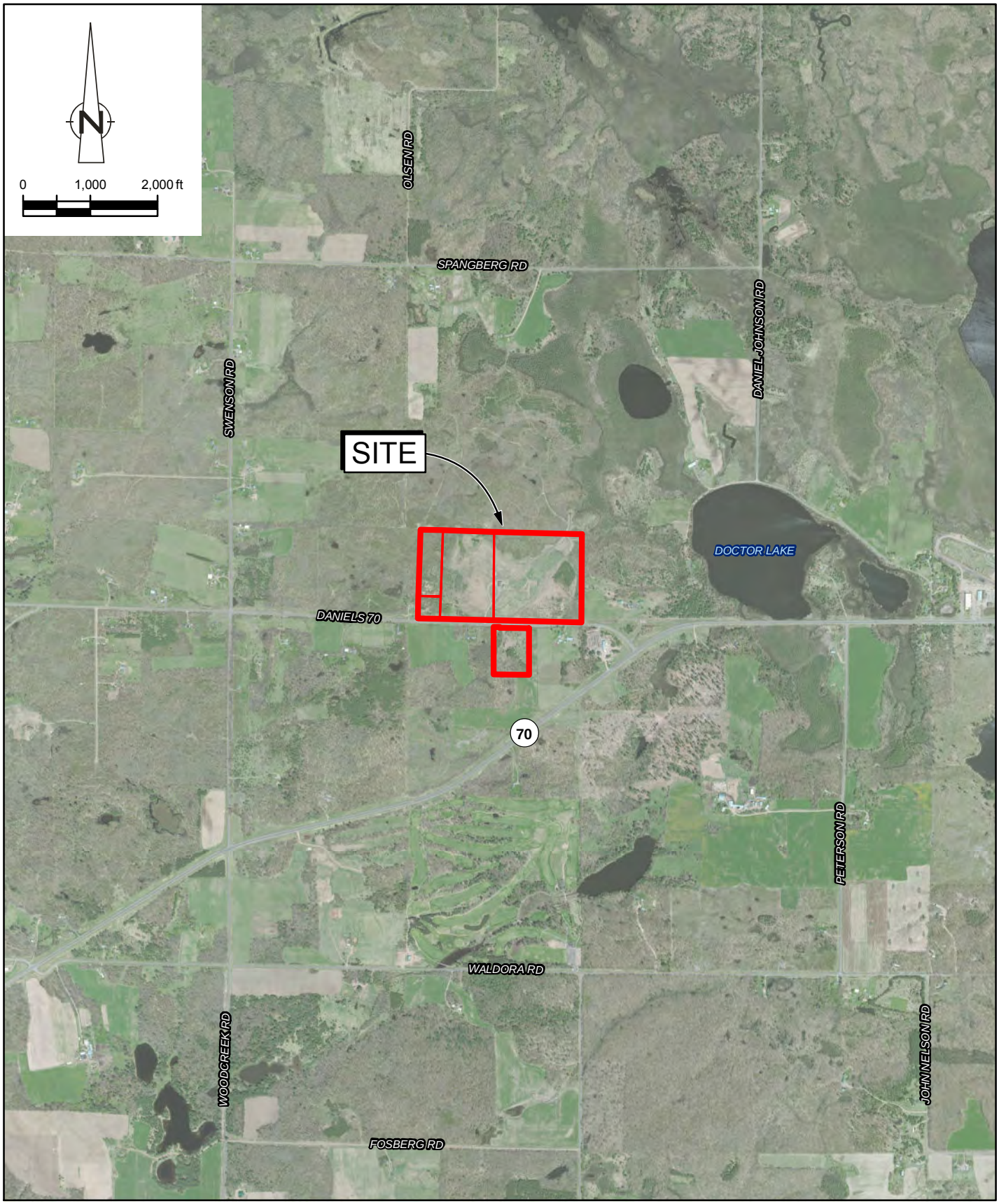
The following actions are recommended for the Site during the next reporting period:

- Keep the remediation system shut down and continue the pilot study monitoring and sampling at the Site based on the USEPA approved scope and schedule
- Continue microcosm study laboratory analyses and evaluation
- Conduct groundwater monitoring and sampling during April 2017; conduct subsequent groundwater sampling on a semiannual basis (April and October) through 2019 and the end of the pilot study; conduct groundwater/LNAPL level monitoring on a quarterly basis (January, April, July, and October) through 2019 and the end of the pilot study
- Include wells MW4 and MW14 in the semiannual groundwater sampling events to assess semi-confined aquifer (lower portion) groundwater quality southeast of the LNAPL source area
- Conduct semiannual residential well sampling during April 2017
- Re-survey the new well MW14 top of casing elevation before the next monitoring event in April 2017
- Purchase new pumps for purging/sampling wells located outside of the LNAPL area to minimize the potential for cross-contamination during sampling

- Assess future pilot study data to determine whether a change in the monitoring and sampling scope and schedule is appropriate and/or whether additional wells are needed to delineate the extent of PCP concentrations exceeding the ES
- Prepare and submit required monthly and semiannual reports
- Conduct a groundwater statistical evaluation using USEPA and ITRC guidance when sufficient groundwater data is obtained after future sampling events
- Remove the remaining sodium hydroxide (approximately 200 gallons) from the Site and transport to the Advanced Waste Services of Wisconsin, ChemWorks Treatment Facility located in Milwaukee, Wisconsin under Profile CHE1000137125 for reclamation and reuse as part of the facility treatment operations
- Remove the ferric sulfate (approximately 2,800 gallons, previously used as part of the onsite groundwater treatment system) from the Site and transport to the Envirite of Illinois facility in Harvey, Illinois for disposal as a hazardous waste

10. Certification

The current actions at the Site remain protective of human health and the environment based on an evaluation of the current data. Implementation of the pilot study contingency plan outlined in the Remediation System Pilot Study Work Plan (GHD; November 13, 2015) is not necessary at this time.



Source: DigitalGlobe 2011

PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
QUARTERLY REPORT

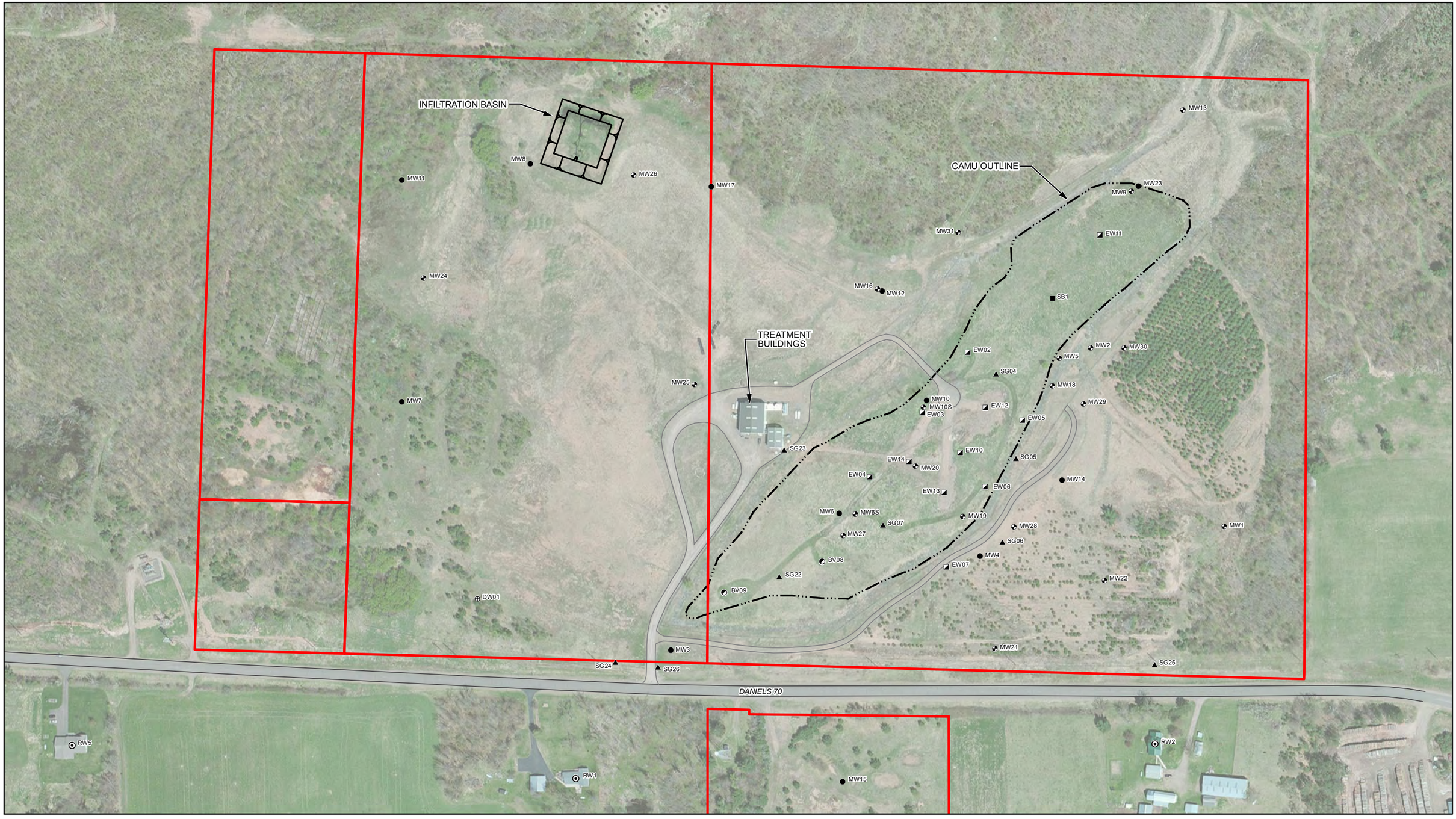
086165-04-07

Mar 3, 2017

SITE LOCATION

FIGURE 1.1

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-04(014)\086165-04(014)GIS-SP001.mxd



0 100 200 ft

N

LEGEND

- EXTRACTION WELL NEST
- UNCONFINED MONITORING WELL
- SEMICONFINED MONITORING WELL
- BIOVENTING WELL
- SOIL GAS WELL NEST
- WATER SUPPLY WELL
- RESIDENTIAL WELL
- APPROXIMATE CAMU LIMIT
- SITE PARCEL BOUNDARY

GHD

PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
QUARTERLY REPORT

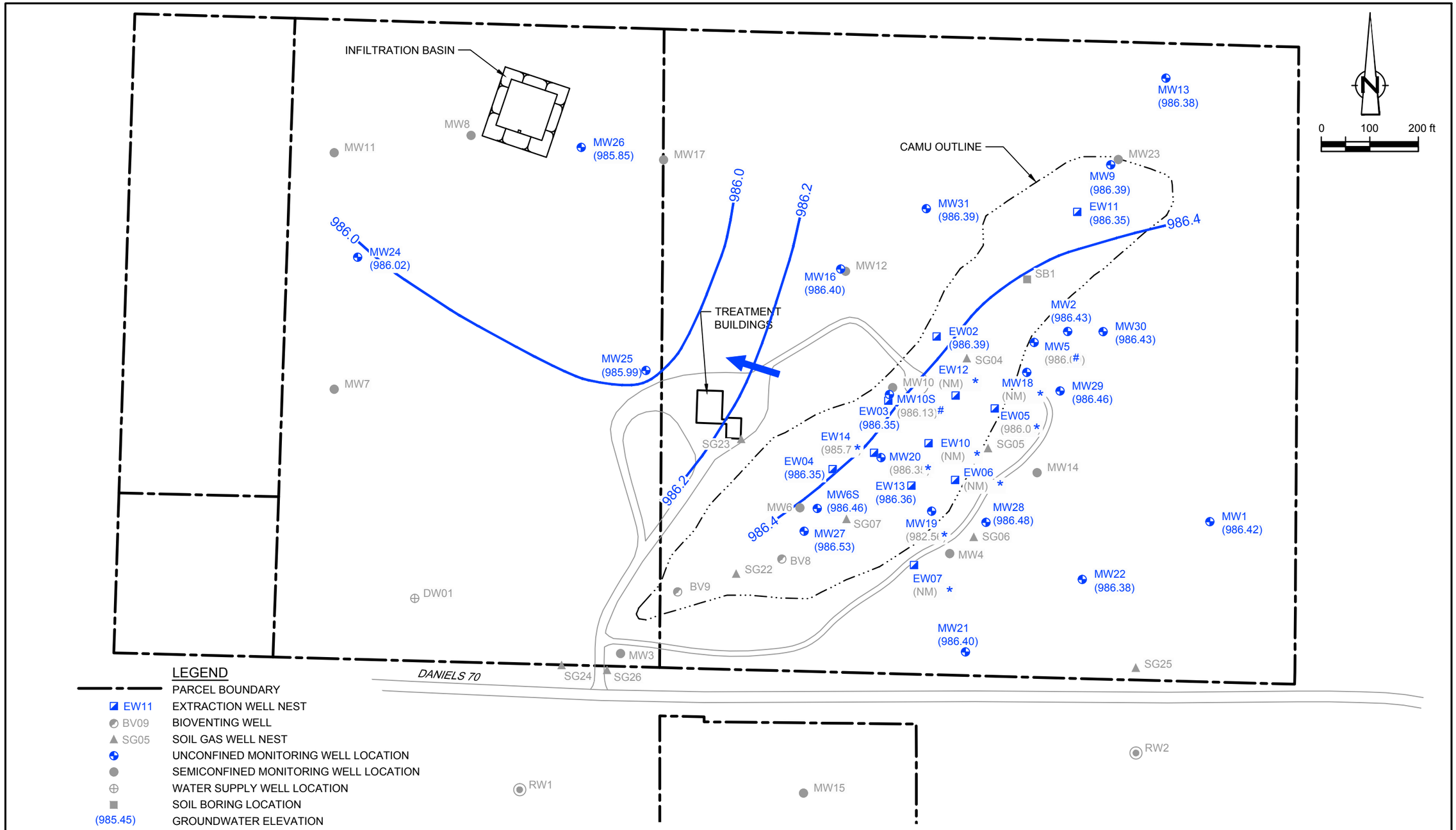
086165-04-07

Apr 28, 2017

SITE PLAN

FIGURE 1.2

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-04(014)\086165-04(014)GIS-SP002.mxd



LEGEND

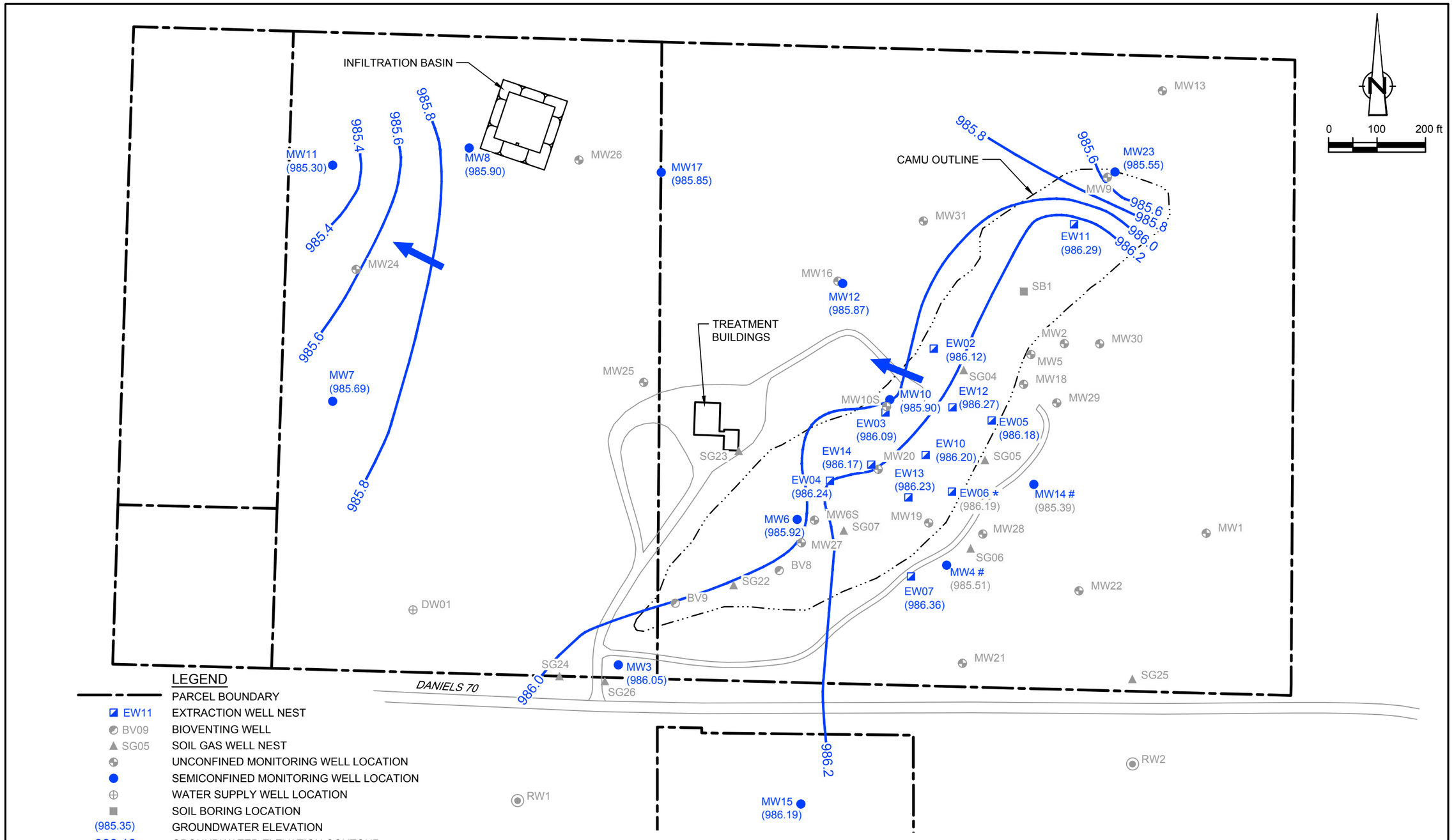
- PARCEL BOUNDARY
- EW11 EXTRACTION WELL NEST
- BV09 BIOVENTING WELL
- SG05 SOIL GAS WELL NEST
- UNCONFINED MONITORING WELL LOCATION
- SEMICONFINED MONITORING WELL LOCATION
- WATER SUPPLY WELL LOCATION
- SOIL BORING LOCATION
- (985.45) GROUNDWATER ELEVATION
- 986.00 GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- * LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
- # WELL NOT USED TO INFER GROUNDWATER ELEVATION CONTOURS
- RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.1

UNCONFINED (UPPER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

86165-03(014)GN-WA001 MAR 6, 2017



LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
	WATER SUPPLY WELL LOCATION
	SOIL BORING LOCATION
(985.35)	GROUNDWATER ELEVATION
986.10	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION
*	LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
#	WELL DAMAGED, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.2

SEMICONFINED (LOWER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

86165-03(014)GN-WA002 MAR 6, 2017

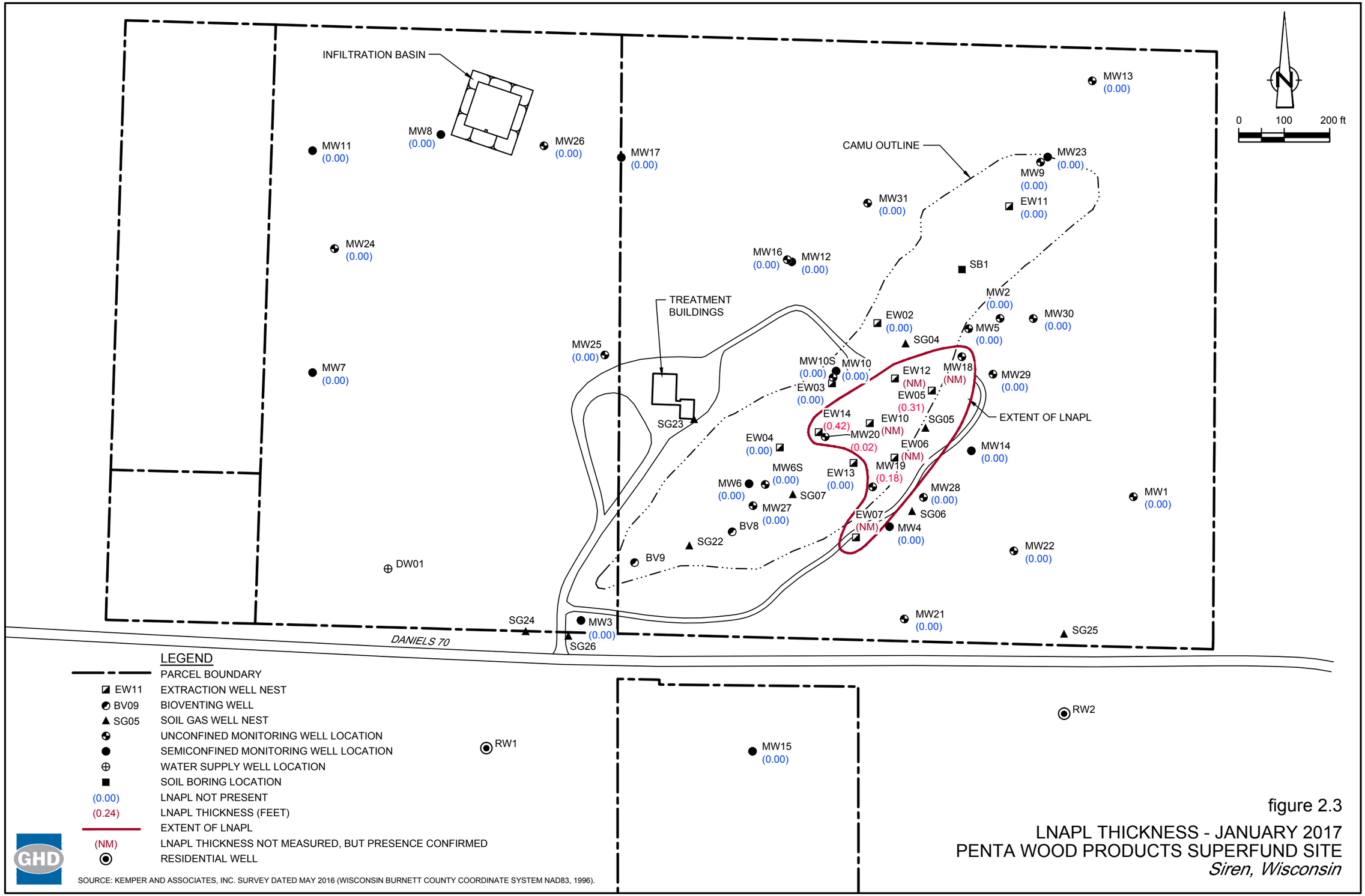
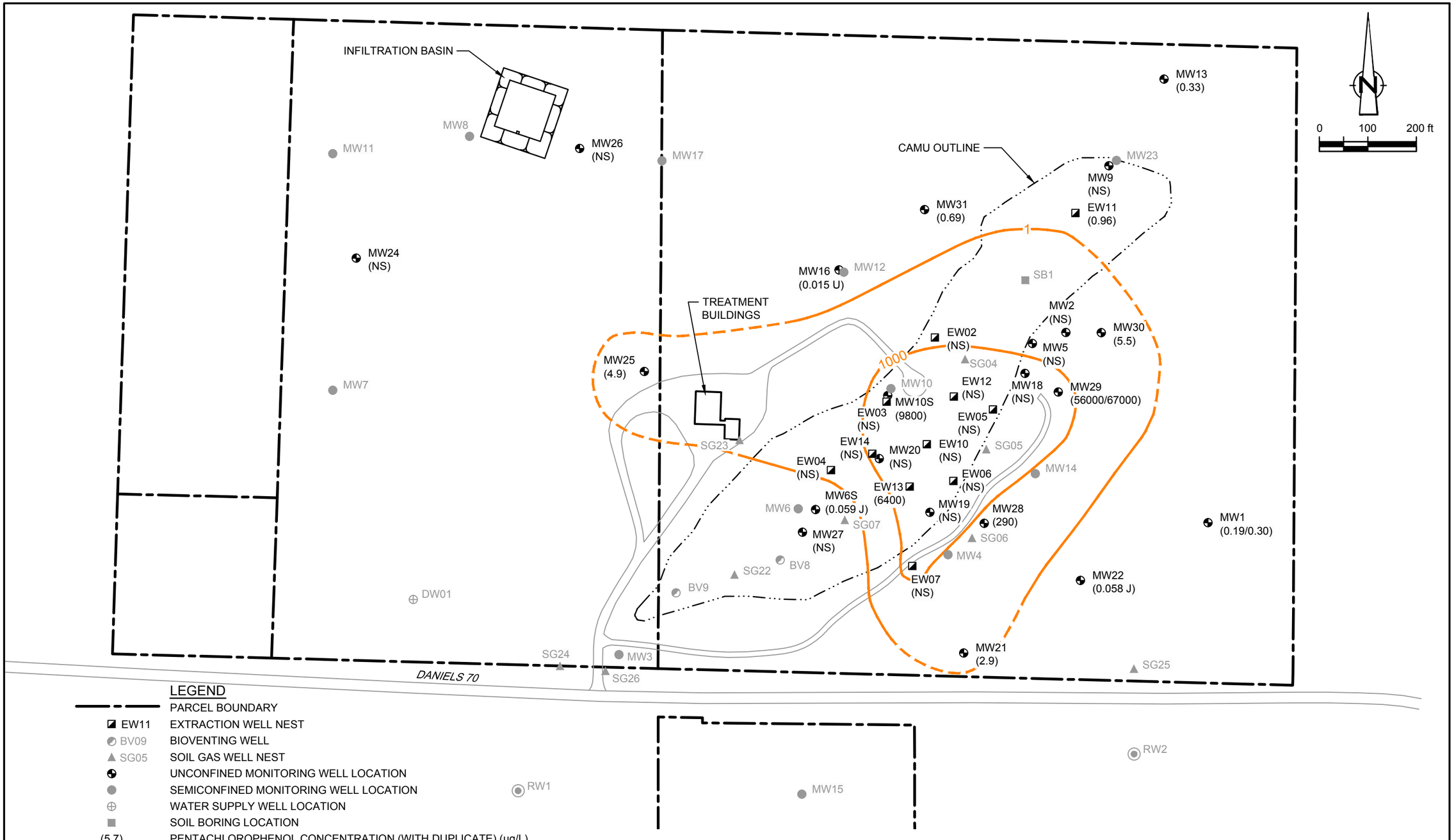


figure 2.3

LNAPL THICKNESS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

86165-03(014)GN-WA003 MAR 6, 2017



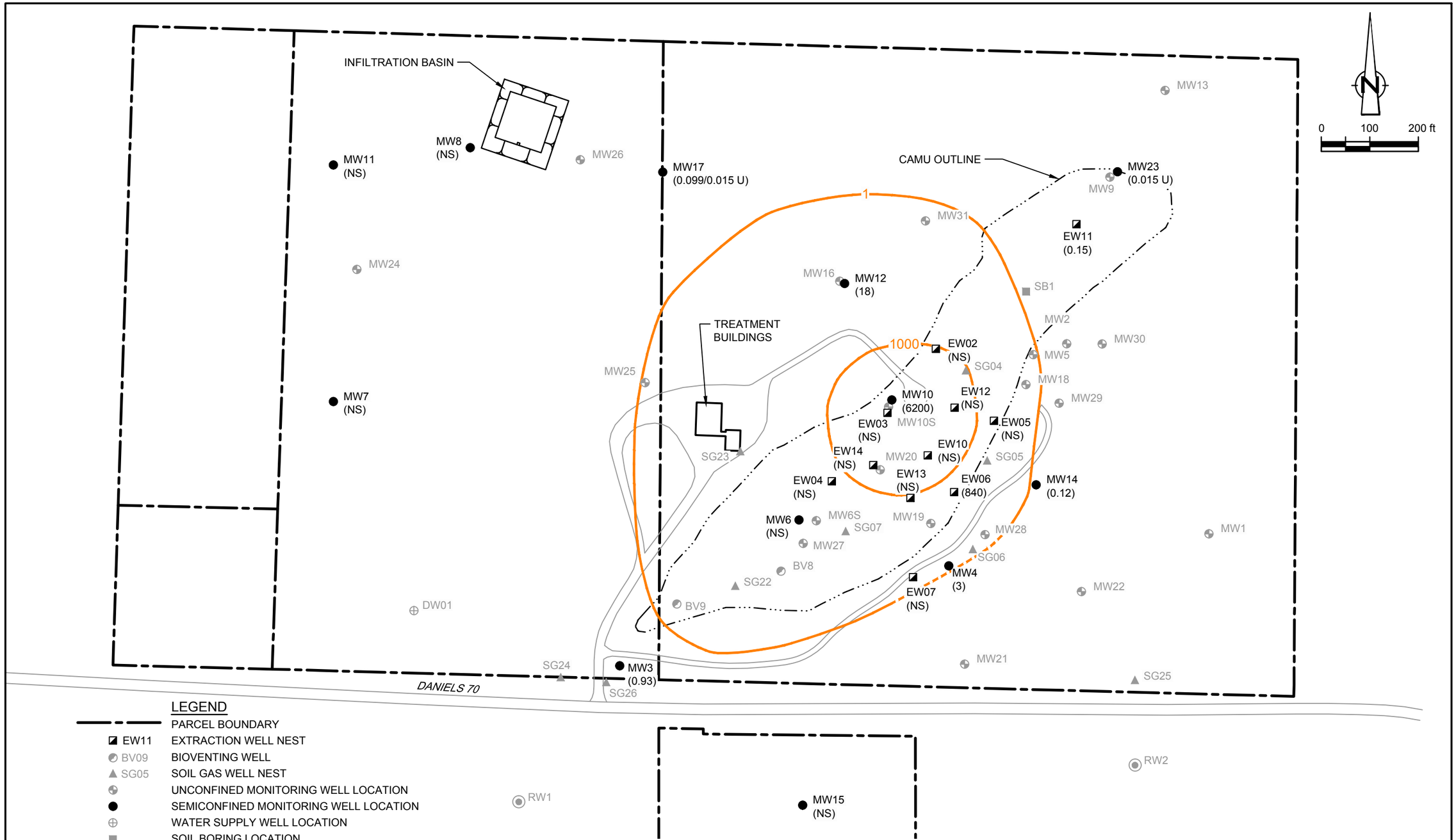
LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
	WATER SUPPLY WELL LOCATION
	SOIL BORING LOCATION
(5.7)	PENTACHLOROPHENOL CONCENTRATION (WITH DUPLICATE) (µg/L)
1	PENTACHLOROPHENOL CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
J	ESTIMATED VALUE
	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.4

UNCONFINED (UPPER) AQUIFER PENTACHLOROPHENOL CONCENTRATIONS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



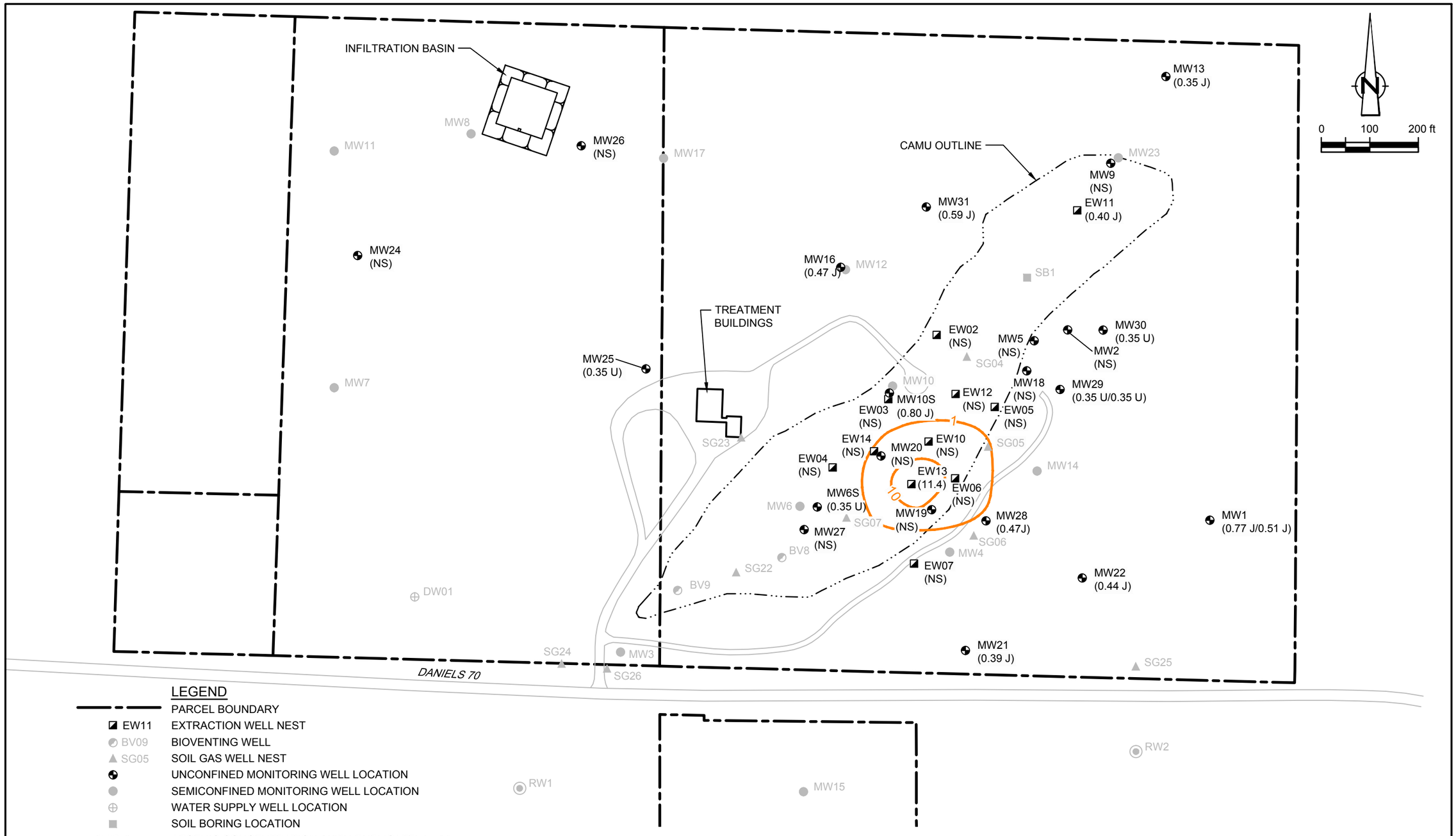
LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
	WATER SUPPLY WELL LOCATION
	SOIL BORING LOCATION
(0.45)	PENTACHLOROPHENOL CONCENTRATION (WITH DUPLICATE) (µg/L)
1	PENTACHLOROPHENOL CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.5

SEMICONFINED (LOWER) AQUIFER PENTACHLOROPHENOL CONCENTRATIONS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



LEGEND

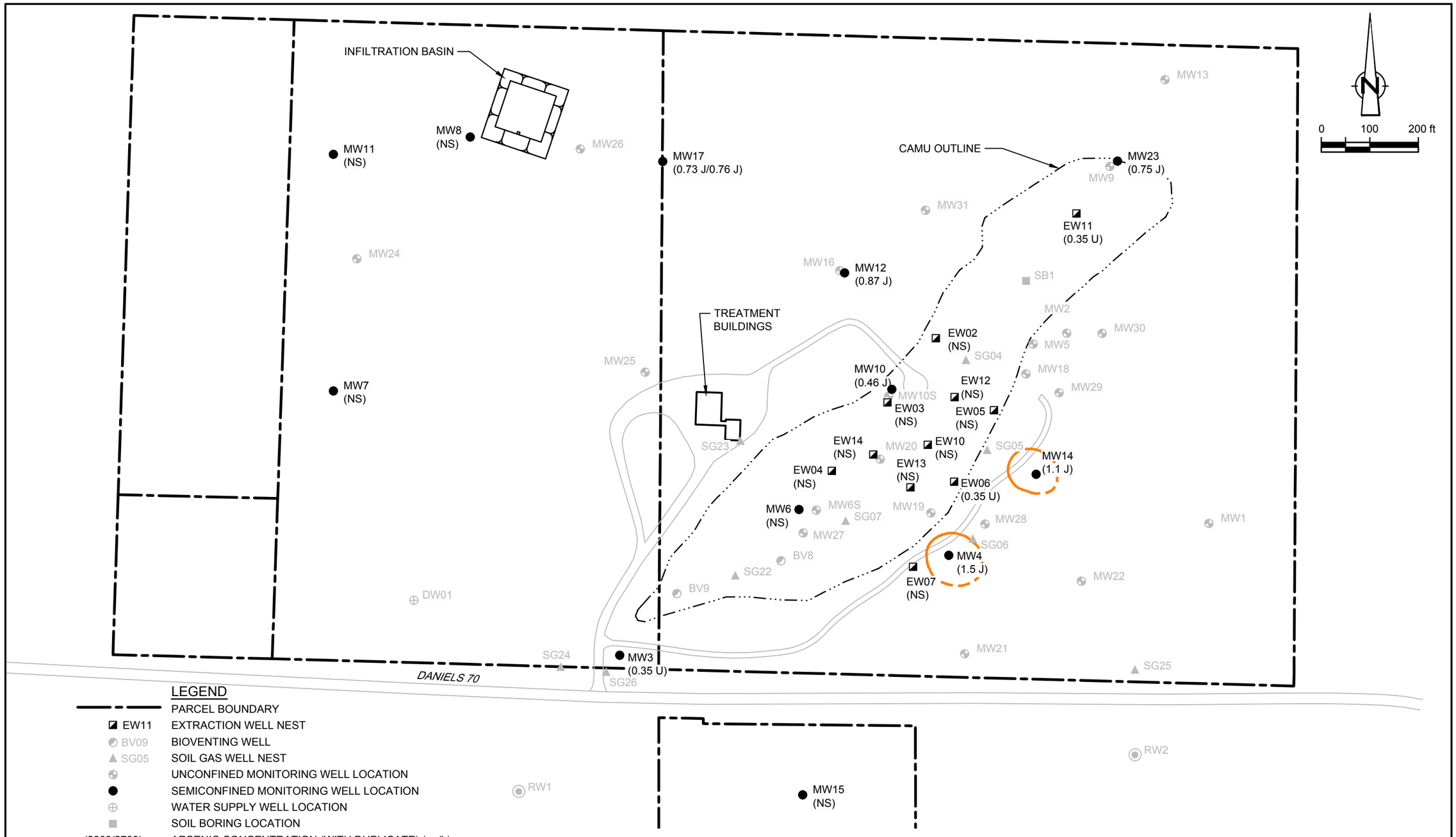
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
	WATER SUPPLY WELL LOCATION
	SOIL BORING LOCATION
(0.38 J)	ARSENIC CONCENTRATION (WITH DUPLICATE) (µg/L)
1	ARSENIC CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
J	ESTIMATED VALUE
	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.6

UNCONFINED (UPPER) AQUIFER ARSENIC CONCENTRATIONS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

86165-03(014)GN-WA006 MAR 6, 2017



LEGEND

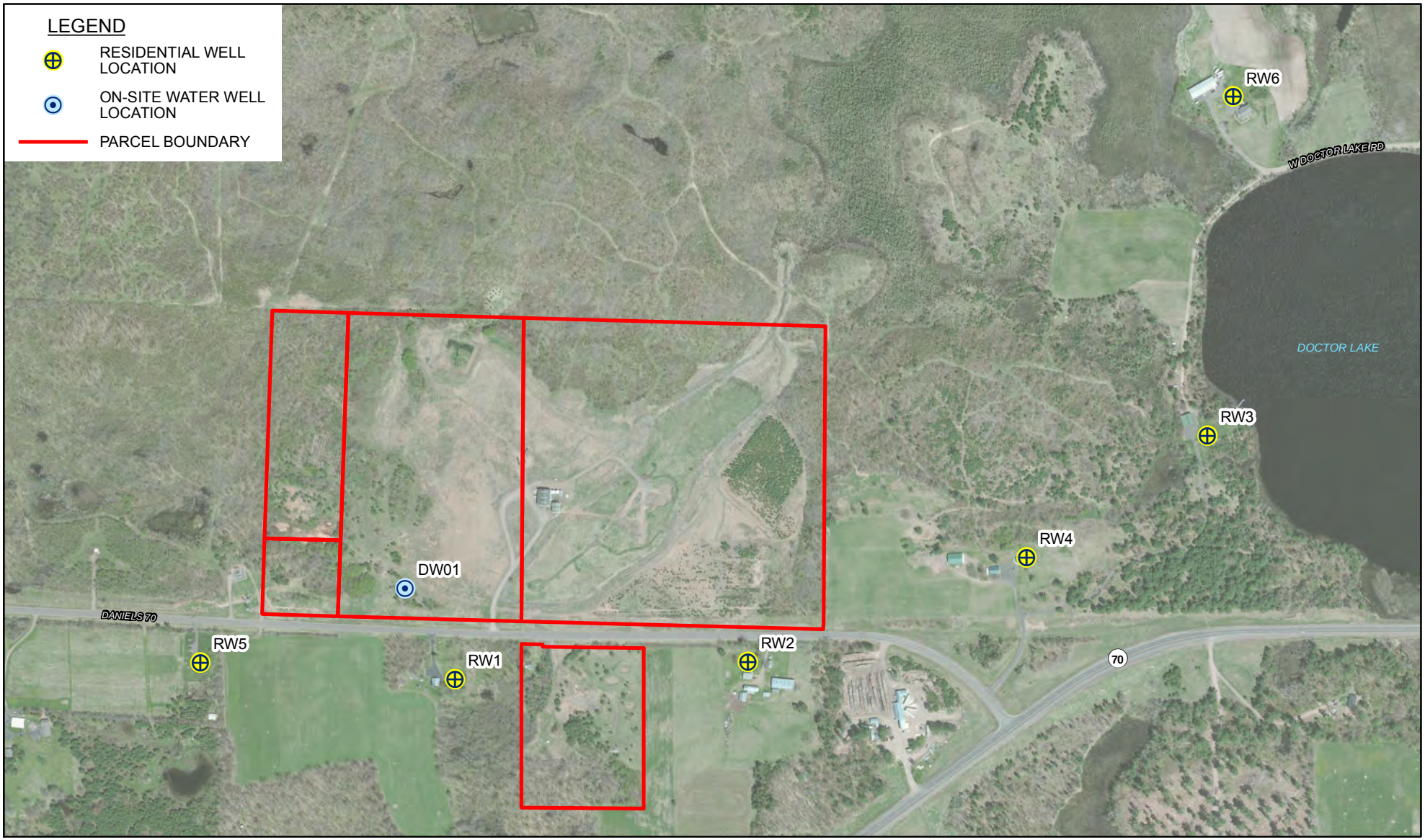
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
	WATER SUPPLY WELL LOCATION
	SOIL BORING LOCATION
(2800/2700)	ARSENIC CONCENTRATION (WITH DUPLICATE) (µg/L)
1	ARSENIC CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
J	ESTIMATED VALUE
	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.7

SEMICONFINED (LOWER) AQUIFER ARSENIC CONCENTRATIONS - JANUARY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

86165-03(014)GN-WA007 MAR 6, 2017



0 200 400 600 ft

N

GHD

PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
QUARTERLY REPORT

086165-04-07
May 3, 2017

RESIDENTIAL WELL LOCATIONS

FIGURE 3.1

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-04(014)\086165-04(014)GIS-SP004.mxd

Table 2.1

Groundwater and LNAPL Level Monitoring Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet btoc)	Depth to LNAPL (feet btoc)	Groundwater Elevation (feet AMSL)	LNAPL Elevation (feet AMSL)	LNAPL Thickness (feet)
Semiconfined Aquifer (Lower)							
MW3	1/11/2017	1129.44	143.39	ND	986.05	NA	0.00
MW4	1/11/2017	1087.74	102.23	ND	985.51	NA	0.00
MW6	1/11/2017	1109.11	123.19	ND	985.92	NA	0.00
MW7	1/11/2017	1096.25	110.56	ND	985.69	NA	0.00
MW8	1/11/2017	1091.13	105.23	ND	985.90	NA	0.00
MW10	1/11/2017	1089.01	103.11	ND	985.90	NA	0.00
MW11	1/11/2017	1085.48	100.18	ND	985.30	NA	0.00
MW12	1/11/2017	1080.91	95.04	ND	985.87	NA	0.00
MW14	1/11/2017	1078.37	92.98	ND	985.39	NA	0.00
MW15	1/11/2017	1127.09	140.90	ND	986.19	NA	0.00
MW17	1/11/2017	1084.43	98.58	ND	985.85	NA	0.00
MW23	1/11/2017	1017.45	31.90	ND	985.55	NA	0.00
EW02D	1/11/2017	1083.00	96.88	ND	986.12	NA	0.00
EW03D	1/11/2017	1089.48	103.39	ND	986.09	NA	0.00
EW04D	1/11/2017	1101.09	114.85	ND	986.24	NA	0.00
EW05D	1/11/2017	1076.99	90.81	ND	986.18	NA	0.00
EW06D	1/23/2017	1083.39	97.20	ND	986.19	NA	0.00
EW07D	1/11/2017	1087.52	101.16	ND	986.36	NA	0.00
EW10D	1/11/2017	1088.55	102.35	ND	986.20	NA	0.00
EW11D	1/11/2017	1048.19	61.90	ND	986.29	NA	0.00
EW12D	1/11/2017	1086.41	100.14	ND	986.27	NA	0.00
EW13D	1/11/2017	1092.88	106.65	ND	986.23	NA	0.00
EW14D	1/11/2017	1098.28	112.11	ND	986.17	NA	0.00

Table 2.1

Groundwater and LNAPL Level Monitoring Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet btoc)	Depth to LNAPL (feet btoc)	Groundwater Elevation (feet AMSL)	LNAPL Elevation (feet AMSL)	LNAPL Thickness (feet)
Unconfined Aquifer (Upper)							
MW1	1/11/2017	1072.27	85.85	ND	986.42	NA	0.00
MW2	1/11/2017	1065.03	78.60	ND	986.43	NA	0.00
MW5	1/11/2017	1071.39	85.39	ND	986.00	NA	0.00
MW6S	1/11/2017	1108.35	121.89	ND	986.46	NA	0.00
MW9	1/11/2017	1019.58	33.19	ND	986.39	NA	0.00
MW10S	1/11/2017	1090.12	103.99	ND	986.13	NA	0.00
MW13	1/11/2017	1005.81	19.43	ND	986.38	NA	0.00
MW16	1/11/2017	1081.95	95.55	ND	986.40	NA	0.00
MW18	1/23/2017	1071.96	NM	85.54	NM	986.42	NA
MW19	1/23/2017	1087.96	105.40	105.22	982.56	982.74	0.18
MW20	1/11/2017	1098.16	111.81	111.79	986.35	986.37	0.02
MW21	1/11/2017	1095.82	109.42	ND	986.40	NA	0.00
MW22	1/11/2017	1084.65	98.27	ND	986.38	NA	0.00
MW24	1/11/2017	1084.04	98.02	ND	986.02	NA	0.00
MW25	1/11/2017	1095.25	109.26	ND	985.99	NA	0.00
MW26	1/11/2017	1086.87	101.02	ND	985.85	NA	0.00
MW27	1/11/2017	1110.96	124.43	ND	986.53	NA	0.00
MW28	1/11/2017	1083.52	97.04	ND	986.48	NA	0.00
MW29	1/11/2017	1070.24	83.78	ND	986.46	NA	0.00
MW30	1/11/2017	1048.98	62.55	ND	986.43	NA	0.00
MW31	1/11/2017	1076.34	89.95	ND	986.39	NA	0.00
EW02S	1/11/2017	1082.25	95.86	ND	986.39	NA	0.00
EW03S	1/11/2017	1088.66	102.31	ND	986.35	NA	0.00
EW04S	1/11/2017	1101.01	114.66	ND	986.35	NA	0.00
EW05S	1/11/2017	1077.04	91.00	90.69	986.04	986.35	0.31
EW06S	1/23/2017	1083.61	NM	97.29	NM	986.32	NA
EW07S	1/23/2017	1087.49	NM	101.18	NM	986.31	NA
EW10S	1/23/2017	1088.72	NM	102.37	NM	986.35	NA
EW11S	1/11/2017	1047.23	60.88	ND	986.35	NA	0.00
EW12S	1/23/2017	1086.31	NM	100.11	NM	986.20	NA
EW13S	1/11/2017	1092.88	106.52	ND	986.36	NA	0.00
EW14S	1/23/2017	1098.32	112.58	112.16	985.74	986.16	0.42

Notes:

btoc - Feet below top of casing
feet AMSL - Feet above mean sea level
NA - Not applicable
ND - LNAPL was not detected in a measurable quantity
NM - Depth to water was not measured at some wells with LNAPL due to a faulty interface probe

Table 2.2

Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW1	1/19/2017	W-170119-PS-08	10:10	0.8	10.59	203	8.4	10.94	6.69	148	-	-
		W-170119-PS-09(Duplicate	10:15	1.6	10.75	201	0.0	10.50	6.84	135	-	-
			10:20	2.4	10.85	200	0.0	9.99	7.22	110	-	-
			10:25	3.2	10.86	198	0.0	10.10	7.23	112	-	-
			10:30	4.0	10.83	197	0.0	10.16	7.23	112	ND	ND
MW3	1/20/2017	W-170120-PS-17	10:50	0.8	9.83	589	133	2.10	7.80	-146	-	-
			10:55	1.6	11.21	628	104	1.01	7.54	-64	-	-
			11:00	2.4	11.53	645	75.9	1.24	7.46	-35	-	-
			11:05	3.2	11.58	647	64.7	1.24	7.55	-38	-	-
			11:10	4.0	11.55	648	64.0	1.31	7.52	-36	-	-
			11:15	4.8	11.68	650	63.1	1.31	7.48	-32	5.6	ND
MW4	1/20/2017	W-170120-PS-16	10:05	1.3	10.16	301	200	0.00	8.13	-235	-	-
			10:10	2.6	10.63	293	19	0.00	8.54	-238	-	-
			10:15	4.0	10.65	292	0	0.00	8.63	-237	-	-
			10:20	5.3	10.66	294	0	0.00	8.57	-230	0.8	ND
MW6S	1/23/2017	W-170123-PS-21	15:55	3.0	10.40	403	41.1	3.81	6.99	37	2.0	ND
MW10S	1/24/2017	W-170124-PS-24(MS/MSD)	9:23	1.3	11.95	464	10.6	0.00	6.47	-5	-	-
			9:28	2.6	12.74	430	5.0	0.00	6.36	0	-	-
			9:33	4.0	12.81	422	4.6	0.00	6.35	0	-	-
			9:38	5.3	12.83	419	5.1	0.00	6.35	-1	0.4	ND
MW10	1/20/2017	W-170124-PS-23	8:50	0.8	11.51	429	0.0	0.00	6.43	-152	-	-
			8:55	1.6	11.71	426	0.0	0.00	6.67	-146	-	-
			9:00	2.4	11.76	427	0.0	0.00	6.77	-147	-	-
			9:05	3.2	11.72	426	0.0	0.00	6.88	-149	-	-
			9:10	4.0	11.59	425	0.0	0.00	6.92	-147	-	-
			9:15	4.8	11.57	425	0.0	0.00	9.98	-144	1.2	ND

Table 2.2

Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW12	1/18/2017	W-170118-PS-03	10:15	0.8	11.27	544	8.6	1.55	7.43	76	-	-
			10:20	1.6	11.69	596	4.3	0.00	7.38	61	-	-
			10:25	2.4	12.09	602	3.2	0.00	7.40	53	-	-
			10:30	3.2	11.96	612	1.9	0.00	7.32	57	-	-
			10:35	4.0	11.98	614	1.9	0.00	7.35	54	-	-
			10:40	4.8	12.02	617	2.0	0.00	7.39	49	ND	ND
MW13	1/19/2017	W-170119-PS-12	13:10	1.3	10.84	128	0.9	4.29	5.99	209	-	-
			13:15	2.0	10.84	130	0.0	3.44	5.80	223	-	-
			13:20	2.6	10.87	130	0.0	3.14	5.66	233	-	-
			13:25	3.3	10.82	131	0.0	2.92	5.62	236	-	-
			13:30	4.0	10.82	131	0.0	2.77	5.64	235	ND	ND
MW14	1/23/2017	W-170123-PS-20	14:10	0.8	10.59	323	21.0	0.00	8.25	124	-	-
			14:15	1.6	10.74	323	0.0	0.00	8.21	100	-	-
			14:20	2.4	10.91	323	0.0	0.00	8.29	71	-	-
			14:25	3.2	10.91	324	0.0	0.00	8.30	69	-	-
			14:30	4.0	10.89	324	0.0	0.00	8.22	63	ND	ND
MW16	1/18/2017	W-170118-PS-04	10:45	3.0	11.95	107	32.0	2.86	7.44	84	1.2	ND
MW17	1/23/2017	W-170123-PS-18	13:08	0.8	11.17	736	0.0	3.87	8.01	151	-	-
		W-170123-PS-19(Duplicate	13:13	1.6	11.78	737	0.0	3.59	7.95	111	-	-
			13:18	2.4	11.74	735	0.0	3.18	7.92	107	-	-
			13:23	3.2	11.73	735	0.0	2.96	7.88	107	-	-
			13:28	4.0	11.75	734	0.0	2.95	7.81	110	ND	ND
MW21	1/18/2017	W-170118-PS-06	12:25	0.8	11.30	404	138.0	8.25	7.02	78	-	-
			12:30	1.6	12.42	367	20.4	7.78	7.27	73	-	-
			12:35	2.4	12.13	370	19.7	7.77	7.41	60	-	-
			12:40	3.2	11.91	369	17.0	7.60	7.18	79	-	-
			12:45	4.0	11.82	372	5.5	7.58	7.10	86	-	-
			12:50	4.8	11.80	375	3.4	7.66	7.19	78	ND	ND

Table 2.2

Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW22	1/18/2017	W-170118-PS-07	13:55	3.0	9.18	152	541.0	3.81	7.10	133	6.0	ND
MW23	1/19/2017	W-170119-PS-13	13:50	2.1	8.82	516	0.0	2.34	7.30	63	-	-
			13:55	4.2	8.85	514	0.0	1.89	7.51	77	-	-
			14:00	6.3	8.85	514	0.0	1.83	7.58	81	-	-
			14:05	8.5	8.85	514	0.0	1.77	7.60	87	ND	ND
MW25	1/18/2017	W-170118-PS-02(MS/MSD)	9:35	1.3	12.75	285	153	7.86	6.99	94	-	-
			9:40	2.6	12.78	284	69	8.00	6.97	97	-	-
			9:45	4.0	12.81	284	49	7.84	6.90	90	-	-
			9:50	5.3	12.75	283	33.3	7.76	6.83	92	0.7	ND
MW28	1/20/2017	W-170120-PS-15	9:19	0.7	10.76	312	0.0	0.00	7.15	28	-	-
			9:24	1.3	11.38	314	0.0	0.00	7.30	23	-	-
			9:29	2.0	11.49	315	0.0	0.00	7.39	27	-	-
			9:34	2.6	11.49	315	0.0	0.00	7.39	28	ND	ND
MW29	1/24/2017	W-170124-PS-27	12:10	1.3	11.69	277	113	0.00	6.49	4	-	-
		W-170124-PS-28(Duplicate	12:15	2.6	12.18	277	69	0.00	6.29	10	-	-
			12:20	4.0	12.35	275	49	0.00	6.15	15	-	-
			12:25	5.3	12.54	274	18.4	0.00	6.07	23	-	-
			12:30	6.6	12.60	273	19.0	0.00	6.06	28	-	-
			12:35	7.9	12.61	273	17.4	0.00	6.04	29	3.0	ND
MW30	1/20/2017	W-170120-PS-14	8:35	0.8	9.60	141	16	0.00	5.73	89	-	-
			8:40	1.6	9.64	140	0.0	0.00	5.88	97	-	-
			8:45	2.4	9.65	140	0.0	0.00	6.02	103	-	-
			8:50	3.2	9.63	140	0.0	0.00	6.07	109	-	-
			8:55	4.0	9.65	141	0.0	0.00	6.11	112	0.6	ND
MW31	1/17/2017	W-170117-PS-01	14:50	1.3	11.68	242	18.0	7.31	6.71	68	-	-
			14:55	2.6	11.33	238	9.6	7.12	6.61	91	-	-
			15:00	4.0	11.52	236	3.0	7.00	6.96	85	-	-
			15:05	5.3	11.58	236	1.8	6.84	6.97	93	-	-
			15:10	6.6	11.61	235	1.2	6.78	7.08	92	-	-
			15:15	7.9	11.62	235	0.9	6.79	6.97	95	ND	ND

Table 2.2

Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
EW6D	1/24/2017	W-170124-PS-26	10:50	1.3	11.39	318	185	0.00	7.75	-184	-	-
			10:55	Wiring problem - Pump shuts off - restart the pump								
			11:25	2.6	11.29	315	97	0.00	7.46	-166	-	-
			11:30	3.9	11.42	315	61	0.00	7.46	-158	-	-
			11:35	5.2	11.42	316	58	0.00	7.43	-155	6.0	ND
EW11S	1/19/2017	W-170119-PS-10	15:00	1.3	9.73	296	10	6.48	6.48	158	-	-
			15:05	2.6	9.86	295	0	5.12	6.33	161	-	-
			15:10	4.0	9.84	295	0	1.43	6.19	156	-	-
			15:15	5.3	9.83	296	0	0.00	6.11	136	-	-
			15:20	6.6	9.82	297	0	0.00	6.09	119	-	-
			15:23	7.4	9.79	297	0	0.00	6.07	111	-	-
			15:26	8.2	9.78	297	0	0.00	6.05	105	1.0	ND
EW11D	1/19/2017	W-170119-PS-11	15:35	1.6	9.54	649	32	0.00	6.80	-81	-	-
			15:40	3.2	9.82	646	29	0.00	6.95	-87	-	-
			15:45	4.8	9.87	648	20	0.00	7.05	-91	-	-
			15:50	6.3	9.92	654	18	0.00	7.07	-88	-	-
			15:55	7.9	9.92	659	16	0.00	7.08	-85	4.4	ND
EW13S	1/23/2017	W-170124-PS-22	15:03	1.5	10.51	714	238	0.00	7.31	-172	-	-
		Purged dry on 1/23/17	15:08	3.0	11.70	699	169	0.00	7.13	-168	-	-
		Record Readings on 1/23/17	15:13	4.5	12.02	700	274	0.00	7.10	-171	-	-
		Sampled on 1/24/17	15:18	6.0	12.92	673	701	0.00	7.05	-163	-	-
			15:23	7.5	13.43	617	825	0.00	6.94	-139	10.0	ND

Notes:

°C - Degrees Celcius
µS - Micro-Siemens
mg/L - Milligrams per liter
MS/MSD - Matrix Spike Sample & Matrix Spike Duplicate Sample
mV - Millivolts
ND - Not Detected
NM - Not Measured
NTU - National Turbidity Units
ORP - Oxidation Reduction Potential (ORP) reported in millivolts (mV)
MW20 and EW7S were not sampled due to the continued presence of LNAPL

Table 2.3

Groundwater Analytical Data - Monitoring and Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Sample Location	Sample Idendification	Sample Date	Alkalinity, total (as CaCO3)	Hardness, carbonate	Chloride[3]	Nitrate (as N)	Sulfate[3]	TOC averages	Methane (dissolved)	Arsenic (dissolved)	Copper (dissolved)	Iron (dissolved)[3]	Manganese (dissolved)[3]	Zinc (dissolved)[3]	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)
		ES[1]	-	-	250	10	250	-	-	10	1300	300	50	5000	1	100	5	700	800	2000
		PAL[2]	-	-	125	2	125	-	-	1	130	150	25	2500	0.1	10	0.5	140	160	400
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Semiconfined Aquifer (Lower)																				
EW11D	W-170119-PS-11	01/19/2017	168	70.0	12.2	3.3 H	129	1.9	8.9	0.35 U	0.51 JB	**897 B**	40.4 B	10.8 J	0.15	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
EW6D	W-170124-PS-26	01/24/2017	124	144	12.3	1.0	5.9	6.4 B	0.25 J	0.35 U	0.70 J	**398 B**	**163 B**	15.4 J	**840**	1.7	0.28 U	0.26 U	0.23 U	1.2 J
MW3	W-170120-PS-17	01/20/2017	230	284	47.3	1.9	14.5	1.6	1.9	0.35 U	2.0 B	**812 B**	16.4 B	6.2 U	0.93	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW4	W-170120-PS-16	01/20/2017	87.9	132	22.7	0.23	11.6	0.53 J	0.92	1.5 J	0.36 U	124 B	37.9 B	6.2 U	**3.0**	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U
MW10	W-170124-PS-23	01/24/2017	158	220	17.4	0.035 U	24.0	19.4 B	8.5	0.46 J	1.9 J	**539 B**	**831 B**	6.2 U	**6200**	10	0.28 U	0.96 J	0.91 J	8.1
MW12	W-170118-PS-03	01/18/2017	203	326	10.7	1.1 H	122	0.89 J	0.13 JB	0.87 J	1.4 JB	8.5 JB	**427**	6.2 U	**18**	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW14	W-170123-PS-20	01/23/2017	129	146	15.8	1.7 H	6.6	0.51 JB	0.080 U	1.1 J	0.62 J	5.3 U	1.6 JB	6.2 U	0.12	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U
MW17	W-170123-PS-18	01/23/2017	202	390	17.4	2.1 H	167	0.81 JB	0.13 J	0.73 J	1.4 J	5.3 U	0.25 U	6.2 U	0.099	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW17 (Duplicate)	W-170123-PS-19	01/23/2017	213	380	17.4	2.1 H	167	0.50 JB	0.080 U	0.76 J	0.66 J	5.3 U	0.25 U	6.2 U	0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW23	W-170119-PS-13	01/19/2017	177	238	35.1	1.8 H	8.2	0.81 J	0.080 U	0.75 J	0.64 JB	5.3 U	0.25 U	6.2 U	0.015 U	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U
Unconfined Aquifer (Upper)																				
EW11S	W-170119-PS-10	01/19/2017	50.5	108	9.8	7.7 H	36.3	4.3	0.20 J	0.40 J	2.2 B	211 B	**157 B**	6.2 U	0.96	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
EW13S	W-170124-PS-22	01/24/2017	297	304	28.0	4.8	12.1	35.8 B	48	**11.4**	3.2	**8700 B**	**2220 B**	6.2 U	**6400**	11	0.28 U	0.70 J	0.62 J	9.3
MW1	W-170119-PS-08	01/19/2017	71.9	88.0	6.7	0.54	4.7	0.65 J	0.080 U	0.77 J	0.76 JB	8.1 JB	0.25 U	6.2 U	0.19	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U
MW1 (Duplicate)	W-170119-PS-09	01/19/2017	71.9	88.0	6.8	0.54	4.8	0.73 J	0.080 U	0.51 J	0.73 JB	5.7 JB	0.25 U	6.2 U	0.30	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U
MW6S	W-170123-PS-21	01/23/2017	188	212	6.6	3.1	6.0	3.8 B	0.080 U	0.35 U	2.8	5.3 U	6.0 B	6.2 U	0.059 J	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U
MW10S	W-170124-PS-24	01/24/2017	164	220	12.3	0.035 U	17.3 F1	23.4 B	0.12 J	0.80 J	2.5	254 B	**624 B**	6.2 U	**9800**	10	0.28 U	0.40 J	0.23 U	5.7
MW13	W-170119-PS-12	01/19/2017	50.8	52.0	0.71 J	0.49 H	3.6	2.2	0.080 U	0.35 J	3.1 B	17.1 JB	1.1 JB	6.2 U	0.33	0.064 U	0.28 U	0.26 U	0.23 U	0.24 U
MW16	W-170118-PS-04	01/18/2017	31.3	46.0	3.2	0.46 H	3.6 F1	1.1	0.080 U	0.47 J	1.3 JB	11.5 JB	1.2 J	6.2 U	0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW21	W-170118-PS-06	01/18/2017	25.4	88.0	86.8	1.8 H	7.4	0.75 J	0.080 U	0.39 J	2.2 B	6.8 JB	0.25 U	6.2 U	**2.9**	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW22	W-170118-PS-07	01/18/2017	58.4	94.0	2.1	0.65 H	3.8	1.1	0.080 JB	0.44 J	3.4 B	186 B	10.6	6.2 U	0.058 J	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW25	W-170118-PS-02	01/18/2017	46.0	112	45.2	2.8 H	4.9	0.78 J	0.080 U	0.35 U	1.2 JB	28.2 JB	0.70 J	6.2 U	**4.9**	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U
MW28	W-170120-PS-15	01/20/2017	113	138	13.4	2.0	6.1	4.9	0.20 J	0.47 J	1.0 JB	5.3 U	10.3 B	6.2 U	**290**	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U
MW29	W-170124-PS-27	01/24/2017	113	120	4.3	0.035 U	6.8	51.4 B	0.40 J	0.35 U	1.9 J	**1400 B**	**3290 B**	6.2 U	**56000**	40	0.28 U	0.98 J	1.2	12
MW29 (Duplicate)	W-170124-PS-28	01/24/2017	112	122	4.3	0.035 U	6.9	49.9 B	0.37 J	0.35 U	3.3	**1380 B**	**3170 B**	6.2 U	**67000**	41	0.28 U	0.90 J	1.3	12
MW30	W-170120-PS-14	01/20/2017	45.9	60.0	2.4	0.80	9.9	1.4	0.080 U	0.35 U	1.0 JB	9.4 JB	**52.8 B**	6.2 U	**5.5**	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U
MW31	W-170117-PS-01	01/17/2017	113	118	0.53 J	0.51 HF1	1.7	0.74 J	0.20 JB	0.59 J	1.4 JB	10.5 JB	0.52 J	6.2 U	0.69	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U

Notes:

[1] - Enforcement Standard (ES) criteria adapted from Table 1 referred to and incorporated by NR 140.10 with except of Iron, Manganese, Zinc, Chloride, and Sulfate (see note 3 below)

[2] - Preventive Action Limit (PAL) criteria adapted from Table 1 referred to and incorporated by NR 140.10 with except of Iron, Manganese, Zinc, Chloride, and Sulfate (see note 3 below)

[3] - Enforcement Standard (ES) and Preventive Action Limit (PAL) criteria adapted from Table 2 referred to and incorporated by NR 140.12

mg/L - Concentrations listed with units of milligrams per liter

ug/L - Concentrations listed with units of micrograms per liter

J - Concentration was between the limit of detection and the limit of quantitation

U - Compound was not detected above the limit of detection

B - Compound was found in the blank and sample

F1 - MS and/or MSD recovery is outside acceptance limits

H - Analysis was performed beyond the specified holding time

^ - Instrument related quality control (QC) is outside of acceptance limits

NA - Not analyzed

- Concentration exceeds the ES

- Concentration exceeds the PAL

Well MW20 was not sampled due to the presence of LNAPL

Table 4.1

Initial Groundwater Characterization Analytical Data - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

Parameters	Date Analyzed / Units	12/4/2015 SB1	4/28/2016 MW29
General Chemistry			
pH	S.U.	6.72	6.71
Ammonia-Nitrogen	mg/L	< 1.0	< 1.0
Orthophosphate-Phosphorus	mg/L	1.85	1.45
Semi-Volatile Organic Compounds			
Pentachlorophenol	µg/L	87	1430
Total Petroleum Hydrocarbons			
TPH(C_9-C_{36})	mg/L	0.176	1540
Total Metals			
Iron	µg/L	27600	10500
Manganese	µg/L	4480	2530
Dissolved Metals			
Dissolved Iron	µg/L	1010	270
Dissolved Manganese	µg/L	3340	2350

Notes:

< - Compound not detected above the reporting limit
S.U. - Standard units
µg/L - Micrograms per liter

Table 4.2

Initial Soil Characterization Analytical Data - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

Parameters	Date Analyzed / Units	12/3/2015 SB1	12/3/2015 MW29
General Chemistry			
pH	S.U.	7.14	6.65
Ammonia-Nitrogen	mg/kg	ND	ND
Orthophosphate-Phosphorus	mg/kg	27.8	20.5
Percent Moisture	%	7.77	4.45
Percent Solids	%	92.2	95.6
Semi-Volatile Organic Compounds			
Pentachlorophenol	mg/kg	0.502	61
Total Petroleum Hydrocarbons			
TPH(C_9-C_{36})	mg/kg	< 50	153
Total Metals			
Iron	mg/kg	6880	8330
Manganese	mg/kg	79.9	94.56

Notes:

ND - Not detected
< - Compound not detected above the reporting limit
J - Estimated value
S.U. - Standard units
mg/kg - Milligrams per kilogram
% - Percent

Table 4.3

Aerobic Biostudy SB1 Groundwater Analytical Data (3-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			3-Month Period		
	Date Analyzed	**1/11/2016**	**4/11/2016**	**4/11/2016**	**4/11/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and Oxygen**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	µg/L	289 / 302	9.29 J / < 50	3.10 J / < 50	362 / 282
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/L	4.61 / 5.10	< 0.5 / < 0.5	< 0.5 / < 0.5	4.45 / 4.28
Removal of Pentachlorophenol	%		94.2	95.2	-8.96
Removal of TPH(C_9-C_{36})	%		41.5	41.5	4.41

Notes:

< - Compound not detected above the reporting limit
µg/L - Micrograms per liter
mg/L - Milligrams per liter
J - Estimated value
All samples were analyzed in duplicate.

Table 4.4

Aerobic Biostudy SB1 Soil Analytical Data (3-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			3-Month Period		
	Date Analyzed	**1/11/2016**	**4/11/2016**	**4/11/2016**	**4/11/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and Oxygen**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	mg/kg	0.087 J / 0.094 J	< 0.1 / < 0.1	< 0.1 / < 0.1	< 0.1 / < 0.1
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/kg	< 50 / < 50	< 50 / < 50	< 50 / < 50	< 50 / < 50

Notes:

J - Estimated value
< - Compound not detected above the reporting limit
mg/kg - Milligrams per kilogram
All samples were analyzed in duplicate.

Table 4.5

Aerobic Biostudy SB1 Groundwater Analytical Data (6-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			6-Month Period		
	Date Analyzed	**1/11/2016**	**8/1/2016**	**8/1/2016**	**8/1/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and Oxygen**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	µg/L	289 / 302	< 50 / < 50	< 50 / < 50	92.7 / 110
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/L	4.61 / 5.10	< 0.5 / < 0.5	< 0.5 / < 0.5	< 0.5 / < 0.5
Removal of Pentachlorophenol	%		91.5	91.5	65.7
Removal of TPH(C_9-C_{36})	%		41.5	41.5	41.5

Notes:

< - Compound not detected above the reporting limit
µg/L - Micrograms per liter
mg/L - Milligrams per liter
J - Estimated value
% - Percent
All samples were analyzed in duplicate.

Table 4.6

Aerobic Biostudy SB1 Soil Analytical Data (6-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			6-Month Period		
	Date Analyzed	**1/11/2016**	**8/1/2016**	**8/1/2016**	**8/1/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and Oxygen**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	mg/kg	0.087 J / 0.094 J	< 0.1 / < 0.1	< 0.1 / < 0.1	< 0.1 / < 0.1
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/kg	< 50 / < 50	< 50 / < 50	< 50 / < 50	< 50 / < 50

Notes:

J - Estimated value
< - Compound not detected above the reporting limit
mg/kg - Milligrams per kilogram
All samples were analyzed in duplicate.

Table 4.7

Anaerobic Biostudy MW29 Groundwater Analytical Data (3-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			3-Month Period		
	Date Analyzed	**5/6/2016**	**8/3/2016**	**8/3/2016**	**8/3/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and EVO**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	µg/L	2460 / 1580	8900 / 9600	3250 / 1240	8600 / 7900
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/L	464 / 501	224 / 224	470 / 308	430 / 428
Removal of Pentachlorophenol	%		<1	<1	<1
Removal of TPH(C_9-C_{36})	%		37.3	29.7	9.19

Notes:

µg/L - Micrograms per liter
mg/L - Milligrams per liter
EVO - Emulsified Vegetable Oil
% - Percent
< - Less than value listed
All samples were analyzed in duplicate.

Table 4.8

Anaerobic Biostudy MW29 Soil Analytical Data (3-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

			3-Month Period		
	Date Analyzed	**5/6/2016**	**8/3/2016**	**8/3/2016**	**8/3/2016**
Parameters	**Units**	**Start of Microcosm Study**	**Soil and Groundwater**	**Soil, Groundwater, and EVO**	**Soil, Groundwater, Oxygen, and Azide**
Semi-Volatile Organic Compounds					
Pentachlorophenol	mg/kg	23.3 / 38.1	3.60 / 2.63	3.20 / 1.68	< 0.1 / < 0.1
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/kg	919 / 2370	1250 / 1440	932 / 983	1400 / 1660

Notes:

< - Compound not detected above the reporting limit
mg/kg - Milligrams per kilogram
EVO - Emulsified Vegetable Oil
All samples were analyzed in duplicate.

Table 4.9

Anaerobic Biostudy MW29 Groundwater Analytical Data (6-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

Parameters	Units	Date Analyzed: 5/6/2016 Start of Microcosm Study	6-Month Period: 11/15/2016 Soil and Groundwater	11/15/2016 Soil, Groundwater, and EVO	11/15/2016 Soil, Groundwater, Oxygen, and Azide
Semi-Volatile Organic Compounds					
Pentachlorophenol	µg/L	2460 / 1580	15000 / 17800	1010 / 1610	6100 / 6500
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/L	464 / 501	105 / 237	149 / 264	295 / 213
Removal of Pentachlorophenol	%		<1	35	<1
Removal of TPH(C_9-C_{36})	%		42.3	51.0	25.40

Notes:

µg/L - Micrograms per liter
mg/L - Milligrams per liter
EVO - Emulsified Vegetable Oil
% - Percent
< - Less than value listed
All samples were analyzed in duplicate.

Table 4.10

Anaerobic Biostudy MW29 Soil Analytical Data (6-Month Period) - Microcosm Study
Penta Wood Products Superfund Site
Siren, Wisconsin

Parameters	Units	Date Analyzed: 5/6/2016 Start of Microcosm Study	6-Month Period: 11/15/2016 Soil and Groundwater	6-Month Period: 11/15/2016 Soil, Groundwater, and EVO	6-Month Period: 11/15/2016 Soil, Groundwater, Oxygen, and Azide
Semi-Volatile Organic Compounds					
Pentachlorophenol	mg/kg	23.3 / 38.1	18.3 / 22.4	11.0 / 10.5	4.69 / 9.53
Total Petroleum Hydrocarbons					
TPH(C_9-C_{36})	mg/kg	919 / 2370	1400 / 1360	1010 / 838	1950 / 1350

Notes:

< - Compound not detected above the reporting limit
mg/kg - Milligrams per kilogram
EVO - Emulsified Vegetable Oil
All samples were analyzed in duplicate.

Table 5.1

Bio-Trap Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Parameters	Sample Date: Units	5/23/2016 MW9	5/23/2016 EW11S	5/23/2016 MW20	5/23/2016 MW29
Biomass and ^{13}C Incorporation					
Total Biomass	Cells/bead	2,280,000	1,100,000	380,000	1,920,000
^{13}C Enriched Biomass	Cells/bead	19,800	14,500	2,170	11,200
Average PLFA $\delta^{13}C$	‰	257	360	276	94
Maximum PLFA $\delta^{13}C$	‰	435	1192	399	232
^{13}C Mineralization					
Inorganic Carbon $\delta^{13}C$	‰	-17	-14	-21	-20
$\%^{13}C$	%	1.09	1.09	1.08	1.08
Community Structure (% Total PLFA)					
Firmicutes	%	0.7	2.68	16.17	52.88
Proteobacteria	%	63.6	65.59	49.44	31.17
Anaerobic Metal Reducers	%	0.18	1.02	6.32	0
Actinomycetes	%	0.34	0.36	1.48	4.4
General	%	34.29	29.85	25.96	11.56
Eukaryotes	%	0.88	0.52	0.64	0

Notes:

δ13C - Del Carbon 13
PLFA - Phospholipid Fatty Acids
‰ - Parts per thousand
% - Percent

Appendix A
Historical Site Data

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1]	Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
			Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
DW01	9/24/03	N		0.5 U		1 U		2		50 UJ			5 UJ		30	0.05 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U		250	66.9		110.8	1.48	2 U		1.5
DW01	9/24/03	N2		0.5 U		1 U		1 U		50 UJ			5 U		40															
DW01	5/4/04	N		10.0 U		0.243 J		61.5 R		194 R	27300		108 R		2710 R	0.102 UB	5.00 U	0.109 J	5.00 U	0.153 J	5.00 U		292	49 =		309	1.8 J	7.9 R		1.54 J
DW01	5/4/04	N2				0.280 J		49.5 R		29.2 R			58.0 R		2590 R															
DW01	9/22/04	N															5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
DW01	9/28/04	N														1.08 =														
DW01	11/1/04	N														0.0962 U														
DW01	5/11/05	N		2.0 U												0.033 J	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U					260 J				
DW01	9/27/05	N														0.040 J	0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
DW01	5/31/06	N		2.0 U		1.0 UJ		140 J		50 UJ			4.0 UJ		1900 J	0.039 J	0.95 U	0.50 U	5.0 U	5.0 U	5.0 U		270 J	29 J		260 J	1.5 J	6.5		1.1 J
DW01	9/26/06	N		2.0 UJ		1.0 UJ		100		50 UJ			15 J		1500 J	0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		230 J	21 J		230 J	0.67 J	13 J		2.1
DW01	5/10/07	N		2.0 UJ		1.0 UJ		100		100 UJ			10 UB		620 J	0.074 J	0.95 R	1.0 UJ	1.0 UJ	1.0 UJ	2.0 UJ		400 =	29		320	1.8	17 J		1.0 UB
DW01	9/19/07	N		2.0 UJ		0.63 J		89		100 UJ			2.4 J		1100	0.093 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		250 J	27		330 J	1.5 J	14 J		0.92 J
DW01	5/20/08	N														0.094 UJ	0.94 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
DW01	10/23/08	N		2.0 UJ		2 UJ		205 J		642 J	33000 J		4.6 J		81.2 J	0.1 U	1 U	0.5 U	2.0 U	2.0 U	5.0 U		297 J	29.6		423 J	1.79 J	9.07		44.4
DW01	6/3/09	N														0.1 U	1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U									
DW01	10/8/09	N														0.1 UJ	0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
DW01	5/19/10	N														0.1 U	1.0 U	0.4 U	5 U	5 U	5 U									
DW01	10/7/10	N														0.1 UJ	0.995 UJ	0.1 U	0.4 U	0.4 U	1 U									
DW01	6/30/11	N														0.1 U	0.999 U	0.1 U	0.4 U	0.4 U	1 U									
DW01	10/18/11	N														0.032 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
DW01	5/23/12	N														0.028 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
DW01	10/18/12	N														0.032 J	0.19 U H	0.50 U	1.0 U	1.0 U	2.0 U									
DW01	5/21/13	N														0.029 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
DW01	10/8/13	N														0.027 J	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U									
DW01	5/13/14	N														0.057 J														
DW01	9/25/14	N														0.54 J	0.060 UJ	0.24 U	0.23 U	0.22 U	0.43 U									
DW01	4/21/15	N														0.023 J	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U									
DW01	10/15/15	FD														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
DW01	10/15/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
DW01	4/5/16	N														0.095 Jp	0.14 J	0.35 U	0.25 U	0.23 U	0.52 U									
DW01	4/5/16	FD														0.097 Jp	0.062 U	0.35 U	0.25 U	0.23 U	0.52 U									
EW02D	4/14/16	N		0.15 J	0.49 J		3.8		299			384		46.7		1 U	1.7	0.35 U	0.25 U	0.23 U	0.52 U		55.0	12.1		70.6	0.70	8.7		4.8
EW02S	4/14/16	N		0.094 J	0.49 U		1.4 J		50.2 J			39.3		7.3 U		0.1 U	2.5	0.35 U	0.25 U	0.23 U	0.52 U		30.0	10.5		41.2	1.0	7.0		2.7
EW03D	4/18/16	N		1.3	2.7 J		9.8		12500 B			1780		398		0.071 J	2.4	0.35 U	0.33 J	0.23 U	3.6		184	13.4		169	0.035 UH	25.6		10
EW03S	4/18/16	N		0.15 J	0.53 J		10.8		1050 B			3530		7.3 U		0.1 U	12	0.70 U	0.50 U	0.46 U	5.2		88.0	73.8		220	0.29 H	39.1		59.1
EW04D	4/18/16	N		0.33 J	0.49 U		2.2		3060 B			316		172		0.05 U	0.16 J	0.35 U	0.25 U	0.23 U	0.52 U		129	16.5		131	1.9	6.0		5.3
EW04S	4/18/16	N		0.12 J	0.49 U		2.4		567 B			385		7.3 U		0.23	0.25	0.35 U	0.25 U	0.23 U	0.52 U		81.0	9.9		98.0	0.92	8.1		7.2
EW05D	4/20/16	N		0.44 J	2.7 J		8.6		8430			1980		372		0.04	19	0.35 U	0.79 J	0.95 J	6.7		145 B	14.4		171	0.035 U	17.0		36.7
EW07D	4/12/16	N		0.59	0.49 U		1.1 J		122			210		7.3 U		0.1 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		127	23.7		174	6.6 H	8.4		1.2
EW10D	4/20/16	N		1.1	6.5		10.3		3350			2200		81.0		0.28	19	0.35 U	1.4	1.8	12		135 B	25.7 F1		180	0.057 JF1	21.8 F1		41.8
EW10D	4/20/16	FD		1.3	7.6		12.1		3720			2170		114		0.24	19	0.35 U	1.3	1.9	12		136 B	23.9		184	0.060 J	20.3		41.0

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Type[3] / Units	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
EW10D	4/20/16	RB		0.49 U		0.89 J		16.0 U			1.1 U		7.3 U		0.134 UB	0.065 U	0.35 U	0.25 U	0.23 U	0.52 U									
EW11D	4/14/16	N	0.080 U	0.49 U		1.1 J		657			22.6		46.4		0.140 UB	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		187	12.7		282	2.0	155		1.0
EW11D	4/14/16	FD	0.080 J	0.49 U		0.75 U		825			27.4		55.9		1.51	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		190	12.8		276	2.0	198		1.2
EW11D	7/19/16	N	1.1	0.49 U		2.7 B		292			54.5		50		0.201	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		151	9.1	242		2.2	112 F1	1.9	
EW11D	10/10/16	N	3.2	0.35 U		0.67 JB		793 B			23.6 B		6.2 U		8.4	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		190	13.6	272		2.7	159	1.0 B	
EW11D	1/19/17	N	8.9	0.35 U		0.51 JB		897 B			40.4 B		10.8 J		0.15	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		168	12.2	70.0		3.3 H	129	1.9	
EW11S	4/14/16	N	0.080 U	0.49 U		3.4		451			63.5		7.3 U		0.0952 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		48.6	7.0		100	8.9	45.1		5.2
EW11S	7/19/16	N	0.080 U	0.49 U		2.3 B		84.2 J			37.3		7.3 U		0.053 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		65.7	7.9	106		6	36.5	2.7	
EW11S	10/10/16	N	0.080 U	0.40 J		3.0 B		114 B			97.9 B		6.2 U		0.70	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		64.7	7.9	118		7.9	39.1	4.7 B	
EW11S	1/19/17	N	0.20 J	0.40 J		2.2 B		211 B			157 B		6.2 U		0.96	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		50.5	9.8	108		7.7 H	36.3	4.3	
EW12D	4/20/16	N	4.0	2.2 J		1.3 J		3820			1620		7.3 U		0.068 J	12	0.35 U	0.58 J	0.50 J	7.2		90.0 B	5.4		80.4	0.035 U	6.4		15.7
EW13D	4/19/16	N	1100	1.6 J		0.75 U		7660 B			956		11.7 J		0.035 J	13	0.35 U	0.27 J	0.32 J	4.8		180	15.1		167	0.093 J	2.0		20.7
EW13S	4/19/16	N	4.9	23.2		37.7		14100 B			2340		13.8 J		0.043 J	2.0	0.35 U	0.26 J	0.23 U	4.2		370	20.7		229	0.035 U	9.6		36.6
EW13S	7/26/16	N	20	58.9		133		45600			2580		52.2		0.049 J	4	0.35 U	0.31 J	0.35 J	4.4		312	21.2	292		0.035 U	7.8	32.6 ^	
EW13S	10/14/16	N	40 B	18.5		30.6 B		15600 B			2360		8.4 J		4200	6.8	0.28 U	0.53 J	0.54 J	7.1		296	25.1	236		0.035 U	11.8	34.7	
EW13S	1/24/17	N	48	11.4		3.2		8700 B			2220 B		6.2 U		6400	11	0.28 U	0.70 J	0.62 J	9.3		297	28.0	304		4.8	12.1	35.8 B	
EW14D	4/19/16	N	4.2	0.49 U		3.4		301			77.4		17.5 J		0.050 J	3.5	0.35 U	0.25 U	0.23 U	2.4		137	12.0		139	0.48 H	7.2		6.5
EW14D	4/19/16	FD	3.5	0.49 U		0.75 U		292			77.8		17.2 J		0.055 J	3.1	0.35 U	0.25 U	0.23 U	2.4		136	11.9		145	0.48 H	7.1		6.3
EW6D	1/24/17	N	0.25 J	0.35 U		0.70 J		398 B			163 B		15.4 J		840	1.7	0.28 U	0.26 U	0.23 U	1.2 J		124	12.3	144		1.0	5.9	6.4 B	
MW1	10/9/97	FD	10 U	1		2.3		3.5 U		20 J			1180		0.048 J		0.1 U	1 U	1 U	1 U		190	16			4.5	5.8		43.5
MW1	10/9/97	FD2				2 U		70.9							0.023 J														
MW1	10/9/97	N	10 U	2		2 U		61.6		20 U			1070		0.11 U		0.1 U	1 U	1 U	1 U		190	18			6.5	6.3		20
MW1	10/9/97	N2		2		2 U		2 U							0.048 J		0.1 U	1 U	1 U	1 U									
MW1	4/24/01	N	0.11 U	0.1 U		2.4		33		9830			642		0.035 J	5.6 U	0.1 U	1 U	1 U	1 U		140	24		218	6.5 =	13		3.89
MW1	4/24/01	N2	0.11 U			1 U		25 U		25 U			15 U		0.27 R											6.5			
MW1	9/11/01	N	10 U	0.5		0.7 J		4 J		35 U			0.79 J		0.093 UJ	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		130	10		170	2.6	8.2 U		3.9
MW1	9/11/01	N2				1.3		25 U		4000			450		0.066 J														
MW1	5/14/02	N				1.4 U		1.6 J		11.2 U			0.48 J		0.060 J														
MW1	8/6/02	N	10.0 U	0.067		1.4 U		7.6 J		1700			180			5 U	1 U	5 U	5 U	5 U		170	7.4		190	0.15 U	7.9		2.6
MW1	8/6/02	N2	10.0 U	0.063		1.7 J		0.3 U		11 U			0.95 J			5 U	1 U	5 U	5 U	5 U		160	7.3		190	0.15 U	7.7		3.7
MW1	8/6/02	N3				1.8 J		9.5 J		2200			230		0.1 U														
MW1	8/6/02	N4				1.4 U		0.3 U		11 U			2.2 J		0.1 UJ														
MW1	4/29/03	N	0.5 U	0.1 U		1 U		14		3160			217		0.1 UJ	7.4 U	0.5 U	5 U	5 U	5 U		174	4.3		187	2.6	10		3.2
MW1	4/29/03	N2	0.5 U			1 U		1 U		25 U			5 U		0.1 UJ														
MW1	9/24/03	N	0.5 U	0.13		1 J		21		7000 J			416			1 U	0.25 U	2.5 U	2.5 U	2.5 U		157	3.3		68.25	2.61	2 U		8.4
MW1	9/24/03	N2	0.5 U			1 U		1 J		100 J			36																
MW1	5/4/04	N	0.863 J	1.06 J		0.346 J		5.73 R		790 R	13900		135 R		0.1 UJ	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		147	4.3 R		158	2.1 J	2.0 R		6.37 J
MW1	5/4/04	N2				0.190 J		0.785 R		29.9 R			15.0 R		0.1 UJ														
MW1	9/21/04	FD	10.0 U	0.442		0.470 J		13.6 J		1210			158		0.1 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		140	2.7 =		1960	1.8 J	4.5 J		7.98
MW1	9/21/04	FD2				0.227 J		0.707 J		21.0 J			3.07 J		0.1 U														
MW1	9/21/04	N	10.0 U	0.348		0.353 J		8.41 J		838			103		0.1 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U		130	2.7 =		776	1.8 J	5.2 J		6.75
MW1	9/21/04	N2				0.218 J		0.605 J		18.0 J			2.60 J		0.1 U														

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1] / Units	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW1	5/10/05	N		2.0 U	0.12		1.0 U		18		3800			360			0.92 U	0.50 U	5.0 U	5.0 U	5.0 U		110 J	3.6 J		140 J	1.7 J	14 R		3.7 R
MW1	5/10/05	N2					1.0 U		10 U		50 U			10 U		0.1 U														
MW1	9/29/05	N		2.0 U	0.12		1.0 J		23 J		4800 J			400 J		0.1 U	1.0 U	0.50 U	5.0 U	5.0 U	5.0 U		110 J	6.2 J		160 J	1.9 J	16 R		2.4 J
MW1	9/29/05	N2					1.0 UJ		10 UJ		50 UJ			3.8 J		0.039 J														
MW1	5/31/06	N		2.0 U	0.049 J		1.0 UJ		10 UJ		50 UJ			10 UJ		0.040 J	1.0 U	0.50 U	5.0 U	5.0 U	5.0 U		110 J	2.3 J		100 J	1.6 J	17		1.7 J
MW1	5/8/07	N		2.0 UJ	0.11 J		1.0 UJ		10 UJ		100 UJ			6.3 J		0.031 R	1.0 R	1.0 U	1.0 U	1.0 U	2.0 U		190 =	2.2 J		130	1.9	15 J		1.9
MW1	9/18/07	N		2.0 UJ	0.093 UJ		1.0 UJ		10 UJ		100 UJ			10 UJ		0.096 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		110 J	9.4		170 J	3.0 J	12 J		1.1 J
MW1	10/21/08	N		2.0 UJ	0.42 UJ		2 U		10 UJ		388	21200		10 U		0.017 J	1.00 U	0.50 U	2.0 U	2.0 U	5.0 U		109	3.91		223 J	1.62 J	6.19		3.38 J
MW1	4/12/16	N		0.080 U	0.49 U		0.75 U		19.9 JB			1.4 JB		7.3 U		0.019 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		79.9 B	5.1		102	0.53	5.2		0.73 J
MW1	7/20/16	N		0.080 U	0.49 U		0.75 U		16.0 U			1.1 U		7.3 U		0.035 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		82.4	5.6	30		0.53	5.2	0.83 J	
MW1	10/12/16	N		0.16 J	0.46 J		0.67 JB		5.3 U			0.96 JB		6.2 U		0.12	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		86.2	7.5	92		0.45 H	5.2	0.59 J	
MW1	1/19/17	N		0.080 U	0.77 J		0.76 JB		8.1 JB			0.25 U		6.2 U		0.19	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U		71.9	6.7	88.0		0.54	4.7	0.65 J	
MW1	1/19/17	FD		0.080 U	0.51 J		0.73 JB		5.7 JB			0.25 U		6.2 U		0.30	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		71.9	6.8	88.0		0.54	4.8	0.73 J	
MW2	10/9/97	N		10 U	1 U		2 U		10.2 J		20 J			50.6		0.033 J		0.1 U	1 U	1 U	1 U		300	3.5			1.1	17		2.6
MW2	10/9/97	N2			1 U		2 U		11.4 J							0.027 J		0.1 U	1 U	1 U	1 U									
MW2	4/5/00	N			0.5 U											0.035 J	10 U													
MW2	6/18/01	N		0.14	0.1 U		0.37 J		25 U		24 U			8.3		0.045 J	5 U	0.1 U	1 U	1 U	1 U		36	5.73		66	38 =	105		5.57
MW2	6/18/01	N2		0.14			6.7		109		39900			1230		0.094 UJ											38			
MW2	9/12/01	N		10 U	0.51		3.9		110		29000			1200		0.095 U	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		49	6.2		140	2.3	10		4.2
MW2	9/12/01	N2					0.29 U		2.2 U		35 U			57		0.094 UJ														
MW2	8/6/02	N		10.0 U	0.12		6.4		30		10000			420		0.095 U	5 U	1 U	5 U	5 U	5 U		66	3		98	0.15 U	10		3.2
MW2	8/6/02	N2					1.4 U		0.3 U		48			18		0.029 J														
MW2	9/24/03	N		0.5 U	0.28		8		100		41300 J			1180		0.031 J	0.99 U	0.25 U	2.5 U	2.5 U	2.5 U		80	1 J		106.2	2.02	3 J		2.3
MW2	9/24/03	N2		0.5 U			1 U		16		3030 J			443		0.040 J														
MW2	9/21/04	N		10.0 UJ	1.26		4.03 J		87.2 J		25800 J			972 J		0.097 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		110 J	12 J		921 J	1.4 J	4.0 R		5.23 R
MW2	9/21/04	N2					0.237 J		3.10 J		662			22.2 J		0.051 J														
MW2	9/28/05	N		2.0 U	2.2 =		6.7		140 J		40000 J			1300 J		0.043 J	0.98 U	0.50 U	5.0 U	5.0 U	5.0 U		150 J	5.6 J		270 J	0.10 UJ	27 R		2.5 J
MW2	9/28/05	N2					1.0 UJ		2.5 J		65 J			9.3 J		0.015 U														
MW2	9/26/06	N		2.0 UJ	2.3		1.0 U		10 UJ		50 U			2.6 UB		0 U	1.7 U	0.50 U	5.0 U	5.0 U	5.0 U		160 J	1.6 J		220	0.12 J	20 J		3.1
MW2	9/19/07	N		2.0 UJ	3.7 J		0.62 J		10 UJ		100 UJ			6.5 J			0.97 R	1.0 U	1.0 U	1.0 U	2.0 U		160 J	3.6		200 J	0.22 J	16 J		2.1 J
MW2	10/21/08	N		2.0 UJ	1.60 J		2 U		10 UJ		424 J	27900		5.20 J		2	1.00 U	0.5 U	2.0 U	2.0 U	5.0 U		138	3.17		276 J	1.10 J	12.90		2.59 J
MW2	10/6/09	N		0.83 UJ	2.21 J		2 UJ		10 UJ		129 J	19000 J		10 UJ		0.9 J	0.996 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		122 J	1.97 J		190.6 J	0.81 J	11.6 J		5.33 J
MW2	10/6/10	N		1.3 U	0.1 U		2 U		8 U		43 J	4680		9.4 J		1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		62	0.6 J		52.5	1.01 J	4.2 J		24
MW2	10/19/11	N		0.50 U	0.097 U		2.0 U		2.2 J+		47 J	9400 B		3.7 J		1 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		63	7.7		93.60	0.50 J	33		1.0 U
MW2	10/16/12	N		0.50 U	0.33		0.82 J		6.2 J		810	8800 =		25		0.1 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		54	4.1		91.2	0.90 J	32 J		6.7
MW2	10/9/13	N		0.50 U	0.94 J		2.0 UJ		10.0 UJ		50 UJ	6900 J		10 UJ		9.5	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *		39 J	2.8			2.9 J	28		4.5 J
MW2	10/9/13	N2														0.1 U											2.9 J			
MW2	9/24/14	N		0.070 U	0.32	0.18 U		0.75 U		16 U			1.4 J		7.3 U	0.1 U	0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		62	0.69 J	68		0.73	2.4	0.50 U	
MW2	10/14/15	N		0.080 U	0.49 U		0.75 J		56.7 J			2.9 J		7.3 U		0.05 U	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		50.7 B	0.55 J	60.3		0.63	2.1	1.3	
MW2	4/14/16	N		0.080 U	1.3 J		20.1		6580			171		19.7 J		0.05 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		34.4	0.51 J		49.0	0.38	1.8		3.6
MW3	10/8/97	N		10 U	1 U		2 U		2 U		257			10.9		0.1		0.1 U	1 U	1 U	1 U		370	42 J			4.4 J	16		1.2
MW3	10/8/97	N2			1 U											0.04 U		0.1 U	1 U	1 U	1 U									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW3	4/4/00	N		0.6 U											0.04 U	12 U													
MW3	4/25/01	N		0.11 U		1 U		25 U		147			7.3		0.11 U	6.1 U	0.1 U	1 U	0.46	1 U		442	47		544	4.42	11		1 U
MW3	4/25/01	N2				1 U		25 U		142			7.9		0.11 U	6.1 U										4.42 =			
MW3	9/13/01	N	10 U	0.092 J		0.29 U		2.2 U		930			31		0.11 U	0.26 U	0.44 U	0.5 U	0.4 U	1.2 U		440	58		480	4	14		1.1
MW3	9/13/01	N2				0.35 J		2.2 U		2400			31		0.0252 UB														
MW3	8/7/02	N	10.0 U	0.11		1.7 J		2.3 J		480			15 J		0.398	5 U	1 U	5 U	5 U	5 U		420	69		540	0.15 U	16		1.4
MW3	8/7/02	N2				1.9 J		0.58 J		160			12 J		0.0962 U														
MW3	9/23/03	N	2.5	0.31		1 U		1 J		150			5 U		0.11 U	1.1 U	0.25 U	2.5 U	2.5 U	2.5 U		357	52.4		160	4.43	2 U		1.6
MW3	9/23/03	N2	2.5												0.11 U														
MW3	9/24/03	N				1 U		1 U		1 U			8 J		0.11 UJ														
MW3	9/21/04	N	5.71 J	0.367		0.189 J		356 J		278 J			6.45 J		0.11 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		430 J	62 J		3250 J	3.5 J	8.9 R		2.16 R
MW3	9/21/04	N2				0.119 J		1.91 J		137 J			4.99 J		0.092 UJ														
MW3	9/28/05	FD													0.093 UJ		0.50 U	5.0 U	5.0 U	5.0 U									
MW3	9/28/05	N	2.0 U	0.20 J		1.0 U		4.9 J		23000 J			93 J		0.095 UJ	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		370 J	62 J		490 J	3.3 J	24 R		1.4 J
MW3	9/28/05	N2				1.0 U		3.0 J		120 J			6.7 J																
MW3	10/21/08	N	4.90 J	0.10 UJ		2.00 U		10 UJ		2140	58700		15.20 J		0.1 U	3.13 U	0.50 U	2.0 U	2.0 U	5.0 U		513	60.50		836	2.73 J	15.20		18 J
MW3	10/7/09	N	21 J	0.1 UJ		2 UJ		10 UJ		722 J	46000 J		12.4 J		0.1 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		482 J	53.8 J		581.46 J	2.55 J	11 J		3.42 J
MW3	10/5/10	N	1.6	0.1 U		2 U		10 U		805	69100		12 J		0.1 UJ	1.0 U	0.1 U	0.4 U	0.4 U	1 U		510	67.2		906	3.62	19.8 J		2.2 J
MW3	10/18/11	N	140	0.58		0.76 J		2 U		510	44000 B		41		0.1 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		510	64		531.00	3.3	16		2.9
MW3	10/16/12	N	13	0.46		0.59 J		10 U		260	41000 =		8.3 J		0.1 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		460	69		493	3.6 J	17 =		2.4
MW3	10/8/13	N	4.3	0.38		0.088 J		10.0 U		50 U	42000 B		8.3 J		0.1 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		390	70			3.5 J	16		1.6
MW3	9/25/14	N	15	0.35	0.18 U		0.75 U		160 B			7.6		7.3 U	0.095 U	0.060 U*	0.24 U	0.23 U	0.22 U	0.43 U		290	72	360		2.1	12	0.91 J	
MW3	10/15/15	FD	5.7	0.49 U		1.2 J		56.6 J			7.9		7.3 U		0.097 U	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		258 B	52.3	312		1.7 J	11.2 F1	1.2	
MW3	10/15/15	N	5.1	0.49 U		0.93 J		58.2 J			7.4		7.3 U		0.037 J	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		258 B	52.5	322		1.7 J	11.1	1.1	
MW3	4/5/16	N	4.4	0.49 U		1.4 JB^		716			20.4 B		7.3 U		0.057 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		224 B	48.2		299	1.4	10.1		0.98 J
MW3	4/5/16	FD	4.2	0.49 U		0.99 JB^		514			18.6 B		7.3 U		0.094 UJ	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		221 B	48.6		283	1.4	10.0		0.94 J
MW3	7/21/16	N	2.5	0.49 U		0.75 U		317 B			16.2		7.3 U		0.095 U	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		215	45.5	248		1.4	9.2	1	
MW3	10/11/16	N	1.5	0.35 U		1.7 JB		171 B			14.8 B		6.2 U		0.45	0.062 U	0.28 U	0.26 U	0.23 U	0.24 U		233	46.8	268		1.8	12.7	1.1 B	
MW3	1/20/17	N	1.9	0.35 U		2.0 B		812 B			16.4 B		6.2 U		0.93	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		230	47.3	284		1.9	14.5	1.6	
MW4	10/9/97	N	139	1 U		2 J		2 U		35.9 J			55.9		0.094 UJ		2	3	1	3		94	7.3			0.1 U	6.3		12.3
MW4	10/9/97	N2		1 U		2 U		2.4 U							0.097 U		2	3	1	3									
MW4	4/4/00	N		0.5 U											0.094 U	10 U													
MW4	1/20/17	N	0.92	1.5 J		0.36 U		124 B			37.9 B		6.2 U		3.0	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U		87.9	22.7	132		0.23	11.6	0.53 J	
MW5	10/10/97	FD	10 U	31000 J		4.3		26.2 J		5070			15500		0.095 U		0.1 U	2	4	18		370	50			0.1 U	16		160
MW5	10/10/97	FD2				4.6		4835 J							0.015 U														
MW5	10/10/97	N	10 U	28000 J		3.8		48.5 J		4860			12900		0.015 U		0.1 U	3	5	21		370	50			0.1 U	15		115
MW5	10/10/97	N2		28000 E		3.2		24 J							0 U		0.1 U	3	5	21									
MW5	4/7/00	N		20600 =												76 U													
MW5	4/26/01	N	0.4	20600		5.6		74		20400			11200		1 U	38	0.22	0.84	1.8	8.1		352	42		349	0.13 U	28		43
MW5	4/26/01	N2	0.4			3.9		25 U		7630			11300		0.1 J														
MW5	9/13/01	N	10 U	6300		3.7		5.1 J		4100			8500		0.1 U	23	0.44 U	0.54 J	0.78 J	4.3		270	29		240	0.17 J	22		27
MW5	9/13/01	N2				8.2		100		26000			8500		0.05 U														

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Compound [1] / Units	Date [2]	Type [3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW5		8/7/02	N		510 J		4.1		28		34500			8130		0.094 J	3.2 J	1 U	5 U	5 U	5 U		220	26		4 U	0.15 U	21		25
MW5		8/7/02	N2				2 J		1.5 J		7900			7840		0.04 U														
MW5		9/25/03	N	0.47 J	1100		4		50		35100			9450		0.11 U	2.5	0.25 U	2.5 U	2.5 U	2.5 U		228	22.1		78.48	0.05 U	20		6.2
MW5		9/25/03	N2	0.47 J			3		7		13400			8320		0.11 U														
MW5		9/22/04	N	10.0 UJ	194		0.488 J		17.3 J		30500			7150		0.0952 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		250 J	29 J		1490 J	0.01 R	24 R		18.8 R
MW5		9/22/04	N2		214 E		0.612 J		1.44 J		7480 J			5650 J		2.18														
MW5		9/28/05	N	2.3	1100 =		1.0 UJ		6.0 J		18000 J			7600 J		0.0962 U	1.8	0.50 U	5.0 U	5.0 U	5.0 U		260 J	18 J		480 J	0.10 UJ	35 R		7.4 J
MW5		9/28/05	N2				1.0 UJ		10 UJ		19000 J			7600 J		0.11 U														
MW5		9/26/06	N	8.7 J	460 =		1.0 UJ		10 UJ		23000 J			8000 J		0.11 U	1.4 U	0.50 U	5.0 U	5.0 U	5.0 U		290 J	16 J		370	0.10 J	27 J		6.6
MW5		9/20/07	N	9.8	31 J		1.0 UJ		10 UJ		25000			7600		0.11 UJ	0.74 R	1.0 U	1.0 U	1.0 U	2.0 U		230 J	13		270 J	0.10 U	39 J		4.1 J
MW5		10/22/08	N	11 J	206		2 UJ		10 UJ		10500 J	31400 J		9700 J		0.11 U	1 U	0.5 U	2.0 U	2.0 U	5.0 U		267 J	8.68		357 J	0.05 U	24.8		30.5
MW5		10/7/09	N	17 J	33.3 J		2 UJ		10 UJ		6000 J	33600 J		11800 J		0.092 UJ	0.998 UJ	0.1 UJ	0.4 UJ	0.4 UJ	0.14 J		256 J	8.59 J		344.62 J	0.05 UJ	55.1 J		3.5 J
MW5		10/6/10	N	4.1	39.8 J		3.36 J		8 U		3030	43600		12600		0.093 UJ	1.0 U	0.1 U	0.4 U	0.4 U	1 U		274	11.4 J		437	0.10 UJ	79.4		4.2
MW5		10/19/11	N	38 J	0.97		1.0 J		2 U		2600	40000 B		11000		0.097 UJ	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		260	15		397.00	0.10 U	150		2.6
MW5		10/17/12	N	17	0.59 J		0.57 J		10 U		2700	29000 =		7000			0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		180	11		302	0.10 U H	130 =		1.8
MW5		10/10/13	N	19	0.60		0.39 J		10.0 UJ		2200 J	20000 J		4700 J		0.1 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		150 B	9.2 J			0.10 UJ	140 J		1.8
MW5		9/24/14	FD	10	12	0.42 J		0.75 U		1200 B			2200		7.3 U	0.1 UJ	0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		97	4.3	150		0.12	48	0.50 U	
MW5		9/24/14	N	12	12	0.41 J		0.75 U		1200 B			2200		7.3 U	0.1 UJ	0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		100	4.3	150		0.14	48	2.3	
MW5		10/14/15	N	1.8 B	0.49 U		0.75 U		954			2230		7.3 U		0.1 U	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		98.7 B	12.7	159		0.053 J	48.9	3.3	
MW5		4/7/16	N	4.3	0.49 U		0.75 U		931			1990		7.3 U		0.1 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		72.0 B	12.7		113	0.97 H	38.0		4.6 B
MW5		4/7/16	FD	4.9	0.49 U		0.75 U		940			2070		7.3 U		0.1 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		71.3 B	12.5		113	0.96	37.6		4.5 B
MW6		4/19/16	N	0.78	0.49 U		5.2		282			5.6		9.0 J		0.095 U	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		183	35.0		245	10.2 H	26.3		6.2
MW6		4/19/16	FD		0.49 U		0.75 U		16.0 U			3.2 J		7.3 U		0.097 U	0.066 U	0.35 U	0.25 U	0.23 U	0.52 U									
MW6S		10/9/97	N	10 U	1 U		5.1		473		20 U			4720		0.015 J		0.1 U	1 U	1 U	1 U		62	72 J			4.5	0.9		1.6
MW6S		10/9/97	N2		1 U		2 U		2 U							0.095 U		0.1 U	1 U	1 U	1 U									
MW6S		4/26/01	N	0.12 U	2.5		15		202		82800			1950		0.095 UJ	5.4 U	0.1 U	1 U	1 U	1 U		148	14		285	0.87	12		5.29
MW6S		4/26/01	N2	0.12 U			0.26		25 U		25 U			347		0.053 J														
MW6S		9/12/01	N	10 U	1.1		7.4		190		42000			1900		0.096 U	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		160	12		290	1.1	16		6.3
MW6S		9/12/01	N2				0.58 J		3.1 J		35 U			800		0.095 U														
MW6S		8/7/02	N	270	88 J		5.5		69.1		7570			2210		0.015 U	5 U	1 U	5 U	5 U	5 U		270	17		4 U	0.15 U	18		5.8
MW6S		8/7/02	N2				2.7		9.9 J		3330			1790		0.015 U														
MW6S		9/25/03	N	130	0.33		1 J		22		5900			1190		0.015 U	1 U	0.25 U	2.5 U	2.5 U	2.5 U		282	23.9		104	1.01	17		8.2
MW6S		9/25/03	N2	130			1 J		9		1100			961		0 U														
MW6S		9/27/06	N	3.5 J	0.21		1.0 U		2.6 J		50 U			590			1.1 U	0.50 U	5.0 U	5.0 U	5.0 U		320 J	18		350	3.9 =	18		4.1
MW6S		9/20/07	FD	2.7	0.14 J		1.0 UJ		10 UJ		390			190		1 U	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		230 J	29		330 J	4.7	36 J		5.2 J
MW6S		9/20/07	N	3.0	0.099 J		1.0 UJ		10 UJ		510			200		0.1 U	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		230 J	30		320 J	4.7	34 J		4.7 J
MW6S		10/23/08	N	2.0 UJ	2.65		2 UJ		4.4 J		438 J	6260 J		65.3 J		0.073 J	1 U	0.5 U	2.0 U	2.0 U	5.0 U		4.98 J	28.3		90 J	7.11 J	11		8.3
MW6S		10/7/10	N	1.3 U	0.1 UJ		2 U		5 J		531	4780		19.7 J		0.1 U	1.0 UJ	0.5 UJ	2 U	2 U	5 U		11 UB	21.3		56.9	6.94 J	11 J		6.8
MW6S		10/19/11	N	0.50 U	0.10 U		2.0 U		3.7 J		50 U	4400 B		14		0.05 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		15	17		45.60	5.3	9.8		1.0 U
MW6S		10/17/12	N	0.50 U	0.10 U		0.54 J		10 U		50 U	4600 =		3.9 J		0.13	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		18	16		51.4	5.5 H	11 J		3.2
MW6S		10/9/13	N	0.50 U	0.52 J		2.0 UJ		10.0 UJ		1500 J	6000 J		32 J		0.04 U	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *		5.0 UJ	29			9.0 J	9.5		8.0 J
MW6S		10/9/13	N2													0.11 U											8.9 J			

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1] / Units	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW6S	9/24/14	N		0.082 J	0.27	1.3 J		27		6000 B			110		41 B	0.11 U	0.062 U	0.24 U	0.23 U	0.22 U	0.43 U		22	9.3	100		3.6	7.3	0.50 U	
MW6S	10/14/15	N		0.080 U	0.49 U		2.5		16.8			1.4 J		7.3 U		0.100 U	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		12.5 B	10.8	76.4		3.6	6.7	3.4	
MW6S	4/19/16	N		0.080 U	0.51 J		4.7		831 B			15.4		7.3 U		0.266	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		42.0	7.4		70.6	4.8	6.3		18.2
MW6S	7/25/16	N		0.080 U	0.49 U		3.4 B		118 B			6.1		7.3 U		0.0962 R	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		49.4	13.8	86		7.7 F1	8	3.7	
MW6S	10/13/16	N		0.080 U	0.71 J		19.7 B		2290 B			52.7		11.7 J		0.20	0.061 UH	0.28 U	0.26 U	0.23 U	0.24 U		126	14.5	152		6.9 H	8.1	4.2 ^	
MW6S	1/23/17	N		0.080 U	0.35 U		2.8		5.3 U			6.0 B		6.2 U		0.059 J	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U		188	6.6	212		3.1	6.0	3.8 B	
MW7	10/14/97	N		10 U	1 U		2 U		6.2		622			13.4		0.11 U		0.1 U	1 U	1 U	1 U		350	7.6			4.9	6		1.6
MW7	10/14/97	N2			1 U		2 U		2 U							0.11 U		0.1 U	1 U	1 U	1 U									
MW7	4/4/00	FD			0.5 U											0.11 UJ	10 U													
MW7	4/4/00	N			0.5 U											0.11 U	10 U													
MW7	4/25/01	N		4.65	0.1 U		1 U		25 U		352			5.4		0.093 UJ	5.2 U	0.1 U	1 U	1 U	1 U		352	8.36		388	3.63	6.54		2.8
MW7	4/25/01	N2		4.65			1 U		25 U		154			6.6		0.093 UJ	5.2 U										3.63 =			
MW7	9/11/01	N		12	0.083 J		0.4 J		2.2 U		560			6.4		0.093 UJ	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		340	23		410	3	10		2
MW7	9/11/01	N2		10 U	0.13 J		0.29 U		2.2 U		230			4.4			0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		350	24		400	3	10		1.8
MW7	9/11/01	N3					0.47 J		2.2 U		560			5.7		0.1 U														
MW7	9/11/01	N4					0.29 U		2.2 U		230			4.6		0.1 UJ														
MW7	8/7/02	N		10.0 U	0.03 J		1.5 J		0.3 U		730			6.5 J		0.15 J	5 U	1 U	5 U	5 U	5 U		390	21		450	0.15 U	10		1.5
MW7	8/7/02	N2					1.4 U		0.3 U		300			4 J		0.1 UJ														
MW7	9/24/03	N		4.9	0.044 J		1 U		1 U		280 J			6 J		0.1 U	0.96 U	0.25 U	2.5 U	2.5 U	2.5 U		346	12.2		133.3	2.97	2 U		1.2
MW7	9/24/03	N2		4.9			1 U		1 U		90 J			5 U		0.1 U														
MW7	9/22/04	N		10.0 UJ	9.18 E		1.00 UJ		1.09 J		1640 J			9.86 J		0.1 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		300 J	7.2 J		1560 J	3.4 J	6.8 R		1.98 R
MW7	9/22/04	N2			5.75		0.108 J		0.847 J		25.0 UJ			9.75 J		0.095 U														
MW7	9/27/05	N		2.0 UJ	0.12 U		1.0 U		10 U		1300			18		0.094 U	0.91 UJ	0.50 U	5.0 U	5.0 U	5.0 U		260 J	18 J		450	1.8 J	130 J		0.96 J
MW7	9/27/05	N2					1.0 U		10 U		880			16 J		0.071 J														
MW7	9/26/06	N		4.3 J	0.087 J		1.0 U		10 U		50 U			68 J		0.095 U	0.92 U	0.50 U	5.0 U	5.0 U	5.0 U		280 J	15		390	1.8 =	110 =		2.4
MW7	9/20/07	N		3.7	0.093 U		1.0 UJ		10 UJ		260			22		0.094 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		270 J	16		370 J	1.5	170 J		1.1 J
MW7	10/22/08	N		110 J	0.1 U		2 UJ		4 J		926 J	37700 J		41.6 J		0.094 U	1 U	0.5 U	2.0 U	2.0 U	5 U		277 J	14.1		535 J	1.54 J	98.9		4.16
MW7	10/22/08	N2														0.095 U														4.41
MW7	10/7/09	N		2.4 J	0.403 J		2 UJ		10 UJ		687 J	32600 J		109 J		0.023 J	0.999 UJ	0.1 UJ	0.4 UJ	0.4 UJ	0.14 J		245 J	12.2 J		396.43 J	1.91 J	152 J		14.5 J
MW7	10/6/10	N		28	0.1 U		2 U		8 U		989	38900		63.2		0.015 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		226	13.8 J		482	2.24 J	168		10.4
MW7	10/19/11	N		15	0.098 U		0.48 J		2 U		81	21000 B		21		0.015 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		230	12		249.00	1.9 J	92		1.5 J
MW7	10/17/12	N		2.2	0.096 U		2.0 U		10 U		230	21000 =		22		0 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		210	11		254	1.5 H	120 =		0.97 J
MW7	10/9/13	N		2.2 B	0.094 U		0.34 J		10.0 UJ		10000 J	21000 J		74 J			0.19 U	0.50 U	1.0 U	1.0 U	2.0 U *		200 J	12			1.8 J	120		0.75 J
MW7	10/9/13	N2														0.0935 U											1.8 J			
MW7	9/23/14	N		15	0.034 J	0.28 JB		0.75 U		260			33		30 B	0.293	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		200	9.0	240		1.9 H	110	0.96 J	
MW7	10/12/15	N		6.5 B	0.88 J		1.6 J		16.0 U			423		7.3 U		0.0962 U	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		228 B	8.3	229		1.5	46.2	0.85 J	
MW7	4/6/16	N		13	0.49 U		1.9 JB^		5270 B			117 B		36.2 B		0.11 U	0.065 U	0.35 U	0.25 U	0.23 U	0.52 U		212 B	10.3		237	1.7	25.7		0.58 J
MW8	10/14/97	N		36.5	1 U		2 U		2 U		148			17.8		0.11 U		0.1 U	1 U	1 U	1 U		170	4.2			1.4	4.5		2.3
MW8	10/14/97	N2			1 U		2 J		2 U							0.11 UJ		0.1 U	1 U	1 U	1 U									
MW8	4/5/00	N			0.5 U											0.11 U	10 U													
MW8	4/25/01	N		11.6	0.2		0.99		25 U		829			32		0.092 UJ	5 U	0.1 U	1 U	1 U	1 U		154	3.25		181	1.52	7.47		1.46
MW8	4/25/01	N2		11.6			0.75		25 U		25 U			27		0.093 UJ														

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Compound [1] / Units	Date [2]	Type [3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW8		4/25/01	N3				0.57		25 U		25 U			22		0.095 UJ														
MW8		9/11/01	N	10 U	0.062 J		1		2.2 U		70 J			18			0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		150	3.8		170	1.5	7.6 U		1 J
MW8		9/11/01	N2				1.2		2.2 U		350			19		0.1 U														
MW8		8/8/02	N	10.0 U	0.04 U		1.4 U		0.3 U		98			6.4 J		0.1 UJ	5 U	1 U	5 U	5 U	5 U		180	4.2		310	0.15 U	6		1.1
MW8		8/8/02	N2				1.8 J		0.27 U		11 J			5.3 J		0.1 UJ														
MW8		9/25/03	N	8.9	0.047 J		1 U		1 U		140			8 J		0.1 U	0.95 U	0.25 U	2.5 U	2.5 U	2.5 U		182	11		69.57	2.61	2 U		1.7
MW8		9/25/03	N2	9.2	0.11 U		1 U		1 U		50 U			8 J		0.1 U	1 U	0.25 U	2.5 U	2.5 U	2.5 U		184	11		69.44	2.6	2 U		2.3
MW8		9/25/03	N3	9.2			1 U		1 U		240			8 J		0.1 U														
MW8		9/25/03	N4				1 U		1 U		50 U			6 J		0.095 U														
MW8		9/23/04	N	3.75 J	1.94 =		0.127 J		0.465 J		256			15.1		0.095 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		200	15		1160	2.4 J	5.8 J		1.40
MW8		9/23/04	N2				0.539 J		0.660 J		11.0 J			12.0 J		0.030 J														
MW8		9/28/05	FD	2.0 U	0.12 U		1.0 UJ		2.3 J		4500 J			56 J		0.095 UJ	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		160 J	19 J		200 J	2.0 J	19 R		1.0 J
MW8		9/28/05	FD2				1.0 UJ		10 UJ		120 J			13 J		0.095 U														
MW8		9/28/05	N	2.6	0.031 J		1.0 UJ		3.8 J		4700 J			63 J		0.095 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		160 J	20 J		240 J	2.0 J	19 R		1.2 J
MW8		9/28/05	N2				1.0 UJ		10 UJ		130 J			16 J		0.098 U														
MW8		9/20/07	N	2.0 UJ	0.093 U		0.61 J		10 UJ		210			13 J		0.095 U	0.93 U	1.0 U	1.0 U	1.0 U	2.0 U		180	21		260 J	1.5	76 J		1.1 J
MW8		10/22/08	N	0.78 J	0.1 U		2 UJ		10 UJ		707 J	40400 J		13.1 J		0.015 U	1 U	0.5 U	2.0 U	2.0 U	5 U		178 J	24.3		496 J	1.92 J	73.1		16.1
MW8		4/11/16	N	1.5	0.60 J		0.75 U		197 B			10.9 B		7.3 U		0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		174 B	18.0		421	1.3 H	201		0.26 J
MW9		10/8/97	N	10 U	1 U		2 U		4.2 U		20 U			19.7		0.016 U		0.1 U	1 U	1 U	1 U		60	45			4.2	3.4		6.5
MW9		10/8/97	N2		1 U											0.015 U		0.1 U	1 U	1 U	1 U									
MW9		4/5/00	N		0.6 =											0.015 U	10 U													
MW9		4/23/01	N	0.12 U	0.12		0.38		25 U		470			46		0.015 U	5.3 U	0.1 U	1 U	1 U	1 U		60	3.22		59	2.46 =	27		9.94
MW9		4/23/01	N2	0.12 U												0.018 J											2.46			
MW9		4/24/01	N				0.28		25 U		25 U			34		0.015 U														
MW9		9/12/01	N	10 U	0.76		0.43 J		6.1 J		300			27		11 J	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		62	6.5		64	3.3	6.8 U		5.1
MW9		9/12/01	N2				0.34 J		2.2 U		110			16		6.6 J														
MW9		8/6/02	N	10.0 U	0.54		1.4 U		1.6 J		200			14 J		6.4 J	5 U	1 U	5 U	5 U	5 U		64	11		95	0.15 U	22		8.4
MW9		8/6/02	N2				1.4 U		0.3 U		11 U			6.3 J		9.6 J														
MW9		9/25/03	N	0.5 U	2.3		1 J		20		7400			229		20 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U		59	4.4		32.83	2.36	24		6.5
MW9		9/25/03	N2	0.5 U			1 U		1 U		240			16		10 U														
MW9		9/22/04	N	10.0 UJ	2.92		0.134 J		2.07 J		231 J			16.5 J		4.60 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		58 J	3.2 J		776 J	1.8 J	26 R		6.48 R
MW9		9/22/04	N2				0.265 J		2.88 J		125 U			8.51 J		14.9 J														
MW9		9/27/05	N	2.0 UJ			1.0 UJ		10 U		50 U			6.3 J		20 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		55 J	2.6 J		70	1.9 J	20 J		2.0
MW9		9/27/05	N2				1.0 UJ		10 U		50 U			5.4 J		20 U														
MW9		10/18/05	N		0.57																									
MW9		9/21/07	N	2.0 U	0.37 J		1.0 UJ		5.9 J		100 UJ			4.1 J		20 UJ	0.97 R	1.0 U	1.0 U	1.0 U	2.0 U		58 J	2.6		86 J	3.8	15 J		3.3 J
MW9		10/22/08	N	2.0 UJ	0.1 U		2 UJ		6 J		166 J	11600 J		10 UJ		20 UJ	1 U	0.5 U	2.0 U	2.0 U	5 U		55 J	3.44		113 J	2.48 J	14.9		11.2
MW9		5/18/10	N	1.3 U	0.073 J		2 UJ		10 UJ		120. UJ	6230. J		7.1 J		20 UJ	1.0 U	0.5 U	5 U	5 U	5 U		63 UB	2.63		67.9	2.42 J	11		25.7 UB
MW9		10/6/10	N	1.3 U	0.1 U		2 U		8 U		109 J	8540		16.7 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		27	3.3 J		88.1	3.35	14 J		7.6
MW9		10/19/11	N	0.50 U	0.098 U		2.0 U		3.5 J+		50 U	8400 B		2.9 J		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		69	1.0 U		82.00	3.1	8.9		1.0 U
MW9		10/16/12	N	0.50 U	0.39		0.91 J		10 U		50 U	8400 =		10 U		20 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		63	2.8 J		82	5.9 J	10 J		3.8
MW9		10/9/13	N	0.50 U	0.41 J		2.0 UJ		10.0 UJ		50 UJ	6200 J		10 UJ		20 UJ	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *		47 J	1.2			3.8 J	12		1.6 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW9	10/9/13	N2																								3.8 J			
MW9	9/24/14	N	0.070 U	1.6	0.18 U		0.75 U		16 U			1.1 U		7.3 U		0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		14	1.1	41		2.4	10	2.5	
MW9	10/13/15	N	0.080 U	0.49 U		1.3 J		21.1 J			1.1 U		7.3 U		0.17	0.066 U	0.35 U	0.23 U	0.25 U	0.52 U		31.0 B	0.70 J	40.2		1.5 H	7.4	4.4	
MW9	4/13/16	N	0.080 U	0.49 U		1.4 J		33.6 J			1.5 J		7.3 U		0.28	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		26.6	0.99 J		37.2	1.4	7.3		30.2
MW10	10/15/97	N	13.5	8200 J		1.4		9.1		2190			2510 J		4.4		0.2	2	3	17		340	35			4.9	13		20
MW10	10/15/97	N2		8200 E		2 J		2.8 U							9.2		0.2	2	3	17									
MW10	4/6/00	N		9530 J												60 =													
MW10	4/6/00	N2		12900 =												5410 U													
MW10	4/26/01	N	2.9	22800		3.1		98		25200			2560		44	5.2 U	0.4	3.3	5.3	27		472	48		505	0.18	22		26
MW10	4/26/01	N2	2.9			2.4		5.9		5650			2380		25 U														
MW10	9/12/01	N	10 U	21000		3.9		3.9 J		2400			3200		9.5 J	130	0.44 U	6.3	10	55		540 J	61		630	0.13 J	23		64
MW10	9/12/01	N2				4.5		40		20000			3300		13														
MW10	8/7/02	N	11	22000 J		9.5		48.2		24400			2730		2.8 J	120	1 U	7	11	54		400	56		480	0.15 U	20		110
MW10	8/7/02	N2				7.3		10.1 J		10700			2540		6.1 J														
MW10	10/1/03	N	0.62	9000		2 J		30		5470			1960		10 J	18	0.25 U	2.5 U	2.5 U	13.5		287	22		93.58	0.05 U	3 J		25.3
MW10	10/1/03	N2	0.62			2 J		8		2590			1850		10 U														
MW10	9/23/04	N	10.0 U	38000 =		2.66		28.3		3550			2550		5.58 J	173 E	0.296 J	5.58 J	8.09 J	47.1		390	38		1640	0.0018 J	18 =		54.1
MW10	9/23/04	N2				3.01		12.4 J		24.1 J			1810		4.23 J	160													
MW10	9/27/06	N	2.0 UJ	23000 J		1.0 U		4.3 J		120			2600		20 U	50	0.50 U	2.0 J	1.7 J	16		450 J	14		440	0.10 U	24 =		21
MW10	9/21/07	N	2.4 J	1700 J		0.88 J		2.3 J		550			2700		20 UJ	12 J	1.0 U	1.3	1.0 U	7.2		380 J	20		420 J	0.68	25 J		12 J
MW10	10/23/08	FD	7 J	1720		2 UJ		10 UJ		1080	48600 J		2190 J		20 UJ	0.82 J	0.5 U	2.0 U	2.0 U	5.0 U		310 J	12.4		500 J	0.05 J	29.5		13.1
MW10	10/23/08	N	6 J	1630		2 UJ		10 UJ		1110 J	40000 J		2210 J		20 UJ	0.92 J	0.5 U	2.0 U	2.0 U	5.0 U		305 J	12.4		432 J	0.05 U	28.1		39.2
MW10	10/7/09	FD	23 J	214 J		2 UJ		10 UJ		704 J	36900 J		2310 J		20 UJ	0.996 UJ	0.1 UJ	0.094 J	0.083 J	0.49 J		282 J	9.84 J		347.47 J	0.05 UJ	59 J		2.13 J
MW10	10/7/09	N	17 J	220 J		2 UJ		8.2 J		1210 J	38800 J		2230 J		20 UJ	0.998 UJ	0.1 UJ	0.072 J	0.073 J	0.41 J		280 J	9.82 J		369.28 J	0.05 UJ	58.7 J		4.68 J
MW10	10/7/10	FD	2.3	77.1 J		2 U		8 U		396	37200		1820		20 U	1.0 UJ	0.1 U	0.4 U	0.074 J	1 U		272	7.3 J		346	0.10 UJ	47.7 J		1.8
MW10	10/7/10	N	1.8	92.4 J		2 U		8 U		488	41600		1780		20 U	1.0 UJ	0.1 U	0.4 U	0.051 J	1 U		308	7.2 J		390	0.10 UJ	48.2 J		2.2
MW10	10/20/11	FD	11 J	21		0.60 J		2 U		180	33000 B		1700		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		260	8.7		303.00	0.22	54		2.1
MW10	10/20/11	N	8.8 J	21		2.0 U		2 U		180	33000 B		1700		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		260	8.4		303.00	0.21	53		2.1
MW10	10/17/12	FD	12	14		0.50 J		10 U		180	31000 =		1600		20 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		230	8.0		292	0.067 J	69 J		1.7
MW10	10/17/12	N	12	8.7		0.55 J		10 U		190	32000 =		1600		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		240	7.8		304	0.075 J	68 J		1.7
MW10	10/10/13	FD	140 J	16		0.19 J		10.0 UJ		230 J	31000 J		1600 J		20 UJ	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		230 B	7.9			0.39 J	94		1.7
MW10	10/10/13	N	27 J	17		0.19 J		10.0 UJ		260 J	32000 J		1700 J		20 UJ	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		220 B	7.8			0.41 J	93		1.4
MW10	9/25/14	N	8.1	37	0.21 J		0.75 U		250 B			1300		7.3 U		0.061 U*	0.24 U	0.23 U	0.22 U	0.43 U		180	6.1	270		0.10	77	0.50 U	
MW10	10/15/15	N	8.2	0.49 U		1.0 J		188			861		7.3 U		150	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		178 B	6.5	244		ND	71.8	1.8	
MW10	4/7/16	N	290	0.49 U		0.75 U		1350			719		7.3 U		1900 *	4.8	0.35 U	0.46 J	0.53 J	2.9		162 B	9.8		189	0.035 UH	46.1		8.6 B
MW10	7/25/16	N	8.6	0.49 U		3.7 B		826 B			744		7.3 U		1700 B	5.2	0.35 U	0.66 J	0.64 J	5.2		160	12.3	188		0.035 U	31.7	11.6	
MW10	10/13/16	N	5.5 B	0.46 J		1.7 JB		434 B			777		6.2 U		7300	5.4 H	0.28 U	0.79 J	0.79 J	5.7		156	14.6	186		0.035 UH	24.3	11.1 ^	
MW10	1/24/17	N	8.5	0.46 J		1.9 J		539 B			831 B		6.2 U		6200	10	0.28 U	0.96 J	0.91 J	8.1		158	17.4	220		0.035 U	24.0	19.4 B	
MW10S	10/15/97	N	10 U	30000 E		2 U		28.5 J		45.4 J			10700 J		11.6		0.4	0.9 J	1	8		260	38			0.1 U	23		49.7
MW10S	10/15/97	N2		30000 J		2 J		10.9 J							8.4		0.4	0.9 J	1	8									
MW10S	4/7/00	N		56100 J												512 =													
MW10S	4/7/00	N2		34800 =												393 F													

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Type[3] / Units	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW10S	12/5/00	N	0.57	3810 B		0.74 J		13 J		610			6900		25 U	152	0.1 U	5.9	2.9	70		31	15		570	1	11		300
MW10S	12/5/00	N2	0.57	3810 J		9.36		160		11000			7100		35	152									570				
MW10S	4/25/01	N	0.55	49000		18		409		131000			7990		216	306	1 U	3.5	10 U	44		142	11		425	1.49 =	8.64		503
MW10S	4/25/01	N2	0.55			2.3		46		11300			6030		45		10 U	100 U	100 U	100 U						1.49			
MW10S	9/12/01	N	10 U	82000		5.1		170		35000			8600		100	75	0.44 U	0.94 J	0.41 J	15		270 J	10		260	4.7	13		19
MW10S	9/12/01	N2				0.29 U		3.2 J		48 J			7600		3.7 U														
MW10S	8/7/02	N	10.0 U	390 J		3.9		53.3		9490			7560		22.4 J	5 U	1 U	1 J	5 U	10		170	10		4 U	0.11 J	14		10
MW10S	8/7/02	N2				3.1		2.3 J		67.3			7070		0.98 U														
MW10S	9/25/03	N	0.5 U	2200		1 U		7		1760			5910		10 U	1 U	0.25 U	2.5 U	2.5 U	3.4 J		135	6.7		52.05	3.41	2 J		6.6
MW10S	9/25/03	N2	0.5 U			1 U		1 J		50 U			5900		10 U														
MW10S	9/22/04	N	10.0 UJ	9490		1.49 J		73.1 J		14500 J			5460 J		49.7 J	51.9	5.00 U	50.0 U	50.0 U	5.42 J		120 J	24 J		1220 J	3.6 J	15 R		7.54 R
MW10S	9/22/04	N2				0.190 J		1.79 J		22.7 J			3740 J		6.07 J														
MW10S	9/29/05	N	2.0 U	0.11 U		1.0 UJ		14 J		3600 J			4000 J		8.0 J	5.6	0.50 U	5.0 U	5.0 U	0.99 J		130 J	16 J		300 J	2.0 J	120 R		3.0 J
MW10S	9/29/05	N2				1.0 UJ		10 UJ		50 UJ			3900 J		20 UJ														
MW10S	9/26/06	N	2.0 UJ	2700 J		1.0 U		2.2 J		50 U			2500		20 U	1.2	0.50 U	5.0 U	5.0 U	2.6 J		180 J	8.6		310	1.2	79 =		6.5
MW10S	9/21/07	N	2.0 U	24 J		1.0 UJ		10 UJ		100 UJ			1300		20 UJ	2.4 R	1.0 U	1.0 U	1.0 U	2.0 U		170 J	8.7		240 J	1.3	69 J		2.9 J
MW10S	10/24/08	N	2.0 UJ													3.36	0.5 U	2.0 U	2.0 U	5.0 U									
MW10S	4/18/16	N	0.080 U	0.59 J		2.6		190 B			388		7.3 U		3500	4.7	0.35 U	0.25 U	0.23 U	2.7		102	7.8		92.1	0.035 UH	9.1		9.5
MW10S	7/25/16	N	0.080 U	0.68 J		9.2 B		183 B			315		7.3 U		5200 B	13	0.35 U	0.39 J	0.23 U	5.6		107	7.7	124		0.035 U	11.8	15.6	
MW10S	10/13/16	N	0.12 JB	0.44 J		4.6 B		124 B			399		6.2 U		6600	8.4 H	0.28 U	0.30 J	0.23 U	4.6		83.7	6.1	100		0.035 UH	11.9	12.3 ^	
MW10S	1/24/17	N	0.12 J	0.80 J		2.5		254 B			624 B		6.2 U		9800	10	0.28 U	0.40 J	0.23 U	5.7		164	12.3	220		0.035 U	17.3 F1	23.4 B	
MW11	10/15/97	N	10 U	1 U		2 U		2 U		10 U			2 U		5.3		0.3	1 JB	0.2 J	0.5 J		190	7.5			5	12		1.3
MW11	10/15/97	N2		1 U		2 J		4.2 U							10.3		0.3	1 J	0.2 J	0.5 J									
MW11	4/4/00	N		0.6 U												11 U													
MW11	4/24/01	N	0.1 U	0.1 U		1.4		25 U		58			15 U		25	5.3 U	0.1 U	1 U	1 U	1 U		185	6.16		231	3.59 =	4.57		7.9
MW11	4/24/01	N2	0.11 U	0.11 U		1.2		25 U		25 U			15 U		20	5.3 U	0.1 U	1 U	1 U	1 U		225	6.25		231	3.59	3.48		4.67
MW11	4/24/01	N3	0.11 U			1.4		25 U		151			15 U		126	5.4 U										3.74 =			
MW11	4/24/01	N4				1.3		25 U		25 U			15 U		25 U	5.4 U										3.74			
MW11	9/10/01	N	10 U	0.091 J		1.4		2.9 J		66 J			1.9		9.1 J	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		190	8		220	3.1	7.4 U		4.2
MW11	9/10/01	N2				1.1		2.2 U		35 U			0.45 J		3.7 U														
MW11	8/6/02	N	10.0 U	0.04 U		4.7		0.83 J		46			2.3 J		6.4 J	5 U	1 U	5 U	5 U	5 U		210	7.8		230	0.15 U	7.6		18
MW11	8/6/02	N2	10.0 U			1.5 J		0.3 U		11.2 U			1.2 J		8.5 J														
MW11	9/23/03	N	0.5 U	0.11 U		1 U		2		160			5 U		10 U	0.98 U	0.25 U	2.5 U	2.5 U	2.5 U		187	6.7		72.14	2.94	2 U		2.3
MW11	9/23/03	N2	0.5 U			1 U		1 U		50 U			5 U		10 U														
MW11	9/21/04	N	10.0 U	0.0656 J		0.885 J		0.620 J		15.6 J			2.81 J		6.36 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U		210	9.0 =		1020	3.0 J	6.2 J		14.1
MW11	9/21/04	N2				0.948 J		0.366 J		6.05 J			1.40 J		4.05 J														
MW11	9/29/05	N	2.0 U	740 =		1.0 UJ		10 UJ		50 UJ			1.6 J		20 UJ	0.95 U	0.50 U	5.0 U	5.0 U	5.0 U		200 J	14 J		280 J	2.4 J	9.7 R		1.2 J
MW11	9/29/05	N2				1.0 UJ		10 UJ		50 UJ			3.0 J		20 UJ														
MW11	9/27/06	N	2.0 UJ	0.11 U		1.0 UJ		10 UJ		50 UJ			10 UJ		20 UJ	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		220 J	16 J		240	0.53 J	8.8 J		2.3
MW11	9/20/07	N	2.0 UJ	0.093 U		1.2 J		10 UJ		100 UJ			10 UJ		20 UJ	0.93 U	1.0 U	1.0 U	1.0 U	2.0 U		220	20		260 J	2.4	19 J		1.2 J
MW11	10/22/08	N	2.0 UJ	0.27		2 UJ		10 UJ		533	33600 J		10 UJ		20 UJ	1 U	0.5 U	2.0 U	2.0 U	5 U		234 J	19.9		433 J	2.26 J	17.8		20.2
MW11	4/11/16	N	0.080 U	0.75 J		0.75 U		32.1 JB			1.9 JB		7.3 U		0.016 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		229 B	18.0		470	1.6 H	200		0.32 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW12	10/15/97	N	10 U	13000 E		2 U		5		267			1660		10.6		1	2	3	14		490	50			0.1 U	15		21.7
MW12	10/15/97	N2		13000 J		2 U		6.1 U							16.3		1	2	3	14									
MW12	4/6/00	FD		10600 J												45 =													
MW12	4/6/00	FD2		14100 =												5150 U													
MW12	4/6/00	N		15000 =												5210 U													
MW12	4/6/00	N2		10300 J												47 =													
MW12	4/26/01	N	0.99	1500		1		25 U		151			1540		25 U	44	0.34	2.5	4.1	22		564	48		556	0.43	16		23
MW12	4/26/01	N2	0.99			0.91		25 U		131			1570		25 U														
MW12	9/13/01	N	10 U	18000		1.1		5 J		770			1300		9.3 J	40	0.44 U	2.3 U	3.2 U	20		490	47		470	0.53 U	16		25
MW12	9/13/01	N2				0.95 U		6.8 J		740			1400		12														
MW12	5/14/02	FD		4000																									
MW12	5/14/02	N	10 U	4000		1.4 U		5.3 J		44.5			1670		7.4 J	33	1 U	2 J	2 J	14		490	39		520	0.68 H	16		31
MW12	5/14/02	N2		4300		1.5 J		5 J		11.2 U			1670		9.3 J										520				
MW12	5/14/02	N3				1.4 U		4.9 J		11.2 U			1680		12 J														
MW12	8/8/02	N	10.0 U	6400 J		2.8		5.6 J		123			1620		7.7 J	28	1 U	2 J	2 J	15		460	37		4 U	0.46	15		28
MW12	8/8/02	N2				1.4 U		2.9 J		105			1600		3.3 J														
MW12	4/29/03	N	0.5 U	3000		1 J		5		230			1640		10 U	17	0.5 U	1.3 J	1.3 J	11		470	31		442	0.8	20		19
MW12	4/29/03	N2	0.5 U			1 U		4		25 U			1560		10 U														
MW12	9/23/03	N	0.49 J	10000		1 U		4		70 J			1420		10 U	14	0.25 U	2.5 U	2.5 U	8.6		443	30.8		151.4	1.17	2 U		15.5
MW12	9/23/03	N2	0.49 J			1 U		3		50 U			1530		10 U		0.25 U	2.5 U	2.5 U	9.4		433	29.8		153.3	1.23	2 U		16
MW12	9/23/03	N3	0.64			1 U		4		80 J			1490		10 U														
MW12	9/23/03	N4				1 U		3		50 U			1490		10 U														
MW12	5/4/04	N	1.34 J	11200 J		0.564 J		5.50 R		52.7 R	45900		1730 R		10.8 R	22.9	0.124 J	1.39 J	1.03 J	11.2		446	29 =		443	1.1 J	14 R		20.2 J
MW12	5/4/04	N2				0.600 J		3.95 R		33.6 R			1480 R		8.80 R														
MW12	9/22/04	N	10.0 UJ	9060 J		1.00 UJ		5.09 J		53.9 J			1540 J		9.53 J	28.2 J	0.113 J	1.22 J	0.866 J	9.83		440 J	26 J		1660 J	1.1 J	12 R		18.2 R
MW12	9/22/04	N2		3730 E		0.672 J		3.91 J		22.7 J			1230 J		8.10 J														
MW12	5/10/05	N	2.0 U	8300 J		1.0 U		4.2 J		50 U			1500		8.9 J	6.1	0.50 U	0.93 J	5.0 U	5.6		390 J	23 J		360 J	1.3 J	16 R		9.9 R
MW12	5/10/05	N2				1.0 U		4.8 J		50 U			1400		20 U														
MW12	9/27/05	N	2.0 UJ	8500 J		1.0 UJ		10 U		50 U			1200		7.8 J	3.3	0.50 U	0.85 J	5.0 U	4.9 J		370 J	20 J		410	1.1 J	26 J		9.2
MW12	9/27/05	N2				1.0 UJ		3.9 J		50 U			1300		20 U														
MW12	6/7/06	N	2.0 U	6100 J		1.0 UJ		2.3 J		50 R			1100 J		20 UJ	0.94 U	0.50 U	0.67 J	5.0 U	3.4 J		400 J	21 J		400 J	2.1 J	32 =		7.2 J
MW12	9/26/06	FD	2.0 UJ	2000 =		1.0 UJ		2.5 UJ		46 J			1200 J		20 UJ	1.4	0.50 U	5.0 U	5.0 U	1.7 J		390 J	15 J		370	2.0 J	15 J		10
MW12	9/26/06	N	2.0 UJ	3100 =		1.0 UJ		3.2 J		50 UJ			1200 J		16 J	1.5	0.50 U	5.0 U	5.0 U	2.9 J		390 J	14 J		380	1.9 J	15 J		10
MW12	5/9/07	N	2.0 UJ	3000 J		1.0 UJ		2.1 J		100 UJ			1100		5.2 J	0.99 J	1.0 UJ	1.0 UJ	1.0 UJ	1.9 J		340 =	13		370	2.4	37 J		7.0 UB
MW12	9/19/07	FD	2.0 UJ	1000 J		1.1 J		1.7 J		100 R			790		20 UJ	0.74 J	1.0 U	1.0 U	1.0 U	2.0 U		340	14		350 J	2.2	2.7 J		5.7 J
MW12	9/19/07	N	2.0 UJ	1100 J		0.97 J		10 UJ		100 R			820		20 UJ	0.71 J	1.0 U	1.0 U	1.0 U	2.0 U		340	14		330 J	2.8	29 J		5.6 J
MW12	5/20/08	FD	2.0 UJ	2200 J		0.61 J		3.8		100 UJ			1000		4.2 J	0.95 U	1.0 UJ	1.0 U	1.0 U	1.6 J		360 =	12		380	2.1	25		4.5 J
MW12	5/20/08	N	2.0 UJ	2100 J		0.59 J		3.7		100 UJ			1000		4.6 J	0.96 U	1.0 UJ	1.0 U	1.0 U	1.5 J		360 =	12		350	2.0	25		4.7 J
MW12	10/21/08	FD	2.0 UJ	1300.00 J		2.00 U		3.70 J		936	45000		1120		20 U	1.00 U	0.5 U	2.0 U	2.0 U	5.0 U		322	14.50		465 J	2.95 J	31.70		11.80 J
MW12	10/21/08	N	2.0 UJ	1670.00 J		2 U		4 J		927	50200		1140		11 J	1.00 U	0.5 U	2.0 U	2.0 U	5.0 U		323	13.10		519 J	2.96 J	31.80		11.70 J
MW12	6/2/09	FD	0.8 UJ	489 J		2 U		10 UJ		292 =	40600 =		1020 =		20 U	1.0 UJ	0.5 U	0.31 J	2.0 U	0.96 J	302 J		12.4		429.3758	2.64 J	62.2		1.7 J
MW12	6/2/09	N	0.8 UJ	521 J		2 U		10 UJ		310 =	34400 =		1040 =		20 U	1.0 UJ	0.5 U	0.28 J	2.0 U	0.88 J	294 J		12.3		363.3928	2.65 J	59.9		3.6 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW12	10/6/09	FD	0.83 UJ	289 J		2 UJ		4 J		294 J	47600 J		982 J		20 UJ	0.997 UJ	0.1 UJ	0.069 J	0.4 UJ	0.28 J		294 J	13.7 J		468.19 J	1.83 J	84.7 J		3.25 J
MW12	10/6/09	N	0.83 UJ	295 J		2 UJ		4 J		307 J	51600 J		987 J		20 UJ	0.995 UJ	0.1 UJ	0.073 J	0.4 UJ	0.28 J		297 J	13.7 J		509.63 J	1.84 J	85.4 J		3.83 J
MW12	5/19/10	FD	1.3 U	81.9		2 UJ		3.8 J		225. J	41800. J		633. J		8.2 J	1.0 U	0.5 U	5 U	5 U	5 U		308	14.7		432	1.91 J	117		36.1 UB
MW12	5/19/10	N	1.3 U	70.3		1.9 J		3.5 J		228. J	47700. J		913. J		11. J	1.0 U	0.5 U	5 U	5 U	5 U		308	14.7		496	1.87 J	116		41.8 UB
MW12	10/5/10	FD	1.3 U	42.9		2 U		8 U		332	47500 R		859		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		316	14.4 J		483	1.72	119		22.9 J
MW12	10/5/10	N	1.3 U	43.7		2 U		8 U		358	41500 R		834		20 U	1.0 U	0.1 U	0.4 U	0.044	1 U		320	14.4 J		548	1.73	119		53.9 J
MW12	6/29/11	FD	0.9 U	35.1		2 UJ		10 U		291	56900		765		20 U	0.998 U	0.1 U	0.4 U	0.4 U	1 U		276	13.3 J		524.00	2.11 J	103 J		1.53 J+
MW12	6/29/11	N	0.9 U	37		1.8 J		10 U		314	62600		744		20 U	0.998 U	0.1 U	0.4 U	0.4 U	1 U		295	14.1 J		555.00	2.28	111		1.28 J+
MW12	10/18/11	FD	0.50 U	30		1.0 J		2.3 J+		50 U	42000 B		640		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		300	14		398.00	2.1	100		2.0
MW12	10/18/11	N	0.50 U	37		1.1 J		2.3 J+		50 U	42000 B		660		10 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		300	14		398.00	2.1	98		2.0
MW12	5/22/12	FD	0.50 U	16 J		2.0 U		4.3 J		50 U	43000 =		630		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		310	14 =		419.00	1.8	120		1.6
MW12	5/22/12	N	0.50 U	21 J		2.0 U		10 U		50 U	44000 =		670		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		300	14 =		431.00	1.8	120		1.5
MW12	10/16/12	FD	0.50 U	23		1.2 J		10 U		50 U	43000 =		420		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		290	13		424	2.0 J	130 =		1.3
MW12	10/16/12	N	0.50 U	26		0.98 J		10 U		50 U	42000 =		410		20 U	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U		280	14		413	2.0 J	120 =		1.4
MW12	5/22/13	FD	0.50 U	24		2.0 U		10 U		50 UJ	39000 B		530 B		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		290	12			2.1 J	150		1.6
MW12	5/22/13	N	0.50 U	22		2.0 U		10 U		50 U	36000 B		460 B		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		280	12			2.0 J	150		1.6
MW12	10/8/13	FD	0.50 U	22		0.37 J		10.0 U		50 U	42000 B		710 B		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		260	12			2.1 J	120		1.3
MW12	10/8/13	N	0.50 U	28		0.37 J		10.0 U		50 U	41000 B		680 B		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		270	12			2.1 J	120		1.4
MW12	5/14/14	N		19																									
MW12	9/23/14	N	0.076 J	24	0.66 JB		0.75 U		16 U			450		7.3 U		0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		240	11	360		1.7	130	0.50 U	
MW12	4/20/15	N	0.070 U	16	1.1 JB		1.4 J		16 U			530		7.3 U		0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		220 B	11		410	1.7	140		0.95 J
MW12	10/13/15	N	0.080 JB	0.49 U		0.75 U		362 B			27.4		7.3 U		25	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		279 B	11.7	74.4		1.6	159	1.2	
MW12	4/6/16	N	0.12 J	0.77 J		1.4 JB^		60.1 JB			148 B		7.3 U		5.2	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		236 B	10.6		358 F2	1.6	135		0.67 J
MW12	7/19/16	N	0.080 U	0.61 J		1.6 JB		16.0 U			388		7.3 U		14	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		238	10.1	358		1.4	134	0.96 J	
MW12	10/12/16	N	0.092 J	0.50 J		1.6 JB		10 JB			439 B		6.2 U		14	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		239	10.8	340		1.2 H	124	0.71 J	
MW12	1/18/17	N	0.13 JB	0.87 J		1.4 JB		8.5 JB			427		6.2 U		18	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		203	10.7	326		1.1 H	122	0.89 J	
MW13	10/8/97	N	10 U	0.7 J		2 U		3.32 U		6.7 J			27.3		2.7		0.1 U	1 U	1 U	1 U		70	2.7			1.4	1.4		17.9
MW13	10/8/97	N2		0.7 J													0.1 U	1 U	1 U	1 U									
MW13	4/5/00	N		0.8 =												10 U													
MW13	12/5/00	N	0.58 U	114 J		1 U		25 U		230			66		25 U	5.5 U	0.1 U	1 U	1 U	1 U		72	4.2		140	0.45	8.2		7.9
MW13	12/5/00	N2	0.58 U					92		26000			870		52	5.5 U	0.1 U	1 U	1 U	1 U					140				
MW13	4/23/01	N	0.12 U	0.18		14		140		56300			1300		89	5.3 U	0.1 U	1 U	1 U	1 U		70	3.52		146	1.77	35		18
MW13	4/23/01	N2	0.12 U			0.24		25 U		25 U			110		25 U														
MW13	6/19/01	N	0.12 U	0.11 U		1.1		68		32800			848		45	5.3 U	0.12	1 U	1 U	1 U		68	5.73		112	2.87 =	11		13
MW13	6/19/01	N2	0.12 U			9.1		6.1 J		141			26		25 U											2.87			
MW13	9/10/01	N	10 U	0.69		3.9		49		14000			510		37	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		75	5.4		100	2.5	7.5 U		9.5
MW13	9/10/01	N2				0.54 J		2.8 J		52 J			27		4.7 J														
MW13	8/5/02	N	10.0 U	0.64		9.1		55.3		19000			580		39.5	5 U	1 U	5 U	5 U	5 U		86	6.8		110	0.15 U	8.4		6.3
MW13	8/5/02	N2				2.2 J		2.5 J		1300			45		9.1 J														
MW13	9/23/03	N	0.5 U	2.9		3		55		24600			687		50	1 U	0.25 U	2.5 U	2.5 U	2.5 U		78	5.1		35.04	1.86	7		6
MW13	9/23/03	N2	0.5 U			1 U		8		960			182		10 U														
MW13	9/21/04	N	10.0 UJ	4.67		1.52		32.4		8770			357		24.3 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		68 J	6.5 J		667 J	2.4 J	6.4 R		6.30 R

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1] / Units	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW13	9/21/04	N2					0.259 J		1.96 J		125 UJ			3.67 J		5.28 J														
MW13	9/27/05	N	2.0 UJ	0.85		1.0 J		18		6200			200		18 J	0.97 U	0.50 U	5.0 U	5.0 U	5.0 U		67 J	3.1 J		68	0.60 J	19 J		4.3
MW13	9/27/05	N2				1.0 UJ		2.5 J		50 U			7.1 J		20 U														
MW13	9/18/07	N	2.0 UJ	0.53 J		1.0 UJ		10 UJ		100 UJ			6.3 J		5.2 J	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U		71 J	2.9		100 J	0.31 J	29 J		4.1 J
MW13	10/21/08	N	2.0 UJ	0.31 UJ		2 U		10 UJ		207	10500 J		10 U		20 U	1.00 U	0.50 U	2.0 U	2.0 U	5.0 U		55	1.90		110 J	0.45 J	10.10		3.44 J
MW13	10/7/09	N	0.83 UJ	0.16 J		2 UJ		3.2 J		50 UJ	4430 J		10 UJ		20 UJ	0.996 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		30 J	2.12 J		45.46 J	0.77 J	9.71 J		13.9 J
MW13	4/13/16	N	0.080 U	0.49 U		3.2		449			13.4		7.3 U		0.34	0.065 U	0.35 U	0.25 U	0.23 U	0.52 U		51.0	1.4		54.9	0.70	3.4		4.2
MW13	7/20/16	N	0.080 U	0.49 U		1.5 J		19.4 J			1.1 U		7.3 U		1.1	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		39.5 B	0.91 J	86		1	2.2	2.1	
MW13	10/10/16	N	0.080 U	0.87 J		2.3 B		23.2 JB			0.94 JB		6.2 U		0.37	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		49.3	0.98 J	56		0.58 H F1	3.1 F1	1.9 B	
MW13	1/19/17	N	0.080 U	0.35 J		3.1 B		17.1 JB			1.1 JB		6.2 U		0.33	0.064 U	0.28 U	0.26 U	0.23 U	0.24 U		50.8	0.71 J	52.0		0.49 H	3.6	2.2	
MW14	10/9/97	N	10 U	1 U		2 U		2 U		20 U			4 J		4		0.1 U	1 U	1 U	1 U		120	8			1.6	2.4		1 U
MW14	10/9/97	N2		1 U		2 U		2 U							2 U		0.1 U	1 U	1 U	1 U									
MW14	4/6/00	N		0.5 U												11 U													
MW14	6/19/01	N	0.11 U	0.96		1.4		5.4 J		1070			57		25 U	239	0.1 U	1 U	1 U	1 U		104	12		124	2.06	3.48 J		6.41
MW14	6/19/01	N2	0.11 U			2		25 U		25 U			4.4		25 U											2.06 =			
MW14	1/23/17	N	0.080 U	1.1 J		0.62 J		5.3 U			1.6 JB		6.2 U		0.12	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		129	15.8	146		1.7 H	6.6	0.51 JB	
MW15	10/16/97	N	10 U	1 U		2 U		2 U		8.2 J			62.2		2 U		0.1 U	1 U	1 U	1 U		190	6.5			4.1	6.3		1.2
MW15	10/16/97	N2		1 U		2 U		3.5 U							13.9		0.1 U	1 U	1 U	1 U									
MW15	4/4/00	N		0.5 U												11 U													
MW15	4/25/01	N	0.1 U	0.11 U		0.5		25 U		58			4.8		50	5.3 U	0.1 U	1 U	1 U	1 U		240	15		276	3.97	2.61		5.24
MW15	4/25/01	N2	0.1 U	0.11 U		0.31		25 U		25 U			15 U		15	5.6 U	0.1 U	1 U	1 U	1 U		246	16		276	3.97 =	4.05		3.7
MW15	4/25/01	N3	0.12 U			0.56		25 U		174			4.1		25 U	5.6 U										3.92			
MW15	4/25/01	N4				0.42		25 U		25 U			15 U		16											3.92 =			
MW15	9/12/01	N	10 U	0.077 J		0.95 U		2.9 J		35 U			0.31 J		35	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		240	17		270	3.7	4.5 U		4.5
MW15	9/12/01	N2				0.95 U		5.7 J		63 J			2.7		36														
MW15	8/6/02	N	10.0 U	0.04 U		3.7		1.6 J		130			2.8 J		17 J	5 U	1 U	5 U	5 U	5 U		230	16		250	0.15 U	4.7		53
MW15	8/6/02	N2				2.6		0.3 U		11 U			0.42 U		11 J														
MW15	9/23/03	N	0.5 U	0.1 U		1 U		1 J		280			9 J		10 J	0.99 U	0.25 U	2.5 U	2.5 U	2.5 U		213	17.4		88.57	3.8	2 U		1.8
MW15	9/23/03	N2	0.5 U			1 U		1 U		50 U			5 U		10 U														
MW15	9/21/04	N	10.0 U	0.279		0.468 J		1.74 J		36.7			3.15 J		20.8 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U		230	16 =		1020	3.2 J	3.9 J		12.7
MW15	9/21/04	N2				0.482 J		0.648 J		5.57 J			0.976 J		8.97 J														
MW15	9/29/05	N	2.0 U	0.11 U		1.0 UJ		2.4 J		420 J			15 J		20 UJ	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		220 J	17 J		300 J	4.2 J	5.8 R		0.84 J
MW15	9/29/05	N2				1.0 UJ		10 UJ		50 UJ			1.6 J		20 UJ														
MW15	9/27/06	N	2.0 UJ	0.11 U		1.0 UJ		3.5 J		50 UJ			2.0 UB		13 J	0.91 U	0.50 U	5.0 U	5.0 U	5.0 U		260 J	14 J		250	4.7 J	5.9 J		2.1
MW15	9/19/07	N	2.0 UJ	0.10 U		0.68 J		10 UJ		100 UJ			10 UJ		20 UJ	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U		250	15		250 J	5.7	13 J		1.3 J
MW15	5/20/08	N	2.0 UJ	0.18 J		0.40 J		1.0 J		100 UJ			0.52 J		20 U	0.93 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ		260 =	14		290	4.7	6.6		0.85 J
MW15	10/21/08	N	2.0 UJ	0.10 UJ		2 U		10 UJ		854	45400		10 U		20 U	1.00 U	0.5 U	2.0 U	2.0 U	5.00 U		265	14.60		567 J	6.05 J	6.99		13.60 J
MW15	6/2/09	N	0.8 UJ	0.1 UJ		2 U		10 UJ		301 =	30600 =		10 U		20 U	1.0 UJ	0.5 U	0.21 J	2.0 U	5.0 U	279 J		13.5		375.2114	5.33 J	6.42		1.7 UJ
MW15	10/7/09	N	0.83 UJ	0.1 UJ		2 UJ		3 J		293 J	25500 J		10 UJ		5.4 J	0.999 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		260 J	12.9 J		294.28 J	4.74 J	6.52 J		1.49 J
MW15	5/18/10	N	1.3 U	0.1 U		2 UJ		10 UJ		194. J	24400. J		10 UJ		20 UJ	1.0 U	0.5 U	5 U	5 U	5 U		300	10.7		342	4.57 J	6.3		26.7 UB
MW15	10/7/10	N	1.3 U	2.32 J		2 U		8 U		311	38400		16.7 U		20 U	1.0 UJ	0.5 UJ	2 UJ	2 UJ	5 UJ		252	13.2 J		430	5.49 J	6.9 J		1.0 U
MW15	6/28/11	N	0.9 U	0.1 U		2 UJ		10 U		205	23100		10 U		20 U	0.998 U	0.1 U	0.4 U	0.4 U	1 U		239	12.1 J		307.00	5.2 J	6.91		0.77 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW15	10/18/11	N	0.50 U	0.10 U		0.70 J		2.7 J+		50 U	24000 B		1.7 J		10 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		240	12		261.00	4.8 J	5.3		1.0 J
MW15	5/22/12	N	0.50 U	0.024 J		2.0 U		10 U		50 U	24000 =		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		260	11		266.00	4.6 J	5.1 J		1.2
MW15	10/16/12	N	0.50 U	0.094 U		0.97 J		10 U		50 U	24000 =		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		250	12		271	5.3 J	5.0 U		0.69 J
MW15	5/21/13	N	0.50 U	0.025 J		2.0 U		10 U		50 U	26000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		280	9.8			4.7 J	5.9		0.82 J
MW15	10/8/13	N	0.50 U	0.095 U		0.36 J		10.0 U		50 U	23000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		220	11			5.2 J	6.5		0.50 J
MW15	5/13/14	N		0.095 U																									
MW15	9/23/14	N	0.070 U	0.054 J	1.1 JB		0.75 U		28 J			1.9 J		7.3 U		0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		210	11	250		5.3	5.6	0.85 J	
MW15	4/20/15	N	0.070 U	0.015 U	0.78 JB		0.75 U		16 U			1.1 J		7.3 U		0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		190 B	11		270	5.6	5.7		0.44 J
MW15	10/12/15	N	0.080 U	0.54 J		1.0 J		16.0 U			1.1 U		7.3 U		0.015 U	0.063 U	0.35 U	0.23 U	0.25 U	0.52 U		224 B	12	302		6.7 F1	5.8	0.55	
MW15	4/5/16	N	0.080 U	0.70 J		1.7 JB		16.0 U			1.1 U		7.3 U		0.078 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		207 B	12.5		312	0.45	6.3		0.49 J
MW16	10/14/97	N	10 U	1 U		17.1		438		15.3 J			10300 J		210		0.1 U	1 U	1 U	1 U		170	6.1			2.6	8.1		3
MW16	10/14/97	N2		1 U		2 U		2.7 U							1.9 J		0.1 U	1 U	1 U	1 U									
MW16	4/6/00	N		0.5 U												10 U													
MW16	4/23/01	N	0.12 U	0.11 U		6.5		62		22300			1460		136	5.6 U	0.1 U	1 U	1 U	1 U		90	3.57		164	8.69 =	29		4.4
MW16	4/23/01	N2	0.12 U			1 U		25 U		26			9.4		23											8.69			
MW16	9/10/01	N	10 U	0.17		1.8		23 U		5500			520		19	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		79	1.8		120	5.8	11		0.34 U
MW16	9/10/01	N2				0.29 U		2.2 U		35 U			0.82 J		4.5 J														
MW16	8/6/02	N	10.0 U	0.035 J		3.5		25 J		6800			14		760 J	5 U	1 U	5 U	5 U	5 U		130	2		120	0.15 U	13		1.3
MW16	8/6/02	N2				1.4 U		0.3 U		78			9.1 J		13 J														
MW16	9/23/03	N	0.5 U	0.089 J		2 J		18		7470			532		10 J	1.1 U	0.25 U	2.5 U	2.5 U	2.5 U		82	6.2		37.96	3.49	3 J		2.3
MW16	9/23/03	N2	0.5 U			1 U		1 U		50 U			5 U		10 U														
MW16	9/21/04	N	10.0 U	0.0962 J		0.277 J		4.07 J		570			74.7		8.71 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U		82	3.7 =		1220	2.1 J	5.5 J		4.28
MW16	9/21/04	N2				0.135 J		0.509 J		25.0 U			0.617 J		2.79 J														
MW16	9/29/05	N	2.0 U	0.11 U		1.0 UJ		7.6 J		1000 J			130 J		8.1 J	1.0 U	0.50 U	5.0 U	5.0 U	5.0 U		82 J	11 J		190 J	1.5 J	71 R		0.83 J
MW16	9/29/05	N2				1.0 UJ		2.9 J		50 UJ			2.1 J		20 UJ														
MW16	9/27/06	N	2.0 UJ	0.046 J		1.0 UJ		10 UJ		50 UJ			0.59 UB		20 UJ	0.92 U	0.50 U	5.0 U	5.0 U	5.0 U		83 J	4.1 J		100	1.2 J	32 J		1.3
MW16	9/18/07	N	2.0 UJ	0.20 J		1.0 UJ		10 UJ		100 UJ			10 UJ		20 UJ	0.99 R	1.0 U	1.0 U	1.0 U	2.0 U		81 J	4.5		120 J	1.2 J	23 J		1.3 J
MW16	10/22/08	N	2.0 UJ	0.08 J		2 UJ		10 UJ		318 J	19400 J		20 J		20 UJ	1 U	0.5 U	2.0 U	2.0 U	5 U		51 J	7.51		175 J	0.99 J	43.2		92.3
MW16	10/6/09	N	0.83 UJ	0.1 UJ		2 UJ		6.6 J		458 J	8360 J		48.6 J		20 UJ	0.998 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		40 J	6.35 J		81.869 J	1.03 J	36.7 J		1 UJ
MW16	10/5/10	N	1.3 U	0.1 U		2 U		8 U		50 U	2910 R		16.7 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		39	5.7 J		29.3	0.63 J	6.3 J		15.7
MW16	10/19/11	N	0.50 U	0.095 U		0.44 J		2.2 J+		130	3200 B		14		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		32	4.2		30.70	0.63 J	12		1.0 U
MW16	10/16/12	N	0.50 U	0.099 U		0.66 J		10 U		180	3600 =		17		20 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		37	4.6		39.8	0.52 J	17 J		1.3
MW16	10/8/13	N	0.50 U	0.029 J		0.61 J		10.0 U		1500 B	3300 B		100 B		59 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		34	6.2			0.57 J	6.3		1.1
MW16	9/23/14	N	0.070 U	0.036 J	0.41 JB		0.75 U		16 U			1.1 U		7.3 U		0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		31	5.4	60		0.54	2.8	1.1	
MW16	10/13/15	N	0.080 U	0.49 U		1.0 J		45.2 JB			2.1 J		7.3 U		0.015 U	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		48.4 B	4.3	84.4		0.61	5.9	0.70 J	
MW16	4/6/16	N	0.080 U	0.49 U		1.9 J		168 B			14.6 B		7.3 U		0.015 U	0.11 J	0.35 U	0.25 U	0.23 U	0.52 U		32.6 B	2.2		31.8	0.41	2.6		2.3
MW16	7/19/16	N	0.080 U	0.49 U		2.2 B		114			11.5		7.3 U		0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		32.4	2.2	34		0.42	2.6	5.8	
MW16	10/12/16	N	0.080 U	0.40 J		1.7 JB		61.7 JB			5.3 B		6.2 U		0.18	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		33.1	2.4	24		0.30 H	2.2	0.58 J	
MW16	1/18/17	N	0.080 U	0.47 J		1.3 JB		11.5 JB			1.2 J		6.2 U		0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		31.3	3.2	46.0		0.46 H	3.6 F1	1.1	
MW17	10/15/97	N	10 U	1 U		2 U		2		10 U			2 U		17.6		0.1 U	1 JB	1 U	0.6 J		180	4.8			4.1	10		0.7 J
MW17	10/15/97	N2		1 U		2 U		2.3 U							2.5		0.1 U	1 J	1 U	0.6 J									
MW17	10/28/97	N		5																									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Compound [1] / Units	Date [2]	Type [3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW17		4/6/00	N		0.5 U												11 U													
MW17		4/26/01	N	0.12 U	0.72		0.6		25 U		33			15 U		12	54	0.1 U	1 U	1 U	1 U		202	4.12		228	4.98	6.82		1.57
MW17		4/26/01	N2	0.12 U			0.69		25 U		25 U			15 U		25 U											4.98 =			
MW17		9/11/01	N	10 U	0.059 U		0.94		2.2 U		330			0.27 U		3.7 U	0.29 U	0.44 U	0.5 U	0.4 U	1.2 U		180	4.8		210	4.4	9.3 U		1 J
MW17		9/11/01	N2				1		2.2 U		310			0.27 U		3.7 U														
MW17		8/8/02	N	10.0 U	0.032 J		3		0.47 J		11 U			0.42 U		0.98 U	5 U	1 U	5 U	5 U	5 U		200	4.6		210	0.15 U	7.4		0.73
MW17		8/8/02	N2				1.9 J		0.3 U		11 U			0.42 U		15 J														
MW17		9/25/03	N	0.5 U	0.46		1 U		1 U		50 U			18		10 U	0.96 U	0.25 U	2.5 U	2.5 U	2.5 U		184	4.4		71.56	5.1	2 U		2.1
MW17		9/25/03	N2	0.5 U			1 U		1 U		50 U			5 U		10 U														
MW17		9/22/04	N	10.0 UJ	2.82		0.0787 J		0.774 J		11.5 UB			0.371 J		2.46 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		190 J	4.1 J		1100 J	4.8 J	8.6 R		1.67 R
MW17		9/22/04	N2				0.782 J		0.847 J		13.9 J			45.0 J		2.09 J														
MW17		9/27/05	N	2.0 UJ	0.054 J		1.0 UJ		10 U		50 U			0.44 J		20 U	0.92 U	0.50 U	5.0 U	5.0 U	5.0 U		160 J	3.9 J		180	5.1 J	7.8 J		0.91 J
MW17		9/27/05	N2				1.0 UJ		10 U		50 U			10 U		20 U														
MW17		9/26/06	N	2.0 UJ	0.11 U		1.0 UJ		10 UJ		50 UJ			10 UJ		7.5 J	0.91 U	0.50 U	5.0 U	5.0 U	5.0 U		170 J	2.9 J		170	5.5 J	6.5 J		1.1
MW17		9/19/07	N	2.0 UJ	0.099 U		1.0 J		10 UJ		100 UJ			10 UJ		20 UJ	0.94 U	1.0 U	1.0 U	1.0 U	2.0 U		160	4.7		160 J	5.6	14 J		1.2 J
MW17		10/22/08	N	2.0 UJ	0.1		2 UJ		10 UJ		374 J	29200 J		10 UJ		20 UJ	1 U	0.5 U	2.0 U	2.0 U	5 U		155 J	7.78		295 J	5.75 J	7.75		20.2
MW17		10/6/09	N	0.83 UJ	0.1 UJ		2 UJ		10 UJ		160 J	26700 J		10 UJ		20 UJ	0.995 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		60 J	6.54 J		295.228 J	1.65 J	6.86 J		1 UJ
MW17		10/5/10	N	1.3 U	0.1 U		2 U		10 U		163	20500		10 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		160	11.6 J		225	5.18	9.7 J		1.6
MW17		10/18/11	N	0.50 U	0.095 U		1.1 J		2 U		50 U	17000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		140	16		180.00	3.9	24		0.89 J
MW17		10/16/12	N	0.50 U	0.095 U		1.2 J		10 U		50 U	17000 =		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		150	16		187	4.7	23 J		0.59 J
MW17		10/8/13	N	0.50 U	0.095 U		0.72 J		10.0 U		50 U	18000 B		10 U		20 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		140	16			4.5 J	36		0.40 J
MW17		9/24/14	N	0.070 U	0.015 U	0.83 J		0.75 U		16 U			1.3 J		7.3 U		0.061 U	0.24 U	0.23 U	0.22 U	0.43 U		150	15	250		4.8	40	0.72 J	
MW17		10/13/15	N	0.080 U	1.1 J		0.75 U		16.0 U			1.1 U		7.3 U		0.015 U	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		184 J	14.8	265		4.2 H	45.3	0.59	
MW17		4/5/16	N	0.080 U	0.81 J		1.8 JB		16.0 U			1.1 U		7.3 U		0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		173 B	13.6		289	3.5	85.4		0.46 J
MW17		7/19/16	N	0.080 U	0.84 J		1.4 JB		16.0 U			1.1 U		7.3 U		0.015 U	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		195	14.7	336		2.8	142	0.52 J	
MW17		10/11/16	N	0.080 U	0.80 J		0.76 JB		5.3 U			0.28 JB		6.2 U		0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		208	17.0	348		2.7	136	0.36 JB	
MW17		1/23/17	N	0.13 J	0.73 J		1.4 J		5.3 U			0.25 U		6.2 U		0.099	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		202	17.4	390		2.1 H	167	0.81 JB	
MW17		1/23/17	FD	0.080 U	0.76 J		0.66 J		5.3 U			0.25 U		6.2 U		0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		213	17.4	380		2.1 H	167	0.50 JB	
MW18		10/10/97	N	10 U	27000 J		8.2		43.5 J		32000 J			10600		2.6		0.1 U	2	16	19		260	49			0.1 U	11		154
MW18		10/10/97	N2		27000 E		8.9		62.5							5.3		0.1 U	2	16	19									
MW18		6/19/01	N	0.13 U	27400		4.9		21 J		13700			6650		25 U	5 U	1.1	14	10 U	20		168	19		182	0.13 U	33 J		6.63
MW18		6/19/01	N2	0.13 U			5		43		15200			6540		25 U														
MW19		10/16/97	N	10 U	19000 J		2 U		38 J		10 U			2690 J		46		0.2	1 U	1 U	0.2 J		180	47			3.8	19		32.8
MW19		10/16/97	N2		19000 E		2 U		3.4 U							2 U		0.2	1 U	1 U	0.2 J									
MW19		4/7/00	N		11800 =												5260 U													
MW19		4/7/00	N2		11000 J												22 =													
MW19		4/26/01	N	0.5	25600		2.2		38		10000			1840		27	325 =	1 U	10 U	10 U	10		236	39		323	3.37 =	47		33
MW19		4/26/01	N2	0.5			1 U		25 U		25 U			1790		25 U	325	10 U	100 U	100 U	100 U						3.37			
MW19		9/12/01	N	16	400000		0.29 U		6.4 J		71 J			1800		5.8 J	240	0.44 U	1.9 U	1.7 U	28		320 J	19		270	1.3	9.7 U		34
MW19		9/12/01	N2				1.7 J		44		5600			2100		53 J														
MW19		5/13/02	N		14000		1.4 U		5.1 J		11.2 U			2070		9.4 J	190													
MW19		8/8/02	N	10.0 U	11000 J		7		30.2		719			3100		290	210	1 U	2 J	1 J	29		130	22		4 U	0.16	16		65

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW19	8/8/02	N2				1.4 U		7.1 J		218			3110		5.7 J														
MW19	4/29/03	N	2.4	4900		2 J		24		2030			3670		10 U	1200	500 U	5000 U	5000 U	5000 U		118	19.6		162	3	27		53
MW19	4/29/03	N2	2.4			1 U		5		25 U			3590		10 U														
MW19	9/25/03	N	5.7	15000		1 U		27		950			2210		10 U	3200	1 U	10 U	10 U	46.6		160	17.5 J		71.57	2 J	90 J		129 J
MW19	9/25/03	N2	5.7			1 U		9		50 J			4470		10 U											2 J			
MW19	5/4/04	N	1.13 J	70000 J		0.284 J		22.2 R		892 R	17600		4040 R		11.6 R	201	2.50 U	2.13 J	1.98 J	30.0		144	25 =		176	0.71 J	16 R		43.7 J
MW19	5/4/04	N2				0.169 J		5.77 R		31.4			3360 R		6.93 R														
MW19	9/22/04	N	10.0 UJ	111000		1.00 UJ		13.5 J		402 J			3160 J		16.7 J	260	0.500 U	3.45 J	2.25 J	50.3		110 J	15 J		1120 J	1.5 J	23 R		31.3 R
MW19	9/22/04	N2				0.159 J		6.26 J		125 U			2650		16.0 J														
MW19	5/10/05	N	2.0 U	45000 J		1.0 U		6.3 J		50 U			2300		9.8 J	2300 =	100 UJ	1000 UJ	1000 UJ	1000 UJ		97 J	18 J		140 J	0.76 J	29 R		35 R
MW19	5/10/05	N2				1.0 U		15		630			2100		8.4 J														
MW19	9/29/05	N	2.0 U	13000 =		1.0 UJ		11 J		97 J			2600 J		20 UJ	78	0.50 U	1.2 J	1.1 J	18		140 J	19 J		5 UJ	0.75 J	40 R		32 J
MW19	9/29/05	N2				1.0 UJ		5.0 J		50 UJ			2700 J		20 UJ														
MW19	6/7/06	N	2.0 U	17000 J		1.0 UJ		4.4 J		50 UJ			2700 J		20 UJ	59	0.50 U	1.5 J	1.3 J	22		120 J	18 J		360 J	0.76 J	36 =		20 J
MW19	9/27/06	N	2.0 UJ	8200 J		1.0 U		6.4 J		50 U			3100		20 U	69	0.50 U	1.4 J	1.2 J	19		160 J	14		190	0.66 J	30 =		35
MW19	5/9/07	N	2.0 UJ	11000 J		1.0 UJ		3.7 J		100 UJ			2600		20 UJ	54 J	1.0 U	1.4	1.5	17		230 =	15		160	0.29	59 J		33 UB
MW19	9/21/07	N		3500 J		1.0 UJ		4.0 J		100 UJ			3100		20 UJ	47 R	1.0 U	1.8	2.0	21		190 J	17		240 J	0.28	42 J		38 J
MW19	5/20/08	N	2.0 U	23000 J		1.0 U		3.4		100 UJ			2900		2.3 J	140	1.0 UJ	5.0	4.8	54 J		220 =	16		260	0.44	42		18 J
MW19	10/24/08	N	2.1 J	27900		2 UJ		5 J		510 J	28700 J		4850 J		20 UJ	120	0.5 U	5.11	5.08 =	50.3		221 J	15.9		373 J	0.04 J	46.2		29.8
MW19	6/2/09	N	3.9 J	18600 J		2 U		10 UJ		222 =	29900 =		4050 =		20 U	110 J	0.5 U	7.93	6.66	74.6	249 J		12.8		317.6445	0.01 UB	44.7		13
MW19	10/7/09	N	2 J	31800 J		2 UJ		3.8 J		237 J	27400 J		3190 J		7.2 J	137 J	0.1 UJ	7.62 J	5.77 J	60.7 J		228 J	14.3 J		271.39 J	0.05 UJ	42 J		20.4 J
MW19	5/20/10	N	1.4	26000.		2 UJ		3.2 J		92.2 UJ	19900. J		1870. J		20 UJ	123.	0.5 U	7.95	5.65	64.3		136	21.5		199	0.05 UJ	32.4		50.4 UB
MW19	10/7/10	N	1.3 U	4470 J		2 U		2.9 J		114	7130		942		20 U	102 J	0.5 UJ	3.21 J	1.7 J	44.7 J		84	13.6 J		77.8	0.10 UJ	18.7 J		17.4
MW19	6/29/11	N	0.9 U	8880		2 UJ		14.8 J		131	9550		1300		20 U	42.1	0.1 U	1.12	1.09	22.7		43	16.6 J		90.00	0.26	20.1		85.4
MW19	10/20/11	N	0.33 J	13000		2.0 U		12 B		52 J+	8600 B		1700		14 J+	2.8	0.84 U	1.1 J	1.0 J	23		57	19		85.40	0.30	17		92
MW19	5/22/12	N	0.71	5300		2.0 U		7.6 J		50 U	7600 =		1300		20 U	50	2.0 U	0.88 J	0.76 J	16		51	15		76.20	1.1	12		38
MW19	10/17/12	N	0.50 U	8100		2.0 U		6.9 J		50 U	5800 =		900		20 U	8.4	2.0 U	4.0 U	0.67 J	9.7		36	12		66.3	1.4	11 J		27
MW19	5/22/13	N	0.84 J	5800		2.0 U		7.3 J		50 U	8700 B		1100 B		20 U	29 J	0.50 U	0.99 J	1.5	19		54	14			1.1 J	11		45
MW19	10/10/13	N	0.50 U	7900		0.26 J		10.0 UJ		50 UJ	5800 J		990 J		20 UJ	3.0	2.5 U	5.0 U	1.1 J	15		36 B	12			1.1 J	11		31
MW19	5/14/14	N		18000																									
MW20	10/15/97	N	10 U	29000 J													0.1 U	1 U	1 U	0.1 U									
MW20	4/26/01	N	2.73	36600		8.2		196		33200			3120		126	9970 =	1 U	10 U	10 U	29		198	24		301	0.13 U	67		478
MW20	4/26/01	N2	2.73			1.1		14		841			2250		23	9970	10 U	100 U	100 U	71									
MW20	9/12/01	N	10 U	83000		3.6		81		7900			3200		36	890	0.44 U	3.4 U	4.1 U	37		260 J	16		250	0.15 J	24		65
MW20	9/12/01	N2				1.5		15 U		35 U			2800		12 U														
MW20	8/7/02	N	10.0 U	30000 J		8.9		87.4		4910			3520		16.6 J	1400	1 U	12	9	120		220	22		4 U	0.15 U	25		71
MW20	8/7/02	N2				2.6		5.8 J		206			3280		15.4 J														
MW20	9/25/03	N	5.4	13000		2 J		58		7220			3310		20 J	830	1 U	10 U	10 U	60.9		233	19.4 J		86.67	1.25 U	80 J		150 J
MW20	9/25/03	N2	5.4			1 U		11		350			3250		10 J											1.25 U			
MW20	9/22/04	N	10.0 UJ	133000		1.00 UJ		30.4 J		1320 J			2770 J		18.7 J	282	2.50 U	3.01 J	3.21 J	40.3		190 J	24 J		1320 J	0.29 J	23 R		46.3 R
MW20	9/22/04	N2				0.498 J		35.2 J		2070			2320		47.0 J														
MW20	10/25/05	N	2.0 UJ	63000 =		1.0 U		16 J		780 J			2300 J		20 UJ		0.50 U	5.5	5.4	62		170 J	13 J		190 J	2.1 J	39 R		21 R

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW20	10/25/05	N2				1.0 UJ		2.7 UJ		140 J			2400 J		20 UJ														
MW20	9/27/06	FD	2.0 UJ	44000 J		1.0 UJ		4.8 J		94 J			4200		20 U	180 =	0.50 U	5.1	4.1 J	53		230 J	16		380	0.19	65 =		22
MW20	9/27/06	N	2.0 UJ	35000 J		1.0 U		3.8 J		48 J			4200		20 U	160 =	0.50 U	4.8 J	4.1 J	51		220 J	16		240	0.22	71 =		23
MW20	9/21/07	N	2.0 U	9500 J		1.0 UJ		10 UJ		100 UJ			4800		20 UJ	71 R	1.0 U	6.4	4.4	62		230 J	18		300 J	0.10 U	98 J		13 J
MW20	10/23/08	N	2.0 UJ	41000		2 UJ		17.3 J		462	31700 J		3400 J		20 UJ	1150	0.5 U	2.99 =	2.94 =	38.7		127 J	15.7		332 J	0.13 J	28.9		121
MW21	2/9/98	FD	10	1		3.1		83.9		7.3 U			1380		98.9		0.1 U	1 U	1 U	1 U		196	67.3				8.9		0.47 U
MW21	2/9/98	FD2				2 U		9.5 U							33.8														
MW21	2/9/98	N	11	1 U		3		70.1		5.5 U			1210		113		0.1 U	1 U	1 U	1 U		176	70.6				9.1		0.47 U
MW21	2/9/98	N2		1 U		2 U		9.5 U							32.6 U		0.1 U	1 U	1 U	1 U									
MW21	5/14/02	N				1.9 J		1.3 J		130			9.7 J		11 J														
MW21	8/6/02	N		0.035 J		4.4		50		10000			930		29	5 U	1 U	5 U	5 U	5 U		120	49		150	0.15 U	9.6		8.3
MW21	8/6/02	N2				1.6 J		0.3 U		11 U			0.63 J		6.8 J														
MW21	4/29/03	N	0.5 U	0.15		1 U		12		3440			227		10 U	7.4 U	0.5 U	5 U	5 U	5 U		144	41		169	2.5	12		1.5
MW21	4/29/03	N2	0.5 U			1 U		1 U		25 U			5 U		10 U														
MW21	9/24/03	N	0.5 U	0.063 J		1 U		260		68400			3750		150	1 U	0.25 U	2.5 U	2.5 U	2.5 U		165	48		81.46	2.62	2 U		3.6
MW21	9/24/03	N2	0.5 U			1 U		1 U		50 UJ			5 U		10 U														
MW21	5/4/04	N	10.0 U	0.135 UB		2.31 J		72.5 R		14000 R	19300		1970 R		46.5 R	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		165	67 =		188	2.3 J	3.6 R		3.12 J
MW21	5/4/04	N2				0.122 J		1.28 R		28.6 R			0.718 R		4.48 R														
MW21	9/21/04	N	10.0 UJ	0.474		1.80 J		48.2 J		10300 J			983 J		32.6 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		150 J	63 J		1030 J	2.4 J	4.8 R		2.76 R
MW21	9/21/04	N2				0.130 J		0.955 J		25.0 UJ			0.484 J		3.30 J														
MW21	5/10/05	N	2.0 U	0.33		1.0 U		10 U		50 U			0.47 J		20 U	0.98 U	0.50 U	5.0 U	5.0 U	5.0 U		130 J	49 J		170 J	2.8 J	12 R		2.2 R
MW21	5/10/05	N2				1.0 U		25		6200			480		16 J														
MW21	9/27/05	N	2.0 UJ	0.046 J		7.1		230		56000			3400		110	0.91 U	0.50 U	5.0 U	5.0 U	5.0 U		130 J	47 J		370	2.4 J	17 J		1.2
MW21	9/27/05	N2				1.0 UJ		2.6 J		36 J			9.8 J		20 U														
MW21	6/1/06	N	2.0 U	0.023 J		1.0 UJ		10 UJ		47 J			17 J		20 UJ	0.99 U	0.50 U	5.0 U	5.0 U	5.0 U		140 J	65 J		140	2.7 J	20		1.5 J
MW21	5/8/07	N	2.0 UJ	0.098 UJ		1.0 UJ		10 UJ		100 UJ			10 UJ		4.2 J	1.0 R	1.0 U	1.0 U	1.0 U	2.0 U		210 =	33 J		120	4.2	9.3 J		1.7
MW21	9/18/07	N	2.0 UJ	0.13 J		1.0 UJ		10 UJ		100 UJ			10 UJ		20 UJ	0.98 R	1.0 U	1.0 U	1.0 U	2.0 U		110 J	29		120 J	3.7 J	12 J		1.2 J
MW21	10/21/08	N	2.0 UJ	0.10 UJ		2 U		10 UJ		294 J	14900 J		10 U		20 U	1.00 U	0.50 U	2.00 U	2.0 U	5.00 U		66	68.80		149 J	2.69 J	7.27 U		2.38 J
MW21	4/6/16	N	0.092 J	0.70 J		1.0 J		22.8 J			1.7 J		7.3 U		0.016 Jp*	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		25.9 B	101		83.6	1.8 H	6.8		0.63 JB
MW21	7/20/16	N	0.11 J	0.49 U		1.3 J		29.4 J			1.1 U		7.3 U		8.5	0.062 U	0.35 U	0.25 U	0.23 U	0.52 U		29.4 B	84.5	84		1.7	6.8	0.93 J	
MW21	7/20/16	FD	0.080 U	0.49 U		0.86 J		23.5 J			1.1 U		7.3 U		5.5	0.075 U	0.35 U	0.25 U	0.23 U	0.52 U		29.9 B	84.9	78		1.7	6.6	0.90 J	
MW21	10/11/16	N	0.080 U	0.38 J		1.8 JB		6.2 JB			0.44 JB		6.2 U		5.7	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		30.5	74.4	82		1.8	6.6	0.61 JB	
MW21	1/18/17	N	0.080 U	0.39 J		2.2 B		6.8 JB			0.25 U		6.2 U		2.9	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		25.4	86.8	88.0		1.8 H	7.4	0.75 J	
MW22	2/9/98	N	13	1 U		4		255		5.5 U			3700		121		0.1 U	1 U	1 U	1 U		186	56.3				17.9		0.47 U
MW22	2/9/98	N2		1 U		2 U		9.5 U							12.6		0.1 U	1 U	1 U	1 U									
MW22	5/14/02	N				1.4 U		0.3 U		22.9 J			3.5 J		2.7 J														
MW22	8/6/02	N	10.0 U	0.078		2.2 J		9.8 J		2500			170		7.3 J	5 U	1 U	5 U	5 U	5 U		150	7.2		170	0.15 U	12		1.3
MW22	8/6/02	N2				1.4 U		0.3 U		25 J			0.42 U		4.9 J														
MW22	9/24/03	N	0.5 U	0.34		7		140		56900			2570		120 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U		132	4.9		101.8	2.15	3 J		1.7
MW22	9/24/03	N2	0.5 U			1 U		20		2770			542		20 J														
MW22	9/21/04	N	10.0 UJ	0.220		2.76 J		71.6 J		13600 J			963 J		48.4 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		130 J	11 J		885 J	2.2 J	6.7 R		3.86 R
MW22	9/21/04	N2				0.164 J		0.473 J		25.0 UJ			15.0 UJ		2.31 J														

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW22	9/28/05	N	2.0 U	0.16 J		1.0 UJ		9.8 J		2100 J			130 J		8.0 J	1.0 U	0.50 U	5.0 U	5.0 U	5.0 U		91 J	9.6 J		130 J	1.7 J	18 R		0.94 J
MW22	9/28/05	N2				1.0 UJ		10 UJ		50 UJ			1.3 J		20 UJ														
MW22	9/18/07	N	2.0 UJ	0.13 J		1.0 UJ		10 UJ		100 UJ			10 UJ		20 UJ	0.99 R	1.0 U	1.0 U	1.0 U	2.0 U		110 J	8.2		160 J	2.5 J	10 J		1.0 J
MW22	5/20/08	N	2.0 UJ	0.77 J		1.0 U		0.98 J		100 UJ			3.6		5.4 J	0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ		110 =	8.4		200	2.3	12		3.0 J
MW22	10/21/08	N	2.0 UJ	0.09 UJ		2.60 J		10 UJ		303 J	11100 J		0.01 U		20 U	1.00 U	0.5 U	2.0 U	2.0 U	5.0 U		90	4.69		111 J	1.48 J	6.95		21.10 J
MW22	6/2/09	N	0.8 UJ	0.1 UJ		2 U		10 UJ		83.1 =	10000 J		10 U		20 U	1.0 UJ	0.5 U	0.22 J	2.0 U	5.0 U	70 J		6.92		99.6098	1.97 J	6.73		1.7 UJ
MW22	10/6/09	N	0.83 UJ	0.1 UJ		2 UJ		13.1 J		1560 J	11500 J		168 J		6.7 J	0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		147 J	7 J		106.54 J	5.31 J	7.53 J		8.62 J
MW22	5/18/10	N	1.3 U	0.1 U													0.5 U	5 U	5 U	5 U		66 UB	9.21			1.9 J	6.9		58.8 UB
MW22	10/6/10	N	1.3 U	0.13 UB		2 U		4.1 J		74.2 J	3680		16.7 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		62	1.8 J		40.9	0.90 J	5.6 J		24.6
MW22	6/29/11	N	0.9 U	0.1 U		2 UJ		4.5 J		499	3700		27.6		20 U	0.999 U	0.1 U	0.4 U	0.4 U	1 U		32.	0.78 J+		34.10	0.46 J	3.9 J		11
MW22	10/18/11	N	0.50 U	0.098 U		0.45 J		2.1 J+		50 U	3600 B		2.7 J		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		43	1.0 U		37.30	0.50 J	3.5 J		1.0 U
MW22	5/22/12	N	0.50 U	0.084 J		2.0 U		2.3 J		160	5000 =		13		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		49	3.4		50.60	0.76 J	3.9 J		10
MW22	10/16/12	N	0.50 U	0.096 U		0.59 J		10 U		50 U	5000 =		5.7 J		20 U	0.19 U	2.5 UJ	5.0 UJ	5.0 UJ	10 UJ		48	4.1		53.1	0.48 J	5.0 U		36
MW22	5/22/13	N	0.50 U	0.11		2.0 U		10 U		50 U	4000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		41	3.7			1.0 J	3.9		15
MW22	10/8/13	N	0.50 U	0.14		0.24 J		10.0 U		50 U	5200 B		2.8 J		20 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		45	7.2			1.4 J	4.7		10
MW22	5/14/14	N		0.093 J																								
MW22	9/24/14	N	0.070 U	0.27	0.22 J		0.75 U		25 JB			19		7.3 U		0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		51	1.7	60		0.69	3.6	0.71 J	
MW22	4/21/15	N	0.070 U	0.072 J	0.60 JB		2.8		390 B			23		7.3 U		0.065 U	0.35 U	0.25 U	0.23 U	0.52 U		42 B	1.9		57	0.69	3.7		0.57 J
MW22	10/13/15	N	0.080 U	0.49 U		1.2 J		16.0 U			1.1 U		7.3 U		0.041 J	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		46.3 B	1.7	52.3		0.65 H	2.8	0.74 J	
MW22	4/6/16	N	0.080 U	0.49 U		0.92 J		17.5 J			2.2 J		7.3 U		0.025 Jp*	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		50.8 B	1.3		57.7	0.61 H	2.9		5.3 B
MW22	7/20/16	N	0.080 U	0.49 U		3.4		235			10		7.3 U		0.030 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		58.6 B	1.2	64		0.6	3.1	1.7	
MW22	10/12/16	N	0.080 U	0.41 J		1.7 JB		85.4 JB			5.4 B		6.2 U		0.043 J	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		67.2	1.7	70		0.53 H	3.5	0.96 J	
MW22	1/18/17	N	0.080 JB	0.44 J		3.4 B		186 B			10.6		6.2 U		0.058 J	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		58.4	2.1	94.0		0.65 H	3.8	1.1	
MW23	2/26/98	N	57	1 U		2 U		17.6 U		5.5 U			128		43.6		2	1 U	77	2		120	8.7				7.6		0.47 U
MW23	2/26/98	N2		1 U		2 U		14.2 U							6.6		2 =	1 U	77 =	2 =								
MW23	9/11/01	N	10 U	0.49		1.2		6.3 J		630			140		37	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		110	10		140	0.13 U	8.2 U		5.6
MW23	9/11/01	N2				0.62 J		2.2 U		35 U			29		4.7 J													
MW23	4/13/16	N	0.080 U	0.58 J		0.75 U		35.1 J			1.1 U		7.3 U		0.015 U	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		197	29.5		255	1.8	7.1		0.62 J
MW23	7/20/16	N	0.080 U	0.70 J		0.75 U		16.0 U			1.1 U		7.3 U		0.31	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		195 B	30.6	230		1.8	7.2	0.66 J	
MW23	10/11/16	N	0.080 U	0.71 J		0.90 JB		5.3 U			0.38 JB		6.2 U		0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		194	32.3	230		1.9	8.1	0.54 JB	
MW23	1/19/17	N	0.080 U	0.75 J		0.64 JB		5.3 U			0.25 U		6.2 U		0.015 U	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		177	35.1	238		1.8 H	8.2	0.81 J	
MW24	2/8/98	N	10 U	4 U		4.3		53		5.5 U			1030		50.7		3 U	2 U	3 U	5 U		253	18.7				5.2		1.8
MW24	2/8/98	N2		4 U		2 U		9.5 U							23		3 U	2 U	3 U	5 U								
MW24	12/6/00	N	0.53 U	123 J		1.6		27		6500			530		11	5.9 U	0.1 U	1 U	0.29	1 U		180	21		310	2.3	7.1		5.5
MW24	12/6/00	N2	0.53 U			0.29		25 U		25 U			15 U		25 U	5.9 U	0.1 U	1 U	0.29	1 U									
MW24	4/24/01	N	0.1 U	0.11		2.4		30		7310			508		23	5.3 U	0.1 U	1 U	1 U	1 U		256	36		348	3.64 =	12		3.36
MW24	4/24/01	N2	0.1 U			0.29		5.2		25 U			2.4		11	5.3 U										3.64			
MW24	4/7/16	N	0.11 J	0.49 U		3.0		420			28.4		7.3 U		0.044 Jp*	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		168 B	9.1		135	1.9	17.4		0.79 JB
MW25	2/9/98	N	17	1		6.6		462		30.2 U			4480		321		0.1 U	1 U	1 U	1 U		455	15.6				9.9		0.47 U
MW25	2/9/98	N2		1 =		2 U		9.5 U							16.4		0.1 U	1 U	1 U	1 U								
MW25	4/11/16	N	0.080 U	1.1 J		17.6 B		6090 B			148 B		12.4 JB		0.024 Jp	0.064 U	0.35 U	0.25 U	0.23 U	0.52 U		33.7 B	37.8		137	2.4	3.8		1.5
MW25	7/26/16	N	0.080 U	0.35 U		1.3 J		28.8 J			1.0 J		6.2 U		0.30 B	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		40.3	49.1	108		3.2	5	0.70 J ^	

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW25	10/10/16	N	0.080 U	0.35 U		0.62 JB		5.4 JB			0.46 JB		6.2 U		0.23	0.062 U	0.28 U	0.26 U	0.23 U	0.24 U		31.1	17.5	52		1.6 H	2.8	0.44 JB	
MW25	10/10/16	D	0.080 U	0.35 U		0.71 JB		5.3 U			0.27 JB		6.2 U		0.17	0.066 U	0.28 U	0.26 U	0.23 U	0.24 U		31.1	16.9	54		1.6	2.7	0.44 JB	
MW25	1/18/17	N	0.080 U	0.35 U		1.2 JB		28.2 JB			0.70 J		6.2 U		4.9	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U		46.0	45.2	112		2.8 H	4.9	0.78 J	
MW26	12/6/00	N	0.65 U	118 J		1.1		21		25 U			94		17	5 U	0.1 U	1 U	1 U	1 U		230	29		350	2.8	540		8
MW26	12/6/00	N2	0.65 U	115 J		2.8		27		16000			300		35	5 U	0.1 U	1 U	1 U	1 U		270	28		330	2.8	770		6.1
MW26	12/6/00	N3	0.7 U			4		25 U		25 U			89		25 U	5 U	0.1 U	1 U	1 U	1 U									
MW26	12/6/00	N4				1.1		25		16000			290		33														
MW26	4/24/01	N	0.1 U	0.1 U		3		13		6980			132		24	5.4 U	0.1 U	1 U	1 U	1 U		240	22		294	5 =	10		2.79
MW26	4/24/01	N2	0.1 U			0.24		25 U		36			15 U		19700										5			
MW26	6/18/01	N	0.1 U	1		1.1		25 U		25 U			15 U		25 U	5 U	0.1 U	1 U	1 U	1 U		230	27		326	30	13		6.67
MW26	6/18/01	N2	0.1 U			3.6		18		9140			232		28										30 =			
MW26	9/10/01	N	10 U	0.16 J		1.5		10 U		2300			94		24	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		260	30		300	3.2	12		0.34 U
MW26	9/10/01	N2	10 U	0.16 J		0.8 J		4 J		100 J			4 U		3.8 J	0.24 U	0.44 U	0.5 U	0.4 U	1.2 U		260	29		310	3.2	12		2.7
MW26	9/10/01	N3				0.75 J		2.9 J		55 J			1.5 U		3.7 U													
MW26	9/10/01	N4				1.6		13		2500			96		24													
MW26	5/14/02	N		0.1		1.4 J		5 J		1530			57.2		9.7 J	5 U	1 U	5 U	5 U	5 U		260	27		300	3 H	15		5
MW26	5/14/02	N2				1.4 U		1.2 J		11.2 U			0.73 J		9.3 J										300			
MW26	8/5/02	N	10.0 U	0.03 J		3		2.5 J		385			17.2		16.3 J	5 U	1 U	5 U	5 U	5 U		270	18		310	0.15 U	14		4.5
MW26	8/5/02	N2	10.0 U	0.035 J		1.4 U		0.3 U		11.2 U			0.56 J		13.7 J	5 U	1 U	5 U	5 U	5 U		280	19		310	0.15 U	11		24
MW26	8/5/02	N3				2.7		3.9 J		728			26		18.7 J													
MW26	8/5/02	N4				3.2		0.3 U		11.2 U			0.42 U		7.4 J													
MW26	4/29/03	N	0.5 U	0.1 U		1 U		4		1290			46		10 U	7.1 U	0.5 U	5 U	5 U	5 U		248	18		262	3.5	14		7
MW26	4/29/03	N2	0.5 U	0.11 U		1 U		2 J		25 U			5 U		10 U	7.1 U	0.5 U	5 U	5 U	5 U		250	18.7		257	3.6	14		12
MW26	4/29/03	N3	0.5 U			2 J		5		1690			48		20													
MW26	4/29/03	N4				1 U		1 U		25 U			5 U		10 U													
MW26	9/23/03	N	0.5 U	0.11 U		1 U		1 J		740			29		10 U	1 U	0.25 U	2.5 U	2.5 U	2.5 U		250	11		90.28	3.74	2 U		6.4
MW26	9/23/03	N2	0.5 U			1 U		1 U		50 U			5 U		10 U													
MW26	5/4/04	FD	10.0 U	0.219 UB		0.295 J		2.37 R		399 R	27400		15.2 R		7.82 R	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		242	17 =		291	4.0 J	44 R		4.35 J
MW26	5/4/04	FD2				0.323 J		1.19 R		49.3 R			2.07 R		4.15 R													
MW26	5/4/04	N	10.0 U	0.242 UB		0.264 J		2.62 R		458 R	26700		17.8 R		10.5 R	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		242	17 =		284	3.9 J	42 R		3.75 J
MW26	5/4/04	N2				0.289 J		1.24 R		39.0 R			1.23 R		4.36 R													
MW26	9/23/04	FD	10.0 U	5.97 BE		1.00 U		3.10 J		542			22.2		6.95 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		280	28		1770	1.5 J	170 =		1.95
MW26	9/23/04	FD2		4.11 =		0.354 J		2.01 J		6.48 J			4.00 J		3.80 J													
MW26	9/23/04	N	10.0 U	0.393 =		1.00 U		3.73 J		620			24.8		7.86 J	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U		280	28		1670	1.5 J	120 =		2.40
MW26	9/23/04	N2				0.314 J		1.57 J		8.81 J			19.3		4.70 J													
MW26	5/10/05	FD	2.0 U	0.11 U		1.0 U		10 U		50 U			0.59 J		20 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		240 J	26 J		370 J	2.2 J	180 R		1.1 R
MW26	5/10/05	FD2				1.0 U		2.2 J		510			14		17 J													
MW26	5/10/05	N	2.0 U	0.061 J		1.0 U		10 U		50 U			1.8 J		20 U	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U		250 J	26 J		340 J	2.8 J	200 R		2.1 R
MW26	5/10/05	N2				1.0 U		2.4 J		680			18		7.5 J													
MW26	9/27/05	FD	2.0 UJ	0.024 J		1.0 UJ		10 U		50 U			1.7 J		20 U	0.92 U						250 J	25 J		380	2.0 J	160 J		0.68 J
MW26	9/27/05	FD2				1.0 UJ		2.6 J		50 UJ			10 U		20 U													
MW26	9/27/05	N	2.0 UJ	0.027 J		1.0 UJ		10 U		50 U			2.3 J		20 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U		240 J	25 J		350	1.9 J	170 =		0.72 J

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW26	9/27/05	N2				1.0 UJ		2.2 J		50 U			10 U		20 U														
MW26	6/7/06	FD	2.0 U	0.091 J		1.0 UJ		10 UJ		50 UJ			1.0 UJ		20 UJ	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U		250 J	29 J		350 J	1.8 J	150 =		0.94 J
MW26	6/7/06	N	2.0 U	0.11 UJ		1.0 UJ		10 UJ		50 UJ			2.5 UJ		20 UJ	0.95 U	0.50 U	5.0 U	5.0 U	5.0 U		260 J	29 J		320 J	1.8 J	140 =		1.4 J
MW26	9/26/06	N	2.0 UJ	0.11 U		1.0 UJ		10 UJ		50 UJ			10 UJ		20 UJ	0.91 U	0.50 U	5.0 U	5.0 U	5.0 U		270 J	23 J		350	1.5 J	87 J		2.0
MW26	5/8/07	FD	2.0 UJ	0.095 UJ		1.0 UJ		10 UJ		100 UJ			10 UJ		20 UJ	0.92 R	1.0 U	1.0 U	1.0 U	2.0 U		270 =	21 J		360	1.6	250 J		0.76 J
MW26	5/8/07	N	2.0 UJ	0.093 UJ		1.0 UJ		10 UJ		100 UJ			10 UJ		20 UJ	0.92 R	1.0 U	1.0 U	1.0 U	2.0 U		260 =	21 J		360	1.5	210 J		0.68 J
MW26	9/19/07	N	2.0 UJ	0.095 U		1.0 UJ		10 UJ		100 R			10 UJ		20 UJ	0.93 U	1.0 U	1.0 U	1.0 U	2.0 U		240	25		500 J	1.3	220 J		0.84 J
MW26	5/20/08	N	2.0 UJ	0.096 UJ		0.34 J		0.47 J		100 UJ			2.5 U		20 U	0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ		240 =	22		430	1.8	230		0.65 J
MW26	10/22/08	N	2.0 UJ	0.1 U		2 UJ		6.2 J		777 J	35100 J		10 UJ		20 UJ	1 U	0.5 U	2.0 U	2.0 U	5.0 U		256 J	21.7		432 J	2.36 J	235		18.6
MW26	6/2/09	N	0.8 UJ	0.1 UJ		2 U		10 UJ		341 =	33400 =		10 U		20 U	1.0 UJ	0.5 UB	0.3 J	2.0 UB	5.0 U	229 J		203		414.7082	1.83 J	2360		1.7 UJ
MW26	10/6/09	N	0.83 UJ	0.1 UJ		2 UJ		3.8 J		325 J	42900 J		10 UJ		20 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ		227 J	20.7 J		491.28 J	1.7 J	212 J		1 UJ
MW26	5/19/10	N	1.3 U	0.13 J		1.8 J		10 UJ		236. J	39800. J		10 UJ		15. J	1.0 U	0.5 U	5 U	5 U	5 U		230	20.4		486	2.41 J	279		20.1 J
MW26	10/5/10	N	1.3 U	0.1 UJ		2 U		10 U		376	37900		10 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		236	20.0 J		478	1.77	232		0.6 J
MW26	6/29/11	N	0.9 U	0.1 U		2 UJ		10 U		274	41600		10 U		20 U	0.992 U	0.1 U	0.4 U	0.4 U	1 U		202	18.3 J		463.00	1.83 J	230		1 U
MW26	10/19/11	N	0.50 U	0.099 U		0.87 J		2 U		50 U	29000 B		10 U		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		230	19		329.00	1.6 J	200		0.88 J
MW26	5/22/12	N	0.50 U	0.10 U		2.0 U		10 U		50 U	28000 =		10 U		20 U	0.19 UJ	0.50 U	1.0 U	1.0 U	2.0 U		200	19		325.00	1.7	210		0.43 J
MW26	10/16/12	N	0.50 U	0.095 U		0.99 J		10 U		50 U	29000 =		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 UJ	2.0 U		190	19		344	1.8 J	200 =		0.30 J
MW26	5/22/13	N	0.50 U	0.094 U		2.0 U		10 U		50 U	25000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		170	18			1.9 J	230		0.55 J
MW26	10/8/13	N	0.50 U	0.095 U		0.37 J		10.0 U		50 U	26000 B		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		160	18			1.5 J	110 J		1.0 U
MW26	5/14/14	N		0.095 U																									
MW26	9/24/14	FD	0.070 U	0.015 U	0.32 J		0.75 U		16 U			1.1 U		7.3 U		0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		150	17	280		1.2	160	0.50 U	
MW26	9/24/14	N	0.070 U	0.015 U	0.43 J		0.75 U		16 U			1.1 U		7.3 U		0.060 U	0.24 U	0.23 U	0.22 U	0.43 U		150	17	290		1.2	160	0.50 U	
MW26	4/21/15	FD		0.015 U	0.76 JB		0.75 U		16 U			1.1 U		7.3 U		0.060 U													
MW26	4/21/15	N	0.070 U	0.015 U	0.71 JB		0.75 U		16 U			4.4 J		7.3 U		0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		160 B	16		240	2.4	82		0.26 U
MW26	10/13/15	FD	0.080 U	0.50 J		0.75 U		16.0 U			1.1 U		7.3 U		0.015 U	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		194 B	15.5	235		1.9 H	75.7	0.33 J	
MW26	10/13/15	N	0.080 U	0.76 J		0.75 U		16.0 U			1.1 U		7.3 U		0.015 U	0.061 U	0.35 U	0.23 U	0.25 U	0.52 U		198 B	15.3	229		1.9 H	74.6	0.32 J	
MW26	4/5/16	N	0.15 J	0.57 J		1.5 JB^		21.4 JB			58.7 B		7.3 U		0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		154 B	9.4		183	1.4	36.1		0.26 J
MW27	10/20/11	N	0.10 J	0.17		1.7 J		2.3 J+		50 U	2300 B		10 U		10 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U		63	10		28.70	3.1	9.1		1.6
MW27	4/7/16	N	0.092 J	0.59 J		1.9 J		21.1 J			1.1 U		7.3 U		0.15 *	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		137 B	20.0		113	6.5 F1	14.2		1.9 B
MW27	4/7/16	FD		0.49 U		0.75 U		29.9 J			2.3 J		7.3 U		0.015 U*	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
MW28	10/20/11	N	0.19 J	690		0.55 J		2 U		50 U	12000 B		6.0 J		10 U	0.19 U	0.50 U	1.0 U	1.0 U	0.38 J		130	5.5		132.00	1.3	5.2		2.7
MW28	10/17/12	N	0.50 U	0.095 U		0.48 J		10 U		50 U	12000 =		10 U		20 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U		120	11		134	1.8	5.0 U		0.81 J
MW28	10/9/13	N	0.50 U	0.049 J		2.0 UJ		10.0 UJ		50 UJ	12000 J		10 UJ		20 UJ	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U *		120 J	21			2.2 J	6.5		0.49 J
MW28	10/9/13	N2																								2.2 J			
MW28	9/25/14	N	0.070 U	0.099	0.31 J		0.75 U		16 U			1.1 U		7.3 U		0.060 U*	0.24 U	0.23 U	0.22 U	0.43 U		120	18	150		1.3	5.1	0.85 J	
MW28	10/14/15	N	0.080 U	0.49 U		0.75 U		16.0 U			1.1 U		7.3 U		0.32	0.060 U	0.35 U	0.23 U	0.25 U	0.52 U		126 B	15.5	155		2	5.4	0.69 J	
MW28	4/6/16	N	0.20 J	0.49 U		0.76 J		29.7 J			2.7 J		7.3 U		47 *	0.065 U	0.35 U	0.25 U	0.23 U	0.52 U		122 B	9.4		125	1.2 H	4.8		1.6 B
MW28	7/21/16	N	0.10 J	0.49 J		0.75 U		25.9 JB			10.8		7.3 U		100	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U		127	11.4	138		1.9	5.4	1.9	
MW28	10/13/16	N	0.28 JB	0.39 J		0.76 JB		9.8 JB			8.5		6.2 U		1900	0.060 UH	0.28 U	0.26 U	0.23 U	1.4 J		128	11.4	148		1.7 H	5.8	12.3 ^	
MW28	10/13/16	D	0.36 JB	0.38 J		0.61 JB		5.3 U			7.9		6.2 U		1200	0.060 UH	0.28 U	0.26 U	0.23 U	1.4 J		125	11.4	142		1.7 H	5.6	12.3 ^	
MW28	1/20/17	N	0.20 J	0.47 J		1.0 JB		5.3 U			10.3 B		6.2 U		290	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U		113	13.4	138		2.0	6.1	4.9	
MW29	4/13/16	N	1.4	0.49 U		6.7		1660			2270		7.3 U		14000	34	0.35 U	0.58 J	0.90 J	7.2		87.0	4.5		120	0.035 U	6.4		70.2

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Compound [1] / Units / Type[3]	Methane ug/L	Arsenic (dissolved) ug/L	Arsenic ug/L	Copper (dissolved) ug/L	Copper ug/L	Iron (dissolved) ug/L	Iron ug/L	Magnesium ug/L	Manganese (dissolved) ug/L	Manganese ug/L	Zinc (dissolved) ug/L	Zinc ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, hydroxide (as CACO3) mg/l	Alkalinity, total (as CaCO3) mg/l	Chloride mg/l	Hardness, carbonate mg/l	Hardness mg/l	Nitrate (as N) mg/l	Sulfate mg/l	TOC averages mg/l	Total organic carbon (TOC) mg/l
MW29	7/21/16	N	0.67	0.49 U		2.1 B		1290 B			2800		7.3 U		11000	35	0.35 U	0.74 J	1.3	9.1		84	9.2	110		0.035 U	10.4	50.5	
MW29	7/21/16	FD	0.69	0.49 U		2.1 B		1250 B			2740		7.3 U		9100	30	0.35 U	0.83 J	1.2	9.3		83.8	9.2	110		0.035 U	10.5	51.6	
MW29	10/14/16	N	0.32 JB	0.35 J		2.6 B		1970 B			3220		6.2 U		20000	32	0.28 U	0.98 J	1.6	11		83	15.9	124		0.035 U	16.3	56.9 ^	
MW29	1/24/17	N	0.40 J	0.35 U		1.9 J		1400 B			3290 B		6.2 U		56000	40	0.28 U	0.98 J	1.2	12		113	4.3	120		0.035 U	6.8	51.4 B	
MW29	1/24/17	FD	0.37 J	0.35 U		3.3		1380 B			3170 B		6.2 U		67000	41	0.28 U	0.90 J	1.3	12		112	4.3	122		0.035 U	6.9	49.9 B	
MW30	4/13/16	N	0.080 U	0.49 U		0.81 J		46.1 J			147		7.3 U		0.72	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		42.0	3.2		82.3	3.4	32.8		1.2
MW30	7/21/16	N	0.080 U	0.49 U		0.75 U		16.0 U			52.9		7.3 U		1.7	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		44.5	2.9	82		4	29.9	1.4	
MW30	10/12/16	N	0.084 J	0.35 U		1.1 JB		13.8 JB			67.3 B		6.2 U		3.8	0.062 U	0.28 U	0.26 U	0.23 U	0.24 U		52.2	3.8	86		1.6 H	30.5	NA	
MW30	1/20/17	N	0.080 U	0.35 U		1.0 JB		9.4 JB			52.8 B		6.2 U		5.5	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U		45.9	2.4	60.0		0.80	9.9	1.4	
MW31	4/12/16	N	0.080 U	0.49 U		0.75 U		20.9 JB			7.7 B		7.3 U		0.030 Jp	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U		122 B	0.99 J		125	0.68	4.0		0.59 J
MW31	7/20/16	N	0.080 U	0.49 U		0.86 J		16.0 U			2.2 J		7.3 U		4.6	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U		105 B	0.76 J	100		0.49	1.9	0.68 J	
MW31	10/13/16	N	0.11 JB	0.35 U		0.76 JB		5.3 U			0.25 U		6.2 U		3.7	0.062 UH	0.28 U	0.26 U	0.23 U	0.24 U		110	0.63 J	104		0.46 H	1.5	0.29 J^	
MW31	1/17/17	N	0.20 JB	0.59 J		1.4 JB		10.5 JB			0.52 J		6.2 U		0.69	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U		113	0.53 J	118		0.51 HF1	1.7	0.74 J	
RW01	10/9/97	N													1 U														
RW01	4/23/01	N													0.1 U	5.3 U	0.5 U	5 U	5 U										
RW01	9/11/01	N													0.071 J	0.26 U	0.44 U	0.5 U	0.4 U	1.2 U									
RW01	9/28/01	N													0.1 U														
RW01	9/28/01	N2													0.05 U														
RW01	5/14/02	N													0.23	5 U	1 U	5 U	2 J	2 J									
RW01	8/6/02	N													0.04	5 U	1 U	5 U	5 U	5 U									
RW01	4/29/03	N													0.1 J	7.1 U	0.5 U	5 U	5 U	5 U									
RW01	9/23/03	N													0.28	0.97 U	0.25 U	2.5 U	2.5 U	2.5 U									
RW01	11/20/03	N													0.24														
RW01	5/4/04	FD													0.134 UB	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW01	5/4/04	N													0.140 UB	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW01	9/22/04	FD													1.51	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW01	9/22/04	N													0.201	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW01	11/1/04	N													0.0952 U														
RW01	5/10/05	FD													0.053 J	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	5/10/05	N													0.068 J	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	7/7/05	FD													0.035 J	0.96 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	7/7/05	N													0.043 J	0.95 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	9/27/05	FD													0.049 J	0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	9/27/05	N													0.050 J	0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	5/31/06	FD													0.055 J	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	5/31/06	N													0.048 J	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	9/25/06	FD													0.023 J	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	9/25/06	N													0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW01	5/9/07	FD													0.048 J	0.95 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW01	5/9/07	N													0.035 J	0.95 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW01	9/18/07	FD													0.27 R	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW01	9/18/07	N													0.093 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1]	Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
			Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
RW01	5/20/08	FD														0.066 J	0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW01	5/20/08	N														0.060 J	0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW01	10/23/08	FD															1 U													
RW01	10/23/08	N															1 U													
RW01	12/11/08	FD														0.1 U		0.1 U	0.4 U	0.4 U	1.0 U									
RW01	12/11/08	N														0.1 UJ		0.1 U	0.4 U	0.4 U	1.0 U									
RW01	6/2/09	FD														0.1 UJ	1.0 UJ	0.5 UB	2.0 UB	2.0 UB	5.0 UB									
RW01	6/2/09	N														0.1 UJ	1.0 UJ	0.5 UB	2.0 UB	2.0 UB	5.0 U									
RW01	7/6/09	FD																0.5 U	2.0 U	2.0 U	5.0 U									
RW01	7/6/09	N																0.5 U	2.0 U	2.0 U	5.0 U									
RW01	10/7/09	FD														0.1 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW01	10/7/09	N														0.1 UJ	1 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW01	5/19/10	FD														0.1 U	1.0 U	0.4 U	5 U	5 U	5 U									
RW01	5/19/10	N														0.1 U	1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ									
RW01	10/5/10	FD														0.1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U									
RW01	10/5/10	N														0.1 U	1.0 U	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW01	11/30/10	N																0.1 U	0.4 U	0.4 U	1 U									
RW01	6/30/11	FD														0.1 U	1 U	0.1 U	0.4 U	0.4 U	1 U									
RW01	6/30/11	N														0.1 U	0.997 U	0.1 U	0.4 U	0.4 U	1 U									
RW01	10/20/11	FD														0.039 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	10/20/11	N														0.040 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	12/16/11	FD														0.031 R														
RW01	12/16/11	N														0.096 UJ														
RW01	5/23/12	FD														0.017 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	5/23/12	N														0.019 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	7/11/12	FD														0.035 J														
RW01	7/11/12	FD2														0.033 J														
RW01	7/11/12	N														0.027 J														
RW01	10/17/12	FD														0.035 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	10/17/12	N														0.045 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	12/3/12	FD														0.094 UJ														
RW01	12/3/12	FD2														0.095 U														
RW01	12/3/12	N														0.094 UJ														
RW01	12/3/12	N2														0.095 U														
RW01	5/21/13	FD														0.029 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	5/21/13	N														0.031 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	10/8/13	N														0.040 J	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	10/8/13	N2														0.097 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW01	5/13/14	N														0.051 J														
RW01	9/25/14	N														0.043 J	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW01	4/21/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW01	10/15/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1]	Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
			Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
RW01	4/5/16	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW02	10/9/97	FD														2														
RW02	10/9/97	N														0.9 J														
RW02	10/24/97	N														1 U														
RW02	4/8/98	N														1 U														
RW02	4/24/01	N														0.1 U	5.4 U	0.1 U	1 U	1 U	1 U									
RW02	9/11/01	N														9.5	0.25 U	0.44 U	0.5 U	0.4 U	1.2 U									
RW02	9/28/01	N														0.1 U														
RW02	9/28/01	N2														0.1 U														
RW02	9/28/01	N3														0.05 U														
RW02	9/28/01	N4														0.05 U														
RW02	5/14/02	N														0.1	5 U	1 U	5 U	5 U	5 U									
RW02	8/6/02	N														0.04 U	5 U	1 U	5 U	5 U	5 U									
RW02	8/6/02	N2														0.04 U	5 U	1 U	5 U	5 U	5 U									
RW02	4/29/03	N														0.11 U	6.8 U	0.5 U	5 U	5 U	5 U									
RW02	9/24/03	N														0.11 U	0.97 U	0.25 U	2.5 U	2.5 U	2.5 U									
RW02	9/24/03	N2														0.11 U	0.96 U	0.25 U	2.5 U	2.5 U	2.5 U									
RW02	5/4/04	N														0.0252 UB	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW02	9/22/04	N														0.398	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW02	11/1/04	N														0.0962 U														
RW02	5/10/05	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW02	9/27/05	N														0.11 U	0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW02	5/31/06	N														0.11 UJ	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW02	9/25/06	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW02	5/9/07	N														0.092 UJ	0.97 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW02	9/18/07	N														0.093 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW02	5/20/08	N														0.095 UJ	0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW02	10/23/08	N															1.33 U													
RW02	12/10/08	N														0.1 U		0.1 U	0.4 U	0.4 U	1.0 U									
RW02	6/2/09	N														0.1 UJ	1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U									
RW02	10/7/09	N														0.1 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW02	5/19/10	N														0.1 U	1.0 U	0.4 U	5 U	5 U	5 U									
RW02	10/5/10	N														0.1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U									
RW02	6/30/11	N														0.1 U	0.999 U	0.1 U	0.4 U	0.4 U	1 U									
RW02	10/20/11	N														0.095 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW02	5/23/12	N														0.097 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW02	10/17/12	N														0.037 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW02	10/17/12	N2														0.057 J														
RW02	10/17/12	N3														0.094 UJ														
RW02	12/3/12	N														0.095 U														
RW02	12/3/12	N2														0.094 UJ														
RW02	5/21/13	N														0.097 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1]	Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
			Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
RW02	10/8/13	N														0.094 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW02	5/13/14	N														0.095 U														
RW02	9/25/14	N														0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW02	4/21/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW02	10/15/15	N														0.015 U	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW02	4/5/16	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW03	10/9/97	N														1 U														
RW03	9/11/01	N														0.1 J	0.28 U	0.44 U	0.5 U	0.4 U	1.2 U									
RW03	9/28/01	N														0.1 U														
RW03	9/28/01	N2														0.05 U														
RW03	5/14/02	N														0.094 J	5 U	1 U	5 U	5 U	5 U									
RW03	8/6/02	N														0.04 U	5 U	1 U	5 U	5 U	5 U									
RW03	4/29/03	N														0.11 U	6.8 U	0.5 U	5 U	5 U	5 U									
RW03	9/23/03	N														0.11 U	0.96 U	0.25 U	2.5 U	2.5 U	2.5 U									
RW03	5/4/04	N														0.0952 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW03	9/22/04	N														2.18	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW03	11/1/04	N														0.0962 U														
RW03	5/10/05	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW03	9/27/05	N														0.11 U	0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW03	5/31/06	N														0.11 UJ	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW03	9/25/06	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW03	5/9/07	N														0.092 UJ	0.95 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW03	9/18/07	N														0.093 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW03	5/20/08	N														0.097 UJ	0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW03	10/23/08	N															1 U														
RW03	12/10/08	N														0.1 U		0.1 U	0.4 U	0.4 U	1.0 U									
RW03	6/2/09	N														0.1 UJ	1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U									
RW03	10/7/09	N														0.1 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW03	5/19/10	N														0.1 U	1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ									
RW03	10/5/10	N														0.1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U									
RW03	6/30/11	N														0.1 U	0.994 U	0.1 U	0.4 U	0.4 U	1 U									
RW03	10/20/11	N														0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW03	5/23/12	N														0.097 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW03	10/17/12	N														0.015 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW03	12/3/12	N														0.095 U														
RW03	12/3/12	N2														0.095 UJ														
RW03	5/21/13	N														0.053 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW03	10/8/13	N														0.096 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW03	5/13/14	N														0.095 U														
RW03	9/25/14	FD														0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW03	9/25/14	N														0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW03	4/21/15	N														0.015 U	0.063 U	0.35 U	0.25 U	0.23 U	0.52 U									

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Compound [1]			Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
	Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Location	Date [2]	Type [3]																											
RW03	10/15/15	N													0.015 U	0.061 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW03	4/5/16	N													0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW04	10/9/97	N													1 U														
RW04	4/23/01	N													0.1 U	5 U	0.5 U	5 U	5 U										
RW04	9/11/01	N													0.073 J	0.25 U	0.44 U	0.5 U	0.4 U	1.2 U									
RW04	9/28/01	N													0.1 U														
RW04	9/28/01	N2													0.05 U														
RW04	5/14/02	N													0.13	5 U	1 U	5 U	5 U	5 U									
RW04	8/6/02	N													0.04 U	5 U	1 U	5 U	5 U	5 U									
RW04	4/29/03	N													0.11 U	7.4 U	0.5 U	5 U	5 U	5 U									
RW04	9/23/03	N													0.11 U	0.99 U	0.25 U	2.5 U	2.5 U	2.5 U									
RW04	5/4/04	N													0.100 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW04	9/22/04	N													0.266	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW04	10/1/04	N													0.0962 R														
RW04	5/10/05	N													0.11 U	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW04	9/27/05	N													0.11 U	0.91 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW04	5/31/06	N													0.11 UJ	0.97 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW04	9/25/06	N													0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW04	5/9/07	N													0.093 UJ	0.96 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW04	9/18/07	N													0.093 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW04	5/20/08	N													0.093 UJ	0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW04	10/23/08	N														1 U													
RW04	12/10/08	N													0.1 U		0.1 U	0.4 U	0.4 U	1.0 U									
RW04	6/2/09	N													0.1 UJ	1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U									
RW04	10/7/09	N													0.15 J	0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW04	10/20/09	N													0.1 UJ														
RW04	5/19/10	N													0.1 U	1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ									
RW04	10/5/10	N													0.1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U									
RW04	6/30/11	N													0.1 U	0.992 U	0.1 U	0.4 U	0.4 U	1 U									
RW04	10/20/11	N													0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW04	5/23/12	N													0.094 U	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW04	10/17/12	N													0.071 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW04	12/3/12	N													0.095 U														
RW04	12/3/12	N2													0.094 UJ														
RW04	5/21/13	N													0.094 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW04	10/8/13	N													0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW04	5/13/14	N													0.023 J														
RW04	9/25/14	N													0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW04	4/21/15	N													0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW04	10/15/15	N													0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW04	4/5/16	N													0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW05	5/4/04	N													0.0935 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date[2]	Type[3]	Compound [1]	Methane	Arsenic (dissolved)	Arsenic	Copper (dissolved)	Copper	Iron (dissolved)	Iron	Magnesium	Manganese (dissolved)	Manganese	Zinc (dissolved)	Zinc	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Alkalinity, hydroxide (as CACO3)	Alkalinity, total (as CaCO3)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)
			Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
RW05	9/22/04	N														0.293	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U									
RW05	11/1/04	N														0.0962 U														
RW05	5/10/05	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW05	9/27/05	N														0.11 U	0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U									
RW05	5/31/06	N														0.11 UJ	0.94 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW05	9/25/06	N														0.11 U	0.93 U	0.50 U	5.0 U	5.0 U	5.0 U									
RW05	5/9/07	N														0.092 UJ	0.93 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW05	9/18/07	N														0.093 UJ	1.0 R	1.0 U	1.0 U	1.0 U	2.0 U									
RW05	5/20/08	N														0.095 UJ	0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ									
RW05	10/23/08	N															1 U													
RW05	12/10/08	N														0.1 U		0.1 U	0.4 U	0.4 U	1.0 U									
RW05	6/2/09	N														0.1 UJ	1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U									
RW05	10/7/09	N														0.1 UJ	0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ									
RW05	5/19/10	N														0.1 U	1.0 U	0.4 U	5 U	5 U	5 U									
RW05	10/5/10	N														0.1 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U									
RW05	6/30/11	N														0.1 U	0.991 U	0.1 U	0.4 U	0.4 U	1 U									
RW05	10/20/11	N														0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW05	5/23/12	N														0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW05	10/17/12	N														0.030 J	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW05	12/4/12	N														0.095 UJ														
RW05	12/4/12	N2														0.095 U														
RW05	5/21/13	N														0.095 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW05	10/8/13	N														0.098 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U									
RW05	5/13/14	N														0.095 U														
RW05	9/25/14	N														0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW05	4/21/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW05	10/15/15	N														0.016 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW05	4/5/16	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW06	9/25/14	N														0.015 U	0.060 U	0.24 U	0.23 U	0.22 U	0.43 U									
RW06	4/21/15	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW06	10/15/15	N														0.018 J	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									
RW06	4/5/16	N														0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U									

Appendix A.6

Historical Groundwater Sampling Results
Penta Wood Products Superfund Site
Siren, Wisconsin

Notes:

########## Only compounds currently sampled are included on this table.

########## Samples collected before September 2014 were not collected by GHD. GHD has no ability to verify data or data qualifiers.

########## Sample type is listed for normal samples (N) and field duplicates (FD), numbers differentiate from multiple samples of similar sample type during the same sampling event.

r Concentrations listed with units of milligrams per liter.

ι Concentrations listed with units of micrograms per liter.

⁴ LCS or LCSD exceeds the control limits.

Ɛ Compound was detected in the method blank.

f MS and/or MSD Recovery exceeds the control limits

ⱨ Analysis was performed after holding time.

J Concentration was estimated below the reporting limit.

ƒ The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

ι Compound was not detected above the reporting limit.

ι Compound was not detected above the estimated reporting limit.

Appendix A.2

Historical LNAPL Thickness - Monitoring Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

	Monitoring Well LNAPL Thickness (feet)			
Date	**MW10S**	**MW18**	**MW19**	**MW20**
Sep-01	0.01	0.27	0.51	0.11
May-02	0.00	0.29	0.23	0.00
Aug-02	0.00	0.33	0.22	0.00
May-03	0.00	0.00	0.00	0.00
Sep-03	0.00	0.32	0.24	0.04
May-04	0.00	0.45	0.36	0.35
Sep-04	0.21	0.54	0.67	0.52
May-05	0.29	0.48	0.63	0.36
Sep-05	0.87	0.06	0.83	1.15
May-06	0.00	0.00	0.29	0.00
Sep-06	0.00	0.05	0.80	0.69
Apr-07	0.58	0.04	0.74	1.22
May-07	0.58	0.03	0.54	1.20
Sep-07	0.04	0.16	1.07	0.00
May-08	0.40	1.19	0.90	1.71
Oct-08	0.14	0.04	0.00	0.00
Jun-09	0.54	1.58	1.60	1.45
Oct-09	0.63	1.92	1.46	1.02
May-10	0.51	2.01	1.10	0.85
Oct-10	0.00	0.57	0.59	0.00
Jun-11	0.00	0.42	0.79	0.00
Oct-11	0.00	0.53	1.07	0.00
May-12	0.69	0.79	0.80	2.17
Aug-12	0.04	0.43	0.89	0.30
Oct-12	0.00	0.45	0.91	0.88
Dec-12	0.02	0.44	1.06	0.95
May-13	0.17	0.53	0.94	1.08
Oct-13	0.00	0.70	1.25	0.81
May-14	0.00	0.79	0.22	0.22
Sep-14	0.00	0.56	0.30	0.00
2/13/15	0.00	0.56	0.24	0.00
2/20/15	0.00	0.53	0.23	0.00
3/24/15	0.00	0.34	0.52	0.00
4/16/15	0.00	0.58	NM	0.00
5/14/15	0.00	0.57	NM	0.00
10/12/15	0.00	0.42	0.07	0.01
4/4/16	0.00	0.66	0.25	0.01
7/18/16	0.00	0.52	0.00	0.00
10/7/16	0.00	0.67	0.01	0.01
1/11/17	0.00	NM	0.18	0.02

Notes:

NM - Not Measured

Appendix A.3

Historical Groundwater Extraction Summary
Penta Wood Products Superfund Site
Siren, Wisconsin

Operation Period	Volume of Groundwater Extracted (gallons)
09/27/00 to 12/18/00	11,712,960
02/02/01 to 02/08/01	691,200
03/16/01 to 06/10/01	9,288,000
06/15/01 to 09/27/01	6,822,720
02/27/04 to 12/31/04	18,548,154
01/01/05 to 12/31/05	21,374,796
01/01/06 to 12/31/06	14,759,392
01/01/07 to 12/31/07	16,551,336
01/01/08 to 12/31/08	18,118,696
01/01/09 to 12/31/09	18,533,648
01/01/10 to 12/31/10	18,561,632
01/01/11 to 12/31/11	17,796,668
01/01/12 to 12/31/12	23,051,892
01/01/13 to 12/31/13	29,793,563
01/01/14 to 12/31/14	18,415,098
01/01/15 to 06/30/15	6,282,127
07/01/15 to 11/23/15	5,125,729
Total Gallons Extracted	255,427,611

Appendix A.4

Historical Influent Pentachlorophenol Concentrations
Penta Wood Products Superfund Site
Siren, Wisconsin

Date	Influent PCP Concentration (ug/L)
02/27/2004 to 12/31/2004*	9,227
01/01/2005 to 12/31/2005*	7,300
01/01/2006 to 12/31/2006*	6,425
01/01/2007 to 12/31/2007*	3,557
01/01/2008 to 12/31/2008*	3,255
March 2009	3,560
July 2009	3,140
September 2009	2,800
December 2009	2,030
March 2010	2050 J
June 2010	1,970
September 2010	1,830
December 2010	1,940
March 2011	2,470
June 2011	2,170
August 2011	1,700
October 2011	1,600
February 2012	2,600
May 2012	2,200
July 2012	1,900
October 2012	1,800
February 2013	1,100
May 2013	1,100
July 2013	1,800
October 2013	1,400
February 2014	1,800
May 2014	1,600
August 2014	2,100
September 2014	2,400
October 2014	2,400
November 2014	2,100
December 2014	4,600
January 2015	1,800
February 2015	480
March 2015	390
April 2015*	1,767
May 2015*	355
June 2015	550
July 2015*	1,100
August 2015	370
September 2015	750
October 2015	600
November 2015	1,100

Note:

* Average PCP influent concentration for that time period.

Appendix A.5

Historical Hazardous Waste Generation Summary
Penta Wood Products Superfund Site
Siren, Wisconsin

Date	Filter Cake (lb)	Misc. Debris (lb)	Carbon (lb)	LNAPL (lb)	Water (gallons)	Yearly Total (lb)
2000	0	200	6,000	5,009*	0	11,209
2001	0	400	56,100	6,166*	0	62,666
2002	0	1,400	48,000	10,790*	27,756	87,946
2003	0	600	0	3,083*	1,376	5,059
2004	155,960	3,200	102,000	53,522*	0	314,682
2005	178,784	1,290	104,860	23,847*	0	308,924
2006	112,640	1,200	136,520	52,892*	0	303,252
2007	174,020	2,200	245,377	77,615*	0	517,387
2008	211,402	3,176	70,007	28,036	0	312,621
2009	233,840	1,116	49,757	35,659	0	320,372
2010	210,940	0	81,227	34,937	0	327,104
2011	292,903	0	74,247	0	0	367,150
2012	182,280	0	65,420	25,493	0	273,193
2013	156,760	0	46,571	27,252	0	230,582
2014	110,754	13,513	65,995	11,720	0	201,982
2015	0	0	22,248	0	0	22,248
2016	0	15,212†	34,877	14,374	0	49,251
2017	0	0	0	0	0	0

Note:

* - Volume shows the amount of waste disposed offsite and is estimated to be approximately 50 percent pure LNAPL and 50 percent mixture of water and emulsified LNAPL.

† - Miscellaneous debris includes sludge, filter cake, and drill cuttings from system decommissioning.

lb - pounds

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW02	2/18/2015	97.51	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW02	2/20/2015	97.52	NP	0.00	NA	
EW02	2/24/2015	97.59	NP	0.00	NA	
EW02	3/10/2015	97.67	NP	0.00	NA	
EW02	3/24/2015	97.76	NP	0.00	NA	
EW02	4/10/2015	97.79	NP	0.00	NA	
EW02	4/16/2015	97.76	NP	0.00	NA	
EW02	5/8/2015	97.77	NP	0.00	NA	Groundwater extraction rate increased to 12 gpm on 4/30/2015
EW02	5/21/2015	97.89	NP	0.00	NA	
EW02	6/3/2015	97.92	NP	0.00	NA	
EW02	6/16/2015	97.99	NP	0.00	NA	
EW02	7/8/2015	98.12	NP	0.00	NA	
EW02	7/21/2015	98.11	NP	0.00	NA	
EW02	7/29/2015	98.11	NP	0.00	NA	Groundwater extraction rate increased to 13.5 gpm
EW02	8/5/2015	98.18	NP	0.00	NA	
EW02	8/19/2015	98.11	NP	0.00	NA	
EW02	9/4/2015	97.83	NP	0.00	NA	
EW02	9/21/2015	97.76	NP	0.00	NA	
EW02	10/8/2015	97.72	NP	0.00	NA	
EW02	10/22/2015	97.64	NP	0.00	NA	
EW02	11/2/2015	97.58	NP	0.00	NA	
EW02	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
				Total LNAPL Recovered	0.0	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW04	11/4/2014	114.30	NP	0.00	NA	
EW04	12/11/2014	115.39	NP	0.00	NA	
EW04	12/23/2014	115.34	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW04	12/30/2014	115.26	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW04	1/8/2015	115.22	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW04	1/19/2015	115.23	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW04	1/22/2015	115.36	NP	0.00	NA	
EW04	1/30/2015	115.47	NP	0.00	NA	
EW04	2/3/2015	115.48	NP	0.00	NA	
EW04	2/13/2015	115.51	NP	0.00	NA	
EW04	2/17/2015	115.48	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW04	2/18/2015	115.51	NP	0.00	NA	
EW04	2/20/2015	115.43	NP	0.00	NA	
EW04	2/24/2015	115.53	NP	0.00	NA	
EW04	3/10/2015	115.58	NP	0.00	NA	
EW04	3/24/2015	115.67	NP	0.00	NA	
EW04	4/10/2015	115.69	NP	0.00	NA	
EW04	4/16/2015	115.69	NP	0.00	NA	
EW04	5/8/2015	115.69	NP	0.00	NA	Groundwater extraction rate increased to 12 gpm on 4/30/2015
EW04	5/21/2015	115.74	NP	0.00	NA	
EW04	6/3/2015	115.75	NP	0.00	NA	
EW04	6/16/2015	115.82	NP	0.00	NA	
EW04	7/8/2015	115.93	NP	0.00	NA	
EW04	7/21/2015	115.92	NP	0.00	NA	
EW04	7/29/2015	115.91	NP	0.00	NA	Groundwater extraction rate increased to 13.5 gpm
EW04	8/5/2015	115.97	NP	0.00	NA	
EW04	8/19/2015	115.95	NP	0.00	NA	
EW04	9/4/2015	115.78	NP	0.00	NA	
EW04	9/21/2015	115.61	NP	0.00	NA	
EW04	10/8/2015	115.58	NP	0.00	NA	
EW04	10/22/2015	115.58	NP	0.00	NA	
EW04	11/2/2015	115.45	NP	0.00	NA	
EW04	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
				Total LNAPL Recovered	0.0	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW05	11/4/2014	83.35	83.25	0.10	NA	
EW05	11/6/2014	NM	NM	NM	<0.1	
EW05	11/7/2014	91.51	91.44	0.07	NA	
EW05	11/11/2014	91.75	91.56	0.19	NA	
EW05	11/12/2014	91.65	91.48	0.17	NA	Temporary system shutdown due to alarm condition
EW05	11/17/2014	91.64	91.51	0.13	NA	
EW05	12/1/2014	91.58	91.46	0.12	NA	
EW05	12/8/2014	91.55	91.51	0.04	NA	
EW05	12/11/2014	91.65	91.52	0.13	NA	
EW05	12/23/2014	91.40	91.39	0.01	NA	Groundwater extraction system shutdown pending carbon change-out
EW05	12/30/2014	91.37	91.36	0.01	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW05	1/8/2015	91.31	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW05	1/19/2015	91.32	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW05	1/22/2015	91.95	91.45	0.50	NA	
EW05	1/30/2015	92.00	91.49	0.51	0.1	Measurements recorded prior to LNAPL removal
EW05	2/3/2015	92.17	91.54	0.63	NA	
EW05	2/13/2015	92.14	91.54	0.60	NA	Groundwater extraction pump turned off
EW05	2/17/2015	91.72	91.49	0.23	NA	
EW05	2/20/2015	91.96	91.54	0.42	NA	
EW05	2/24/2015	91.91	91.56	0.35	NA	
EW05	2/27/2015	NM	NM	NM	0.3	Measurements recorded prior to LNAPL removal
EW05	3/10/2015	92.30	91.58	0.72	0.1	Measurements recorded prior to LNAPL removal
EW05	3/26/2015	92.42	91.62	0.80	NA	
EW05	3/31/2015	NM	NM	NM	0.5	
EW05	4/10/2015	92.50	91.71	0.79	NA	
EW05	4/16/2015	92.51	91.69	0.82	NA	
EW05	4/27/2015	NM	NM	NM	1.0	
EW05	5/8/2015	92.03	91.70	0.33	NA	
EW05	5/21/2015	92.34	91.76	0.58	1.0	
EW05	6/3/2015	92.29	91.79	0.50	0.4	
EW05	6/16/2015	92.40	91.86	0.54	0.3	
EW05	7/8/2015	92.34	91.95	0.39	NA	
EW05	7/10/2015	NM	NM	NM	0.5	
EW05	7/21/2015	92.58	91.93	0.65	NA	
EW05	7/23/2015	NM	NM	NM	0.5	
EW05	7/29/2015	92.69	91.96	0.73	NA	
EW05	8/5/2015	92.60	92.04	0.56	NA	
EW05	8/7/2015	NM	NM	NM	0.3	
EW05	8/19/2015	92.45	91.94	0.51	NA	
EW05	8/21/2015	NM	NM	NM	0.3	
EW05	9/4/2015	92.02	91.82	0.20	NA	
EW05	9/11/2015	NM	NM	NM	<0.1	
EW05	9/21/2015	91.67	91.66	0.01	NA	
EW05	10/8/2015	91.87	91.67	0.20	NA	
EW05	10/22/2015	91.66	91.65	0.01	NA	
EW05	11/2/2015	91.51	91.50	0.01	NA	
				Total LNAPL Recovered	5.5	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW06	11/5/2014	111.22	98.06	13.16	12.0	
EW06	11/12/2014	107.80	98.30	9.50	NA	Temporary system shutdown due to alarm condition
EW06	11/17/2014	110.34	98.52	11.82	NA	
EW06	11/24/2014	111.05	98.45	12.60	10.0	
EW06	11/25/2014	105.63	98.55	7.08	NA	
EW06	12/1/2014	108.60	98.53	10.07	NA	
EW06	12/4/2014	109.35	98.48	10.87	NA	
EW06	12/8/2014	101.90	97.89	4.01	NA	
EW06	12/11/2014	111.91	98.01	13.90	NA	Measurements recorded prior to LNAPL removal
EW06	12/11/2014	100.35	98.40	1.95	12.0	Measurements recorded immediately after LNAPL removal
EW06	12/15/2014	108.40	98.01	10.39	NA	
EW06	12/23/2014	109.35	98.01	11.34	NA	Measurements recorded prior to LNAPL removal
EW06	12/23/2014	99.50	98.35	1.15	13.0	Measurements recorded immediately after LNAPL removal, groundwater extraction system shutdown pending carbon change-out
EW06	12/30/2014	98.59	97.83	0.76	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW06	1/8/2015	99.00	97.92	1.08	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW06	1/19/2015	99.54	97.80	1.74	NA	Groundwater extraction system restarted after carbon change-out
EW06	1/22/2015	111.10	98.18	12.92	NA	
EW06	1/23/2015	98.90	98.50	0.40	12.0	Measurements recorded immediately after LNAPL removal
EW06	1/30/2015	109.35	98.22	11.13	NA	
EW06	2/3/2015	112.61	98.22	14.39	12.0	Measurements recorded prior to LNAPL removal
EW06	2/13/2015	112.44	98.22	14.22	14.0	Groundwater extraction pump turned off
EW06	2/17/2015	101.95	98.12	3.83	NA	
EW06	2/20/2015	105.20	98.18	7.02	NA	
EW06	2/24/2015	105.37	98.02	7.35	8.0	Measurements recorded prior to LNAPL removal
EW06	3/10/2015	108.36	98.22	10.14	8.0	Measurements recorded prior to LNAPL removal
EW06	3/24/2015	NM	NM	NM	8.0	Not measured due to equipment breakdown
EW06	3/26/2015	105.87	98.21	7.66	NA	
EW06	4/10/2015	105.55	98.39	7.16	10.0	
EW06	4/16/2015	106.02	98.36	7.66	10.0	
EW06	4/30/2015	106.33	98.47	7.86	8.0	Groundwater extraction rate increased to 6 gpm
EW06	5/8/2015	100.72	98.32	2.40	4.0	
EW06	5/21/2015	106.84	98.27	8.57	10.0	
EW06	6/3/2015	106.55	98.41	8.14	NA	
EW06	6/4/2015	NM	NM	NM	10.0	
EW06	6/16/2015	105.85	98.49	7.36	7.0	
EW06	7/8/2015	107.10	98.42	8.68	20.0	
EW06	7/10/2015	107.10	98.60	8.50	17.0	
EW06	7/21/2015	107.90	98.54	9.36	17.0	
EW06	7/29/2015	105.87	98.59	7.28	NA	Groundwater extraction rate decreased to 3 gpm
EW06	8/5/2015	105.98	98.65	7.33	14.0	
EW06	8/7/2015	NM	NM	NM	14.0	
EW06	8/19/2015	103.95	98.51	5.44	10.0	
EW06	9/4/2015	105.31	98.31	7.00	10.0	
EW06	9/21/2015	104.49	98.28	6.21	10.0	
EW06	10/8/2015	100.38	98.25	2.13	5.0	
EW06	10/22/2015	105.54	98.23	7.31	8.0	
EW06	11/2/2015	105.15	98.05	7.10	NA	
EW06	11/5/2015	NM	NM	NM	8.0	
EW06	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
				Total LNAPL Recovered	301.0	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW10	11/4/2014	108.20	103.92	4.28	NA	
EW10	11/5/2014	108.77	104.70	4.07	4.0	
EW10	11/18/2014	107.60	104.35	3.25	NA	
EW10	11/24/2014	107.45	103.94	3.51	0.0	LNAPL pump inoperable, unable to recover LNAPL
EW10	11/25/2014	107.50	103.91	3.59	NA	
EW10	12/1/2014	107.30	104.14	3.16	NA	
EW10	12/4/2014	107.33	104.11	3.22	NA	Measurements recorded prior to LNAPL removal
EW10	12/4/2014	105.35	104.05	1.30	2.0	Measurements recorded immediately after LNAPL removal
EW10	12/8/2014	104.29	103.17	1.12	NA	
EW10	12/11/2014	106.95	104.05	2.90	NA	Measurements recorded prior to LNAPL removal
EW10	12/11/2014	105.46	104.12	1.34	2.0	Measurements recorded immediately after LNAPL removal
EW10	12/15/2014	106.68	104.00	2.68	NA	
EW10	12/23/2014	107.25	103.91	3.34	NA	Measurements recorded prior to LNAPL removal
EW10	12/23/2014	104.75	104.06	0.69	4.0	Measurements recorded immediately after LNAPL removal, groundwater extraction system shutdown pending carbon change-out
EW10	12/30/2014	104.59	103.00	1.59	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW10	1/8/2015	104.55	103.10	1.45	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW10	1/19/2015	104.70	103.00	1.70	NA	Groundwater extraction system restarted after carbon change-out
EW10	1/22/2015	106.38	104.31	2.07	NA	
EW10	1/23/2015	104.40	104.38	0.02	2.0	Measurements recorded immediately after LNAPL removal
EW10	1/30/2015	105.76	104.28	1.48	NA	
EW10	2/3/2015	106.00	104.27	1.73	2.0	Measurements recorded prior to LNAPL removal
EW10	2/13/2015	106.82	104.24	2.58	3.0	Groundwater extraction pump turned off
EW10	2/17/2015	105.80	103.65	2.15	NA	
EW10	2/20/2015	106.40	103.81	2.59	NA	
EW10	2/24/2015	106.85	103.79	3.06	2.0	Measurements recorded prior to LNAPL removal
EW10	3/10/2015	107.80	103.81	3.99	2.0	Measurements recorded prior to LNAPL removal
EW10	3/24/2015	108.21	103.84	4.37	2.0	Measurements recorded prior to LNAPL removal
EW10	4/10/2015	108.96	103.86	5.10	3.0	
EW10	4/16/2015	108.18	103.90	4.28	2.0	
EW10	4/30/2015	107.81	103.84	3.97	2.0	
EW10	5/8/2015	106.84	103.46	3.38	2.5	
EW10	5/21/2015	107.46	103.62	3.84	2.5	
EW10	6/3/2015	107.51	103.60	3.91	NA	
EW10	6/4/2015	NM	NM	NM	2.5	
EW10	6/16/2015	108.20	103.85	4.35	2.0	
EW10	7/8/2015	108.53	103.96	4.57	3.0	
EW10	7/10/2015	107.85	103.97	3.88	NA	
EW10	7/21/2015	108.48	103.96	4.52	3.0	
EW10	7/29/2015	108.10	104.00	4.10	NA	
EW10	8/5/2015	108.85	104.00	4.85	2.5	
EW10	8/19/2015	108.57	103.74	4.83	3.0	
EW10	9/4/2015	108.91	103.60	5.31	3.0	
EW10	9/21/2015	108.35	103.62	4.73	3.0	
EW10	10/8/2015	107.72	103.33	4.39	2.5	
EW10	10/22/2015	109.10	103.56	5.54	3.0	
EW10	11/2/2015	109.50	103.27	6.23	NA	
EW10	11/5/2015	NM	NM	NM	3.0	
				Total LNAPL Recovered	67.5	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW12	11/4/2014	105.26	105.04	0.22	NA	
EW12	11/6/2014	NM	NM	NM	<0.1	
EW12	11/7/2014	108.26	108.15	0.11	NA	
EW12	11/11/2014	108.39	108.22	0.17	NA	
EW12	11/12/2014	101.16	101.14	0.02	NA	Temporary system shutdown due to alarm condition
EW12	11/17/2014	108.00	107.98	0.02	NA	
EW12	12/8/2014	100.99	NP	0.00	NA	
EW12	12/11/2014	108.98	108.97	0.01	NA	
EW12	12/23/2014	109.75	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW12	12/30/2014	101.10	100.88	0.22	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW12	1/8/2015	101.20	100.84	0.36	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW12	1/19/2015	101.35	100.85	0.50	NA	Groundwater extraction system restarted after carbon change-out
EW12	1/22/2015	108.16	108.15	0.01	NA	
EW12	1/30/2015	108.96	108.96	0.00	NA	
EW12	2/3/2015	109.13	109.13	0.00	NA	
EW12	2/13/2015	109.98	NP	0.00	NA	Groundwater extraction pump turned off
EW12	2/17/2015	101.56	101.08	0.48	NA	
EW12	2/20/2015	101.90	101.32	0.58	NA	
EW12	2/24/2015	102.01	101.31	0.70	NA	
EW12	2/27/2015	NM	NM	NM	0.1	Measurements recorded prior to LNAPL removal
EW12	3/10/2015	102.35	101.35	1.00	0.1	Measurements recorded prior to LNAPL removal
EW12	3/24/2015	102.45	101.33	1.12	NA	
EW12	3/31/2015	NM	NM	NM	1.0	
EW12	4/10/2015	102.22	101.36	0.86	NA	
EW12	4/16/2015	102.32	101.36	0.96	NA	
EW12	4/27/2015	NM	NM	NM	1.0	
EW12	5/8/2015	101.99	101.19	0.80	NA	
EW12	5/21/2015	102.39	101.40	0.99	1.0	
EW12	6/3/2015	102.34	101.45	0.89	0.4	
EW12	6/16/2015	102.27	101.50	0.77	0.3	
EW12	7/8/2015	102.26	101.54	0.72	NA	
EW12	7/10/2015	NM	NM	NM	0.5	
EW12	7/21/2015	102.10	101.61	0.49	NA	
EW12	7/23/2015	NM	NM	NM	0.5	
EW12	7/29/2015	102.11	101.65	0.46	NA	
EW12	8/5/2015	102.39	101.69	0.70	NA	
EW12	8/7/2015	NM	NM	NM	0.3	
EW12	8/19/2015	101.27	100.45	0.82	NA	
EW12	8/21/2015	NM	NM	NM	0.1	
EW12	9/4/2015	101.87	101.47	0.40	NA	
EW12	9/11/2015	NM	NM	NM	0.3	
EW12	9/21/2015	101.60	101.29	0.31	NA	
EW12	10/1/2015	NM	NM	NM	0.2	
EW12	10/8/2015	101.39	101.15	0.24	NA	
EW12	10/22/2015	101.52	101.23	0.29	NA	
EW12	11/2/2015	101.51	101.18	0.33	NA	
				Total LNAPL Recovered	5.9	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW13	11/4/2014	111.48	NP	0.00	NA	
EW13	12/11/2014	114.81	NP	0.00	NA	
EW13	12/23/2014	115.11	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW13	12/30/2014	107.34	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW13	1/8/2015	107.27	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW13	1/19/2015	107.33	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW13	1/22/2015	115.05	NP	0.00	NA	
EW13	1/30/2015	115.49	NP	0.00	NA	
EW13	2/3/2015	115.28	NP	0.00	NA	
EW13	2/13/2015	115.74	NP	0.00	NA	
EW13	2/17/2015	117.05	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW13	2/18/2015	119.19	NP	0.00	NA	
EW13	2/20/2015	119.37	NP	0.00	NA	
EW13	2/24/2015	119.50	NP	0.00	NA	
EW13	3/10/2015	120.13	NP	0.00	NA	
EW13	3/24/2015	116.72	NP	0.00	NA	
EW13	4/10/2015	118.55	NP	0.00	NA	
EW13	4/16/2015	120.92	NP	0.00	NA	
EW13	5/8/2015	107.18	NP	0.00	NA	Groundwater extraction pump turned off on 4/30/2015
EW13	5/21/2015	104.94	NP	0.00	NA	
EW13	6/3/2015	105.88	NP	0.00	NA	
EW13	6/16/2015	106.44	NP	0.00	NA	
EW13	7/8/2015	107.42	NP	0.00	NA	
EW13	7/21/2015	107.70	NP	0.00	NA	
EW13	7/29/2015	107.91	NP	0.00	NA	
EW13	8/5/2015	107.89	NP	0.00	NA	
EW13	8/19/2015	107.80	NP	0.00	NA	
EW13	9/4/2015	107.63	NP	0.00	NA	
EW13	9/21/2015	107.63	NP	0.00	NA	
EW13	10/8/2015	107.49	NP	0.00	NA	
EW13	10/22/2015	107.72	NP	0.00	NA	
EW13	11/2/2015	107.48	NP	0.00	NA	
				Total LNAPL Recovered	0.0	

Appendix A.6

LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Well ID	Date	Depth to Water (feet) [1]	Depth to LNAPL (feet) [1]	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW14	11/4/2014	112.55	112.45	0.10	NA	
EW14	11/6/2014	NM	NM	NM	<0.1	
EW14	11/7/2014	112.54	112.49	0.05	NA	
EW14	11/11/2014	112.68	112.60	0.08	NA	
EW14	11/12/2014	112.91	112.87	0.04	NA	Temporary system shutdown due to alarm condition
EW14	11/17/2014	111.82	111.55	0.27	NA	
EW14	12/8/2014	112.89	112.85	0.04	NA	
EW14	12/11/2014	113.83	113.75	0.08	NA	
EW14	12/23/2014	113.74	113.65	0.09	NA	Groundwater extraction system shutdown pending carbon change-out
EW14	12/30/2014	112.85	112.76	0.09	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW14	1/8/2015	112.77	112.71	0.06	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW14	1/19/2015	112.92	112.78	0.14	NA	Groundwater extraction system restarted after carbon change-out
EW14	1/22/2015	113.80	113.72	0.08	NA	
EW14	1/30/2015	113.79	113.66	0.13	<0.1	
EW14	2/3/2015	113.74	113.65	0.09	NA	
EW14	2/13/2015	113.90	113.68	0.22	NA	
EW14	2/17/2015	113.85	113.79	0.06	NA	Groundwater extraction rate increased to 10 gpm
EW14	2/18/2015	114.29	114.21	0.08	NA	
EW14	2/20/2015	114.26	114.18	0.08	NA	
EW14	2/24/2015	114.25	114.21	0.04	NA	
EW14	3/10/2015	114.36	114.30	0.06	NA	
EW14	3/24/2015	114.41	114.36	0.05	NA	
EW14	3/31/2015	NM	NM	NM	<0.1	
EW14	4/10/2015	114.43	114.42	0.01	NA	
EW14	4/16/2015	114.47	114.44	0.03	NA	
EW14	5/8/2015	113.30	113.14	0.16	NA	Groundwater extraction pump turned off on 4/30/2015
EW14	5/21/2015	113.71	113.49	0.22	NA	
EW14	6/3/2015	113.72	113.50	0.22	0.2	
EW14	6/16/2015	113.71	113.58	0.13	0.1	
EW14	7/8/2015	113.71	113.62	0.09	NA	
EW14	7/21/2015	113.78	113.68	0.10	NA	
EW14	7/29/2015	113.83	113.72	0.11	NA	
EW14	8/5/2015	113.84	113.72	0.12	NA	
EW14	8/7/2015	NM	NM	NM	<0.1	
EW14	8/19/2015	113.80	113.70	0.10	NA	
EW14	9/4/2015	113.68	113.59	0.09	NA	
EW14	9/11/2015	NM	NM	NM	<0.1	
EW14	9/21/2015	113.43	113.38	0.05	NA	
EW14	10/8/2015	113.12	113.06	0.06	NA	
EW14	10/22/2015	113.48	113.39	0.09	NA	
EW14	11/2/2015	113.44	113.32	0.12	NA	
				Total LNAPL Recovered	0.8	
			Total LNAPL Recovered (all wells)		380.7	Since system modification in October 2014; system shutdown and LNAPL recovery terminated in November 2015

Notes:

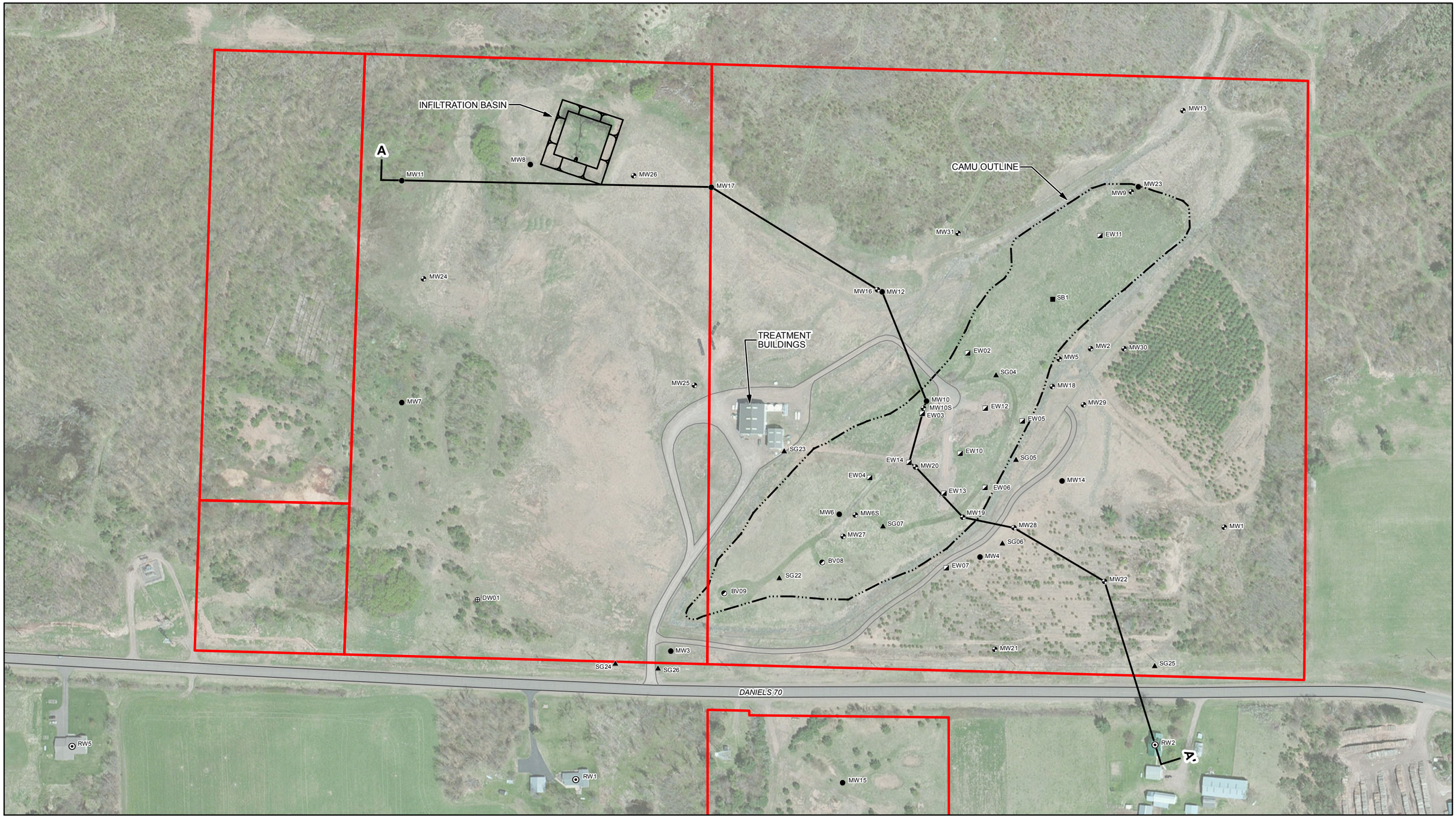
[1] Depth to water and depth to LNAPL measurements before December 2014 were not consistently recorded from the same benchmark location/elevation. Measurements were consistently recorded from the same benchmark location at the top of the well vault starting in December 2014.

NM - Not measured

NP - LNAPL was not present in a measurable quantity

NA - Not applicable

Appendix B
Cross-Section



0 100 200 ft

N

LEGEND

- EXTRACTION WELL NEST
- UNCONFINED MONITORING WELL
- SEMICONFINED MONITORING WELL
- BIOVENTING WELL
- SOIL GAS WELL NEST
- WATER SUPPLY WELL
- RESIDENTIAL WELL
- APPROXIMATE CAMU LIMIT
- SITE PARCEL BOUNDARY
- CROSS SECTION LOCATION

GHD

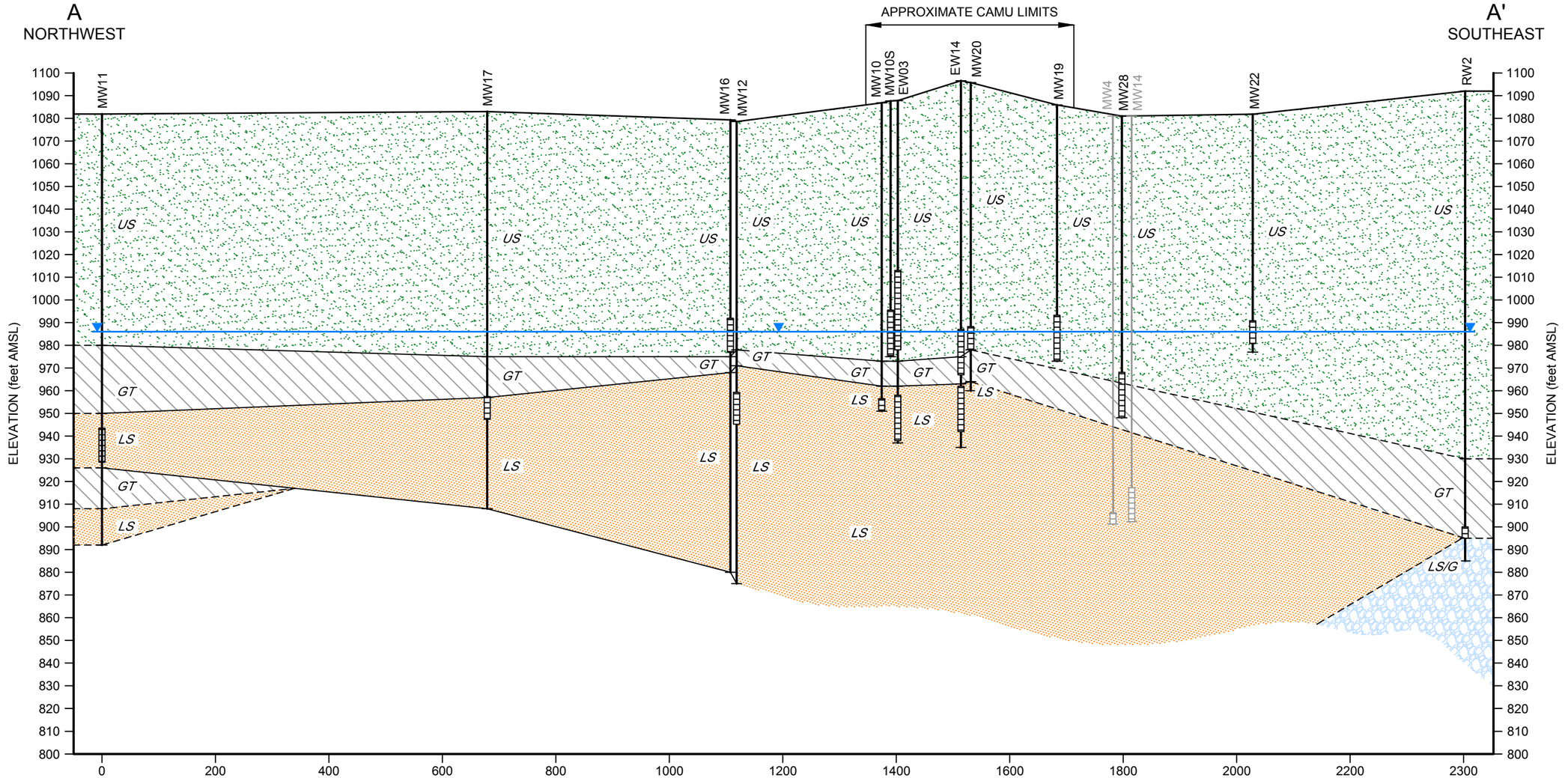
PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
QUARTERLY REPORT

086165-04-07
Apr 28, 2017

LOCATION OF CROSS SECTION A - A'

FIGURE B1

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-04(014)\086165-04(014)GIS-SP003.mxd



SCALE: HORZ. 1" = 200'
VERT. 1" = 50'

LEGEND

MW-2
- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING
- APPROXIMATE WATER TABLE

- UPPER SAND (*US*) WELL GRADED SAND UNIT
- GLACIAL TILL (*GT*) SILTY SAND TO SANDY SILT WITH GRAVEL
- LOWER SAND (*LS*) WELL GRADED SAND UNIT
- LOWER SAND WITH GRAVEL (*LS/G*) WELL GRADED SAND WITH GRAVEL

figure B2

GENERAL CROSS-SECTION
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

GHD

86165-03(014)GN-WA009 MAY 2, 2017

Appendix C
Groundwater Sample Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-74553-1
Client Project/Site: 86165-03-11, Penta Wood

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Denise D Heckler

Authorized for release by:
1/30/2017 8:05:15 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

GC Semi VOA

Qualifier	Qualifier Description
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Reported value was between the limit of detection and the limit of quantitation.

Metals

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
F1	MS and/or MSD Recovery is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-74553-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-74553-1

Comments
No additional comments.

Receipt
The samples were received on 1/19/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.6º C, 0.8º C, 1.0º C, 1.2º C and 2.2º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
Method(s) 8151A: The following sample was diluted due to the abundance of target analytes: W-170118-PS-03 (240-74553-3) and W-170118-PS-05 (240-74553-5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method(s) 300.0, 9056A: The following samples ere analyzed outside of analytical holding time due to equipment failure: W-170118-PS-02 (240-74553-2), W-170118-PS-02 (240-74553-2[MS]), W-170118-PS-02 (240-74553-2[MSD]), W-170118-PS-03 (240-74553-3), W-170118-PS-04 (240-74553-4), W-170118-PS-06 (240-74553-6) and W-170118-PS-07 (240-74553-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020	Metals (ICP/MS)	SW846	TAL CAN
2320B-1997	Alkalinity, Total	SM	TAL CAN
2340C-1997	Hardness, Total	SM	TAL CAN
300.0	Anions, Ion Chromatography	MCAWW	TAL CAN
9060	Organic Carbon, Total (TOC)	SW846	TAL CAN

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Sample Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-74553-1	W-170117-PS-01	Water	01/17/17 15:20	01/19/17 09:30
240-74553-2	W-170118-PS-02	Water	01/18/17 10:00	01/19/17 09:30
240-74553-3	W-170118-PS-03	Water	01/18/17 10:40	01/19/17 09:30
240-74553-4	W-170118-PS-04	Water	01/18/17 10:45	01/19/17 09:30
240-74553-5	W-170118-PS-05	Water	01/18/17 12:00	01/19/17 09:30
240-74553-6	W-170118-PS-06	Water	01/18/17 13:00	01/19/17 09:30
240-74553-7	W-170118-PS-07	Water	01/18/17 14:00	01/19/17 09:30
240-74553-8	TRIPBLANK-001	Water	01/18/17 15:00	01/19/17 09:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170117-PS-01 — Lab Sample ID: 240-74553-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.20	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.69		0.099	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.59	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.4	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	10.5	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	0.52	J	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	113		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	118		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	0.53	J	1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.51	H F1	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	1.7		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.74	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170118-PS-02 — Lab Sample ID: 240-74553-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	4.9		0.098	0.015	ug/L	4		8151A	Total/NA
Copper	1.2	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	28.2	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	0.70	J	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	46.0		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	112		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	45.2		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	2.8	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	4.9		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.78	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170118-PS-03 — Lab Sample ID: 240-74553-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.13	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	18		0.48	0.074	ug/L	20		8151A	Total/NA
Arsenic	0.87	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.4	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	8.5	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	427		5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	203		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	326		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	10.7		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.1	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	122		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.89	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170118-PS-04 — Lab Sample ID: 240-74553-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.47	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.3	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	11.5	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	1.2	J	5.0	0.25	ug/L	1		6020	Dissolved

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-04 (Continued) — Lab Sample ID: 240-74553-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	31.3		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	46.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	3.2		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.46	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	3.6	F1	1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	1.1		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170118-PS-05 — Lab Sample ID: 240-74553-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	7.3		0.49	0.075	ug/L	20		8151A	Total/NA
Iron	7.0	J B	100	5.3	ug/L	1		6020	Dissolved

Client Sample ID: W-170118-PS-06 — Lab Sample ID: 240-74553-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	2.9		0.095	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.39	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	2.2	B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	6.8	J B	100	5.3	ug/L	1		6020	Dissolved
Alkalinity	25.4		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	88.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	86.8		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.8	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	7.4		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.75	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170118-PS-07 — Lab Sample ID: 240-74553-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.080	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.058	J	0.095	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.44	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	3.4	B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	186	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	10.6		5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	58.4		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	94.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	2.1		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.65	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	3.8		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	1.1		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: TRIPBLANK-001 — Lab Sample ID: 240-74553-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-170117-PS-01

Date Collected: 01/17/17 15:20
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 19:26	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 19:26	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 19:26	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 132*		*01/20/17 19:26*	*1*
4-Bromofluorobenzene (Surr)	*82*		*73 - 120*		*01/20/17 19:26*	*1*
Toluene-d8 (Surr)	*89*		*73 - 124*		*01/20/17 19:26*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/20/17 19:26*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.061		0.20	0.061	ug/L		01/20/17 08:42	01/24/17 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*42 - 120*	*01/20/17 08:42*	*01/24/17 16:11*	*1*
2-Fluorophenol (Surr)	*40*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:11*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*35 - 125*	*01/20/17 08:42*	*01/24/17 16:11*	*1*
Nitrobenzene-d5 (Surr)	*80*		*36 - 120*	*01/20/17 08:42*	*01/24/17 16:11*	*1*
Phenol-d5 (Surr)	*25*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:11*	*1*
Terphenyl-d14 (Surr)	*80*		*17 - 120*	*01/20/17 08:42*	*01/24/17 16:11*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.20**	**J B**	0.50	0.080	ug/L			01/20/17 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*87*		*76 - 121*		*01/20/17 15:47*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.69**		0.099	0.015	ug/L		01/24/17 15:00	01/26/17 15:47	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*50*		*18 - 125*	*01/24/17 15:00*	*01/26/17 15:47*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.59**	**J**	5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:35	1
Copper	**1.4**	**J B**	2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:35	1
Iron	**10.5**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:35	1
Manganese	**0.52**	**J**	5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:35	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:35	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**113**		5.0	1.9	mg/L			01/23/17 14:12	1
Hardness as calcium carbonate	**118**		5.0	3.1	mg/L			01/20/17 06:20	1
Chloride	**0.53**	**J**	1.0	0.41	mg/L			01/20/17 15:07	1
Nitrate as N	**0.51**	**H F1**	0.10	0.035	mg/L			01/20/17 15:07	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170117-PS-01
Date Collected: 01/17/17 15:20
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.7		1.0	0.13	mg/L			01/20/17 15:07	1
Total Organic Carbon	0.74	J	1.0	0.080	mg/L			01/20/17 11:50	1

Client Sample ID: W-170118-PS-02

Date Collected: 01/18/17 10:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 22:00	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 22:00	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 22:00	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 132*		*01/20/17 22:00*	*1*
4-Bromofluorobenzene (Surr)	*81*		*73 - 120*		*01/20/17 22:00*	*1*
Toluene-d8 (Surr)	*89*		*73 - 124*		*01/20/17 22:00*	*1*
Dibromofluoromethane (Surr)	*88*		*80 - 120*		*01/20/17 22:00*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/20/17 08:42	01/24/17 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*42 - 120*	*01/20/17 08:42*	*01/24/17 15:04*	*1*
2-Fluorophenol (Surr)	*41*		*10 - 120*	*01/20/17 08:42*	*01/24/17 15:04*	*1*
2,4,6-Tribromophenol (Surr)	*88*		*35 - 125*	*01/20/17 08:42*	*01/24/17 15:04*	*1*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*	*01/20/17 08:42*	*01/24/17 15:04*	*1*
Phenol-d5 (Surr)	*25*		*10 - 120*	*01/20/17 08:42*	*01/24/17 15:04*	*1*
Terphenyl-d14 (Surr)	*83*		*17 - 120*	*01/20/17 08:42*	*01/24/17 15:04*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/20/17 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*76 - 121*		*01/20/17 16:04*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**4.9**		0.098	0.015	ug/L		01/24/17 15:00	01/26/17 16:11	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*39*	*p*	*18 - 125*	*01/24/17 15:00*	*01/26/17 16:11*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/20/17 14:00	01/23/17 21:45	1
Copper	**1.2**	**J B**	2.0	0.36	ug/L		01/20/17 14:00	01/23/17 21:45	1
Iron	**28.2**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/23/17 21:45	1
Manganese	**0.70**	**J**	5.0	0.25	ug/L		01/20/17 14:00	01/23/17 21:45	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/23/17 21:45	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**46.0**		5.0	1.9	mg/L			01/23/17 14:20	1
Hardness as calcium carbonate	**112**		5.0	3.1	mg/L			01/20/17 06:10	1
Chloride	**45.2**		1.0	0.41	mg/L			01/20/17 16:07	1
Nitrate as N	**2.8**	**H**	0.10	0.035	mg/L			01/20/17 16:07	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-02
Date Collected: 01/18/17 10:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	4.9		1.0	0.13	mg/L			01/20/17 16:07	1
Total Organic Carbon	0.78	J	1.0	0.080	mg/L			01/20/17 11:06	1

Client Sample ID: W-170118-PS-03

Date Collected: 01/18/17 10:40
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 19:48	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 19:48	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 19:48	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 132*		*01/20/17 19:48*	*1*
4-Bromofluorobenzene (Surr)	*81*		*73 - 120*		*01/20/17 19:48*	*1*
Toluene-d8 (Surr)	*88*		*73 - 124*		*01/20/17 19:48*	*1*
Dibromofluoromethane (Surr)	*86*		*80 - 120*		*01/20/17 19:48*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/20/17 08:42	01/24/17 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*79*		*42 - 120*	*01/20/17 08:42*	*01/24/17 16:34*	*1*
2-Fluorophenol (Surr)	*44*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:34*	*1*
2,4,6-Tribromophenol (Surr)	*88*		*35 - 125*	*01/20/17 08:42*	*01/24/17 16:34*	*1*
Nitrobenzene-d5 (Surr)	*84*		*36 - 120*	*01/20/17 08:42*	*01/24/17 16:34*	*1*
Phenol-d5 (Surr)	*28*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:34*	*1*
Terphenyl-d14 (Surr)	*87*		*17 - 120*	*01/20/17 08:42*	*01/24/17 16:34*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.13**	**J B**	0.50	0.080	ug/L			01/20/17 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*79*		*76 - 121*		*01/20/17 16:56*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**18**		0.48	0.074	ug/L		01/24/17 15:00	01/27/17 12:49	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*86*		*18 - 125*	*01/24/17 15:00*	*01/27/17 12:49*	*20*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.87**	**J**	5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:40	1
Copper	**1.4**	**J B**	2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:40	1
Iron	**8.5**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:40	1
Manganese	**427**		5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:40	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:40	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**203**		5.0	1.9	mg/L			01/23/17 14:38	1
Hardness as calcium carbonate	**326**		5.0	3.1	mg/L			01/20/17 06:23	1
Chloride	**10.7**		1.0	0.41	mg/L			01/20/17 17:07	1
Nitrate as N	**1.1**	**H**	0.10	0.035	mg/L			01/20/17 17:07	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-03
Date Collected: 01/18/17 10:40
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	122		1.0	0.13	mg/L			01/20/17 17:07	1
Total Organic Carbon	0.89	J	1.0	0.080	mg/L			01/20/17 12:17	1

Client Sample ID: W-170118-PS-04
Date Collected: 01/18/17 10:45
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 20:10	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 20:10	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 20:10	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 132*		*01/20/17 20:10*	*1*
4-Bromofluorobenzene (Surr)	*83*		*73 - 120*		*01/20/17 20:10*	*1*
Toluene-d8 (Surr)	*88*		*73 - 124*		*01/20/17 20:10*	*1*
Dibromofluoromethane (Surr)	*88*		*80 - 120*		*01/20/17 20:10*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/20/17 08:42	01/24/17 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*42 - 120*	*01/20/17 08:42*	*01/24/17 16:56*	*1*
2-Fluorophenol (Surr)	*39*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:56*	*1*
2,4,6-Tribromophenol (Surr)	*85*		*35 - 125*	*01/20/17 08:42*	*01/24/17 16:56*	*1*
Nitrobenzene-d5 (Surr)	*79*		*36 - 120*	*01/20/17 08:42*	*01/24/17 16:56*	*1*
Phenol-d5 (Surr)	*25*		*10 - 120*	*01/20/17 08:42*	*01/24/17 16:56*	*1*
Terphenyl-d14 (Surr)	*67*		*17 - 120*	*01/20/17 08:42*	*01/24/17 16:56*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/20/17 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*79*		*76 - 121*		*01/20/17 17:13*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.015		0.094	0.015	ug/L		01/24/17 15:00	01/26/17 17:46	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*67*		*18 - 125*	*01/24/17 15:00*	*01/26/17 17:46*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.47**	**J**	5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:44	1
Copper	**1.3**	**J B**	2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:44	1
Iron	**11.5**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:44	1
Manganese	**1.2**	**J**	5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:44	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:44	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**31.3**		5.0	1.9	mg/L			01/23/17 14:46	1
Hardness as calcium carbonate	**46.0**		5.0	3.1	mg/L			01/20/17 06:27	1
Chloride	**3.2**		1.0	0.41	mg/L			01/20/17 17:27	1
Nitrate as N	**0.46**	**H**	0.10	0.035	mg/L			01/20/17 17:27	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-04
Date Collected: 01/18/17 10:45
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	3.6	F1	1.0	0.13	mg/L			01/20/17 17:27	1
Total Organic Carbon	1.1		1.0	0.080	mg/L			01/20/17 12:44	1

Client Sample ID: W-170118-PS-05

Date Collected: 01/18/17 12:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 20:32	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 20:32	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 20:32	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 20:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 132*		*01/20/17 20:32*	*1*
4-Bromofluorobenzene (Surr)	*80*		*73 - 120*		*01/20/17 20:32*	*1*
Toluene-d8 (Surr)	*86*		*73 - 124*		*01/20/17 20:32*	*1*
Dibromofluoromethane (Surr)	*84*		*80 - 120*		*01/20/17 20:32*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.067		0.21	0.067	ug/L		01/20/17 08:42	01/24/17 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*61*		*42 - 120*	*01/20/17 08:42*	*01/24/17 17:19*	*1*
2-Fluorophenol (Surr)	*27*		*10 - 120*	*01/20/17 08:42*	*01/24/17 17:19*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*35 - 125*	*01/20/17 08:42*	*01/24/17 17:19*	*1*
Nitrobenzene-d5 (Surr)	*67*		*36 - 120*	*01/20/17 08:42*	*01/24/17 17:19*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*01/20/17 08:42*	*01/24/17 17:19*	*1*
Terphenyl-d14 (Surr)	*56*		*17 - 120*	*01/20/17 08:42*	*01/24/17 17:19*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**7.3**		0.49	0.075	ug/L		01/24/17 15:00	01/27/17 13:12	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*67*		*18 - 125*	*01/24/17 15:00*	*01/27/17 13:12*	*20*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:48	1
Copper	<0.36		2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:48	1
Iron	**7.0**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:48	1
Manganese	<0.25		5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:48	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:48	1

Client Sample ID: W-170118-PS-06

Date Collected: 01/18/17 13:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 20:54	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 20:54	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 20:54	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 132*		*01/20/17 20:54*	*1*
4-Bromofluorobenzene (Surr)	*82*		*73 - 120*		*01/20/17 20:54*	*1*
Toluene-d8 (Surr)	*88*		*73 - 124*		*01/20/17 20:54*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 120*		*01/20/17 20:54*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/20/17 08:42	01/24/17 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*42 - 120*	*01/20/17 08:42*	*01/24/17 17:41*	*1*
2-Fluorophenol (Surr)	*27*		*10 - 120*	*01/20/17 08:42*	*01/24/17 17:41*	*1*
2,4,6-Tribromophenol (Surr)	*65*		*35 - 125*	*01/20/17 08:42*	*01/24/17 17:41*	*1*
Nitrobenzene-d5 (Surr)	*61*		*36 - 120*	*01/20/17 08:42*	*01/24/17 17:41*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*01/20/17 08:42*	*01/24/17 17:41*	*1*
Terphenyl-d14 (Surr)	*68*		*17 - 120*	*01/20/17 08:42*	*01/24/17 17:41*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/20/17 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*78*		*76 - 121*		*01/20/17 17:30*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**2.9**		0.095	0.015	ug/L		01/24/17 15:00	01/26/17 18:33	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*54*		*18 - 125*	*01/24/17 15:00*	*01/26/17 18:33*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.39**	**J**	5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:52	1
Copper	**2.2**	**B**	2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:52	1
Iron	**6.8**	**J B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:52	1
Manganese	<0.25		5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:52	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:52	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**25.4**		5.0	1.9	mg/L			01/23/17 14:54	1
Hardness as calcium carbonate	**88.0**		5.0	3.1	mg/L			01/20/17 06:30	1
Chloride	**86.8**		1.0	0.41	mg/L			01/20/17 19:08	1
Nitrate as N	**1.8**	**H**	0.10	0.035	mg/L			01/20/17 19:08	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-06
Date Collected: 01/18/17 13:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	7.4		1.0	0.13	mg/L			01/20/17 19:08	1
Total Organic Carbon	0.75	J	1.0	0.080	mg/L			01/20/17 13:12	1

Client Sample ID: W-170118-PS-07

Date Collected: 01/18/17 14:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-7

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 21:16	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 21:16	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 21:16	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 132*		*01/20/17 21:16*	*1*
4-Bromofluorobenzene (Surr)	*82*		*73 - 120*		*01/20/17 21:16*	*1*
Toluene-d8 (Surr)	*86*		*73 - 124*		*01/20/17 21:16*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/20/17 21:16*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/20/17 08:42	01/24/17 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*42 - 120*	*01/20/17 08:42*	*01/24/17 18:04*	*1*
2-Fluorophenol (Surr)	*26*		*10 - 120*	*01/20/17 08:42*	*01/24/17 18:04*	*1*
2,4,6-Tribromophenol (Surr)	*75*		*35 - 125*	*01/20/17 08:42*	*01/24/17 18:04*	*1*
Nitrobenzene-d5 (Surr)	*66*		*36 - 120*	*01/20/17 08:42*	*01/24/17 18:04*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*01/20/17 08:42*	*01/24/17 18:04*	*1*
Terphenyl-d14 (Surr)	*52*		*17 - 120*	*01/20/17 08:42*	*01/24/17 18:04*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.080**	**J B**	0.50	0.080	ug/L			01/20/17 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*80*		*76 - 121*		*01/20/17 17:47*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.058**	**J**	0.095	0.015	ug/L		01/24/17 15:00	01/26/17 18:57	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*43*		*18 - 125*	*01/24/17 15:00*	*01/26/17 18:57*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.44**	**J**	5.0	0.35	ug/L		01/20/17 14:00	01/24/17 13:57	1
Copper	**3.4**	**B**	2.0	0.36	ug/L		01/20/17 14:00	01/24/17 13:57	1
Iron	**186**	**B**	100	5.3	ug/L		01/20/17 14:00	01/24/17 13:57	1
Manganese	**10.6**		5.0	0.25	ug/L		01/20/17 14:00	01/24/17 13:57	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/24/17 13:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**58.4**		5.0	1.9	mg/L			01/23/17 15:02	1
Hardness as calcium carbonate	**94.0**		5.0	3.1	mg/L			01/20/17 06:33	1
Chloride	**2.1**		1.0	0.41	mg/L			01/20/17 19:28	1
Nitrate as N	**0.65**	**H**	0.10	0.035	mg/L			01/20/17 19:28	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-07
Date Collected: 01/18/17 14:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-7
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	3.8		1.0	0.13	mg/L			01/20/17 19:28	1
Total Organic Carbon	1.1		1.0	0.080	mg/L			01/20/17 13:39	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: TRIPBLANK-001
Date Collected: 01/18/17 15:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 21:38	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 21:38	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 21:38	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 132*		*01/20/17 21:38*	*1*
4-Bromofluorobenzene (Surr)	*82*		*73 - 120*		*01/20/17 21:38*	*1*
Toluene-d8 (Surr)	*90*		*73 - 124*		*01/20/17 21:38*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/20/17 21:38*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-132)	(73-120)	(73-124)	(80-120)
240-74553-1	W-170117-PS-01	96	82	89	87
240-74553-2	W-170118-PS-02	100	81	89	88
240-74553-2 MS	W-170118-PS-02	90	93	92	84
240-74553-2 MSD	W-170118-PS-02	88	95	93	84
240-74553-3	W-170118-PS-03	95	81	88	86
240-74553-4	W-170118-PS-04	96	83	88	88
240-74553-5	W-170118-PS-05	97	80	86	84
240-74553-6	W-170118-PS-06	97	82	88	89
240-74553-7	W-170118-PS-07	97	82	86	87
240-74553-8	TRIPBLANK-001	98	82	90	87
LCS 240-263690/4	Lab Control Sample	88	92	93	85
LCSD 240-263690/5	Lab Control Sample Dup	89	92	91	86
MB 240-263690/7	Method Blank	92	82	88	84

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(42-120)	(10-120)	(35-125)	(36-120)	(10-120)	(17-120)
240-74553-1	W-170117-PS-01	75	40	78	80	25	80
240-74553-2	W-170118-PS-02	77	41	88	82	25	83
240-74553-2 MS	W-170118-PS-02	68	40	82	73	25	65
240-74553-2 MSD	W-170118-PS-02	74	38	90	77	23	68
240-74553-3	W-170118-PS-03	79	44	88	84	28	87
240-74553-4	W-170118-PS-04	77	39	85	79	25	67
240-74553-5	W-170118-PS-05	61	27	71	67	16	56
240-74553-6	W-170118-PS-06	58	27	65	61	16	68
240-74553-7	W-170118-PS-07	65	26	75	66	16	52
LCS 240-263629/21-A	Lab Control Sample	83	51	102	91	33	95
LCSD 240-263629/22-A	Lab Control Sample Dup	85	68	87	89	43	96
MB 240-263629/20-A	Method Blank	75	49	80	81	32	91

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	rifluoroet (76-121)								
240-74553-1	W-170117-PS-01	87								
240-74553-2	W-170118-PS-02	83								
240-74553-2 MS	W-170118-PS-02	80								
240-74553-2 MSD	W-170118-PS-02	80								
240-74553-3	W-170118-PS-03	79								
240-74553-4	W-170118-PS-04	79								
240-74553-6	W-170118-PS-06	78								
240-74553-7	W-170118-PS-07	80								
LCS 240-263630/5	Lab Control Sample	81								
MB 240-263630/4	Method Blank	79								

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	DCPA1 (18-125)	DCPA2 (18-125)							
240-74553-1	W-170117-PS-01	47	50							
240-74553-2	W-170118-PS-02	59	39 p							
240-74553-2 MS	W-170118-PS-02	54	33 p							
240-74553-2 MSD	W-170118-PS-02	60	40							
240-74553-3	W-170118-PS-03	61	86							
240-74553-4	W-170118-PS-04	63	67							
240-74553-5	W-170118-PS-05	64	67							
240-74553-6	W-170118-PS-06	51	54							
240-74553-7	W-170118-PS-07	42	43							
LCS 180-200770/2-A	Lab Control Sample	50	55							
MB 180-200770/1-A	Method Blank	47	47							

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-263690/7
Matrix: Water
Analysis Batch: 263690

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/20/17 14:39	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/20/17 14:39	1
Toluene	<0.23		1.0	0.23	ug/L			01/20/17 14:39	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/20/17 14:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 132*		*01/20/17 14:39*	*1*
4-Bromofluorobenzene (Surr)	*82*		*73 - 120*		*01/20/17 14:39*	*1*
Toluene-d8 (Surr)	*88*		*73 - 124*		*01/20/17 14:39*	*1*
Dibromofluoromethane (Surr)	*84*		*80 - 120*		*01/20/17 14:39*	*1*

Lab Sample ID: LCS 240-263690/4
Matrix: Water
Analysis Batch: 263690

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			10.0	9.94		ug/L		99	80 - 120		
Ethylbenzene			10.0	9.93		ug/L		99	80 - 120		
Toluene			10.0	10.2		ug/L		102	80 - 121		
Xylenes, Total			20.0	20.0		ug/L		100	80 - 120		
m-Xylene & p-Xylene			10.0	10.1		ug/L		101	80 - 120		
o-Xylene			10.0	9.92		ug/L		99	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 132*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*
Toluene-d8 (Surr)	*93*		*73 - 124*
Dibromofluoromethane (Surr)	*85*		*80 - 120*

Lab Sample ID: LCSD 240-263690/5
Matrix: Water
Analysis Batch: 263690

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			10.0	10.1		ug/L		101	80 - 120	2	35
Ethylbenzene			10.0	10.2		ug/L		102	80 - 120	2	35
Toluene			10.0	10.2		ug/L		102	80 - 121	0	35
Xylenes, Total			20.0	20.3		ug/L		102	80 - 120	1	35
m-Xylene & p-Xylene			10.0	10.3		ug/L		103	80 - 120	2	35
o-Xylene			10.0	10.0		ug/L		100	80 - 120	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 132*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*
Toluene-d8 (Surr)	*91*		*73 - 124*
Dibromofluoromethane (Surr)	*86*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263690

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.28		10.0	10.2		ug/L		102	67 - 126
Ethylbenzene	<0.26		10.0	10.4		ug/L		104	66 - 123
Toluene	<0.23		10.0	10.6		ug/L		106	63 - 130
Xylenes, Total	<0.24		20.0	20.7		ug/L		104	60 - 126
m-Xylene & p-Xylene	<0.24		10.0	10.4		ug/L		104	58 - 127
o-Xylene	<0.28		10.0	10.3		ug/L		103	61 - 126

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 132*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*
Toluene-d8 (Surr)	*92*		*73 - 124*
Dibromofluoromethane (Surr)	*84*		*80 - 120*

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263690

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.28		10.0	9.76		ug/L		98	67 - 126	5	31
Ethylbenzene	<0.26		10.0	9.86		ug/L		99	66 - 123	5	34
Toluene	<0.23		10.0	9.90		ug/L		99	63 - 130	7	33
Xylenes, Total	<0.24		20.0	19.8		ug/L		99	60 - 126	5	35
m-Xylene & p-Xylene	<0.24		10.0	9.99		ug/L		100	58 - 127	4	35
o-Xylene	<0.28		10.0	9.76		ug/L		98	61 - 126	6	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 132*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*
Toluene-d8 (Surr)	*93*		*73 - 124*
Dibromofluoromethane (Surr)	*84*		*80 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-263629/20-A
Matrix: Water
Analysis Batch: 263811

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 263629

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/20/17 08:42	01/23/17 11:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*42 - 120*	*01/20/17 08:42*	*01/23/17 11:43*	*1*
2-Fluorophenol (Surr)	*49*		*10 - 120*	*01/20/17 08:42*	*01/23/17 11:43*	*1*
2,4,6-Tribromophenol (Surr)	*80*		*35 - 125*	*01/20/17 08:42*	*01/23/17 11:43*	*1*
Nitrobenzene-d5 (Surr)	*81*		*36 - 120*	*01/20/17 08:42*	*01/23/17 11:43*	*1*
Phenol-d5 (Surr)	*32*		*10 - 120*	*01/20/17 08:42*	*01/23/17 11:43*	*1*
Terphenyl-d14 (Surr)	*91*		*17 - 120*	*01/20/17 08:42*	*01/23/17 11:43*	*1*

QC Sample Results

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Lab Sample ID: LCS 240-263629/21-A
Matrix: Water
Analysis Batch: 263811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 263629

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			20.0	15.9		ug/L		80	54 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*83*		*42 - 120*
2-Fluorophenol (Surr)	*51*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*102*		*35 - 125*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*
Phenol-d5 (Surr)	*33*		*10 - 120*
Terphenyl-d14 (Surr)	*95*		*17 - 120*

Lab Sample ID: LCSD 240-263629/22-A
Matrix: Water
Analysis Batch: 263811

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 263629

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			20.0	15.4		ug/L		77	54 - 120	3	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*42 - 120*
2-Fluorophenol (Surr)	*68*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*87*		*35 - 125*
Nitrobenzene-d5 (Surr)	*89*		*36 - 120*
Phenol-d5 (Surr)	*43*		*10 - 120*
Terphenyl-d14 (Surr)	*96*		*17 - 120*

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263990

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA
Prep Batch: 263629

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene	<0.063		19.0	11.7		ug/L		62	37 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*68*		*42 - 120*
2-Fluorophenol (Surr)	*40*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*82*		*35 - 125*
Nitrobenzene-d5 (Surr)	*73*		*36 - 120*
Phenol-d5 (Surr)	*25*		*10 - 120*
Terphenyl-d14 (Surr)	*65*		*17 - 120*

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263990

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA
Prep Batch: 263629

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	<0.063		19.8	13.5		ug/L		68	37 - 120	14	33

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*74*		*42 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263990

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA
Prep Batch: 263629

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorophenol (Surr)	*38*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*90*		*35 - 125*
Nitrobenzene-d5 (Surr)	*77*		*36 - 120*
Phenol-d5 (Surr)	*23*		*10 - 120*
Terphenyl-d14 (Surr)	*68*		*17 - 120*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-263630/4
Matrix: Water
Analysis Batch: 263630

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.118	J	0.50	0.080	ug/L			01/20/17 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*79*		*76 - 121*		*01/20/17 15:13*	*1*

Lab Sample ID: LCS 240-263630/5
Matrix: Water
Analysis Batch: 263630

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			199	192		ug/L		97	80 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*81*		*76 - 121*

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263630

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane	<0.080		199	195		ug/L		98	48 - 159		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*80*		*76 - 121*

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263630

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	<0.080		199	190		ug/L		96	48 - 159	3	23

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263630

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,1,1-Trifluoroethane	80		76 - 121

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-200770/1-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 200770

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.016		0.10	0.016	ug/L		01/24/17 15:00	01/26/17 14:36	4

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	47		18 - 125	01/24/17 15:00	01/26/17 14:36	4

Lab Sample ID: LCS 180-200770/2-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 200770

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Pentachlorophenol			1.00	1.21		ug/L		121	30 - 150		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	55		18 - 125

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 200952

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA
Prep Batch: 200770

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Pentachlorophenol	4.9		0.962	6.04	4	ug/L		114	30 - 150		

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4-Dichlorophenylacetic acid	33	p	18 - 125

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 200952

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA
Prep Batch: 200770

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	4.9		0.952	5.89	4	ug/L		99	30 - 150	2	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2,4-Dichlorophenylacetic acid	60		18 - 125

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-263664/1-A
Matrix: Water
Analysis Batch: 263993

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 263664

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/20/17 14:00	01/23/17 21:28	1
Copper	1.21	J	2.0	0.36	ug/L		01/20/17 14:00	01/23/17 21:28	1
Iron	27.71	J	100	5.3	ug/L		01/20/17 14:00	01/23/17 21:28	1
Manganese	<0.25		5.0	0.25	ug/L		01/20/17 14:00	01/23/17 21:28	1
Zinc	<6.2		20.0	6.2	ug/L		01/20/17 14:00	01/23/17 21:28	1

Lab Sample ID: LCS 240-263664/2-A
Matrix: Water
Analysis Batch: 263993

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263664

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	896.9		ug/L		90	80 - 120
Copper	1000	1045		ug/L		105	80 - 120
Iron	10000	10230		ug/L		102	80 - 120
Manganese	1000	1012		ug/L		101	80 - 120
Zinc	1000	1108		ug/L		111	80 - 120

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263993

Client Sample ID: W-170118-PS-02
Prep Type: Dissolved
Prep Batch: 263664

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.35		1000	941.8		ug/L		94	75 - 125
Copper	1.2	J B	1000	1034		ug/L		103	75 - 125
Iron	28.2	J B	10000	10320		ug/L		103	75 - 125
Manganese	0.70	J	1000	1021		ug/L		102	75 - 125
Zinc	<6.2		1000	1093		ug/L		109	75 - 125

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263993

Client Sample ID: W-170118-PS-02
Prep Type: Dissolved
Prep Batch: 263664

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.35		1000	951.2		ug/L		95	75 - 125	1	20
Copper	1.2	J B	1000	1042		ug/L		104	75 - 125	1	20
Iron	28.2	J B	10000	10480		ug/L		105	75 - 125	2	20
Manganese	0.70	J	1000	1031		ug/L		103	75 - 125	1	20
Zinc	<6.2		1000	1119		ug/L		112	75 - 125	2	20

Method: 2320B-1997 - Alkalinity, Total

Lab Sample ID: MB 240-264014/5
Matrix: Water
Analysis Batch: 264014

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<1.9		5.0	1.9	mg/L			01/23/17 12:07	1

Method: 2320B-1997 - Alkalinity, Total (Continued)

Lab Sample ID: LCS 240-264014/4
Matrix: Water
Analysis Batch: 264014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			378	345.6		mg/L		91	86 - 123		

Lab Sample ID: 240-74553-2 DU
Matrix: Water
Analysis Batch: 264014

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	46.0			46.67		mg/L				1	20

Method: 2340C-1997 - Hardness, Total

Lab Sample ID: MB 240-263591/1
Matrix: Water
Analysis Batch: 263591

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<3.1		5.0	3.1	mg/L			01/20/17 06:00	1

Lab Sample ID: LCS 240-263591/2
Matrix: Water
Analysis Batch: 263591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Hardness as calcium carbonate			170	172.0		mg/L		101	80 - 120		

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263591

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Hardness as calcium carbonate	112		200	326.0		mg/L		107	80 - 120		

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263591

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hardness as calcium carbonate	112		200	328.0		mg/L		108	80 - 120	1	10

Lab Sample ID: 240-74553-2 DU
Matrix: Water
Analysis Batch: 263591

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Hardness as calcium carbonate	112			114.0		mg/L				2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-263676/3
Matrix: Water
Analysis Batch: 263676

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.41		1.0	0.41	mg/L			01/20/17 14:26	1
Sulfate	<0.13		1.0	0.13	mg/L			01/20/17 14:26	1

Lab Sample ID: LCS 240-263676/4
Matrix: Water
Analysis Batch: 263676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			50.0	53.93		mg/L		108	90 - 110		
Sulfate			50.0	54.08		mg/L		108	90 - 110		

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263676

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	45.2		50.0	100.7		mg/L		111	80 - 120		
Sulfate	4.9		50.0	63.02		mg/L		116	80 - 120		

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263676

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	45.2		50.0	101.4		mg/L		112	80 - 120	1	15
Sulfate	4.9		50.0	63.71		mg/L		118	80 - 120	1	15

Lab Sample ID: 240-74553-4 MS
Matrix: Water
Analysis Batch: 263676

Client Sample ID: W-170118-PS-04
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	3.2		50.0	61.85		mg/L		117	80 - 120		
Sulfate	3.6	F1	50.0	63.45		mg/L		120	80 - 120		

Lab Sample ID: 240-74553-4 MSD
Matrix: Water
Analysis Batch: 263676

Client Sample ID: W-170118-PS-04
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.2		50.0	62.53		mg/L		119	80 - 120	1	15
Sulfate	3.6	F1	50.0	64.08	F1	mg/L		121	80 - 120	1	15

Lab Sample ID: MB 240-263677/3
Matrix: Water
Analysis Batch: 263677

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.035		0.10	0.035	mg/L			01/20/17 14:26	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 240-263677/4
Matrix: Water
Analysis Batch: 263677

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.50	2.62		mg/L		105	90 - 110

Lab Sample ID: 240-74553-1 MS
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170117-PS-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.51	H F1	2.50	3.58	F1	mg/L		123	80 - 120

Lab Sample ID: 240-74553-1 MSD
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170117-PS-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.51	H F1	2.50	3.41		mg/L		116	80 - 120	5	15

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.8	H	2.50	5.62	H	mg/L		113	80 - 120

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	2.8	H	2.50	5.66	H	mg/L		115	80 - 120	1	15

Lab Sample ID: 240-74553-4 MS
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170118-PS-04
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.46	H	2.50	3.36		mg/L		116	80 - 120

Lab Sample ID: 240-74553-4 MSD
Matrix: Water
Analysis Batch: 263677

Client Sample ID: W-170118-PS-04
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.46	H	2.50	3.39		mg/L		117	80 - 120	1	15

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 240-263793/4
Matrix: Water
Analysis Batch: 263793

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.080		1.0	0.080	mg/L			01/20/17 10:49	1

Lab Sample ID: LLCS 240-263793/5
Matrix: Water
Analysis Batch: 263793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4.63	4.70		mg/L		102	88 - 115

Lab Sample ID: 240-74553-2 MS
Matrix: Water
Analysis Batch: 263793

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.78	J	5.00	6.06		mg/L		106	65 - 134

Lab Sample ID: 240-74553-2 MSD
Matrix: Water
Analysis Batch: 263793

Client Sample ID: W-170118-PS-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	0.78	J	5.00	6.17		mg/L		108	65 - 134	2	10

GC/MS VOA

Analysis Batch: 263690

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	8260B	
240-74553-2	W-170118-PS-02	Total/NA	Water	8260B	
240-74553-3	W-170118-PS-03	Total/NA	Water	8260B	
240-74553-4	W-170118-PS-04	Total/NA	Water	8260B	
240-74553-5	W-170118-PS-05	Total/NA	Water	8260B	
240-74553-6	W-170118-PS-06	Total/NA	Water	8260B	
240-74553-7	W-170118-PS-07	Total/NA	Water	8260B	
240-74553-8	TRIPBLANK-001	Total/NA	Water	8260B	
MB 240-263690/7	Method Blank	Total/NA	Water	8260B	
LCS 240-263690/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-263690/5	Lab Control Sample Dup	Total/NA	Water	8260B	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	8260B	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 263629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	3510C	
240-74553-2	W-170118-PS-02	Total/NA	Water	3510C	
240-74553-3	W-170118-PS-03	Total/NA	Water	3510C	
240-74553-4	W-170118-PS-04	Total/NA	Water	3510C	
240-74553-5	W-170118-PS-05	Total/NA	Water	3510C	
240-74553-6	W-170118-PS-06	Total/NA	Water	3510C	
240-74553-7	W-170118-PS-07	Total/NA	Water	3510C	
MB 240-263629/20-A	Method Blank	Total/NA	Water	3510C	
LCS 240-263629/21-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 240-263629/22-A	Lab Control Sample Dup	Total/NA	Water	3510C	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	3510C	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	3510C	

Analysis Batch: 263811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-263629/20-A	Method Blank	Total/NA	Water	8270C	263629
LCS 240-263629/21-A	Lab Control Sample	Total/NA	Water	8270C	263629
LCSD 240-263629/22-A	Lab Control Sample Dup	Total/NA	Water	8270C	263629

Analysis Batch: 263990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	8270C	263629
240-74553-2	W-170118-PS-02	Total/NA	Water	8270C	263629
240-74553-3	W-170118-PS-03	Total/NA	Water	8270C	263629
240-74553-4	W-170118-PS-04	Total/NA	Water	8270C	263629
240-74553-5	W-170118-PS-05	Total/NA	Water	8270C	263629
240-74553-6	W-170118-PS-06	Total/NA	Water	8270C	263629
240-74553-7	W-170118-PS-07	Total/NA	Water	8270C	263629
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	8270C	263629
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	8270C	263629

QC Association Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

GC VOA

Analysis Batch: 263630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	RSK-175	
240-74553-2	W-170118-PS-02	Total/NA	Water	RSK-175	
240-74553-3	W-170118-PS-03	Total/NA	Water	RSK-175	
240-74553-4	W-170118-PS-04	Total/NA	Water	RSK-175	
240-74553-6	W-170118-PS-06	Total/NA	Water	RSK-175	
240-74553-7	W-170118-PS-07	Total/NA	Water	RSK-175	
MB 240-263630/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-263630/5	Lab Control Sample	Total/NA	Water	RSK-175	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	RSK-175	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 200770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	8151A	
240-74553-2	W-170118-PS-02	Total/NA	Water	8151A	
240-74553-3	W-170118-PS-03	Total/NA	Water	8151A	
240-74553-4	W-170118-PS-04	Total/NA	Water	8151A	
240-74553-5	W-170118-PS-05	Total/NA	Water	8151A	
240-74553-6	W-170118-PS-06	Total/NA	Water	8151A	
240-74553-7	W-170118-PS-07	Total/NA	Water	8151A	
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	8151A	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	8151A	

Analysis Batch: 200952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	8151A	200770
240-74553-2	W-170118-PS-02	Total/NA	Water	8151A	200770
240-74553-4	W-170118-PS-04	Total/NA	Water	8151A	200770
240-74553-6	W-170118-PS-06	Total/NA	Water	8151A	200770
240-74553-7	W-170118-PS-07	Total/NA	Water	8151A	200770
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	200770
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	200770
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	8151A	200770
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	8151A	200770

Analysis Batch: 201078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-3	W-170118-PS-03	Total/NA	Water	8151A	200770
240-74553-5	W-170118-PS-05	Total/NA	Water	8151A	200770

Metals

Prep Batch: 263664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Dissolved	Water	3005A	
240-74553-2	W-170118-PS-02	Dissolved	Water	3005A	

Metals (Continued)

Prep Batch: 263664 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-3	W-170118-PS-03	Dissolved	Water	3005A	
240-74553-4	W-170118-PS-04	Dissolved	Water	3005A	
240-74553-5	W-170118-PS-05	Dissolved	Water	3005A	
240-74553-6	W-170118-PS-06	Dissolved	Water	3005A	
240-74553-7	W-170118-PS-07	Dissolved	Water	3005A	
MB 240-263664/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-263664/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-74553-2 MS	W-170118-PS-02	Dissolved	Water	3005A	
240-74553-2 MSD	W-170118-PS-02	Dissolved	Water	3005A	

Analysis Batch: 263993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-2	W-170118-PS-02	Dissolved	Water	6020	263664
MB 240-263664/1-A	Method Blank	Total Recoverable	Water	6020	263664
LCS 240-263664/2-A	Lab Control Sample	Total Recoverable	Water	6020	263664
240-74553-2 MS	W-170118-PS-02	Dissolved	Water	6020	263664
240-74553-2 MSD	W-170118-PS-02	Dissolved	Water	6020	263664

Analysis Batch: 264194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Dissolved	Water	6020	263664
240-74553-3	W-170118-PS-03	Dissolved	Water	6020	263664
240-74553-4	W-170118-PS-04	Dissolved	Water	6020	263664
240-74553-5	W-170118-PS-05	Dissolved	Water	6020	263664
240-74553-6	W-170118-PS-06	Dissolved	Water	6020	263664
240-74553-7	W-170118-PS-07	Dissolved	Water	6020	263664

General Chemistry

Analysis Batch: 263591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	2340C-1997	
240-74553-2	W-170118-PS-02	Total/NA	Water	2340C-1997	
240-74553-3	W-170118-PS-03	Total/NA	Water	2340C-1997	
240-74553-4	W-170118-PS-04	Total/NA	Water	2340C-1997	
240-74553-6	W-170118-PS-06	Total/NA	Water	2340C-1997	
240-74553-7	W-170118-PS-07	Total/NA	Water	2340C-1997	
MB 240-263591/1	Method Blank	Total/NA	Water	2340C-1997	
LCS 240-263591/2	Lab Control Sample	Total/NA	Water	2340C-1997	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	2340C-1997	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	2340C-1997	
240-74553-2 DU	W-170118-PS-02	Total/NA	Water	2340C-1997	

Analysis Batch: 263676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	300.0	
240-74553-2	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-3	W-170118-PS-03	Total/NA	Water	300.0	
240-74553-4	W-170118-PS-04	Total/NA	Water	300.0	
240-74553-6	W-170118-PS-06	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 263676 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-7	W-170118-PS-07	Total/NA	Water	300.0	
MB 240-263676/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263676/4	Lab Control Sample	Total/NA	Water	300.0	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-4 MS	W-170118-PS-04	Total/NA	Water	300.0	
240-74553-4 MSD	W-170118-PS-04	Total/NA	Water	300.0	

Analysis Batch: 263677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	300.0	
240-74553-2	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-3	W-170118-PS-03	Total/NA	Water	300.0	
240-74553-4	W-170118-PS-04	Total/NA	Water	300.0	
240-74553-6	W-170118-PS-06	Total/NA	Water	300.0	
240-74553-7	W-170118-PS-07	Total/NA	Water	300.0	
MB 240-263677/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263677/4	Lab Control Sample	Total/NA	Water	300.0	
240-74553-1 MS	W-170117-PS-01	Total/NA	Water	300.0	
240-74553-1 MSD	W-170117-PS-01	Total/NA	Water	300.0	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	300.0	
240-74553-4 MS	W-170118-PS-04	Total/NA	Water	300.0	
240-74553-4 MSD	W-170118-PS-04	Total/NA	Water	300.0	

Analysis Batch: 263793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	9060	
240-74553-2	W-170118-PS-02	Total/NA	Water	9060	
240-74553-3	W-170118-PS-03	Total/NA	Water	9060	
240-74553-4	W-170118-PS-04	Total/NA	Water	9060	
240-74553-6	W-170118-PS-06	Total/NA	Water	9060	
240-74553-7	W-170118-PS-07	Total/NA	Water	9060	
MB 240-263793/4	Method Blank	Total/NA	Water	9060	
LLCS 240-263793/5	Lab Control Sample	Total/NA	Water	9060	
240-74553-2 MS	W-170118-PS-02	Total/NA	Water	9060	
240-74553-2 MSD	W-170118-PS-02	Total/NA	Water	9060	

Analysis Batch: 264014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74553-1	W-170117-PS-01	Total/NA	Water	2320B-1997	
240-74553-2	W-170118-PS-02	Total/NA	Water	2320B-1997	
240-74553-3	W-170118-PS-03	Total/NA	Water	2320B-1997	
240-74553-4	W-170118-PS-04	Total/NA	Water	2320B-1997	
240-74553-6	W-170118-PS-06	Total/NA	Water	2320B-1997	
240-74553-7	W-170118-PS-07	Total/NA	Water	2320B-1997	
MB 240-264014/5	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-264014/4	Lab Control Sample	Total/NA	Water	2320B-1997	
240-74553-2 DU	W-170118-PS-02	Total/NA	Water	2320B-1997	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170117-PS-01

Lab Sample ID: 240-74553-1

Date Collected: 01/17/17 15:20

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 19:26	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 16:11	MRU	TAL CAN
Total/NA	Analysis	RSK-175		1	263630	01/20/17 15:47	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 15:47	DFE	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:35	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 14:12	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:20	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 15:07	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 15:07	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 11:50	TPH	TAL CAN

Client Sample ID: W-170118-PS-02

Lab Sample ID: 240-74553-2

Date Collected: 01/18/17 10:00

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 22:00	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 15:04	MRU	TAL CAN
Total/NA	Analysis	RSK-175		1	263630	01/20/17 16:04	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 16:11	DFE	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	263993	01/23/17 21:45	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 14:20	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:10	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 16:07	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 16:07	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 11:06	TPH	TAL CAN

Client Sample ID: W-170118-PS-03

Lab Sample ID: 240-74553-3

Date Collected: 01/18/17 10:40

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 19:48	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 16:34	MRU	TAL CAN

Client Sample ID: W-170118-PS-03

Lab Sample ID: 240-74553-3

Date Collected: 01/18/17 10:40

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	263630	01/20/17 16:56	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		20	201078	01/27/17 12:49	JMO	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:40	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 14:38	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:23	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 17:07	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 17:07	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 12:17	TPH	TAL CAN

Client Sample ID: W-170118-PS-04

Lab Sample ID: 240-74553-4

Date Collected: 01/18/17 10:45

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 20:10	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 16:56	MRU	TAL CAN
Total/NA	Analysis	RSK-175		1	263630	01/20/17 17:13	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 17:46	DFE	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:44	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 14:46	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:27	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 17:27	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 17:27	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 12:44	TPH	TAL CAN

Client Sample ID: W-170118-PS-05

Lab Sample ID: 240-74553-5

Date Collected: 01/18/17 12:00

Matrix: Water

Date Received: 01/19/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 20:32	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 17:19	MRU	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		20	201078	01/27/17 13:12	JMO	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:48	AS1	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Client Sample ID: W-170118-PS-06

Date Collected: 01/18/17 13:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 20:54	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 17:41	MRU	TAL CAN
Total/NA	Analysis	RSK-175		1	263630	01/20/17 17:30	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 18:33	DFE	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:52	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 14:54	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:30	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 19:08	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 19:08	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 13:12	TPH	TAL CAN

Client Sample ID: W-170118-PS-07

Date Collected: 01/18/17 14:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 21:16	LRW	TAL CAN
Total/NA	Prep	3510C			263629	01/20/17 08:42	KEH	TAL CAN
Total/NA	Analysis	8270C		1	263990	01/24/17 18:04	MRU	TAL CAN
Total/NA	Analysis	RSK-175		1	263630	01/20/17 17:47	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 18:57	DFE	TAL PIT
Dissolved	Prep	3005A			263664	01/20/17 14:00	WKD	TAL CAN
Dissolved	Analysis	6020		1	264194	01/24/17 13:57	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 15:02	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	263591	01/20/17 06:33	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263676	01/20/17 19:28	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263677	01/20/17 19:28	LCN	TAL CAN
Total/NA	Analysis	9060		1	263793	01/20/17 13:39	TPH	TAL CAN

Client Sample ID: TRIPBLANK-001

Date Collected: 01/18/17 15:00
Date Received: 01/19/17 09:30

Lab Sample ID: 240-74553-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	263690	01/20/17 21:38	LRW	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Certification Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74553-1

Laboratory: TestAmerica Canton

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999518190	08-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
RSK-175		Water	Methane

Laboratory: TestAmerica Pittsburgh

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	998027800	08-31-17

2.2/C2.2 0.8/C0.8
0.6/C0.6
1.0/C1.0 1.2/C1.2

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: P. Storlie	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-39638-17402.1
Client Contact: Mr. Grant Anderson	Phone: 651-247-4218	E-Mail: denise.heckler@testamericainc.com		Page: Page 1 of 8

Company: GHD Services Inc.

Address: 1801 Old Highway 8 NW Suite 114
City: St. Paul
State, Zip: MN, 55112
Phone: 651-639-0913(Tel) 651-639-0923(Fax)
Email: grant.anderson@ghd.com
Project Name: 86165-03-11, Penta Wood
Site:

Due Date Requested:
TAT Requested (days): Standard
PO #: 34001059
WO #: 86165
Project #: 24012755
SSOW#:

A

240-74553 Chain of Custody

Preservation Codes:
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B - Alkalinity	2340C - Hardness as calcium carbonate	6020 - Metals — Field Filtered	8260B, RSK_175 Methane	9060 - TOC	300.0_28D - Nitrate &Chloride & Sulfate	8260B - BTEX	8270C - Naphthalene	8151 - PCP	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	D	A	S	N	A	N			
W-170117-PS-01	1-17-2017	1520	G	Water			X	X	X	X	X	X	X	X	X	16	
W-170118-PS-02	1-18-2017	1000		Water		Y	X	X	X	X	X	X	X	X	X	48	MS/MSD
03		1040		Water			X	X	X	X	X	X	X	X	X	16	
04		1045		Water			X	X	X	X	X	X	X	X	X	16	
05		1200		Water					X				X	X	X	8	
06		1300		Water			X	X	X	X	X	X	X	X	X	16	
07		1400		Water			X	X	X	X	X	X	X	X	X	16	
TRIPBLANK-001		1500		Water									X			1	
				Water													
				Water													
				Water													

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	1-18-2017/1600	GHD		1-19-17 930	TA
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

1/30/2017

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 141553**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by:

Cooler Received on 1-19-17 Opened on 1-19-17

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +1.1°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 10	Yes	No
-Were custody seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 11-15 have been checked at the originating laboratory.		
11. Were sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC682547
12. Were VOAs on the COC?	Yes	No
13. Were air bubbles >6 mm in any VOA vials?	Yes	No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
15. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative **Login # :** 74553
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
client	8	2.2	2.2	ice
↓	↓	0.6	0.6	↓
		1.0	1.0	
		0.8	0.8	
↓	↓	1.2	1.2	↓

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
W-170117-PS-01	240-74553-J-1	Plastic 250ml - with Nitric Acid	<2		
W-170117-PS-01	240-74553-L-1	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-02	240-74553-AB-2	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-02	240-74553-AC-2	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-02	240-74553-AD-2	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-02	240-74553-AH-2	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-02	240-74553-AI-2	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-02	240-74553-AJ-2	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-03	240-74553-J-3	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-03	240-74553-L-3	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-04	240-74553-J-4	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-04	240-74553-L-4	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-05	240-74553-D-5	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-06	240-74553-J-6	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-06	240-74553-L-6	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170118-PS-07	240-74553-J-7	Plastic 250ml - with Nitric Acid	<2		
W-170118-PS-07	240-74553-L-7	Plastic 500ml - w/ Nitric - Dis.	<2		

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-74553-1

Login Number: 74553
List Number: 2
Creator: Skowronek, Elyse N

List Source: TestAmerica Pittsburgh
List Creation: 01/20/17 10:57 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.0,3.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-74615-1
Client Project/Site: 86165-03-11, Penta Wood

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Denise D Heckler

Authorized for release by:
1/31/2017 3:50:07 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

Metals

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-74615-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-74615-1

Comments
No additional comments.

Receipt
The samples were received on 1/20/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

GC/MS VOA
Method(s) 8260B: The reporting limit (RL) provided for the following analyte(s) falls below the laboratory's verified standard quantitation limit: Benzene. Results reported below the verified standard quantitation limit have less certainty (i.e., are estimated) and must be used at the client's discretion. The continuing calibration blanks and method blanks may not support the lower RL.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA
Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-263826.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C, 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-264292.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020	Metals (ICP/MS)	SW846	TAL CAN
2320B-1997	Alkalinity, Total	SM	TAL CAN
2340C-1997	Hardness, Total	SM	TAL CAN
300.0	Anions, Ion Chromatography	MCAWW	TAL CAN
9060	Organic Carbon, Total (TOC)	SW846	TAL CAN

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Sample Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-74615-1	W-170119-PS-08	Water	01/19/17 10:40	01/20/17 09:30
240-74615-2	W-170119-PS-09	Water	01/19/17 10:45	01/20/17 09:30
240-74615-3	TRIP BLANK-002	Water	01/19/17 12:00	01/20/17 09:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Client Sample ID: W-170119-PS-08 — Lab Sample ID: 240-74615-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.19		0.095	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.77	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	0.76	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	8.1	J B	100	5.3	ug/L	1		6020	Dissolved
Alkalinity	71.9		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	88.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	6.7		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.54		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	4.7		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.65	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170119-PS-09 — Lab Sample ID: 240-74615-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.30		0.097	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.51	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	0.73	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	5.7	J B	100	5.3	ug/L	1		6020	Dissolved
Alkalinity	71.9		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	88.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	6.8		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.54		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	4.8		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.73	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: TRIP BLANK-002 — Lab Sample ID: 240-74615-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-170119-PS-08
Date Collected: 01/19/17 10:40
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 18:17	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 18:17	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 18:17	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 132*		*01/24/17 18:17*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*01/24/17 18:17*	*1*
Toluene-d8 (Surr)	*75*		*73 - 124*		*01/24/17 18:17*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/24/17 18:17*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/25/17 12:03	01/27/17 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*42 - 120*	*01/25/17 12:03*	*01/27/17 17:49*	*1*
2-Fluorophenol (Surr)	*29*		*10 - 120*	*01/25/17 12:03*	*01/27/17 17:49*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*35 - 125*	*01/25/17 12:03*	*01/27/17 17:49*	*1*
Nitrobenzene-d5 (Surr)	*83*		*36 - 120*	*01/25/17 12:03*	*01/27/17 17:49*	*1*
Phenol-d5 (Surr)	*17*		*10 - 120*	*01/25/17 12:03*	*01/27/17 17:49*	*1*
Terphenyl-d14 (Surr)	*79*		*17 - 120*	*01/25/17 12:03*	*01/27/17 17:49*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*86*		*76 - 121*		*01/23/17 17:08*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.19**		0.095	0.015	ug/L		01/24/17 15:00	01/26/17 19:44	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*53*		*18 - 125*	*01/24/17 15:00*	*01/26/17 19:44*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.77**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 01:49	1
Copper	**0.76**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 01:49	1
Iron	**8.1**	**J B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 01:49	1
Manganese	<0.25		5.0	0.25	ug/L		01/23/17 14:00	01/26/17 01:49	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 01:49	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**71.9**		5.0	1.9	mg/L			01/23/17 15:11	1
Hardness as calcium carbonate	**88.0**		5.0	3.1	mg/L			01/25/17 07:21	1
Chloride	**6.7**		1.0	0.41	mg/L			01/21/17 04:50	1
Nitrate as N	**0.54**		0.10	0.035	mg/L			01/21/17 04:50	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Client Sample ID: W-170119-PS-08
Date Collected: 01/19/17 10:40
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	4.7		1.0	0.13	mg/L			01/21/17 04:50	1
Total Organic Carbon	0.65	J	1.0	0.080	mg/L			01/23/17 12:39	1

Client Sample ID: W-170119-PS-09

Date Collected: 01/19/17 10:45
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 18:39	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 18:39	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 18:39	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*63 - 132*		*01/24/17 18:39*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*01/24/17 18:39*	*1*
Toluene-d8 (Surr)	*77*		*73 - 124*		*01/24/17 18:39*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/24/17 18:39*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.061		0.20	0.061	ug/L		01/25/17 12:03	01/27/17 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*74*		*42 - 120*	*01/25/17 12:03*	*01/27/17 17:06*	*1*
2-Fluorophenol (Surr)	*30*		*10 - 120*	*01/25/17 12:03*	*01/27/17 17:06*	*1*
2,4,6-Tribromophenol (Surr)	*76*		*35 - 125*	*01/25/17 12:03*	*01/27/17 17:06*	*1*
Nitrobenzene-d5 (Surr)	*80*		*36 - 120*	*01/25/17 12:03*	*01/27/17 17:06*	*1*
Phenol-d5 (Surr)	*17*		*10 - 120*	*01/25/17 12:03*	*01/27/17 17:06*	*1*
Terphenyl-d14 (Surr)	*78*		*17 - 120*	*01/25/17 12:03*	*01/27/17 17:06*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*88*		*76 - 121*		*01/23/17 17:25*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.30**		0.097	0.015	ug/L		01/24/17 15:00	01/26/17 20:08	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*56*		*18 - 125*	*01/24/17 15:00*	*01/26/17 20:08*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.51**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:03	1
Copper	**0.73**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:03	1
Iron	**5.7**	**J B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:03	1
Manganese	<0.25		5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:03	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:03	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**71.9**		5.0	1.9	mg/L			01/23/17 15:19	1
Hardness as calcium carbonate	**88.0**		5.0	3.1	mg/L			01/25/17 07:37	1
Chloride	**6.8**		1.0	0.41	mg/L			01/21/17 05:10	1
Nitrate as N	**0.54**		0.10	0.035	mg/L			01/21/17 05:10	1

Client Sample ID: W-170119-PS-09
Date Collected: 01/19/17 10:45
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	4.8		1.0	0.13	mg/L			01/21/17 05:10	1
Total Organic Carbon	0.73	J	1.0	0.080	mg/L			01/23/17 13:23	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Client Sample ID: TRIP BLANK-002
Date Collected: 01/19/17 12:00
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 19:02	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 19:02	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 19:02	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*63 - 132*		*01/24/17 19:02*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*01/24/17 19:02*	*1*
Toluene-d8 (Surr)	*79*		*73 - 124*		*01/24/17 19:02*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/24/17 19:02*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-132)	(73-120)	(73-124)	(80-120)
240-74615-1	W-170119-PS-08	84	93	75	87
240-74615-2	W-170119-PS-09	87	98	77	87
240-74615-3	TRIP BLANK-002	86	98	79	87
LCS 240-264041/4	Lab Control Sample	82	103	77	82
MB 240-264041/8	Method Blank	85	95	79	88

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(42-120)	(10-120)	(35-125)	(36-120)	(10-120)	(17-120)
240-74615-1	W-170119-PS-08	77	29	78	83	17	79
240-74615-2	W-170119-PS-09	74	30	76	80	17	78
LCS 240-264292/22-A	Lab Control Sample	85	55	105	91	36	93
MB 240-264292/21-A	Method Blank	78	50	87	86	32	92

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		rifluoroet
Lab Sample ID	Client Sample ID	(76-121)
240-74615-1	W-170119-PS-08	86
240-74615-2	W-170119-PS-09	88
LCS 240-263826/5	Lab Control Sample	88
MB 240-263826/4	Method Blank	86

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	DCPA1 (18-125)	DCPA2 (18-125)								
240-74615-1	W-170119-PS-08	52	53								
240-74615-2	W-170119-PS-09	54	56								
LCS 180-200770/2-A	Lab Control Sample	50	55								
MB 180-200770/1-A	Method Blank	47	47								

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264041/8
Matrix: Water
Analysis Batch: 264041

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 11:31	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 11:31	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 11:31	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 11:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 132*		*01/24/17 11:31*	*1*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*		*01/24/17 11:31*	*1*
Toluene-d8 (Surr)	*79*		*73 - 124*		*01/24/17 11:31*	*1*
Dibromofluoromethane (Surr)	*88*		*80 - 120*		*01/24/17 11:31*	*1*

Lab Sample ID: LCS 240-264041/4
Matrix: Water
Analysis Batch: 264041

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	8.58		ug/L		86	80 - 120
Ethylbenzene	10.0	9.10		ug/L		91	80 - 120
Toluene	10.0	8.51		ug/L		85	80 - 121
Xylenes, Total	20.0	19.4		ug/L		97	80 - 120
m-Xylene & p-Xylene	10.0	9.61		ug/L		96	80 - 120
o-Xylene	10.0	9.79		ug/L		98	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 132*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*
Toluene-d8 (Surr)	*77*		*73 - 124*
Dibromofluoromethane (Surr)	*82*		*80 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264292/21-A
Matrix: Water
Analysis Batch: 264502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264292

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.127	J	0.20	0.063	ug/L		01/25/17 12:03	01/26/17 15:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*42 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
2-Fluorophenol (Surr)	*50*		*10 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
2,4,6-Tribromophenol (Surr)	*87*		*35 - 125*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Phenol-d5 (Surr)	*32*		*10 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Terphenyl-d14 (Surr)	*92*		*17 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-264292/22-A
Matrix: Water
Analysis Batch: 264502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264292

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			20.0	16.2		ug/L		81	54 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*42 - 120*
2-Fluorophenol (Surr)	*55*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*105*		*35 - 125*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*
Phenol-d5 (Surr)	*36*		*10 - 120*
Terphenyl-d14 (Surr)	*93*		*17 - 120*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-263826/4
Matrix: Water
Analysis Batch: 263826

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 16:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*86*		*76 - 121*		*01/23/17 16:16*	*1*

Lab Sample ID: LCS 240-263826/5
Matrix: Water
Analysis Batch: 263826

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			199	200		ug/L		101	80 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*88*		*76 - 121*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-200770/1-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 200770

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.016		0.10	0.016	ug/L		01/24/17 15:00	01/26/17 14:36	4

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*47*		*18 - 125*	*01/24/17 15:00*	*01/26/17 14:36*	*4*

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 180-200770/2-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 200770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	1.00	1.21		ug/L		121	30 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*55*		*18 - 125*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-263902/1-A
Matrix: Water
Analysis Batch: 264398

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 263902

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/23/17 14:00	01/26/17 01:40	1
Copper	0.699	J	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 01:40	1
Iron	17.39	J	100	5.3	ug/L		01/23/17 14:00	01/26/17 01:40	1
Manganese	0.341	J	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 01:40	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 01:40	1

Lab Sample ID: LCS 240-263902/2-A
Matrix: Water
Analysis Batch: 264398

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263902

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	962.7		ug/L		96	80 - 120
Copper	1000	935.3		ug/L		94	80 - 120
Iron	10000	9467		ug/L		95	80 - 120
Manganese	1000	1006		ug/L		101	80 - 120
Zinc	1000	1016		ug/L		102	80 - 120

Lab Sample ID: 240-74615-1 MS
Matrix: Water
Analysis Batch: 264398

Client Sample ID: W-170119-PS-08
Prep Type: Dissolved
Prep Batch: 263902

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.77	J	1000	988.7		ug/L		99	75 - 125
Copper	0.76	J B	1000	948.5		ug/L		95	75 - 125
Iron	8.1	J B	10000	9758		ug/L		98	75 - 125
Manganese	<0.25		1000	1023		ug/L		102	75 - 125
Zinc	<6.2		1000	997.3		ug/L		100	75 - 125

Lab Sample ID: 240-74615-1 MSD
Matrix: Water
Analysis Batch: 264398

Client Sample ID: W-170119-PS-08
Prep Type: Dissolved
Prep Batch: 263902

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.77	J	1000	1003		ug/L		100	75 - 125	1	20
Copper	0.76	J B	1000	960.7		ug/L		96	75 - 125	1	20
Iron	8.1	J B	10000	9845		ug/L		98	75 - 125	1	20

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 240-74615-1 MSD
Matrix: Water
Analysis Batch: 264398

Client Sample ID: W-170119-PS-08
Prep Type: Dissolved
Prep Batch: 263902

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Manganese	<0.25		1000	1050		ug/L		105	75 - 125	3	20
Zinc	<6.2		1000	1019		ug/L		102	75 - 125	2	20

Method: 2320B-1997 - Alkalinity, Total

Lab Sample ID: MB 240-264014/5
Matrix: Water
Analysis Batch: 264014

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<1.9		5.0	1.9	mg/L			01/23/17 12:07	1

Lab Sample ID: LCS 240-264014/4
Matrix: Water
Analysis Batch: 264014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	378	345.6		mg/L		91	86 - 123

Method: 2340C-1997 - Hardness, Total

Lab Sample ID: MB 240-264193/1
Matrix: Water
Analysis Batch: 264193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<3.1		5.0	3.1	mg/L			01/25/17 07:06	1

Lab Sample ID: LCS 240-264193/2
Matrix: Water
Analysis Batch: 264193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	170	170.0		mg/L		100	80 - 120

Lab Sample ID: 240-74615-1 MS
Matrix: Water
Analysis Batch: 264193

Client Sample ID: W-170119-PS-08
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	88.0		200	286.0		mg/L		99	80 - 120

Lab Sample ID: 240-74615-1 MSD
Matrix: Water
Analysis Batch: 264193

Client Sample ID: W-170119-PS-08
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hardness as calcium carbonate	88.0		200	288.0		mg/L		100	80 - 120	1	10

Method: 2340C-1997 - Hardness, Total (Continued)

Lab Sample ID: 240-74615-1 DU
Matrix: Water
Analysis Batch: 264193

Client Sample ID: W-170119-PS-08
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Hardness as calcium carbonate	88.0		86.00		mg/L		2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-263688/3
Matrix: Water
Analysis Batch: 263688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.41		1.0	0.41	mg/L			01/21/17 03:09	1
Sulfate	<0.13		1.0	0.13	mg/L			01/21/17 03:09	1

Lab Sample ID: LCS 240-263688/4
Matrix: Water
Analysis Batch: 263688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	53.95		mg/L		108	90 - 110
Sulfate	50.0	54.09		mg/L		108	90 - 110

Lab Sample ID: MB 240-263689/3
Matrix: Water
Analysis Batch: 263689

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.035		0.10	0.035	mg/L			01/21/17 03:09	1

Lab Sample ID: LCS 240-263689/4
Matrix: Water
Analysis Batch: 263689

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.50	2.60		mg/L		104	90 - 110

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 240-263971/4
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.080		1.0	0.080	mg/L			01/23/17 12:14	1

Lab Sample ID: LCS 240-263971/6
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	46.3	46.07		mg/L		99	80 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Lab Sample ID: LLCS 240-263971/5
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			4.63	4.66		mg/L		101	88 - 115		

Lab Sample ID: 240-74615-1 MS
Matrix: Water
Analysis Batch: 263971

Client Sample ID: W-170119-PS-08
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.65	J	25.0	24.66		mg/L		96	65 - 134		

Lab Sample ID: 240-74615-1 MSD
Matrix: Water
Analysis Batch: 263971

Client Sample ID: W-170119-PS-08
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	0.65	J	25.0	24.68		mg/L		96	65 - 134	0	10

QC Association Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

GC/MS VOA

Analysis Batch: 264041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	8260B	
240-74615-2	W-170119-PS-09	Total/NA	Water	8260B	
240-74615-3	TRIP BLANK-002	Total/NA	Water	8260B	
MB 240-264041/8	Method Blank	Total/NA	Water	8260B	
LCS 240-264041/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 264292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	3510C	
240-74615-2	W-170119-PS-09	Total/NA	Water	3510C	
MB 240-264292/21-A	Method Blank	Total/NA	Water	3510C	
LCS 240-264292/22-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 264502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-264292/21-A	Method Blank	Total/NA	Water	8270C	264292
LCS 240-264292/22-A	Lab Control Sample	Total/NA	Water	8270C	264292

Analysis Batch: 264588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	8270C	264292
240-74615-2	W-170119-PS-09	Total/NA	Water	8270C	264292

GC VOA

Analysis Batch: 263826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	RSK-175	
240-74615-2	W-170119-PS-09	Total/NA	Water	RSK-175	
MB 240-263826/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-263826/5	Lab Control Sample	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 200770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	8151A	
240-74615-2	W-170119-PS-09	Total/NA	Water	8151A	
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	

Analysis Batch: 200952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	8151A	200770
240-74615-2	W-170119-PS-09	Total/NA	Water	8151A	200770
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	200770
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	200770

QC Association Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Metals

Prep Batch: 263902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Dissolved	Water	3005A	
240-74615-2	W-170119-PS-09	Dissolved	Water	3005A	
MB 240-263902/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-263902/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-74615-1 MS	W-170119-PS-08	Dissolved	Water	3005A	
240-74615-1 MSD	W-170119-PS-08	Dissolved	Water	3005A	

Analysis Batch: 264398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Dissolved	Water	6020	263902
240-74615-2	W-170119-PS-09	Dissolved	Water	6020	263902
MB 240-263902/1-A	Method Blank	Total Recoverable	Water	6020	263902
LCS 240-263902/2-A	Lab Control Sample	Total Recoverable	Water	6020	263902
240-74615-1 MS	W-170119-PS-08	Dissolved	Water	6020	263902
240-74615-1 MSD	W-170119-PS-08	Dissolved	Water	6020	263902

General Chemistry

Analysis Batch: 263688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	300.0	
240-74615-2	W-170119-PS-09	Total/NA	Water	300.0	
MB 240-263688/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263688/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 263689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	300.0	
240-74615-2	W-170119-PS-09	Total/NA	Water	300.0	
MB 240-263689/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263689/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 263971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	9060	
240-74615-2	W-170119-PS-09	Total/NA	Water	9060	
MB 240-263971/4	Method Blank	Total/NA	Water	9060	
LCS 240-263971/6	Lab Control Sample	Total/NA	Water	9060	
LLCS 240-263971/5	Lab Control Sample	Total/NA	Water	9060	
240-74615-1 MS	W-170119-PS-08	Total/NA	Water	9060	
240-74615-1 MSD	W-170119-PS-08	Total/NA	Water	9060	

Analysis Batch: 264014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	2320B-1997	
240-74615-2	W-170119-PS-09	Total/NA	Water	2320B-1997	
MB 240-264014/5	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-264014/4	Lab Control Sample	Total/NA	Water	2320B-1997	

General Chemistry (Continued)

Analysis Batch: 264193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74615-1	W-170119-PS-08	Total/NA	Water	2340C-1997	
240-74615-2	W-170119-PS-09	Total/NA	Water	2340C-1997	
MB 240-264193/1	Method Blank	Total/NA	Water	2340C-1997	
LCS 240-264193/2	Lab Control Sample	Total/NA	Water	2340C-1997	
240-74615-1 MS	W-170119-PS-08	Total/NA	Water	2340C-1997	
240-74615-1 MSD	W-170119-PS-08	Total/NA	Water	2340C-1997	
240-74615-1 DU	W-170119-PS-08	Total/NA	Water	2340C-1997	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Client Sample ID: W-170119-PS-08

Date Collected: 01/19/17 10:40
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264041	01/24/17 18:17	LEE	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 17:49	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 17:08	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 19:44	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 01:49	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 15:11	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 07:21	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263688	01/21/17 04:50	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263689	01/21/17 04:50	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 12:39	TPH	TAL CAN

Client Sample ID: W-170119-PS-09

Date Collected: 01/19/17 10:45
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264041	01/24/17 18:39	LEE	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 17:06	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 17:25	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 20:08	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:03	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264014	01/23/17 15:19	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 07:37	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263688	01/21/17 05:10	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263689	01/21/17 05:10	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 13:23	TPH	TAL CAN

Client Sample ID: TRIP BLANK-002

Date Collected: 01/19/17 12:00
Date Received: 01/20/17 09:30

Lab Sample ID: 240-74615-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264041	01/24/17 19:02	LEE	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Certification Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74615-1

Laboratory: TestAmerica Canton

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999518190	08-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
RSK-175		Water	Methane

Laboratory: TestAmerica Pittsburgh

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	998027800	08-31-17

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

1.4/C1.4

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Peter Storlie	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-39638-17402.7
Client Contact: Mr. Grant Anderson	Phone: 651-247-4218	E-Mail: denise.heckler@testamericainc.com		Page: Page 7 of 8
Company: GHD Services Inc.				Job #:
Address: 1801 Old Highway 8 NW Suite 114	Due Date Requested:			
City: St. Paul	TAT Requested (days): STANDARD			
State, Zip: MN, 55112				
Phone: 651-639-0913(Tel) 651-639-0923(Fax)	PO #: 34001059			
Email: grant.anderson@ghd.com	WO #: 86165			
Project Name: 86165-03-11, Penta Wood	Project #: 24012755			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B - Alkalinity	2340C - Hardness as calcium carbonate	6020 - Metals - Field Filtered	8260B_RSK_175 Methane	9060 - TOC	300.0_28D - Nitrate &Chloride & Sulfate	8260B - BTEX	8270C - Naphthalene	8151 - PCP	Total Number of containers	/Note:
			Preservation Code:				N	D	D	A	S	N	A	N	2		
W-170119-PS-08	1-19-17	1040	G	Water			X	X	X	X	X	X	X	X	X		
09	↓	1045	G	Water			X	X	X	X	X	X	X	X	X		
Trip Blank-002	↓	1200	G	Water									X				
				Water													
				Water													
				Water													
				Water													
				Water													
				Water													
				Water													
				Water													
				Water													

240-74615 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	1-19-17 / 1400			1/20/17 930	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client GTH Site Name Penta Wood

Cooler unpacked by:

Cooler Received on 1/20/17 Opened on 1/20/17

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA CANTON Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
   IR GUN #36 (CF +1.1°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B6/530VB Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
W-170119-PS-08	240-74615-J-1	Plastic 250ml - with Nitric Acid			
W-170119-PS-08	240-74615-L-1	Plastic 500ml - w/ Nitric - Dis.			
W-170119-PS-09	240-74615-J-2	Plastic 250ml - with Nitric Acid			
W-170119-PS-09	240-74615-L-2	Plastic 500ml - w/ Nitric - Dis.			

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-74615-1

Login Number: 74615
List Number: 2
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 01/21/17 10:17 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-74690-2
Client Project/Site: 86165-03-11, Penta Wood
Revision: 1

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Denise D Heckler

Authorized for release by:
2/8/2017 1:01:34 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

GC VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
X	Surrogate is outside control limits

Metals

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-74690-2

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-74690-1

Comments
A revised report was provided on February 8, 2017. Dissolved metals are reported.

Receipt
The samples were received on 1/21/2017 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.2º C, 1.4º C, 1.6º C and 3.2º C.

GC/MS VOA
Method(s) 8260B: The reporting limit (RL) provided for the following analyte (Benzene) falls below the laboratory's verified standard quantitation limit: W-170119-PS-10 (240-74690-1), W-170119-PS-11 (240-74690-2), W-170119-PS-12 (240-74690-3), W-170119-PS-13 (240-74690-4), W-170120-PS-14 (240-74690-5), W-170120-PS-15 (240-74690-6), W-170120-PS-16 (240-74690-7) and W-170120-PS-17 (240-74690-8). Results reported below the verified standard quantitation limit have less certainty (i.e., are estimated) and must be used at the clients discretion. The continuing calibration blanks and method blanks may not support the lower RL.

Method(s) 8260B: The reporting limit (RL) provided for the following analyte (Benzene) falls below the laboratory's verified standard quantitation limit: TRIP BLANK 003 (240-74690-9). Results reported below the verified standard quantitation limit have less certainty (i.e., are estimated) and must be used at the clients discretion. The continuing calibration blanks and method blanks may not support the lower RL.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA
Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-263826.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method(s) 8151A: The following sample was diluted due to the abundance of target analytes: W-170120-PS-15 (240-74690-6)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method(s) 300.0: The following samples were received with less holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: W-170119-PS-10 (240-74690-1), W-170119-PS-11 (240-74690-2), W-170119-PS-12 (240-74690-3) and W-170119-PS-13 (240-74690-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C, 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-264292.

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-264597.

Job ID: 240-74690-2 (Continued)

Laboratory: TestAmerica Canton (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020	Metals (ICP/MS)	SW846	TAL CAN
2320B-1997	Alkalinity, Total	SM	TAL CAN
2340C-1997	Hardness, Total	SM	TAL CAN
300.0	Anions, Ion Chromatography	MCAWW	TAL CAN
9060	Organic Carbon, Total (TOC)	SW846	TAL CAN

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Sample Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-74690-1	W-170119-PS-10	Water	01/19/17 15:30	01/21/17 10:30
240-74690-2	W-170119-PS-11	Water	01/19/17 16:00	01/21/17 10:30
240-74690-3	W-170119-PS-12	Water	01/19/17 13:30	01/21/17 10:30
240-74690-4	W-170119-PS-13	Water	01/19/17 14:10	01/21/17 10:30
240-74690-5	W-170120-PS-14	Water	01/20/17 09:00	01/21/17 10:30
240-74690-6	W-170120-PS-15	Water	01/20/17 09:40	01/21/17 10:30
240-74690-7	W-170120-PS-16	Water	01/20/17 10:30	01/21/17 10:30
240-74690-8	W-170120-PS-17	Water	01/20/17 11:20	01/21/17 10:30
240-74690-9	TRIP BLANK 003	Water	01/20/17 12:00	01/21/17 10:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-10 — Lab Sample ID: 240-74690-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.20	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.96		0.094	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.40	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	2.2	B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	211	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	157	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	50.5		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	108		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	9.8		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	7.7	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	36.3		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	4.3		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170119-PS-11 — Lab Sample ID: 240-74690-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	8.9		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.15		0.095	0.015	ug/L	4		8151A	Total/NA
Copper	0.51	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	897	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	40.4	B	5.0	0.25	ug/L	1		6020	Dissolved
Zinc	10.8	J	20.0	6.2	ug/L	1		6020	Dissolved
Alkalinity	168		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	70.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	12.2		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	3.3	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	129		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	1.9		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170119-PS-12 — Lab Sample ID: 240-74690-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.33		0.098	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.35	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	3.1	B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	17.1	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	1.1	J B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	50.8		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	52.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	0.71	J	1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.49	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	3.6		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	2.2		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170119-PS-13 — Lab Sample ID: 240-74690-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.75	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	0.64	J B	2.0	0.36	ug/L	1		6020	Dissolved
Alkalinity	177		5.0	1.9	mg/L	1		2320B-1997	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-13 (Continued) — Lab Sample ID: 240-74690-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Hardness as calcium carbonate	238		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	35.1		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.8	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	8.2		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.81	J	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170120-PS-14 — Lab Sample ID: 240-74690-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	5.5		0.095	0.015	ug/L	4		8151A	Total/NA
Copper	1.0	J B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	9.4	J B	100	5.3	ug/L	1		6020	Dissolved
Manganese	52.8	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	45.9		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	60.0		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	2.4		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.80		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	9.9		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	1.4		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170120-PS-15 — Lab Sample ID: 240-74690-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.20	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	290		9.5	1.5	ug/L	400		8151A	Total/NA
Arsenic	0.47	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.0	J B	2.0	0.36	ug/L	1		6020	Dissolved
Manganese	10.3	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	113		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	138		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	13.4		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	2.0		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	6.1		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	4.9		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170120-PS-16 — Lab Sample ID: 240-74690-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.92		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	3.0		0.099	0.015	ug/L	4		8151A	Total/NA
Arsenic	1.5	J	5.0	0.35	ug/L	1		6020	Dissolved
Iron	124	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	37.9	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	87.9		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	132		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	22.7		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	0.23		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	11.6		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.53	J	1.0	0.080	mg/L	1		9060	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-17 — Lab Sample ID: 240-74690-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	1.9		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.93		0.095	0.015	ug/L	4		8151A	Total/NA
Copper	2.0	B	2.0	0.36	ug/L	1		6020	Dissolved
Iron	812	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	16.4	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	230		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	284		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	47.3		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.9		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	14.5		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	1.6		1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: TRIP BLANK 003 — Lab Sample ID: 240-74690-9

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-170119-PS-10
Date Collected: 01/19/17 15:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 18:12	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 18:12	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 18:12	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 132*		*01/24/17 18:12*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/24/17 18:12*	*1*
Toluene-d8 (Surr)	*98*		*73 - 124*		*01/24/17 18:12*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*01/24/17 18:12*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/25/17 12:03	01/27/17 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*81*		*42 - 120*	*01/25/17 12:03*	*01/27/17 16:45*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:45*	*1*
2,4,6-Tribromophenol (Surr)	*89*		*35 - 125*	*01/25/17 12:03*	*01/27/17 16:45*	*1*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*	*01/25/17 12:03*	*01/27/17 16:45*	*1*
Phenol-d5 (Surr)	*19*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:45*	*1*
Terphenyl-d14 (Surr)	*89*		*17 - 120*	*01/25/17 12:03*	*01/27/17 16:45*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.20**	**J**	0.50	0.080	ug/L			01/23/17 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*81*		*76 - 121*		*01/23/17 17:42*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.96**		0.094	0.015	ug/L		01/24/17 15:00	01/26/17 20:32	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*51*		*18 - 125*	*01/24/17 15:00*	*01/26/17 20:32*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.40**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:08	1
Copper	**2.2**	**B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:08	1
Iron	**211**	**B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:08	1
Manganese	**157**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:08	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:08	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**50.5**		5.0	1.9	mg/L			01/24/17 10:58	1
Hardness as calcium carbonate	**108**		5.0	3.1	mg/L			01/25/17 07:48	1
Chloride	**9.8**		1.0	0.41	mg/L			01/21/17 17:20	1
Nitrate as N	**7.7**	**H**	0.10	0.035	mg/L			01/21/17 17:20	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-10
Date Collected: 01/19/17 15:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	36.3		1.0	0.13	mg/L			01/21/17 17:20	1
Total Organic Carbon	4.3		1.0	0.080	mg/L			01/23/17 13:51	1

Client Sample ID: W-170119-PS-11

Date Collected: 01/19/17 16:00
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 18:34	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 18:34	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 18:34	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*63 - 132*		*01/24/17 18:34*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*01/24/17 18:34*	*1*
Toluene-d8 (Surr)	*97*		*73 - 124*		*01/24/17 18:34*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*01/24/17 18:34*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/25/17 12:03	01/27/17 15:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*42 - 120*	*01/25/17 12:03*	*01/27/17 15:40*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 120*	*01/25/17 12:03*	*01/27/17 15:40*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*35 - 125*	*01/25/17 12:03*	*01/27/17 15:40*	*1*
Nitrobenzene-d5 (Surr)	*75*		*36 - 120*	*01/25/17 12:03*	*01/27/17 15:40*	*1*
Phenol-d5 (Surr)	*19*		*10 - 120*	*01/25/17 12:03*	*01/27/17 15:40*	*1*
Terphenyl-d14 (Surr)	*86*		*17 - 120*	*01/25/17 12:03*	*01/27/17 15:40*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**8.9**		0.50	0.080	ug/L			01/23/17 17:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*76 - 121*		*01/23/17 17:59*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.15**		0.095	0.015	ug/L		01/24/17 15:00	01/26/17 20:56	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*62*		*18 - 125*	*01/24/17 15:00*	*01/26/17 20:56*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:12	1
Copper	**0.51**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:12	1
Iron	**897**	**B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:12	1
Manganese	**40.4**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:12	1
Zinc	**10.8**	**J**	20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:12	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**168**		5.0	1.9	mg/L			01/24/17 11:08	1
Hardness as calcium carbonate	**70.0**		5.0	3.1	mg/L			01/25/17 07:53	1
Chloride	**12.2**		1.0	0.41	mg/L			01/21/17 18:21	1
Nitrate as N	**3.3**	**H**	0.10	0.035	mg/L			01/21/17 18:21	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-11
Date Collected: 01/19/17 16:00
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	129		1.0	0.13	mg/L			01/21/17 18:21	1
Total Organic Carbon	1.9		1.0	0.080	mg/L			01/23/17 14:18	1

Client Sample ID: W-170119-PS-12

Date Collected: 01/19/17 13:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 18:56	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 18:56	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 18:56	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*63 - 132*		*01/24/17 18:56*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/24/17 18:56*	*1*
Toluene-d8 (Surr)	*99*		*73 - 124*		*01/24/17 18:56*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*01/24/17 18:56*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.064		0.20	0.064	ug/L		01/25/17 12:03	01/27/17 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*42 - 120*	*01/25/17 12:03*	*01/27/17 16:23*	*1*
2-Fluorophenol (Surr)	*30*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:23*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*35 - 125*	*01/25/17 12:03*	*01/27/17 16:23*	*1*
Nitrobenzene-d5 (Surr)	*75*		*36 - 120*	*01/25/17 12:03*	*01/27/17 16:23*	*1*
Phenol-d5 (Surr)	*17*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:23*	*1*
Terphenyl-d14 (Surr)	*74*		*17 - 120*	*01/25/17 12:03*	*01/27/17 16:23*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*85*		*76 - 121*		*01/23/17 18:16*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.33**		0.098	0.015	ug/L		01/24/17 15:00	01/26/17 21:19	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*47*		*18 - 125*	*01/24/17 15:00*	*01/26/17 21:19*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.35**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:16	1
Copper	**3.1**	**B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:16	1
Iron	**17.1**	**J B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:16	1
Manganese	**1.1**	**J B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:16	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:16	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**50.8**		5.0	1.9	mg/L			01/24/17 11:15	1
Hardness as calcium carbonate	**52.0**		5.0	3.1	mg/L			01/25/17 07:59	1
Chloride	**0.71**	**J**	1.0	0.41	mg/L			01/21/17 18:41	1
Nitrate as N	**0.49**	**H**	0.10	0.035	mg/L			01/21/17 18:41	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-12
Date Collected: 01/19/17 13:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	3.6		1.0	0.13	mg/L			01/21/17 18:41	1
Total Organic Carbon	2.2		1.0	0.080	mg/L			01/23/17 14:45	1

Client Sample ID: W-170119-PS-13
Date Collected: 01/19/17 14:10
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 19:18	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 19:18	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 19:18	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 19:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 132*		*01/24/17 19:18*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*01/24/17 19:18*	*1*
Toluene-d8 (Surr)	*98*		*73 - 124*		*01/24/17 19:18*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*01/24/17 19:18*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.061		0.20	0.061	ug/L		01/25/17 12:03	01/27/17 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*42 - 120*	*01/25/17 12:03*	*01/27/17 16:02*	*1*
2-Fluorophenol (Surr)	*27*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:02*	*1*
2,4,6-Tribromophenol (Surr)	*74*		*35 - 125*	*01/25/17 12:03*	*01/27/17 16:02*	*1*
Nitrobenzene-d5 (Surr)	*78*		*36 - 120*	*01/25/17 12:03*	*01/27/17 16:02*	*1*
Phenol-d5 (Surr)	*15*		*10 - 120*	*01/25/17 12:03*	*01/27/17 16:02*	*1*
Terphenyl-d14 (Surr)	*78*		*17 - 120*	*01/25/17 12:03*	*01/27/17 16:02*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*84*		*76 - 121*		*01/23/17 18:33*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.015		0.097	0.015	ug/L		01/24/17 15:00	01/26/17 21:43	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*45*		*18 - 125*	*01/24/17 15:00*	*01/26/17 21:43*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.75**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:20	1
Copper	**0.64**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:20	1
Iron	<5.3		100	5.3	ug/L		01/23/17 14:00	01/26/17 03:20	1
Manganese	<0.25		5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:20	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:20	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**177**		5.0	1.9	mg/L			01/24/17 11:25	1
Hardness as calcium carbonate	**238**		5.0	3.1	mg/L			01/25/17 08:04	1
Chloride	**35.1**		1.0	0.41	mg/L			01/21/17 19:01	1
Nitrate as N	**1.8**	**H**	0.10	0.035	mg/L			01/21/17 19:01	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-13
Date Collected: 01/19/17 14:10
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	8.2		1.0	0.13	mg/L			01/21/17 19:01	1
Total Organic Carbon	0.81	J	1.0	0.080	mg/L			01/23/17 15:28	1

Client Sample ID: W-170120-PS-14
Date Collected: 01/20/17 09:00
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 19:40	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 19:40	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 19:40	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 132*		*01/24/17 19:40*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*01/24/17 19:40*	*1*
Toluene-d8 (Surr)	*99*		*73 - 124*		*01/24/17 19:40*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*01/24/17 19:40*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/25/17 12:03	01/27/17 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*42 - 120*	*01/25/17 12:03*	*01/27/17 15:19*	*1*
2-Fluorophenol (Surr)	*31*		*10 - 120*	*01/25/17 12:03*	*01/27/17 15:19*	*1*
2,4,6-Tribromophenol (Surr)	*77*		*35 - 125*	*01/25/17 12:03*	*01/27/17 15:19*	*1*
Nitrobenzene-d5 (Surr)	*77*		*36 - 120*	*01/25/17 12:03*	*01/27/17 15:19*	*1*
Phenol-d5 (Surr)	*18*		*10 - 120*	*01/25/17 12:03*	*01/27/17 15:19*	*1*
Terphenyl-d14 (Surr)	*80*		*17 - 120*	*01/25/17 12:03*	*01/27/17 15:19*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*76 - 121*		*01/23/17 18:51*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**5.5**		0.095	0.015	ug/L		01/24/17 15:00	01/26/17 22:06	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*58*		*18 - 125*	*01/24/17 15:00*	*01/26/17 22:06*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:24	1
Copper	**1.0**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:24	1
Iron	**9.4**	**J B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:24	1
Manganese	**52.8**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:24	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:24	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**45.9**		5.0	1.9	mg/L			01/24/17 11:33	1
Hardness as calcium carbonate	**60.0**		5.0	3.1	mg/L			01/25/17 08:09	1
Chloride	**2.4**		1.0	0.41	mg/L			01/21/17 19:21	1
Nitrate as N	**0.80**		0.10	0.035	mg/L			01/21/17 19:21	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-14
Date Collected: 01/20/17 09:00
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-5
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	9.9		1.0	0.13	mg/L			01/21/17 19:21	1
Total Organic Carbon	1.4		1.0	0.080	mg/L			01/23/17 15:55	1

Client Sample ID: W-170120-PS-15

Date Collected: 01/20/17 09:40
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 20:02	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 20:02	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 20:02	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 20:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 132*		*01/24/17 20:02*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*01/24/17 20:02*	*1*
Toluene-d8 (Surr)	*99*		*73 - 124*		*01/24/17 20:02*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*01/24/17 20:02*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/27/17 08:40	01/31/17 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*42 - 120*	*01/27/17 08:40*	*01/31/17 14:06*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 120*	*01/27/17 08:40*	*01/31/17 14:06*	*1*
2,4,6-Tribromophenol (Surr)	*74*		*35 - 125*	*01/27/17 08:40*	*01/31/17 14:06*	*1*
Nitrobenzene-d5 (Surr)	*73*		*36 - 120*	*01/27/17 08:40*	*01/31/17 14:06*	*1*
Phenol-d5 (Surr)	*19*		*10 - 120*	*01/27/17 08:40*	*01/31/17 14:06*	*1*
Terphenyl-d14 (Surr)	*62*		*17 - 120*	*01/27/17 08:40*	*01/31/17 14:06*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.20**	**J**	0.50	0.080	ug/L			01/23/17 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*82*		*76 - 121*		*01/23/17 19:25*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**290**		9.5	1.5	ug/L		01/24/17 15:00	01/27/17 13:36	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X D*	*18 - 125*	*01/24/17 15:00*	*01/27/17 13:36*	*400*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.47**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:29	1
Copper	**1.0**	**J B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:29	1
Iron	<5.3		100	5.3	ug/L		01/23/17 14:00	01/26/17 03:29	1
Manganese	**10.3**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:29	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:29	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**113**		5.0	1.9	mg/L			01/24/17 11:42	1
Hardness as calcium carbonate	**138**		5.0	3.1	mg/L			01/25/17 08:15	1
Chloride	**13.4**		1.0	0.41	mg/L			01/21/17 19:41	1
Nitrate as N	**2.0**		0.10	0.035	mg/L			01/21/17 19:41	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-15
Date Collected: 01/20/17 09:40
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.1		1.0	0.13	mg/L			01/21/17 19:41	1
Total Organic Carbon	4.9		1.0	0.080	mg/L			01/23/17 16:22	1

Client Sample ID: W-170120-PS-16
Date Collected: 01/20/17 10:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 20:24	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 20:24	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 20:24	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*63 - 132*		*01/24/17 20:24*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*01/24/17 20:24*	*1*
Toluene-d8 (Surr)	*97*		*73 - 124*		*01/24/17 20:24*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*01/24/17 20:24*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/27/17 08:40	01/31/17 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*67*		*42 - 120*	*01/27/17 08:40*	*01/31/17 13:45*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 120*	*01/27/17 08:40*	*01/31/17 13:45*	*1*
2,4,6-Tribromophenol (Surr)	*68*		*35 - 125*	*01/27/17 08:40*	*01/31/17 13:45*	*1*
Nitrobenzene-d5 (Surr)	*74*		*36 - 120*	*01/27/17 08:40*	*01/31/17 13:45*	*1*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/27/17 08:40*	*01/31/17 13:45*	*1*
Terphenyl-d14 (Surr)	*69*		*17 - 120*	*01/27/17 08:40*	*01/31/17 13:45*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.92**		0.50	0.080	ug/L			01/23/17 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*78*		*76 - 121*		*01/23/17 19:42*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**3.0**		0.099	0.015	ug/L		01/24/17 15:00	01/26/17 22:54	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*40*		*18 - 125*	*01/24/17 15:00*	*01/26/17 22:54*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.5**	**J**	5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:33	1
Copper	<0.36		2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:33	1
Iron	**124**	**B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:33	1
Manganese	**37.9**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:33	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:33	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**87.9**		5.0	1.9	mg/L			01/24/17 11:54	1
Hardness as calcium carbonate	**132**		5.0	3.1	mg/L			01/25/17 08:20	1
Chloride	**22.7**		1.0	0.41	mg/L			01/21/17 20:41	1
Nitrate as N	**0.23**		0.10	0.035	mg/L			01/21/17 20:41	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-16
Date Collected: 01/20/17 10:30
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-7
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	11.6		1.0	0.13	mg/L			01/21/17 20:41	1
Total Organic Carbon	0.53	J	1.0	0.080	mg/L			01/23/17 16:49	1

Client Sample ID: W-170120-PS-17
Date Collected: 01/20/17 11:20
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 20:46	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 20:46	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 20:46	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 132*		*01/24/17 20:46*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*01/24/17 20:46*	*1*
Toluene-d8 (Surr)	*99*		*73 - 124*		*01/24/17 20:46*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*01/24/17 20:46*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/27/17 08:40	01/31/17 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*61*		*42 - 120*	*01/27/17 08:40*	*01/31/17 13:23*	*1*
2-Fluorophenol (Surr)	*27*		*10 - 120*	*01/27/17 08:40*	*01/31/17 13:23*	*1*
2,4,6-Tribromophenol (Surr)	*63*		*35 - 125*	*01/27/17 08:40*	*01/31/17 13:23*	*1*
Nitrobenzene-d5 (Surr)	*69*		*36 - 120*	*01/27/17 08:40*	*01/31/17 13:23*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*01/27/17 08:40*	*01/31/17 13:23*	*1*
Terphenyl-d14 (Surr)	*56*		*17 - 120*	*01/27/17 08:40*	*01/31/17 13:23*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1.9**		0.50	0.080	ug/L			01/23/17 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*76 - 121*		*01/23/17 19:59*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.93**		0.095	0.015	ug/L		01/24/17 15:00	01/26/17 23:17	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*52*		*18 - 125*	*01/24/17 15:00*	*01/26/17 23:17*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/23/17 14:00	01/26/17 03:37	1
Copper	**2.0**	**B**	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 03:37	1
Iron	**812**	**B**	100	5.3	ug/L		01/23/17 14:00	01/26/17 03:37	1
Manganese	**16.4**	**B**	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 03:37	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 03:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**230**		5.0	1.9	mg/L			01/24/17 12:04	1
Hardness as calcium carbonate	**284**		5.0	3.1	mg/L			01/25/17 08:31	1
Chloride	**47.3**		1.0	0.41	mg/L			01/21/17 21:42	1
Nitrate as N	**1.9**		0.10	0.035	mg/L			01/21/17 21:42	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-17
Date Collected: 01/20/17 11:20
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-8
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14.5		1.0	0.13	mg/L			01/21/17 21:42	1
Total Organic Carbon	1.6		1.0	0.080	mg/L			01/23/17 17:17	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: TRIP BLANK 003
Date Collected: 01/20/17 12:00
Date Received: 01/21/17 10:30

Lab Sample ID: 240-74690-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/25/17 17:42	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/25/17 17:42	1
Toluene	<0.23		1.0	0.23	ug/L			01/25/17 17:42	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/25/17 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*63 - 132*		*01/25/17 17:42*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/25/17 17:42*	*1*
Toluene-d8 (Surr)	*98*		*73 - 124*		*01/25/17 17:42*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*01/25/17 17:42*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-132)	(73-120)	(73-124)	(80-120)
240-74690-1	W-170119-PS-10	113	103	98	99
240-74690-2	W-170119-PS-11	116	104	97	100
240-74690-3	W-170119-PS-12	114	103	99	99
240-74690-4	W-170119-PS-13	112	102	98	99
240-74690-5	W-170120-PS-14	112	101	99	98
240-74690-6	W-170120-PS-15	113	101	99	101
240-74690-7	W-170120-PS-16	116	105	97	103
240-74690-8	W-170120-PS-17	112	102	99	98
240-74690-9	TRIP BLANK 003	116	103	98	101
LCS 240-264082/4	Lab Control Sample	111	108	99	100
LCS 240-264297/4	Lab Control Sample	108	105	100	99
LCSD 240-264082/5	Lab Control Sample Dup	109	107	99	99
MB 240-264082/7	Method Blank	113	104	98	101
MB 240-264297/7	Method Blank	110	101	97	98

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(42-120)	(10-120)	(35-125)	(36-120)	(10-120)	(17-120)
240-74690-1	W-170119-PS-10	81	32	89	82	19	89
240-74690-2	W-170119-PS-11	73	32	78	75	19	86
240-74690-3	W-170119-PS-12	72	30	78	75	17	74
240-74690-4	W-170119-PS-13	77	27	74	78	15	78
240-74690-5	W-170120-PS-14	73	31	77	77	18	80
240-74690-6	W-170120-PS-15	64	32	74	73	19	62
240-74690-7	W-170120-PS-16	67	32	68	74	20	69
240-74690-8	W-170120-PS-17	61	27	63	69	16	56
LCS 240-264292/22-A	Lab Control Sample	85	55	105	91	36	93
LCS 240-264597/16-A	Lab Control Sample	71	48	84	80	32	76
LCSD 240-264597/17-A	Lab Control Sample Dup	88	60	100	97	42	93
MB 240-264292/21-A	Method Blank	78	50	87	86	32	92
MB 240-264597/15-A	Method Blank	72	49	71	82	32	83

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	rifluoroet (76-121)
240-74690-1	W-170119-PS-10	81
240-74690-2	W-170119-PS-11	83
240-74690-3	W-170119-PS-12	85
240-74690-4	W-170119-PS-13	84
240-74690-5	W-170120-PS-14	83
240-74690-6	W-170120-PS-15	82
240-74690-7	W-170120-PS-16	78
240-74690-8	W-170120-PS-17	83
LCS 240-263826/5	Lab Control Sample	88
MB 240-263826/4	Method Blank	86

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPA1 (18-125)	DCPA2 (18-125)
240-74690-1	W-170119-PS-10	48	51
240-74690-2	W-170119-PS-11	62	60
240-74690-3	W-170119-PS-12	44	47
240-74690-4	W-170119-PS-13	44	45
240-74690-5	W-170120-PS-14	54	58
240-74690-6	W-170120-PS-15	0 X D	0 X D
240-74690-7	W-170120-PS-16	40	40
240-74690-8	W-170120-PS-17	48	52
LCS 180-200770/2-A	Lab Control Sample	50	55
MB 180-200770/1-A	Method Blank	47	47

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264082/7
Matrix: Water
Analysis Batch: 264082

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/24/17 13:26	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/24/17 13:26	1
Toluene	<0.23		1.0	0.23	ug/L			01/24/17 13:26	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/24/17 13:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 132*		*01/24/17 13:26*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*01/24/17 13:26*	*1*
Toluene-d8 (Surr)	*98*		*73 - 124*		*01/24/17 13:26*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*01/24/17 13:26*	*1*

Lab Sample ID: LCS 240-264082/4
Matrix: Water
Analysis Batch: 264082

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			10.0	10.2		ug/L		102	80 - 120		
Ethylbenzene			10.0	10.0		ug/L		100	80 - 120		
Toluene			10.0	10.2		ug/L		102	80 - 121		
Xylenes, Total			20.0	19.7		ug/L		98	80 - 120		
m-Xylene & p-Xylene			10.0	9.94		ug/L		99	80 - 120		
o-Xylene			10.0	9.72		ug/L		97	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 132*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*
Toluene-d8 (Surr)	*99*		*73 - 124*
Dibromofluoromethane (Surr)	*100*		*80 - 120*

Lab Sample ID: LCSD 240-264082/5
Matrix: Water
Analysis Batch: 264082

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			10.0	10.2		ug/L		102	80 - 120	0	35
Ethylbenzene			10.0	10.1		ug/L		101	80 - 120	1	35
Toluene			10.0	10.3		ug/L		103	80 - 121	2	35
Xylenes, Total			20.0	19.7		ug/L		99	80 - 120	0	35
m-Xylene & p-Xylene			10.0	10.1		ug/L		101	80 - 120	1	35
o-Xylene			10.0	9.62		ug/L		96	80 - 120	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 132*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*
Toluene-d8 (Surr)	*99*		*73 - 124*
Dibromofluoromethane (Surr)	*99*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-264297/7
Matrix: Water
Analysis Batch: 264297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/25/17 14:46	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/25/17 14:46	1
Toluene	<0.23		1.0	0.23	ug/L			01/25/17 14:46	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/25/17 14:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 132*		*01/25/17 14:46*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*01/25/17 14:46*	*1*
Toluene-d8 (Surr)	*97*		*73 - 124*		*01/25/17 14:46*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*01/25/17 14:46*	*1*

Lab Sample ID: LCS 240-264297/4
Matrix: Water
Analysis Batch: 264297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.3		ug/L		103	80 - 120
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120
Toluene	10.0	10.6		ug/L		106	80 - 121
Xylenes, Total	20.0	20.2		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
o-Xylene	10.0	9.99		ug/L		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 132*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Toluene-d8 (Surr)	*100*		*73 - 124*
Dibromofluoromethane (Surr)	*99*		*80 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264292/21-A
Matrix: Water
Analysis Batch: 264502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264292

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.127	J	0.20	0.063	ug/L		01/25/17 12:03	01/26/17 15:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*42 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
2-Fluorophenol (Surr)	*50*		*10 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
2,4,6-Tribromophenol (Surr)	*87*		*35 - 125*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Phenol-d5 (Surr)	*32*		*10 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*
Terphenyl-d14 (Surr)	*92*		*17 - 120*	*01/25/17 12:03*	*01/26/17 15:42*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-264292/22-A
Matrix: Water
Analysis Batch: 264502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264292

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			20.0	16.2		ug/L		81	54 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*42 - 120*
2-Fluorophenol (Surr)	*55*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*105*		*35 - 125*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*
Phenol-d5 (Surr)	*36*		*10 - 120*
Terphenyl-d14 (Surr)	*93*		*17 - 120*

Lab Sample ID: MB 240-264597/15-A
Matrix: Water
Analysis Batch: 264818

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264597

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/27/17 08:40	01/30/17 09:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*42 - 120*	*01/27/17 08:40*	*01/30/17 09:32*	*1*
2-Fluorophenol (Surr)	*49*		*10 - 120*	*01/27/17 08:40*	*01/30/17 09:32*	*1*
2,4,6-Tribromophenol (Surr)	*71*		*35 - 125*	*01/27/17 08:40*	*01/30/17 09:32*	*1*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*	*01/27/17 08:40*	*01/30/17 09:32*	*1*
Phenol-d5 (Surr)	*32*		*10 - 120*	*01/27/17 08:40*	*01/30/17 09:32*	*1*
Terphenyl-d14 (Surr)	*83*		*17 - 120*	*01/27/17 08:40*	*01/30/17 09:32*	*1*

Lab Sample ID: LCS 240-264597/16-A
Matrix: Water
Analysis Batch: 264818

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264597

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			20.0	14.8		ug/L		74	54 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*71*		*42 - 120*
2-Fluorophenol (Surr)	*48*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*84*		*35 - 125*
Nitrobenzene-d5 (Surr)	*80*		*36 - 120*
Phenol-d5 (Surr)	*32*		*10 - 120*
Terphenyl-d14 (Surr)	*76*		*17 - 120*

Lab Sample ID: LCSD 240-264597/17-A
Matrix: Water
Analysis Batch: 264818

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 264597

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			20.0	13.6		ug/L		68	54 - 120	8	35

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 240-264597/17-A
Matrix: Water
Analysis Batch: 264818

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 264597

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*88*		*42 - 120*
2-Fluorophenol (Surr)	*60*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*100*		*35 - 125*
Nitrobenzene-d5 (Surr)	*97*		*36 - 120*
Phenol-d5 (Surr)	*42*		*10 - 120*
Terphenyl-d14 (Surr)	*93*		*17 - 120*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-263826/4
Matrix: Water
Analysis Batch: 263826

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/23/17 16:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*86*		*76 - 121*		*01/23/17 16:16*	*1*

Lab Sample ID: LCS 240-263826/5
Matrix: Water
Analysis Batch: 263826

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	199	200		ug/L		101	80 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*88*		*76 - 121*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-200770/1-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 200770

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.016		0.10	0.016	ug/L		01/24/17 15:00	01/26/17 14:36	4

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*47*		*18 - 125*	*01/24/17 15:00*	*01/26/17 14:36*	*4*

Lab Sample ID: LCS 180-200770/2-A
Matrix: Water
Analysis Batch: 200952

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 200770

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	1.00	1.21		ug/L		121	30 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	55		18 - 125

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-263902/1-A
Matrix: Water
Analysis Batch: 264398

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 263902

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/23/17 14:00	01/26/17 01:40	1
Copper	0.699	J	2.0	0.36	ug/L		01/23/17 14:00	01/26/17 01:40	1
Iron	17.39	J	100	5.3	ug/L		01/23/17 14:00	01/26/17 01:40	1
Manganese	0.341	J	5.0	0.25	ug/L		01/23/17 14:00	01/26/17 01:40	1
Zinc	<6.2		20.0	6.2	ug/L		01/23/17 14:00	01/26/17 01:40	1

Lab Sample ID: LCS 240-263902/2-A
Matrix: Water
Analysis Batch: 264398

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263902

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	962.7		ug/L		96	80 - 120
Copper	1000	935.3		ug/L		94	80 - 120
Iron	10000	9467		ug/L		95	80 - 120
Manganese	1000	1006		ug/L		101	80 - 120
Zinc	1000	1016		ug/L		102	80 - 120

Method: 2320B-1997 - Alkalinity, Total

Lab Sample ID: MB 240-264126/5
Matrix: Water
Analysis Batch: 264126

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<1.9		5.0	1.9	mg/L			01/24/17 09:31	1

Lab Sample ID: LCS 240-264126/4
Matrix: Water
Analysis Batch: 264126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	378	344.1		mg/L		91	86 - 123

Method: 2340C-1997 - Hardness, Total

Lab Sample ID: MB 240-264193/1
Matrix: Water
Analysis Batch: 264193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<3.1		5.0	3.1	mg/L			01/25/17 07:06	1

Method: 2340C-1997 - Hardness, Total (Continued)

Lab Sample ID: LCS 240-264193/2
Matrix: Water
Analysis Batch: 264193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	170	170.0		mg/L		100	80 - 120

Lab Sample ID: 240-74690-8 DU
Matrix: Water
Analysis Batch: 264193

Client Sample ID: W-170120-PS-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Hardness as calcium carbonate	284		288.0		mg/L		1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-263844/3
Matrix: Water
Analysis Batch: 263844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.41		1.0	0.41	mg/L			01/21/17 16:40	1
Sulfate	<0.13		1.0	0.13	mg/L			01/21/17 16:40	1

Lab Sample ID: LCS 240-263844/4
Matrix: Water
Analysis Batch: 263844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	53.88		mg/L		108	90 - 110
Sulfate	50.0	53.97		mg/L		108	90 - 110

Lab Sample ID: 240-74690-1 MS
Matrix: Water
Analysis Batch: 263844

Client Sample ID: W-170119-PS-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.8		50.0	64.90		mg/L		110	80 - 120
Sulfate	36.3		50.0	91.79		mg/L		111	80 - 120

Lab Sample ID: 240-74690-1 MSD
Matrix: Water
Analysis Batch: 263844

Client Sample ID: W-170119-PS-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.8		50.0	64.50		mg/L		109	80 - 120	1	15
Sulfate	36.3		50.0	91.43		mg/L		110	80 - 120	0	15

Lab Sample ID: 240-74690-7 MS
Matrix: Water
Analysis Batch: 263844

Client Sample ID: W-170120-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	22.7		50.0	78.04		mg/L		111	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 240-74690-7 MS
Matrix: Water
Analysis Batch: 263844

Client Sample ID: W-170120-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	11.6		50.0	68.56		mg/L		114	80 - 120

Lab Sample ID: 240-74690-7 MSD
Matrix: Water
Analysis Batch: 263844

Client Sample ID: W-170120-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	22.7		50.0	77.96		mg/L		111	80 - 120	0	15
Sulfate	11.6		50.0	68.83		mg/L		115	80 - 120	0	15

Lab Sample ID: MB 240-263845/3
Matrix: Water
Analysis Batch: 263845

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.035		0.10	0.035	mg/L			01/21/17 16:40	1

Lab Sample ID: LCS 240-263845/4
Matrix: Water
Analysis Batch: 263845

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.50	2.60		mg/L		104	90 - 110

Lab Sample ID: 240-74690-7 MS
Matrix: Water
Analysis Batch: 263845

Client Sample ID: W-170120-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.23		2.50	2.94		mg/L		108	80 - 120

Lab Sample ID: 240-74690-7 MSD
Matrix: Water
Analysis Batch: 263845

Client Sample ID: W-170120-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.23		2.50	2.94		mg/L		108	80 - 120	0	15

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 240-263971/4
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.080		1.0	0.080	mg/L			01/23/17 12:14	1

Method: 9060 - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 240-263971/6
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	46.3	46.07		mg/L		99	80 - 120

Lab Sample ID: LLCS 240-263971/5
Matrix: Water
Analysis Batch: 263971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4.63	4.66		mg/L		101	88 - 115

GC/MS VOA

Analysis Batch: 264082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	8260B	
240-74690-2	W-170119-PS-11	Total/NA	Water	8260B	
240-74690-3	W-170119-PS-12	Total/NA	Water	8260B	
240-74690-4	W-170119-PS-13	Total/NA	Water	8260B	
240-74690-5	W-170120-PS-14	Total/NA	Water	8260B	
240-74690-6	W-170120-PS-15	Total/NA	Water	8260B	
240-74690-7	W-170120-PS-16	Total/NA	Water	8260B	
240-74690-8	W-170120-PS-17	Total/NA	Water	8260B	
MB 240-264082/7	Method Blank	Total/NA	Water	8260B	
LCS 240-264082/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-264082/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 264297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-9	TRIP BLANK 003	Total/NA	Water	8260B	
MB 240-264297/7	Method Blank	Total/NA	Water	8260B	
LCS 240-264297/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 264292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	3510C	
240-74690-2	W-170119-PS-11	Total/NA	Water	3510C	
240-74690-3	W-170119-PS-12	Total/NA	Water	3510C	
240-74690-4	W-170119-PS-13	Total/NA	Water	3510C	
240-74690-5	W-170120-PS-14	Total/NA	Water	3510C	
MB 240-264292/21-A	Method Blank	Total/NA	Water	3510C	
LCS 240-264292/22-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 264502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-264292/21-A	Method Blank	Total/NA	Water	8270C	264292
LCS 240-264292/22-A	Lab Control Sample	Total/NA	Water	8270C	264292

Analysis Batch: 264588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	8270C	264292
240-74690-2	W-170119-PS-11	Total/NA	Water	8270C	264292
240-74690-3	W-170119-PS-12	Total/NA	Water	8270C	264292
240-74690-4	W-170119-PS-13	Total/NA	Water	8270C	264292
240-74690-5	W-170120-PS-14	Total/NA	Water	8270C	264292

Prep Batch: 264597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-6	W-170120-PS-15	Total/NA	Water	3510C	
240-74690-7	W-170120-PS-16	Total/NA	Water	3510C	
240-74690-8	W-170120-PS-17	Total/NA	Water	3510C	
MB 240-264597/15-A	Method Blank	Total/NA	Water	3510C	
LCS 240-264597/16-A	Lab Control Sample	Total/NA	Water	3510C	

GC/MS Semi VOA (Continued)

Prep Batch: 264597 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 240-264597/17-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 264818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-264597/15-A	Method Blank	Total/NA	Water	8270C	264597
LCS 240-264597/16-A	Lab Control Sample	Total/NA	Water	8270C	264597
LCSD 240-264597/17-A	Lab Control Sample Dup	Total/NA	Water	8270C	264597

Analysis Batch: 264996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-6	W-170120-PS-15	Total/NA	Water	8270C	264597
240-74690-7	W-170120-PS-16	Total/NA	Water	8270C	264597
240-74690-8	W-170120-PS-17	Total/NA	Water	8270C	264597

GC VOA

Analysis Batch: 263826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	RSK-175	
240-74690-2	W-170119-PS-11	Total/NA	Water	RSK-175	
240-74690-3	W-170119-PS-12	Total/NA	Water	RSK-175	
240-74690-4	W-170119-PS-13	Total/NA	Water	RSK-175	
240-74690-5	W-170120-PS-14	Total/NA	Water	RSK-175	
240-74690-6	W-170120-PS-15	Total/NA	Water	RSK-175	
240-74690-7	W-170120-PS-16	Total/NA	Water	RSK-175	
240-74690-8	W-170120-PS-17	Total/NA	Water	RSK-175	
MB 240-263826/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-263826/5	Lab Control Sample	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 200770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	8151A	
240-74690-2	W-170119-PS-11	Total/NA	Water	8151A	
240-74690-3	W-170119-PS-12	Total/NA	Water	8151A	
240-74690-4	W-170119-PS-13	Total/NA	Water	8151A	
240-74690-5	W-170120-PS-14	Total/NA	Water	8151A	
240-74690-6	W-170120-PS-15	Total/NA	Water	8151A	
240-74690-7	W-170120-PS-16	Total/NA	Water	8151A	
240-74690-8	W-170120-PS-17	Total/NA	Water	8151A	
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	

Analysis Batch: 200952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	8151A	200770
240-74690-2	W-170119-PS-11	Total/NA	Water	8151A	200770
240-74690-3	W-170119-PS-12	Total/NA	Water	8151A	200770
240-74690-4	W-170119-PS-13	Total/NA	Water	8151A	200770

GC Semi VOA (Continued)

Analysis Batch: 200952 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-5	W-170120-PS-14	Total/NA	Water	8151A	200770
240-74690-7	W-170120-PS-16	Total/NA	Water	8151A	200770
240-74690-8	W-170120-PS-17	Total/NA	Water	8151A	200770
MB 180-200770/1-A	Method Blank	Total/NA	Water	8151A	200770
LCS 180-200770/2-A	Lab Control Sample	Total/NA	Water	8151A	200770

Analysis Batch: 201078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-6	W-170120-PS-15	Total/NA	Water	8151A	200770

Metals

Prep Batch: 263902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Dissolved	Water	3005A	
240-74690-2	W-170119-PS-11	Dissolved	Water	3005A	
240-74690-3	W-170119-PS-12	Dissolved	Water	3005A	
240-74690-4	W-170119-PS-13	Dissolved	Water	3005A	
240-74690-5	W-170120-PS-14	Dissolved	Water	3005A	
240-74690-6	W-170120-PS-15	Dissolved	Water	3005A	
240-74690-7	W-170120-PS-16	Dissolved	Water	3005A	
240-74690-8	W-170120-PS-17	Dissolved	Water	3005A	
MB 240-263902/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-263902/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 264398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Dissolved	Water	6020	263902
240-74690-2	W-170119-PS-11	Dissolved	Water	6020	263902
240-74690-3	W-170119-PS-12	Dissolved	Water	6020	263902
240-74690-4	W-170119-PS-13	Dissolved	Water	6020	263902
240-74690-5	W-170120-PS-14	Dissolved	Water	6020	263902
240-74690-6	W-170120-PS-15	Dissolved	Water	6020	263902
240-74690-7	W-170120-PS-16	Dissolved	Water	6020	263902
240-74690-8	W-170120-PS-17	Dissolved	Water	6020	263902
MB 240-263902/1-A	Method Blank	Total Recoverable	Water	6020	263902
LCS 240-263902/2-A	Lab Control Sample	Total Recoverable	Water	6020	263902

General Chemistry

Analysis Batch: 263844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	300.0	
240-74690-2	W-170119-PS-11	Total/NA	Water	300.0	
240-74690-3	W-170119-PS-12	Total/NA	Water	300.0	
240-74690-4	W-170119-PS-13	Total/NA	Water	300.0	
240-74690-5	W-170120-PS-14	Total/NA	Water	300.0	
240-74690-6	W-170120-PS-15	Total/NA	Water	300.0	
240-74690-7	W-170120-PS-16	Total/NA	Water	300.0	
240-74690-8	W-170120-PS-17	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 263844 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-263844/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263844/4	Lab Control Sample	Total/NA	Water	300.0	
240-74690-1 MS	W-170119-PS-10	Total/NA	Water	300.0	
240-74690-1 MSD	W-170119-PS-10	Total/NA	Water	300.0	
240-74690-7 MS	W-170120-PS-16	Total/NA	Water	300.0	
240-74690-7 MSD	W-170120-PS-16	Total/NA	Water	300.0	

Analysis Batch: 263845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	300.0	
240-74690-2	W-170119-PS-11	Total/NA	Water	300.0	
240-74690-3	W-170119-PS-12	Total/NA	Water	300.0	
240-74690-4	W-170119-PS-13	Total/NA	Water	300.0	
240-74690-5	W-170120-PS-14	Total/NA	Water	300.0	
240-74690-6	W-170120-PS-15	Total/NA	Water	300.0	
240-74690-7	W-170120-PS-16	Total/NA	Water	300.0	
240-74690-8	W-170120-PS-17	Total/NA	Water	300.0	
MB 240-263845/3	Method Blank	Total/NA	Water	300.0	
LCS 240-263845/4	Lab Control Sample	Total/NA	Water	300.0	
240-74690-7 MS	W-170120-PS-16	Total/NA	Water	300.0	
240-74690-7 MSD	W-170120-PS-16	Total/NA	Water	300.0	

Analysis Batch: 263971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	9060	
240-74690-2	W-170119-PS-11	Total/NA	Water	9060	
240-74690-3	W-170119-PS-12	Total/NA	Water	9060	
240-74690-4	W-170119-PS-13	Total/NA	Water	9060	
240-74690-5	W-170120-PS-14	Total/NA	Water	9060	
240-74690-6	W-170120-PS-15	Total/NA	Water	9060	
240-74690-7	W-170120-PS-16	Total/NA	Water	9060	
240-74690-8	W-170120-PS-17	Total/NA	Water	9060	
MB 240-263971/4	Method Blank	Total/NA	Water	9060	
LCS 240-263971/6	Lab Control Sample	Total/NA	Water	9060	
LLCS 240-263971/5	Lab Control Sample	Total/NA	Water	9060	

Analysis Batch: 264126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	2320B-1997	
240-74690-2	W-170119-PS-11	Total/NA	Water	2320B-1997	
240-74690-3	W-170119-PS-12	Total/NA	Water	2320B-1997	
240-74690-4	W-170119-PS-13	Total/NA	Water	2320B-1997	
240-74690-5	W-170120-PS-14	Total/NA	Water	2320B-1997	
240-74690-6	W-170120-PS-15	Total/NA	Water	2320B-1997	
240-74690-7	W-170120-PS-16	Total/NA	Water	2320B-1997	
240-74690-8	W-170120-PS-17	Total/NA	Water	2320B-1997	
MB 240-264126/5	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-264126/4	Lab Control Sample	Total/NA	Water	2320B-1997	

General Chemistry (Continued)

Analysis Batch: 264193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74690-1	W-170119-PS-10	Total/NA	Water	2340C-1997	
240-74690-2	W-170119-PS-11	Total/NA	Water	2340C-1997	
240-74690-3	W-170119-PS-12	Total/NA	Water	2340C-1997	
240-74690-4	W-170119-PS-13	Total/NA	Water	2340C-1997	
240-74690-5	W-170120-PS-14	Total/NA	Water	2340C-1997	
240-74690-6	W-170120-PS-15	Total/NA	Water	2340C-1997	
240-74690-7	W-170120-PS-16	Total/NA	Water	2340C-1997	
240-74690-8	W-170120-PS-17	Total/NA	Water	2340C-1997	
MB 240-264193/1	Method Blank	Total/NA	Water	2340C-1997	
LCS 240-264193/2	Lab Control Sample	Total/NA	Water	2340C-1997	
240-74690-8 DU	W-170120-PS-17	Total/NA	Water	2340C-1997	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170119-PS-10

Lab Sample ID: 240-74690-1
Date Collected: 01/19/17 15:30
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 18:12	LRW	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 16:45	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 17:42	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 20:32	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:08	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 10:58	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 07:48	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 17:20	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 17:20	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 13:51	TPH	TAL CAN

Client Sample ID: W-170119-PS-11

Lab Sample ID: 240-74690-2
Date Collected: 01/19/17 16:00
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 18:34	LRW	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 15:40	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 17:59	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 20:56	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:12	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:08	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 07:53	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 18:21	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 18:21	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 14:18	TPH	TAL CAN

Client Sample ID: W-170119-PS-12

Lab Sample ID: 240-74690-3
Date Collected: 01/19/17 13:30
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 18:56	LRW	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 16:23	JMG	TAL CAN

Client Sample ID: W-170119-PS-12

Lab Sample ID: 240-74690-3

Date Collected: 01/19/17 13:30

Matrix: Water

Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	263826	01/23/17 18:16	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 21:19	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:16	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:15	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 07:59	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 18:41	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 18:41	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 14:45	TPH	TAL CAN

Client Sample ID: W-170119-PS-13

Lab Sample ID: 240-74690-4

Date Collected: 01/19/17 14:10

Matrix: Water

Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 19:18	LRW	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 16:02	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 18:33	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 21:43	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:20	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:25	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 08:04	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 19:01	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 19:01	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 15:28	TPH	TAL CAN

Client Sample ID: W-170120-PS-14

Lab Sample ID: 240-74690-5

Date Collected: 01/20/17 09:00

Matrix: Water

Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 19:40	LRW	TAL CAN
Total/NA	Prep	3510C			264292	01/25/17 12:03	KEH	TAL CAN
Total/NA	Analysis	8270C		1	264588	01/27/17 15:19	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 18:51	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 22:06	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-14

Lab Sample ID: 240-74690-5

Date Collected: 01/20/17 09:00
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6020		1	264398	01/26/17 03:24	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:33	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 08:09	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 19:21	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 19:21	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 15:55	TPH	TAL CAN

Client Sample ID: W-170120-PS-15

Lab Sample ID: 240-74690-6

Date Collected: 01/20/17 09:40
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 20:02	LRW	TAL CAN
Total/NA	Prep	3510C			264597	01/27/17 08:40	SDE	TAL CAN
Total/NA	Analysis	8270C		1	264996	01/31/17 14:06	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 19:25	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		400	201078	01/27/17 13:36	JMO	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:29	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:42	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 08:15	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 19:41	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 19:41	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 16:22	TPH	TAL CAN

Client Sample ID: W-170120-PS-16

Lab Sample ID: 240-74690-7

Date Collected: 01/20/17 10:30
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 20:24	LRW	TAL CAN
Total/NA	Prep	3510C			264597	01/27/17 08:40	SDE	TAL CAN
Total/NA	Analysis	8270C		1	264996	01/31/17 13:45	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 19:42	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 22:54	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:33	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 11:54	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 08:20	TPH	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Client Sample ID: W-170120-PS-16

Lab Sample ID: 240-74690-7

Date Collected: 01/20/17 10:30
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	263844	01/21/17 20:41	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 20:41	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 16:49	TPH	TAL CAN

Client Sample ID: W-170120-PS-17

Lab Sample ID: 240-74690-8

Date Collected: 01/20/17 11:20
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264082	01/24/17 20:46	LRW	TAL CAN
Total/NA	Prep	3510C			264597	01/27/17 08:40	SDE	TAL CAN
Total/NA	Analysis	8270C		1	264996	01/31/17 13:23	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	263826	01/23/17 19:59	BPM	TAL CAN
Total/NA	Prep	8151A			200770	01/24/17 15:00	CBY	TAL PIT
Total/NA	Analysis	8151A		4	200952	01/26/17 23:17	DFE	TAL PIT
Dissolved	Prep	3005A			263902	01/23/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264398	01/26/17 03:37	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264126	01/24/17 12:04	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	264193	01/25/17 08:31	TPH	TAL CAN
Total/NA	Analysis	300.0		1	263844	01/21/17 21:42	LCN	TAL CAN
Total/NA	Analysis	300.0		1	263845	01/21/17 21:42	LCN	TAL CAN
Total/NA	Analysis	9060		1	263971	01/23/17 17:17	TPH	TAL CAN

Client Sample ID: TRIP BLANK 003

Lab Sample ID: 240-74690-9

Date Collected: 01/20/17 12:00
Matrix: Water
Date Received: 01/21/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264297	01/25/17 17:42	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Certification Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74690-2

Laboratory: TestAmerica Canton

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999518190	08-31-17

Laboratory: TestAmerica Pittsburgh

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	998027800	08-31-17

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

1.2/C1.2 1.4/C1.4 1.6/C1.6 3.2/C3.2

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Peter Starlie	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-39638-17402.8
Client Contact: Mr. Grant Anderson	Phone: 651-247-4218	E-Mail: denise.heckler@testamericainc.com		Page: Page 8 of 8
Company: GHD Services Inc.				Job #:
Address: 1801 Old Highway 8 NW Suite 114	Due Date Requested:			
City: St. Paul	TAT Requested (days): STANDARD			
State, Zip: MN, 55112				
Phone: 651-639-0913(Tel) 651-639-0923(Fax)	PO #: 34001059			
Email: grant.anderson@ghd.com	WO #: 86165			
Project Name: 86165-03-11, Penta Wood	Project #: 24012755			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B - Alkalinity	2340C - Hardness as calcium carbonate	6020 - Metals (field filtered)	8260B, RSK_175 (methane)	9060 - TOC	300.0_28D - Nitrate &Chloride & Sulfate	8260B - BTEX	8270C - Naphthalene	8151 - PCP	Total Number of containers	Special Instructions
			Preservation Code:				N	D	D	A	S	N	A	N	N		
W-170119-PS-10	1-19-17	1530	G	Water			X	X	X	X	X	X	X	X	X		
11		1600		Water			X	X	X	X	X	X	X	X	X		
12		1330		Water			X	X	X	X	X	X	X	X	X		
13		1410					X	X	X	X	X	X	X	X	X		
W-170120-PS-14	1-20-17	0900					X	X	X	X	X	X	X	X	X		
15		0940					X	X	X	X	X	X	X	X	X		
16		1030					X	X	X	X	X	X	X	X	X		
17		1120					X	X	X	X	X	X	X	X	X		
Trip Blank-003		1200											X				

240-74690 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	1-20-17 / 1600	GHD		1/21/17 1030	TA Can
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

2/8/2017

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 74690**
Canton Facility

Client GHD Site Name

Cooler Received on 1/21/17 Opened on 1/21/17

Cooler unpacked by: Terry Burns

FedEx: 1st Grd (Exp) UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other Multiple

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   (IR GUN# IR-8 (CF +0 °C)) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +1.1°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 2 each (Yes) No
   -Were custody seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? (Yes) No
13. Were air bubbles >6 mm in any VOA vials? Yes (No) NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B624401VB (Yes) No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

TestAmerica Multiple Cooler Receipt Form/Narrative **Login # :** 144690
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
CANTON	8	1.2	1.2	ICE
"	"	1.4	1.4	"
"	"	1.6	1.6	"
Client	"	3.2	3.2	"

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-74690-1

Login Number: 74690
List Number: 2
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 01/24/17 11:15 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-74790-1
Client Project/Site: 86165-03-11, Penta Wood

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Denise D Heckler

Authorized for release by:
2/7/2017 11:42:39 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
X	Surrogate is outside control limits

GC VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
^c	CCV Recovery is outside acceptance limits.

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
X	Surrogate is outside control limits
J	Reported value was between the limit of detection and the limit of quantitation.
^c	CCV Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Metals

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-74790-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-74790-1

Comments
No additional comments.

Receipt
The samples were received on 1/25/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.2º C, 0.2º C, 1.2º C, 1.6º C, 2.4º C, 2.6º C and 3.6º C.

GC/MS VOA
Method(s) 8260B: The reporting limit (RL) provided for the following analyte(s) falls below the laboratory's verified standard quantitation limit: Benzene. Results reported below the verified standard quantitation limit have less certainty (i.e., are estimated) and must be used at the client's discretion. The continuing calibration blanks and method blanks may not support the lower RL.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method(s) 8270C: The following samples were diluted due to the nature of the sample matrix: W-170124-PS-22 (240-74790-6), W-170124-PS-23 (240-74790-7), W-170124-PS-24 (240-74790-8), W-170124-PS-24 (240-74790-8[MS]), W-170124-PS-24 (240-74790-8[MSD]), W-170124-PS-27 (240-74790-10) and W-170124-PS-28 (240-74790-11). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA
Method(s) RSK-175: 1,1,1-Trifluoroethane (surrogate) was low in the closing CCV. All samples and prior QC pass limits for surrogate recovery.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method(s) 8151A: The following sample was diluted due to the abundance of target analytes: W-170124-PS-23 (240-74790-7) and W-170124-PS-26 (240-74790-9)

Method(s) 8151A: The following samples was diluted due to the abundance of target analytes: W-170124-PS-22 (240-74790-6), W-170124-PS-24 (240-74790-8), W-170124-PS-24 (240-74790-8[MS]), W-170124-PS-24 (240-74790-8[MSD]), W-170124-PS-27 (240-74790-10) and W-170124-PS-28 (240-74790-11)All surrogates and spiked compounds were diluted out.

Method(s) 8151A: The following samples were diluted due to the nature of the sample matrix: W-170124-PS-22 (240-74790-6), W-170124-PS-24 (240-74790-8), W-170124-PS-24 (240-74790-8[MS]), W-170124-PS-24 (240-74790-8[MSD]), W-170124-PS-27 (240-74790-10) and W-170124-PS-28 (240-74790-11). Because of this dilution, the surrogate spike and matrix spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method(s) 300.0: The following samples were received with less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: W-170123-PS-18 (240-74790-1), W-170123-PS-19 (240-74790-2) and W-170123-PS-20 (240-74790-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 240-74790-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CAN
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020	Metals (ICP/MS)	SW846	TAL CAN
2320B-1997	Alkalinity, Total	SM	TAL CAN
2340C-1997	Hardness, Total	SM	TAL CAN
300.0	Anions, Ion Chromatography	MCAWW	TAL CAN
9060	Organic Carbon, Total (TOC)	SW846	TAL CAN

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Sample Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-74790-1	W-170123-PS-18	Water	01/23/17 13:33	01/25/17 10:00
240-74790-2	W-170123-PS-19	Water	01/23/17 13:39	01/25/17 10:00
240-74790-3	W-170123-PS-20	Water	01/23/17 14:35	01/25/17 10:00
240-74790-4	W-170123-PS-21	Water	01/23/17 16:00	01/25/17 10:00
240-74790-5	W-170123-PS-25	Water	01/23/17 15:00	01/25/17 10:00
240-74790-6	W-170124-PS-22	Water	01/24/17 08:25	01/25/17 10:00
240-74790-7	W-170124-PS-23	Water	01/24/17 09:20	01/25/17 10:00
240-74790-8	W-170124-PS-24	Water	01/24/17 09:43	01/25/17 10:00
240-74790-9	W-170124-PS-26	Water	01/24/17 11:45	01/25/17 10:00
240-74790-10	W-170124-PS-27	Water	01/24/17 12:40	01/25/17 10:00
240-74790-11	W-170124-PS-28	Water	01/24/17 12:45	01/25/17 10:00
240-74790-12	TRIP BLANK-004	Water	01/23/17 00:00	01/25/17 10:00

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-18 — Lab Sample ID: 240-74790-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.13	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.099		0.095	0.015	ug/L	4		8151A	Total/NA
Arsenic	0.73	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.4	J	2.0	0.36	ug/L	1		6020	Dissolved
Alkalinity	202		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	390		25.0	15.5	mg/L	1		2340C-1997	Total/NA
Chloride	17.4		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	2.1	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	167		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.81	J B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170123-PS-19 — Lab Sample ID: 240-74790-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.76	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	0.66	J	2.0	0.36	ug/L	1		6020	Dissolved
Alkalinity	213		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	380		25.0	15.5	mg/L	1		2340C-1997	Total/NA
Chloride	17.4		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	2.1	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	167		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.50	J B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170123-PS-20 — Lab Sample ID: 240-74790-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.12		0.095	0.015	ug/L	4		8151A	Total/NA
Arsenic	1.1	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	0.62	J	2.0	0.36	ug/L	1		6020	Dissolved
Manganese	1.6	J B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	129		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	146		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	15.8		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.7	H	0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	6.6		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	0.51	J B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170123-PS-21 — Lab Sample ID: 240-74790-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.059	J	0.095	0.015	ug/L	4		8151A	Total/NA
Copper	2.8		2.0	0.36	ug/L	1		6020	Dissolved
Manganese	6.0	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	188		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	212		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	6.6		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	3.1		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	6.0		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	3.8	B	1.0	0.080	mg/L	1		9060	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-25 — Lab Sample ID: 240-74790-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.037	J	0.095	0.015	ug/L	4		8151A	Total/NA

Client Sample ID: W-170124-PS-22 — Lab Sample ID: 240-74790-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.70	J	1.0	0.26	ug/L	1		8260B	Total/NA
Toluene	0.62	J	1.0	0.23	ug/L	1		8260B	Total/NA
Xylenes, Total	9.3		2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	11		0.97	0.30	ug/L	5		8270C	Total/NA
Methane	48		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	6400		480	74	ug/L	20000		8151A	Total/NA
Arsenic	11.4		5.0	0.35	ug/L	1		6020	Dissolved
Copper	3.2		2.0	0.36	ug/L	1		6020	Dissolved
Iron	8700	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	2220	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	297		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	304		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	28.0		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	4.8		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	12.1		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	35.8	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170124-PS-23 — Lab Sample ID: 240-74790-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.96	J	1.0	0.26	ug/L	1		8260B	Total/NA
Toluene	0.91	J	1.0	0.23	ug/L	1		8260B	Total/NA
Xylenes, Total	8.1		2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	10		0.98	0.31	ug/L	5		8270C	Total/NA
Methane	8.5		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	6200		98	15	ug/L	4000		8151A	Total/NA
Arsenic	0.46	J	5.0	0.35	ug/L	1		6020	Dissolved
Copper	1.9	J	2.0	0.36	ug/L	1		6020	Dissolved
Iron	539	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	831	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	158		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	220		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	17.4		1.0	0.41	mg/L	1		300.0	Total/NA
Sulfate	24.0		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	19.4	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170124-PS-24 — Lab Sample ID: 240-74790-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.40	J	1.0	0.26	ug/L	1		8260B	Total/NA
Xylenes, Total	5.7		2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	10		0.96	0.30	ug/L	5		8270C	Total/NA
Methane	0.12	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	9800		480	74	ug/L	20000		8151A	Total/NA
Arsenic	0.80	J	5.0	0.35	ug/L	1		6020	Dissolved

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-24 (Continued) — Lab Sample ID: 240-74790-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Copper	2.5		2.0	0.36	ug/L	1		6020	Dissolved
Iron	254	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	624	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	164		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	220		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	12.3		1.0	0.41	mg/L	1		300.0	Total/NA
Sulfate	17.3	F1	1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	23.4	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170124-PS-26 — Lab Sample ID: 240-74790-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	1.2	J	2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	1.7		0.19	0.060	ug/L	1		8270C	Total/NA
Methane	0.25	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	840		95	15	ug/L	4000		8151A	Total/NA
Copper	0.70	J	2.0	0.36	ug/L	1		6020	Dissolved
Iron	398	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	163	B	5.0	0.25	ug/L	1		6020	Dissolved
Zinc	15.4	J	20.0	6.2	ug/L	1		6020	Dissolved
Alkalinity	124		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	144		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	12.3		1.0	0.41	mg/L	1		300.0	Total/NA
Nitrate as N	1.0		0.10	0.035	mg/L	1		300.0	Total/NA
Sulfate	5.9		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	6.4	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170124-PS-27 — Lab Sample ID: 240-74790-10

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.98	J	1.0	0.26	ug/L	1		8260B	Total/NA
Toluene	1.2		1.0	0.23	ug/L	1		8260B	Total/NA
Xylenes, Total	12		2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	40		1.9	0.60	ug/L	10		8270C	Total/NA
Methane	0.40	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	56000		1900	300	ug/L	80000		8151A	Total/NA
Copper	1.9	J	2.0	0.36	ug/L	1		6020	Dissolved
Iron	1400	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	3290	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	113		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	120		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	4.3		1.0	0.41	mg/L	1		300.0	Total/NA
Sulfate	6.8		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	51.4	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: W-170124-PS-28 — Lab Sample ID: 240-74790-11

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.90	J	1.0	0.26	ug/L	1		8260B	Total/NA
Toluene	1.3		1.0	0.23	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Detection Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-28 (Continued) — Lab Sample ID: 240-74790-11

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	12		2.0	0.24	ug/L	1		8260B	Total/NA
Naphthalene	41		2.1	0.65	ug/L	10		8270C	Total/NA
Methane	0.37	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	67000		1900	300	ug/L	80000		8151A	Total/NA
Copper	3.3		2.0	0.36	ug/L	1		6020	Dissolved
Iron	1380	B	100	5.3	ug/L	1		6020	Dissolved
Manganese	3170	B	5.0	0.25	ug/L	1		6020	Dissolved
Alkalinity	112		5.0	1.9	mg/L	1		2320B-1997	Total/NA
Hardness as calcium carbonate	122		5.0	3.1	mg/L	1		2340C-1997	Total/NA
Chloride	4.3		1.0	0.41	mg/L	1		300.0	Total/NA
Sulfate	6.9		1.0	0.13	mg/L	1		300.0	Total/NA
Total Organic Carbon	49.9	B	1.0	0.080	mg/L	1		9060	Total/NA

Client Sample ID: TRIP BLANK-004 — Lab Sample ID: 240-74790-12

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-170123-PS-18
Date Collected: 01/23/17 13:33
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 12:13	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 12:13	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 12:13	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*63 - 132*		*01/30/17 12:13*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*01/30/17 12:13*	*1*
Toluene-d8 (Surr)	*74*		*73 - 124*		*01/30/17 12:13*	*1*
Dibromofluoromethane (Surr)	*86*		*80 - 120*		*01/30/17 12:13*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/30/17 09:12	02/01/17 10:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*42 - 120*	*01/30/17 09:12*	*02/01/17 10:35*	*1*
2-Fluorophenol (Surr)	*37*		*10 - 120*	*01/30/17 09:12*	*02/01/17 10:35*	*1*
2,4,6-Tribromophenol (Surr)	*64*		*35 - 125*	*01/30/17 09:12*	*02/01/17 10:35*	*1*
Nitrobenzene-d5 (Surr)	*79*		*36 - 120*	*01/30/17 09:12*	*02/01/17 10:35*	*1*
Phenol-d5 (Surr)	*22*		*10 - 120*	*01/30/17 09:12*	*02/01/17 10:35*	*1*
Terphenyl-d14 (Surr)	*66*		*17 - 120*	*01/30/17 09:12*	*02/01/17 10:35*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.13**	**J**	0.50	0.080	ug/L			01/31/17 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*86*		*76 - 121*		*01/31/17 13:54*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.099**		0.095	0.015	ug/L		01/27/17 14:30	01/31/17 08:49	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*26*		*18 - 125*	*01/27/17 14:30*	*01/31/17 08:49*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.73**	**J**	5.0	0.35	ug/L		01/26/17 14:00	01/27/17 19:48	1
Copper	**1.4**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 19:48	1
Iron	<5.3		100	5.3	ug/L		01/26/17 14:00	01/27/17 19:48	1
Manganese	<0.25		5.0	0.25	ug/L		01/26/17 14:00	01/27/17 19:48	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 19:48	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**202**		5.0	1.9	mg/L			01/31/17 16:15	1
Hardness as calcium carbonate	**390**		25.0	15.5	mg/L			01/31/17 11:31	1
Chloride	**17.4**		1.0	0.41	mg/L			01/25/17 17:42	1
Nitrate as N	**2.1**	**H**	0.10	0.035	mg/L			01/25/17 17:42	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-18
Date Collected: 01/23/17 13:33
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	167		1.0	0.13	mg/L			01/25/17 17:42	1
Total Organic Carbon	0.81	J B	1.0	0.080	mg/L			01/27/17 09:02	1

Client Sample ID: W-170123-PS-19
Date Collected: 01/23/17 13:39
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 12:36	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 12:36	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 12:36	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 132*		*01/30/17 12:36*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/30/17 12:36*	*1*
Toluene-d8 (Surr)	*81*		*73 - 124*		*01/30/17 12:36*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 120*		*01/30/17 12:36*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/30/17 09:12	02/01/17 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*42 - 120*	*01/30/17 09:12*	*02/01/17 13:06*	*1*
2-Fluorophenol (Surr)	*34*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:06*	*1*
2,4,6-Tribromophenol (Surr)	*65*		*35 - 125*	*01/30/17 09:12*	*02/01/17 13:06*	*1*
Nitrobenzene-d5 (Surr)	*78*		*36 - 120*	*01/30/17 09:12*	*02/01/17 13:06*	*1*
Phenol-d5 (Surr)	*21*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:06*	*1*
Terphenyl-d14 (Surr)	*65*		*17 - 120*	*01/30/17 09:12*	*02/01/17 13:06*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/31/17 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*82*		*76 - 121*		*01/31/17 14:11*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.015		0.095	0.015	ug/L		01/27/17 14:30	01/30/17 08:28	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*33*		*18 - 125*	*01/27/17 14:30*	*01/30/17 08:28*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.76**	**J**	5.0	0.35	ug/L		01/26/17 14:00	01/27/17 19:52	1
Copper	**0.66**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 19:52	1
Iron	<5.3		100	5.3	ug/L		01/26/17 14:00	01/27/17 19:52	1
Manganese	<0.25		5.0	0.25	ug/L		01/26/17 14:00	01/27/17 19:52	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 19:52	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**213**		5.0	1.9	mg/L			01/26/17 23:55	1
Hardness as calcium carbonate	**380**		25.0	15.5	mg/L			01/31/17 11:38	1
Chloride	**17.4**		1.0	0.41	mg/L			01/25/17 18:03	1
Nitrate as N	**2.1**	**H**	0.10	0.035	mg/L			01/25/17 18:03	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-19
Date Collected: 01/23/17 13:39
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	167		1.0	0.13	mg/L			01/25/17 18:03	1
Total Organic Carbon	0.50	J B	1.0	0.080	mg/L			01/27/17 09:30	1

Client Sample ID: W-170123-PS-20

Lab Sample ID: 240-74790-3

Date Collected: 01/23/17 14:35

Matrix: Water

Date Received: 01/25/17 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 12:58	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 12:58	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 12:58	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 12:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 132*		*01/30/17 12:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*01/30/17 12:58*	*1*
Toluene-d8 (Surr)	*75*		*73 - 124*		*01/30/17 12:58*	*1*
Dibromofluoromethane (Surr)	*85*		*80 - 120*		*01/30/17 12:58*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.061		0.20	0.061	ug/L		01/30/17 09:12	02/01/17 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*67*		*42 - 120*	*01/30/17 09:12*	*02/01/17 13:28*	*1*
2-Fluorophenol (Surr)	*33*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:28*	*1*
2,4,6-Tribromophenol (Surr)	*61*		*35 - 125*	*01/30/17 09:12*	*02/01/17 13:28*	*1*
Nitrobenzene-d5 (Surr)	*74*		*36 - 120*	*01/30/17 09:12*	*02/01/17 13:28*	*1*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:28*	*1*
Terphenyl-d14 (Surr)	*65*		*17 - 120*	*01/30/17 09:12*	*02/01/17 13:28*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/31/17 14:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*85*		*76 - 121*		*01/31/17 14:28*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.12**		0.095	0.015	ug/L		01/27/17 14:30	01/30/17 08:52	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*53*		*18 - 125*	*01/27/17 14:30*	*01/30/17 08:52*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.1**	**J**	5.0	0.35	ug/L		01/26/17 14:00	01/27/17 19:56	1
Copper	**0.62**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 19:56	1
Iron	<5.3		100	5.3	ug/L		01/26/17 14:00	01/27/17 19:56	1
Manganese	**1.6**	**J B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 19:56	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 19:56	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**129**		5.0	1.9	mg/L			01/27/17 00:03	1
Hardness as calcium carbonate	**146**		5.0	3.1	mg/L			01/31/17 11:46	1
Chloride	**15.8**		1.0	0.41	mg/L			01/25/17 18:23	1
Nitrate as N	**1.7**	**H**	0.10	0.035	mg/L			01/25/17 18:23	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-20
Date Collected: 01/23/17 14:35
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.6		1.0	0.13	mg/L			01/25/17 18:23	1
Total Organic Carbon	0.51	J B	1.0	0.080	mg/L			01/27/17 09:57	1

Client Sample ID: W-170123-PS-21
Date Collected: 01/23/17 16:00
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 13:21	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 13:21	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 13:21	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 132*		*01/30/17 13:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*		*01/30/17 13:21*	*1*
Toluene-d8 (Surr)	*76*		*73 - 124*		*01/30/17 13:21*	*1*
Dibromofluoromethane (Surr)	*85*		*80 - 120*		*01/30/17 13:21*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/30/17 09:12	02/01/17 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*60*		*42 - 120*	*01/30/17 09:12*	*02/01/17 14:11*	*1*
2-Fluorophenol (Surr)	*33*		*10 - 120*	*01/30/17 09:12*	*02/01/17 14:11*	*1*
2,4,6-Tribromophenol (Surr)	*64*		*35 - 125*	*01/30/17 09:12*	*02/01/17 14:11*	*1*
Nitrobenzene-d5 (Surr)	*65*		*36 - 120*	*01/30/17 09:12*	*02/01/17 14:11*	*1*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/30/17 09:12*	*02/01/17 14:11*	*1*
Terphenyl-d14 (Surr)	*52*		*17 - 120*	*01/30/17 09:12*	*02/01/17 14:11*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/31/17 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*76 - 121*		*01/31/17 14:45*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.059**	**J**	0.095	0.015	ug/L		01/27/17 14:30	01/30/17 09:15	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*48*		*18 - 125*	*01/27/17 14:30*	*01/30/17 09:15*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:01	1
Copper	**2.8**		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:01	1
Iron	<5.3		100	5.3	ug/L		01/26/17 14:00	01/27/17 20:01	1
Manganese	**6.0**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:01	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:01	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**188**		5.0	1.9	mg/L			01/27/17 00:13	1
Hardness as calcium carbonate	**212**		5.0	3.1	mg/L			01/31/17 11:54	1
Chloride	**6.6**		1.0	0.41	mg/L			01/25/17 14:02	1
Nitrate as N	**3.1**		0.10	0.035	mg/L			01/25/17 14:02	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-21
Date Collected: 01/23/17 16:00
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.0		1.0	0.13	mg/L			01/25/17 14:02	1
Total Organic Carbon	3.8	B	1.0	0.080	mg/L			01/27/17 10:25	1

Client Sample ID: W-170123-PS-25
Date Collected: 01/23/17 15:00
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 13:42	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 13:42	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 13:42	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 132*		*01/30/17 13:42*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*01/30/17 13:42*	*1*
Toluene-d8 (Surr)	*79*		*73 - 124*		*01/30/17 13:42*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/30/17 13:42*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.060		0.19	0.060	ug/L		01/30/17 09:12	02/01/17 13:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*66*		*42 - 120*	*01/30/17 09:12*	*02/01/17 13:50*	*1*
2-Fluorophenol (Surr)	*28*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:50*	*1*
2,4,6-Tribromophenol (Surr)	*61*		*35 - 125*	*01/30/17 09:12*	*02/01/17 13:50*	*1*
Nitrobenzene-d5 (Surr)	*73*		*36 - 120*	*01/30/17 09:12*	*02/01/17 13:50*	*1*
Phenol-d5 (Surr)	*17*		*10 - 120*	*01/30/17 09:12*	*02/01/17 13:50*	*1*
Terphenyl-d14 (Surr)	*72*		*17 - 120*	*01/30/17 09:12*	*02/01/17 13:50*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.037**	**J**	0.095	0.015	ug/L		01/27/17 14:30	01/30/17 09:39	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*31*		*18 - 125*	*01/27/17 14:30*	*01/30/17 09:39*	*4*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:05	1
Copper	<0.36		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:05	1
Iron	<5.3		100	5.3	ug/L		01/26/17 14:00	01/27/17 20:05	1
Manganese	<0.25		5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:05	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:05	1

Client Sample ID: W-170124-PS-22

Date Collected: 01/24/17 08:25
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 14:05	1
Ethylbenzene	**0.70**	**J**	1.0	0.26	ug/L			01/30/17 14:05	1
Toluene	**0.62**	**J**	1.0	0.23	ug/L			01/30/17 14:05	1
Xylenes, Total	**9.3**		2.0	0.24	ug/L			01/30/17 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 132*		*01/30/17 14:05*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*01/30/17 14:05*	*1*
Toluene-d8 (Surr)	*76*		*73 - 124*		*01/30/17 14:05*	*1*
Dibromofluoromethane (Surr)	*86*		*80 - 120*		*01/30/17 14:05*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**11**		0.97	0.30	ug/L		01/30/17 09:12	02/02/17 19:27	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*57*		*42 - 120*	*01/30/17 09:12*	*02/02/17 19:27*	*5*
2-Fluorophenol (Surr)	*33*		*10 - 120*	*01/30/17 09:12*	*02/02/17 19:27*	*5*
2,4,6-Tribromophenol (Surr)	*64*		*35 - 125*	*01/30/17 09:12*	*02/02/17 19:27*	*5*
Nitrobenzene-d5 (Surr)	*72*		*36 - 120*	*01/30/17 09:12*	*02/02/17 19:27*	*5*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/30/17 09:12*	*02/02/17 19:27*	*5*
Terphenyl-d14 (Surr)	*47*		*17 - 120*	*01/30/17 09:12*	*02/02/17 19:27*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**48**		0.50	0.080	ug/L			01/31/17 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*	*^c*	*76 - 121*		*01/31/17 15:20*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**6400**		480	74	ug/L		01/27/17 14:30	02/01/17 10:16	20000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X D*	*18 - 125*	*01/27/17 14:30*	*02/01/17 10:16*	*20000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**11.4**		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:09	1
Copper	**3.2**		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:09	1
Iron	**8700**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 20:09	1
Manganese	**2220**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:09	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:09	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**297**		5.0	1.9	mg/L			01/27/17 00:28	1
Hardness as calcium carbonate	**304**		5.0	3.1	mg/L			01/31/17 12:01	1
Chloride	**28.0**		1.0	0.41	mg/L			01/25/17 14:22	1
Nitrate as N	**4.8**		0.10	0.035	mg/L			01/25/17 14:22	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-22
Date Collected: 01/24/17 08:25
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	12.1		1.0	0.13	mg/L			01/25/17 14:22	1
Total Organic Carbon	35.8	B	1.0	0.080	mg/L			01/27/17 11:08	1

Client Sample ID: W-170124-PS-23

Date Collected: 01/24/17 09:20
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-7

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 14:28	1
Ethylbenzene	**0.96**	**J**	1.0	0.26	ug/L			01/30/17 14:28	1
Toluene	**0.91**	**J**	1.0	0.23	ug/L			01/30/17 14:28	1
Xylenes, Total	**8.1**		2.0	0.24	ug/L			01/30/17 14:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 132*		*01/30/17 14:28*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*01/30/17 14:28*	*1*
Toluene-d8 (Surr)	*77*		*73 - 124*		*01/30/17 14:28*	*1*
Dibromofluoromethane (Surr)	*85*		*80 - 120*		*01/30/17 14:28*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**10**		0.98	0.31	ug/L		01/30/17 09:12	02/02/17 19:49	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*42 - 120*	*01/30/17 09:12*	*02/02/17 19:49*	*5*
2-Fluorophenol (Surr)	*33*		*10 - 120*	*01/30/17 09:12*	*02/02/17 19:49*	*5*
2,4,6-Tribromophenol (Surr)	*63*		*35 - 125*	*01/30/17 09:12*	*02/02/17 19:49*	*5*
Nitrobenzene-d5 (Surr)	*81*		*36 - 120*	*01/30/17 09:12*	*02/02/17 19:49*	*5*
Phenol-d5 (Surr)	*20*		*10 - 120*	*01/30/17 09:12*	*02/02/17 19:49*	*5*
Terphenyl-d14 (Surr)	*62*		*17 - 120*	*01/30/17 09:12*	*02/02/17 19:49*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**8.5**		0.50	0.080	ug/L			01/31/17 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*80*	*^c*	*76 - 121*		*01/31/17 15:37*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**6200**		98	15	ug/L		01/27/17 14:30	01/31/17 09:36	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*D ^c X*	*18 - 125*	*01/27/17 14:30*	*01/31/17 09:36*	*4000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.46**	**J**	5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:13	1
Copper	**1.9**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:13	1
Iron	**539**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 20:13	1
Manganese	**831**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:13	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**158**		5.0	1.9	mg/L			01/27/17 00:38	1
Hardness as calcium carbonate	**220**		5.0	3.1	mg/L			01/31/17 12:09	1
Chloride	**17.4**		1.0	0.41	mg/L			01/25/17 14:42	1
Nitrate as N	<0.035		0.10	0.035	mg/L			01/25/17 14:42	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-23
Date Collected: 01/24/17 09:20
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-7
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	24.0		1.0	0.13	mg/L			01/25/17 14:42	1
Total Organic Carbon	19.4	B	1.0	0.080	mg/L			01/27/17 11:36	1

Client Sample ID: W-170124-PS-24

Date Collected: 01/24/17 09:43
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-8

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 14:50	1
Ethylbenzene	**0.40**	**J**	1.0	0.26	ug/L			01/30/17 14:50	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 14:50	1
Xylenes, Total	**5.7**		2.0	0.24	ug/L			01/30/17 14:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 132*		*01/30/17 14:50*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*01/30/17 14:50*	*1*
Toluene-d8 (Surr)	*78*		*73 - 124*		*01/30/17 14:50*	*1*
Dibromofluoromethane (Surr)	*85*		*80 - 120*		*01/30/17 14:50*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**10**		0.96	0.30	ug/L		01/30/17 09:12	02/02/17 18:21	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*42 - 120*	*01/30/17 09:12*	*02/02/17 18:21*	*5*
2-Fluorophenol (Surr)	*37*		*10 - 120*	*01/30/17 09:12*	*02/02/17 18:21*	*5*
2,4,6-Tribromophenol (Surr)	*76*		*35 - 125*	*01/30/17 09:12*	*02/02/17 18:21*	*5*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*	*01/30/17 09:12*	*02/02/17 18:21*	*5*
Phenol-d5 (Surr)	*24*		*10 - 120*	*01/30/17 09:12*	*02/02/17 18:21*	*5*
Terphenyl-d14 (Surr)	*55*		*17 - 120*	*01/30/17 09:12*	*02/02/17 18:21*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.12**	**J**	0.50	0.080	ug/L			01/31/17 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*81*	*^c*	*76 - 121*		*01/31/17 15:54*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**9800**		480	74	ug/L		01/27/17 14:30	02/01/17 10:40	20000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X D*	*18 - 125*	*01/27/17 14:30*	*02/01/17 10:40*	*20000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.80**	**J**	5.0	0.35	ug/L		01/26/17 14:00	01/27/17 18:41	1
Copper	**2.5**		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 18:41	1
Iron	**254**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 18:41	1
Manganese	**624**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 18:41	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 18:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**164**		5.0	1.9	mg/L			01/31/17 15:56	1
Hardness as calcium carbonate	**220**		5.0	3.1	mg/L			01/31/17 12:17	1
Chloride	**12.3**		1.0	0.41	mg/L			01/25/17 15:02	1
Nitrate as N	<0.035		0.10	0.035	mg/L			01/25/17 15:02	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-24
Date Collected: 01/24/17 09:43
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-8
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	17.3	F1	1.0	0.13	mg/L			01/25/17 15:02	1
Total Organic Carbon	23.4	B	1.0	0.080	mg/L			01/27/17 08:15	1

Client Sample ID: W-170124-PS-26
Date Collected: 01/24/17 11:45
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 15:13	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 15:13	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 15:13	1
Xylenes, Total	**1.2**	**J**	2.0	0.24	ug/L			01/30/17 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*63 - 132*		*01/30/17 15:13*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*01/30/17 15:13*	*1*
Toluene-d8 (Surr)	*76*		*73 - 124*		*01/30/17 15:13*	*1*
Dibromofluoromethane (Surr)	*82*		*80 - 120*		*01/30/17 15:13*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**1.7**		0.19	0.060	ug/L		01/30/17 09:12	02/01/17 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*42 - 120*	*01/30/17 09:12*	*02/01/17 20:19*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 120*	*01/30/17 09:12*	*02/01/17 20:19*	*1*
2,4,6-Tribromophenol (Surr)	*74*		*35 - 125*	*01/30/17 09:12*	*02/01/17 20:19*	*1*
Nitrobenzene-d5 (Surr)	*79*		*36 - 120*	*01/30/17 09:12*	*02/01/17 20:19*	*1*
Phenol-d5 (Surr)	*19*		*10 - 120*	*01/30/17 09:12*	*02/01/17 20:19*	*1*
Terphenyl-d14 (Surr)	*65*		*17 - 120*	*01/30/17 09:12*	*02/01/17 20:19*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.25**	**J**	0.50	0.080	ug/L			01/31/17 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*78*	*^c*	*76 - 121*		*01/31/17 16:45*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**840**		95	15	ug/L		01/27/17 14:30	01/31/17 11:12	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*D ^c X*	*18 - 125*	*01/27/17 14:30*	*01/31/17 11:12*	*4000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:18	1
Copper	**0.70**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:18	1
Iron	**398**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 20:18	1
Manganese	**163**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:18	1
Zinc	**15.4**	**J**	20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:18	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**124**		5.0	1.9	mg/L			01/27/17 00:47	1
Hardness as calcium carbonate	**144**		5.0	3.1	mg/L			01/31/17 12:40	1
Chloride	**12.3**		1.0	0.41	mg/L			01/25/17 16:02	1
Nitrate as N	**1.0**		0.10	0.035	mg/L			01/25/17 16:02	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-26
Date Collected: 01/24/17 11:45
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-9
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.9		1.0	0.13	mg/L			01/25/17 16:02	1
Total Organic Carbon	6.4	B	1.0	0.080	mg/L			01/27/17 12:05	1

Client Sample ID: W-170124-PS-27

Date Collected: 01/24/17 12:40
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 15:36	1
Ethylbenzene	**0.98**	**J**	1.0	0.26	ug/L			01/30/17 15:36	1
Toluene	**1.2**		1.0	0.23	ug/L			01/30/17 15:36	1
Xylenes, Total	**12**		2.0	0.24	ug/L			01/30/17 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*63 - 132*		*01/30/17 15:36*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*01/30/17 15:36*	*1*
Toluene-d8 (Surr)	*78*		*73 - 124*		*01/30/17 15:36*	*1*
Dibromofluoromethane (Surr)	*85*		*80 - 120*		*01/30/17 15:36*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**40**		1.9	0.60	ug/L		01/30/17 09:12	02/02/17 20:33	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*59*		*42 - 120*	*01/30/17 09:12*	*02/02/17 20:33*	*10*
2-Fluorophenol (Surr)	*33*		*10 - 120*	*01/30/17 09:12*	*02/02/17 20:33*	*10*
2,4,6-Tribromophenol (Surr)	*65*		*35 - 125*	*01/30/17 09:12*	*02/02/17 20:33*	*10*
Nitrobenzene-d5 (Surr)	*79*		*36 - 120*	*01/30/17 09:12*	*02/02/17 20:33*	*10*
Phenol-d5 (Surr)	*19*		*10 - 120*	*01/30/17 09:12*	*02/02/17 20:33*	*10*
Terphenyl-d14 (Surr)	*71*		*17 - 120*	*01/30/17 09:12*	*02/02/17 20:33*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.40**	**J**	0.50	0.080	ug/L			01/31/17 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*76*	*^c*	*76 - 121*		*01/31/17 17:02*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**56000**		1900	300	ug/L		01/27/17 14:30	02/01/17 11:52	80000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X D*	*18 - 125*	*01/27/17 14:30*	*02/01/17 11:52*	*80000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:22	1
Copper	**1.9**	**J**	2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:22	1
Iron	**1400**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 20:22	1
Manganese	**3290**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:22	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:22	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**113**		5.0	1.9	mg/L			01/27/17 00:55	1
Hardness as calcium carbonate	**120**		5.0	3.1	mg/L			01/31/17 12:47	1
Chloride	**4.3**		1.0	0.41	mg/L			01/25/17 16:22	1
Nitrate as N	<0.035		0.10	0.035	mg/L			01/25/17 16:22	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-27
Date Collected: 01/24/17 12:40
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-10
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.8		1.0	0.13	mg/L			01/25/17 16:22	1
Total Organic Carbon	51.4	B	1.0	0.080	mg/L			01/27/17 12:32	1

Client Sample ID: W-170124-PS-28

Date Collected: 01/24/17 12:45
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-11

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 15:58	1
Ethylbenzene	**0.90**	**J**	1.0	0.26	ug/L			01/30/17 15:58	1
Toluene	**1.3**		1.0	0.23	ug/L			01/30/17 15:58	1
Xylenes, Total	**12**		2.0	0.24	ug/L			01/30/17 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*63 - 132*		*01/30/17 15:58*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*01/30/17 15:58*	*1*
Toluene-d8 (Surr)	*81*		*73 - 124*		*01/30/17 15:58*	*1*
Dibromofluoromethane (Surr)	*86*		*80 - 120*		*01/30/17 15:58*	*1*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**41**		2.1	0.65	ug/L		01/30/17 09:12	02/02/17 20:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*42 - 120*	*01/30/17 09:12*	*02/02/17 20:11*	*10*
2-Fluorophenol (Surr)	*39*		*10 - 120*	*01/30/17 09:12*	*02/02/17 20:11*	*10*
2,4,6-Tribromophenol (Surr)	*57*		*35 - 125*	*01/30/17 09:12*	*02/02/17 20:11*	*10*
Nitrobenzene-d5 (Surr)	*77*		*36 - 120*	*01/30/17 09:12*	*02/02/17 20:11*	*10*
Phenol-d5 (Surr)	*27*		*10 - 120*	*01/30/17 09:12*	*02/02/17 20:11*	*10*
Terphenyl-d14 (Surr)	*69*		*17 - 120*	*01/30/17 09:12*	*02/02/17 20:11*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.37**	**J**	0.50	0.080	ug/L			01/31/17 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*77*	*^c*	*76 - 121*		*01/31/17 17:20*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**67000**		1900	300	ug/L		01/27/17 14:30	02/01/17 12:16	80000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*0*	*X D*	*18 - 125*	*01/27/17 14:30*	*02/01/17 12:16*	*80000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 20:34	1
Copper	**3.3**		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 20:34	1
Iron	**1380**	**B**	100	5.3	ug/L		01/26/17 14:00	01/27/17 20:34	1
Manganese	**3170**	**B**	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 20:34	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 20:34	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**112**		5.0	1.9	mg/L			01/27/17 01:03	1
Hardness as calcium carbonate	**122**		5.0	3.1	mg/L			01/31/17 13:02	1
Chloride	**4.3**		1.0	0.41	mg/L			01/25/17 17:22	1
Nitrate as N	<0.035		0.10	0.035	mg/L			01/25/17 17:22	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-28
Date Collected: 01/24/17 12:45
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-11
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.9		1.0	0.13	mg/L			01/25/17 17:22	1
Total Organic Carbon	49.9	B	1.0	0.080	mg/L			01/27/17 13:00	1

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: TRIP BLANK-004
Date Collected: 01/23/17 00:00
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 16:21	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 16:21	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 16:21	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*63 - 132*		*01/30/17 16:21*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*01/30/17 16:21*	*1*
Toluene-d8 (Surr)	*76*		*73 - 124*		*01/30/17 16:21*	*1*
Dibromofluoromethane (Surr)	*82*		*80 - 120*		*01/30/17 16:21*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-132)	(73-120)	(73-124)	(80-120)
240-74790-1	W-170123-PS-18	83	97	74	86
240-74790-2	W-170123-PS-19	88	103	81	92
240-74790-3	W-170123-PS-20	82	96	75	85
240-74790-4	W-170123-PS-21	85	94	76	85
240-74790-5	W-170123-PS-25	84	99	79	87
240-74790-6	W-170124-PS-22	84	102	76	86
240-74790-7	W-170124-PS-23	82	98	77	85
240-74790-8	W-170124-PS-24	82	97	78	85
240-74790-8 MS	W-170124-PS-24	81	96	75	78 X
240-74790-8 MSD	W-170124-PS-24	81	97	77	81
240-74790-9	W-170124-PS-26	80	97	76	82
240-74790-10	W-170124-PS-27	81	99	78	85
240-74790-11	W-170124-PS-28	80	103	81	86
240-74790-12	TRIP BLANK-004	79	100	76	82
LCS 240-264838/4	Lab Control Sample	81	98	79	85
MB 240-264838/6	Method Blank	83	99	77	87

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	(42-120)	(10-120)	(35-125)	(36-120)	(10-120)	(17-120)
240-74790-1	W-170123-PS-18	71	37	64	79	22	66
240-74790-2	W-170123-PS-19	69	34	65	78	21	65
240-74790-3	W-170123-PS-20	67	33	61	74	20	65
240-74790-4	W-170123-PS-21	60	33	64	65	20	52
240-74790-5	W-170123-PS-25	66	28	61	73	17	72
240-74790-6	W-170124-PS-22	57	33	64	72	20	47
240-74790-7	W-170124-PS-23	58	33	63	81	20	62
240-74790-8	W-170124-PS-24	69	37	76	82	24	55
240-74790-8 MS	W-170124-PS-24	66	32	73	82	19	40
240-74790-8 MSD	W-170124-PS-24	70	36	77	84	23	50
240-74790-9	W-170124-PS-26	58	32	74	79	19	65
240-74790-10	W-170124-PS-27	59	33	65	79	19	71
240-74790-11	W-170124-PS-28	58	39	57	77	27	69
LCS 240-264830/21-A	Lab Control Sample	75	42	78	82	27	76
MB 240-264830/20-A	Method Blank	63	36	62	71	23	70

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)

PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	trifluoroet (76-121)
240-74790-1	W-170123-PS-18	86
240-74790-2	W-170123-PS-19	82
240-74790-3	W-170123-PS-20	85
240-74790-4	W-170123-PS-21	83
240-74790-6	W-170124-PS-22	83 ^c
240-74790-7	W-170124-PS-23	80 ^c
240-74790-8	W-170124-PS-24	81 ^c
240-74790-8 MS	W-170124-PS-24	78
240-74790-8 MSD	W-170124-PS-24	78
240-74790-9	W-170124-PS-26	78 ^c
240-74790-10	W-170124-PS-27	76 ^c
240-74790-11	W-170124-PS-28	77 ^c
LCS 240-264983/5	Lab Control Sample	85
MB 240-264983/4	Method Blank	89

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPA1 (18-125)	DCPA2 (18-125)
240-74790-1	W-170123-PS-18	24 ^c	26
240-74790-2	W-170123-PS-19	30	33
240-74790-3	W-170123-PS-20	49	53
240-74790-4	W-170123-PS-21	46	48
240-74790-5	W-170123-PS-25	30	31
240-74790-6	W-170124-PS-22	0 X D	0 X D
240-74790-7	W-170124-PS-23	0 D ^c X	0 D X
240-74790-8	W-170124-PS-24	0 X D	0 X D
240-74790-8 MS - DL	W-170124-PS-24	0 X	
240-74790-8 MSD - DL	W-170124-PS-24	0 X	
240-74790-9	W-170124-PS-26	0 D ^c X	0 D X
240-74790-10	W-170124-PS-27	0 X D	0 X D
240-74790-11	W-170124-PS-28	0 X D	0 X D
LCS 180-201109/2-A	Lab Control Sample	21	26
MB 180-201109/1-A	Method Blank	59	63

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264838/6
Matrix: Water
Analysis Batch: 264838

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.28		0.50	0.28	ug/L			01/30/17 11:48	1
Ethylbenzene	<0.26		1.0	0.26	ug/L			01/30/17 11:48	1
Toluene	<0.23		1.0	0.23	ug/L			01/30/17 11:48	1
Xylenes, Total	<0.24		2.0	0.24	ug/L			01/30/17 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*63 - 132*		*01/30/17 11:48*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*01/30/17 11:48*	*1*
Toluene-d8 (Surr)	*77*		*73 - 124*		*01/30/17 11:48*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*		*01/30/17 11:48*	*1*

Lab Sample ID: LCS 240-264838/4
Matrix: Water
Analysis Batch: 264838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.01		ug/L		90	80 - 120
Ethylbenzene	10.0	9.81		ug/L		98	80 - 120
Toluene	10.0	8.52		ug/L		85	80 - 121
Xylenes, Total	20.0	20.7		ug/L		104	80 - 120
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	80 - 120
o-Xylene	10.0	10.4		ug/L		104	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*63 - 132*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*
Toluene-d8 (Surr)	*79*		*73 - 124*
Dibromofluoromethane (Surr)	*85*		*80 - 120*

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264838

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.28		10.0	7.99		ug/L		80	67 - 126
Ethylbenzene	0.40	J	10.0	8.22		ug/L		78	66 - 123
Toluene	<0.23		10.0	7.48		ug/L		75	63 - 130
Xylenes, Total	5.7		20.0	22.3		ug/L		83	60 - 126
m-Xylene & p-Xylene	2.1		10.0	10.3		ug/L		81	58 - 127
o-Xylene	3.6		10.0	12.0		ug/L		84	61 - 126

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*63 - 132*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*
Toluene-d8 (Surr)	*75*		*73 - 124*
Dibromofluoromethane (Surr)	*78*	*X*	*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264838

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.28		10.0	8.85		ug/L		88	67 - 126	10	31
Ethylbenzene	0.40	J	10.0	9.77		ug/L		94	66 - 123	17	34
Toluene	<0.23		10.0	8.48		ug/L		85	63 - 130	13	33
Xylenes, Total	5.7		20.0	25.6		ug/L		100	60 - 126	14	35
m-Xylene & p-Xylene	2.1		10.0	11.9		ug/L		98	58 - 127	15	35
o-Xylene	3.6		10.0	13.7		ug/L		102	61 - 126	14	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*63 - 132*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*
Toluene-d8 (Surr)	*77*		*73 - 124*
Dibromofluoromethane (Surr)	*81*		*80 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-264830/20-A
Matrix: Water
Analysis Batch: 265156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264830

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.063		0.20	0.063	ug/L		01/30/17 09:12	02/01/17 09:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*63*		*42 - 120*	*01/30/17 09:12*	*02/01/17 09:51*	*1*
2-Fluorophenol (Surr)	*36*		*10 - 120*	*01/30/17 09:12*	*02/01/17 09:51*	*1*
2,4,6-Tribromophenol (Surr)	*62*		*35 - 125*	*01/30/17 09:12*	*02/01/17 09:51*	*1*
Nitrobenzene-d5 (Surr)	*71*		*36 - 120*	*01/30/17 09:12*	*02/01/17 09:51*	*1*
Phenol-d5 (Surr)	*23*		*10 - 120*	*01/30/17 09:12*	*02/01/17 09:51*	*1*
Terphenyl-d14 (Surr)	*70*		*17 - 120*	*01/30/17 09:12*	*02/01/17 09:51*	*1*

Lab Sample ID: LCS 240-264830/21-A
Matrix: Water
Analysis Batch: 265156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264830

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	20.0	13.6		ug/L		68	54 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*75*		*42 - 120*
2-Fluorophenol (Surr)	*42*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*78*		*35 - 125*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*
Phenol-d5 (Surr)	*27*		*10 - 120*
Terphenyl-d14 (Surr)	*76*		*17 - 120*

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 265338

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA
Prep Batch: 264830

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	10		19.4	22.1		ug/L		62	37 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*66*		*42 - 120*
2-Fluorophenol (Surr)	*32*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*73*		*35 - 125*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*
Phenol-d5 (Surr)	*19*		*10 - 120*
Terphenyl-d14 (Surr)	*40*		*17 - 120*

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 265338

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA
Prep Batch: 264830

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	10		19.0	24.5		ug/L		76	37 - 120	10	33

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*70*		*42 - 120*
2-Fluorophenol (Surr)	*36*		*10 - 120*
2,4,6-Tribromophenol (Surr)	*77*		*35 - 125*
Nitrobenzene-d5 (Surr)	*84*		*36 - 120*
Phenol-d5 (Surr)	*23*		*10 - 120*
Terphenyl-d14 (Surr)	*50*		*17 - 120*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-264983/4
Matrix: Water
Analysis Batch: 264983

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.080		0.50	0.080	ug/L			01/31/17 12:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*89*		*76 - 121*		*01/31/17 12:11*	*1*

Lab Sample ID: LCS 240-264983/5
Matrix: Water
Analysis Batch: 264983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane			199	203		ug/L		102	80 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*85*		*76 - 121*

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264983

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.12	J	199	191		ug/L		96	48 - 159

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*78*		*76 - 121*

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264983

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.12	J	199	190		ug/L		95	48 - 159	1	23

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*78*		*76 - 121*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-201109/1-A
Matrix: Water
Analysis Batch: 201309

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 201109

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.016		0.10	0.016	ug/L		01/27/17 14:30	01/31/17 08:25	4

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*63*		*18 - 125*	*01/27/17 14:30*	*01/31/17 08:25*	*4*

Lab Sample ID: LCS 180-201109/2-A
Matrix: Water
Analysis Batch: 201193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 201109

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol			1.00	1.46		ug/L		146	30 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*26*		*18 - 125*

Method: 8151A - Herbicides (GC) - DL

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 201450

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA
Prep Batch: 201109

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol - DL	9800		0.952	<74	4 D	ug/L		0	30 - 150

Method: 8151A - Herbicides (GC) - DL (Continued)

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 201450

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA
Prep Batch: 201109

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid - DL	*0*	*X*	*18 - 125*

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 201450

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA
Prep Batch: 201109

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol - DL	9800		0.952	<74	4 D	ug/L		0	30 - 150	NC	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid - DL	*0*	*X*	*18 - 125*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-264421/1-A
Matrix: Water
Analysis Batch: 264836

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 264421

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.35		5.0	0.35	ug/L		01/26/17 14:00	01/27/17 18:33	1
Copper	<0.36		2.0	0.36	ug/L		01/26/17 14:00	01/27/17 18:33	1
Iron	11.91	J	100	5.3	ug/L		01/26/17 14:00	01/27/17 18:33	1
Manganese	3.67	J	5.0	0.25	ug/L		01/26/17 14:00	01/27/17 18:33	1
Zinc	<6.2		20.0	6.2	ug/L		01/26/17 14:00	01/27/17 18:33	1

Lab Sample ID: LCS 240-264421/2-A
Matrix: Water
Analysis Batch: 264836

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 264421

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	982.0		ug/L		98	80 - 120
Copper	1000	988.3		ug/L		99	80 - 120
Iron	10000	10700		ug/L		107	80 - 120
Manganese	1000	1067		ug/L		107	80 - 120
Zinc	1000	1122		ug/L		112	80 - 120

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264836

Client Sample ID: W-170124-PS-24
Prep Type: Dissolved
Prep Batch: 264421

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.80	J	1000	991.2		ug/L		99	75 - 125
Copper	2.5		1000	982.1		ug/L		98	75 - 125
Iron	254	B	10000	10740		ug/L		105	75 - 125
Manganese	624	B	1000	1698		ug/L		107	75 - 125
Zinc	<6.2		1000	1049		ug/L		105	75 - 125

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264836

Client Sample ID: W-170124-PS-24
Prep Type: Dissolved
Prep Batch: 264421

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.80	J	1000	985.0		ug/L		98	75 - 125	1	20
Copper	2.5		1000	979.0		ug/L		98	75 - 125	0	20
Iron	254	B	10000	10940		ug/L		107	75 - 125	2	20
Manganese	624	B	1000	1681		ug/L		106	75 - 125	1	20
Zinc	<6.2		1000	1045		ug/L		105	75 - 125	0	20

Method: 2320B-1997 - Alkalinity, Total

Lab Sample ID: MB 240-264621/5
Matrix: Water
Analysis Batch: 264621

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<1.9		5.0	1.9	mg/L			01/26/17 19:26	1

Lab Sample ID: LCS 240-264621/4
Matrix: Water
Analysis Batch: 264621

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	378	372.4		mg/L		99	86 - 123

Lab Sample ID: MB 240-265180/5
Matrix: Water
Analysis Batch: 265180

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<1.9		5.0	1.9	mg/L			01/31/17 14:42	1

Lab Sample ID: LCS 240-265180/4
Matrix: Water
Analysis Batch: 265180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	378	363.5		mg/L		96	86 - 123

Lab Sample ID: 240-74790-8 DU
Matrix: Water
Analysis Batch: 265180

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	164		163.0		mg/L		0.9	20

Method: 2340C-1997 - Hardness, Total

Lab Sample ID: MB 240-265037/1
Matrix: Water
Analysis Batch: 265037

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<3.1		5.0	3.1	mg/L			01/31/17 11:16	1

Lab Sample ID: LCS 240-265037/2
Matrix: Water
Analysis Batch: 265037

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	170	156.0		mg/L		92	80 - 120

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 265037

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	220		250	447.5		mg/L		91	80 - 120

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 265037

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hardness as calcium carbonate	220		250	442.5		mg/L		89	80 - 120	1	10

Lab Sample ID: 240-74790-10 DU
Matrix: Water
Analysis Batch: 265037

Client Sample ID: W-170124-PS-27
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Hardness as calcium carbonate	120		120.0		mg/L		0	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-264138/27
Matrix: Water
Analysis Batch: 264138

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.41		1.0	0.41	mg/L			01/25/17 13:08	1
Sulfate	<0.13		1.0	0.13	mg/L			01/25/17 13:08	1

Lab Sample ID: LCS 240-264138/28
Matrix: Water
Analysis Batch: 264138

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	54.46		mg/L		109	90 - 110
Sulfate	50.0	54.75		mg/L		110	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264138

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	12.3		50.0	72.51		mg/L		120	80 - 120
Sulfate	17.3	F1	50.0	78.66	F1	mg/L		123	80 - 120

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264138

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	12.3		50.0	70.59		mg/L		117	80 - 120	3	15
Sulfate	17.3	F1	50.0	76.47		mg/L		118	80 - 120	3	15

Lab Sample ID: MB 240-264313/27
Matrix: Water
Analysis Batch: 264313

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<0.035		0.10	0.035	mg/L			01/25/17 13:08	1

Lab Sample ID: LCS 240-264313/28
Matrix: Water
Analysis Batch: 264313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.50	2.62		mg/L		105	90 - 110

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264313

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	<0.035		2.50	2.91		mg/L		116	80 - 120

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264313

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	<0.035		2.50	2.79		mg/L		112	80 - 120	4	15

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 240-264815/4
Matrix: Water
Analysis Batch: 264815

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.192	J	1.0	0.080	mg/L			01/27/17 07:51	1

Method: 9060 - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 240-264815/6
Matrix: Water
Analysis Batch: 264815

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	46.3	46.91		mg/L		101	80 - 120

Lab Sample ID: LLCS 240-264815/5
Matrix: Water
Analysis Batch: 264815

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4.63	4.85		mg/L		105	88 - 115

Lab Sample ID: 240-74790-8 MS
Matrix: Water
Analysis Batch: 264815

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	23.4	B	25.0	47.84		mg/L		98	65 - 134

Lab Sample ID: 240-74790-8 MSD
Matrix: Water
Analysis Batch: 264815

Client Sample ID: W-170124-PS-24
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	23.4	B	25.0	47.76		mg/L		97	65 - 134	0	10

GC/MS VOA

Analysis Batch: 264838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	8260B	
240-74790-2	W-170123-PS-19	Total/NA	Water	8260B	
240-74790-3	W-170123-PS-20	Total/NA	Water	8260B	
240-74790-4	W-170123-PS-21	Total/NA	Water	8260B	
240-74790-5	W-170123-PS-25	Total/NA	Water	8260B	
240-74790-6	W-170124-PS-22	Total/NA	Water	8260B	
240-74790-7	W-170124-PS-23	Total/NA	Water	8260B	
240-74790-8	W-170124-PS-24	Total/NA	Water	8260B	
240-74790-9	W-170124-PS-26	Total/NA	Water	8260B	
240-74790-10	W-170124-PS-27	Total/NA	Water	8260B	
240-74790-11	W-170124-PS-28	Total/NA	Water	8260B	
240-74790-12	TRIP BLANK-004	Total/NA	Water	8260B	
MB 240-264838/6	Method Blank	Total/NA	Water	8260B	
LCS 240-264838/4	Lab Control Sample	Total/NA	Water	8260B	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	8260B	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 264830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	3510C	
240-74790-2	W-170123-PS-19	Total/NA	Water	3510C	
240-74790-3	W-170123-PS-20	Total/NA	Water	3510C	
240-74790-4	W-170123-PS-21	Total/NA	Water	3510C	
240-74790-5	W-170123-PS-25	Total/NA	Water	3510C	
240-74790-6	W-170124-PS-22	Total/NA	Water	3510C	
240-74790-7	W-170124-PS-23	Total/NA	Water	3510C	
240-74790-8	W-170124-PS-24	Total/NA	Water	3510C	
240-74790-9	W-170124-PS-26	Total/NA	Water	3510C	
240-74790-10	W-170124-PS-27	Total/NA	Water	3510C	
240-74790-11	W-170124-PS-28	Total/NA	Water	3510C	
MB 240-264830/20-A	Method Blank	Total/NA	Water	3510C	
LCS 240-264830/21-A	Lab Control Sample	Total/NA	Water	3510C	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	3510C	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	3510C	

Analysis Batch: 265156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	8270C	264830
240-74790-2	W-170123-PS-19	Total/NA	Water	8270C	264830
240-74790-3	W-170123-PS-20	Total/NA	Water	8270C	264830
240-74790-4	W-170123-PS-21	Total/NA	Water	8270C	264830
240-74790-5	W-170123-PS-25	Total/NA	Water	8270C	264830
240-74790-9	W-170124-PS-26	Total/NA	Water	8270C	264830
MB 240-264830/20-A	Method Blank	Total/NA	Water	8270C	264830
LCS 240-264830/21-A	Lab Control Sample	Total/NA	Water	8270C	264830

GC/MS Semi VOA (Continued)

Analysis Batch: 265338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-6	W-170124-PS-22	Total/NA	Water	8270C	264830
240-74790-7	W-170124-PS-23	Total/NA	Water	8270C	264830
240-74790-8	W-170124-PS-24	Total/NA	Water	8270C	264830
240-74790-10	W-170124-PS-27	Total/NA	Water	8270C	264830
240-74790-11	W-170124-PS-28	Total/NA	Water	8270C	264830
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	8270C	264830
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	8270C	264830

GC VOA

Analysis Batch: 264983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	RSK-175	
240-74790-2	W-170123-PS-19	Total/NA	Water	RSK-175	
240-74790-3	W-170123-PS-20	Total/NA	Water	RSK-175	
240-74790-4	W-170123-PS-21	Total/NA	Water	RSK-175	
240-74790-6	W-170124-PS-22	Total/NA	Water	RSK-175	
240-74790-7	W-170124-PS-23	Total/NA	Water	RSK-175	
240-74790-8	W-170124-PS-24	Total/NA	Water	RSK-175	
240-74790-9	W-170124-PS-26	Total/NA	Water	RSK-175	
240-74790-10	W-170124-PS-27	Total/NA	Water	RSK-175	
240-74790-11	W-170124-PS-28	Total/NA	Water	RSK-175	
MB 240-264983/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-264983/5	Lab Control Sample	Total/NA	Water	RSK-175	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	RSK-175	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 201109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	8151A	
240-74790-2	W-170123-PS-19	Total/NA	Water	8151A	
240-74790-3	W-170123-PS-20	Total/NA	Water	8151A	
240-74790-4	W-170123-PS-21	Total/NA	Water	8151A	
240-74790-5	W-170123-PS-25	Total/NA	Water	8151A	
240-74790-6	W-170124-PS-22	Total/NA	Water	8151A	
240-74790-7	W-170124-PS-23	Total/NA	Water	8151A	
240-74790-8	W-170124-PS-24	Total/NA	Water	8151A	
240-74790-9	W-170124-PS-26	Total/NA	Water	8151A	
240-74790-10	W-170124-PS-27	Total/NA	Water	8151A	
240-74790-11	W-170124-PS-28	Total/NA	Water	8151A	
MB 180-201109/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-201109/2-A	Lab Control Sample	Total/NA	Water	8151A	
240-74790-8 MS - DL	W-170124-PS-24	Total/NA	Water	8151A	
240-74790-8 MSD - DL	W-170124-PS-24	Total/NA	Water	8151A	

Analysis Batch: 201193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-2	W-170123-PS-19	Total/NA	Water	8151A	201109

GC Semi VOA (Continued)

Analysis Batch: 201193 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-3	W-170123-PS-20	Total/NA	Water	8151A	201109
240-74790-4	W-170123-PS-21	Total/NA	Water	8151A	201109
240-74790-5	W-170123-PS-25	Total/NA	Water	8151A	201109
LCS 180-201109/2-A	Lab Control Sample	Total/NA	Water	8151A	201109

Analysis Batch: 201309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	8151A	201109
240-74790-7	W-170124-PS-23	Total/NA	Water	8151A	201109
240-74790-9	W-170124-PS-26	Total/NA	Water	8151A	201109
MB 180-201109/1-A	Method Blank	Total/NA	Water	8151A	201109

Analysis Batch: 201450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-6	W-170124-PS-22	Total/NA	Water	8151A	201109
240-74790-8	W-170124-PS-24	Total/NA	Water	8151A	201109
240-74790-10	W-170124-PS-27	Total/NA	Water	8151A	201109
240-74790-11	W-170124-PS-28	Total/NA	Water	8151A	201109
240-74790-8 MS - DL	W-170124-PS-24	Total/NA	Water	8151A	201109
240-74790-8 MSD - DL	W-170124-PS-24	Total/NA	Water	8151A	201109

Metals

Prep Batch: 264421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Dissolved	Water	3005A	
240-74790-2	W-170123-PS-19	Dissolved	Water	3005A	
240-74790-3	W-170123-PS-20	Dissolved	Water	3005A	
240-74790-4	W-170123-PS-21	Dissolved	Water	3005A	
240-74790-5	W-170123-PS-25	Dissolved	Water	3005A	
240-74790-6	W-170124-PS-22	Dissolved	Water	3005A	
240-74790-7	W-170124-PS-23	Dissolved	Water	3005A	
240-74790-8	W-170124-PS-24	Dissolved	Water	3005A	
240-74790-9	W-170124-PS-26	Dissolved	Water	3005A	
240-74790-10	W-170124-PS-27	Dissolved	Water	3005A	
240-74790-11	W-170124-PS-28	Dissolved	Water	3005A	
MB 240-264421/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-264421/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-74790-8 MS	W-170124-PS-24	Dissolved	Water	3005A	
240-74790-8 MSD	W-170124-PS-24	Dissolved	Water	3005A	

Analysis Batch: 264836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Dissolved	Water	6020	264421
240-74790-2	W-170123-PS-19	Dissolved	Water	6020	264421
240-74790-3	W-170123-PS-20	Dissolved	Water	6020	264421
240-74790-4	W-170123-PS-21	Dissolved	Water	6020	264421
240-74790-5	W-170123-PS-25	Dissolved	Water	6020	264421
240-74790-6	W-170124-PS-22	Dissolved	Water	6020	264421
240-74790-7	W-170124-PS-23	Dissolved	Water	6020	264421

Metals (Continued)

Analysis Batch: 264836 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-8	W-170124-PS-24	Dissolved	Water	6020	264421
240-74790-9	W-170124-PS-26	Dissolved	Water	6020	264421
240-74790-10	W-170124-PS-27	Dissolved	Water	6020	264421
240-74790-11	W-170124-PS-28	Dissolved	Water	6020	264421
MB 240-264421/1-A	Method Blank	Total Recoverable	Water	6020	264421
LCS 240-264421/2-A	Lab Control Sample	Total Recoverable	Water	6020	264421
240-74790-8 MS	W-170124-PS-24	Dissolved	Water	6020	264421
240-74790-8 MSD	W-170124-PS-24	Dissolved	Water	6020	264421

General Chemistry

Analysis Batch: 264138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	300.0	
240-74790-2	W-170123-PS-19	Total/NA	Water	300.0	
240-74790-3	W-170123-PS-20	Total/NA	Water	300.0	
240-74790-4	W-170123-PS-21	Total/NA	Water	300.0	
240-74790-6	W-170124-PS-22	Total/NA	Water	300.0	
240-74790-7	W-170124-PS-23	Total/NA	Water	300.0	
240-74790-8	W-170124-PS-24	Total/NA	Water	300.0	
240-74790-9	W-170124-PS-26	Total/NA	Water	300.0	
240-74790-10	W-170124-PS-27	Total/NA	Water	300.0	
240-74790-11	W-170124-PS-28	Total/NA	Water	300.0	
MB 240-264138/27	Method Blank	Total/NA	Water	300.0	
LCS 240-264138/28	Lab Control Sample	Total/NA	Water	300.0	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	300.0	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	300.0	

Analysis Batch: 264313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	300.0	
240-74790-2	W-170123-PS-19	Total/NA	Water	300.0	
240-74790-3	W-170123-PS-20	Total/NA	Water	300.0	
240-74790-4	W-170123-PS-21	Total/NA	Water	300.0	
240-74790-6	W-170124-PS-22	Total/NA	Water	300.0	
240-74790-7	W-170124-PS-23	Total/NA	Water	300.0	
240-74790-8	W-170124-PS-24	Total/NA	Water	300.0	
240-74790-9	W-170124-PS-26	Total/NA	Water	300.0	
240-74790-10	W-170124-PS-27	Total/NA	Water	300.0	
240-74790-11	W-170124-PS-28	Total/NA	Water	300.0	
MB 240-264313/27	Method Blank	Total/NA	Water	300.0	
LCS 240-264313/28	Lab Control Sample	Total/NA	Water	300.0	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	300.0	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	300.0	

Analysis Batch: 264621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-2	W-170123-PS-19	Total/NA	Water	2320B-1997	
240-74790-3	W-170123-PS-20	Total/NA	Water	2320B-1997	
240-74790-4	W-170123-PS-21	Total/NA	Water	2320B-1997	

General Chemistry (Continued)

Analysis Batch: 264621 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-6	W-170124-PS-22	Total/NA	Water	2320B-1997	
240-74790-7	W-170124-PS-23	Total/NA	Water	2320B-1997	
240-74790-9	W-170124-PS-26	Total/NA	Water	2320B-1997	
240-74790-10	W-170124-PS-27	Total/NA	Water	2320B-1997	
240-74790-11	W-170124-PS-28	Total/NA	Water	2320B-1997	
MB 240-264621/5	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-264621/4	Lab Control Sample	Total/NA	Water	2320B-1997	

Analysis Batch: 264815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	9060	
240-74790-2	W-170123-PS-19	Total/NA	Water	9060	
240-74790-3	W-170123-PS-20	Total/NA	Water	9060	
240-74790-4	W-170123-PS-21	Total/NA	Water	9060	
240-74790-6	W-170124-PS-22	Total/NA	Water	9060	
240-74790-7	W-170124-PS-23	Total/NA	Water	9060	
240-74790-8	W-170124-PS-24	Total/NA	Water	9060	
240-74790-9	W-170124-PS-26	Total/NA	Water	9060	
240-74790-10	W-170124-PS-27	Total/NA	Water	9060	
240-74790-11	W-170124-PS-28	Total/NA	Water	9060	
MB 240-264815/4	Method Blank	Total/NA	Water	9060	
LCS 240-264815/6	Lab Control Sample	Total/NA	Water	9060	
LLCS 240-264815/5	Lab Control Sample	Total/NA	Water	9060	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	9060	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	9060	

Analysis Batch: 265037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	2340C-1997	
240-74790-2	W-170123-PS-19	Total/NA	Water	2340C-1997	
240-74790-3	W-170123-PS-20	Total/NA	Water	2340C-1997	
240-74790-4	W-170123-PS-21	Total/NA	Water	2340C-1997	
240-74790-6	W-170124-PS-22	Total/NA	Water	2340C-1997	
240-74790-7	W-170124-PS-23	Total/NA	Water	2340C-1997	
240-74790-8	W-170124-PS-24	Total/NA	Water	2340C-1997	
240-74790-9	W-170124-PS-26	Total/NA	Water	2340C-1997	
240-74790-10	W-170124-PS-27	Total/NA	Water	2340C-1997	
240-74790-11	W-170124-PS-28	Total/NA	Water	2340C-1997	
MB 240-265037/1	Method Blank	Total/NA	Water	2340C-1997	
LCS 240-265037/2	Lab Control Sample	Total/NA	Water	2340C-1997	
240-74790-8 MS	W-170124-PS-24	Total/NA	Water	2340C-1997	
240-74790-8 MSD	W-170124-PS-24	Total/NA	Water	2340C-1997	
240-74790-10 DU	W-170124-PS-27	Total/NA	Water	2340C-1997	

Analysis Batch: 265180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74790-1	W-170123-PS-18	Total/NA	Water	2320B-1997	
240-74790-8	W-170124-PS-24	Total/NA	Water	2320B-1997	
MB 240-265180/5	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-265180/4	Lab Control Sample	Total/NA	Water	2320B-1997	
240-74790-8 DU	W-170124-PS-24	Total/NA	Water	2320B-1997	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170123-PS-18

Lab Sample ID: 240-74790-1
Matrix: Water
Date Collected: 01/23/17 13:33
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 12:13	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 10:35	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 13:54	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	201309	01/31/17 08:49	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 19:48	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	265180	01/31/17 16:15	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 11:31	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 17:42	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 17:42	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 09:02	LKG	TAL CAN

Client Sample ID: W-170123-PS-19

Lab Sample ID: 240-74790-2
Matrix: Water
Date Collected: 01/23/17 13:39
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 12:36	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 13:06	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 14:11	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	201193	01/30/17 08:28	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 19:52	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/26/17 23:55	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 11:38	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 18:03	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 18:03	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 09:30	LKG	TAL CAN

Client Sample ID: W-170123-PS-20

Lab Sample ID: 240-74790-3
Matrix: Water
Date Collected: 01/23/17 14:35
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 12:58	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 13:28	JMG	TAL CAN

Client Sample ID: W-170123-PS-20

Lab Sample ID: 240-74790-3

Date Collected: 01/23/17 14:35

Matrix: Water

Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	264983	01/31/17 14:28	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	201193	01/30/17 08:52	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 19:56	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:03	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 11:46	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 18:23	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 18:23	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 09:57	LKG	TAL CAN

Client Sample ID: W-170123-PS-21

Lab Sample ID: 240-74790-4

Date Collected: 01/23/17 16:00

Matrix: Water

Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 13:21	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 14:11	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 14:45	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	201193	01/30/17 09:15	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:01	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:13	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 11:54	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 14:02	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 14:02	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 10:25	LKG	TAL CAN

Client Sample ID: W-170123-PS-25

Lab Sample ID: 240-74790-5

Date Collected: 01/23/17 15:00

Matrix: Water

Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 13:42	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 13:50	JMG	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	201193	01/30/17 09:39	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:05	AS1	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Client Sample ID: W-170124-PS-22

Lab Sample ID: 240-74790-6

Date Collected: 01/24/17 08:25
Matrix: Water
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 14:05	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		5	265338	02/02/17 19:27	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 15:20	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		20000	201450	02/01/17 10:16	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:09	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:28	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 12:01	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 14:22	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 14:22	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 11:08	LKG	TAL CAN

Client Sample ID: W-170124-PS-23

Lab Sample ID: 240-74790-7

Date Collected: 01/24/17 09:20
Matrix: Water
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 14:28	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		5	265338	02/02/17 19:49	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 15:37	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4000	201309	01/31/17 09:36	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:13	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:38	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 12:09	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 14:42	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 14:42	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 11:36	LKG	TAL CAN

Client Sample ID: W-170124-PS-24

Lab Sample ID: 240-74790-8

Date Collected: 01/24/17 09:43
Matrix: Water
Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 14:50	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		5	265338	02/02/17 18:21	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 15:54	BPM	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		20000	201450	02/01/17 10:40	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 18:41	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	265180	01/31/17 15:56	LCN	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 12:17	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 15:02	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 15:02	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 08:15	LKG	TAL CAN

Client Sample ID: W-170124-PS-26

Date Collected: 01/24/17 11:45
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 15:13	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		1	265156	02/01/17 20:19	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 16:45	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4000	201309	01/31/17 11:12	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:18	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:47	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 12:40	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 16:02	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 16:02	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 12:05	LKG	TAL CAN

Client Sample ID: W-170124-PS-27

Date Collected: 01/24/17 12:40
Date Received: 01/25/17 10:00

Lab Sample ID: 240-74790-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 15:36	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		10	265338	02/02/17 20:33	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 17:02	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		80000	201450	02/01/17 11:52	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:22	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 00:55	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 12:47	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 16:22	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 16:22	LCN	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1	264815	01/27/17 12:32	LKG	TAL CAN

Client Sample ID: W-170124-PS-28

Lab Sample ID: 240-74790-11

Date Collected: 01/24/17 12:45

Matrix: Water

Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 15:58	LEE	TAL CAN
Total/NA	Prep	3510C			264830	01/30/17 09:12	KEH	TAL CAN
Total/NA	Analysis	8270C		10	265338	02/02/17 20:11	JMG	TAL CAN
Total/NA	Analysis	RSK-175		1	264983	01/31/17 17:20	BPM	TAL CAN
Total/NA	Prep	8151A			201109	01/27/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		80000	201450	02/01/17 12:16	JMO	TAL PIT
Dissolved	Prep	3005A			264421	01/26/17 14:00	AJC	TAL CAN
Dissolved	Analysis	6020		1	264836	01/27/17 20:34	AS1	TAL CAN
Total/NA	Analysis	2320B-1997		1	264621	01/27/17 01:03	JWW	TAL CAN
Total/NA	Analysis	2340C-1997		1	265037	01/31/17 13:02	JMB	TAL CAN
Total/NA	Analysis	300.0		1	264138	01/25/17 17:22	LCN	TAL CAN
Total/NA	Analysis	300.0		1	264313	01/25/17 17:22	LCN	TAL CAN
Total/NA	Analysis	9060		1	264815	01/27/17 13:00	LKG	TAL CAN

Client Sample ID: TRIP BLANK-004

Lab Sample ID: 240-74790-12

Date Collected: 01/23/17 00:00

Matrix: Water

Date Received: 01/25/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	264838	01/30/17 16:21	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Certification Summary

Client: GHD Services Inc.
Project/Site: 86165-03-11, Penta Wood

TestAmerica Job ID: 240-74790-1

Laboratory: TestAmerica Canton

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999518190	08-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
RSK-175		Water	Methane

Laboratory: TestAmerica Pittsburgh

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	998027800	08-31-17

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

0.2/C0.2 2.4/C2.4 0.2/C0.2 3.6/C3.6 1.2/C1.2 2.6/C2.6 1.6/C1.6

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Peter Storlie	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-39638-17402.1
Client Contact: Mr. Grant Anderson	Phone: 651-247-4218	E-Mail: denise.heckler@testamericainc.com		Page: of 2
Company: GHD Services Inc.				
Address: 1801 Old Highway 8 NW Suite 114	Due Date Requested:			
City: St. Paul	TAT Requested (days): STANDARD.			
State, Zip: MN, 55112				
Phone: 651-639-0913(Tel) 651-639-0923(Fax)	PO #: 34001059			
Email: grant.anderson@ghd.com	WO #: 86165			
Project Name: 86165-03-11, Penta Wood	Project #: 24012755			
Site:	SSOW#:			

240-74790 Chain of Custody

Preservation Codes:
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecanydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B - Alkalinity	2340C - Hardness as calcium carbonate	6020 - Metals - Field Filtered	8260B, RSK_175 - Methane	9060 - TOC	300.0_28D - Nitrate &Chloride & Sulfate	8260B - BTEX	8270C - Naphthalene	8151 - 6C		Total Number of containers	Special Instructions/Note:
Preservation Code:							N	D	D	A	S	N	A	N	Z			
W-170123-PS-18	1-23-17	1333	G	Water													16	
19		1339		Water													16	
20		1435		Water													16	
21		1600		Water													16	
25		1500		Water													8	
W-170124-PS-22	1-24-17	0825		Water													16	High SVOCs!
23		0920		Water													16	
24		0943		Water		Y											48	MS/MSD High SVOCs!
26		1145		Water													16	High SVOCs!!
27		1240		Water													16	High SVOCs!!
28		1245		Water													16	High SVOCs!!

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	1-24-17 /1600	GHD		1/25/17 10:00	TANC
Relinquished by:	Date/Time	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

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2/7/2017

0.2/CO.2

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Peter Storle	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-39638-17402.2
Client Contact: Mr. Grant Anderson	Phone: 651-247-4218	E-Mail: denise.heckler@testamericainc.com		Page: Page 2 of 2
Company: GHD Services Inc.				Job #:
Address: 1801 Old Highway 8 NW Suite 114	Due Date Requested:			
City: St. Paul	TAT Requested (days): STANDARD			
State, Zip: MN, 55112				
Phone: 651-639-0913(Tel) 651-639-0923(Fax)	PO #: 34001059			
Email: grant.anderson@ghd.com	WO #: 86165			
Project Name: 86165-03-11, Penta Wood	Project #: 24012755			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B - Alkalinity	2340C - Hardness as calcium carbonate	6020 - Metals	8260B_RSK_175	9060 - TOC	300.0_28D - Nitrate &Chloride & Sulfate	8260B - BTEX	8270C - Naphthalene	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	D	A	S	N	A	N		
TRIP BLANK-004	1-24-17	1400	G	Water									X			TRIP
				Water												
				Water												
				Water												
				Water												
				Water												
				Water												
				Water												
				Water												
				Water												
				Water												

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 1-24-17 / 1600	Company: GHD	Received by:	Date/Time: 1/25/17 10:00	Company: TANC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 14792**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: BM
Cooler Received on 11/25/17 Opened on 11/25/17
FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____
Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #36 (CF +1.1°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 7 Yes No
-Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B624048 Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

Ref: SOP NC-SC-0005, Sample Receiving
\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\In Revision\WI-NC-099Y-060816 Cooler Receipt Form.doc djl

TestAmerica Multiple Cooler Receipt Form/Narrative
Canton Facility

Login # : 94790

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
client	R8	0.2	0.2	wet ice
	R8	2.4	2.4	
	R8	0.2	0.2	
	R8	1.2	1.2	
	R8	3.6	3.6	
	R8	1.6	1.6	

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
W-170123-PS-18	240-74790-J-1	Plastic 250ml - with Nitric Acid	<2		
W-170123-PS-18	240-74790-L-1	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170123-PS-19	240-74790-J-2	Plastic 250ml - with Nitric Acid	<2		
W-170123-PS-19	240-74790-L-2	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170123-PS-20	240-74790-J-3	Plastic 250ml - with Nitric Acid	<2		
W-170123-PS-20	240-74790-L-3	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170123-PS-21	240-74790-J-4	Plastic 250ml - with Nitric Acid	<2		
W-170123-PS-21	240-74790-L-4	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170123-PS-25	240-74790-D-5	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-22	240-74790-J-6	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-22	240-74790-L-6	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-23	240-74790-J-7	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-23	240-74790-L-7	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-24	240-74790-AB-8	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-24	240-74790-AC-8	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-24	240-74790-AD-8	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-24	240-74790-AH-8	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-24	240-74790-AI-8	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-24	240-74790-AJ-8	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-24	240-74790-AK-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AL-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AM-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AN-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AO-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AP-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AQ-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AR-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AS-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AT-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AU-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-24	240-74790-AV-8	Amber Glass 1 liter - Hydrochloric			
W-170124-PS-26	240-74790-J-9	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-26	240-74790-L-9	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-27	240-74790-J-10	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-27	240-74790-L-10	Plastic 500ml - w/ Nitric - Dis.	<2		
W-170124-PS-28	240-74790-J-11	Plastic 250ml - with Nitric Acid	<2		
W-170124-PS-28	240-74790-L-11	Plastic 500ml - w/ Nitric - Dis.	<2		

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-74790-1

Login Number: 74790
List Number: 2
Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh
List Creation: 01/26/17 04:54 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix D
Sodium Hydroxide Disposal Documentation

VEOLIA

STRAIGHT BILL OF LADING

ORIGINAL - NOT NEGOTIABLE

BOL No.: BL2789232000
Shipper No.:
Date 03/20/2017

Emergency Contact #: (877) 818-0087

Consignee: CHEMWORKS	Shipper: WISCONSIN DNR
Street: 3801K WEST MCKINLEY	Street: 8682 DANIELS 70
City, State, Zip: MILWAUKEE, WI 53208	City, State, Zip: SIREN, WI, 54872
1) Carrier: ~~ADVANCED WASTE CARRIERS, INC~~ Covanta Carriers	1) Carrier Number: WI0000815381
2) Carrier:	2) Carrier Number:

# of Pkgs.	HM	Cont Type	Description of articles, special marks, and exceptions	Total Quantity	UOM	Material ID
1	X	TT	UN1824, SODIUM HYDROXIDE SOLUTION, (FOR REUSE), 8, II P.G.	~~9999~~ 5000	P	

Special Handling and Instructions:

ER Service Contracted by VESTS

TT = Cargo tanks (tank trucks).

Profile#: 10001371Z5 - Benificial Reuse Chemical

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transporation according to the applicable regulations of the Department of Transportation:

Shipper Signature: [signature] Date: 3/17/17

1) Carrier Signature: Bruce A. Krueger Bruce A Krueger Date: 3-20-17

2) Carrier Signature: Date:

Received, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possesion of the property under the contract) agrees to carry to its usual place of delivery at said destination if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper herby certified that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns. NOTICE: Freight moving under this Bill of Lading is subject to the classifications and lawfully filed tariffs in effect on teh date of the Bill of Lading. This notice supersedes and negates any claimed, alleged or asserted oral or written contract, promise, representation or understanding between the parties with respect to this freight, except to the extent of any written contract which establishes lawful contract carriage and is signed by authorized representatives of both parties to the contract.

Consignee Signature: [signature] Date: 3-20-17

VEOLIA
ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION PROFILE

☐ Recertification

Disposal Code _____

Veolia ES LOCATION
☐ Invoice Address
☐ Manifest from – blank if direct

ADDRESS _____ CITY _____ ST _____

Veolia ES TSDF requested _____ Technology requested _____ Generator No._____ **Generator EPA ID No. WID006176945**

1. **Generator Name** Wisconsin Department of Natural Resources **Generator State No.** _____
   Address 8682 Daniels 70 **State Wastestream No.**_____
   City Siren **State** WI **Country** USA **ZIP** 54872
   NAICS (SIC) Code 562910 _____ _____ **Source** G49 **Origin** _____ **Form** W119 **System Type** _____

2. **Waste Name** Sodium Hydroxide **Lab or Waste Area**_____
3. **Process Generating Waste** Virgin Material used for former Wastewater Treatment process
4. **Shipping Name** RQ, UN1824, SODIUM HYDROXIDE SOLUTION, 8, PG II
   Hazard Class 8 **UN/NA No.** 1824 **PG** II **RQ amt** 1,000 lb

RQ Desc:	1.	2.
DOT Desc:	1.	2.

5. **Waste Codes** NA _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

Wastewater ☐ **Non Wastewater** ☒ **Sub Category** _____

6. **Physical and chemical properties** *(check all that apply)*

pH
a ☐ < 2
b ☐ 2 - 5
c ☐ 5 - 9
d ☐ 9 - 12.5
e ☒ > 12.5
_____ exact

Specific Gravity
a ☐ < .8
b ☐ .8 - 1.0
c ☐ 1.0
d ☒ 1.0 - 1.2
e ☐ > 1.2
_____ exact

Flash Point (F)
a ☐ < 80
b ☐ 80 - 100
c ☐ 101 - 140
d ☒ 141 - 200
e ☐ > 200
f ☐ no flash _____ exact

Solids
1 % suspended
0 % settleable
0 % dissolved
Free Liquid Range 99 to 100%

0 % ash
YES water solubility
NA BTU/lb

Physical State
s ☐ solid
m ☐ semi-solid
l ☒ liquid
p ☐ pumpable semi-solid
f ☐ flowable powder
g ☐ gas
a ☐ aerosol
r ☐ pressurized liquid
d ☐ debris per 40 CFR 268.45
h ☐ sharps

Hazardous Characteristics
a ☐ air reactive
w ☐ water reactive
c ☐ cyanide reactive
f ☐ sulfide reactive
e ☐ explosive
o ☐ oxidizing acid
p ☐ peroxide former
r ☐ radioactive or NRC regulated
s ☐ shock sensitive
t ☒ temp sensitive
m ☐ polymerization/monomer
n ☐ OSHA carcinogen
I ☐ infectious
h ☐ inhalation hazard
Zone: _

Odor
a none ☒
b mild ☐
c strong ☐
describe_____

Halogens
Br 0 % Bromine
Cl 0 % Chlorine
F 0 % Fluorine
I 0 % Iodine

Layers: a ☐ **multilayered:** b ☐ **bi-layered:** c ☒ **single phase:**

Viscosity by Layer:	Top Layer	Second Layer	Bottom Layer
	☐ high (syrup)	☐ high (syrup)	☐ high (syrup)
	☐ medium (oil)	☐ medium (oil)	☐ medium (oil)
	☒ low (water)	☐ low (water)	☐ low (water)
	☐ solid	☐ solid	☐ solid

Color
Colorless
_____
_____

Used oil y/n N **HOC <1000 ppm** ☐ **or > 1000 ppm** ☐

WIP No. _____

7. **Chemical Composition** [M = Marine Pollutant, S - Severe Marine Pollutant, O = Ozone Depleting Substance, U = Underlying Hazardous Constituent, B = Benzene NESHAP, T = TRI Chemical, C = OSHA Carcinogen]

	Constituents	Range	Units		Constituents	Range	Units
	Water	**48.5-60**	**%**				
	Sodium Hydroxide	**20-50**	**%**				
	Sodium Chloride	**1-35**	**%**				

Total Composition Must Equal or Exceed 100%

Other:

8. Is the wastestream being imported into the USA? Yes ☐ No ☒
9. Does the wastestream contain PCBs regulated by 40CFR? Yes ☐ No ☒
   PCB concentration _____ppm
10. Is the wastestream subject to the Marine Pollutant Regulations? Yes ☐ No ☒
11. Is the wastestream subject to Benzene NESHAP? Yes ☐ No ☒
    If yes, is the wastestream subject to Notification and Control Requirements? Yes ☐ No ☒
    Benzene concentration _____ ppm
12. Is the wastestream subject to RCRA subpart CC controls? Yes ☐ No ☒
    Volatile organic concentration, if known _____ ppmw
    CC approved analytical method ☐ Generator Knowledge ☐
13. Is the wastestream from a CERCLA or state mandated cleanup? Yes ☒ No ☐

14. **Container Information** (*Identify UN container marking if known*)
    Packaging: Bulk Solid ☐ Type/Size: _____ **Bulk Liquid** ☒ Type/Size: **AST/5,000 Gal** **Drum** ☐ Type/Size: _____
    Other _____
    Shipping Frequency: Units _____ Per Month ☐ Quarter ☐ Year ☐ One Time ☒ Other _____

15. **Additional Information:** **Tanker truck will need at least 100 ft of hose.**

The material is RCRA non-hazardous and being sent off for reuse and will be on a BOL.

Is analytical or an MSDS available that describes the waste? Yes ☒ No ☐ If yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

Philip E. Richard	715 762 1352	2/14/17
NAME (PRINT OR TYPE)	**PHONE**	**DATE**
Philip E. Richard	DNR Project Manager	
SIGNATURE	**TITLE**	

FACILITY NOTIFICATION

If approved for management, Veolia ES has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED No _____ Yes _____ Describe _____

WIP No. _____

VEOLIA ENVIRONMENTAL SERVICES
WIP INSTRUCTIONS

Veolia ES requires completion of all sections of the Wastestream Information Profile (WIP). Sections not applicable to the wastestream must have N/A written in the space provided.

Documented WIP information is used to comply with TSDF Waste Analysis Plans, RCRA and DOT regulations, Emergency Planning and Community Right-to-Know Act (EPCRA), Pollution Prevention Act, Toxic Release Inventory Report and other regulatory and generator requirements.

MARINE POLLUTANT

- The wastestream is subject to the Marine Pollutant Regulations if:
    1. it is a bulk (>119 gallons) packaging with Marine Pollutant concentration $\geq$ 10% or Severe Marine Pollutant concentration $\geq$ 1%

       or
    2. it is non-bulk Marine Pollutant shipped by vessel (boat) in packages larger than 5 liters (liquid) or 5 kg (solid)

       or
    3. it is a non-bulk Severe Marine Pollutant, shipped by vessel (boat) in packages larger than 0.5 liters (liquid) or 0.5 kg (solid).

  Refer to the list of Marine Pollutants.

OZONE DEPLETING SUBSTANCE (ODS)

Refer to the list of Ozone Depleting Substances.

UNDERLYING HAZARDOUS CONSTITUENT (UHC)

Refer to the list of Underlying Hazardous Constituents (40 CFR 268.48)

BENZENE NESHAP

- The wastestream is subject to Benzene NESHAP notification and control requirements if it:
    1. contains > 10 ppm benzene, **and**
    2. is generated by a chemical manufacturing plant, petroleum refinery or coke by-product recovery plant, **and**
    3. the generator's Total Annual Benzene (TAB) is $\geq$ 10 Mg/yr

TRI CHEMICAL

- The wastestream is subject to Toxic Release Inventory Reporting if it contains a Section 313 Toxic Chemical and meets Qualifier requirements.

OSHA CARCINOGEN

- OSHA promulgated standards in 1974 to regulate the industrial use of 13 chemicals identified as occupational carcinogens. Exposures are to be controlled through the required use of engineering controls, work practices, and personal protective equipment, including respirators.
  See 29 CFR 1910.1003-1910.1016 for specific details.

RCRA SUB-PART CC CONTROLS

- Subpart CC Air Emission Control requirements apply to large quantity hazardous waste generators and to treatment, storage, and disposal facilities.
- Waste in containers greater than 0.1 cubic meters (i.e., 26.4 gallons) with greater than 500 ppm volatile organics are subject to this rule., unless otherwise exempted. Allowable controls include DOT approved containers, containers with an adequate cover and closure devices, and containers which operate with no detectable emissions (less than 500 ppm).

Appendix E
Site Inspection Forms

Well Inspection Form
Penta Wood Products Superfund Site
Siren, Wisconsin

086165

Monitoring Wells

	Protective Casing	Lock & Cover	J-Plug	Well Casing	Ground Surface	Notes
MW1	✓	✓	✓	✓	✓	
MW2	↓	↓	↓	↓	↓	
MW3						
MW4						Removed obstruction this quarte
MW5						
MW6						
MW6S						
MW7						
MW8						
MW9						
MW10						
MW10S						
MW11						
MW12						
MW13						
MW14						Survey TOC - Repaired this quarte
MW15						
MW16						
MW17						
MW18						
MW19						
MW20						
MW21						
MW22						
MW23						
MW24						
MW25						
MW26						
MW27						
MW28						
MW29						
MW30						
MW31	↓	↓	↓	↓	↓	

Extraction Wells

	Vault & Cover	Well Casings	Ground Surface	Notes
EW2	✓	✓	✓	
EW3	↓	↓	↓	
EW4				
EW5				
EW6				
EW7				
EW10				
EW12				
EW13				
EW14	↓	↓	↓	

Gas Probes

	Protective Casing	Lock & Cover	Ground Surface	Inner Casing/Tubing	Notes
SG-04DIS	✓	✓	✓		
SG-05DIS	↓	↓	↓		
SG-06DIS					
SG-07DIS					
SG-22					
SG-23					
SG-24					
SG-25					
SG-26	↓	↓	↓		

Inspected By: [signature] (Peter Starlie)

Date: 1-16-2017

Additonal Notes:

Continuing Obligations Inspection Form
Penta Wood Products Superfund Site
Siren, Wisconsin

086165

	Verified	Notes
Verify Site Conditions		
CAMU area fence condition is satisfactory	✓	
CAMU signage is present/visible at all fence gates	✓	
CAMU surface soil condition is satifactory and does not require erosion/settlement repairs	✓	
Perimeter area fence is satisfactory and does not require repairs	✓	
Perimeter signage is present/visible	✓	
Site access is limited and all perimeter fence locks in working order	✓	
NaOH tank condition is satisfactory with no signs of leaks	✓	
FeSO4 tank condition is satisfactory with no signs of leaks	✓	
Verify situations have not and are not occuring		
Removal of the existing barrier or cover	✓	
Replacement with another barrier or cover	✓	
Excavating or grading of the land surface	✓	
Filling on covered or paved areas	✓	
Plowing for agricultural cultivation	✓	
Construction or placement of a building or other structure	✓	
Change in use or occupancy of the property	✓	

Inspected By: _____ · (Peter Starlie)

Date: 1-16-2017

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