



Final



Semiannual Report

July through December 2017

Penta Wood Products Superfund Site

Wisconsin Department of Natural Resources

GHD | 1801 Old Highway 8 Northwest Suite 114 St. Paul Minnesota 55112 USA

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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 July through December 2017 including:

- Groundwater monitoring and sampling (Section 2)
- Residential well and onsite supply well sampling (Section 3)
- Waste management and disposal (Section 4)
- Continuing obligations and inspections (Section 5)
- Conclusions and recommendations (Section 6)
- Certification (Section 7)

2. Groundwater Monitoring and Sampling

Groundwater monitoring was conducted at the Site in July and September 2017 and sampling was conducted at the Site in October 2017 based on the modified scope of work provided in a GHD letter to EPA dated June 30, 2016. Wells MW4 and MW14 were subsequently added to the sampling scope to assess semi-confined aquifer (lower portion) groundwater quality southeast of the LNAPL source area. The groundwater monitoring and sampling plan is summarized in Table 2.1. 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 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 July 12 and 13, 2017 and on September 28, 2017. The groundwater and LNAPL elevation data along with well survey data are summarized in Table 2.2. Historical LNAPL thickness data are included in Appendix A.

Groundwater elevation contours were inferred from the July and September 2017 measurement data. Unconfined aquifer (upper portion) contours are shown on Figures 2.1 and 2.4. Semiconfined aquifer (lower portion) groundwater contours are shown on Figure 2.2 and 2.5. The contours indicate that the groundwater gradient is relatively flat at less than 0.0005 ft/ft (as calculated between wells MW2 and MW26) and represent non-pumping conditions following shutdown of the remediation system and groundwater extraction pumps (November 2015).

During the July 2017 event, LNAPL was present in monitoring wells MW18, MW19, MW20 and MW29 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 July 2017 monitoring event. During the September 2017 event, LNAPL was present in monitoring wells MW20 and MW29 at measurable thicknesses, and LNAPL was not present in well MW10S. LNAPL was present in four extraction wells (EW07S, EW10S, EW12S, and EW14S) with casings screened in the unconfined (upper) aquifer during the September 2017 monitoring event. During the September monitoring event, wells MW18, MW19, EW05S, and EW06S were not monitored due to a faulty oil-water interface probe. This is consistent with recent monitoring. LNAPL was not observed in any monitoring wells with casings screened in the semiconfined (lower) aquifer during July or September 2017. LNAPL thickness measurements are shown on Figures 2.3 and 2.6.

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, 2.2, 2.4 and 2.5). 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 0.005 ft/ft (MW10/MW10S) to 0.017 ft/ft (MW12/MW16). These values are consistent with recent monitoring events and represent non-pumping conditions.

2.2 Groundwater Sampling

This groundwater sampling event was conducted from September 29 through October 13, 2017 and consisted of collecting groundwater samples from eighteen (18) monitoring wells (MW1, MW3, MW4, MW6S, MW10, MW10S, MW12, MW13, MW14, MW16, MW17, MW21, MW22, MW23, MW25, MW28, MW30, and MW31) and three (3) extraction wells (EW11D, EW11S, and EW13S). Wells MW20 and MW29 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 2.3.

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 2.4.

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 B.

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 October 2017 naphthalene and BTEX analytical data are summarized in Table 2.4. Naphthalene was detected in two (2) wells (MW10, EW13S) at concentrations that exceeded the PAL of 10 micrograms per liter ($\mu\text{g/L}$) (Table 2.4). Naphthalene concentrations did not exceed the ES of 100 $\mu\text{g/L}$.

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

2.2.2 PCP Analytical Data

The October 2017 PCP analytical data are summarized in Table 2.4. PCP was detected in twelve (12) wells (MW1, MW3, MW6S, MW10, MW10S, MW12, MW13, MW28, MW30, EW11D, EW11S, and EW13S) at concentrations exceeding the PAL of 0.1 $\mu\text{g/L}$. Of those twelve wells, the PCP concentrations in five (5) wells (MW10, MW10S, MW12, MW30, and EW13S) exceeded the ES of 1.0 $\mu\text{g/L}$. Figure 2.7 shows the PCP concentrations in the unconfined (upper) aquifer wells. Figure 2.8 shows the PCP concentrations in the semiconfined (lower) aquifer wells.

Based on a review of the October 2017 analytical data, it appears that the elevated PCP concentrations (i.e., greater than 1,000 $\mu\text{g/L}$) 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 and recent sampling events.

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 October 2017 dissolved arsenic analytical data are summarized in Table 2.4. Arsenic was detected in two (2) wells (MW4 and EW13S) at concentrations exceeding the PAL (1 µg/L). Of those two wells, the PCP concentrations in one well (EW13S) exceeded the ES (10 µg/L). Figure 2.9 shows the arsenic concentrations in the unconfined (upper) aquifer wells. Figure 2.10 shows the arsenic concentrations in the semiconfined (lower) aquifer wells.

2.2.4 Other Dissolved Metals Analytical Data

The October 2017 dissolved metals analytical data are summarized in Table 2.4. Zinc and copper were not detected above the PALs or ESs in any of the eighteen (18) monitoring wells and three (3) extraction wells.

Iron was detected in six (6) wells at concentrations exceeding the PAL (150 µg/L) and five (5) wells at concentrations exceeding the ES (300 µg/L). Manganese was detected in eight (8) wells at concentrations exceeding the PAL (25 µg/L) and four (4) 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 2.4. 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 2.3) 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.

3. Residential Well and Onsite Supply Well Sampling

On October 20, 2017, water samples were collected from six residential wells located near the Site and the onsite water supply well (DW01) in general accordance with the FSP and QAPP. The six residential wells included:

- 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. The samples were analyzed for PCP, BTEX, and naphthalene.

3.1 Residential Well and Onsite Supply Well Sample Analytical Data

PCP, BTEX, and naphthalene were not detected at concentrations in the residential wells or onsite water supply well that exceed the respective PALs (Table 3.1). These results are similar with historical data. The residential well and onsite supply well sample analytical data are summarized in Table 3.1. Copies of the laboratory reports and data validation are included in Appendix C. Historical residential and onsite water supply well PCP data are included in Appendix A.

4. Waste Management and Disposal

No waste was disposed during July through December 2017. GHD continues to collect and containerize PPE and other waste produced during sampling events onsite. Historical hazardous waste disposal is summarized in Appendix A.

5. 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).

5.1 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.



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:
 - The selected remedy (i.e. remediation system shutdown pilot study and associated monitoring) remains in place and remains effective
 - 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:
 - 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
 - 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 September 28, 2017 and a copy of the continuing obligations inspection form is included in Appendix D.

5.2 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 September 28, 2017 and a copy of the well inspection form is included in Appendix D.



6. Conclusions and Recommendations

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

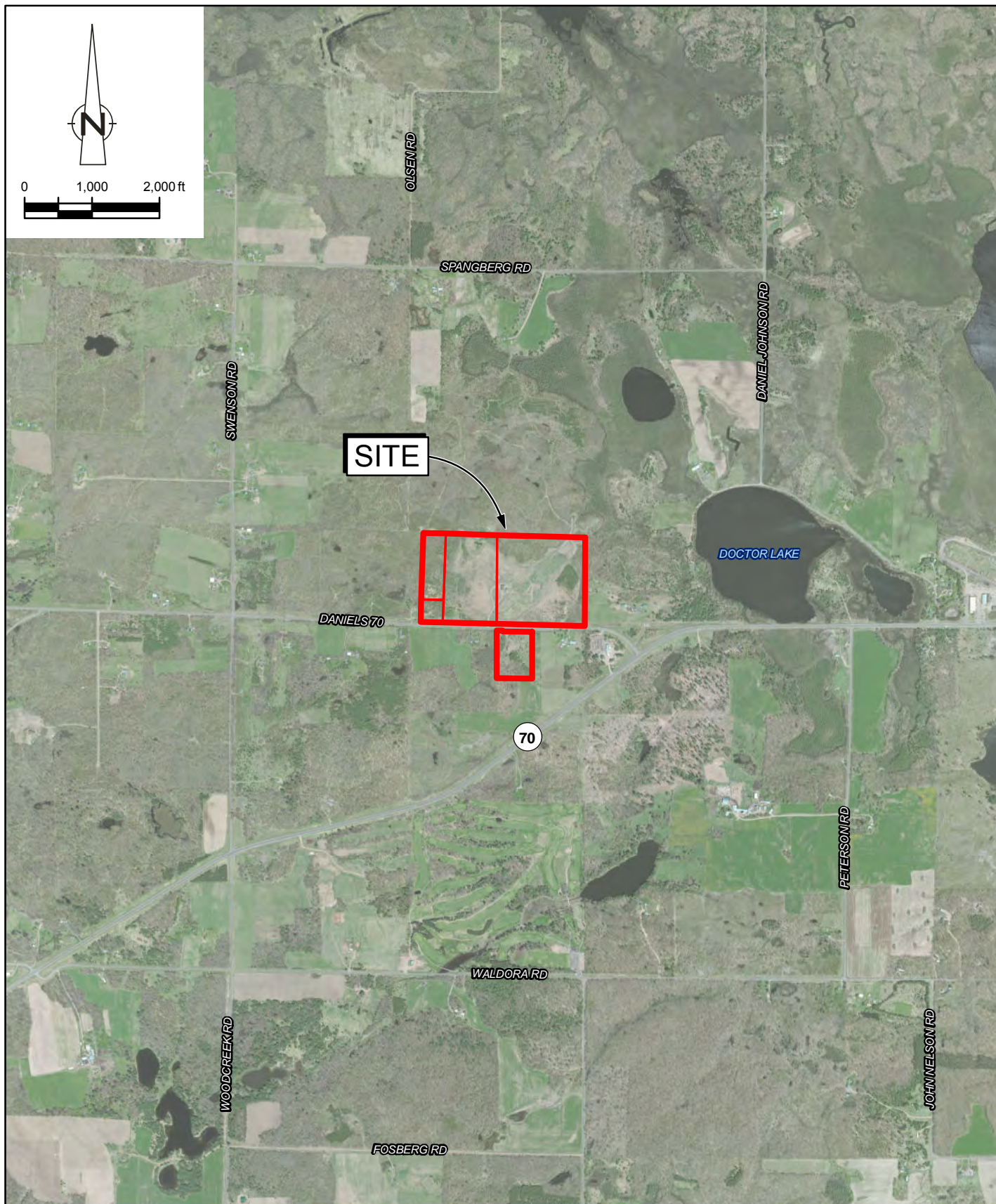
- LNAPL is stable and not migrating
- The dissolved PCP plume is stable and not migrating
- Dissolved PCP concentrations greater than 1,000 µg/L are limited to the immediate vicinity of the LNAPL area
- Dissolved PCP degrades naturally in the aerobic zone
- Dissolved PCP degrades in the anaerobic zone (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
- Consider extending the anaerobic microcosm study laboratory analyses and evaluation
- Conduct quarterly groundwater and LNAPL level monitoring during January and April 2018
- Conduct semiannual groundwater monitoring and sampling during April 2018
- Conduct semiannual residential well sampling during April 2018
- 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; the next semiannual report will document Site work during January through June 2018 and will be submitted in July 2018.
- Conduct a groundwater statistical evaluation using USEPA and ITRC guidance when sufficient groundwater data is obtained after future sampling events

7. 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

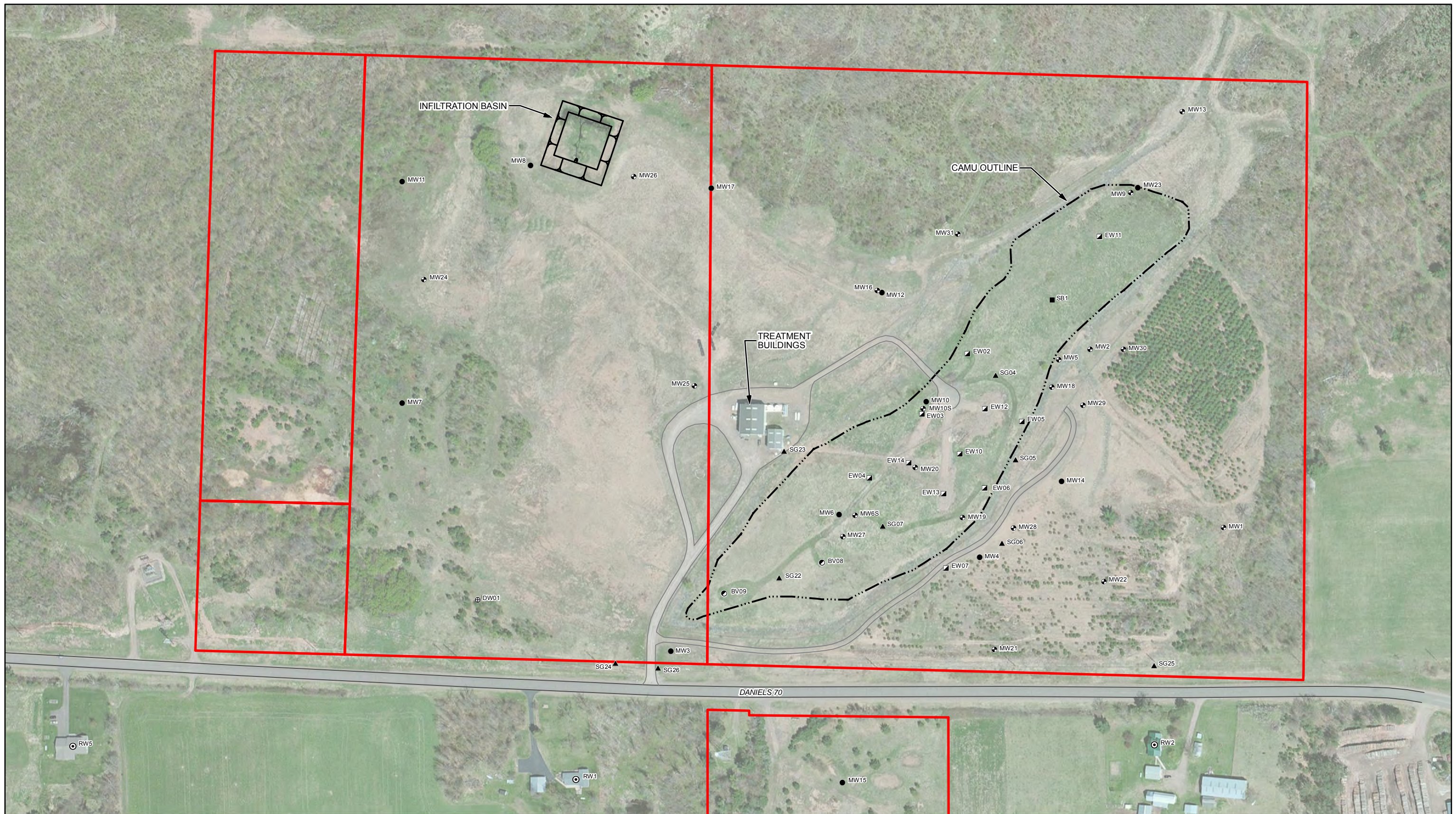


PENTA WOOD PRODUCTS SUPERFUND SITE
 SIREN, WISCONSIN
 SEMI-ANNUAL REPORT

086165-05-06
 Jan 8, 2018

SITE LOCATION

FIGURE 1.1



LEGEND

- | | | | |
|---|------------------------------|-----|------------------------|
| ▣ | EXTRACTION WELL NEST | ⊕ | WATER SUPPLY WELL |
| ⊕ | UNCONFINED MONITORING WELL | ⊙ | RESIDENTIAL WELL |
| ● | SEMICONFINED MONITORING WELL | --- | APPROXIMATE CAMU LIMIT |
| ⊙ | BIOVENTING WELL | --- | SITE PARCEL BOUNDARY |
| ▲ | SOIL GAS WELL NEST | | |



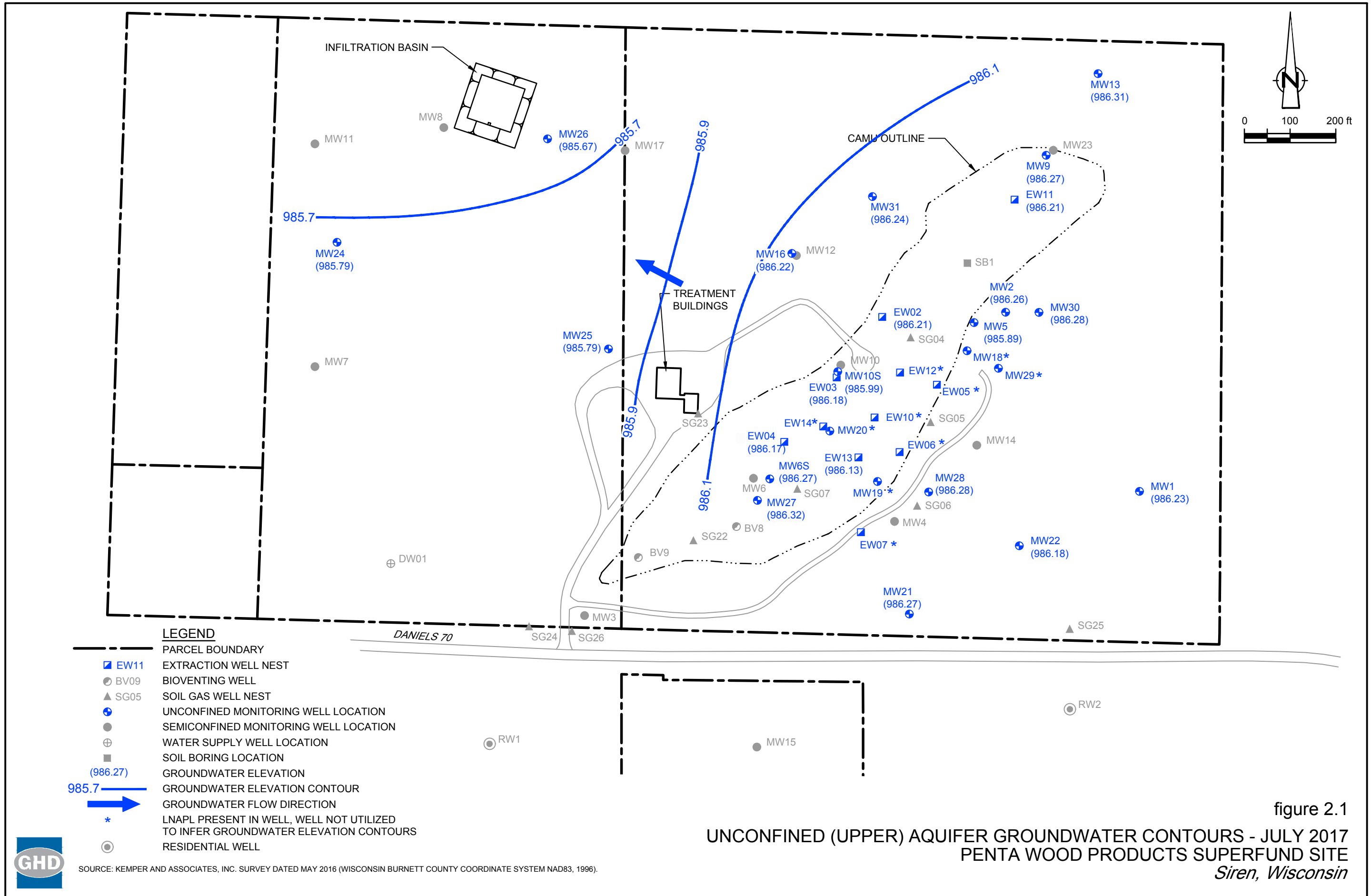
PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
SEMIANNUAL REPORT

SITE PLAN

086165-05-06

Jan 8, 2018

FIGURE 1.2



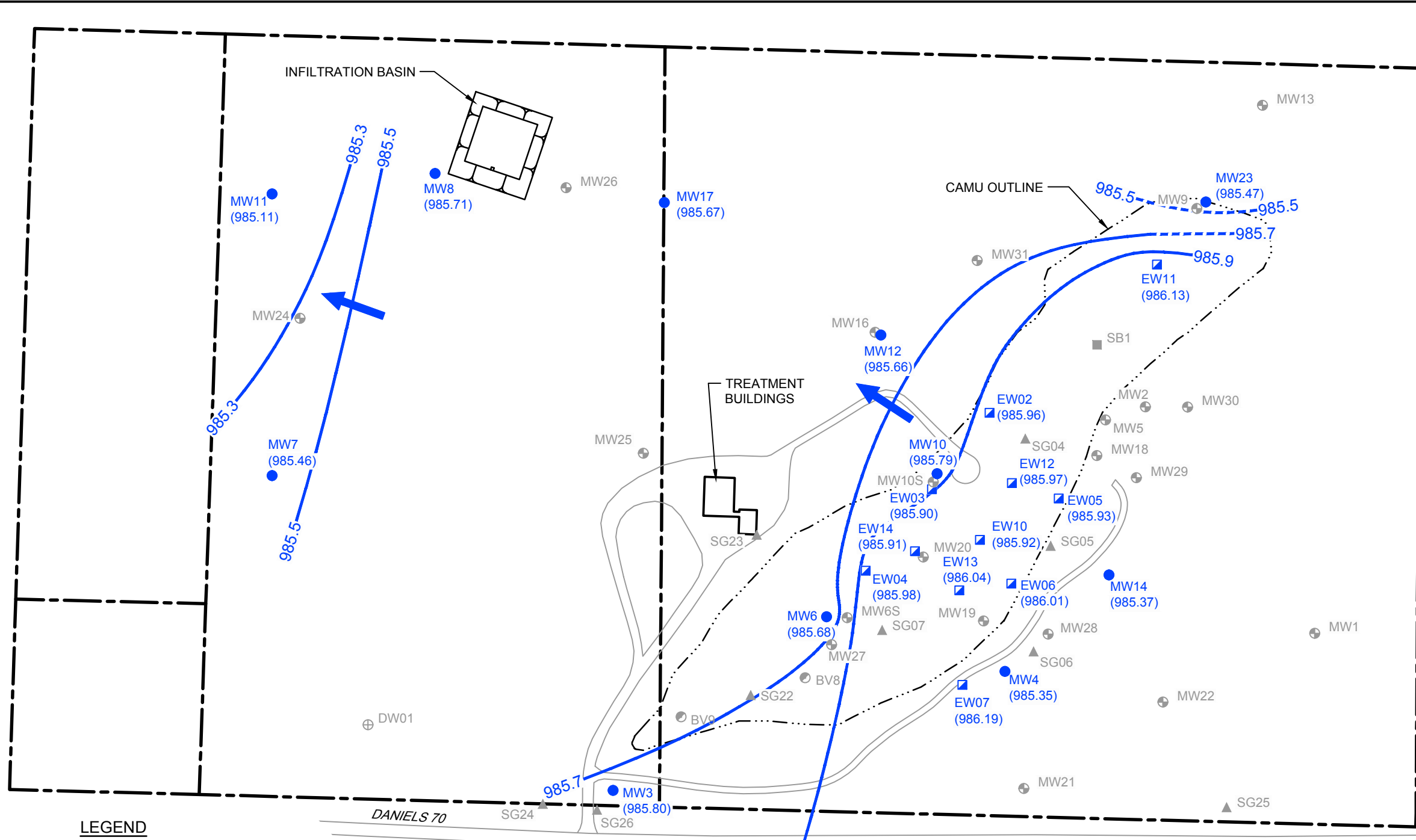
LEGEND

- 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
- (986.27) GROUNDWATER ELEVATION
- 985.7 GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- * LNAPL PRESENT IN WELL, 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 2.1
UNCONFINED (UPPER) AQUIFER GROUNDWATER CONTOURS - JULY 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



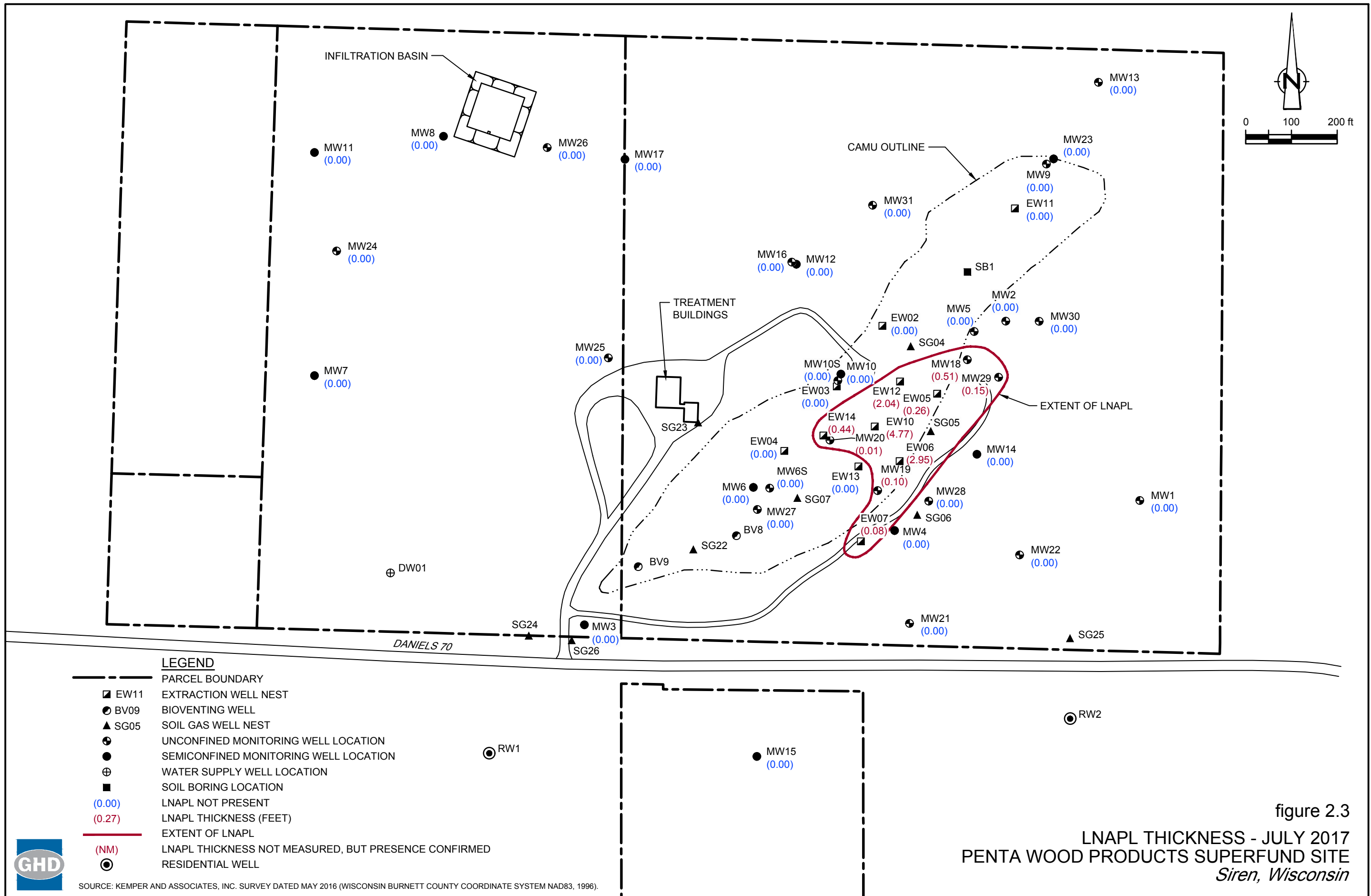


- LEGEND**
- PARCEL BOUNDARY
 - EW11 (blue square) EXTRACTION WELL NEST
 - BV09 (circle with dot) BIOVENTING WELL
 - SG05 (triangle) SOIL GAS WELL NEST
 - ⊕ UNCONFINED MONITORING WELL LOCATION
 - SEMICONFINED MONITORING WELL LOCATION
 - ⊕ WATER SUPPLY WELL LOCATION
 - SOIL BORING LOCATION
 - (985.35) GROUNDWATER ELEVATION
 - 986.10— GROUNDWATER ELEVATION CONTOUR
 - GROUNDWATER FLOW DIRECTION
 - 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 - JULY 2017
 PENTA WOOD PRODUCTS SUPERFUND SITE
 Siren, Wisconsin





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

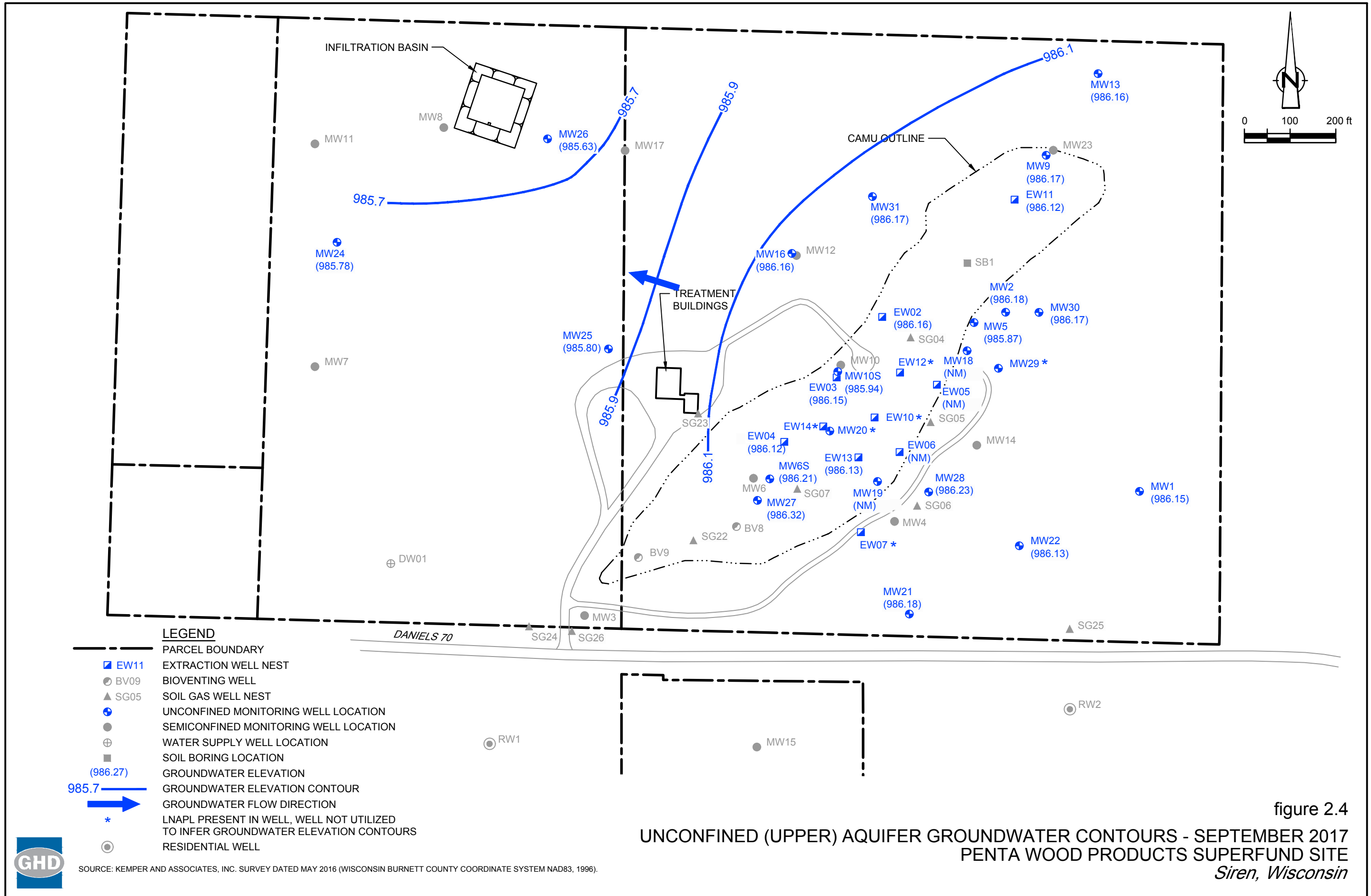
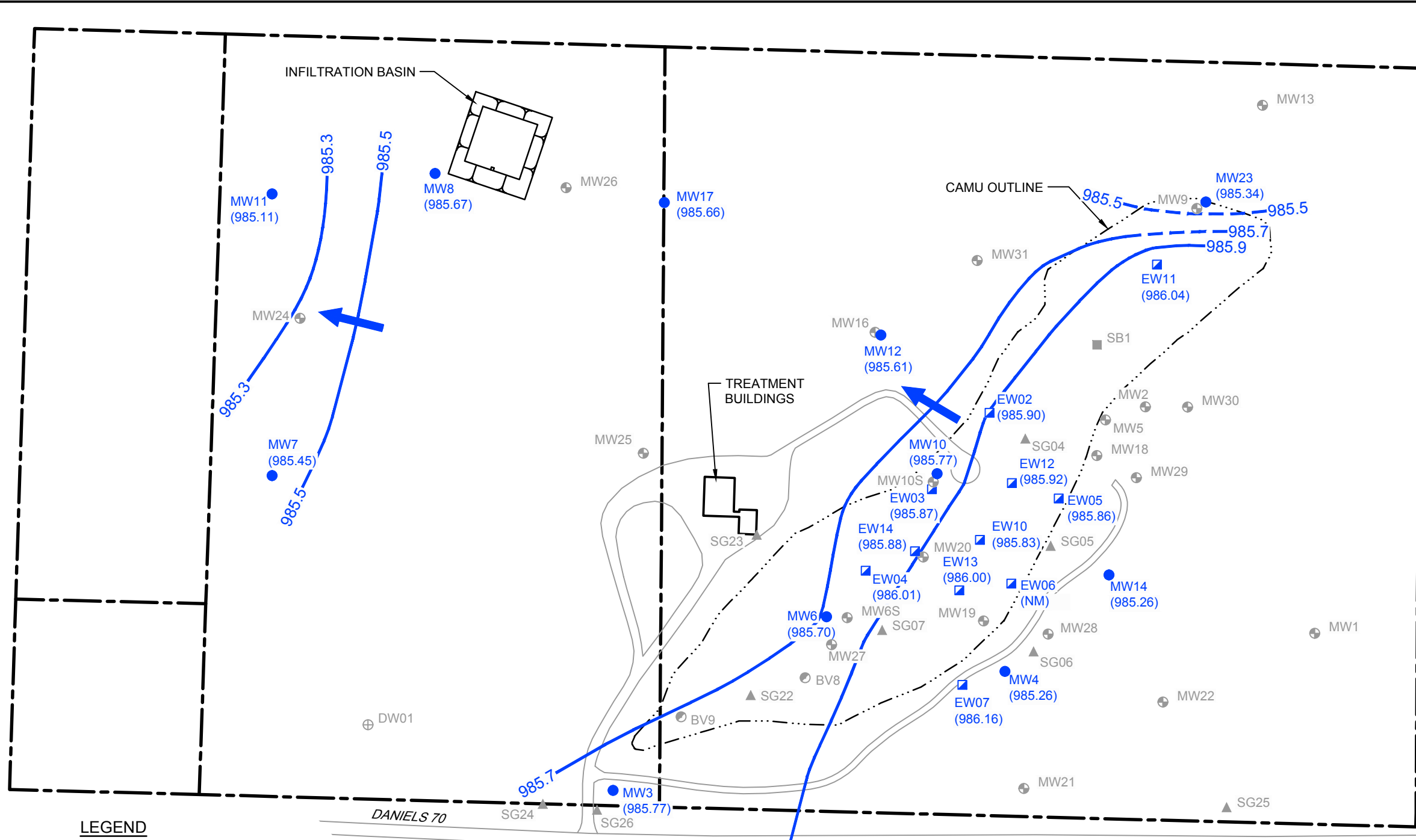


figure 2.4



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

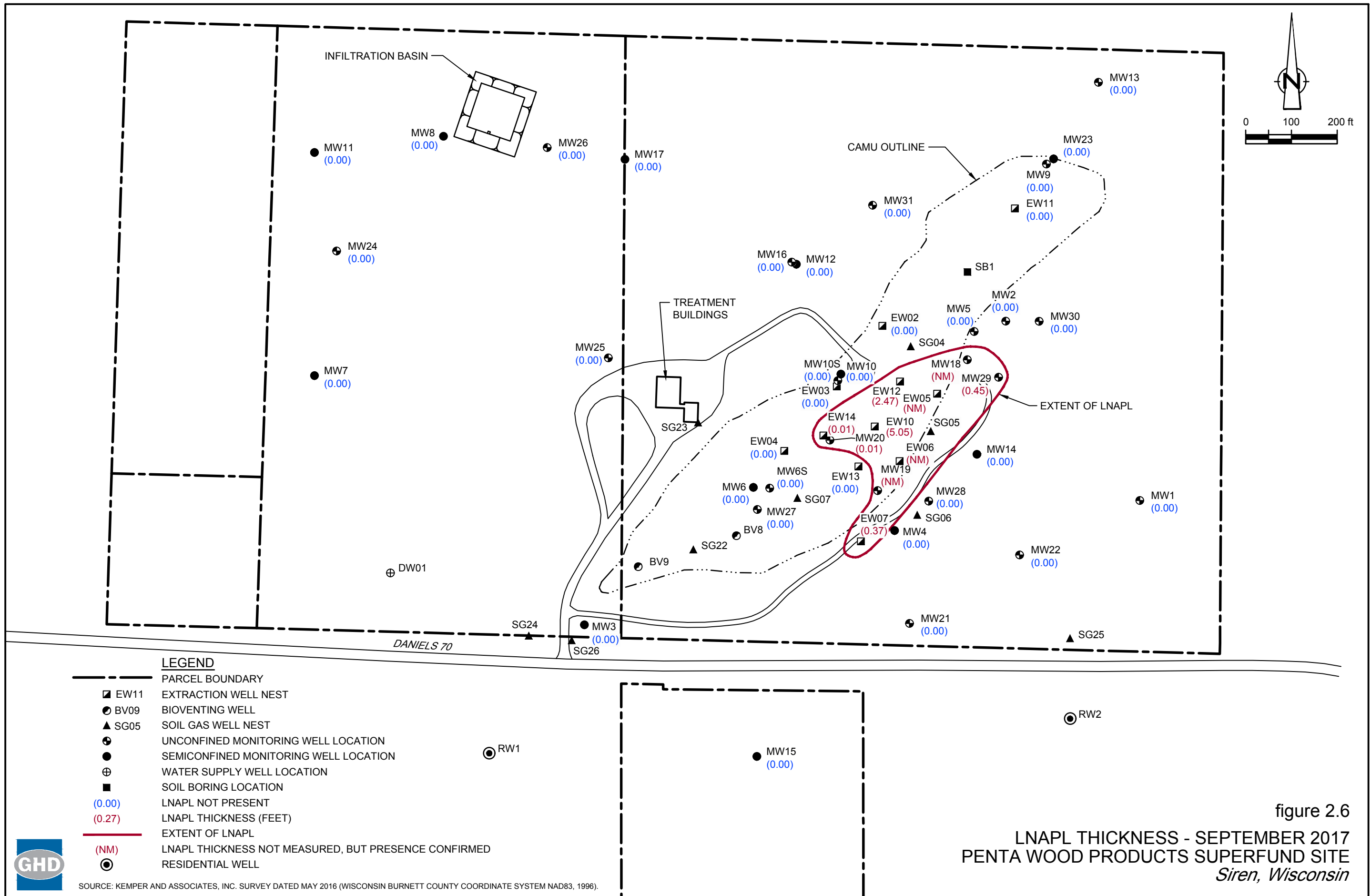


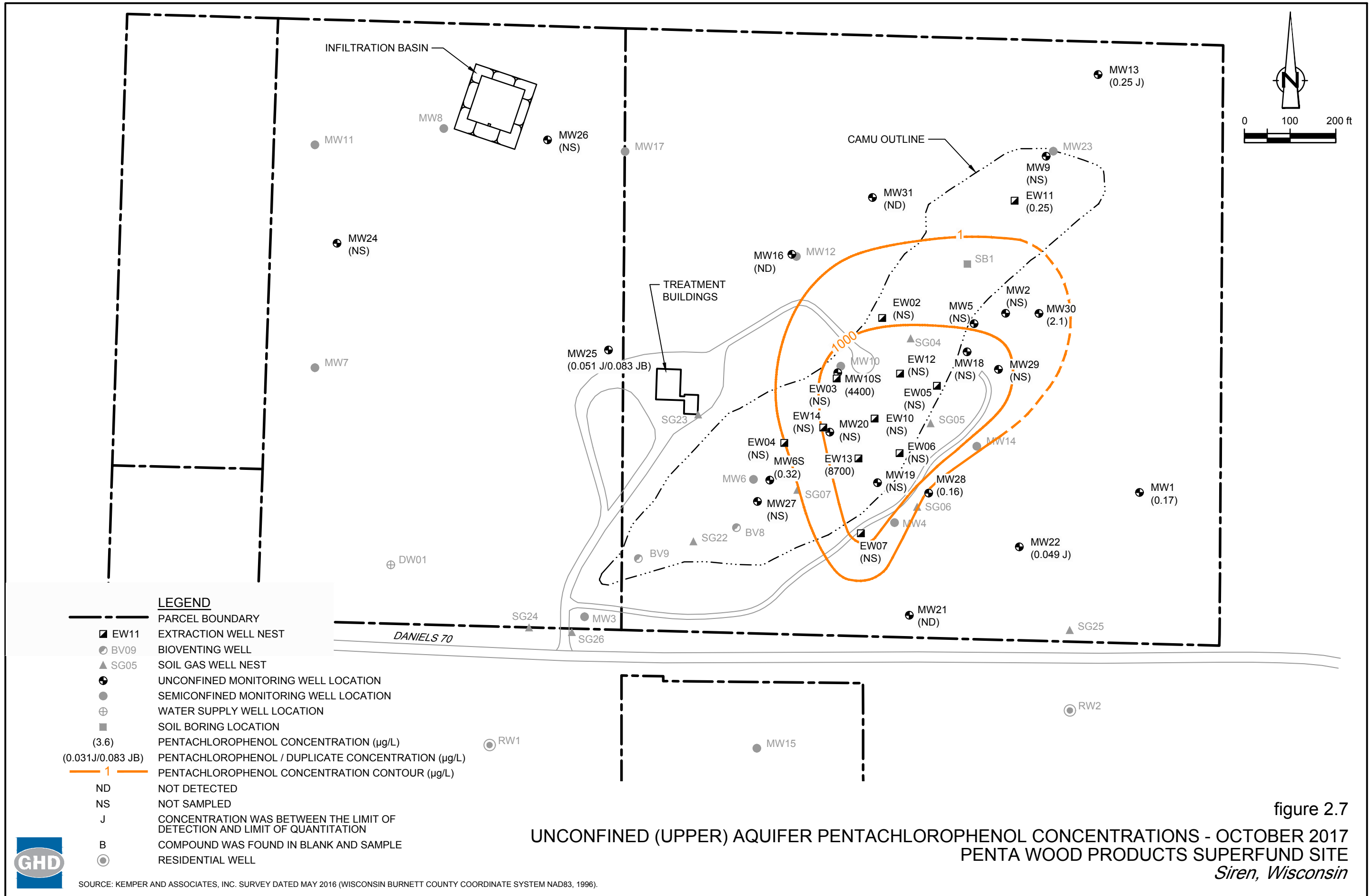
- LEGEND**
- PARCEL BOUNDARY
 - EW11 EXTRACTION WELL NEST
 - BV09 BIOVENTING WELL
 - SG05 SOIL GAS WELL NEST
 - ⊕ UNCONFINED MONITORING WELL LOCATION
 - SEMICONFINED MONITORING WELL LOCATION
 - ⊕ WATER SUPPLY WELL LOCATION
 - SOIL BORING LOCATION
 - (985.35) GROUNDWATER ELEVATION
 - 986.10— GROUNDWATER ELEVATION CONTOUR
 - GROUNDWATER FLOW DIRECTION
 - RESIDENTIAL WELL

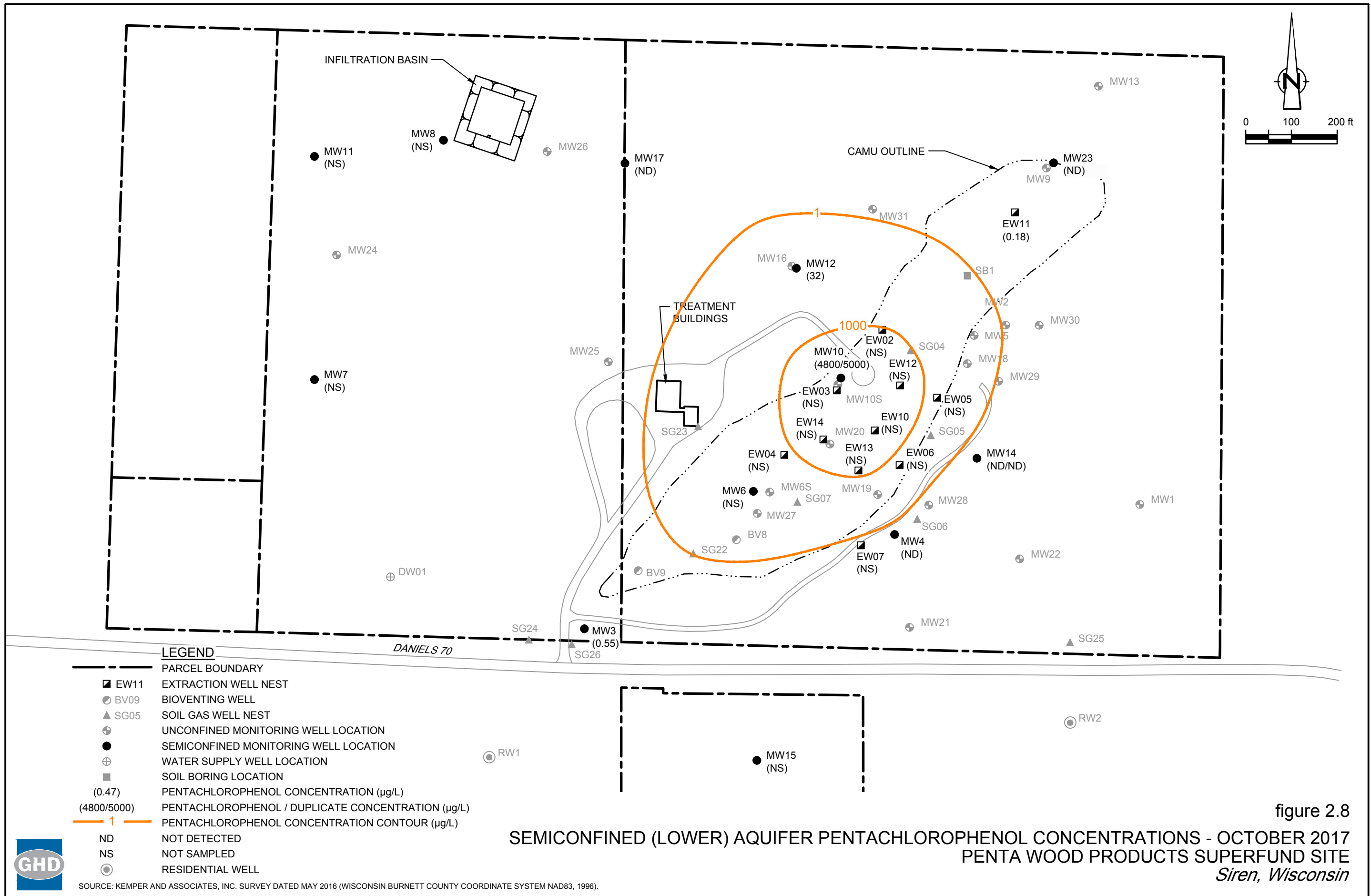
SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.5
SEMICONFINED (LOWER) AQUIFER GROUNDWATER CONTOURS - SEPTEMBER 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin









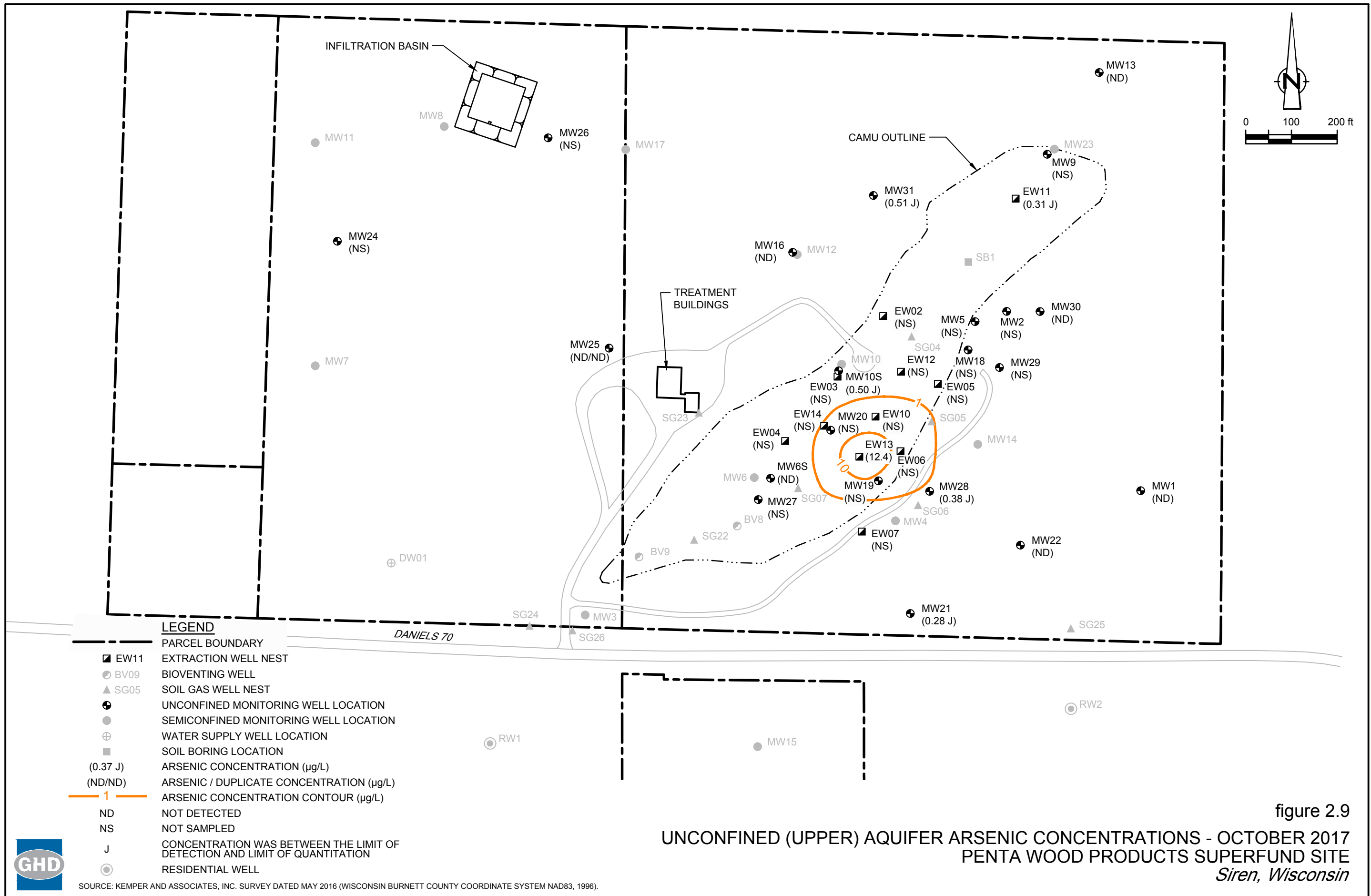
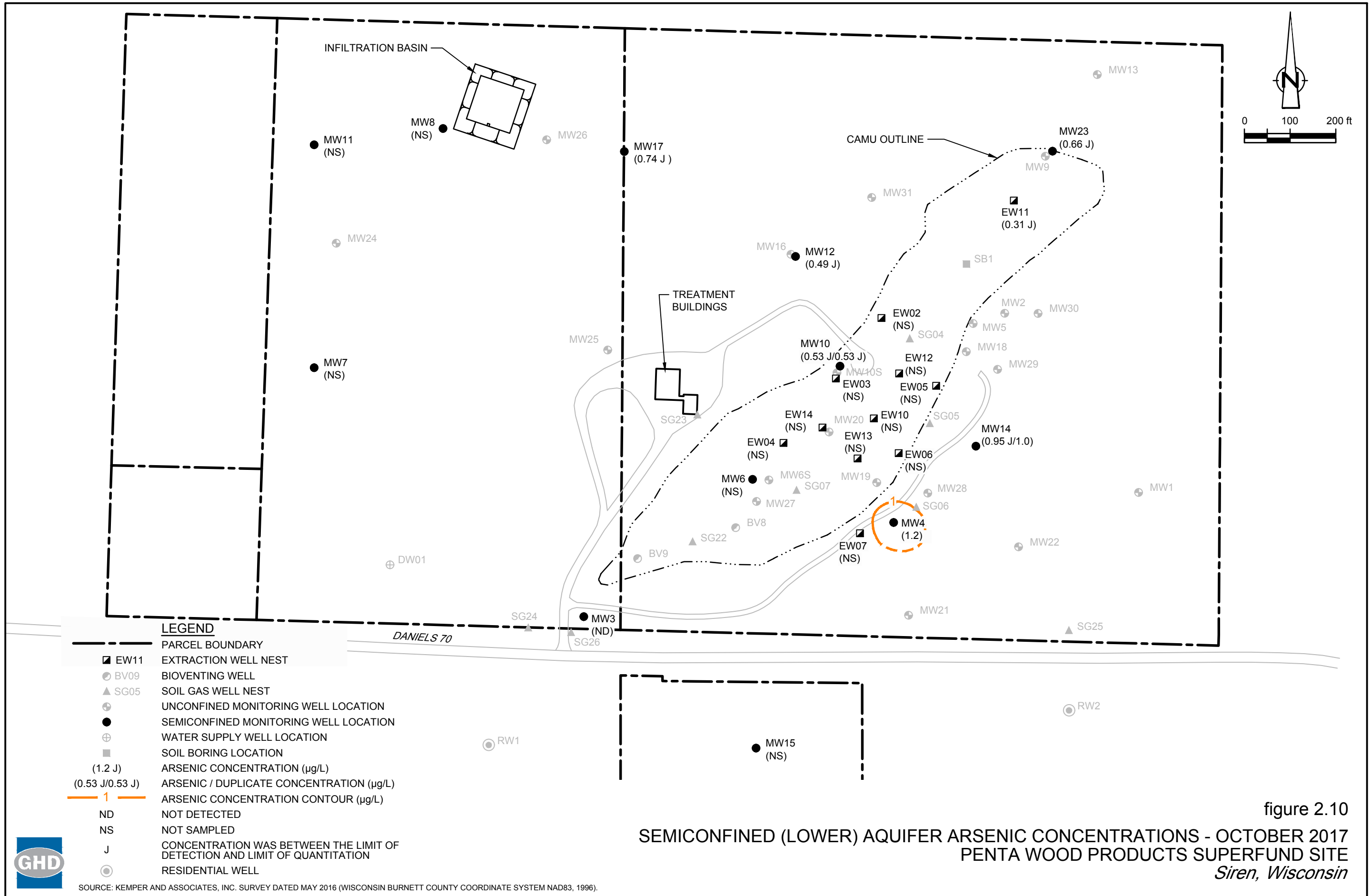


figure 2.9



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



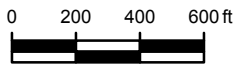
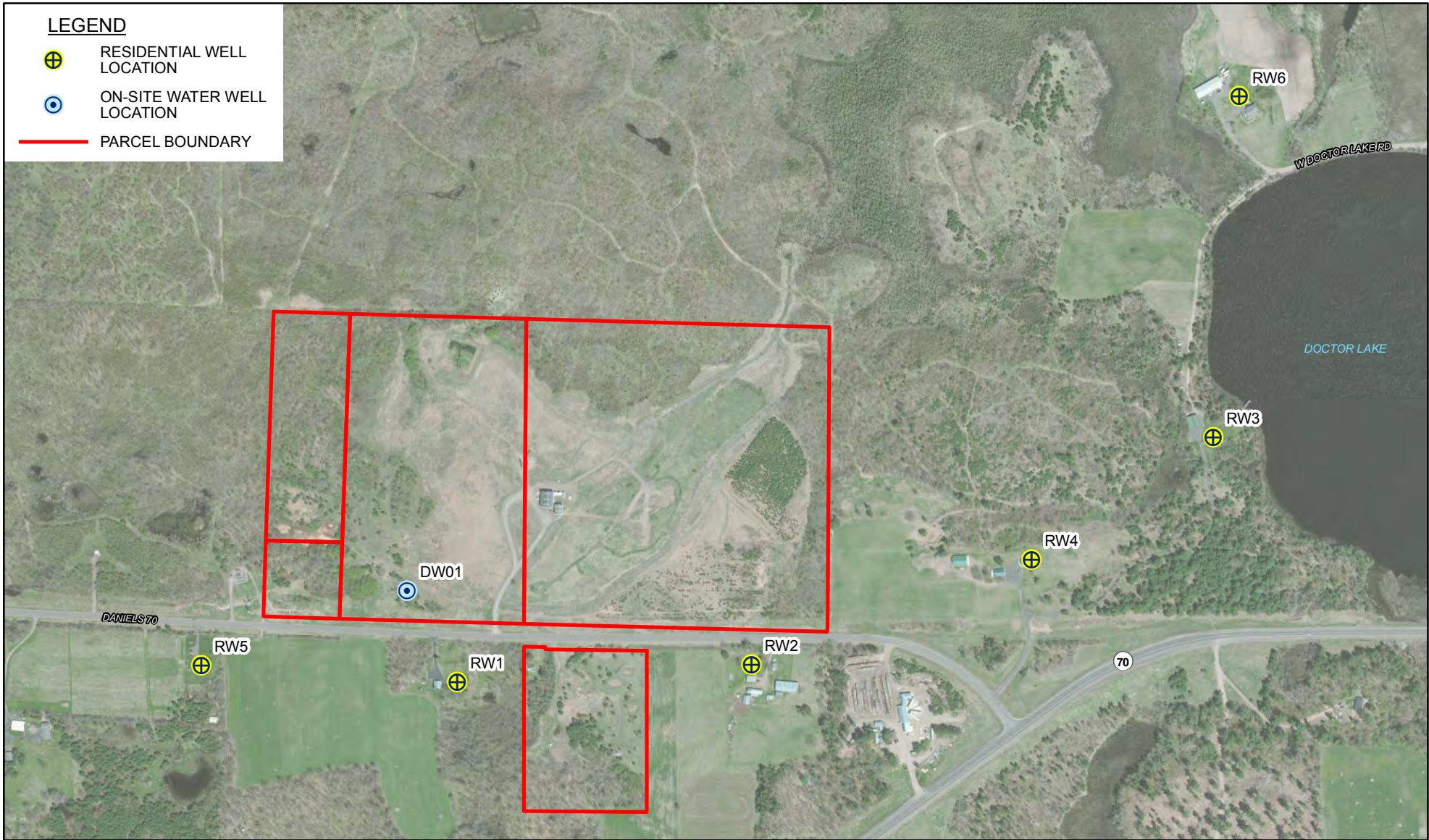
LEGEND

- ▣ 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
- (1.2 J) ARSENIC CONCENTRATION (µg/L)
- (0.53 J/0.53 J) ARSENIC / DUPLICATE CONCENTRATION (µg/L)
- 1 ARSENIC CONCENTRATION CONTOUR (µg/L)
- ND NOT DETECTED
- NS NOT SAMPLED
- J CONCENTRATION WAS BETWEEN THE LIMIT OF DETECTION AND LIMIT OF QUANTITATION
- RESIDENTIAL WELL

figure 2.10
SEMICONFINED (LOWER) AQUIFER ARSENIC CONCENTRATIONS - OCTOBER 2017
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



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



PENTA WOOD PRODUCTS SUPERFUND SITE
 SIREN, WISCONSIN
 SEMIANNUAL REPORT

RESIDENTIAL WELL LOCATIONS

086165-05-06
 Jan 8, 2018

FIGURE 3.1

**Groundwater Monitoring and Sampling Plan
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Quarterly Groundwater/LNAPL Level Monitoring ¹	Semiannual Groundwater Sampling ^{2, 3, 4}
Unconfined (Upper) Aquifer		
MW1	X	X
MW2	X	
MW5	X	
MW6S	X	X
MW9	X	
MW10S	X	X
MW13	X	X
MW16	X	X
MW18	X	
MW19	X	
MW20	X	X
MW21	X	X
MW22	X	X
MW24	X	
MW25	X	X
MW26	X	
MW27	X	
MW28	X	X
MW29	X	X
MW30	X	X
MW31	X	X
EW02S	X	
EW03S	X	
EW04S	X	
EW05S	X	
EW06S	X	
EW07S	X	
EW10S	X	
EW11S	X	X
EW12S	X	
EW13S	X	X
EW14S	X	

**Groundwater Monitoring and Sampling Plan
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Quarterly Groundwater/LNAPL Level Monitoring ¹	Semiannual Groundwater Sampling ^{2, 3, 4}
---------	---	--

Semiconfined (Lower) Aquifer

MW3	X	X
MW4	X	X
MW6	X	
MW7	X	
MW8	X	
MW10	X	X
MW11	X	
MW12	X	X
MW14	X	X
MW15	X	
MW17	X	X
MW23	X	X
EW02D	X	
EW03D	X	
EW04D	X	
EW05D	X	
EW06D	X	
EW07D	X	
EW10D	X	
EW11D	X	X
EW12D	X	
EW13D	X	
EW14D	X	

Notes:

- 1 Groundwater/LNAPL level monitoring conducted on a quarterly basis in January, April, July, and October
- 2 Groundwater sampling conducted on a semiannual basis in April and October
- 3 Groundwater sample laboratory analyses include the following parameters: Pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylenes (BTEX); natural attenuation parameters (alkalinity, chloride, hardness, nitrate, sulfate, total organic carbon, and methane); and select dissolved metals (arsenic, copper, iron, manganese, and zinc). Field parameter measurements include the following parameters: pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), iron, and sulfide.
- 4 Groundwater samples will not be collected if LNAPL is present in the well casing.

Table 2.2

**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	7/12/2017	1129.44	143.64	ND	985.80	NA	0.00
MW3	9/28/2017	1129.44	143.67	ND	985.77	NA	0.00
MW4	7/12/2017	1087.74	102.39	ND	985.35	NA	0.00
MW4	9/28/2017	1087.74	102.48	ND	985.26	NA	0.00
MW6	7/12/2017	1109.11	123.43	ND	985.68	NA	0.00
MW6	9/28/2017	1109.11	123.41	ND	985.70	NA	0.00
MW7	7/12/2017	1096.25	110.79	ND	985.46	NA	0.00
MW7	9/28/2017	1096.25	110.80	ND	985.45	NA	0.00
MW8	7/12/2017	1091.13	105.42	ND	985.71	NA	0.00
MW8	9/28/2017	1091.13	105.46	ND	985.67	NA	0.00
MW10	7/12/2017	1089.01	103.22	ND	985.79	NA	0.00
MW10	9/28/2017	1089.01	103.24	ND	985.77	NA	0.00
MW11	7/12/2017	1085.48	100.37	ND	985.11	NA	0.00
MW11	9/28/2017	1085.48	100.37	ND	985.11	NA	0.00
MW12	7/12/2017	1080.91	95.25	ND	985.66	NA	0.00
MW12	9/28/2017	1080.91	95.30	ND	985.61	NA	0.00
MW14	7/12/2017	1078.28	92.91	ND	985.37	NA	0.00
MW14	9/28/2017	1078.28	93.02	ND	985.26	NA	0.00
MW15	7/12/2017	1127.09	141.09	ND	986.00	NA	0.00
MW15	9/28/2017	1127.09	141.15	ND	985.94	NA	0.00
MW17	7/12/2017	1084.43	98.76	ND	985.67	NA	0.00
MW17	9/28/2017	1084.43	98.77	ND	985.66	NA	0.00
MW23	7/12/2017	1017.45	31.98	ND	985.47	NA	0.00
MW23	9/28/2017	1017.45	32.11	ND	985.34	NA	0.00
EW02D	7/12/2017	1083.00	97.04	ND	985.96	NA	0.00
EW02D	9/28/2017	1083.00	97.10	ND	985.90	NA	0.00
EW03D	7/12/2017	1089.48	103.58	ND	985.90	NA	0.00
EW03D	9/28/2017	1089.48	103.61	ND	985.87	NA	0.00
EW04D	7/12/2017	1101.09	115.11	ND	985.98	NA	0.00
EW04D	9/28/2017	1101.09	115.08	ND	986.01	NA	0.00
EW05D	7/13/2017	1076.99	91.06	ND	985.93	NA	0.00
EW05D	9/28/2017	1076.99	91.13	ND	985.86	NA	0.00
EW06D	7/13/2017	1083.39	97.38	ND	986.01	NA	0.00
EW06D	9/28/2017	1083.39	NM	NM	NM	NM	NA
EW07D	7/12/2017	1087.52	101.33	ND	986.19	NA	0.00
EW07D	9/28/2017	1087.52	101.36	ND	986.16	NA	0.00
EW10D	7/13/2017	1088.55	102.63	ND	985.92	NA	0.00
EW10D	9/28/2017	1088.55	102.72	ND	985.83	NA	0.00
EW11D	7/12/2017	1048.19	62.06	ND	986.13	NA	0.00
EW11D	9/28/2017	1048.19	62.15	ND	986.04	NA	0.00
EW12D	7/13/2017	1086.41	100.44	ND	985.97	NA	0.00
EW12D	9/28/2017	1086.41	100.49	ND	985.92	NA	0.00
EW13D	7/12/2017	1092.88	106.84	ND	986.04	NA	0.00
EW13D	9/28/2017	1092.88	106.88	ND	986.00	NA	0.00
EW14D	7/13/2017	1098.28	112.37	ND	985.91	NA	0.00
EW14D	9/28/2017	1098.28	112.40	ND	985.88	NA	0.00

Table 2.2

**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	7/12/2017	1072.27	86.04	ND	986.23	NA	0.00
MW1	9/28/2017	1072.27	86.12	ND	986.15	NA	0.00
MW2	7/12/2017	1065.03	78.77	ND	986.26	NA	0.00
MW2	9/28/2017	1065.03	78.85	ND	986.18	NA	0.00
MW5	7/12/2017	1071.39	85.50	ND	985.89	NA	0.00
MW5	9/28/2017	1071.39	85.52	ND	985.87	NA	0.00
MW6S	7/12/2017	1108.35	122.08	ND	986.27	NA	0.00
MW6S	9/28/2017	1108.35	122.14	ND	986.21	NA	0.00
MW9	7/12/2017	1019.58	33.31	ND	986.27	NA	0.00
MW9	9/28/2017	1019.58	33.41	ND	986.17	NA	0.00
MW10S	7/12/2017	1090.12	104.13	ND	985.99	NA	0.00
MW10S	9/28/2017	1090.12	104.18	ND	985.94	NA	0.00
MW13	7/12/2017	1005.81	19.50	ND	986.31	NA	0.00
MW13	9/28/2017	1005.81	19.65	ND	986.16	NA	0.00
MW16	7/12/2017	1081.95	95.73	ND	986.22	NA	0.00
MW16	9/28/2017	1081.95	95.79	ND	986.16	NA	0.00
MW18	7/13/2017	1071.96	86.24	85.73	985.72	986.23	0.51
MW18	9/28/2017	1071.96	NM	NM	NM	NM	NA
MW19	7/13/2017	1087.96	102.14	102.04	985.82	985.92	0.10
MW19	9/28/2017	1087.96	NM	NM	NM	NM	NA
MW20	7/13/2017	1098.16	111.95	111.94	986.21	986.22	0.01
MW20	9/28/2017	1098.16	112.02	112.01	986.14	986.15	0.01
MW21	7/12/2017	1095.82	109.55	ND	986.27	NA	0.00
MW21	9/28/2017	1095.82	109.64	ND	986.18	NA	0.00
MW22	7/12/2017	1084.65	98.47	ND	986.18	NA	0.00
MW22	9/28/2017	1084.65	98.52	ND	986.13	NA	0.00
MW24	7/12/2017	1084.04	98.25	ND	985.79	NA	0.00
MW24	9/28/2017	1084.04	98.26	ND	985.78	NA	0.00
MW25	7/12/2017	1095.25	109.46	ND	985.79	NA	0.00
MW25	9/28/2017	1095.25	109.45	ND	985.80	NA	0.00
MW26	7/12/2017	1086.87	101.20	ND	985.67	NA	0.00
MW26	9/28/2017	1086.87	101.24	ND	985.63	NA	0.00
MW27	7/12/2017	1110.96	124.64	ND	986.32	NA	0.00
MW27	9/28/2017	1110.96	124.64	ND	986.32	NA	0.00
MW28	7/12/2017	1083.52	97.24	ND	986.28	NA	0.00
MW28	9/28/2017	1083.52	97.29	ND	986.23	NA	0.00
MW29	7/13/2017	1070.24	84.14	83.99	986.10	986.25	0.15
MW29	9/28/2017	1070.24	84.49	84.04	985.75	986.20	0.45
MW30	7/12/2017	1048.98	62.70	ND	986.28	NA	0.00
MW30	9/28/2017	1048.98	62.81	ND	986.17	NA	0.00
MW31	7/12/2017	1076.34	90.10	ND	986.24	NA	0.00
MW31	9/28/2017	1076.34	90.17	ND	986.17	NA	0.00
EW02S	7/12/2017	1082.25	96.04	ND	986.21	NA	0.00
EW02S	9/28/2017	1082.25	96.09	ND	986.16	NA	0.00
EW03S	7/12/2017	1088.66	102.48	ND	986.18	NA	0.00
EW03S	9/28/2017	1088.66	102.51	ND	986.15	NA	0.00

Table 2.2

**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) continued							
EW04S	7/12/2017	1101.01	114.84	ND	986.17	NA	0.00
EW04S	9/28/2017	1101.01	114.89	ND	986.12	NA	0.00
EW05S	7/13/2017	1077.04	91.14	90.88	985.90	986.16	0.26
EW05S	9/28/2017	1077.04	NM	NM	NM	NM	NA
EW06S	7/13/2017	1083.61	100.42	97.47	983.19	986.14	2.95
EW06S	9/28/2017	1083.61	NM	NM	NM	NM	NA
EW07S	7/13/2017	1087.49	101.45	101.37	986.04	986.12	0.08
EW07S	9/28/2017	1087.49	101.80	101.43	985.69	986.06	0.37
EW10S	7/13/2017	1088.72	107.35	102.58	981.37	986.14	4.77
EW10S	9/28/2017	1088.72	107.69	102.64	981.03	986.08	5.05
EW11S	7/12/2017	1047.23	61.02	ND	986.21	NA	0.00
EW11S	9/28/2017	1047.23	61.11	ND	986.12	NA	0.00
EW12S	7/13/2017	1086.31	102.27	100.23	984.04	986.08	2.04
EW12S	9/28/2017	1086.31	102.76	100.29	983.55	986.02	2.47
EW13S	7/12/2017	1092.88	106.75	ND	986.13	NA	0.00
EW13S	9/28/2017	1092.88	106.75	ND	986.13	NA	0.00
EW14S	7/13/2017	1098.32	112.80	112.36	985.52	985.96	0.44
EW14S	9/28/2017	1098.32	112.43	112.42	985.89	985.90	0.01

Notes:

- feet AMSL - Feet above mean sea level
 btoc - Feet below top of casing
 ND - LNAPL was not detected in a measurable quantity
 NA - Not applicable

Table 2.3

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

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific	Turbidity (NTU)	Dissolved	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
						Conductance (µS)		Oxygen (mg/L)				
MW1	10/4/2017	W-171004-PS-16	15:10	2.6	9.85	125	12.10	11.08	6.53	97.7	-	-
			15:15	4.0	9.85	125	11.03	10.99	6.54	98.8	-	-
			15:20	5.3	9.84	124	3.99	11.06	6.54	100.8	-	-
			15:25	6.6	9.82	124	3.39	11.01	6.56	100.9	-	-
			15:30	7.9	9.81	124	3.11	10.98	6.57	101.2	0.4	ND
MW3	10/13/2017	W-171013-PS-24	9:40	4.0	9.64	625	162	2.74	6.93	50	-	-
			9:45	5.9	9.84	644	103	2.73	7.07	79	-	-
			9:50	7.9	10.01	664	65	3.61	7.13	101	-	-
			9:55	9.9	10.04	665	73	3.65	7.13	104	-	-
			10:00	11.9	10.06	668	61	3.90	7.13	107	-	-
			10:05	11.9	10.03	670	56	3.92	7.12	110	1.2	ND
MW4	10/3/2017	W-171003-PS-06	9:40	2.6	10.24	223	20.4	2.52	2.98	-198.6	-	-
			9:45	4.0	10.26	216	10.6	1.16	7.62	-145.4	-	-
			9:50	5.3	10.24	212	9.5	1.04	7.72	-135.9	-	-
			9:55	6.6	10.25	212	8.7	0.93	7.80	-134.1	1.0	ND
MW6S	10/5/2017	W-171005-PS-23	15:50	3.0	11.57	368	49.2	5.17	6.19	109.7	1.4	ND
MW10S	10/5/2017	W-171005-PS-19	10:45	2.6	13.52	541	NM	15.17	6.55	68.2	-	-
			10:50	4.0	14.26	551	6.33	5.12	6.50	67.4	-	-
			10:55	5.3	15.58	568	4.55	2.23	6.55	61.5	-	-
			11:00	6.6	16.61	584	3.96	1.64	6.64	55.4	-	-
			11:05	7.9	17.07	595	4.08	1.29	6.64	51.2	-	-
			11:10	9.2	17.15	596	3.99	1.20	6.65	49.4	-	-
MW10	10/5/2017	W-171005-PS-18 (Duplicate)	10:00	2.6	11.67	281	12.16	2.66	7.41	-66	-	-
			10:05	4.0	12.83	295	11.42	1.22	7.43	-69.4	-	-
			10:10	5.3	12.87	296	7.64	1.01	7.41	-69.9	-	-
			10:15	6.6	12.90	298	7.18	0.83	7.39	-68.7	-	-
			10:20	7.9	12.90	298	7.01	0.77	7.39	-68.5	-	-
			10:25	9.2	12.93	299	6.88	0.72	7.38	-67.5	1.3	ND

Table 2.3

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

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific	Turbidity (NTU)	Dissolved	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
						Conductance (µS)		Oxygen (mg/L)				
MW12	10/2/2017	W-171002-PS-02	11:55	2.6	12.43	385	0.07	5.00	6.93	53.1	-	-
			12:00	4.0	12.45	391	0	4.14	6.95	55.1	-	-
			12:05	5.3	12.43	404	0	3.40	6.94	57.4	-	-
			12:10	6.6	12.43	412	0	2.79	6.95	59.5	-	-
			12:15	7.9	12.43	412	0	2.76	6.95	59.6	-	-
			12:20	9.2	12.42	412	0	2.77	6.95	59.6	ND	ND
MW13	9/29/2017	W-170929-PS-01	10:25	2.6	11.14	81	NM	8.55	6.08	156.8	-	-
			10:30	4.0	11.09	82	NM	7.89	5.44	175.5	-	-
			10:35	5.3	11.06	84	NM	7.53	5.23	181.4	-	-
			10:40	6.6	10.99	84	NM	7.37	5.18	182.9	-	-
			10:45	7.9	11.02	84	NM	7.30	5.17	183.4	ND	ND
MW14	10/3/2017	W-171003-PS-08	14:05	2.6	10.44	209	20.56	8.59	7.25	96.4	-	-
	10/3/2017	W-171003-PS-09 (Duplicate)	14:10	4.0	10.48	209	10.94	6.07	0.32	94.5	-	-
			14:15	5.3	10.49	210	6.83	5.60	7.43	89.3	-	-
			14:20	6.6	10.48	210	6.56	5.52	7.45	88.2	-	-
			14:25	7.9	10.46	209	6.01	5.48	7.45	88.1	ND	ND
MW16	10/2/2017	W-171002-PS-03	15:15	3.0	12.09	99	13.47	9.37	7.86	46.3	0.4	ND
MW17	10/3/2017	W-171003-PS-11	16:55	2.6	11.97	470	NM	7.16	7.15	69.7	-	-
			17:00	4.0	12.74	481	2.26	6.11	7.38	60.5	-	-
			17:05	5.3	12.77	484	1.80	5.89	7.48	61.2	-	-
			17:10	6.6	12.79	486	NM	5.86	7.48	61.9	ND	ND

Table 2.3

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

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific	Turbidity (NTU)	Dissolved	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
						Conductance (µS)		Oxygen (mg/L)				
MW21	10/3/2017	W-171003-PS-10	15:45	2.6	11.15	228	19.57	10.10	7.14	122.3	-	-
			15:50	4.0	10.52	221	7.88	7.99	6.99	108.4	-	-
			15:55	5.3	10.41	218	3.78	6.78	6.98	104.7	-	-
			16:00	6.6	10.35	216	3.50	6.67	6.98	101.3	-	-
			16:05	7.9	10.35	216	3.21	6.56	6.98	99.8	ND	ND
MW22	10/4/2017	W-171004-PS-15	14:10	3.0	11.40	115	45.00	10.21	7.68	80.2	1.2	ND
MW23	10/2/2017	W-171002-PS-04	14:00	2.6	9.22	331	3.94	9.02	6.76	88.9	-	-
			14:05	4.0	9.27	331	3.22	8.47	6.67	96.3	-	-
			14:10	5.3	9.29	331	2.34	8.09	6.85	91.9	-	-
			14:15	6.6	9.29	331	2.23	7.75	6.94	90.1	-	-
			14:20	7.9	9.29	331	2.13	7.27	6.95	89.6	ND	ND
MW25	10/13/2017	W-171013-PS-26 (MS/MSD)	11:55	2.6	10.49	295	34.20	13.01	6.98	211	-	-
	10/13/2017	W-171013-PS-27 (Duplicate)	12:00	4.0	10.47	294	30.10	10.14	6.94	222	-	-
			12:05	5.3	10.48	295	28.70	9.22	6.96	223	-	-
			12:10	6.6	10.50	292	26.00	9.13	6.95	223	ND	ND
MW28	10/3/2017	W-171003-PS-07 (MS/MSD)	12:55	2.6	11.36	224	20.02	6.28	7.53	59.9	-	-
			13:00	4.0	11.94	230	11.34	6.20	7.48	62.6	-	-
			13:05	5.3	13.01	239	6.11	7.07	7.72	51.4	-	-
			13:10	6.6	13.38	244	5.50	7.21	7.71	55.4	-	-
			13:15	7.9	13.38	246	5.04	7.26	7.67	58.0	-	-
			13:20	9.2	13.39	246	4.98	7.26	7.67	58.1	ND	ND
MW30	10/5/2017	W-171005-PS-21	13:20	2.6	10.16	87	18.60	5.72	7.41	54.3	-	-
			13:25	4.0	10.06	76	13.05	2.47	6.38	131.1	-	-
			13:30	5.3	10.05	76	10.31	2.39	6.30	128.4	-	-
			13:35	6.6	10.05	76	6.39	2.38	6.29	128.5	-	-
			13:40	7.9	10.05	76	5.92	2.37	6.27	128.1	-	-
			13:45	9.2	10.05	75	5.88	2.40	6.28	128.6	1.2	ND
MW31	10/2/2017	W-171002-PS-05	15:05	2.6	10.05	134	NM	13.00	7.60	48.1	-	-
			15:10	4.0	10.05	132	NM	12.13	6.89	85.0	-	-
			15:15	5.3	10.02	128	13.44	11.08	6.76	92.6	-	-
			15:20	6.6	10.03	128	12.98	11.04	6.75	93.3	-	-
			15:25	7.9	10.04	126	12.35	11.00	6.75	93.8	0.4	ND

Table 2.3

**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)
EW11S	10/4/2017	W-171004-PS-14	10:05	2.6	9.57	195	15.20	6.18	6.72	111.1	-	-
			10:10	4.0	9.72	198	9.34	4.01	6.38	121.9	-	-
			10:15	5.3	9.79	195	9.44	3.83	6.30	121.8	-	-
			10:20	6.6	9.98	194	10.49	3.57	6.24	117.9	1.0	ND
EW11D	10/4/2017	W-171004-PS-13	9:15	2.6	9.60	366	NM	7.62	7.28	-47.6	-	-
			9:20	4.0	9.67	353	NM	3.86	7.13	-64.8	-	-
			9:25	5.3	9.69	350	34.1	3.41	7.12	-69.1	-	-
			9:30	6.6	9.69	351	30.9	3.00	7.12	-69.3	-	-
			9:35	7.9	9.68	353	29.2	2.91	7.13	-68.3	6.4	ND
EW13S	10/5/2017	W-171005-PS-20 (purged dry on 10/4/17)	16:28	6.7	11.68	503	2.85	5.03	7.17	-94.6	-	-
			16:32	7.7	12.38	500	3.54	1.29	6.87	-77.5	-	-
			16:37	9.0	12.67	505	4.76	1.03	6.90	-82.8	-	-
			16:42	10.4	12.85	496	9.28	0.82	6.98	-81.9	-	-
			16:47	11.7	12.90	475	13.90	0.76	6.90	-64.7	-	-
			16:52	13.0	13.30	463	24.90	0.73	6.89	-56.1	8.0	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)
- Wells MW20 and MW29 were not sampled due to the presence of LNAPL

Table 2.4

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

Sample Location	Sample Identification	Sample Date	Alkalinity, total (as CaCO3) mg/L	Chloride ³ mg/L	Hardness, carbonate mg/L	Nitrate (as N) mg/L	Sulfate ³ mg/L	TOC averages mg/L	Methane (dissolved) ug/L	Arsenic (dissolved) ug/L	Copper (dissolved) ug/L	Iron (dissolved) ug/L	Manganese (dissolved) ug/L	Zinc (dissolved) ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L
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
Semiconfined Aquifer (Lower)																				
EW11D	W-171004-PS-13	10/4/2017	159	11.5	220	7.7	79.4	2.5	14	0.31 J	1.4 JB	1290	66.9	11.9 J	0.18	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW3	W-171013-PS-24	10/13/2017	272	50.1	298	2.0	13.9	1.4	2.1	0.23 U	2.0	59.7 J	12.5	6.9 U	0.55	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW4	W-171003-PS-06	10/3/2017	93.7	37.0	134	0.26	30.0	0.47 U	7.2	1.2	1.2 JB	501	41.8	6.9 U	0.045 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW10	W-171005-PS-17	10/5/2017	157	26.2	184	0.083 J	20.2 B	30.8	13 B	0.53 J	3.0 B	626	903	6.9 U	4800	20	0.15 U	1.2	1.5	9.4
MW10 (Duplicate)	W-171005-PS-18	10/5/2017	157	25.9	182	0.081 J	20.1 F1	32.0	15 B	0.53 J	3.7 B	609	898	6.9 U	5000	19	0.15 U	1.3	1.5	9.5
MW12	W-171002-PS-02	10/2/2017	199	11.7	282	0.90	105	1.1	0.48 J	0.49 J	1.9 JB	46.7 U	328	6.9 U	32	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW14	W-171003-PS-08	10/3/2017	129	16.1	166	1.9	6.9	0.47 J	0.087 J	0.95 J	0.72 JB	46.7 U	1.1 J	6.9 U	0.046 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW14 (Duplicate)	W-171003-PS-09	10/3/2017	128	17.1	148	1.9	6.7	0.47 U	0.11 J	1.0	0.74 JB	46.7 U	0.93 J	6.9 U	0.046 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW17	W-171003-PS-11	10/3/2017	212	17.2 F1	390	3.5	125	0.47 U	0.096 J	0.74 J	1.8 JB	46.7 U	0.79 U	6.9 U	0.046 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U
MW23	W-171002-PS-04	10/2/2017	197	40.3	240	2.0	9.1	0.68 J	0.080 U	0.66 J	1.5 JB	46.7 U	0.79 U	6.9 U	0.046 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
Unconfined Aquifer (Upper)																				
EW11S	W-171004-PS-14	10/4/2017	65.2	9.4	129	8.0	39.1	3.9	0.22 J	0.31 J	2.9 B	164	65.0	7.9 J	0.25	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
EW13S	W-171005-PS-20	10/5/2017	276	34.5	276	0.075 JH	13.6	34.9	52	12.4	0.93 J	10400	2010	6.9 U	8700	16	0.15 U	1.0	1.0	14
MW1	W-171004-PS-16	10/4/2017	78.5	8.1	81.3	1.1	5.5	0.63 J	0.15 JB	0.23 U	1.1 JB	46.7 U	0.79 U	6.9 U	0.17	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW6S	W-171005-PS-23	10/5/2017	225	18.2	283	6.6 H	8.0	1.8	0.080 U	0.23 U	5.5	46.7 U	4.0	7.2 J	0.32	0.27 U	0.15 U	0.18 U	0.15 U	0.22 U
MW10S	W-171005-PS-19	10/5/2017	314	41.1	378	0.13 J	26.7	29.8	0.29 JB	0.50 J	2.9 B	770	1260	8.1 JB	4400	9.9	0.15 U	0.46 J	0.15 U	6.0
MW13	W-170929-PS-01	9/29/2017	59.0	1.4	47.6	0.56	3.3	2.0	0.25 JB	0.23 U	1.6 J	53.5 J	1.4 J	6.9 U	0.25 J	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW16	W-171002-PS-03	10/2/2017	43.7	4.0	45.7	0.73	6.6	0.82 J	0.11 J	0.23 U	2.5 B	46.7 U	2.0 J	8.8 J	0.045 U	0.28 U	0.15 U	0.18 U	0.15 U	0.22 U
MW21	W-171003-PS-10	10/3/2017	35.2	72.6	70.5	1.8	7.1	0.76 J	0.082 J	0.28 J	1.2 JB	46.7 U	0.79 U	6.9 U	0.045 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW22	W-171004-PS-15	10/4/2017	74.1	2.7	77.9	0.71	3.7	0.90 J	0.39 JB	0.23 U	2.6 B	198	11.9	8.5 JB	0.049 J	0.27 U	0.15 U	0.18 U	0.15 U	0.22 U
MW25	W-171013-PS-26	10/13/2017	79.5	36.1	125	3.2	7.0	0.84 J	0.17 U	0.23 U	1.3 J	46.7 U	0.79 U	6.9 U	0.051 J	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW25 (Duplicate)	W-171013-PS-27	10/13/2017	78.7	35.0	122	3.2	7.0	0.81 J	0.17 U	0.23 U	1.1 J	46.7 U	0.79 U	6.9 U	0.083 JB	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW28	W-171003-PS-07	10/3/2017	116	31.8	171	2.3	6.6	0.83 J	0.18 JB	0.38 J	1.4 J	46.7 U	0.79 U	6.9 U	0.16	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW30	W-171005-PS-21	10/5/2017	48.4	0.55	52.3	2.0 H	4.6	1.6	0.11 J	0.23 U	1.1 J	49.4 J	31.5	6.9 U	2.1	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW31	W-171003-PS-05	10/3/2017	104	1.4	93.9	0.54	1.3	0.50 J	1.9	0.51 J	5.0 B	1630	34.5	9.7 J	0.044 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 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
- NA - Not analyzed

- Concentration exceeds the ES
- Concentration exceeds the PAL



Wells MW20 and MW29 were not sampled due to the presence of LNAPL

Table 3.1

**Groundwater Analytical Data - Residential Wells and Onsite Supply Well
Penta Wood Products Superfund Site
Siren, Wisconsin**

Sample Location	Sample Identification	Date	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		ES ¹	1	100	5	700	800	2000
		PAL ²	0.1	10	0.5	140	160	400
DW01	W-171020-PS-R8	10/20/2017	0.046 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U
DW01 (Dup)	W-171020-PS-R9	10/20/2017	0.046 U	0.27 U	0.15 U	0.18 U	0.15 U	0.22 U
RW1	W-171020-PS-R2	10/20/2017	0.048 U	0.27 U	0.15 U	0.18 U	0.37 J	0.22 U
RW2	W-171020-PS-R3	10/20/2017	0.046 U	0.23 U	0.15 U	0.18 U	0.33 J	0.22 U
RW3	W-171020-PS-R5	10/20/2017	0.045 U	0.24 U	0.15 U	0.18 U	0.29 J	0.22 U
RW4	W-171020-PS-R4	10/20/2017	0.045 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
RW5	W-171020-PS-R1	10/20/2017	0.044 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
RW6	W-171020-PS-R6	10/20/2017	0.044 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U

Notes:

- ¹ - Enforcement Standard (ES) criteria adapted from Table 1 referred to and incorporated by NR 140.10
- ² - Preventive Action Limit (PAL) criteria adapted from Table 1 referred to and incorporated by NR 140.10
- 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
- Dup - Duplicate sample
-  - Concentration exceeds the ES
-  - Concentration exceeds the PAL

Appendix A

Historical Site Data

Appendix A.1

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

DW01	Date	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	
																														ug/L
DW01	9/24/03	N	0.5 U		1 U		2		50 UJ			5 U		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								292	49 =		309	1.8 J	7.9 R		1.54 J	
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										
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 UH	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										
DW01	4/18/17	N													0.020 J	0.063 U	0.29 JB	0.26 U	0.23 U	0.24 U										
DW01	4/18/17	FD													0.022 J	0.063 U	0.28 U	0.26 U	0.23 U	0.24 U										
DW01	10/20/17	N													0.046 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U										
DW01	10/20/17	FD													0.046 U	0.27 U	0.15 U	0.18 U	0.15 U	0.22 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

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		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	
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		
EW11D	4/19/17	N	35	5.0 U		0.58 J		2930 B			129 B		19.0 J		0.13	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	152		11.4	238		5.2	97.3	3.2		
EW11D	10/4/17	N	14	0.31 J		1.4 JB		1290			66.9		11.9 J		0.18	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		159	11.5	220		7.7	79.4	2.5		
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		
EW11S	4/19/17	N	0.26 J	5.0 U		1.8 J		445 B			185 B		20.0 U		0.2	0.23 U	0.50 U	1.0 U	1.0 U	2.0 U	45.9		9.2	122		8.6	36.8	3.5		
EW11S	10/4/17	N	0.22 J	0.31 J		2.9 B		164			65		7.9 J		0.25	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		65.2	9.4	129		8	39.1	3.9		
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		
EW13S	4/20/17	N	32	13.7		2.2 B		10600 B			2260		20.0 U		5100	20	0.50 U	0.96 J	0.90 J	13	240		29.1	294		0.10 UH	16.1	37.2		
EW13S	10/5/17	N	52	12.4		0.93 J		10400			2010		6.9 U		8700	16	0.15 U	1	1	14		276	34.5	276		0.075 JH	13.6	34.9		
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		
Location	Date²	Type³																												
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															

Appendix A.1

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

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		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	
MW1	9/21/04	FD	10.0 U	0.442		0.470 J		13.6 J					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															
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		
MW1	4/18/17	N	0.50 U	0.37 J		2.0 U		100 U			5.0 U		20.0 U		0.12	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	64.4		3.9	84		0.39	5.5	0.91 J		
MW1	10/4/17	N	0.15 JB	0.23 U		1.1 JB		46.7 U			0.79 U		6.9 U		0.17	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		78.5	8.1	81.3		1.1	5.5	0.63 J		
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

Appendix A.1

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

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	
DW01	9/24/03	N	0.5 U																										
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			250 B					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		
MW10	4/24/17	N		0.76 J		5.9 B		756 B		897 B		20.0 U		7600	20						142		234						
MW10	10/5/17	N	13 B	0.53 J		3.0 B		626		903		6.9 U		4800	20	0.15 U	1.2	1.5	9.4		157	26.2	184		0.083 J	20.2 B	30.8		
MW10	10/5/17	FD	15 B	0.53 J		3.7 B		609		898		6.9 U		5000	19	0.15 U	1.3	1.5	9.5		157	25.9	182		0.081 J	20.1 F1	32		
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														
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		
MW10S	4/24/17	N		0.74 J		3.3 B		394 B		1340 B		20.0 U		4300	11														
MW10S	4/24/17	FD		0.65 J		3.3 B		406 B		1380 B		20.0 U		3300	10						195								
MW10S	10/5/17	N	0.29 JB	0.50 J		2.9 B		770		1260		8.1 JB		4400	9.9	0.15 U	0.46 J	0.15 U	6		314	41.1	378		0.13 J	26.7	29.8		
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 =				

Appendix A.1

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

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		N	0.5 U		1 U	1.3	2	25 U	50 UJ	25 U		5 UJ	15 U	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	
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	
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															

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DW01	9/24/03	N	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
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			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			363.3928	2.65 J	59.9		3.6 J	
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	
MW12	4/19/17	N	0.13 J	0.46 J		1.2 JB		10.8 JB				362		20.0 U		14	0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	201		10.1	346			1	112	1	
MW12	10/2/17	N	0.48 J	0.49 J		1.9 JB		46.7 U				328		6.9 U		32	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		199	11.7	282			0.9	105	1.1	
MW13	10/8/97	N	10 U	0.7 J		2 U		3.32 U			6.7 J			27.3				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																				

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DW01	9/24/03	N	0.5 U	0.18	1 U	14	2	140	50 UJ	56300		5 UJ	1300	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		
																													Compound ¹	Units
MW13	4/23/01	N	0.12 U	0.18		14		25 U		56300			110		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	
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	
MW13	4/19/17	N	0.50 U	5.0 U		1.1 J		100 U					0.28 JB		20.0 U	0.24	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U		53.7	0.76 J	60		0.5	4.4	2.2	
MW13	9/29/17	N	0.25 JB	0.23 U		1.6 J		53.5 J					1.4 J		6.9 U	0.25 J	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		59	1.4	47.6		0.56	3.3	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															
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	
MW14	4/20/17	N	0.50 U	1.0 J		0.37 JB		100 U					0.33 J		20.0 U	0.10 U	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U		131	14.8	186		3.5	7	0.47 J	
MW14	4/20/17	FD	0.50 U	0.99 J		2.0 U		100 U					0.64 J		20.0 U	0.10 U	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U		133	14.7	188		1.7	7	0.49 J	
MW14	10/3/17	N	0.087 J	0.95 J		0.72 JB		46.7 U					1.1 J		6.9 U	0.046 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		129	16.1	166		1.9	6.9	0.47 J	
MW14	10/3/17	FD	0.11 J	1		0.74 JB		46.7 U					0.93 J		6.9 U	0.046 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		128	17.1	148		1.9	6.7	0.47 U	
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														
MW15	4/25/01	N4				0.42		25 U		25 U			15 U		16															
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	

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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
DW01	9/24/03	N	0.5 U																									
MW15	9/23/03	N2	0.5 U																									
MW15	9/21/04	N	10.0 U	0.279																								
MW15	9/21/04	N2																										
MW15	9/29/05	N	2.0 U	0.11 U																								
MW15	9/29/05	N2																										
MW15	9/27/06	N	2.0 UJ	0.11 U																								
MW15	9/19/07	N	2.0 UJ	0.10 U																								
MW15	5/20/08	N	2.0 UJ	0.18 J																								
MW15	10/21/08	N	2.0 UJ	0.10 UJ																								
MW15	6/2/09	N	0.8 UJ	0.1 UJ																								
MW15	10/7/09	N	0.83 UJ	0.1 UJ																								
MW15	5/18/10	N	1.3 U	0.1 U																								
MW15	10/7/10	N	1.3 U	2.32 J																								
MW15	6/28/11	N	0.9 U	0.1 U																								
MW15	10/18/11	N	0.50 U	0.10 U																								
MW15	5/22/12	N	0.50 U	0.024 J																								
MW15	10/16/12	N	0.50 U	0.094 U																								
MW15	5/21/13	N	0.50 U	0.025 J																								
MW15	10/8/13	N	0.50 U	0.095 U																								
MW15	5/13/14	N		0.095 U																								
MW15	9/23/14	N	0.070 U	0.054 J	1.1 JB																							
MW15	4/20/15	N	0.070 U	0.015 U	0.78 JB																							
MW15	10/12/15	N	0.080 U	0.54 J																								
MW15	4/5/16	N	0.080 U	0.70 J																								
MW16	10/14/97	N	10 U	1 U																								
MW16	10/14/97	N2		1 U																								
MW16	4/6/00	N		0.5 U																								
MW16	4/23/01	N	0.12 U	0.11 U																								
MW16	4/23/01	N2	0.12 U																									
MW16	9/10/01	N	10 U	0.17																								
MW16	9/10/01	N2																										
MW16	8/6/02	N	10.0 U	0.035 J																								
MW16	8/6/02	N2																										
MW16	9/23/03	N	0.5 U	0.089 J																								
MW16	9/23/03	N2	0.5 U																									
MW16	9/21/04	N	10.0 U	0.0962 J																								
MW16	9/21/04	N2																										
MW16	9/29/05	N	2.0 U	0.11 U																								
MW16	9/29/05	N2																										
MW16	9/27/06	N	2.0 UJ	0.046 J																								
MW16	9/18/07	N	2.0 UJ	0.20 J																								
MW16	10/22/08	N	2.0 UJ	0.08 J																								
MW16	10/6/09	N	0.83 UJ	0.1 UJ																								
MW16	10/5/10	N	1.3 U	0.1 U																								
MW16	10/19/11	N	0.50 U	0.095 U																								

Appendix A.1

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Well ID	Date	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)	
DW01	9/24/03	N	0.5 U	0.099 U	1 U	0.66 J	2	10 U	50 UJ	180	3600 =	5 UJ	17	30	0.05 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U	mg/l	250	66.9		110.8	1.48	2 U		1.5	
MW16	10/16/12	N	0.50 U	0.099 U		0.66 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		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														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		
MW16	4/19/17	N	0.50 U	5.0 U		1.6 JB		7.7 JB			0.80 J		20.0 U		0.10 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	39		3.3	60		0.57	4.5	2		
MW16	10/2/17	N	0.11 J	0.23 U		2.5 B		46.7 U			2.0 J		8.8 J		0.045 U	0.28 U	0.15 U	0.18 U	0.15 U	0.22 U		43.7	4	45.7		0.73	6.6	0.82 J		
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																										
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		
MW17	4/20/17	N	0.50 U	0.71 J		0.77 JB		100 U			0.45 J		20.0 U		0.10 U	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	201		16.1	460		2.2	164	0.48 J		
MW17	4/20/17	FD	0.50 U	0.68 J		0.65 JB		100 U			0.58 J		20.0 U		0.10 U	0.24 U	0.50 U	1.0 U	1.0 U	2.0 U	223		16.1	470		2.2	165	0.43 J		
MW17	10/3/17	N	0.096 J	0.74 J		1.8 JB		46.7 U			0.79 U		6.9 U		0.046 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U		212	17.2 F1	390		3.5	125	0.47 U		
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	

Appendix A.1

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

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		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
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		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
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																									
MW2	10/9/97	N	10 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									0.1 U	1 U	1 U	1 U									

Appendix A.1

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

DW	Date	Compound ¹ Units	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)	
			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	ug/L	ug/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	
MW2	4/5/00	N		0.5 U											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	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																
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		
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		
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	

Appendix A.1

Historical Groundwater Analytical Data
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Siren, Wisconsin

DW01	9/24/03	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 CaCO ₃)	Alkalinity, total (as CaCO ₃)	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		N	0.5 U		1 U			9.5 U	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
MW21	2/9/98	N2			1 U			9.5 U							32.6 U		0.1 U	1 U	1 U	1 U									
MW21	5/14/02	N						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		
MW21	4/18/17	N	0.50 U	5.0 U		0.44 J		100 U			5.0 U		20.0 U		0.017 Jp	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U		26.7	78.6	92	1.8	7.5	0.77 J		
MW21	10/3/17	N	0.082 J	0.28 J		1.2 JB		46.7 U			0.79 U		6.9 U		0.045 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U		35.2	72.6	70.5	1.8	7.1	0.76 J		
MW22	2/9/98	N	13		1 U			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			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														
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

Appendix A.1

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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	
DW01	9/24/03	N	0.5 U																										
MW22	6/29/11	N	0.9 U	0.1 U		2 UJ																							
MW22	10/18/11	N	0.50 U	0.098 U		0.45 J																							
MW22	5/22/12	N	0.50 U	0.084 J		2.0 U																							
MW22	10/16/12	N	0.50 U	0.096 U		0.59 J																							
MW22	5/22/13	N	0.50 U	0.11		2.0 U																							
MW22	10/8/13	N	0.50 U	0.14		0.24 J																							
MW22	5/14/14	N		0.093 J																									
MW22	9/24/14	N	0.070 U	0.27	0.22 J																								
MW22	4/21/15	N	0.070 U	0.072 J	0.60 JB																								
MW22	10/13/15	N	0.080 U	0.49 U		1.2 J																							
MW22	4/6/16	N	0.080 U	0.49 U		0.92 J																							
MW22	7/20/16	N	0.080 U	0.49 U		3.4																							
MW22	10/12/16	N	0.080 U	0.41 J		1.7 JB																							
MW22	1/18/17	N	0.080 JB	0.44 J		3.4 B																							
MW22	4/21/17	N	0.50 U	5.0 U		2.6 B																							
MW22	10/4/17	N	0.39 JB	0.23 U		2.6 B																							
MW23	2/26/98	N	57	1 U		2 U																							
MW23	2/26/98	N2		1 U		2 U																							
MW23	9/11/01	N	10 U	0.49		1.2																							
MW23	9/11/01	N2				0.62 J																							
MW23	4/13/16	N	0.080 U	0.58 J		0.75 U																							
MW23	7/20/16	N	0.080 U	0.70 J		0.75 U																							
MW23	10/11/16	N	0.080 U	0.71 J		0.90 JB																							
MW23	1/19/17	N	0.080 U	0.75 J		0.64 JB																							
MW23	4/19/17	N	0.50 U	0.59 J		2.0 U																							
MW23	10/2/17	N	0.080 U	0.66 J		1.5 JB																							
MW24	2/8/98	N	10 U	4 U		4.3																							
MW24	2/8/98	N2		4 U		2 U																							
MW24	12/6/00	N	0.53 U	123 J		1.6																							
MW24	12/6/00	N2	0.53 U			0.29																							
MW24	4/24/01	N	0.1 U	0.11		2.4																							
MW24	4/24/01	N2	0.1 U			0.29																							
MW24	4/7/16	N	0.11 J	0.49 U		3.0																							
MW25	2/9/98	N	17	1		6.6																							
MW25	2/9/98	N2		1 =		2 U																							
MW25	4/11/16	N	0.080 U	1.1 J		17.6 B																							
MW25	7/26/16	N	0.080 U	0.35 U		1.3 J																							
MW25	10/10/16	N	0.080 U	0.35 U		0.62 JB																							
MW25	10/10/16	D	0.080 U	0.35 U		0.71 JB																							
MW25	1/18/17	N	0.080 U	0.35 U		1.2 JB																							
MW25	4/18/17	N	0.50 U	5.0 U		1.4 J																							
MW25	10/13/17	N	0.17 U	0.23 U		1.3 J																							
MW25	10/13/17	FD	0.17 U	0.23 U		1.1 J																							
MW26	12/6/00	N	0.65 U	118 J		1.1																							
MW26	12/6/00	N2	0.65 U	115 J		2.8																							

Appendix A.1

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

Well	Date	Compound	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		
		1																														
DW01	9/24/03	N	0.5 U			1 U	4	2	25 U	50 UJ	25 U		5 UJ	89	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		
MW26	12/6/00	N3	0.7 U													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		
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		

Appendix A.1
 Historical Groundwater Analytical Data
 Penta Wood Products Superfund Site
 Siren, Wisconsin

		Compound ¹		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	
		Units																													
DW01	9/24/03	N	0.5 U			1 U		2		6.2 J		777 J	35100 J		10 UJ		20 UJ	1 U	0.5 U	2.0 U	5.0 U		250	66.9		110.8	1.48	2 U		1.5	
MW26	10/22/08	N	2.0 UJ	0.1 U			2 UJ								10 UJ		20 UJ	1 U	0.5 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					1.1 U	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		
MW28	4/20/17	N	0.50 U	0.55 J			1.0 JB		11.9 JB				4.0 J	20.0 U		22	0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	123	22.5	186		3.3	7.1	1.6			
MW28	10/3/17	N	0.18 JB	0.38 J			1.4 J		46.7 U				0.79 U	6.9 U		0.16	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		116	31.8	171		2.3	6.6	0.83 J		
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	
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		
MW3	10/8/97	N	10 U	1 U			2 U		2 U		257			10.9				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		1 U	1 U										
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	

Appendix A.1

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

Well	Date	Compound ¹ Units	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 CaCO ₃)	Alkalinity, total (as CaCO ₃)	Chloride	Hardness, carbonate	Hardness	Nitrate (as N)	Sulfate	TOC averages	Total organic carbon (TOC)	
			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	ug/L	ug/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			25 U		142			7.9	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	
MW3	4/25/01	N2				1 U		2.2 U		930			31		0.11 U	6.1 U	0.26 U	0.44 U	0.5 U	0.4 U	1.2 U		440	58		480	4.42 =	14		1.1
MW3	9/13/01	N	10 U	0.092 J		0.29 U		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		
MW3	4/20/17	N	1.3	5.0 U		1.7 JB		83.6 JB			23		20.0 U		0.47	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	232		45.5	358		1.8 H	15	1.4		
MW3	10/13/17	N	2.1	0.23 U		2		59.7 J			12.5		6.9 U		0.55	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U		272	50.1	298		2	13.9	1.4		
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		
MW30	4/21/17	N	0.50 U	5.0 U		0.95 JB		8.1 JB			37.7		20.0 U		3.6	0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	46.2		0.57 J	250		1.1	5.4	0.93 J		
MW30	10/5/17	N	0.11 J	0.23 U		1.1 J		49.4 J			31.5		6.9 U		2.1	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		48.4	0.55	52.3		2.0 H	4.6	1.6		
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		
MW31	4/18/17	N	0.21 J	5.0 U		0.58 J		100 U			0.63 JB		20.0 U		0.026 Jp	0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	111		0.68 J	136		0.73	2.8	0.72 J		
MW31	10/3/17	N	1.9	0.51 J		5.0 B		1630			34.5		9.7 J		0.044 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		104	1.4	93.9		0.54	1.3	0.50 J		
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		

Appendix A.1

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

DW01	Date	Compound ¹ Units	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)
			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	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	9/24/03	N	0.5 U		1 U	2.0 U	2	85.4 JB	50 UJ		39	5 UJ	20.0 U	30	0.05 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U	82.8	250	66.9	170	110.8	1.48	2 U	0.60 J	1.5
MW4	4/21/17	N	10	1.2 J		1.2 JB					41.8		6.9 U		0.045 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U		93.7	37	134		0.26	30	0.47 U	
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														
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 UH	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										0.1 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

Appendix A.1

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

DW01	Date	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	9/24/03	N	0.5 U		1 U		2	10 UJ	50 UJ	390		5 UJ	190	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	
MW6S	9/20/07	FD	2.7	0.14 J		1.0 UJ		10 UJ		510			200		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				
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		
MW6S	4/24/17	N		5.0 U		3.3 B		8.3 JB			7.4 B		20.0 U		0.13	0.23 U					198			268						
MW6S	10/5/17	N	0.080 U	0.23 U		5.5		46.7 U			4		7.2 J		0.32	0.27 U	0.15 U	0.18 U	0.15 U	0.22 U		225	18.2	283		6.6 H	8	1.8		
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	1.0 U	2.0 U*		200 J	12			1.8 J	120		0.75 J	
MW7	10/9/13	N2													0.0935 U															
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		

Appendix A.1

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

DW01	9/24/03	N	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 CaCO ₃)	Alkalinity, total (as CaCO ₃)	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	ug/L	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
			0.5 U			1 U		2	16.0 U	50 UJ			5 UJ	7.3 U	30	0.05 J	1 U	0.25 U	2.5 U	2.5 U	2.5 U		250	66.9	229	110.8	1.48	2 U		1.5			
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	237	1.5	46.2	0.85 J	0.58 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					
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																	
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																	
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			

Appendix A.1

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

Well	Date	Compound ¹ Units	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)
			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	ug/L	ug/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	8 U	50 UJ			5 UJ	16.7 U	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
MW9	10/6/10	N	1.3 U	0.1 U		2 U				109 J	8540		16.7 U		20 U	1.0 U	0.1 U	0.4 U	0.4 U	1 U		27			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			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			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				3.8 J	12		1.6 J
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
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									
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									

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

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		N	0.5 U		1 U		2		50 UJ													250	66.9							1.5
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								
RW01	4/5/16	N															0.015 U	0.060 U	0.35 U	0.25 U	0.23 U	0.52 U								
RW01	4/19/17	N															0.015 J	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U								
RW01	10/20/17	N															0.048 U	0.27 U	0.15 U	0.18 U	0.37 J	0.22 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													

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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)
DW01	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			2		50 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
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									
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									
RW02	4/17/17	N												0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U									
RW02	10/20/17	N												0.046 U	0.23 U	0.15 U	0.18 U	0.33 J	0.22 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														

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Siren, Wisconsin

DW01	9/24/03	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	ug/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		N	0.5 U		1 U		2		50 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
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									
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									
RW03	4/17/17	N													0.015 U	0.061 U	0.28 U	0.26 U	0.23 U	0.24 U									
RW03	10/20/17	N													0.045 U	0.24 U	0.15 U	0.18 U	0.29 J	0.22 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									

Appendix A.1

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)
DW01	9/24/03	N	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
			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	
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										
RW04	4/17/17	N												0.015 U	0.060 U	0.34 JB	0.26 U	0.23 U	0.24 U										
RW04	10/20/17	N												0.045 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U										
RW05	5/4/04	N												0.0935 U	5.00 U	0.500 U	5.00 U	5.00 U	5.00 U										
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										

Appendix A.1

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

Well	Date	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	ug/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					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
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									
RW05	4/17/17	N													0.015 U	0.060 U	0.39 JB	0.26 U	0.23 U	0.24 U									
RW05	10/20/17	N													0.044 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 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									
RW06	4/18/17	N													0.015 U	0.060 U	0.28 U	0.26 U	0.23 U	0.24 U									
RW06	10/20/17	N													0.044 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U									

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	MW29
Sep-01	0.01	0.27	0.51	0.11	NA
May-02	0.00	0.29	0.23	0.00	NA
Aug-02	0.00	0.33	0.22	0.00	NA
May-03	0.00	0.00	0.00	0.00	NA
Sep-03	0.00	0.32	0.24	0.04	NA
May-04	0.00	0.45	0.36	0.35	NA
Sep-04	0.21	0.54	0.67	0.52	NA
May-05	0.29	0.48	0.63	0.36	NA
Sep-05	0.87	0.06	0.83	1.15	NA
May-06	0.00	0.00	0.29	0.00	NA
Sep-06	0.00	0.05	0.80	0.69	NA
Apr-07	0.58	0.04	0.74	1.22	NA
May-07	0.58	0.03	0.54	1.20	NA
Sep-07	0.04	0.16	1.07	0.00	NA
May-08	0.40	1.19	0.90	1.71	NA
Oct-08	0.14	0.04	0.00	0.00	NA
Jun-09	0.54	1.58	1.60	1.45	NA
Oct-09	0.63	1.92	1.46	1.02	NA
May-10	0.51	2.01	1.10	0.85	NA
Oct-10	0.00	0.57	0.59	0.00	NA
Jun-11	0.00	0.42	0.79	0.00	NA
Oct-11	0.00	0.53	1.07	0.00	NA
May-12	0.69	0.79	0.80	2.17	NA
Aug-12	0.04	0.43	0.89	0.30	NA
Oct-12	0.00	0.45	0.91	0.88	NA
Dec-12	0.02	0.44	1.06	0.95	NA
May-13	0.17	0.53	0.94	1.08	NA
Oct-13	0.00	0.70	1.25	0.81	NA
May-14	0.00	0.79	0.22	0.22	NA
Sep-14	0.00	0.56	0.30	0.00	NA
2/13/15	0.00	0.56	0.24	0.00	NA
2/20/15	0.00	0.53	0.23	0.00	NA
3/24/15	0.00	0.34	0.52	0.00	NA
4/16/15	0.00	0.58	NM	0.00	NA
5/14/15	0.00	0.57	NM	0.00	NA
10/12/15	0.00	0.42	0.07	0.01	NA
4/4/16	0.00	0.66	0.25	0.01	0.00
7/18/16	0.00	0.52	0.00	0.00	0.00
10/7/16	0.00	0.67	0.01	0.01	0.00
1/11/17	0.00	NM	0.18	0.02	0.00
4/17/17	0.00	0.53	0.27	0.01	0.47
7/13/17	0.00	0.51	0.10	0.01	0.15
9/28/17	0.00	NM	NM	0.01	0.45

Notes:

NM - Not Measured

NA - Not Applicable

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)	Liquids[‡] (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	2,759	2,759

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.
- ‡ - Prior to 2017, all liquids disposed were water. In 2017, liquids disposed were ferric sulfate water treatment chemicals.

lb - pounds

**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	

**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	

**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	

**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	

**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
						Measurements recorded immediately after LNAPL removal, groundwater extraction system shutdown pending carbon change-out
EW10	12/23/2014	104.75	104.06	0.69	4.0	
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	

**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	

**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	

**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

Groundwater Sample Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-134867-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson

Jodie Bracken

Authorized for release by:
10/12/2017 4:37:00 PM
Jodie Bracken, Project Management Assistant II
jodie.bracken@testamericainc.com

Designee for
Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

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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.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Job ID: 500-134867-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-134867-1

Receipt

The sample was received on 9/30/2017 11:35 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° 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

Method(s) RSK-175: The associated RSK samples were analyzed following the requirements of a revised RSK SOP. Samples were analyzed to avoid hold time violations while the SOP is still waiting final approval signatures. W-170929-PS-01 (500-134867-1), (CCV 240-298530/19), (CCVRT 240-298530/3), (LCS 240-298530/5), (LCSD 240-298530/9) and (MB 240-298530/4)

Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-298530.

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 RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch 224782 recovered outside control limits for all analytes:

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

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

Organic Prep

Method(s) 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 180-224782.

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

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Client Sample ID: W-170929-PS-01

Lab Sample ID: 500-134867-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.25	J B	0.50	0.080	ug/L	1	1	RSK-175	Total/NA
Pentachlorophenol	0.27	J *	0.49	0.23	ug/L	20	1	8151A	Total/NA
Copper	1.6	J	2.0	0.50	ug/L	1	1	6020A	Dissolved
Iron	53.5	J	100	46.7	ug/L	1	1	6020A	Dissolved
Manganese	1.4	J	2.5	0.79	ug/L	1	1	6020A	Dissolved
Hardness as calcium carbonate	47.6		1.3	0.66	mg/L	1	1	SM 2340B	Total/NA
Chloride	1.4		0.20	0.17	mg/L	1	1	300.0	Total/NA
Nitrate as N	0.56		0.20	0.068	mg/L	1	1	300.0	Total/NA
Sulfate	3.3		0.20	0.095	mg/L	1	1	300.0	Total/NA
Total Organic Carbon - Duplicates	2.0		1.0	0.47	mg/L	1	1	9060A	Total/NA
Alkalinity	59.0		5.0	3.7	mg/L	1	1	SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-134867-1	W-170929-PS-01	Water	09/29/17 10:50	09/30/17 11:35

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Client Sample ID: W-170929-PS-01

Lab Sample ID: 500-134867-1

Date Collected: 09/29/17 10:50

Matrix: Water

Date Received: 09/30/17 11:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/10/17 21:41	1
Toluene	<0.15		0.50	0.15	ug/L			10/10/17 21:41	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/10/17 21:41	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/10/17 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		10/10/17 21:41	1
Toluene-d8 (Surr)	90		75 - 120		10/10/17 21:41	1
4-Bromofluorobenzene (Surr)	92		72 - 124		10/10/17 21:41	1
Dibromofluoromethane	107		75 - 120		10/10/17 21:41	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		10/02/17 10:24	10/12/17 12:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	55		27 - 110	10/02/17 10:24	10/12/17 12:06	1
Phenol-d5 (Surr)	43		20 - 100	10/02/17 10:24	10/12/17 12:06	1
Nitrobenzene-d5 (Surr)	82		36 - 120	10/02/17 10:24	10/12/17 12:06	1
2-Fluorobiphenyl (Surr)	80		34 - 110	10/02/17 10:24	10/12/17 12:06	1
2,4,6-Tribromophenol (Surr)	60		40 - 145	10/02/17 10:24	10/12/17 12:06	1
Terphenyl-d14 (Surr)	95		40 - 145	10/02/17 10:24	10/12/17 12:06	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.25	J B	0.50	0.080	ug/L			10/11/17 13:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	101		76 - 121		10/11/17 13:08	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.27	J *	0.49	0.23	ug/L		10/03/17 15:30	10/04/17 14:49	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	92		20 - 100	10/03/17 15:30	10/04/17 14:49	20

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/02/17 07:23	10/03/17 19:14	1
Copper	1.6	J	2.0	0.50	ug/L		10/02/17 07:23	10/04/17 12:39	1
Iron	53.5	J	100	46.7	ug/L		10/02/17 07:23	10/03/17 19:14	1
Manganese	1.4	J	2.5	0.79	ug/L		10/02/17 07:23	10/03/17 19:14	1
Zinc	<6.9		20.0	6.9	ug/L		10/02/17 07:23	10/03/17 19:14	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	47.6		1.3	0.66	mg/L		10/02/17 07:24	10/03/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4		0.20	0.17	mg/L			09/30/17 19:59	1

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Client Sample ID: W-170929-PS-01

Lab Sample ID: 500-134867-1

Date Collected: 09/29/17 10:50

Matrix: Water

Date Received: 09/30/17 11:35

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.56		0.20	0.068	mg/L			09/30/17 19:59	1
Sulfate	3.3		0.20	0.095	mg/L			09/30/17 19:59	1
Total Organic Carbon - Duplicates	2.0		1.0	0.47	mg/L			10/09/17 03:18	1
Alkalinity	59.0		5.0	3.7	mg/L			10/05/17 17:02	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

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
*	RPD of the LCS and LCSD exceeds the control limits
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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

GC/MS VOA

Analysis Batch: 404676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	8260B	
MB 500-404676/6	Method Blank	Total/NA	Water	8260B	
LCS 500-404676/4	Lab Control Sample	Total/NA	Water	8260B	
500-134867-1 MS	W-170929-PS-01	Total/NA	Water	8260B	
500-134867-1 MSD	W-170929-PS-01	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 403526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	3510C	
MB 500-403526/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-403526/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-403526/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 404243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-403526/1-A	Method Blank	Total/NA	Water	8270D	403526
LCS 500-403526/2-A	Lab Control Sample	Total/NA	Water	8270D	403526
LCSD 500-403526/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	403526

Analysis Batch: 405058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	8270D	403526

GC VOA

Analysis Batch: 298530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	RSK-175	
MB 240-298530/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-298530/5	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-298530/9	Lab Control Sample Dup	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 224782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	8151A	
MB 180-224782/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-224782/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 180-224782/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 224839

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	8151A	224782
MB 180-224782/1-A	Method Blank	Total/NA	Water	8151A	224782
LCS 180-224782/2-A	Lab Control Sample	Total/NA	Water	8151A	224782
LCSD 180-224782/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	224782

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Metals

Prep Batch: 403479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Dissolved	Water	3005A	
MB 500-403479/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-403479/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 403481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	3010A	

Analysis Batch: 403697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	SM 2340B	403481

Analysis Batch: 403898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Dissolved	Water	6020A	403479
MB 500-403479/1-A	Method Blank	Total Recoverable	Water	6020A	403479
LCS 500-403479/2-A	Lab Control Sample	Total Recoverable	Water	6020A	403479

Analysis Batch: 404072

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Dissolved	Water	6020A	403479
MB 500-403479/1-A	Method Blank	Total Recoverable	Water	6020A	403479
LCS 500-403479/2-A	Lab Control Sample	Total Recoverable	Water	6020A	403479

General Chemistry

Analysis Batch: 403659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	300.0	
MB 500-403659/23	Method Blank	Total/NA	Water	300.0	
LCS 500-403659/34	Lab Control Sample	Total/NA	Water	300.0	
500-134867-1 MS	W-170929-PS-01	Total/NA	Water	300.0	
500-134867-1 MSD	W-170929-PS-01	Total/NA	Water	300.0	

Analysis Batch: 404235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	SM 2320B	
MB 500-404235/28	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-404235/29	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 404598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-134867-1	W-170929-PS-01	Total/NA	Water	9060A	
MB 500-404598/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404598/5	Lab Control Sample	Total/NA	Water	9060A	

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-134867-1	W-170929-PS-01	94	90	92	107
500-134867-1 MS	W-170929-PS-01	86	94	91	98
500-134867-1 MSD	W-170929-PS-01	86	91	90	99
LCS 500-404676/4	Lab Control Sample	87	92	89	99
MB 500-404676/6	Method Blank	92	91	92	107

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-134867-1	W-170929-PS-01	55	43	82	80	60	95
LCS 500-403526/2-A	Lab Control Sample	81	59	83	82	105	93
LCS 500-403526/3-A	Lab Control Sample Dup	79	56	86	80	101	91
MB 500-403526/1-A	Method Blank	67	58	82	85	98	102

Surrogate Legend

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

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroet (76-121)
500-134867-1	W-170929-PS-01	101
LCS 240-298530/5	Lab Control Sample	99
LCS 240-298530/9	Lab Control Sample Dup	105
MB 240-298530/4	Method Blank	104

Surrogate Legend

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

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPA1 (20-100)	DCPA2 (20-100)
500-134867-1	W-170929-PS-01	92	82
LCS 180-224782/2-A	Lab Control Sample	76	75
LCSD 180-224782/3-A	Lab Control Sample Dup	46	49
MB 180-224782/1-A	Method Blank	68	70

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

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

Lab Sample ID: MB 500-404676/6
Matrix: Water
Analysis Batch: 404676

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/10/17 13:17	1
Toluene	<0.15		0.50	0.15	ug/L			10/10/17 13:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/10/17 13:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/10/17 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 126		10/10/17 13:17	1
Toluene-d8 (Surr)	91		75 - 120		10/10/17 13:17	1
4-Bromofluorobenzene (Surr)	92		72 - 124		10/10/17 13:17	1
Dibromofluoromethane	107		75 - 120		10/10/17 13:17	1

Lab Sample ID: LCS 500-404676/4
Matrix: Water
Analysis Batch: 404676

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	53.1		ug/L		106	70 - 120
Toluene	50.0	50.2		ug/L		100	70 - 125
Ethylbenzene	50.0	51.7		ug/L		103	70 - 120
Xylenes, Total	100	98.1		ug/L		98	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		75 - 126
Toluene-d8 (Surr)	92		75 - 120
4-Bromofluorobenzene (Surr)	89		72 - 124
Dibromofluoromethane	99		75 - 120

Lab Sample ID: 500-134867-1 MS
Matrix: Water
Analysis Batch: 404676

Client Sample ID: W-170929-PS-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	50.0		ug/L		100	70 - 120
Toluene	<0.15		50.0	49.1		ug/L		98	70 - 125
Ethylbenzene	<0.18		50.0	50.6		ug/L		101	70 - 120
Xylenes, Total	<0.22		100	95.9		ug/L		96	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
Toluene-d8 (Surr)	94		75 - 120
4-Bromofluorobenzene (Surr)	91		72 - 124
Dibromofluoromethane	98		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

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

Lab Sample ID: 500-134867-1 MSD

Matrix: Water

Analysis Batch: 404676

Client Sample ID: W-170929-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
Benzene	<0.15		50.0	49.8		ug/L		100	70 - 120	0	20
Toluene	<0.15		50.0	47.6		ug/L		95	70 - 125	3	20
Ethylbenzene	<0.18		50.0	49.3		ug/L		99	70 - 120	3	20
Xylenes, Total	<0.22		100	93.1		ug/L		93	70 - 125	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
Toluene-d8 (Surr)	91		75 - 120
4-Bromofluorobenzene (Surr)	90		72 - 124
Dibromofluoromethane	99		75 - 120

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

Lab Sample ID: MB 500-403526/1-A

Matrix: Water

Analysis Batch: 404243

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 403526

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/02/17 10:24	10/06/17 12:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	67		27 - 110	10/02/17 10:24	10/06/17 12:12	1
Phenol-d5 (Surr)	58		20 - 100	10/02/17 10:24	10/06/17 12:12	1
Nitrobenzene-d5 (Surr)	82		36 - 120	10/02/17 10:24	10/06/17 12:12	1
2-Fluorobiphenyl (Surr)	85		34 - 110	10/02/17 10:24	10/06/17 12:12	1
2,4,6-Tribromophenol (Surr)	98		40 - 145	10/02/17 10:24	10/06/17 12:12	1
Terphenyl-d14 (Surr)	102		40 - 145	10/02/17 10:24	10/06/17 12:12	1

Lab Sample ID: LCS 500-403526/2-A

Matrix: Water

Analysis Batch: 404243

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 403526

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	22.9		ug/L		72	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	81		27 - 110
Phenol-d5 (Surr)	59		20 - 100
Nitrobenzene-d5 (Surr)	83		36 - 120
2-Fluorobiphenyl (Surr)	82		34 - 110
2,4,6-Tribromophenol (Surr)	105		40 - 145
Terphenyl-d14 (Surr)	93		40 - 145

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

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

Lab Sample ID: LCSD 500-403526/3-A
Matrix: Water
Analysis Batch: 404243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 403526

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	32.0	24.8		ug/L		78	36 - 110	8	20
Surrogate									
		%Recovery	Qualifier				Limits		
2-Fluorophenol (Surr)		79					27 - 110		
Phenol-d5 (Surr)		56					20 - 100		
Nitrobenzene-d5 (Surr)		86					36 - 120		
2-Fluorobiphenyl (Surr)		80					34 - 110		
2,4,6-Tribromophenol (Surr)		101					40 - 145		
Terphenyl-d14 (Surr)		91					40 - 145		

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-298530/4
Matrix: Water
Analysis Batch: 298530

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.0951	J	0.50	0.080	ug/L			10/11/17 11:25	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	104		76 - 121					10/11/17 11:25	1

Lab Sample ID: LCS 240-298530/5
Matrix: Water
Analysis Batch: 298530

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	309		ug/L		108	80 - 130
Surrogate							
		%Recovery	Qualifier				Limits
1,1,1-Trifluoroethane		99					76 - 121

Lab Sample ID: LCSD 240-298530/9
Matrix: Water
Analysis Batch: 298530

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
Methane	285	304		ug/L		107	80 - 130	1	35
Surrogate									
		%Recovery	Qualifier				Limits		
1,1,1-Trifluoroethane		105					76 - 121		

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-224782/1-A
Matrix: Water
Analysis Batch: 224839

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224782

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.23		0.50	0.23	ug/L		10/03/17 15:30	10/04/17 12:21	20
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	70		20 - 100				10/03/17 15:30	10/04/17 12:21	20

Lab Sample ID: LCS 180-224782/2-A
Matrix: Water
Analysis Batch: 224839

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224782

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Pentachlorophenol	5.00	4.85		ug/L		97	34 - 150		
Surrogate	%Recovery	LCS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	76		20 - 100						

Lab Sample ID: LCSD 180-224782/3-A
Matrix: Water
Analysis Batch: 224839

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224782

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	5.00	3.22	*	ug/L		64	34 - 150	41	35
Surrogate	%Recovery	LCSD Qualifier	Limits						
2,4-Dichlorophenylacetic acid	49		20 - 100						

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-403479/1-A
Matrix: Water
Analysis Batch: 403898

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 403479

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/02/17 07:23	10/03/17 19:07	1
Iron	<46.7		100	46.7	ug/L		10/02/17 07:23	10/03/17 19:07	1
Manganese	<0.79		2.5	0.79	ug/L		10/02/17 07:23	10/03/17 19:07	1
Zinc	7.71	J	20.0	6.9	ug/L		10/02/17 07:23	10/03/17 19:07	1

Lab Sample ID: MB 500-403479/1-A
Matrix: Water
Analysis Batch: 404072

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 403479

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<0.50		2.0	0.50	ug/L		10/02/17 07:23	10/04/17 12:30	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-403479/2-A
Matrix: Water
Analysis Batch: 403898

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 403479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	98.42		ug/L		98	80 - 120
Iron	1000	1089		ug/L		109	80 - 120
Manganese	500	532.9		ug/L		107	80 - 120
Zinc	500	528.3		ug/L		106	80 - 120

Lab Sample ID: LCS 500-403479/2-A
Matrix: Water
Analysis Batch: 404072

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 403479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	250	264.8		ug/L		106	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-403659/23
Matrix: Water
Analysis Batch: 403659

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			09/30/17 13:14	1
Nitrate as N	<0.068		0.20	0.068	mg/L			09/30/17 13:14	1
Sulfate	<0.095		0.20	0.095	mg/L			09/30/17 13:14	1

Lab Sample ID: LCS 500-403659/34
Matrix: Water
Analysis Batch: 403659

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.86		mg/L		95	90 - 110
Nitrate as N	2.00	1.97		mg/L		98	90 - 110
Sulfate	5.00	5.19		mg/L		104	90 - 110

Lab Sample ID: 500-134867-1 MS
Matrix: Water
Analysis Batch: 403659

Client Sample ID: W-170929-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	0.56		1.00	1.55		mg/L		99	80 - 120

Lab Sample ID: 500-134867-1 MSD
Matrix: Water
Analysis Batch: 403659

Client Sample ID: W-170929-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	0.56		1.00	1.58		mg/L		102	80 - 120	2	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-404598/4
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 02:41	1

Lab Sample ID: LCS 500-404598/5
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	10.0	9.51		mg/L		95	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-404235/28
Matrix: Water
Analysis Batch: 404235

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/05/17 15:12	1

Lab Sample ID: LCS 500-404235/29
Matrix: Water
Analysis Batch: 404235

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	107.1		mg/L		107	85 - 115

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Client Sample ID: W-170929-PS-01

Lab Sample ID: 500-134867-1

Date Collected: 09/29/17 10:50

Matrix: Water

Date Received: 09/30/17 11:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404676	10/10/17 21:41	EMA	TAL CHI
Total/NA	Prep	3510C			403526	10/02/17 10:24	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 12:06	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	298530	10/11/17 13:08	BPM	TAL CAN
Total/NA	Prep	8151A			224782	10/03/17 15:30	CBY	TAL PIT
Total/NA	Analysis	8151A		20	224839	10/04/17 14:49	JMO	TAL PIT
Dissolved	Prep	3005A			403479	10/02/17 07:23	JEF	TAL CHI
Dissolved	Analysis	6020A		1	404072	10/04/17 12:39	FXG	TAL CHI
Dissolved	Prep	3005A			403479	10/02/17 07:23	JEF	TAL CHI
Dissolved	Analysis	6020A		1	403898	10/03/17 19:14	FXG	TAL CHI
Total/NA	Prep	3010A			403481	10/02/17 07:24	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	403697	10/03/17 10:13	KML	TAL CHI
Total/NA	Analysis	300.0		1	403659	09/30/17 19:59	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 03:18	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:02	SMO	TAL CHI

Laboratory References:

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

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-134867-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112 United States

Phone: (651) 639-0913 Fax: (651) 639-0923

COC NO: **SP-02492**

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 086165-04-05			Laboratory Name: Test America					Lab Location: N. Canton			SSOW ID:				
Project Name: Penta Wood			Lab Contact: D. Heckler					Lab Quote No:			Cooler No:				
Project Location: Siren, WI			CONTAINER QUANTITY & PRESERVATION					ANALYSIS REQUESTED (See Back of COC for Definitions)			Carrier: Fed Ex				
Chemistry Contact: Grant Anderson			SAMPLE TYPE	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Airbill No:
Sampler(s): P. Storlie															Date Shipped: 9-29-17
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)		DATE (mm/dd/yy)	TIME (hh:mm)	W	G	5	6	2	2					COMMENTS/ SPECIAL INSTRUCTIONS:
1	W-170929-PS-01		9-29-17	1050											
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
1															
2															
3															
4															
5															
TAT Required in business days (use separate COCs for different TATs):						Total Number of Containers:			Notes/ Special Requirements:						
<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <input checked="" type="checkbox"/> Other: Standard						All Samples in Cooler must be on COC			34 → 35						
RELINQUISHED BY		COMPANY		DATE		TIME		RECEIVED BY		COMPANY		DATE		TIME	
1. [Signature]		GHD		9-29-17		1600		1. [Signature]		GA-UH		09/30/17		1135	
2.								2.							
3.								3.							

* Metals include:
Arsenic, Copper, Fe
Mn & Zn.

Notes:
Nitrate w/
48 hr



500-134867 COC

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

ORIGIN ID: GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

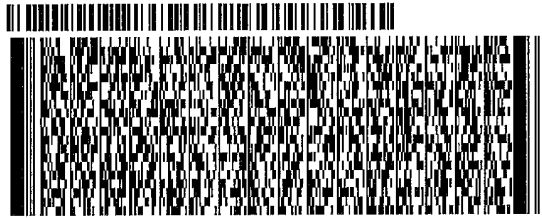
SHIP DATE: 29SEP17
ACTWGT: 36.00 LB
CAD: 9292115/INET3920
DIMS: 25x15x15 IN
BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF: 050229-K JENKINS
INV. PO: DEPT:

549JLFF19/04C

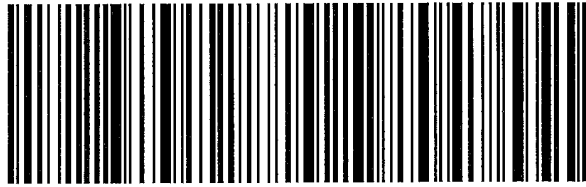


SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 7703 8581 1193
0201

X0 JOTA

60484
IL-US ORD



500-134867 Waybill

AR

1. Use the 'print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.





Chain of Custody Record

TestAmerica Chicago
 2417 Bond Street
 University Park, IL 60484
 Phone (708) 534-5200 Fax (708) 534-5211

Client Information (Sub Contract Lab)
 Client Contact: Wright, Richard C
 Shipping/Receiving
 TestAmerica Laboratories, Inc.
 Address: 301 Alpha Drive, RIDC Park, Pittsburgh, PA, 15238
 Phone: 412-963-7058(Tel), 412-963-2468(Fax)
 Email: Pentia Wood 086165-04

Lab PM: Wright, Richard C
 E-Mail: richard.wright@testamericainc.com
 Accreditations Required (See note): State Program - Wisconsin
 COC No: 500-93708.1
 Page: Page 1 of 1
 Job #: 500-134867-1

Analysis Requested
 Due Date Requested: 10/12/2017
 TAT Requested (days):
 PO #:
 WO #:
 Project #: 50013796
 SOW#:

Sample Identification - Client ID (Lab ID)
 Sample Date: 9/29/17
 Sample Time: 10:50 Central
 Matrix (W=Water, S=Soil, O=Water/Oil, BT=BIOTIBIUR, A=AL): Water
 Sample Type (C=Comp, G=Grab)
 Preservation Code:
 Field Filtered Sample (Yes or No)
 Perform MS/MSD (Yes or No)

W-170929-PS-01 (500-134867-1)
 Total Number of Containers: 2
 Special Instructions/Note: WI Use 200 ul spike, and x4 dilution

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2

Empty Kit Relinquished by: *gink*
 Date: 10/02/17 @ 1600
 Relinquished by: *gink* Company: TA
 Relinquished by: Company: TA
 Relinquished by: Company: TA

Custody Seal No.:
 Δ Yes Δ No

Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record



S.6/5.6

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard C	Carrier Tracking No(s):	COC No: 500-93707-1																				
Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 1																				
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-134867-1																				
Address: 4101 Shuffel Street NW		Analysis Requested																						
City: North Canton	Due Date Requested: 10/12/2017	<table border="1"> <tr> <th>Analysis Requested</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>RSK 175f (MOD) Methane</th> <th>Total Number of Containers</th> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Analysis Requested	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK 175f (MOD) Methane	Total Number of Containers		X	X	X	3										
Analysis Requested	Field Filtered Sample (Yes or No)				Perform MS/MSD (Yes or No)	RSK 175f (MOD) Methane	Total Number of Containers																	
	X				X	X	3																	
State, Zip: OH, 44720	TAT Requested (days):	<table border="1"> <tr> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=wastewater, ST=Soil, AS=Air)</th> <th>Preservation Code:</th> </tr> <tr> <td>9/29/17</td> <td>10:50 Central</td> <td></td> <td>Water</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, ST=Soil, AS=Air)	Preservation Code:	9/29/17	10:50 Central		Water											
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, ST=Soil, AS=Air)	Preservation Code:																				
9/29/17	10:50 Central		Water																					
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:	Special Instructions/Note: RSK																						
Email:	WO #:	Other:																						
Project Name: Penta Wood 086165-04	Project #: 50013796	Special Instructions/Note: RSK																						
Site:	SSOW#:	Special Instructions/Note: RSK																						
Sample Identification - Client ID (Lab ID)		Special Instructions/Note: RSK																						
W-170929-PS-01 (500-134867-1)		Special Instructions/Note: RSK																						

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forward under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: _____ Date: 10/02/17 @ 1600 Company TA
 Relinquished by: _____ Date: _____ Company
 Relinquished by: _____ Date: _____ Company
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No


Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____
 Method of Shipment: _____
 Received by: _____ Date/Time: 10-3-17 9:10 Company TA
 Received by: _____ Date/Time: _____ Company
 Received by: _____ Date/Time: _____ Company
 Cooler Temperature(s) °C and Other Remarks: _____



Client Chicago Site Name _____ Cooler unpacked by: _____
 Cooler Received on 10-3-17 Opened on 10-3-17

FedEx: 1st Grd Exp UPS FAS Clipper 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. 5.6 °C Corrected Cooler Temp. 5.6 °C
 IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
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 all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
 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

Tests that are not checked for pH by Receiving:

 VOAs
 Oil and Grease
 TOC

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

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

17. 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)

18. 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\Word Version Work Instructions\WI-NC-099-091117 Cooler Receipt Form (3).doc dfl

6.0.0/6.0

Chain of Custody Record



Page 1 of 1

Client Information (Sub Contract Lab) Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc. Address: 4101 Shuffel Street NW, City: North Canton State, Zip: OH, 44720 Phone: 330-497-9396(Tel) 330-487-0772(Fax) Email: Project Name: MnDOT I-94, Albertville to St. Michael Site:		Lab P.V.: Bindert, Zach T E-Mail: zach.bindert@testamerica.com Accreditations Required (See note): NELAP - Minnesota		Carrier Tracking Note: State of Origin: Minnesota Job #: 310-115518-1		COC No: 310-10749-1 Page: Page 1 of 1	
Due Date Requested: 10/9/2017 TAT Requested (days): PO #: WO #: Project #: 31009371 SSOW#:		Analysis Requested Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> X Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> X 6020A/3050B RCRA Metals Analyte List		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 Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		Total Number of Containers: 1 Special Instructions/Note: C270	
Sample Identification - Client ID (Lab ID) TP-3 (6-8) (310-115518-5) TP-6 (3-3.5) (310-115518-15)		Sample Date: 9/27/17 Sample Time: 10:40 Central 08:20 Central		Sample Type (C=Comp, G=grab) Preservation Code: Solid Matrix (Liquid, Solid, Overweight, Oil, BT-Tissue, A=Air)		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> X Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> X	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.							
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: <i>[Signature]</i> Date: 10/27/17 1506 Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Δ Yes Δ No							
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:							
Method of Shipment: _____ Received by: _____ Date/Time: 10.3.17 9:10 Company: TA Received by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____ Cooler Temperature(s): °C and Other Remarks:							



TestAmerica Canton Sample Receipt Form/Narrative Login # : _____

Canton Facility

Client Cedar Falls Site Name _____ Cooler unpacked by: _____

Cooler Received on 10-3-17 Opened on 10-3-17

FedEx: 1st Grd Exp UPS FAS Clipper 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

See Multiple Cooler Form

- Cooler temperature upon receipt
 - IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 6.0 °C Corrected Cooler Temp. 6.0 °C
 - IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 - IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
- Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 - Yes No
 - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 - Were tamper/custody seals intact and uncompromised? Yes No NA
- Shippers' packing slip attached to the cooler(s)? Yes No
- Did custody papers accompany the sample(s)? Yes No
- Were the custody papers relinquished & signed in the appropriate place? Yes No
- Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
- Did all bottles arrive in good condition (Unbroken)? Yes No
- Could all bottle labels be reconciled with the COC? Yes No
- Were correct bottle(s) used for the test(s) indicated? Yes No
- Sufficient quantity received to perform indicated analyses? Yes No
- Are these work share samples? Yes No
- If yes, Questions 11-15 have been checked at the originating laboratory.
- Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
- Were VOAs on the COC? Yes No
- Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

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

Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

17. 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)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-134867-1

Login Number: 134867

List Source: TestAmerica Chicago

List Number: 1

Creator: Sanchez, Ariel M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	3.5
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-134867-1

Login Number: 134867
List Number: 3
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 10/03/17 11:46 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 Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-135021-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson



Authorized for release by:
10/18/2017 4:59:17 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Job ID: 500-135021-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-135021-1

Comments

No additional comments.

Receipt

The samples were received on 10/4/2017 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.5° C and 5.6° 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

Method(s) RSK-175: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 240-299157 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) and MSD recovery was within acceptance limits.

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-171002-PS-02 (500-135021-1)

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

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

Organic Prep

Method(s) 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 180-225031.

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

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-02

Lab Sample ID: 500-135021-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.48	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	32		2.4	1.1	ug/L	100		8151A	Total/NA
Arsenic	0.49	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.9	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	328		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	282		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	11.7		0.40	0.34	mg/L	2		300.0	Total/NA
Nitrate as N	0.90		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	105		4.0	1.9	mg/L	20		300.0	Total/NA
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	199		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171002-PS-03

Lab Sample ID: 500-135021-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.11	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Copper	2.5	B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	2.0	J	2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.8	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	45.7		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	4.0		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.73		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.6		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.82	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	43.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171002-PS-04

Lab Sample ID: 500-135021-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.66	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.5	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	240		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	40.3		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.0		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	9.1		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.68	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	197		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171002-PS-05

Lab Sample ID: 500-135021-4

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
Arsenic	0.51	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	5.0	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	1630		100	46.7	ug/L	1		6020A	Dissolved
Manganese	34.5		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	9.7	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	93.9		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	1.4		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.54		0.20	0.068	mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-05 (Continued)

Lab Sample ID: 500-135021-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1.3		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.50	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	104		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171003-PS-06

Lab Sample ID: 500-135021-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	7.2		0.50	0.080	ug/L	1		RSK-175	Total/NA
Arsenic	1.2		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.2	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	501		100	46.7	ug/L	1		6020A	Dissolved
Manganese	41.8		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	134		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	37.0		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.26		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	30.0		2.0	0.95	mg/L	10		300.0	Total/NA
Alkalinity	93.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank 001

Lab Sample ID: 500-135021-6

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-135021-1	W-171002-PS-02	Water	10/02/17 12:35	10/04/17 10:15
500-135021-2	W-171002-PS-03	Water	10/02/17 13:15	10/04/17 10:15
500-135021-3	W-171002-PS-04	Water	10/02/17 14:30	10/04/17 10:15
500-135021-4	W-171002-PS-05	Water	10/02/17 15:30	10/04/17 10:15
500-135021-5	W-171003-PS-06	Water	10/03/17 10:05	10/04/17 10:15
500-135021-6	Trip Blank 001	Water	10/03/17 11:00	10/04/17 10:15

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-02

Lab Sample ID: 500-135021-1

Date Collected: 10/02/17 12:35

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 18:53	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 18:53	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 18:53	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 18:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		10/11/17 18:53	1
Toluene-d8 (Surr)	93		75 - 120		10/11/17 18:53	1
4-Bromofluorobenzene (Surr)	97		72 - 124		10/11/17 18:53	1
Dibromofluoromethane	95		75 - 120		10/11/17 18:53	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		10/05/17 10:29	10/12/17 12:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	59		27 - 110	10/05/17 10:29	10/12/17 12:30	1
Phenol-d5 (Surr)	56		20 - 100	10/05/17 10:29	10/12/17 12:30	1
Nitrobenzene-d5 (Surr)	76		36 - 120	10/05/17 10:29	10/12/17 12:30	1
2-Fluorobiphenyl (Surr)	74		34 - 110	10/05/17 10:29	10/12/17 12:30	1
2,4,6-Tribromophenol (Surr)	75		40 - 145	10/05/17 10:29	10/12/17 12:30	1
Terphenyl-d14 (Surr)	98		40 - 145	10/05/17 10:29	10/12/17 12:30	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.48	J	0.50	0.080	ug/L			10/16/17 16:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		76 - 121		10/16/17 16:14	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	32		2.4	1.1	ug/L		10/05/17 14:30	10/07/17 10:57	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	0	X D	20 - 100	10/05/17 14:30	10/07/17 10:57	100

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.49	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:42	1
Copper	1.9	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 13:14	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:42	1
Manganese	328		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:42	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:42	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	282		1.3	0.66	mg/L		10/04/17 15:11	10/08/17 11:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11.7		0.40	0.34	mg/L			10/17/17 02:45	2

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-02

Lab Sample ID: 500-135021-1

Date Collected: 10/02/17 12:35

Matrix: Water

Date Received: 10/04/17 10:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.90		0.20	0.068	mg/L			10/04/17 11:56	1
Sulfate	105		4.0	1.9	mg/L			10/18/17 14:34	20
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L			10/09/17 03:35	1
Alkalinity	199		5.0	3.7	mg/L			10/05/17 17:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-03

Lab Sample ID: 500-135021-2

Date Collected: 10/02/17 13:15

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 19:19	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 19:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 19:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 19:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		10/11/17 19:19	1
Toluene-d8 (Surr)	95		75 - 120		10/11/17 19:19	1
4-Bromofluorobenzene (Surr)	98		72 - 124		10/11/17 19:19	1
Dibromofluoromethane	93		75 - 120		10/11/17 19:19	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.28		0.90	0.28	ug/L		10/05/17 10:29	10/12/17 12:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	69		27 - 110	10/05/17 10:29	10/12/17 12:54	1
Phenol-d5 (Surr)	59		20 - 100	10/05/17 10:29	10/12/17 12:54	1
Nitrobenzene-d5 (Surr)	72		36 - 120	10/05/17 10:29	10/12/17 12:54	1
2-Fluorobiphenyl (Surr)	78		34 - 110	10/05/17 10:29	10/12/17 12:54	1
2,4,6-Tribromophenol (Surr)	66		40 - 145	10/05/17 10:29	10/12/17 12:54	1
Terphenyl-d14 (Surr)	98		40 - 145	10/05/17 10:29	10/12/17 12:54	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.11	J	0.50	0.080	ug/L			10/16/17 16:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		76 - 121		10/16/17 16:31	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.045		0.096	0.045	ug/L		10/05/17 14:30	10/07/17 11:21	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	81		20 - 100	10/05/17 14:30	10/07/17 11:21	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:53	1
Copper	2.5	B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 13:19	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:53	1
Manganese	2.0	J	2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:53	1
Zinc	8.8	J	20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:53	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	45.7		1.3	0.66	mg/L		10/04/17 15:11	10/08/17 11:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.0		0.20	0.17	mg/L			10/04/17 12:08	1

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-03

Lab Sample ID: 500-135021-2

Date Collected: 10/02/17 13:15

Matrix: Water

Date Received: 10/04/17 10:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.73		0.20	0.068	mg/L			10/04/17 12:08	1
Sulfate	6.6		0.20	0.095	mg/L			10/04/17 12:08	1
Total Organic Carbon - Duplicates	0.82	J	1.0	0.47	mg/L			10/09/17 03:52	1
Alkalinity	43.7		5.0	3.7	mg/L			10/05/17 17:18	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-04

Lab Sample ID: 500-135021-3

Date Collected: 10/02/17 14:30

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 19:45	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 19:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 19:45	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 19:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		10/11/17 19:45	1
Toluene-d8 (Surr)	96		75 - 120		10/11/17 19:45	1
4-Bromofluorobenzene (Surr)	95		72 - 124		10/11/17 19:45	1
Dibromofluoromethane	92		75 - 120		10/11/17 19:45	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.81	0.25	ug/L		10/05/17 10:29	10/12/17 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	65		27 - 110	10/05/17 10:29	10/12/17 13:17	1
Phenol-d5 (Surr)	62		20 - 100	10/05/17 10:29	10/12/17 13:17	1
Nitrobenzene-d5 (Surr)	77		36 - 120	10/05/17 10:29	10/12/17 13:17	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/05/17 10:29	10/12/17 13:17	1
2,4,6-Tribromophenol (Surr)	68		40 - 145	10/05/17 10:29	10/12/17 13:17	1
Terphenyl-d14 (Surr)	100		40 - 145	10/05/17 10:29	10/12/17 13:17	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			10/16/17 16:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		76 - 121		10/16/17 16:48	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.098	0.046	ug/L		10/05/17 14:30	10/07/17 11:45	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	56		20 - 100	10/05/17 14:30	10/07/17 11:45	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.66	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:57	1
Copper	1.5	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 13:23	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:57	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:57	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:57	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	240		1.3	0.66	mg/L		10/04/17 15:11	10/08/17 11:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40.3		2.0	1.7	mg/L			10/17/17 02:58	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-04

Lab Sample ID: 500-135021-3

Date Collected: 10/02/17 14:30

Matrix: Water

Date Received: 10/04/17 10:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	2.0		0.20	0.068	mg/L			10/04/17 12:21	1
Sulfate	9.1		0.20	0.095	mg/L			10/04/17 12:21	1
Total Organic Carbon - Duplicates	0.68	J	1.0	0.47	mg/L			10/09/17 04:10	1
Alkalinity	197		5.0	3.7	mg/L			10/05/17 17:24	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-05

Lab Sample ID: 500-135021-4

Date Collected: 10/02/17 15:30

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 20:11	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 20:11	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 20:11	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 20:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		10/11/17 20:11	1
Toluene-d8 (Surr)	96		75 - 120		10/11/17 20:11	1
4-Bromofluorobenzene (Surr)	98		72 - 124		10/11/17 20:11	1
Dibromofluoromethane	93		75 - 120		10/11/17 20:11	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		10/05/17 10:29	10/12/17 13:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	68		27 - 110	10/05/17 10:29	10/12/17 13:41	1
Phenol-d5 (Surr)	68		20 - 100	10/05/17 10:29	10/12/17 13:41	1
Nitrobenzene-d5 (Surr)	81		36 - 120	10/05/17 10:29	10/12/17 13:41	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/05/17 10:29	10/12/17 13:41	1
2,4,6-Tribromophenol (Surr)	73		40 - 145	10/05/17 10:29	10/12/17 13:41	1
Terphenyl-d14 (Surr)	100		40 - 145	10/05/17 10:29	10/12/17 13:41	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			10/16/17 17:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		76 - 121		10/16/17 17:05	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.044		0.095	0.044	ug/L		10/05/17 14:30	10/07/17 12:10	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	62		20 - 100	10/05/17 14:30	10/07/17 12:10	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.51	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 13:00	1
Copper	5.0	B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 13:28	1
Iron	1630		100	46.7	ug/L		10/05/17 16:14	10/06/17 13:00	1
Manganese	34.5		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 13:00	1
Zinc	9.7	J	20.0	6.9	ug/L		10/05/17 16:14	10/06/17 13:00	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	93.9		1.3	0.66	mg/L		10/04/17 15:11	10/08/17 11:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4		0.20	0.17	mg/L			10/04/17 12:34	1

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-05

Lab Sample ID: 500-135021-4

Date Collected: 10/02/17 15:30

Matrix: Water

Date Received: 10/04/17 10:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.54		0.20	0.068	mg/L			10/04/17 12:34	1
Sulfate	1.3		0.20	0.095	mg/L			10/04/17 12:34	1
Total Organic Carbon - Duplicates	0.50	J	1.0	0.47	mg/L			10/09/17 04:27	1
Alkalinity	104		5.0	3.7	mg/L			10/05/17 17:31	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171003-PS-06

Lab Sample ID: 500-135021-5

Date Collected: 10/03/17 10:05

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 20:38	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 20:38	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 20:38	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 20:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		10/11/17 20:38	1
Toluene-d8 (Surr)	94		75 - 120		10/11/17 20:38	1
4-Bromofluorobenzene (Surr)	98		72 - 124		10/11/17 20:38	1
Dibromofluoromethane	94		75 - 120		10/11/17 20:38	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		10/05/17 10:29	10/12/17 14:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	71		27 - 110	10/05/17 10:29	10/12/17 14:05	1
Phenol-d5 (Surr)	61		20 - 100	10/05/17 10:29	10/12/17 14:05	1
Nitrobenzene-d5 (Surr)	82		36 - 120	10/05/17 10:29	10/12/17 14:05	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/05/17 10:29	10/12/17 14:05	1
2,4,6-Tribromophenol (Surr)	66		40 - 145	10/05/17 10:29	10/12/17 14:05	1
Terphenyl-d14 (Surr)	102		40 - 145	10/05/17 10:29	10/12/17 14:05	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	7.2		0.50	0.080	ug/L			10/16/17 17:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		76 - 121		10/16/17 17:23	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.045		0.097	0.045	ug/L		10/05/17 14:30	10/07/17 12:34	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	62		20 - 100	10/05/17 14:30	10/07/17 12:34	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.2		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 13:04	1
Copper	1.2	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 13:32	1
Iron	501		100	46.7	ug/L		10/05/17 16:14	10/06/17 13:04	1
Manganese	41.8		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 13:04	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 13:04	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	134		1.3	0.66	mg/L		10/04/17 15:11	10/08/17 11:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37.0		2.0	1.7	mg/L			10/17/17 03:36	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171003-PS-06

Lab Sample ID: 500-135021-5

Date Collected: 10/03/17 10:05

Matrix: Water

Date Received: 10/04/17 10:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.26		0.20	0.068	mg/L			10/04/17 12:46	1
Sulfate	30.0		2.0	0.95	mg/L			10/17/17 03:36	10
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 04:43	1
Alkalinity	93.7		5.0	3.7	mg/L			10/05/17 17:37	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: Trip Blank 001

Lab Sample ID: 500-135021-6

Date Collected: 10/03/17 11:00

Matrix: Water

Date Received: 10/04/17 10:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 21:04	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 21:04	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 21:04	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 21:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		10/11/17 21:04	1
Toluene-d8 (Surr)	94		75 - 120		10/11/17 21:04	1
4-Bromofluorobenzene (Surr)	96		72 - 124		10/11/17 21:04	1
Dibromofluoromethane	93		75 - 120		10/11/17 21:04	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Qualifiers

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
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.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

GC/MS VOA

Analysis Batch: 404859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	8260B	
500-135021-2	W-171002-PS-03	Total/NA	Water	8260B	
500-135021-3	W-171002-PS-04	Total/NA	Water	8260B	
500-135021-4	W-171002-PS-05	Total/NA	Water	8260B	
500-135021-5	W-171003-PS-06	Total/NA	Water	8260B	
500-135021-6	Trip Blank 001	Total/NA	Water	8260B	
MB 500-404859/7	Method Blank	Total/NA	Water	8260B	
LCS 500-404859/5	Lab Control Sample	Total/NA	Water	8260B	
500-135021-5 MS	W-171003-PS-06	Total/NA	Water	8260B	
500-135021-5 MSD	W-171003-PS-06	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 404092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	3510C	
500-135021-2	W-171002-PS-03	Total/NA	Water	3510C	
500-135021-3	W-171002-PS-04	Total/NA	Water	3510C	
500-135021-4	W-171002-PS-05	Total/NA	Water	3510C	
500-135021-5	W-171003-PS-06	Total/NA	Water	3510C	
MB 500-404092/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-404092/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-404092/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 404878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-404092/1-A	Method Blank	Total/NA	Water	8270D	404092
LCS 500-404092/2-A	Lab Control Sample	Total/NA	Water	8270D	404092
LCSD 500-404092/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	404092

Analysis Batch: 405058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	8270D	404092
500-135021-2	W-171002-PS-03	Total/NA	Water	8270D	404092
500-135021-3	W-171002-PS-04	Total/NA	Water	8270D	404092
500-135021-4	W-171002-PS-05	Total/NA	Water	8270D	404092
500-135021-5	W-171003-PS-06	Total/NA	Water	8270D	404092

GC VOA

Analysis Batch: 299157

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	RSK-175	
500-135021-2	W-171002-PS-03	Total/NA	Water	RSK-175	
500-135021-3	W-171002-PS-04	Total/NA	Water	RSK-175	
500-135021-4	W-171002-PS-05	Total/NA	Water	RSK-175	
500-135021-5	W-171003-PS-06	Total/NA	Water	RSK-175	
MB 240-299157/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-299157/5	Lab Control Sample	Total/NA	Water	RSK-175	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

GC Semi VOA

Prep Batch: 225031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	8151A	
500-135021-2	W-171002-PS-03	Total/NA	Water	8151A	
500-135021-3	W-171002-PS-04	Total/NA	Water	8151A	
500-135021-4	W-171002-PS-05	Total/NA	Water	8151A	
500-135021-5	W-171003-PS-06	Total/NA	Water	8151A	
MB 180-225031/1-A	Method Blank	Total/NA	Water	8151A	
MB 180-225031/1-A - RA	Method Blank	Total/NA	Water	8151A	
LCS 180-225031/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 180-225031/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 225075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-225031/1-A	Method Blank	Total/NA	Water	8151A	225031
LCS 180-225031/2-A	Lab Control Sample	Total/NA	Water	8151A	225031
LCSD 180-225031/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	225031

Analysis Batch: 225136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	8151A	225031
500-135021-2	W-171002-PS-03	Total/NA	Water	8151A	225031
500-135021-3	W-171002-PS-04	Total/NA	Water	8151A	225031
500-135021-4	W-171002-PS-05	Total/NA	Water	8151A	225031
500-135021-5	W-171003-PS-06	Total/NA	Water	8151A	225031
MB 180-225031/1-A - RA	Method Blank	Total/NA	Water	8151A	225031

Metals

Prep Batch: 403975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	3010A	
500-135021-2	W-171002-PS-03	Total/NA	Water	3010A	
500-135021-3	W-171002-PS-04	Total/NA	Water	3010A	
500-135021-4	W-171002-PS-05	Total/NA	Water	3010A	
500-135021-5	W-171003-PS-06	Total/NA	Water	3010A	

Prep Batch: 404150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Dissolved	Water	3005A	
500-135021-2	W-171002-PS-03	Dissolved	Water	3005A	
500-135021-3	W-171002-PS-04	Dissolved	Water	3005A	
500-135021-4	W-171002-PS-05	Dissolved	Water	3005A	
500-135021-5	W-171003-PS-06	Dissolved	Water	3005A	
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 404400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	SM 2340B	403975
500-135021-2	W-171002-PS-03	Total/NA	Water	SM 2340B	403975
500-135021-3	W-171002-PS-04	Total/NA	Water	SM 2340B	403975

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Metals (Continued)

Analysis Batch: 404400 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-4	W-171002-PS-05	Total/NA	Water	SM 2340B	403975
500-135021-5	W-171003-PS-06	Total/NA	Water	SM 2340B	403975

Analysis Batch: 404510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Dissolved	Water	6020A	404150
500-135021-2	W-171002-PS-03	Dissolved	Water	6020A	404150
500-135021-3	W-171002-PS-04	Dissolved	Water	6020A	404150
500-135021-4	W-171002-PS-05	Dissolved	Water	6020A	404150
500-135021-5	W-171003-PS-06	Dissolved	Water	6020A	404150
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	6020A	404150
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404150

Analysis Batch: 404653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Dissolved	Water	6020A	404150
500-135021-2	W-171002-PS-03	Dissolved	Water	6020A	404150
500-135021-3	W-171002-PS-04	Dissolved	Water	6020A	404150
500-135021-4	W-171002-PS-05	Dissolved	Water	6020A	404150
500-135021-5	W-171003-PS-06	Dissolved	Water	6020A	404150
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	6020A	404150
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404150

General Chemistry

Analysis Batch: 403992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	300.0	
500-135021-2	W-171002-PS-03	Total/NA	Water	300.0	
500-135021-3	W-171002-PS-04	Total/NA	Water	300.0	
500-135021-4	W-171002-PS-05	Total/NA	Water	300.0	
500-135021-5	W-171003-PS-06	Total/NA	Water	300.0	
MB 500-403992/23	Method Blank	Total/NA	Water	300.0	
LCS 500-403992/31	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 404235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	SM 2320B	
500-135021-2	W-171002-PS-03	Total/NA	Water	SM 2320B	
500-135021-3	W-171002-PS-04	Total/NA	Water	SM 2320B	
500-135021-4	W-171002-PS-05	Total/NA	Water	SM 2320B	
500-135021-5	W-171003-PS-06	Total/NA	Water	SM 2320B	
MB 500-404235/28	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-404235/29	Lab Control Sample	Total/NA	Water	SM 2320B	
500-135021-5 DU	W-171003-PS-06	Total/NA	Water	SM 2320B	

Analysis Batch: 404598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	9060A	
500-135021-2	W-171002-PS-03	Total/NA	Water	9060A	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

General Chemistry (Continued)

Analysis Batch: 404598 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-3	W-171002-PS-04	Total/NA	Water	9060A	
500-135021-4	W-171002-PS-05	Total/NA	Water	9060A	
500-135021-5	W-171003-PS-06	Total/NA	Water	9060A	
MB 500-404598/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404598/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 405584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	300.0	
500-135021-3	W-171002-PS-04	Total/NA	Water	300.0	
500-135021-5	W-171003-PS-06	Total/NA	Water	300.0	
MB 500-405584/4	Method Blank	Total/NA	Water	300.0	
LCS 500-405584/5	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 405902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135021-1	W-171002-PS-02	Total/NA	Water	300.0	
MB 500-405902/18	Method Blank	Total/NA	Water	300.0	
LCS 500-405902/19	Lab Control Sample	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-135021-1	W-171002-PS-02	90	93	97	95
500-135021-2	W-171002-PS-03	93	95	98	93
500-135021-3	W-171002-PS-04	90	96	95	92
500-135021-4	W-171002-PS-05	93	96	98	93
500-135021-5	W-171003-PS-06	93	94	98	94
500-135021-5 MS	W-171003-PS-06	95	93	85	96
500-135021-5 MSD	W-171003-PS-06	93	91	89	95
500-135021-6	Trip Blank 001	94	94	96	93
LCS 500-404859/5	Lab Control Sample	92	92	91	93
MB 500-404859/7	Method Blank	88	95	98	92

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-135021-1	W-171002-PS-02	59	56	76	74	75	98
500-135021-2	W-171002-PS-03	69	59	72	78	66	98
500-135021-3	W-171002-PS-04	65	62	77	77	68	100
500-135021-4	W-171002-PS-05	68	68	81	84	73	100
500-135021-5	W-171003-PS-06	71	61	82	84	66	102
LCS 500-404092/2-A	Lab Control Sample	62	49	79	72	98	90
LCSD 500-404092/3-A	Lab Control Sample Dup	75	60	82	77	99	93
MB 500-404092/1-A	Method Blank	64	48	84	77	78	98

Surrogate Legend

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

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroet (76-121)
500-135021-1	W-171002-PS-02	80
500-135021-2	W-171002-PS-03	87
500-135021-3	W-171002-PS-04	84
500-135021-4	W-171002-PS-05	81

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Trifluoroet (76-121)
500-135021-5	W-171003-PS-06	87
LCS 240-299157/5	Lab Control Sample	88
MB 240-299157/4	Method Blank	91

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 (20-100)	DCPA2 (20-100)
500-135021-1	W-171002-PS-02	0 X D	0 X D
500-135021-2	W-171002-PS-03	76	81
500-135021-3	W-171002-PS-04	54	56
500-135021-4	W-171002-PS-05	60	62
500-135021-5	W-171003-PS-06	58	62
LCS 180-225031/2-A	Lab Control Sample	80	82
LCSD 180-225031/3-A	Lab Control Sample Dup	81	84
MB 180-225031/1-A	Method Blank	58	60
MB 180-225031/1-A - RA	Method Blank	50	55

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

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

Lab Sample ID: MB 500-404859/7
Matrix: Water
Analysis Batch: 404859

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/11/17 13:34	1
Toluene	<0.15		0.50	0.15	ug/L			10/11/17 13:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/11/17 13:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/11/17 13:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 126		10/11/17 13:34	1
Toluene-d8 (Surr)	95		75 - 120		10/11/17 13:34	1
4-Bromofluorobenzene (Surr)	98		72 - 124		10/11/17 13:34	1
Dibromofluoromethane	92		75 - 120		10/11/17 13:34	1

Lab Sample ID: LCS 500-404859/5
Matrix: Water
Analysis Batch: 404859

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.6		ug/L		93	70 - 120
Toluene	50.0	47.7		ug/L		95	70 - 125
Ethylbenzene	50.0	47.8		ug/L		96	70 - 120
Xylenes, Total	100	93.9		ug/L		94	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		75 - 126
Toluene-d8 (Surr)	92		75 - 120
4-Bromofluorobenzene (Surr)	91		72 - 124
Dibromofluoromethane	93		75 - 120

Lab Sample ID: 500-135021-5 MS
Matrix: Water
Analysis Batch: 404859

Client Sample ID: W-171003-PS-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	47.2		ug/L		94	70 - 120
Toluene	<0.15		50.0	48.6		ug/L		97	70 - 125
Ethylbenzene	<0.18		50.0	47.6		ug/L		95	70 - 120
Xylenes, Total	<0.22		100	95.8		ug/L		96	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 126
Toluene-d8 (Surr)	93		75 - 120
4-Bromofluorobenzene (Surr)	85		72 - 124
Dibromofluoromethane	96		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

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

Lab Sample ID: 500-135021-5 MSD

Matrix: Water

Analysis Batch: 404859

Client Sample ID: W-171003-PS-06

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	48.4		ug/L		97	70 - 120	3	20
Toluene	<0.15		50.0	48.6		ug/L		97	70 - 125	0	20
Ethylbenzene	<0.18		50.0	48.4		ug/L		97	70 - 120	2	20
Xylenes, Total	<0.22		100	95.3		ug/L		95	70 - 125	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		75 - 126
Toluene-d8 (Surr)	91		75 - 120
4-Bromofluorobenzene (Surr)	89		72 - 124
Dibromofluoromethane	95		75 - 120

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

Lab Sample ID: MB 500-404092/1-A

Matrix: Water

Analysis Batch: 404878

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 404092

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/05/17 10:29	10/11/17 19:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	64		27 - 110	10/05/17 10:29	10/11/17 19:30	1
Phenol-d5 (Surr)	48		20 - 100	10/05/17 10:29	10/11/17 19:30	1
Nitrobenzene-d5 (Surr)	84		36 - 120	10/05/17 10:29	10/11/17 19:30	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/05/17 10:29	10/11/17 19:30	1
2,4,6-Tribromophenol (Surr)	78		40 - 145	10/05/17 10:29	10/11/17 19:30	1
Terphenyl-d14 (Surr)	98		40 - 145	10/05/17 10:29	10/11/17 19:30	1

Lab Sample ID: LCS 500-404092/2-A

Matrix: Water

Analysis Batch: 404878

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 404092

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	19.0		ug/L		59	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	62		27 - 110
Phenol-d5 (Surr)	49		20 - 100
Nitrobenzene-d5 (Surr)	79		36 - 120
2-Fluorobiphenyl (Surr)	72		34 - 110
2,4,6-Tribromophenol (Surr)	98		40 - 145
Terphenyl-d14 (Surr)	90		40 - 145

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

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

Lab Sample ID: LCSD 500-404092/3-A
Matrix: Water
Analysis Batch: 404878

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 404092

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	32.0	18.7		ug/L		58	36 - 110	2	20
Surrogate									
	%Recovery	Qualifier	Limits						
2-Fluorophenol (Surr)	75		27 - 110						
Phenol-d5 (Surr)	60		20 - 100						
Nitrobenzene-d5 (Surr)	82		36 - 120						
2-Fluorobiphenyl (Surr)	77		34 - 110						
2,4,6-Tribromophenol (Surr)	99		40 - 145						
Terphenyl-d14 (Surr)	93		40 - 145						

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-299157/4
Matrix: Water
Analysis Batch: 299157

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			10/16/17 11:24	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	91		76 - 121					10/16/17 11:24	1

Lab Sample ID: LCS 240-299157/5
Matrix: Water
Analysis Batch: 299157

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	286		ug/L		100	80 - 130
Surrogate							
	%Recovery	Qualifier	Limits				
1,1,1-Trifluoroethane	88		76 - 121				

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-225031/1-A
Matrix: Water
Analysis Batch: 225075

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225031

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.23		0.50	0.23	ug/L		10/05/17 14:30	10/06/17 18:25	20
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	60		20 - 100				10/05/17 14:30	10/06/17 18:25	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 180-225031/2-A
Matrix: Water
Analysis Batch: 225075

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225031

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	5.00	5.05		ug/L		101	34 - 150
Surrogate		LCS %Recovery	LCS Qualifier				Limits
2,4-Dichlorophenylacetic acid		82					20 - 100

Lab Sample ID: LCSD 180-225031/3-A
Matrix: Water
Analysis Batch: 225075

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 225031

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	5.00	4.81		ug/L		96	34 - 150	5	35
Surrogate		LCSD %Recovery	LCSD Qualifier				Limits		
2,4-Dichlorophenylacetic acid		84					20 - 100		

Method: 8151A - Herbicides (GC) - RA

Lab Sample ID: MB 180-225031/1-A
Matrix: Water
Analysis Batch: 225136

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225031

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol - RA	<0.046		0.10	0.046	ug/L		10/05/17 14:30	10/07/17 10:32	4
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid - RA	55		20 - 100				10/05/17 14:30	10/07/17 10:32	4

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-404150/1-A
Matrix: Water
Analysis Batch: 404510

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 11:52	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 11:52	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 11:52	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 11:52	1

Lab Sample ID: MB 500-404150/1-A
Matrix: Water
Analysis Batch: 404653

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Copper	0.941	J	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:18	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-404150/2-A
Matrix: Water
Analysis Batch: 404510

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	95.79		ug/L		96	80 - 120
Iron	1000	1050		ug/L		105	80 - 120
Manganese	500	522.9		ug/L		105	80 - 120
Zinc	500	500.8		ug/L		100	80 - 120

Lab Sample ID: LCS 500-404150/2-A
Matrix: Water
Analysis Batch: 404653

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	250	255.1		ug/L		102	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-403992/23
Matrix: Water
Analysis Batch: 403992

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/04/17 09:07	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/04/17 09:07	1
Sulfate	<0.095		0.20	0.095	mg/L			10/04/17 09:07	1

Lab Sample ID: LCS 500-403992/31
Matrix: Water
Analysis Batch: 403992

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.07		mg/L		102	90 - 110
Nitrate as N	2.00	1.96		mg/L		98	90 - 110
Sulfate	5.00	5.22		mg/L		104	90 - 110

Lab Sample ID: MB 500-405584/4
Matrix: Water
Analysis Batch: 405584

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/16/17 14:26	1
Sulfate	<0.095		0.20	0.095	mg/L			10/16/17 14:26	1

Lab Sample ID: LCS 500-405584/5
Matrix: Water
Analysis Batch: 405584

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.84		mg/L		95	90 - 110
Sulfate	5.00	5.25		mg/L		105	90 - 110

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 500-405902/18
Matrix: Water
Analysis Batch: 405902

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.095		0.20	0.095	mg/L			10/18/17 10:59	1

Lab Sample ID: LCS 500-405902/19
Matrix: Water
Analysis Batch: 405902

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.43		mg/L		109	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-404598/4
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 02:41	1

Lab Sample ID: LCS 500-404598/5
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	10.0	9.51		mg/L		95	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-404235/28
Matrix: Water
Analysis Batch: 404235

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/05/17 15:12	1

Lab Sample ID: LCS 500-404235/29
Matrix: Water
Analysis Batch: 404235

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	107.1		mg/L		107	85 - 115

Lab Sample ID: 500-135021-5 DU
Matrix: Water
Analysis Batch: 404235

Client Sample ID: W-171003-PS-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	93.7		93.77		mg/L		0	20

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-02

Lab Sample ID: 500-135021-1

Date Collected: 10/02/17 12:35

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 18:53	EMA	TAL CHI
Total/NA	Prep	3510C			404092	10/05/17 10:29	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 12:30	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299157	10/16/17 16:14	BPM	TAL CAN
Total/NA	Prep	8151A			225031	10/05/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		100	225136	10/07/17 10:57	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 13:14	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:42	FXG	TAL CHI
Total/NA	Prep	3010A			403975	10/04/17 15:11	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404400	10/08/17 11:51	KML	TAL CHI
Total/NA	Analysis	300.0		1	403992	10/04/17 11:56	EAT	TAL CHI
Total/NA	Analysis	300.0		2	405584	10/17/17 02:45	EAT	TAL CHI
Total/NA	Analysis	300.0		20	405902	10/18/17 14:34	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 03:35	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:09	SMO	TAL CHI

Client Sample ID: W-171002-PS-03

Lab Sample ID: 500-135021-2

Date Collected: 10/02/17 13:15

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 19:19	EMA	TAL CHI
Total/NA	Prep	3510C			404092	10/05/17 10:29	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 12:54	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299157	10/16/17 16:31	BPM	TAL CAN
Total/NA	Prep	8151A			225031	10/05/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225136	10/07/17 11:21	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 13:19	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:53	FXG	TAL CHI
Total/NA	Prep	3010A			403975	10/04/17 15:11	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404400	10/08/17 11:51	KML	TAL CHI
Total/NA	Analysis	300.0		1	403992	10/04/17 12:08	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 03:52	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:18	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171002-PS-04

Lab Sample ID: 500-135021-3

Date Collected: 10/02/17 14:30

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 19:45	EMA	TAL CHI
Total/NA	Prep	3510C			404092	10/05/17 10:29	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 13:17	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299157	10/16/17 16:48	BPM	TAL CAN
Total/NA	Prep	8151A			225031	10/05/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225136	10/07/17 11:45	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 13:23	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:57	FXG	TAL CHI
Total/NA	Prep	3010A			403975	10/04/17 15:11	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404400	10/08/17 11:51	KML	TAL CHI
Total/NA	Analysis	300.0		1	403992	10/04/17 12:21	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405584	10/17/17 02:58	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 04:10	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:24	SMO	TAL CHI

Client Sample ID: W-171002-PS-05

Lab Sample ID: 500-135021-4

Date Collected: 10/02/17 15:30

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 20:11	EMA	TAL CHI
Total/NA	Prep	3510C			404092	10/05/17 10:29	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 13:41	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299157	10/16/17 17:05	BPM	TAL CAN
Total/NA	Prep	8151A			225031	10/05/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225136	10/07/17 12:10	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 13:28	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 13:00	FXG	TAL CHI
Total/NA	Prep	3010A			403975	10/04/17 15:11	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404400	10/08/17 11:51	KML	TAL CHI
Total/NA	Analysis	300.0		1	403992	10/04/17 12:34	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 04:27	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:31	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Client Sample ID: W-171003-PS-06

Lab Sample ID: 500-135021-5

Date Collected: 10/03/17 10:05

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 20:38	EMA	TAL CHI
Total/NA	Prep	3510C			404092	10/05/17 10:29	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 14:05	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299157	10/16/17 17:23	BPM	TAL CAN
Total/NA	Prep	8151A			225031	10/05/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225136	10/07/17 12:34	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 13:32	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 13:04	FXG	TAL CHI
Total/NA	Prep	3010A			403975	10/04/17 15:11	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404400	10/08/17 11:51	KML	TAL CHI
Total/NA	Analysis	300.0		1	403992	10/04/17 12:46	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405584	10/17/17 03:36	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 04:43	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	404235	10/05/17 17:37	SMO	TAL CHI

Client Sample ID: Trip Blank 001

Lab Sample ID: 500-135021-6

Date Collected: 10/03/17 11:00

Matrix: Water

Date Received: 10/04/17 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	404859	10/11/17 21:04	EMA	TAL CHI

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
 TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200
 TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135021-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Report To (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 E-Mail: _____

Bill To (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 PO#/Reference# _____

Chain of Custody Record

Lab Job #: 500-135021
 Chain of Custody Number: _____
 Page 1 of 1
 Temperature °C of Cooler: 1.0-72.5, 5.6

Client		Client Project #		Preservative		None		HCL		None		H ₂ SO ₄		HNO ₃		HNO ₃		HCL		None	
Project Name		Parameter		None		HCL		None		H ₂ SO ₄		HNO ₃		HNO ₃		HCL		None		None	
Project Location/State		Lab Project #		None		HCL		None		H ₂ SO ₄		HNO ₃		HNO ₃		HCL		None		None	
Sampler		Lab PM		None		HCL		None		H ₂ SO ₄		HNO ₃		HNO ₃		HCL		None		None	
Lab ID	M/S/MSD	Sample ID	Date	Time	# of Containers	Matrix	Air	Water	Soil	Sludge	Oil	Other	None	HCL	None	H ₂ SO ₄	HNO ₃	HNO ₃	HCL	None	None
1		W-171002-PS-02	10-2-17	1235	15	W	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2		03		1315	15	W	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3		04		1430	15	W	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4		05		1530	15	W	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5		W-171007-PS-06		1005	15	W	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6		TRIP BLANK 001	10-3-17	1100	20	W		X													

Preservative Key
 Cool to 4°
 Cool to 4°
 Cool to 4°
 Cool to 4°
 Zn, Cool to 4°
 14
 4°
 500-135021 COC

Turnaround Time Required (Business Days)

___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other
 Requested Due Date _____

Sample Disposal

Return to Client Disposal by Lab Archive for ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: <u>SKZ</u>	Company: <u>GHD</u>	Date: <u>10-3-17</u>	Time: <u>1200</u>	Received By: <u>Sam Sandy</u>	Company: <u>TACH</u>	Date: <u>10/12/17</u>	Time: <u>1015</u>
Relinquished By: _____	Company: _____	Date: _____	Time: _____	Received By: _____	Company: _____	Date: _____	Time: _____
Relinquished By: _____	Company: _____	Date: _____	Time: _____	Received By: _____	Company: _____	Date: _____	Time: _____

Lab Courier: _____
 Shipped: EX Priority
 Hand Delivered: _____

Matrix Key

WW - Wastewater	SE - Sediment
W - Water	SO - Soil
S - Soil	L - Leachate
SL - Sludge	WI - Wipe
MS - Miscellaneous	DW - Drinking Water
OL - Oil	O - Other
A - Air	

Client Comments: _____

Lab Comments: _____

FedEx *NEW Package*
Express *US Airbill*

FedEx Tracking Number **8018 1222 2910**

Form ID No. **0200**

48 qt.

1 From
Date **10-3-17**
Sender's Name **Peter Stulik** Phone **651 247-4218**
Company **GHD**
Address **1801 old Hwy 8**
City **St. Paul** State **MN** ZIP **55112**

2 Your Internal Billing Reference

3 To
Recipient's Name **Sample Receiving** Phone **708 534-5200**
Company **Test America**
Address **2417 Bond Street**
City **University Park** State **IL** ZIP **60484**

4 Express Package Service * To most locations.
NOTE: Service order has changed. Please select carefully. **Packages up to 150 lbs.**
For packages over 150 lbs, use the new FedEx Express Freight US Airbill.

Next Business Day
 FedEx First Overnight
 FedEx Priority Overnight
 FedEx Standard Overnight

2 or 3 Business Days
 FedEx 2Day A.M.
 FedEx 2Day
 FedEx Express Saver

5 Packaging * Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options
 SATURDAY Delivery
 No Signature Required
 Direct Signature
 Indirect Signature
Does this shipment contain dangerous goods?
 No Yes Yes Dry Ice Cargo Aircraft Only

7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Recipient Third Party Credit Card Cash/Chek
Total Packages **1** Total Weight **48** lbs. Credit Card Auth. **644**



8018 1222 2910

Recipient's Name Please print.
Phone Number
Company
Dept./Floor/Suite/Room
Street Address We cannot deliver to P.O. boxes or P.O. ZIP codes.
City
State ZIP Country

FedEx
TRK# **8018 1222 2920**

WED - 04 OCT 10:30A
PRIORITY OVERNIGHT

XH JOTA

60484
IL-US
ORD



ORIGIN ID: JOTA (708) 534-5200
SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

SHIP DATE: 04OCT17
ACTWGT: 61.00 LB MAN
CAD: 33264/CAFE9108

UNIVERSITY PARK, IL 60466
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIPT**
TEST AMERICA
301 ALPHA DR.
STE. 3
PITTSBURGH PA 15238

REF: 134991 135021 DE



FedEx
Express



TRK# 4059 7166 0480
0201

THU - 05 OCT 3:00P
STANDARD OVERNIGHT

NA AGCA

15238
PA-US PIT

Uncorrected temp 2.6 °C
Thermometer ID T3

CF 0 Initials TJ

PT-WI-SR-001 effective 7/26/13



500-135021 Waybill

TestAmerica Chicago
 2417 Bond Street
 University Park, IL 60484
 Phone (708) 534-5200 Fax (708) 534-5211

Chain of Custody Record



estAmerica
 LEADER IN ENVIRONMENTAL TESTING

C No: 0-93858-1
 Page: Page 1 of 1
 Lab # 500-135021-1
 State of Origin: Wisconsin
 500-135021 Chain of Custody
 Lab PM: Wright, Richard C
 E-Mail: richard.wright@testamericainc.com
 Accreditations Required (See note): State Program - Wisconsin
 Sampler: Wright, Richard C
 Phone: richard.wright@testamericainc.com
 Company: TestAmerica Laboratories, Inc.
 Address: 301 Alpha Drive, RIDC Park, Pittsburgh, PA, 15238
 Phone: 412-963-7058(Tel) 412-963-2468(Fax)
 Email: Penta Wood 086165-04
 Project Name: Penta Wood 086165-04
 Site:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastobol)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	815A/815A_AP (MOD) Pentachlorophenol	Total Number of Containers	Special Instructions/Note:
W-171002-PS-02 (500-135021-1)	10/2/17	12:35 Central	Water	Water	X	X	X	2	WI Use 200 ul spike; and x4 dilution
W-171002-PS-03 (500-135021-2)	10/2/17	13:15 Central	Water	Water	X	X	X	2	WI Use 200 ul spike; and x4 dilution
W-171002-PS-04 (500-135021-3)	10/2/17	14:30 Central	Water	Water	X	X	X	2	WI Use 200 ul spike; and x4 dilution
W-171002-PS-05 (500-135021-4)	10/2/17	15:30 Central	Water	Water	X	X	X	2	WI Use 200 ul spike; and x4 dilution
W-171002-PS-06 (500-135021-5)	10/2/17	10:05 Central	Water	Water	X	X	X	2	WI Use 200 ul spike; and x4 dilution

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2
 Date: _____
 Empty Kit Relinquished by: _____
 Relinquished by: *[Signature]* Date: 10/09/17 Time: 1600
 Relinquished by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____
 Custody Seals Intact: Yes No
 Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____

Method of Shipment: _____
 Received by: *[Signature]* Date: 10/5/17 8:50 Company: TAP
 Received by: _____ Date: _____ Company: _____
 Received by: _____ Date: _____ Company: _____



Chain of Custody Record



3,2/C3,2

Client Information (Sub Contract Lab)

Company: TestAmerica Laboratories, Inc.
 Address: 4101 Shuffel Street NW,
 City: North Canton
 State, Zip: OH, 44720
 Phone: 330-497-9396(Tel) 330-497-0772(Fax)
 Email:
 Project #: 50013796
 Penta Wood 086165-04
 Site:

Sampler: Lab PM Wright, Richard C
 Phone: E-Mail: richard.wright@testamericainc.com
 Shipping/Receiving
 Accreditations Required (See note): State Program - Wisconsin

COC No: 500-93851.1
 Page: Page 1 of 1
 Job #: 500-135021-1

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, B=soil, T=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK 175 (MOD) Methane	Total Number of Containers	Special Instructions/Note:
W-171002-PS-02 (500-135021-1)	10/2/17	12:35 Central	Water	Water	X	X		3	WI
W-171002-PS-03 (500-135021-2)	10/2/17	13:15 Central	Water	Water	X	X		3	WI
W-171002-PS-04 (500-135021-3)	10/2/17	14:30 Central	Water	Water	X	X		3	WI
W-171002-PS-05 (500-135021-4)	10/2/17	15:30 Central	Water	Water	X	X		3	WI
W-171002-PS-06 (500-135021-5)	10/2/17	10:05 Central	Water	Water	X	X		3	WI

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
 Other:

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

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: _____ Date/Time: 10/04/17 @ 1600 Company TA
 Relinquished by: _____ Date/Time: _____ Company
 Relinquished by: _____ Date/Time: _____ Company

Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Received by: _____ Date/Time: 10/05/17 9:25 Company TAC
 Received by: _____ Date/Time: _____ Company
 Received by: _____ Date/Time: _____ Company

Cooler Temperature(s) °C and Other Remarks:



Login # : _____

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Cooler unpacked by: DoD

Client TA Chicago Site Name _____

Cooler Received on 10/05/17 Opened on 10/05/17

FedEx: 1st Grd UPS FAS Clipper 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

See Multiple Cooler Form

- Cooler temperature upon receipt
 - IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 3.2 °C
 - IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 - IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

- Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 - Were tamper/custody seals intact and uncompromised? Yes No NA
- Shippers' packing slip attached to the cooler(s)? Yes No
- Did custody papers accompany the sample(s)? Yes No
- Were the custody papers relinquished & signed in the appropriate place? Yes No
- Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
- Did all bottles arrive in good condition (Unbroken)? Yes No
- Could all bottle labels be reconciled with the COC? Yes No
- Were correct bottle(s) used for the test(s) indicated? Yes No
- Sufficient quantity received to perform indicated analyses? Yes No
- Are these work share samples? Yes No
- If yes, Questions 11-15 have been checked at the originating laboratory.
- Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
- Were VOAs on the COC? Yes No
- Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

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

Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

17. 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)

18. SAMPLE PRESERVATION

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135021-1

Login Number: 135021

List Source: TestAmerica Chicago

List Number: 1

Creator: Sanchez, Ariel M

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	2.5, 5.6
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)	False	Refer to Job Narrative for details.
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	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135021-1

Login Number: 135021
List Number: 2
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 10/05/17 02:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 <math><6\text{mm}</math> (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 Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-135085-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson



Authorized for release by:
10/18/2017 5:00:44 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Job ID: 500-135085-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-135085-1

Comments

No additional comments.

Receipt

The samples were received on 10/5/2017 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.5° C, 3.0° C, 4.2° C, 4.3° C and 5.8° 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 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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-07

Lab Sample ID: 500-135085-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.18	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.16		0.095	0.044	ug/L	4		8151A	Total/NA
Arsenic	0.38	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.4	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	171		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	31.8		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.3		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.6		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.83	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	116		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171003-PS-08

Lab Sample ID: 500-135085-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.087	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Arsenic	0.95	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.72	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	1.1	J	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	166		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	16.1		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	1.9		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.9		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.47	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	129		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171003-PS-09

Lab Sample ID: 500-135085-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.11	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Arsenic	1.0		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.74	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	0.93	J	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	148		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	17.1		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	1.9		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.7		0.20	0.095	mg/L	1		300.0	Total/NA
Alkalinity	128		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171003-PS-10

Lab Sample ID: 500-135085-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.082	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Arsenic	0.28	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.2	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	70.5		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	72.6		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.8		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.1		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.76	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	35.2		5.0	3.7	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-11

Lab Sample ID: 500-135085-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.096	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Arsenic	0.74	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.8	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	390		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	17.2	F1	1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	3.5		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	125		4.0	1.9	mg/L	20		300.0	Total/NA
Alkalinity	212		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171003-PS-12

Lab Sample ID: 500-135085-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.21	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Copper	2.0	B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	65.8		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	28.0		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	4.0		0.40	0.14	mg/L	2		300.0	Total/NA
Sulfate	9.8		0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	0.50	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	26.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171004-PS-13

Lab Sample ID: 500-135085-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	14		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.18		0.098	0.046	ug/L	4		8151A	Total/NA
Arsenic	0.31	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.4	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	1290		100	46.7	ug/L	1		6020A	Dissolved
Manganese	66.9		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	11.9	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	220		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	11.5		0.40	0.34	mg/L	2		300.0	Total/NA
Nitrate as N	7.7		0.40	0.14	mg/L	2		300.0	Total/NA
Sulfate	79.4		4.0	1.9	mg/L	20		300.0	Total/NA
Total Organic Carbon - Duplicates	2.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	159		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171004-PS-14

Lab Sample ID: 500-135085-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.22	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.25		0.10	0.046	ug/L	4		8151A	Total/NA
Arsenic	0.31	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.9	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	164		100	46.7	ug/L	1		6020A	Dissolved
Manganese	65.0		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	7.9	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	129		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	9.4		0.40	0.34	mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-14 (Continued)

Lab Sample ID: 500-135085-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	8.0		1.0	0.34	mg/L	5		300.0	Total/NA
Sulfate	39.1		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	3.9		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	65.2		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank-002

Lab Sample ID: 500-135085-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-135085-1	W-171003-PS-07	Water	10/03/17 13:30	10/05/17 09:45
500-135085-2	W-171003-PS-08	Water	10/03/17 14:40	10/05/17 09:45
500-135085-3	W-171003-PS-09	Water	10/03/17 14:45	10/05/17 09:45
500-135085-4	W-171003-PS-10	Water	10/03/17 16:20	10/05/17 09:45
500-135085-5	W-171003-PS-11	Water	10/03/17 17:20	10/05/17 09:45
500-135085-6	W-171003-PS-12	Water	10/03/17 17:35	10/05/17 09:45
500-135085-7	W-171004-PS-13	Water	10/04/17 09:45	10/05/17 09:45
500-135085-8	W-171004-PS-14	Water	10/04/17 10:30	10/05/17 09:45
500-135085-9	Trip Blank-002	Water	10/04/17 12:30	10/05/17 09:45



Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-07

Lab Sample ID: 500-135085-1

Date Collected: 10/03/17 13:30

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 13:13	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 13:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 13:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 13:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		75 - 126		10/12/17 13:13	1
Toluene-d8 (Surr)	96		75 - 120		10/12/17 13:13	1
4-Bromofluorobenzene (Surr)	87		72 - 124		10/12/17 13:13	1
Dibromofluoromethane	92		75 - 120		10/12/17 13:13	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.76	0.24	ug/L		10/06/17 07:45	10/12/17 14:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	54		27 - 110	10/06/17 07:45	10/12/17 14:28	1
Phenol-d5 (Surr)	45		20 - 100	10/06/17 07:45	10/12/17 14:28	1
Nitrobenzene-d5 (Surr)	81		36 - 120	10/06/17 07:45	10/12/17 14:28	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/06/17 07:45	10/12/17 14:28	1
2,4,6-Tribromophenol (Surr)	72		40 - 145	10/06/17 07:45	10/12/17 14:28	1
Terphenyl-d14 (Surr)	103		40 - 145	10/06/17 07:45	10/12/17 14:28	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.18	J B	0.50	0.080	ug/L			10/17/17 19:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		76 - 121		10/17/17 19:31	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.16		0.095	0.044	ug/L		10/07/17 09:30	10/10/17 16:38	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	78		20 - 100	10/07/17 09:30	10/10/17 16:38	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.38	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 11:25	1
Copper	1.4	J	2.0	0.50	ug/L		10/05/17 16:14	10/06/17 11:25	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 11:25	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 11:25	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 11:25	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	171		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	31.8		2.0	1.7	mg/L			10/17/17 01:42	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-07

Lab Sample ID: 500-135085-1

Date Collected: 10/03/17 13:30

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	2.3		0.20	0.068	mg/L			10/05/17 11:22	1
Sulfate	6.6		0.20	0.095	mg/L			10/05/17 11:22	1
Total Organic Carbon - Duplicates	0.83	J	1.0	0.47	mg/L			10/09/17 05:00	1
Alkalinity	116		5.0	3.7	mg/L			10/12/17 12:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-08

Lab Sample ID: 500-135085-2

Date Collected: 10/03/17 14:40

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 13:40	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 13:40	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 13:40	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	84		75 - 126		10/12/17 13:40	1
Toluene-d8 (Surr)	95		75 - 120		10/12/17 13:40	1
4-Bromofluorobenzene (Surr)	91		72 - 124		10/12/17 13:40	1
Dibromofluoromethane	94		75 - 120		10/12/17 13:40	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.76	0.24	ug/L		10/06/17 07:45	10/12/17 14:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	54		27 - 110	10/06/17 07:45	10/12/17 14:52	1
Phenol-d5 (Surr)	50		20 - 100	10/06/17 07:45	10/12/17 14:52	1
Nitrobenzene-d5 (Surr)	80		36 - 120	10/06/17 07:45	10/12/17 14:52	1
2-Fluorobiphenyl (Surr)	76		34 - 110	10/06/17 07:45	10/12/17 14:52	1
2,4,6-Tribromophenol (Surr)	59		40 - 145	10/06/17 07:45	10/12/17 14:52	1
Terphenyl-d14 (Surr)	98		40 - 145	10/06/17 07:45	10/12/17 14:52	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.087	J	0.50	0.080	ug/L			10/17/17 14:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	88		76 - 121		10/17/17 14:27	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.098	0.046	ug/L		10/07/17 09:30	10/10/17 17:51	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	62		20 - 100	10/07/17 09:30	10/10/17 17:51	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.95	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:08	1
Copper	0.72	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:27	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:08	1
Manganese	1.1	J	2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:08	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:08	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	166		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.1		1.0	0.85	mg/L			10/17/17 02:20	5

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-08

Lab Sample ID: 500-135085-2

Date Collected: 10/03/17 14:40

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	1.9		0.20	0.068	mg/L			10/05/17 12:00	1
Sulfate	6.9		0.20	0.095	mg/L			10/05/17 12:00	1
Total Organic Carbon - Duplicates	0.47	J	1.0	0.47	mg/L			10/09/17 05:53	1
Alkalinity	129		5.0	3.7	mg/L			10/12/17 12:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-09

Lab Sample ID: 500-135085-3

Date Collected: 10/03/17 14:45

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 14:07	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 14:07	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 14:07	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 14:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		75 - 126					10/12/17 14:07	1
Toluene-d8 (Surr)	96		75 - 120					10/12/17 14:07	1
4-Bromofluorobenzene (Surr)	91		72 - 124					10/12/17 14:07	1
Dibromofluoromethane	98		75 - 120					10/12/17 14:07	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/06/17 07:45	10/12/17 15:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	54		27 - 110				10/06/17 07:45	10/12/17 15:16	1
Phenol-d5 (Surr)	53		20 - 100				10/06/17 07:45	10/12/17 15:16	1
Nitrobenzene-d5 (Surr)	81		36 - 120				10/06/17 07:45	10/12/17 15:16	1
2-Fluorobiphenyl (Surr)	79		34 - 110				10/06/17 07:45	10/12/17 15:16	1
2,4,6-Tribromophenol (Surr)	65		40 - 145				10/06/17 07:45	10/12/17 15:16	1
Terphenyl-d14 (Surr)	106		40 - 145				10/06/17 07:45	10/12/17 15:16	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.11	J	0.50	0.080	ug/L			10/17/17 14:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		76 - 121					10/17/17 14:44	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.099	0.046	ug/L		10/07/17 09:30	10/10/17 18:15	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	61		20 - 100				10/07/17 09:30	10/10/17 18:15	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.0		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:11	1
Copper	0.74	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:32	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:11	1
Manganese	0.93	J	2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:11	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:11	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	148		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.1		1.0	0.85	mg/L			10/17/17 02:33	5

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-09

Lab Sample ID: 500-135085-3

Date Collected: 10/03/17 14:45

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	1.9		0.20	0.068	mg/L			10/05/17 12:13	1
Sulfate	6.7		0.20	0.095	mg/L			10/05/17 12:13	1
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 06:10	1
Alkalinity	128		5.0	3.7	mg/L			10/12/17 12:50	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-10

Lab Sample ID: 500-135085-4

Date Collected: 10/03/17 16:20

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 14:34	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 14:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 14:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 14:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		75 - 126		10/12/17 14:34	1
Toluene-d8 (Surr)	97		75 - 120		10/12/17 14:34	1
4-Bromofluorobenzene (Surr)	88		72 - 124		10/12/17 14:34	1
Dibromofluoromethane	101		75 - 120		10/12/17 14:34	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.76	0.23	ug/L		10/06/17 07:45	10/12/17 15:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	60		27 - 110	10/06/17 07:45	10/12/17 15:39	1
Phenol-d5 (Surr)	47		20 - 100	10/06/17 07:45	10/12/17 15:39	1
Nitrobenzene-d5 (Surr)	81		36 - 120	10/06/17 07:45	10/12/17 15:39	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/06/17 07:45	10/12/17 15:39	1
2,4,6-Tribromophenol (Surr)	57		40 - 145	10/06/17 07:45	10/12/17 15:39	1
Terphenyl-d14 (Surr)	100		40 - 145	10/06/17 07:45	10/12/17 15:39	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.082	J	0.50	0.080	ug/L			10/17/17 15:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		76 - 121		10/17/17 15:01	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.045		0.096	0.045	ug/L		10/07/17 09:30	10/10/17 18:39	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	72		20 - 100	10/07/17 09:30	10/10/17 18:39	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.28	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:15	1
Copper	1.2	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:37	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:15	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:15	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:15	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	70.5		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	72.6		2.0	1.7	mg/L			10/17/17 22:01	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-10

Lab Sample ID: 500-135085-4

Date Collected: 10/03/17 16:20

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	1.8		0.20	0.068	mg/L			10/05/17 12:26	1
Sulfate	7.1		0.20	0.095	mg/L			10/05/17 12:26	1
Total Organic Carbon - Duplicates	0.76	J	1.0	0.47	mg/L			10/09/17 06:27	1
Alkalinity	35.2		5.0	3.7	mg/L			10/12/17 12:56	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-11

Lab Sample ID: 500-135085-5

Date Collected: 10/03/17 17:20

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 15:01	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 15:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 15:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 15:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 126		10/12/17 15:01	1
Toluene-d8 (Surr)	96		75 - 120		10/12/17 15:01	1
4-Bromofluorobenzene (Surr)	88		72 - 124		10/12/17 15:01	1
Dibromofluoromethane	96		75 - 120		10/12/17 15:01	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.85	0.26	ug/L		10/06/17 07:45	10/12/17 16:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	64		27 - 110	10/06/17 07:45	10/12/17 16:03	1
Phenol-d5 (Surr)	60		20 - 100	10/06/17 07:45	10/12/17 16:03	1
Nitrobenzene-d5 (Surr)	86		36 - 120	10/06/17 07:45	10/12/17 16:03	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/06/17 07:45	10/12/17 16:03	1
2,4,6-Tribromophenol (Surr)	70		40 - 145	10/06/17 07:45	10/12/17 16:03	1
Terphenyl-d14 (Surr)	117		40 - 145	10/06/17 07:45	10/12/17 16:03	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.096	J	0.50	0.080	ug/L			10/17/17 15:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	85		76 - 121		10/17/17 15:19	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.099	0.046	ug/L		10/07/17 09:30	10/10/17 19:04	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 100	10/07/17 09:30	10/10/17 19:04	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.74	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:19	1
Copper	1.8	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:41	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:19	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:19	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:19	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	390		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17.2	F1	1.0	0.85	mg/L			10/17/17 22:13	5

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-11

Lab Sample ID: 500-135085-5

Date Collected: 10/03/17 17:20

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	3.5		0.20	0.068	mg/L			10/05/17 12:38	1
Sulfate	125		4.0	1.9	mg/L			10/18/17 12:53	20
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 06:44	1
Alkalinity	212		5.0	3.7	mg/L			10/12/17 13:03	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-12

Lab Sample ID: 500-135085-6

Date Collected: 10/03/17 17:35

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 15:29	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 15:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 15:29	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 15:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	82		75 - 126		10/12/17 15:29	1
Toluene-d8 (Surr)	97		75 - 120		10/12/17 15:29	1
4-Bromofluorobenzene (Surr)	87		72 - 124		10/12/17 15:29	1
Dibromofluoromethane	94		75 - 120		10/12/17 15:29	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.84	0.26	ug/L		10/06/17 07:45	10/12/17 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	65		27 - 110	10/06/17 07:45	10/12/17 16:27	1
Phenol-d5 (Surr)	59		20 - 100	10/06/17 07:45	10/12/17 16:27	1
Nitrobenzene-d5 (Surr)	82		36 - 120	10/06/17 07:45	10/12/17 16:27	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/06/17 07:45	10/12/17 16:27	1
2,4,6-Tribromophenol (Surr)	62		40 - 145	10/06/17 07:45	10/12/17 16:27	1
Terphenyl-d14 (Surr)	115		40 - 145	10/06/17 07:45	10/12/17 16:27	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.21	J	0.50	0.080	ug/L			10/17/17 15:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	89		76 - 121		10/17/17 15:53	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.044		0.095	0.044	ug/L		10/07/17 09:30	10/10/17 19:28	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	57		20 - 100	10/07/17 09:30	10/10/17 19:28	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:23	1
Copper	2.0	B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:46	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:23	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:23	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:23	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	65.8		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28.0		1.0	0.85	mg/L			10/17/17 23:55	5

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-12

Lab Sample ID: 500-135085-6

Date Collected: 10/03/17 17:35

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	4.0		0.40	0.14	mg/L			10/05/17 14:07	2
Sulfate	9.8		0.40	0.19	mg/L			10/05/17 14:07	2
Total Organic Carbon - Duplicates	0.50	J	1.0	0.47	mg/L			10/09/17 07:00	1
Alkalinity	26.1		5.0	3.7	mg/L			10/12/17 13:08	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-13

Lab Sample ID: 500-135085-7

Date Collected: 10/04/17 09:45

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 15:56	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 15:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 15:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 15:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		75 - 126		10/12/17 15:56	1
Toluene-d8 (Surr)	95		75 - 120		10/12/17 15:56	1
4-Bromofluorobenzene (Surr)	90		72 - 124		10/12/17 15:56	1
Dibromofluoromethane	98		75 - 120		10/12/17 15:56	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.81	0.25	ug/L		10/06/17 07:45	10/12/17 16:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	60		27 - 110	10/06/17 07:45	10/12/17 16:50	1
Phenol-d5 (Surr)	51		20 - 100	10/06/17 07:45	10/12/17 16:50	1
Nitrobenzene-d5 (Surr)	82		36 - 120	10/06/17 07:45	10/12/17 16:50	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/06/17 07:45	10/12/17 16:50	1
2,4,6-Tribromophenol (Surr)	73		40 - 145	10/06/17 07:45	10/12/17 16:50	1
Terphenyl-d14 (Surr)	108		40 - 145	10/06/17 07:45	10/12/17 16:50	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	14		0.50	0.080	ug/L			10/17/17 16:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		76 - 121		10/17/17 16:10	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.18		0.098	0.046	ug/L		10/07/17 09:30	10/10/17 19:52	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	69		20 - 100	10/07/17 09:30	10/10/17 19:52	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.31	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:26	1
Copper	1.4	J B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:51	1
Iron	1290		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:26	1
Manganese	66.9		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:26	1
Zinc	11.9	J	20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:26	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	220		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11.5		0.40	0.34	mg/L			10/05/17 18:58	2

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-13

Lab Sample ID: 500-135085-7

Date Collected: 10/04/17 09:45

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	7.7		0.40	0.14	mg/L			10/05/17 18:58	2
Sulfate	79.4		4.0	1.9	mg/L			10/18/17 13:56	20
Total Organic Carbon - Duplicates	2.5		1.0	0.47	mg/L			10/09/17 07:17	1
Alkalinity	159		5.0	3.7	mg/L			10/12/17 13:15	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-14

Lab Sample ID: 500-135085-8

Date Collected: 10/04/17 10:30

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 16:23	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 16:23	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 16:23	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 126		10/12/17 16:23	1
Toluene-d8 (Surr)	94		75 - 120		10/12/17 16:23	1
4-Bromofluorobenzene (Surr)	87		72 - 124		10/12/17 16:23	1
Dibromofluoromethane	98		75 - 120		10/12/17 16:23	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/06/17 07:45	10/12/17 17:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	59		27 - 110	10/06/17 07:45	10/12/17 17:14	1
Phenol-d5 (Surr)	53		20 - 100	10/06/17 07:45	10/12/17 17:14	1
Nitrobenzene-d5 (Surr)	80		36 - 120	10/06/17 07:45	10/12/17 17:14	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/06/17 07:45	10/12/17 17:14	1
2,4,6-Tribromophenol (Surr)	73		40 - 145	10/06/17 07:45	10/12/17 17:14	1
Terphenyl-d14 (Surr)	113		40 - 145	10/06/17 07:45	10/12/17 17:14	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.22	J	0.50	0.080	ug/L			10/17/17 16:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	82		76 - 121		10/17/17 16:27	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.25		0.10	0.046	ug/L		10/07/17 09:30	10/10/17 20:16	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	58		20 - 100	10/07/17 09:30	10/10/17 20:16	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.31	J	1.0	0.23	ug/L		10/05/17 16:14	10/06/17 12:30	1
Copper	2.9	B	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:55	1
Iron	164		100	46.7	ug/L		10/05/17 16:14	10/06/17 12:30	1
Manganese	65.0		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 12:30	1
Zinc	7.9	J	20.0	6.9	ug/L		10/05/17 16:14	10/06/17 12:30	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	129		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.4		0.40	0.34	mg/L			10/05/17 19:11	2

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-14

Lab Sample ID: 500-135085-8

Date Collected: 10/04/17 10:30

Matrix: Water

Date Received: 10/05/17 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	8.0		1.0	0.34	mg/L			10/06/17 10:23	5
Sulfate	39.1		1.0	0.48	mg/L			10/06/17 10:23	5
Total Organic Carbon - Duplicates	3.9		1.0	0.47	mg/L			10/09/17 07:35	1
Alkalinity	65.2		5.0	3.7	mg/L			10/12/17 13:20	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: Trip Blank-002

Lab Sample ID: 500-135085-9

Date Collected: 10/04/17 12:30

Matrix: Water

Date Received: 10/05/17 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 16:50	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 16:50	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 16:50	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 16:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		75 - 126		10/12/17 16:50	1
Toluene-d8 (Surr)	98		75 - 120		10/12/17 16:50	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/12/17 16:50	1
Dibromofluoromethane	96		75 - 120		10/12/17 16:50	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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.

Metals

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
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.
E	Result exceeded calibration range.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

GC/MS VOA

Analysis Batch: 405056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	8260B	
500-135085-2	W-171003-PS-08	Total/NA	Water	8260B	
500-135085-3	W-171003-PS-09	Total/NA	Water	8260B	
500-135085-4	W-171003-PS-10	Total/NA	Water	8260B	
500-135085-5	W-171003-PS-11	Total/NA	Water	8260B	
500-135085-6	W-171003-PS-12	Total/NA	Water	8260B	
500-135085-7	W-171004-PS-13	Total/NA	Water	8260B	
500-135085-8	W-171004-PS-14	Total/NA	Water	8260B	
500-135085-9	Trip Blank-002	Total/NA	Water	8260B	
MB 500-405056/5	Method Blank	Total/NA	Water	8260B	
LCS 500-405056/4	Lab Control Sample	Total/NA	Water	8260B	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	8260B	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 404220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	3510C	
500-135085-2	W-171003-PS-08	Total/NA	Water	3510C	
500-135085-3	W-171003-PS-09	Total/NA	Water	3510C	
500-135085-4	W-171003-PS-10	Total/NA	Water	3510C	
500-135085-5	W-171003-PS-11	Total/NA	Water	3510C	
500-135085-6	W-171003-PS-12	Total/NA	Water	3510C	
500-135085-7	W-171004-PS-13	Total/NA	Water	3510C	
500-135085-8	W-171004-PS-14	Total/NA	Water	3510C	
MB 500-404220/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-404220/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	3510C	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	3510C	

Analysis Batch: 404268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-404220/1-A	Method Blank	Total/NA	Water	8270D	404220
LCS 500-404220/2-A	Lab Control Sample	Total/NA	Water	8270D	404220

Analysis Batch: 405058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	8270D	404220
500-135085-2	W-171003-PS-08	Total/NA	Water	8270D	404220
500-135085-3	W-171003-PS-09	Total/NA	Water	8270D	404220
500-135085-4	W-171003-PS-10	Total/NA	Water	8270D	404220
500-135085-5	W-171003-PS-11	Total/NA	Water	8270D	404220
500-135085-6	W-171003-PS-12	Total/NA	Water	8270D	404220
500-135085-7	W-171004-PS-13	Total/NA	Water	8270D	404220
500-135085-8	W-171004-PS-14	Total/NA	Water	8270D	404220
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	8270D	404220
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	8270D	404220

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

GC VOA

Analysis Batch: 299350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-2	W-171003-PS-08	Total/NA	Water	RSK-175	
500-135085-3	W-171003-PS-09	Total/NA	Water	RSK-175	
500-135085-4	W-171003-PS-10	Total/NA	Water	RSK-175	
500-135085-5	W-171003-PS-11	Total/NA	Water	RSK-175	
500-135085-6	W-171003-PS-12	Total/NA	Water	RSK-175	
500-135085-7	W-171004-PS-13	Total/NA	Water	RSK-175	
500-135085-8	W-171004-PS-14	Total/NA	Water	RSK-175	
MB 240-299350/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-299350/5	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 299476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	RSK-175	
MB 240-299476/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-299476/5	Lab Control Sample	Total/NA	Water	RSK-175	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	RSK-175	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 225166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	8151A	
500-135085-2	W-171003-PS-08	Total/NA	Water	8151A	
500-135085-3	W-171003-PS-09	Total/NA	Water	8151A	
500-135085-4	W-171003-PS-10	Total/NA	Water	8151A	
500-135085-5	W-171003-PS-11	Total/NA	Water	8151A	
500-135085-6	W-171003-PS-12	Total/NA	Water	8151A	
500-135085-7	W-171004-PS-13	Total/NA	Water	8151A	
500-135085-8	W-171004-PS-14	Total/NA	Water	8151A	
MB 180-225166/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-225166/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	8151A	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	8151A	

Analysis Batch: 225378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	8151A	225166
500-135085-2	W-171003-PS-08	Total/NA	Water	8151A	225166
500-135085-3	W-171003-PS-09	Total/NA	Water	8151A	225166
500-135085-4	W-171003-PS-10	Total/NA	Water	8151A	225166
500-135085-5	W-171003-PS-11	Total/NA	Water	8151A	225166
500-135085-6	W-171003-PS-12	Total/NA	Water	8151A	225166
500-135085-7	W-171004-PS-13	Total/NA	Water	8151A	225166
500-135085-8	W-171004-PS-14	Total/NA	Water	8151A	225166
MB 180-225166/1-A	Method Blank	Total/NA	Water	8151A	225166
LCS 180-225166/2-A	Lab Control Sample	Total/NA	Water	8151A	225166
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	8151A	225166
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	8151A	225166

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Metals

Prep Batch: 404150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Dissolved	Water	3005A	
500-135085-2	W-171003-PS-08	Dissolved	Water	3005A	
500-135085-3	W-171003-PS-09	Dissolved	Water	3005A	
500-135085-4	W-171003-PS-10	Dissolved	Water	3005A	
500-135085-5	W-171003-PS-11	Dissolved	Water	3005A	
500-135085-6	W-171003-PS-12	Dissolved	Water	3005A	
500-135085-7	W-171004-PS-13	Dissolved	Water	3005A	
500-135085-8	W-171004-PS-14	Dissolved	Water	3005A	
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-135085-1 MS	W-171003-PS-07	Dissolved	Water	3005A	
500-135085-1 MSD	W-171003-PS-07	Dissolved	Water	3005A	
500-135085-1 DU	W-171003-PS-07	Dissolved	Water	3005A	

Prep Batch: 404461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	3010A	
500-135085-2	W-171003-PS-08	Total/NA	Water	3010A	
500-135085-3	W-171003-PS-09	Total/NA	Water	3010A	
500-135085-4	W-171003-PS-10	Total/NA	Water	3010A	
500-135085-5	W-171003-PS-11	Total/NA	Water	3010A	
500-135085-6	W-171003-PS-12	Total/NA	Water	3010A	
500-135085-7	W-171004-PS-13	Total/NA	Water	3010A	
500-135085-8	W-171004-PS-14	Total/NA	Water	3010A	

Analysis Batch: 404510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Dissolved	Water	6020A	404150
500-135085-2	W-171003-PS-08	Dissolved	Water	6020A	404150
500-135085-3	W-171003-PS-09	Dissolved	Water	6020A	404150
500-135085-4	W-171003-PS-10	Dissolved	Water	6020A	404150
500-135085-5	W-171003-PS-11	Dissolved	Water	6020A	404150
500-135085-6	W-171003-PS-12	Dissolved	Water	6020A	404150
500-135085-7	W-171004-PS-13	Dissolved	Water	6020A	404150
500-135085-8	W-171004-PS-14	Dissolved	Water	6020A	404150
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	6020A	404150
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404150
500-135085-1 MS	W-171003-PS-07	Dissolved	Water	6020A	404150
500-135085-1 MSD	W-171003-PS-07	Dissolved	Water	6020A	404150
500-135085-1 DU	W-171003-PS-07	Dissolved	Water	6020A	404150

Analysis Batch: 404653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-2	W-171003-PS-08	Dissolved	Water	6020A	404150
500-135085-3	W-171003-PS-09	Dissolved	Water	6020A	404150
500-135085-4	W-171003-PS-10	Dissolved	Water	6020A	404150
500-135085-5	W-171003-PS-11	Dissolved	Water	6020A	404150
500-135085-6	W-171003-PS-12	Dissolved	Water	6020A	404150
500-135085-7	W-171004-PS-13	Dissolved	Water	6020A	404150
500-135085-8	W-171004-PS-14	Dissolved	Water	6020A	404150
MB 500-404150/1-A	Method Blank	Total Recoverable	Water	6020A	404150

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Metals (Continued)

Analysis Batch: 404653 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 500-404150/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404150

Analysis Batch: 404670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	SM 2340B	404461
500-135085-2	W-171003-PS-08	Total/NA	Water	SM 2340B	404461
500-135085-3	W-171003-PS-09	Total/NA	Water	SM 2340B	404461
500-135085-4	W-171003-PS-10	Total/NA	Water	SM 2340B	404461
500-135085-5	W-171003-PS-11	Total/NA	Water	SM 2340B	404461
500-135085-6	W-171003-PS-12	Total/NA	Water	SM 2340B	404461
500-135085-7	W-171004-PS-13	Total/NA	Water	SM 2340B	404461
500-135085-8	W-171004-PS-14	Total/NA	Water	SM 2340B	404461

General Chemistry

Analysis Batch: 404145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	300.0	
500-135085-2	W-171003-PS-08	Total/NA	Water	300.0	
500-135085-3	W-171003-PS-09	Total/NA	Water	300.0	
500-135085-4	W-171003-PS-10	Total/NA	Water	300.0	
500-135085-5	W-171003-PS-11	Total/NA	Water	300.0	
500-135085-6	W-171003-PS-12	Total/NA	Water	300.0	
500-135085-7	W-171004-PS-13	Total/NA	Water	300.0	
500-135085-8	W-171004-PS-14	Total/NA	Water	300.0	
MB 500-404145/8	Method Blank	Total/NA	Water	300.0	
LCS 500-404145/9	Lab Control Sample	Total/NA	Water	300.0	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	300.0	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	300.0	

Analysis Batch: 404303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-8	W-171004-PS-14	Total/NA	Water	300.0	
MB 500-404303/9	Method Blank	Total/NA	Water	300.0	
LCS 500-404303/10	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 404598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	9060A	
500-135085-2	W-171003-PS-08	Total/NA	Water	9060A	
500-135085-3	W-171003-PS-09	Total/NA	Water	9060A	
500-135085-4	W-171003-PS-10	Total/NA	Water	9060A	
500-135085-5	W-171003-PS-11	Total/NA	Water	9060A	
500-135085-6	W-171003-PS-12	Total/NA	Water	9060A	
500-135085-7	W-171004-PS-13	Total/NA	Water	9060A	
500-135085-8	W-171004-PS-14	Total/NA	Water	9060A	
MB 500-404598/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404598/5	Lab Control Sample	Total/NA	Water	9060A	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	9060A	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	9060A	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

General Chemistry (Continued)

Analysis Batch: 405136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	SM 2320B	
500-135085-2	W-171003-PS-08	Total/NA	Water	SM 2320B	
500-135085-3	W-171003-PS-09	Total/NA	Water	SM 2320B	
500-135085-4	W-171003-PS-10	Total/NA	Water	SM 2320B	
500-135085-5	W-171003-PS-11	Total/NA	Water	SM 2320B	
500-135085-6	W-171003-PS-12	Total/NA	Water	SM 2320B	
500-135085-7	W-171004-PS-13	Total/NA	Water	SM 2320B	
500-135085-8	W-171004-PS-14	Total/NA	Water	SM 2320B	
MB 500-405136/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-405136/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-135085-1 DU	W-171003-PS-07	Total/NA	Water	SM 2320B	

Analysis Batch: 405584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-1	W-171003-PS-07	Total/NA	Water	300.0	
500-135085-2	W-171003-PS-08	Total/NA	Water	300.0	
500-135085-3	W-171003-PS-09	Total/NA	Water	300.0	
MB 500-405584/4	Method Blank	Total/NA	Water	300.0	
LCS 500-405584/5	Lab Control Sample	Total/NA	Water	300.0	
500-135085-1 MS	W-171003-PS-07	Total/NA	Water	300.0	
500-135085-1 MSD	W-171003-PS-07	Total/NA	Water	300.0	

Analysis Batch: 405805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-4	W-171003-PS-10	Total/NA	Water	300.0	
500-135085-5	W-171003-PS-11	Total/NA	Water	300.0	
500-135085-6	W-171003-PS-12	Total/NA	Water	300.0	
MB 500-405805/13	Method Blank	Total/NA	Water	300.0	
LCS 500-405805/14	Lab Control Sample	Total/NA	Water	300.0	
500-135085-5 MS	W-171003-PS-11	Total/NA	Water	300.0	
500-135085-5 MSD	W-171003-PS-11	Total/NA	Water	300.0	

Analysis Batch: 405902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135085-5	W-171003-PS-11	Total/NA	Water	300.0	
500-135085-7	W-171004-PS-13	Total/NA	Water	300.0	
MB 500-405902/18	Method Blank	Total/NA	Water	300.0	
LCS 500-405902/19	Lab Control Sample	Total/NA	Water	300.0	
500-135085-5 MS	W-171003-PS-11	Total/NA	Water	300.0	
500-135085-5 MSD	W-171003-PS-11	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-135085-1	W-171003-PS-07	81	96	87	92
500-135085-1 MS	W-171003-PS-07	82	97	85	95
500-135085-1 MSD	W-171003-PS-07	83	97	89	92
500-135085-2	W-171003-PS-08	84	95	91	94
500-135085-3	W-171003-PS-09	85	96	91	98
500-135085-4	W-171003-PS-10	85	97	88	101
500-135085-5	W-171003-PS-11	83	96	88	96
500-135085-6	W-171003-PS-12	82	97	87	94
500-135085-7	W-171004-PS-13	85	95	90	98
500-135085-8	W-171004-PS-14	87	94	87	98
500-135085-9	Trip Blank-002	86	98	89	96
LCS 500-405056/4	Lab Control Sample	77	101	84	90
MB 500-405056/5	Method Blank	83	97	84	94

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-135085-1	W-171003-PS-07	54	45	81	77	72	103
500-135085-1 MS	W-171003-PS-07	65	47	80	82	78	98
500-135085-1 MSD	W-171003-PS-07	71	52	88	89	85	107
500-135085-2	W-171003-PS-08	54	50	80	76	59	98
500-135085-3	W-171003-PS-09	54	53	81	79	65	106
500-135085-4	W-171003-PS-10	60	47	81	77	57	100
500-135085-5	W-171003-PS-11	64	60	86	84	70	117
500-135085-6	W-171003-PS-12	65	59	82	84	62	115
500-135085-7	W-171004-PS-13	60	51	82	77	73	108
500-135085-8	W-171004-PS-14	59	53	80	77	73	113
LCS 500-404220/2-A	Lab Control Sample	67	52	83	81	119	101
MB 500-404220/1-A	Method Blank	64	46	71	67	86	102

Surrogate Legend

2FP = 2-Fluorophenol (Surr)

PHL = Phenol-d5 (Surr)

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TBP = 2,4,6-Tribromophenol (Surr)

TPH = Terphenyl-d14 (Surr)

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Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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)
500-135085-1	W-171003-PS-07	86
500-135085-1 MS	W-171003-PS-07	84
500-135085-1 MSD	W-171003-PS-07	86
500-135085-2	W-171003-PS-08	88
500-135085-3	W-171003-PS-09	87
500-135085-4	W-171003-PS-10	86
500-135085-5	W-171003-PS-11	85
500-135085-6	W-171003-PS-12	89
500-135085-7	W-171004-PS-13	86
500-135085-8	W-171004-PS-14	82
LCS 240-299350/5	Lab Control Sample	87
LCS 240-299476/5	Lab Control Sample	89
MB 240-299350/4	Method Blank	92
MB 240-299476/4	Method Blank	88

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 (20-100)	DCPA2 (20-100)
500-135085-1	W-171003-PS-07	73	78
500-135085-1 MS	W-171003-PS-07	81	81
500-135085-1 MSD	W-171003-PS-07	75	73
500-135085-2	W-171003-PS-08	59	62
500-135085-3	W-171003-PS-09	57	61
500-135085-4	W-171003-PS-10	66	72
500-135085-5	W-171003-PS-11	61	64
500-135085-6	W-171003-PS-12	53	57
500-135085-7	W-171004-PS-13	69	66
500-135085-8	W-171004-PS-14	58	54
LCS 180-225166/2-A	Lab Control Sample	70	72
MB 180-225166/1-A	Method Blank	38	40

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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

Lab Sample ID: MB 500-405056/5

Matrix: Water

Analysis Batch: 405056

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 12:45	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 12:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 12:45	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 12:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 126		10/12/17 12:45	1
Toluene-d8 (Surr)	97		75 - 120		10/12/17 12:45	1
4-Bromofluorobenzene (Surr)	84		72 - 124		10/12/17 12:45	1
Dibromofluoromethane	94		75 - 120		10/12/17 12:45	1

Lab Sample ID: LCS 500-405056/4

Matrix: Water

Analysis Batch: 405056

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	43.7		ug/L		87	70 - 120
Toluene	50.0	48.4		ug/L		97	70 - 125
Ethylbenzene	50.0	44.5		ug/L		89	70 - 120
Xylenes, Total	100	87.1		ug/L		87	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	77		75 - 126
Toluene-d8 (Surr)	101		75 - 120
4-Bromofluorobenzene (Surr)	84		72 - 124
Dibromofluoromethane	90		75 - 120

Lab Sample ID: 500-135085-1 MS

Matrix: Water

Analysis Batch: 405056

Client Sample ID: W-171003-PS-07

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	44.2		ug/L		88	70 - 120
Toluene	<0.15		50.0	45.8		ug/L		92	70 - 125
Ethylbenzene	<0.18		50.0	43.5		ug/L		87	70 - 120
Xylenes, Total	<0.22		100	86.7		ug/L		87	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		75 - 126
Toluene-d8 (Surr)	97		75 - 120
4-Bromofluorobenzene (Surr)	85		72 - 124
Dibromofluoromethane	95		75 - 120

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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

Lab Sample ID: 500-135085-1 MSD

Matrix: Water

Analysis Batch: 405056

Client Sample ID: W-171003-PS-07

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	43.9		ug/L		88	70 - 120	1	20
Toluene	<0.15		50.0	45.2		ug/L		90	70 - 125	1	20
Ethylbenzene	<0.18		50.0	44.9		ug/L		90	70 - 120	3	20
Xylenes, Total	<0.22		100	86.0		ug/L		86	70 - 125	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		75 - 126
Toluene-d8 (Surr)	97		75 - 120
4-Bromofluorobenzene (Surr)	89		72 - 124
Dibromofluoromethane	92		75 - 120

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

Lab Sample ID: MB 500-404220/1-A

Matrix: Water

Analysis Batch: 404268

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 404220

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/06/17 07:45	10/06/17 14:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	64		27 - 110	10/06/17 07:45	10/06/17 14:22	1
Phenol-d5 (Surr)	46		20 - 100	10/06/17 07:45	10/06/17 14:22	1
Nitrobenzene-d5 (Surr)	71		36 - 120	10/06/17 07:45	10/06/17 14:22	1
2-Fluorobiphenyl (Surr)	67		34 - 110	10/06/17 07:45	10/06/17 14:22	1
2,4,6-Tribromophenol (Surr)	86		40 - 145	10/06/17 07:45	10/06/17 14:22	1
Terphenyl-d14 (Surr)	102		40 - 145	10/06/17 07:45	10/06/17 14:22	1

Lab Sample ID: LCS 500-404220/2-A

Matrix: Water

Analysis Batch: 404268

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 404220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	20.8		ug/L		65	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	67		27 - 110
Phenol-d5 (Surr)	52		20 - 100
Nitrobenzene-d5 (Surr)	83		36 - 120
2-Fluorobiphenyl (Surr)	81		34 - 110
2,4,6-Tribromophenol (Surr)	119		40 - 145
Terphenyl-d14 (Surr)	101		40 - 145

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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

Lab Sample ID: 500-135085-1 MS

Matrix: Water

Analysis Batch: 405058

Client Sample ID: W-171003-PS-07

Prep Type: Total/NA

Prep Batch: 404220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Naphthalene	<0.24		32.3	22.6		ug/L		70	36 - 110
Surrogate	%Recovery	MS Qualifier	MS Limits						
2-Fluorophenol (Surr)	65		27 - 110						
Phenol-d5 (Surr)	47		20 - 100						
Nitrobenzene-d5 (Surr)	80		36 - 120						
2-Fluorobiphenyl (Surr)	82		34 - 110						
2,4,6-Tribromophenol (Surr)	78		40 - 145						
Terphenyl-d14 (Surr)	98		40 - 145						

Lab Sample ID: 500-135085-1 MSD

Matrix: Water

Analysis Batch: 405058

Client Sample ID: W-171003-PS-07

Prep Type: Total/NA

Prep Batch: 404220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Naphthalene	<0.24		32.0	22.6		ug/L		71	36 - 110	0	20
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
2-Fluorophenol (Surr)	71		27 - 110								
Phenol-d5 (Surr)	52		20 - 100								
Nitrobenzene-d5 (Surr)	88		36 - 120								
2-Fluorobiphenyl (Surr)	89		34 - 110								
2,4,6-Tribromophenol (Surr)	85		40 - 145								
Terphenyl-d14 (Surr)	107		40 - 145								

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-299350/4

Matrix: Water

Analysis Batch: 299350

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			10/17/17 11:19	1
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac			
1,1,1-Trifluoroethane	92		76 - 121		10/17/17 11:19	1			

Lab Sample ID: LCS 240-299350/5

Matrix: Water

Analysis Batch: 299350

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	295		ug/L		103	80 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	87		76 - 121				

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

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

Lab Sample ID: MB 240-299476/4
Matrix: Water
Analysis Batch: 299476

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.105	J	0.50	0.080	ug/L			10/17/17 18:57	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	88		76 - 121					10/17/17 18:57	1

Lab Sample ID: LCS 240-299476/5
Matrix: Water
Analysis Batch: 299476

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	292		ug/L		103	80 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	89		76 - 121				

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 299476

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.18	J B	285	288		ug/L		101	48 - 159
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,1,1-Trifluoroethane	84		76 - 121						

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 299476

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.18	J B	285	289		ug/L		101	48 - 159	0	23
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,1,1-Trifluoroethane	86		76 - 121								

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-225166/1-A
Matrix: Water
Analysis Batch: 225378

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225166

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/07/17 09:30	10/10/17 15:49	4
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	40		20 - 100				10/07/17 09:30	10/10/17 15:49	4

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 180-225166/2-A
Matrix: Water
Analysis Batch: 225378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225166

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	5.00	4.42		ug/L		88	34 - 150
Surrogate	%Recovery	LCS Qualifier	Limits				
2,4-Dichlorophenylacetic acid	72		20 - 100				

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 225378

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA
Prep Batch: 225166

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	0.16		0.952	0.942		ug/L		82	34 - 150
Surrogate	%Recovery	MS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	81		20 - 100						

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 225378

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA
Prep Batch: 225166

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	0.16		0.952	0.799		ug/L		67	34 - 150	16	35
Surrogate	%Recovery	MSD Qualifier	Limits								
2,4-Dichlorophenylacetic acid	75		20 - 100								

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-404150/1-A
Matrix: Water
Analysis Batch: 404510

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/05/17 16:14	10/06/17 11:52	1
Copper	<0.50		2.0	0.50	ug/L		10/05/17 16:14	10/06/17 11:52	1
Iron	<46.7		100	46.7	ug/L		10/05/17 16:14	10/06/17 11:52	1
Manganese	<0.79		2.5	0.79	ug/L		10/05/17 16:14	10/06/17 11:52	1
Zinc	<6.9		20.0	6.9	ug/L		10/05/17 16:14	10/06/17 11:52	1

Lab Sample ID: MB 500-404150/1-A
Matrix: Water
Analysis Batch: 404653

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Copper	0.941	J	2.0	0.50	ug/L		10/05/17 16:14	10/09/17 12:18	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-404150/2-A
Matrix: Water
Analysis Batch: 404510

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	100	95.79		ug/L		96	80 - 120
Copper	250	257.7		ug/L		103	80 - 120
Iron	1000	1050		ug/L		105	80 - 120
Manganese	500	522.9		ug/L		105	80 - 120
Zinc	500	500.8		ug/L		100	80 - 120

Lab Sample ID: LCS 500-404150/2-A
Matrix: Water
Analysis Batch: 404653

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Copper	250	255.1		ug/L		102	80 - 120

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 404510

Client Sample ID: W-171003-PS-07
Prep Type: Dissolved
Prep Batch: 404150

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.38	J	100	96.38		ug/L		96	75 - 125
Copper	1.4	J	250	253.2		ug/L		101	75 - 125
Iron	<46.7		1000	1020		ug/L		102	75 - 125
Manganese	<0.79		500	499.9		ug/L		100	75 - 125
Zinc	<6.9		500	492.9		ug/L		99	75 - 125

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 404510

Client Sample ID: W-171003-PS-07
Prep Type: Dissolved
Prep Batch: 404150

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	0.38	J	100	96.05		ug/L		96	75 - 125	0	20
Copper	1.4	J	250	251.5		ug/L		100	75 - 125	1	20
Iron	<46.7		1000	1008		ug/L		101	75 - 125	1	20
Manganese	<0.79		500	494.7		ug/L		99	75 - 125	1	20
Zinc	<6.9		500	489.0		ug/L		98	75 - 125	1	20

Lab Sample ID: 500-135085-1 DU
Matrix: Water
Analysis Batch: 404510

Client Sample ID: W-171003-PS-07
Prep Type: Dissolved
Prep Batch: 404150

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	0.38	J	0.401	J	ug/L		6	20
Copper	1.4	J	3.06	F5	ug/L		74	20
Iron	<46.7		<46.7		ug/L		NC	20
Manganese	<0.79		1.97	J	ug/L		NC	20
Zinc	<6.9		8.92	J	ug/L		NC	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-404145/8
Matrix: Water
Analysis Batch: 404145

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/05/17 10:44	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/05/17 10:44	1
Sulfate	<0.095		0.20	0.095	mg/L			10/05/17 10:44	1

Lab Sample ID: LCS 500-404145/9
Matrix: Water
Analysis Batch: 404145

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.16		mg/L		105	90 - 110
Nitrate as N	2.00	1.97		mg/L		99	90 - 110
Sulfate	5.00	5.33		mg/L		107	90 - 110

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 404145

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.3		1.00	3.34		mg/L		108	80 - 120
Sulfate	6.6		2.50	9.22		mg/L		103	80 - 120

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 404145

Client Sample ID: W-171003-PS-07
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	2.3		1.00	3.38		mg/L		111	80 - 120	1	20
Sulfate	6.6		2.50	9.39		mg/L		110	80 - 120	2	20

Lab Sample ID: MB 500-404303/9
Matrix: Water
Analysis Batch: 404303

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	<0.068		0.20	0.068	mg/L			10/06/17 10:36	1
Sulfate	<0.095		0.20	0.095	mg/L			10/06/17 10:36	1

Lab Sample ID: LCS 500-404303/10
Matrix: Water
Analysis Batch: 404303

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	2.00	1.98		mg/L		99	90 - 110
Sulfate	5.00	5.31		mg/L		106	90 - 110

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 500-405584/4
Matrix: Water
Analysis Batch: 405584

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/16/17 14:26	1

Lab Sample ID: LCS 500-405584/5
Matrix: Water
Analysis Batch: 405584

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.84		mg/L		95	90 - 110

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 405584

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	31.8		10.0	43.35		mg/L		115	80 - 120

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 405584

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	31.8		10.0	43.12		mg/L		113	80 - 120	1	20

Lab Sample ID: MB 500-405805/13
Matrix: Water
Analysis Batch: 405805

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/17/17 14:03	1

Lab Sample ID: LCS 500-405805/14
Matrix: Water
Analysis Batch: 405805

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.95		mg/L		98	90 - 110

Lab Sample ID: 500-135085-5 MS
Matrix: Water
Analysis Batch: 405805

Client Sample ID: W-171003-PS-11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	17.2	F1	5.00	23.66	F1	mg/L		130	80 - 120

Lab Sample ID: 500-135085-5 MSD
Matrix: Water
Analysis Batch: 405805

Client Sample ID: W-171003-PS-11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	17.2	F1	5.00	23.81	F1	mg/L		133	80 - 120	1	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Lab Sample ID: MB 500-405902/18
Matrix: Water
Analysis Batch: 405902

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.095		0.20	0.095	mg/L			10/18/17 10:59	1

Lab Sample ID: LCS 500-405902/19
Matrix: Water
Analysis Batch: 405902

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.43		mg/L		109	90 - 110

Lab Sample ID: 500-135085-5 MS
Matrix: Water
Analysis Batch: 405902

Client Sample ID: W-171003-PS-11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	125		100	238.2	E	mg/L		114	80 - 120

Lab Sample ID: 500-135085-5 MSD
Matrix: Water
Analysis Batch: 405902

Client Sample ID: W-171003-PS-11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	125		100	242.2	E	mg/L		118	80 - 120	2	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-404598/4
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 02:41	1

Lab Sample ID: LCS 500-404598/5
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	10.0	9.51		mg/L		95	80 - 120

Lab Sample ID: 500-135085-1 MS
Matrix: Water
Analysis Batch: 404598

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	0.83	J	10.0	10.59		mg/L		98	75 - 125

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 500-135085-1 MSD
Matrix: Water
Analysis Batch: 404598

Client Sample ID: W-171003-PS-07
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 - Duplicates	0.83	J	10.0	10.71		mg/L		99	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-405136/3
Matrix: Water
Analysis Batch: 405136

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/12/17 11:17	1

Lab Sample ID: LCS 500-405136/4
Matrix: Water
Analysis Batch: 405136

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	107.5		mg/L		107	85 - 115

Lab Sample ID: 500-135085-1 DU
Matrix: Water
Analysis Batch: 405136

Client Sample ID: W-171003-PS-07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	116		117.2		mg/L		0.9	20

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-07

Date Collected: 10/03/17 13:30

Date Received: 10/05/17 09:45

Lab Sample ID: 500-135085-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 13:13	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 14:28	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 19:31	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 16:38	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 11:25	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404145	10/05/17 11:22	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405584	10/17/17 01:42	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 05:00	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:30	SMO	TAL CHI

Client Sample ID: W-171003-PS-08

Date Collected: 10/03/17 14:40

Date Received: 10/05/17 09:45

Lab Sample ID: 500-135085-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 13:40	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 14:52	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 14:27	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 17:51	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:27	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:08	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404145	10/05/17 12:00	EAT	TAL CHI
Total/NA	Analysis	300.0		5	405584	10/17/17 02:20	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 05:53	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:44	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-09

Lab Sample ID: 500-135085-3

Date Collected: 10/03/17 14:45

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 14:07	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 15:16	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 14:44	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 18:15	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:32	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:11	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404145	10/05/17 12:13	EAT	TAL CHI
Total/NA	Analysis	300.0		5	405584	10/17/17 02:33	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 06:10	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:50	SMO	TAL CHI

Client Sample ID: W-171003-PS-10

Lab Sample ID: 500-135085-4

Date Collected: 10/03/17 16:20

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 14:34	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 15:39	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 15:01	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 18:39	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:37	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:15	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404145	10/05/17 12:26	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405805	10/17/17 22:01	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 06:27	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:56	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171003-PS-11

Lab Sample ID: 500-135085-5

Date Collected: 10/03/17 17:20

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 15:01	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 16:03	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 15:19	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 19:04	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:41	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:19	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404145	10/05/17 12:38	EAT	TAL CHI
Total/NA	Analysis	300.0		5	405805	10/17/17 22:13	EAT	TAL CHI
Total/NA	Analysis	300.0		20	405902	10/18/17 12:53	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 06:44	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 13:03	SMO	TAL CHI

Client Sample ID: W-171003-PS-12

Lab Sample ID: 500-135085-6

Date Collected: 10/03/17 17:35

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 15:29	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 16:27	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 15:53	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 19:28	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:46	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:23	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		2	404145	10/05/17 14:07	EAT	TAL CHI
Total/NA	Analysis	300.0		5	405805	10/17/17 23:55	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 07:00	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 13:08	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: W-171004-PS-13

Lab Sample ID: 500-135085-7

Date Collected: 10/04/17 09:45

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 15:56	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 16:50	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 16:10	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 19:52	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:51	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:26	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		2	404145	10/05/17 18:58	EAT	TAL CHI
Total/NA	Analysis	300.0		20	405902	10/18/17 13:56	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 07:17	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 13:15	SMO	TAL CHI

Client Sample ID: W-171004-PS-14

Lab Sample ID: 500-135085-8

Date Collected: 10/04/17 10:30

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 16:23	EMA	TAL CHI
Total/NA	Prep	3510C			404220	10/06/17 07:45	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405058	10/12/17 17:14	WDS	TAL CHI
Total/NA	Analysis	RSK-175		1	299350	10/17/17 16:27	BPM	TAL CAN
Total/NA	Prep	8151A			225166	10/07/17 09:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225378	10/10/17 20:16	JMO	TAL PIT
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404653	10/09/17 12:55	FXG	TAL CHI
Dissolved	Prep	3005A			404150	10/05/17 16:14	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404510	10/06/17 12:30	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		2	404145	10/05/17 19:11	EAT	TAL CHI
Total/NA	Analysis	300.0		5	404303	10/06/17 10:23	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 07:35	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 13:20	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Client Sample ID: Trip Blank-002

Lab Sample ID: 500-135085-9

Date Collected: 10/04/17 12:30

Matrix: Water

Date Received: 10/05/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 16:50	EMA	TAL CHI

Laboratory References:

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

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135085-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
 Phone: 708.534.5200 Fax: 708.534.5211

Report To (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 E-Mail: _____

Bill To (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 PO#/Reference# _____



Chain of Custody Record

Lab Job #: 500-135085

Chain of Custody Number: _____

Page 1 of 1 (4.2)

Temperature °C of Cooler: (2.5)(5.8)(3.0)(4.2)

Client		Client Project #		Preservative		Parameter		Matrix		Preservative Key					
GHD		086165-04-05		None →		None →		None →		1. HCL, Cool to 4° 2. H2SO4, Cool to 4° 3. HNO3, Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO4 7. Cool to 4° 8. None 9. Other					
Project Name		Project Location/State		Lab Project #		Sampler		Lab PM							
Penta Wood		Siren, WI				P. Starke									
Lab ID	MS/MSD	Sample ID	Sampling		# of Containers	Matrix	Aik. 2320 Nitrate, Cl-, SO4 300.0-2.80	HCL 8260	Naphth. 8270	PCP-8151	TOC 9060	Hardness-2340	Methane 175	Metals 6020 As, Cu, Fe, Mn Zn (field method)	Comments
			Date	Time											
1	X	W-171003-PS-07	10/3/17	1330	45	W	X	X	X	X	X	X	X	X	MS/MSD
2		-08		1440	15		X	X	X	X	X	X	X	X	
3		-09		1445	15		X	X	X	X	X	X	X	X	
4		-10		1620	15		X	X	X	X	X	X	X	X	
5		-11		1720	15		X	X	X	X	X	X	X	X	
6		-12		1735	15		X	X	X	X	X	X	X	X	
7		W-171004-PS-13	10/4/17	0945	15		X	X	X	X	X	X	X	X	
8		-14		1030	15		X	X	X	X	X	X	X	X	
9		Trip Blank-002	10-4-17	1230	2			X							

Turnaround Time Required (Business Days)

___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other

Sample Disposal

Return to Client Disposal by Lab Archive for ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: <u>[Signature]</u> Company: <u>GHD</u> Date: <u>10/4/17</u> Time: <u>1700</u>	Received By: <u>[Signature]</u> Company: <u>TA</u> Date: <u>10/05/17</u> Time: <u>0945</u>	Lab Courier: _____
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Shipped: <input checked="" type="checkbox"/>
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Hand Delivered: _____

Matrix Key
 WW - Wastewater SE - Sediment
 W - Water SO - Soil
 S - Soil L - Leachate
 SL - Sludge WI - Wipe
 MS - Miscellaneous DW - Drinking Water
 OL - Oil O - Other
 A - Air

Client Comments: _____

Lab Comments: _____

1
2
3
4
5
6
7
8
9
0
1
2
3
4
5



500-135085 Waybill

FedEx **NEW Package**
Express **US Airbill** Tracking Number **8018 1222 2861**

1 From Date **10-4-17**

Sender's Name **Pete Strick** Phone **651 247-4218**

Company **GHD**

Address **1801 Old Hwy 8**

City **St Paul** State **MN** ZIP **55112**

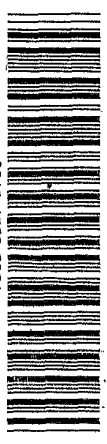
2 Your Internal Billing Reference

3 To Recipient's Name **Sample Learning** Phone **708 534-5200**

Company **Test America**

Address **2417 Bond Street**

City **University Lake** State **IL** ZIP **60094**



8018 1222 2861

4 Express Package Service **0200**

Next Business Day

FedEx First Overnight

FedEx Priority Overnight

FedEx Standard Overnight

Packaging

Special Handling and Delivery Signature Options

Does this shipment contain dangerous goods?

Payment Bill to

Sender

Recipient

Third Party

Other

Rev. Data: 1/12 - Part #5702 - ©2017 FedEx - PRINTED IN U.S.A. SPS

Align Open End of FedEx Pouch Here

FedEx NEW Packages
Express US Airbill
FedEx Tracking Number
8047 9321 5583

Date: 10-4-17

Sender's Name: Peter Strike
Phone: 651 247-4218

Company: GH

Address: 1801 Old Hwy 8
City: St Paul State: MN ZIP: 55112

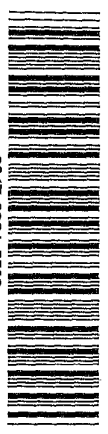
2 Your Internal Billing Reference

3 To
Recipient's Name: Sample Receiving
Phone: 708 534-5200

Company: Test America

Address: 2417 Bond Street
City: University Park State: IL ZIP: 60484

Address: [Redacted]



8047 9321 5583

Print ID No: 0200

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
*To meet your needs, we have selected the following service options:
*In most cases, packages up to 150 lbs. are shipped via FedEx Express freight US Airbill.

Next Business Day
 FedEx First Overnight
 FedEx Priority Overnight
 Next Business Day
 FedEx Standard Overnight
 Next business afternoon*
 Saturday Delivery NOT available

2 to 3 Business Days
 FedEx 2Day A.M.
 FedEx 2Day
 FedEx Express Saver
 Third business day*
 Saturday Delivery NOT available

5 Packaging
*Indicated value limit shown.
 FedEx Envelope*
 FedEx Pak*
 FedEx Box
 FedEx Tube
 Other

6 Special Handling and Delivery Signature Options
 SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
 No Signature Required
 Direct Signature
 Indirect Signature
 Signature Required
 Signature Required - Restricted
 Signature Required - Restricted (Signature only, no address)

7 Payment / Bill to:
Sender: [Redacted]
Recipient: [Redacted]
Third Party: [Redacted]
Bill to: [Redacted]
Cash/Check: [Redacted]
Credit Card: [Redacted]

Does this shipment contain dangerous goods?
One box must be checked.
 No
 Yes
Dangerous goods (including liquid) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment / Bill to:
Sender: [Redacted]
Recipient: [Redacted]
Third Party: [Redacted]
Bill to: [Redacted]
Cash/Check: [Redacted]
Credit Card: [Redacted]

Print Date V12 - Part #FD022 - ©2017 FedEx - PRINTED IN U.S.A. SRF

644

Align Open End of FedEx Pouch Here

FedEx *NEW Package*
Express *US Airbill*

FedEx Tracking Number **8018 1222 2931**

Form ID No. **0200**

1 From
Date 10-4-17
Sender's Name Peter Starke Phone 651 247-4218
Company GHD
Address 1801 Old Hwy 8
City St. Paul State MN ZIP 55112

2 Your Internal Billing Reference

3 To
Recipient's Name Sample Receiving Phone 708 534-5200
Company Test America
Address 2417 Bond Street
We cannot deliver to P.D. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room
Address University Park State IL ZIP 60484
Use this line for the HOLD location address or for continuation of your shipping address.



8018 1222 2931

4 Express Package Service *To most locations. **Packages up to 150 lbs.**
NOTE: Service order has changed. Please select carefully. For packages over 150 lbs, use the new FedEx Express Freight US Airbill.

Next Business Day **2 or 3 Business Days**

<input type="checkbox"/> FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.	<input type="checkbox"/> FedEx 2Day A.M. Second business morning.* Saturday Delivery NOT available.
<input checked="" type="checkbox"/> FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.	<input type="checkbox"/> FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
<input type="checkbox"/> FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.	<input type="checkbox"/> FedEx Express Saver Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options

SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?
One box must be checked.

No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 3, UN 1845 _____ x _____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

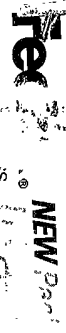
Total Packages _____ Total Weight 44 lbs. Credit Card Auth. **644**

Your liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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Align Open End of FedEx Pouch Here

A 109 25



NEW Post

Trade Mail

8018 1222 2909

1 From

Date 10-4-17

Sender's Name FedEx

Company GHD

Address 1801 ...

City S. ...

2 Your Internal Billing Reference

3 To

Recipient's Name

Company

Address

City

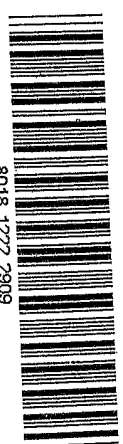
State

Zip

City

State

Zip



8018 1222 2909

Form ID No.

0200

4 Express Package Service

Next Business Day

FedEx First Overnight

FedEx Priority Overnight

FedEx Standard Overnight

Packaging

FedEx Envelope*

FedEx Pak*

Box

FedEx Tube

Other

6 Special Handling and Delivery Signature Options

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

2 or 3 Business Days

FedEx 2Day AM

FedEx 2Day

FedEx Express Saver

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Signature Required

Packages up to 150 lbs.

For per lb. use the new

FedEx Express freight US Airtail.

fedex.com 1.800.GoFedEx 1.800.463.3339

Align Open End of FedEx Pouch Here

10/18/2017



FedEx NEW Package Express USAirbill

FedEx Number 8018 1222 2894

1 From

Date 10-4-17

Sender's Name Peter Sharlie

Phone 651 247-4218

Company GHP

Address 1801 Old Hwy 8

City St. Paul State MN ZIP 55112

2 Your Internal Billing Reference

3 To Recipients Name Sample Receiving Phone 708 534-5200

Company Test Ameca

Address 2417 Bond Street

City Overton State IL ZIP 60484

Address Use this line for the HOLD location address or for completion of your shipping address.



8018 1222 2894

Form ID No. 0200

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

Next Business Day

FedEx First Overnight

FedEx Priority Overnight

FedEx Standard Overnight

2 or 3 Business Days

FedEx 2Day / AM

FedEx 2Day

FedEx Express Saver

FedEx Envelope*

FedEx Pak*

FedEx Box

FedEx Tube

Other

6 Special Handling and Delivery Signature Options

SATURDAY Delivery

No Signature Required

Does this shipment contain dangerous goods?

Direct Signature

Indirect Signature

Dry Ice

Cargo Aircraft Only

Sender

Recipient

Third Party

Credit Card

Cash/Check

644

Align Open End of FedEx Pouch Here

TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Phone (708) 534-5200 Fax (708) 534-5211

Chain of Custody Record

TestAmerica
ADER IN ENVIRONMENTAL TESTING



500-135085 Chain of Custody

Client Information (Sub Contract Lab)		Shipping/Receiving		Company		Address:		City:		State:		Zip:		PA:		Phone:		Email:		Project Name:		Site:	
2417 Bond Street University Park, IL 60484 Phone (708) 534-5200 Fax (708) 534-5211		118 RB 34 DE		TestAmerica Laboratories, Inc.		301 Alpha Drive, RIDC Park, Pittsburgh PA, 15238		Pittsburgh		PA		15238		412-963-7058 (Tel) 412-963-2468 (Fax)						Penta Wood 086165-04		Penta Wood 086165-04	
Due Date Requested:		TAT Requested (days):		PO #:		WO #:		Project #:		SSOW#:													
10/17/2017		10/17/2017						50013796															
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	815A/B15A AP (MOD) Pentachlorophenol	Analysis Requested	Preservation Codes:	Total Number of Containers	Special Instructions/Note:												
W-171003-PS-07 (500-135085-1)	10/3/17	13:30 Central	Water		X	X		A - HCL M - Hexane N - None O - AshNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-07 (500-135085-1MS)	10/3/17	13:30 Central	MS	Water	X	X		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 Other:	2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-07 (500-135085-1MSD)	10/3/17	13:30 Central	MSD	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-08 (500-135085-2)	10/3/17	14:40 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-09 (500-135085-3)	10/3/17	14:45 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-10 (500-135085-4)	10/3/17	16:20 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-11 (500-135085-5)	10/3/17	17:20 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-12 (500-135085-6)	10/3/17	17:35 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													
W-171003-PS-13 (500-135085-7)	10/4/17	09:45 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution													

Notes: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

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

Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: _____ Date/Time: 10/05/17 @ 1600 Company: TA

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No

Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: _____



Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler: Wright, Richard C	Lab PM	Carrier Tracking No(s):	COC No: 500-93907.2
Client Contact: richard.wright@testamericainc.com		Phone: richard.wright@testamericainc.com	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 2 of 2
Shipping/Receiving		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-135085-1	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other:
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 10/17/2017		Analysis Requested	
Address: 301 Alpha Drive, RIDC Park, Pittsburgh PA, 15238		TAT Requested (days):		Total Number of containers	
Phone: 412-963-7058(Tel) 412-963-2468(Fax)		PO #:		815A/815A_AP (MOD) Pentachlorophenol	
Email:		WO #:		Perform MS/MSD (Yes or No) X	
Project Name: Penta Wood 086165-04		Project #: 50013796		Field Filtered Sample (Yes or No) X	
Site:		SSOW#:		Preservation Code: X	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
W-171003-PS-14 (500-135085-8)		10/4/17		10:30 Central	
Sample Type (C=Comp, G=grab)		Matrix (w=water, s=solid, o=waste/oil, BT=Issue, As=Al)		Special Instructions/Note:	
G		Water		W/ Use 200 ul spike, and x4 dilution	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Unconfirmed		Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	
Empty Kit Relinquished by:		Time:	
Relinquished by: <i>[Signature]</i>		Date: 10/05/17 @ 1600	
Relinquished by: <i>[Signature]</i>		Date/Time: 10/6/17 900	
Relinquished by: <i>[Signature]</i>		Date/Time: _____	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks:	





Chain of Custody Record

3.4 / C3.4

Client Information (Sub Contract Lab)		Sampler: Lab PM: Wright, Richard C		Carrier Tracking No(s): COC No: 500-93901.1	
Shipping/Receiving		E-Mail: richard.wright@testamericainc.com		State of Origin: Wisconsin	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-135085-1	
Address: 4101 Shuffel Street NW		Due Date Requested: 10/17/2017		Preservation Codes:	
City: North Canton		TAT Requested (days):		A - HCL	
State, Zip: OH, 44720		PO #:		B - NaOH	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)		WO #:		C - Zn Acetate	
Email:		Project #:		D - Nitric Acid	
Project Name: Pentia Wood 086165-04		SSOW#:		E - NaHSO4	
Site:		Sample Date		F - MeOH	
Sample Identification - Client ID (Lab ID)		Sample Time		G - Amchlor	
W-171003-PS-07 (500-135085-1)		13:30 Central		H - Ascorbic Acid	
W-171003-PS-07 (500-135085-1MS)		13:30 Central		I - Ice	
W-171003-PS-07 (500-135085-1MSD)		13:30 Central		J - DI Water	
W-171003-PS-08 (500-135085-2)		14:40 Central		K - EDTA	
W-171003-PS-09 (500-135085-3)		14:45 Central		L - EDA	
W-171003-PS-10 (500-135085-4)		16:20 Central		Other:	
W-171003-PS-11 (500-135085-5)		17:20 Central		RSK	
W-171003-PS-12 (500-135085-6)		17:35 Central		Special Instructions/Note:	
W-171003-PS-13 (500-135085-7)		09:45 Central		Total Number of containers	
				3	
				3	
				3	
				3	
				3	
				3	
				3	
				3	
				3	
				3	

M - Hxane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecylhydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2

Empty Kit Relinquished by: Date: Time: Method of Shipment: Return To Client Disposal By Lab Archive For Months

Relinquished by: *[Signature]* Date/Time: 10/05/17 @ 1600 Company: TA
 Relinquished by: Date/Time: Received by: POP Date/Time: 10-6-17 915 Company: IAC
 Relinquished by: Date/Time: Received by: Company: Company: Company:

Custody Seal Intact: Yes No Δ Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard C	Carrier Tracking No(s): 500-93901.2
Client Contact: Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin	Job #: 500-135085-1
Address: 4101 Shurfel Street NW		Analysis Requested	
City: North Canton	State: OH, 44720	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 Other:	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	WO #:	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)	
Project Name: Penta Wood 086165-04	Project #: 50013796	Total Number of containers: 3	
Site:	SSOW#:	Special Instructions/Note:	
Sample Identification - Client ID (Lab ID)		Special Instructions/Note:	
W-171003-PS-14 (500-135085-8)	Sample Date: 10/4/17	Field Filtered Sample (Yes or No):	Special Instructions/Note:
	Sample Time: 10:30 Central	Perform MS/MSD (Yes or No):	
	Sample Type (C=Comp, G=grab)	RSK_175 (MOD) Methane: X	
	Matrix (W=water, S=solid, O=wastewater, A=air)		
	Preservation Code:		
	Water		

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Sparks* Date: 10/05/17 @ 1600 Company: TA
 Relinquished by: _____ Date: _____ Company: _____
 Relinquished by: _____ Date: _____ Company: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/OC Requirements:

Received by: *Bob* Date: 10-6-17 9:25 Company: TAC
 Received by: _____ Date: _____ Company: _____
 Received by: _____ Date: _____ Company: _____
 Cooler Temperature(s) °C and Other Remarks:




Canton Facility
 Client TA CHICAGO Site Name _____ Cooler unpacked by: POF
 Cooler Received on 10-6-17 Opened on 10-6-17

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

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

TestAmerica Cooler # _____ Packing material used: Foam Box Bubble Wrap Plastic Bag Client Cooler Box 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. 3.4 °C Corrected Cooler Temp. 3.4 °C
 IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
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?
 If yes, Questions 11-15 have been checked at the originating laboratory.
 11. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this. 
 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

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

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

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

17. 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)

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135085-1

Login Number: 135085

List Source: TestAmerica Chicago

List Number: 1

Creator: Kelsey, Shawn M

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	(2.5)(5.8)(3.0)(4.2)(4.3)c
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.	True	



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135085-1

Login Number: 135085
List Number: 3
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 10/06/17 06:13 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	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-135179-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson

Jodie Bracken

Authorized for release by:
10/20/2017 4:59:17 PM
Jodie Bracken, Project Management Assistant II
jodie.bracken@testamericainc.com

Designee for
Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Job ID: 500-135179-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-135179-1

Receipt

The samples were received on 10/6/2017 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.3° C, 4.7° C and 5.9° C.

GC/MS VOA

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

GC/MS Semi VOA

Method(s) 8270D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch preparation batch 500-404630 and analytical batch 500-405067 recovered outside control limits for Naphthalene. The % recoveries were within limits.

Method(s) 8270D: The following sample contained one acid and one base surrogate outside acceptance limits: W-171005-PS-17 (500-135179-3). The laboratory's SOP allows one acid and one base surrogate to be outside acceptance limits; therefore, re-extraction was not performed. These results have been reported and qualified.

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: The associated RSK samples were analyzed following the requirements of a revised RSK SOP: W-171004-PS-15 (500-135179-1), W-171004-PS-16 (500-135179-2), W-171005-PS-17 (500-135179-3), W-171005-PS-18 (500-135179-4), W-171005-PS-19 (500-135179-5), (CCV 240-299476/19), (CCV 240-299476/21), (CCVRT 240-299476/3), (LCS 240-299476/5), (MB 240-299476/4), (500-135085-C-1), (500-135085-B-1 MS) and (500-135085-B-1 MSD)

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 samples was diluted due to the abundance of target analytes: W-171005-PS-17 (500-135179-3), W-171005-PS-18 (500-135179-4) and W-171005-PS-19 (500-135179-5)

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: The IC8 continuing calibration verification (CCV) associated with batch 500-405994 recovered above the upper control limit for Sulfate. The samples associated with this CCV were QC which met acceptance criteria for the affected analyte; therefore, the data have been reported. The following samples are impacted: (LCS 500-405994/33) and (MB 500-405994/23).

Method(s) 300.0: The IC8 continuing calibration blank (CCB) for batch 500-405994 contained Sulfate above the reporting limit (RL). The samples associated with the CCB were either QC which met acceptance criteria or sample with no detect; therefore, re-analysis of the samples was not performed.

Method(s) 300.0: The IC8 initial calibration blank (ICB) and the method blank (MB) for analytical batch 500-406164 contained Sulfate above the reporting limit (RL). Associated samples were not re-analyzed because results were greater than 10X the value found in both the ICB and MB.

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

Organic Prep

Method(s) 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate

Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Job ID: 500-135179-1 (Continued)

Laboratory: TestAmerica Chicago (Continued)

(MS/MSD/DUP) associated with preparation batch 180-225436.

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

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Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-15

Lab Sample ID: 500-135179-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.39	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.049	J p	0.095	0.044	ug/L	4		8151A	Total/NA
Copper	2.6	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	198		100	46.7	ug/L	1		6020A	Dissolved
Manganese	11.9		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.5	J B	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	77.9		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	2.7		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.71		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	3.7		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.90	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	74.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171004-PS-16

Lab Sample ID: 500-135179-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.15	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.17		0.094	0.044	ug/L	4		8151A	Total/NA
Copper	1.1	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	81.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	8.1		0.40	0.34	mg/L	2		300.0	Total/NA
Nitrate as N	1.1		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.5		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.63	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	78.5		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-17

Lab Sample ID: 500-135179-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.5		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	1.2		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	9.4		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	20	*	0.84	0.26	ug/L	1		8270D	Total/NA
Methane	13	B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	4800		95	44	ug/L	4000		8151A	Total/NA
Arsenic	0.53	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	3.0	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	626		100	46.7	ug/L	1		6020A	Dissolved
Manganese	903		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	184		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	26.2		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.083	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	20.2	B ^	1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	30.8		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	157		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-18

Lab Sample ID: 500-135179-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.5		0.50	0.15	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-18 (Continued)

Lab Sample ID: 500-135179-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	1.3		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	9.5		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	19	*	0.81	0.25	ug/L	1		8270D	Total/NA
Methane	15	B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	5000		95	44	ug/L	4000		8151A	Total/NA
Arsenic	0.53	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	3.7	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	609		100	46.7	ug/L	1		6020A	Dissolved
Manganese	898		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	182		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	25.9		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.081	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	20.1	F1 ^	1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	32.0		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	157		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-19

Lab Sample ID: 500-135179-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.46	J	0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	6.0		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	9.9	*	0.90	0.28	ug/L	1		8270D	Total/NA
Methane	0.29	J B	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	4400		99	46	ug/L	4000		8151A	Total/NA
Arsenic	0.50	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.9	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	770		100	46.7	ug/L	1		6020A	Dissolved
Manganese	1260		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.1	J B	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	378		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	41.1		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.13	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	26.7		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	29.8		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	314		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank-003

Lab Sample ID: 500-135179-6

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-135179-1	W-171004-PS-15	Water	10/04/17 14:20	10/06/17 09:15
500-135179-2	W-171004-PS-16	Water	10/04/17 15:40	10/06/17 09:15
500-135179-3	W-171005-PS-17	Water	10/05/17 10:20	10/06/17 09:15
500-135179-4	W-171005-PS-18	Water	10/05/17 10:25	10/06/17 09:15
500-135179-5	W-171005-PS-19	Water	10/05/17 11:20	10/06/17 09:15
500-135179-6	Trip Blank-003	Water	10/05/17 12:00	10/06/17 09:15

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-15

Lab Sample ID: 500-135179-1

Date Collected: 10/04/17 14:20

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 18:12	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 18:12	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 18:12	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 18:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		10/12/17 18:12	1
Toluene-d8 (Surr)	96		75 - 120		10/12/17 18:12	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/12/17 18:12	1
Dibromofluoromethane	98		75 - 120		10/12/17 18:12	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.27	*	0.89	0.27	ug/L		10/10/17 07:26	10/15/17 15:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	41		27 - 110	10/10/17 07:26	10/15/17 15:12	1
Phenol-d5 (Surr)	48		20 - 100	10/10/17 07:26	10/15/17 15:12	1
Nitrobenzene-d5 (Surr)	68		36 - 120	10/10/17 07:26	10/15/17 15:12	1
2-Fluorobiphenyl (Surr)	68		34 - 110	10/10/17 07:26	10/15/17 15:12	1
2,4,6-Tribromophenol (Surr)	70		40 - 145	10/10/17 07:26	10/15/17 15:12	1
Terphenyl-d14 (Surr)	91		40 - 145	10/10/17 07:26	10/15/17 15:12	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.39	J B	0.50	0.080	ug/L			10/17/17 22:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		76 - 121		10/17/17 22:05	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.049	J p	0.095	0.044	ug/L		10/10/17 15:50	10/11/17 17:01	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64		20 - 100	10/10/17 15:50	10/11/17 17:01	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/06/17 15:10	10/09/17 13:34	1
Copper	2.6	B	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 13:26	1
Iron	198		100	46.7	ug/L		10/06/17 15:10	10/09/17 13:34	1
Manganese	11.9		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 13:34	1
Zinc	8.5	J B	20.0	6.9	ug/L		10/06/17 15:10	10/09/17 13:34	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	77.9		1.3	0.66	mg/L		10/06/17 15:21	10/09/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.7		0.20	0.17	mg/L			10/06/17 13:33	1

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-15

Lab Sample ID: 500-135179-1

Date Collected: 10/04/17 14:20

Matrix: Water

Date Received: 10/06/17 09:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.71		0.20	0.068	mg/L			10/06/17 13:33	1
Sulfate	3.7		0.20	0.095	mg/L			10/06/17 13:33	1
Total Organic Carbon - Duplicates	0.90	J	1.0	0.47	mg/L			10/09/17 07:52	1
Alkalinity	74.1		5.0	3.7	mg/L			10/12/17 11:50	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-16

Lab Sample ID: 500-135179-2

Date Collected: 10/04/17 15:40

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 18:39	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 18:39	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 18:39	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 18:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		75 - 126					10/12/17 18:39	1
Toluene-d8 (Surr)	98		75 - 120					10/12/17 18:39	1
4-Bromofluorobenzene (Surr)	89		72 - 124					10/12/17 18:39	1
Dibromofluoromethane	100		75 - 120					10/12/17 18:39	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24	*	0.77	0.24	ug/L		10/10/17 07:26	10/15/17 15:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	31		27 - 110				10/10/17 07:26	10/15/17 15:36	1
Phenol-d5 (Surr)	35		20 - 100				10/10/17 07:26	10/15/17 15:36	1
Nitrobenzene-d5 (Surr)	80		36 - 120				10/10/17 07:26	10/15/17 15:36	1
2-Fluorobiphenyl (Surr)	77		34 - 110				10/10/17 07:26	10/15/17 15:36	1
2,4,6-Tribromophenol (Surr)	68		40 - 145				10/10/17 07:26	10/15/17 15:36	1
Terphenyl-d14 (Surr)	100		40 - 145				10/10/17 07:26	10/15/17 15:36	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.15	J B	0.50	0.080	ug/L			10/17/17 22:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		76 - 121					10/17/17 22:22	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.17		0.094	0.044	ug/L		10/10/17 15:50	10/11/17 17:25	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	55		20 - 100				10/10/17 15:50	10/11/17 17:25	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/06/17 15:10	10/09/17 13:37	1
Copper	1.1	J B	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 13:30	1
Iron	<46.7		100	46.7	ug/L		10/06/17 15:10	10/09/17 13:37	1
Manganese	<0.79		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 13:37	1
Zinc	<6.9		20.0	6.9	ug/L		10/06/17 15:10	10/09/17 13:37	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	81.3		1.3	0.66	mg/L		10/06/17 15:21	10/09/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.1		0.40	0.34	mg/L			10/19/17 04:34	2

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-16

Lab Sample ID: 500-135179-2

Date Collected: 10/04/17 15:40

Matrix: Water

Date Received: 10/06/17 09:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	1.1		0.20	0.068	mg/L			10/06/17 13:58	1
Sulfate	5.5		0.20	0.095	mg/L			10/06/17 13:58	1
Total Organic Carbon - Duplicates	0.63	J	1.0	0.47	mg/L			10/09/17 18:23	1
Alkalinity	78.5		5.0	3.7	mg/L			10/12/17 11:56	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-17

Lab Sample ID: 500-135179-3

Date Collected: 10/05/17 10:20

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 19:06	1
Toluene	1.5		0.50	0.15	ug/L			10/12/17 19:06	1
Ethylbenzene	1.2		0.50	0.18	ug/L			10/12/17 19:06	1
Xylenes, Total	9.4		1.0	0.22	ug/L			10/12/17 19:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 126		10/12/17 19:06	1
Toluene-d8 (Surr)	96		75 - 120		10/12/17 19:06	1
4-Bromofluorobenzene (Surr)	85		72 - 124		10/12/17 19:06	1
Dibromofluoromethane	97		75 - 120		10/12/17 19:06	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	20	*	0.84	0.26	ug/L		10/10/17 07:26	10/15/17 16:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	51		27 - 110	10/10/17 07:26	10/15/17 16:00	1
Phenol-d5 (Surr)	41		20 - 100	10/10/17 07:26	10/15/17 16:00	1
Nitrobenzene-d5 (Surr)	80		36 - 120	10/10/17 07:26	10/15/17 16:00	1
2-Fluorobiphenyl (Surr)	36	*	34 - 110	10/10/17 07:26	10/15/17 16:00	1
2,4,6-Tribromophenol (Surr)	48	*	40 - 145	10/10/17 07:26	10/15/17 16:00	1
Terphenyl-d14 (Surr)	97		40 - 145	10/10/17 07:26	10/15/17 16:00	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	13	B	0.50	0.080	ug/L			10/17/17 22:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		76 - 121		10/17/17 22:39	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	4800		95	44	ug/L		10/10/17 15:50	10/12/17 17:21	4000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	0	X D	20 - 100	10/10/17 15:50	10/12/17 17:21	4000

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.53	J	1.0	0.23	ug/L		10/06/17 15:10	10/09/17 13:41	1
Copper	3.0	B	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 13:34	1
Iron	626		100	46.7	ug/L		10/06/17 15:10	10/09/17 13:41	1
Manganese	903		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 13:41	1
Zinc	<6.9		20.0	6.9	ug/L		10/06/17 15:10	10/09/17 13:41	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	184		1.3	0.66	mg/L		10/06/17 15:21	10/09/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26.2		2.0	1.7	mg/L			10/06/17 14:36	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-17

Lab Sample ID: 500-135179-3

Date Collected: 10/05/17 10:20

Matrix: Water

Date Received: 10/06/17 09:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.083	J	0.20	0.068	mg/L			10/06/17 14:24	1
Sulfate	20.2	B ^	1.0	0.48	mg/L			10/19/17 14:55	5
Total Organic Carbon - Duplicates	30.8		1.0	0.47	mg/L			10/09/17 18:41	1
Alkalinity	157		5.0	3.7	mg/L			10/12/17 11:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-18

Lab Sample ID: 500-135179-4

Date Collected: 10/05/17 10:25

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 19:34	1
Toluene	1.5		0.50	0.15	ug/L			10/12/17 19:34	1
Ethylbenzene	1.3		0.50	0.18	ug/L			10/12/17 19:34	1
Xylenes, Total	9.5		1.0	0.22	ug/L			10/12/17 19:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		75 - 126					10/12/17 19:34	1
Toluene-d8 (Surr)	94		75 - 120					10/12/17 19:34	1
4-Bromofluorobenzene (Surr)	85		72 - 124					10/12/17 19:34	1
Dibromofluoromethane	100		75 - 120					10/12/17 19:34	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	19	*	0.81	0.25	ug/L		10/10/17 07:26	10/15/17 16:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	47		27 - 110				10/10/17 07:26	10/15/17 16:24	1
Phenol-d5 (Surr)	36		20 - 100				10/10/17 07:26	10/15/17 16:24	1
Nitrobenzene-d5 (Surr)	73		36 - 120				10/10/17 07:26	10/15/17 16:24	1
2-Fluorobiphenyl (Surr)	30	X *	34 - 110				10/10/17 07:26	10/15/17 16:24	1
2,4,6-Tribromophenol (Surr)	36	X *	40 - 145				10/10/17 07:26	10/15/17 16:24	1
Terphenyl-d14 (Surr)	91		40 - 145				10/10/17 07:26	10/15/17 16:24	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	15	B	0.50	0.080	ug/L			10/17/17 22:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		76 - 121					10/17/17 22:56	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	5000		95	44	ug/L		10/10/17 15:50	10/12/17 17:46	4000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	0	X D	20 - 100				10/10/17 15:50	10/12/17 17:46	4000

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.53	J	1.0	0.23	ug/L		10/06/17 15:10	10/09/17 13:45	1
Copper	3.7	B	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 13:38	1
Iron	609		100	46.7	ug/L		10/06/17 15:10	10/09/17 13:45	1
Manganese	898		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 13:45	1
Zinc	<6.9		20.0	6.9	ug/L		10/06/17 15:10	10/09/17 13:45	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	182		1.3	0.66	mg/L		10/06/17 15:21	10/09/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	25.9		2.0	1.7	mg/L			10/06/17 15:02	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-18

Lab Sample ID: 500-135179-4

Date Collected: 10/05/17 10:25

Matrix: Water

Date Received: 10/06/17 09:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.081	J	0.20	0.068	mg/L			10/06/17 14:49	1
Sulfate	20.1	F1 ^	1.0	0.48	mg/L			10/19/17 05:50	5
Total Organic Carbon - Duplicates	32.0		1.0	0.47	mg/L			10/09/17 19:05	1
Alkalinity	157		5.0	3.7	mg/L			10/12/17 11:37	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-19

Lab Sample ID: 500-135179-5

Date Collected: 10/05/17 11:20

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 20:01	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 20:01	1
Ethylbenzene	0.46	J	0.50	0.18	ug/L			10/12/17 20:01	1
Xylenes, Total	6.0		1.0	0.22	ug/L			10/12/17 20:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 126		10/12/17 20:01	1
Toluene-d8 (Surr)	94		75 - 120		10/12/17 20:01	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/12/17 20:01	1
Dibromofluoromethane	95		75 - 120		10/12/17 20:01	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	9.9	*	0.90	0.28	ug/L		10/10/17 07:26	10/15/17 16:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	64		27 - 110	10/10/17 07:26	10/15/17 16:47	1
Phenol-d5 (Surr)	52		20 - 100	10/10/17 07:26	10/15/17 16:47	1
Nitrobenzene-d5 (Surr)	80		36 - 120	10/10/17 07:26	10/15/17 16:47	1
2-Fluorobiphenyl (Surr)	70		34 - 110	10/10/17 07:26	10/15/17 16:47	1
2,4,6-Tribromophenol (Surr)	91		40 - 145	10/10/17 07:26	10/15/17 16:47	1
Terphenyl-d14 (Surr)	98		40 - 145	10/10/17 07:26	10/15/17 16:47	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.29	J B	0.50	0.080	ug/L			10/17/17 23:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		76 - 121		10/17/17 23:30	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	4400		99	46	ug/L		10/10/17 15:50	10/12/17 18:10	4000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	0	X D	20 - 100	10/10/17 15:50	10/12/17 18:10	4000

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.50	J	1.0	0.23	ug/L		10/06/17 15:10	10/09/17 13:49	1
Copper	2.9	B	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 13:42	1
Iron	770		100	46.7	ug/L		10/06/17 15:10	10/09/17 13:49	1
Manganese	1260		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 13:49	1
Zinc	8.1	J B	20.0	6.9	ug/L		10/06/17 15:10	10/09/17 13:49	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	378		1.3	0.66	mg/L		10/06/17 15:21	10/09/17 10:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	41.1		2.0	1.7	mg/L			10/06/17 15:27	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-19

Lab Sample ID: 500-135179-5

Date Collected: 10/05/17 11:20

Matrix: Water

Date Received: 10/06/17 09:15

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.13	J	0.20	0.068	mg/L			10/06/17 15:14	1
Sulfate	26.7		2.0	0.95	mg/L			10/06/17 15:27	10
Total Organic Carbon - Duplicates	29.8		1.0	0.47	mg/L			10/09/17 19:36	1
Alkalinity	314		5.0	3.7	mg/L			10/12/17 11:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: Trip Blank-003

Lab Sample ID: 500-135179-6

Date Collected: 10/05/17 12:00

Matrix: Water

Date Received: 10/06/17 09:15

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 20:28	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 20:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 20:28	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 20:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		75 - 126		10/12/17 20:28	1
Toluene-d8 (Surr)	97		75 - 120		10/12/17 20:28	1
4-Bromofluorobenzene (Surr)	93		72 - 124		10/12/17 20:28	1
Dibromofluoromethane	96		75 - 120		10/12/17 20:28	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
*	ISTD response or retention time outside acceptable limits
X	Surrogate is outside control limits

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
J	Reported value was between the limit of detection and the limit of quantitation.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
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
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.
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.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.
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.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)

TestAmerica Chicago

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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 (Radiochemistry)
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)

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

GC/MS VOA

Analysis Batch: 405056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	8260B	
500-135179-2	W-171004-PS-16	Total/NA	Water	8260B	
500-135179-3	W-171005-PS-17	Total/NA	Water	8260B	
500-135179-4	W-171005-PS-18	Total/NA	Water	8260B	
500-135179-5	W-171005-PS-19	Total/NA	Water	8260B	
500-135179-6	Trip Blank-003	Total/NA	Water	8260B	
MB 500-405056/5	Method Blank	Total/NA	Water	8260B	
LCS 500-405056/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 404630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	3510C	
500-135179-2	W-171004-PS-16	Total/NA	Water	3510C	
500-135179-3	W-171005-PS-17	Total/NA	Water	3510C	
500-135179-4	W-171005-PS-18	Total/NA	Water	3510C	
500-135179-5	W-171005-PS-19	Total/NA	Water	3510C	
MB 500-404630/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-404630/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-404630/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 405067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-404630/1-A	Method Blank	Total/NA	Water	8270D	404630
LCS 500-404630/2-A	Lab Control Sample	Total/NA	Water	8270D	404630
LCSD 500-404630/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	404630

Analysis Batch: 405403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	8270D	404630
500-135179-2	W-171004-PS-16	Total/NA	Water	8270D	404630
500-135179-3	W-171005-PS-17	Total/NA	Water	8270D	404630
500-135179-4	W-171005-PS-18	Total/NA	Water	8270D	404630
500-135179-5	W-171005-PS-19	Total/NA	Water	8270D	404630

GC VOA

Analysis Batch: 299476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	RSK-175	
500-135179-2	W-171004-PS-16	Total/NA	Water	RSK-175	
500-135179-3	W-171005-PS-17	Total/NA	Water	RSK-175	
500-135179-4	W-171005-PS-18	Total/NA	Water	RSK-175	
500-135179-5	W-171005-PS-19	Total/NA	Water	RSK-175	
MB 240-299476/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-299476/5	Lab Control Sample	Total/NA	Water	RSK-175	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

GC Semi VOA

Prep Batch: 225436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	8151A	
500-135179-2	W-171004-PS-16	Total/NA	Water	8151A	
500-135179-3	W-171005-PS-17	Total/NA	Water	8151A	
500-135179-4	W-171005-PS-18	Total/NA	Water	8151A	
500-135179-5	W-171005-PS-19	Total/NA	Water	8151A	
MB 180-225436/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-225436/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCS 180-225436/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 225489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	8151A	225436
500-135179-2	W-171004-PS-16	Total/NA	Water	8151A	225436
MB 180-225436/1-A	Method Blank	Total/NA	Water	8151A	225436
LCS 180-225436/2-A	Lab Control Sample	Total/NA	Water	8151A	225436
LCS 180-225436/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	225436

Analysis Batch: 225595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-3	W-171005-PS-17	Total/NA	Water	8151A	225436
500-135179-4	W-171005-PS-18	Total/NA	Water	8151A	225436
500-135179-5	W-171005-PS-19	Total/NA	Water	8151A	225436

Metals

Prep Batch: 404314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Dissolved	Water	3005A	
500-135179-2	W-171004-PS-16	Dissolved	Water	3005A	
500-135179-3	W-171005-PS-17	Dissolved	Water	3005A	
500-135179-4	W-171005-PS-18	Dissolved	Water	3005A	
500-135179-5	W-171005-PS-19	Dissolved	Water	3005A	
MB 500-404314/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-404314/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 404320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	3010A	
500-135179-2	W-171004-PS-16	Total/NA	Water	3010A	
500-135179-3	W-171005-PS-17	Total/NA	Water	3010A	
500-135179-4	W-171005-PS-18	Total/NA	Water	3010A	
500-135179-5	W-171005-PS-19	Total/NA	Water	3010A	

Analysis Batch: 404522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	SM 2340B	404320
500-135179-2	W-171004-PS-16	Total/NA	Water	SM 2340B	404320
500-135179-3	W-171005-PS-17	Total/NA	Water	SM 2340B	404320
500-135179-4	W-171005-PS-18	Total/NA	Water	SM 2340B	404320
500-135179-5	W-171005-PS-19	Total/NA	Water	SM 2340B	404320

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Metals (Continued)

Analysis Batch: 404581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Dissolved	Water	6020A	404314
500-135179-2	W-171004-PS-16	Dissolved	Water	6020A	404314
500-135179-3	W-171005-PS-17	Dissolved	Water	6020A	404314
500-135179-4	W-171005-PS-18	Dissolved	Water	6020A	404314
500-135179-5	W-171005-PS-19	Dissolved	Water	6020A	404314
MB 500-404314/1-A	Method Blank	Total Recoverable	Water	6020A	404314
LCS 500-404314/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404314

Prep Batch: 404936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Dissolved	Water	3005A	
500-135179-2	W-171004-PS-16	Dissolved	Water	3005A	
500-135179-3	W-171005-PS-17	Dissolved	Water	3005A	
500-135179-4	W-171005-PS-18	Dissolved	Water	3005A	
500-135179-5	W-171005-PS-19	Dissolved	Water	3005A	
MB 500-404936/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-404936/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 405553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Dissolved	Water	6020A	404936
500-135179-2	W-171004-PS-16	Dissolved	Water	6020A	404936
500-135179-3	W-171005-PS-17	Dissolved	Water	6020A	404936
500-135179-4	W-171005-PS-18	Dissolved	Water	6020A	404936
500-135179-5	W-171005-PS-19	Dissolved	Water	6020A	404936
MB 500-404936/1-A	Method Blank	Total Recoverable	Water	6020A	404936
LCS 500-404936/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404936

General Chemistry

Analysis Batch: 404303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	300.0	
500-135179-2	W-171004-PS-16	Total/NA	Water	300.0	
500-135179-3	W-171005-PS-17	Total/NA	Water	300.0	
500-135179-3	W-171005-PS-17	Total/NA	Water	300.0	
500-135179-4	W-171005-PS-18	Total/NA	Water	300.0	
500-135179-4	W-171005-PS-18	Total/NA	Water	300.0	
500-135179-5	W-171005-PS-19	Total/NA	Water	300.0	
500-135179-5	W-171005-PS-19	Total/NA	Water	300.0	
MB 500-404303/9	Method Blank	Total/NA	Water	300.0	
LCS 500-404303/10	Lab Control Sample	Total/NA	Water	300.0	
500-135179-5 MS	W-171005-PS-19	Total/NA	Water	300.0	
500-135179-5 MS	W-171005-PS-19	Total/NA	Water	300.0	
500-135179-5 MSD	W-171005-PS-19	Total/NA	Water	300.0	
500-135179-5 MSD	W-171005-PS-19	Total/NA	Water	300.0	

Analysis Batch: 404598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	9060A	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

General Chemistry (Continued)

Analysis Batch: 404598 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-404598/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404598/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 404764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-2	W-171004-PS-16	Total/NA	Water	9060A	
500-135179-3	W-171005-PS-17	Total/NA	Water	9060A	
500-135179-4	W-171005-PS-18	Total/NA	Water	9060A	
500-135179-5	W-171005-PS-19	Total/NA	Water	9060A	
MB 500-404764/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404764/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 405136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-1	W-171004-PS-15	Total/NA	Water	SM 2320B	
500-135179-2	W-171004-PS-16	Total/NA	Water	SM 2320B	
500-135179-3	W-171005-PS-17	Total/NA	Water	SM 2320B	
500-135179-4	W-171005-PS-18	Total/NA	Water	SM 2320B	
500-135179-5	W-171005-PS-19	Total/NA	Water	SM 2320B	
MB 500-405136/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-405136/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 405994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-2	W-171004-PS-16	Total/NA	Water	300.0	
500-135179-4	W-171005-PS-18	Total/NA	Water	300.0	
MB 500-405994/23	Method Blank	Total/NA	Water	300.0	
LCS 500-405994/33	Lab Control Sample	Total/NA	Water	300.0	
500-135179-2 MS	W-171004-PS-16	Total/NA	Water	300.0	
500-135179-2 MSD	W-171004-PS-16	Total/NA	Water	300.0	

Analysis Batch: 406164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135179-3	W-171005-PS-17	Total/NA	Water	300.0	
MB 500-406164/23	Method Blank	Total/NA	Water	300.0	
LCS 500-406164/34	Lab Control Sample	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-135179-1	W-171004-PS-15	90	96	89	98
500-135179-2	W-171004-PS-16	85	98	89	100
500-135179-3	W-171005-PS-17	87	96	85	97
500-135179-4	W-171005-PS-18	86	94	85	100
500-135179-5	W-171005-PS-19	83	94	89	95
500-135179-6	Trip Blank-003	85	97	93	96
LCS 500-405056/4	Lab Control Sample	77	101	84	90
MB 500-405056/5	Method Blank	83	97	84	94

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-135179-1	W-171004-PS-15	41	48	68	68	70	91
500-135179-2	W-171004-PS-16	31	35	80	77	68	100
500-135179-3	W-171005-PS-17	51	41	80	36 *	48 *	97
500-135179-4	W-171005-PS-18	47	36	73	30 X *	36 X *	91
500-135179-5	W-171005-PS-19	64	52	80	70	91	98
LCS 500-404630/2-A	Lab Control Sample	52	43	69	64	89	83
LCS 500-404630/3-A	Lab Control Sample Dup	54	43	68	66	94	89
MB 500-404630/1-A	Method Blank	60	44	69	61	78	90

Surrogate Legend

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

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroet (76-121)
500-135179-1	W-171004-PS-15	87
500-135179-2	W-171004-PS-16	86
500-135179-3	W-171005-PS-17	83
500-135179-4	W-171005-PS-18	84
500-135179-5	W-171005-PS-19	84
LCS 240-299476/5	Lab Control Sample	89

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Trifluoroet (76-121)
MB 240-299476/4	Method Blank	88

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 (20-100)	DCPA2 (20-100)
500-135179-1	W-171004-PS-15	62	64
500-135179-2	W-171004-PS-16	55	54
500-135179-3	W-171005-PS-17	0 X D	0 X D
500-135179-4	W-171005-PS-18	0 X D	0 X D
500-135179-5	W-171005-PS-19	0 X D	0 X D
LCS 180-225436/2-A	Lab Control Sample	58	59
LCSD 180-225436/3-A	Lab Control Sample Dup	56	58
MB 180-225436/1-A	Method Blank	30	32

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

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

Lab Sample ID: MB 500-405056/5
Matrix: Water
Analysis Batch: 405056

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/12/17 12:45	1
Toluene	<0.15		0.50	0.15	ug/L			10/12/17 12:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/12/17 12:45	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/12/17 12:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 126		10/12/17 12:45	1
Toluene-d8 (Surr)	97		75 - 120		10/12/17 12:45	1
4-Bromofluorobenzene (Surr)	84		72 - 124		10/12/17 12:45	1
Dibromofluoromethane	94		75 - 120		10/12/17 12:45	1

Lab Sample ID: LCS 500-405056/4
Matrix: Water
Analysis Batch: 405056

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	43.7		ug/L		87	70 - 120
Toluene	50.0	48.4		ug/L		97	70 - 125
Ethylbenzene	50.0	44.5		ug/L		89	70 - 120
Xylenes, Total	100	87.1		ug/L		87	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	77		75 - 126
Toluene-d8 (Surr)	101		75 - 120
4-Bromofluorobenzene (Surr)	84		72 - 124
Dibromofluoromethane	90		75 - 120

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

Lab Sample ID: MB 500-404630/1-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404630

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/10/17 07:26	10/12/17 19:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	60		27 - 110	10/10/17 07:26	10/12/17 19:04	1
Phenol-d5 (Surr)	44		20 - 100	10/10/17 07:26	10/12/17 19:04	1
Nitrobenzene-d5 (Surr)	69		36 - 120	10/10/17 07:26	10/12/17 19:04	1
2-Fluorobiphenyl (Surr)	61		34 - 110	10/10/17 07:26	10/12/17 19:04	1
2,4,6-Tribromophenol (Surr)	78		40 - 145	10/10/17 07:26	10/12/17 19:04	1
Terphenyl-d14 (Surr)	90		40 - 145	10/10/17 07:26	10/12/17 19:04	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

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

Lab Sample ID: LCS 500-404630/2-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404630

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	16.6		ug/L		52	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	52		27 - 110
Phenol-d5 (Surr)	43		20 - 100
Nitrobenzene-d5 (Surr)	69		36 - 120
2-Fluorobiphenyl (Surr)	64		34 - 110
2,4,6-Tribromophenol (Surr)	89		40 - 145
Terphenyl-d14 (Surr)	83		40 - 145

Lab Sample ID: LCSD 500-404630/3-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 404630

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	32.0	12.3	*	ug/L		38	36 - 110	30	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorophenol (Surr)	54		27 - 110
Phenol-d5 (Surr)	43		20 - 100
Nitrobenzene-d5 (Surr)	68		36 - 120
2-Fluorobiphenyl (Surr)	66		34 - 110
2,4,6-Tribromophenol (Surr)	94		40 - 145
Terphenyl-d14 (Surr)	89		40 - 145

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-299476/4
Matrix: Water
Analysis Batch: 299476

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.105	J	0.50	0.080	ug/L			10/17/17 18:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	88		76 - 121		10/17/17 18:57	1

Lab Sample ID: LCS 240-299476/5
Matrix: Water
Analysis Batch: 299476

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	292		ug/L		103	80 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,1,1-Trifluoroethane	89		76 - 121

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-225436/1-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225436

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/10/17 15:50	10/11/17 16:12	4
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	32		20 - 100				10/10/17 15:50	10/11/17 16:12	4

Lab Sample ID: LCS 180-225436/2-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Pentachlorophenol	5.00	3.92		ug/L		78	34 - 150		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	59		20 - 100						

Lab Sample ID: LCSD 180-225436/3-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 225436

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	5.00	4.29		ug/L		86	34 - 150	9	35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
2,4-Dichlorophenylacetic acid	58		20 - 100						

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-404314/1-A
Matrix: Water
Analysis Batch: 404581

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404314

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/06/17 15:10	10/09/17 12:01	1
Iron	<46.7		100	46.7	ug/L		10/06/17 15:10	10/09/17 12:01	1
Manganese	<0.79		2.5	0.79	ug/L		10/06/17 15:10	10/09/17 12:01	1
Zinc	7.98	J	20.0	6.9	ug/L		10/06/17 15:10	10/09/17 12:01	1

Lab Sample ID: LCS 500-404314/2-A
Matrix: Water
Analysis Batch: 404581

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404314

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Arsenic	100	97.91		ug/L		98	80 - 120		
Iron	1000	1009		ug/L		101	80 - 120		
Manganese	500	495.4		ug/L		99	80 - 120		
Zinc	500	520.2		ug/L		104	80 - 120		

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 500-404936/1-A
Matrix: Water
Analysis Batch: 405553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404936

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.08	J	2.0	0.50	ug/L		10/11/17 15:25	10/16/17 12:52	1

Lab Sample ID: LCS 500-404936/2-A
Matrix: Water
Analysis Batch: 405553

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	250	272.5		ug/L		109	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-404303/9
Matrix: Water
Analysis Batch: 404303

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/06/17 10:36	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/06/17 10:36	1
Sulfate	<0.095		0.20	0.095	mg/L			10/06/17 10:36	1

Lab Sample ID: LCS 500-404303/10
Matrix: Water
Analysis Batch: 404303

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.19		mg/L		106	90 - 110
Nitrate as N	2.00	1.98		mg/L		99	90 - 110
Sulfate	5.00	5.31		mg/L		106	90 - 110

Lab Sample ID: 500-135179-5 MS
Matrix: Water
Analysis Batch: 404303

Client Sample ID: W-171005-PS-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.13	J	1.00	1.11		mg/L		98	80 - 120

Lab Sample ID: 500-135179-5 MS
Matrix: Water
Analysis Batch: 404303

Client Sample ID: W-171005-PS-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	41.1		10.0	50.65	4	mg/L		95	80 - 120
Sulfate	26.7		25.0	53.60		mg/L		108	80 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-135179-5 MSD
Matrix: Water
Analysis Batch: 404303

Client Sample ID: W-171005-PS-19
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	0.13	J	1.00	1.08		mg/L		95	80 - 120	3	20

Lab Sample ID: 500-135179-5 MSD
Matrix: Water
Analysis Batch: 404303

Client Sample ID: W-171005-PS-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	41.1		10.0	50.68	4	mg/L		96	80 - 120	0	20
Sulfate	26.7		25.0	53.42		mg/L		107	80 - 120	0	20

Lab Sample ID: MB 500-405994/23
Matrix: Water
Analysis Batch: 405994

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/19/17 00:46	1
Sulfate	<0.095		0.20	0.095	mg/L			10/19/17 00:46	1

Lab Sample ID: LCS 500-405994/33
Matrix: Water
Analysis Batch: 405994

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.01		mg/L		100	90 - 110
Sulfate	5.00	5.43		mg/L		109	90 - 110

Lab Sample ID: 500-135179-2 MS
Matrix: Water
Analysis Batch: 405994

Client Sample ID: W-171004-PS-16
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	8.1		2.00	10.31	4	mg/L		111	80 - 120

Lab Sample ID: 500-135179-2 MSD
Matrix: Water
Analysis Batch: 405994

Client Sample ID: W-171004-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	8.1		2.00	10.35	4	mg/L		113	80 - 120	0	20

Lab Sample ID: MB 500-406164/23
Matrix: Water
Analysis Batch: 406164

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.402		0.20	0.095	mg/L			10/19/17 11:58	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 500-406164/34
Matrix: Water
Analysis Batch: 406164

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.08		mg/L		102	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-404598/4
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 02:41	1

Lab Sample ID: LCS 500-404598/5
Matrix: Water
Analysis Batch: 404598

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 - Duplicates	10.0	9.51		mg/L		95	80 - 120

Lab Sample ID: MB 500-404764/4
Matrix: Water
Analysis Batch: 404764

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 17:48	1

Lab Sample ID: LCS 500-404764/5
Matrix: Water
Analysis Batch: 404764

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 - Duplicates	10.0	9.85		mg/L		99	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-405136/3
Matrix: Water
Analysis Batch: 405136

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/12/17 11:17	1

Lab Sample ID: LCS 500-405136/4
Matrix: Water
Analysis Batch: 405136

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	107.5		mg/L		107	85 - 115

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171004-PS-15

Date Collected: 10/04/17 14:20

Date Received: 10/06/17 09:15

Lab Sample ID: 500-135179-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 18:12	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 15:12	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 22:05	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225489	10/11/17 17:01	JMO	TAL PIT
Dissolved	Prep	3005A			404314	10/06/17 15:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404581	10/09/17 13:34	FXG	TAL CHI
Dissolved	Prep	3005A			404936	10/11/17 15:25	BDE	TAL CHI
Dissolved	Analysis	6020A		1	405553	10/16/17 13:26	FXG	TAL CHI
Total/NA	Prep	3010A			404320	10/06/17 15:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404522	10/09/17 10:13	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404303	10/06/17 13:33	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404598	10/09/17 07:52	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 11:50	SMO	TAL CHI

Client Sample ID: W-171004-PS-16

Date Collected: 10/04/17 15:40

Date Received: 10/06/17 09:15

Lab Sample ID: 500-135179-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 18:39	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 15:36	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 22:22	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225489	10/11/17 17:25	JMO	TAL PIT
Dissolved	Prep	3005A			404314	10/06/17 15:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404581	10/09/17 13:37	FXG	TAL CHI
Dissolved	Prep	3005A			404936	10/11/17 15:25	BDE	TAL CHI
Dissolved	Analysis	6020A		1	405553	10/16/17 13:30	FXG	TAL CHI
Total/NA	Prep	3010A			404320	10/06/17 15:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404522	10/09/17 10:13	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404303	10/06/17 13:58	CCK	TAL CHI
Total/NA	Analysis	300.0		2	405994	10/19/17 04:34	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/09/17 18:23	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 11:56	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-17

Lab Sample ID: 500-135179-3

Date Collected: 10/05/17 10:20

Matrix: Water

Date Received: 10/06/17 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 19:06	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 16:00	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 22:39	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4000	225595	10/12/17 17:21	JMO	TAL PIT
Dissolved	Prep	3005A			404314	10/06/17 15:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404581	10/09/17 13:41	FXG	TAL CHI
Dissolved	Prep	3005A			404936	10/11/17 15:25	BDE	TAL CHI
Dissolved	Analysis	6020A		1	405553	10/16/17 13:34	FXG	TAL CHI
Total/NA	Prep	3010A			404320	10/06/17 15:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404522	10/09/17 10:13	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404303	10/06/17 14:24	CCK	TAL CHI
Total/NA	Analysis	300.0		10	404303	10/06/17 14:36	CCK	TAL CHI
Total/NA	Analysis	300.0		5	406164	10/19/17 14:55	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/09/17 18:41	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 11:44	SMO	TAL CHI

Client Sample ID: W-171005-PS-18

Lab Sample ID: 500-135179-4

Date Collected: 10/05/17 10:25

Matrix: Water

Date Received: 10/06/17 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 19:34	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 16:24	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 22:56	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4000	225595	10/12/17 17:46	JMO	TAL PIT
Dissolved	Prep	3005A			404314	10/06/17 15:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404581	10/09/17 13:45	FXG	TAL CHI
Dissolved	Prep	3005A			404936	10/11/17 15:25	BDE	TAL CHI
Dissolved	Analysis	6020A		1	405553	10/16/17 13:38	FXG	TAL CHI
Total/NA	Prep	3010A			404320	10/06/17 15:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404522	10/09/17 10:13	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404303	10/06/17 14:49	CCK	TAL CHI
Total/NA	Analysis	300.0		10	404303	10/06/17 15:02	CCK	TAL CHI
Total/NA	Analysis	300.0		5	405994	10/19/17 05:50	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/09/17 19:05	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 11:37	SMO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Client Sample ID: W-171005-PS-19

Lab Sample ID: 500-135179-5

Date Collected: 10/05/17 11:20

Matrix: Water

Date Received: 10/06/17 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 20:01	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 16:47	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299476	10/17/17 23:30	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4000	225595	10/12/17 18:10	JMO	TAL PIT
Dissolved	Prep	3005A			404314	10/06/17 15:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	404581	10/09/17 13:49	FXG	TAL CHI
Dissolved	Prep	3005A			404936	10/11/17 15:25	BDE	TAL CHI
Dissolved	Analysis	6020A		1	405553	10/16/17 13:42	FXG	TAL CHI
Total/NA	Prep	3010A			404320	10/06/17 15:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	404522	10/09/17 10:13	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404303	10/06/17 15:14	CCK	TAL CHI
Total/NA	Analysis	300.0		10	404303	10/06/17 15:27	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/09/17 19:36	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 11:30	SMO	TAL CHI

Client Sample ID: Trip Blank-003

Lab Sample ID: 500-135179-6

Date Collected: 10/05/17 12:00

Matrix: Water

Date Received: 10/06/17 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405056	10/12/17 20:28	EMA	TAL CHI

Laboratory References:

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

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135179-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

Report To (optional)
Contact: _____
Company: _____
Address: _____
Address: _____
Phone: _____
Fax: _____
E-Mail: _____

Bill To (optional)
Contact: _____
Company: _____
Address: _____
Address: _____
Phone: _____
Fax: _____
PO#/Reference#



Chain of Custody Record

Lab Job #: 500-135179
Chain of Custody Number: 003
Page 1 of 1
Temperature °C of Cooler: (5.9)(2.3)(4.7)

Client		Client Project #		Preservative		Parameter		Matrix		Comments		
GHP		086165-04-05		None ACL		None None		H ₂ SO ₄ HNO ₃ HCL ANO ₃		Preservative Key 1. HCL, Cool to 4° 2. H ₂ SO ₄ , Cool to 4° 3. HNO ₃ , Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO ₄ 7. Cool to 4° 8. None 9. Other		
Project Name		Project Location/State		Lab Project #		Lab PM		Matrix		Comments		
PentaWood		Siren, WI				P. Storli		Alk-2320 N:rate, CL-504 -300.0-280				
Lab ID	MS/MSD	Sample ID	Date	Time	# of Containers	Matrix						
1		W-171004-PS-15	10/4/17	1420	15	W	X	X	X	X	X	X
2		↓ 16	↓	1540	15	↓	X	X	X	X	X	X
3		W-171005-PS-17	10/5/17	1020	15	↓	X	X	X	X	X	X
4		↓ 18	↓	1025	15	↓	X	X	X	X	X	X
5		↓ 19	↓	1120	15	↓	X	X	X	X	X	X
6		Trip Blank-003	↓	1200	2	↓	X	X				

Turnaround Time Required (Business Days)

___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other

Sample Disposal

Return to Client Disposal by Lab Archive for ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: [Signature] Company: GHP Date: 10/5/17 Time: 1400
Received By: [Signature] Company: TA Date: 10/06/17 Time: 0915

Lab Courier:
Shipped:
Hand Delivered:

Matrix Key
WW - Wastewater SE - Sediment
W - Water SO - Soil
S - Soil L - Leachate
SL - Sludge WI - Wipe
MS - Miscellaneous DW - Drinking Water
OL - Oil O - Other
A - Air

Client Comments

Lab Comments:

FedEx *NEW Package*
Express *US Airbill*

FedEx Tracking Number **8047 9321 5561**

Form ID No. **0200**

1 From
Date 10-5-17
Sender's Name Peter Struli Phone 651 247-4218
Company GHD
Address 8682 Daniels 70
City Siren State WI ZIP 54872

2 Your Internal Billing Reference 086165-04-05

3 To
Recipient's Name S. Receiving Phone 708 534-5200
Company Test America
Address 2417 Bond Street
City University Park State IL ZIP 600484

HOLD Weekday
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.

HOLD Saturday
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



500-135179 Waybill

4 Express Package Service *To most locations.
NOTE: Service order has changed. Please select carefully. **Packages up to 150 lbs.**
For packages over 100 lbs., use the new FedEx Express Freight US Airbill.

Next Business Day
 FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
 FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.
 FedEx 2Day
Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options
 SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
 No Signature Required
Package may be left without obtaining a signature for delivery.
 Direct Signature
Someone at recipient's address may sign for delivery. *Fee applies.*
 Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. *Fee applies.*

Does this shipment contain dangerous goods?
One box must be checked.
 No Yes
Yes per attached Shipper's Declaration. Yes
Shipper's Declaration not required. Dry Ice
Dry Ice, 9 UN 1845 x _____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. Cargo Aircraft Only

7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Acct. No. in Section I will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages _____ Total Weight 39 lbs. Credit Card Auth. **644**

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.
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FedEx *NEW Package*
Express *US Airbill*

FedEx Tracking Number **8047 9321 5572**

Form ID No: **0200**

1 From
Date 10-5-17
Sender's Name Pete Starke Phone 651 247-4218
Company GHD
Address 8682 Daniels 70
City Siren State WI ZIP 54872

2 Your Internal Billing Reference 086165-04-05

3 To
Recipient's Name S. Receiving Phone 708 534-5200
Company Test America
Address 2417 Bond Street
City University Park State IL ZIP 60484



8047 9321 5572

4 Express Package Service *To most locations.
NOTE: Service order has changed. Please select carefully. Packages up to 150 lbs. For packages over 150 lbs, use the new FedEx Express Freight US Airbill.

Next Business Day	2 or 3 Business Days
<input type="checkbox"/> FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.	<input type="checkbox"/> FedEx 2Day A.M. Second business morning.* Saturday Delivery NOT available.
<input checked="" type="checkbox"/> FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.	<input type="checkbox"/> FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
<input type="checkbox"/> FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.	<input type="checkbox"/> FedEx Express Saver Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options

SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

One box must be checked.
 No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 5, UN 1845 x kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box. Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages 47 Total Weight 47 lbs. Credit Card Auth. **644**

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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FedEx *NEW Package*
Express *US Airbill*

FedEx Tracking Number **8047 9321 5550**

Form ID No. **0200**

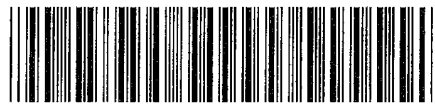
1 From
Date 10-5-17
Sender's Name Pete Storlie Phone 651 247-4218
Company GHD
Address 8682 Daniels 70
City Siren State WI ZIP 54872

2 Your Internal Billing Reference 086165-04-05

3 To
Recipient's Name S. Receiving Phone 708 534-5200
Company Test America
Address 2417 Bond Street
City University Park State IL ZIP 60484

HOLD Weekday
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.

HOLD Saturday
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



4 Express Package Service *To most locations.
NOTE: Service order has changed. Please select carefully. **Packages up to 150 lbs.**
For packages over 150 lbs., use the new FedEx Express Freight US Airbill.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options

SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery. *Fee applies.*

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. *Fee applies.*

Does this shipment contain dangerous goods?

One box must be checked.

No **Yes** (As per attached Shipper's Declaration.) **Yes** (Shipper's Declaration not required.) **Dry Ice** (Dry ice, 9 UN 1845) _____ x _____ kg

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender (Acct. No. in Section 7 will be billed.) **Recipient** **Third Party** **Credit Card** **Cash/Check**

Total Packages _____ Total Weight 51 lbs. Credit Card Auth. _____

Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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644

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TestAmerica Chicago

2417 Bond Street
University Park, IL 60484
Phone (708) 534-5200 Fax (708) 534-5211

Chain of Custody Record

Client Information (Sub Contract Lab)

Company: TestAmerica Laboratories, Inc.
Address: 301 Alpha Drive, RIDC Park, Pittsburgh, PA, 15238
Phone: 412-963-7058(Tel) 412-963-2468(Fax)
Email:
Project Name: Penta Wood 086165-04
Site:
PO #:
WO #:
Project #: 50013796
SSOW#:
Due Date Requested: 10/18/2017
TAT Requested (days):
Accreditations Required (See note): State Program - Wisconsin

Lab PM: Wright, Richard C.
E-Mail: richard.wright@testamericainc.com
State of Origin: Wisconsin

Job #: 500-135179-1
Page 1 of 1

No: -93957.1



Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, or Waste)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of Containers	Special Instructions/Note:
						X	X			
W-171004-PS-15 (500-135179-1)	10/4/17	14:20 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171004-PS-16 (500-135179-2)	10/4/17	15:40 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171005-PS-17 (500-135179-3)	10/5/17	10:20 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171005-PS-18 (500-135179-4)	10/5/17	10:25 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171005-PS-19 (500-135179-5)	10/5/17	11:20 Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify) _____
Primary Deliverable Rank: 2
Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____
Relinquished by: *S. Sinks* Date: 10/06/17 Time: 1600
Relinquished by: *L. Jones* Date: 10/17/17 Time: 0900
Relinquished by: _____ Date: _____ Time: _____
Custody Seal No.: _____
Company: _____
Company: _____
Company: _____
Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Wright, Richard C	Carrier Tracking No(s):	COC No: 500-93950.1
Client Contact: Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin	Job #:	500-135179-1
Address: 4101 Shuffel Street NW		Analysis Requested		
City: North Canton	Due Date Requested: 10/18/2017	Preservation Codes:		
State, Zip: OH, 44720	TAT Requested (days):	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 Other:		
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:	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)		
Email:	WO #:	Total Number of containers		
Project Name: Penta Wood 086165-04	Project #: 50013796	Special Instructions/Note: RSK		
Site:	SSOW#:	Risks: RSK 175 (MOD) Methane		
Sample Identification - Client ID (Lab ID)		Field Filtered Sample (Yes or No)		
W-171004-PS-15 (500-135179-1)	Sample Date: 10/4/17	Sample Time: 14:20 Central	Sample Type (C=Comp, G=grab):	Preservation Code:
W-171004-PS-16 (500-135179-2)	Sample Date: 10/4/17	Sample Time: 15:40 Central	Water	Water
W-171005-PS-17 (500-135179-3)	Sample Date: 10/5/17	Sample Time: 10:20 Central	Water	Water
W-171005-PS-18 (500-135179-4)	Sample Date: 10/5/17	Sample Time: 10:25 Central	Water	Water
W-171005-PS-19 (500-135179-5)	Sample Date: 10/5/17	Sample Time: 11:20 Central	Water	Water
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>				
Possible Hazard Identification				
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2				
Empty Kit Relinquished by: Date: Time: Method of Shipment: Months				
Relinquished by: Date/Time: Company: Received by: Date/Time: Company: Received by: Date/Time: Company: Cooler Temperature(s) °C and Other Remarks:				



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client TA Chicago Site Name _____
 Cooler Received on 10-7-17 Opened on 10-7-17
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:
MBB

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. 2.4 °C Corrected Cooler Temp. 2.4 °C
 IR GUN #36 (CF +0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 627 (CF -1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____ Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA

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

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

If yes, Questions 11-15 have been checked at the originating laboratory.
 11. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this.
 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 _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

17. 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)

18. SAMPLE PRESERVATION

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135179-1

Login Number: 135179

List Source: TestAmerica Chicago

List Number: 1

Creator: Kelsey, Shawn M

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	(5.9)(2.3)(4.7)c
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.	True	



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135179-1

Login Number: 135179

List Number: 2

Creator: Neri, Tom

List Source: TestAmerica Pittsburgh

List Creation: 10/07/17 01:54 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	3.1
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 <math><6\text{mm}</math> (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 Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-135273-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson



Authorized for release by:
10/23/2017 3:13:10 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

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results through
TotalAccess

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www.testamericainc.com

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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.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Job ID: 500-135273-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-135273-1

Comments

No additional comments.

Receipt

The samples were received on 10/7/2017 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 4.1° C.

GC/MS VOA

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

GC/MS Semi VOA

Method(s) 8270D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch preparation batch 500-404630 and analytical batch 500-405067 recovered outside control limits for Naphthalene. The % recoveries were within limits.

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: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-299664.

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-171005-PS-20 (500-135273-1)

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.

Field Service / Mobile Lab

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

General Chemistry

Method(s) 300.0: The following IC 8 samples was 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-171005-PS-20 (500-135273-1), W-171005-PS-21 (500-135273-2) and W-171005-PS-23 (500-135273-4).

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

Organic Prep

Method(s) 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 180-225436.

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

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-20

Lab Sample ID: 500-135273-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.0		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	1.0		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	14		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	16	*	0.80	0.25	ug/L	1		8270D	Total/NA
Methane	52		0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	8700		190	88	ug/L	8000		8151A	Total/NA
Arsenic	12.4		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.93	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	10400		100	46.7	ug/L	1		6020A	Dissolved
Manganese	2010		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	276		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	34.5		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.075	J H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	13.6		0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	34.9		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	276		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-21

Lab Sample ID: 500-135273-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.11	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	2.1		0.099	0.046	ug/L	4		8151A	Total/NA
Copper	1.1	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	49.4	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	31.5		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	52.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	0.55		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	2.0	H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	4.6		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.6		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	48.4		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-22

Lab Sample ID: 500-135273-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.12	J	0.50	0.080	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.38		0.10	0.046	ug/L	4		8151A	Total/NA
Copper	0.54	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	69.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	28.0		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	4.0	H F1	0.40	0.14	mg/L	2		300.0	Total/NA
Sulfate	9.5	F1	0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	0.75	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	25.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171005-PS-23

Lab Sample ID: 500-135273-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.32		0.098	0.046	ug/L	4		8151A	Total/NA
Copper	5.5		2.0	0.50	ug/L	1		6020A	Dissolved

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-23 (Continued)

Lab Sample ID: 500-135273-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Manganese	4.0		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	7.2	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	283		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	18.2		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	6.6	H	1.0	0.34	mg/L	5		300.0	Total/NA
Sulfate	8.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.8		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	225		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank-004

Lab Sample ID: 500-135273-5

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-135273-1	W-171005-PS-20	Water	10/05/17 13:15	10/07/17 10:35
500-135273-2	W-171005-PS-21	Water	10/05/17 13:45	10/07/17 10:35
500-135273-3	W-171005-PS-22	Water	10/05/17 15:15	10/07/17 10:35
500-135273-4	W-171005-PS-23	Water	10/05/17 15:50	10/07/17 10:35
500-135273-5	Trip Blank-004	Water	10/06/17 12:00	10/07/17 10:35

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-20

Lab Sample ID: 500-135273-1

Date Collected: 10/05/17 13:15

Matrix: Water

Date Received: 10/07/17 10:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/17/17 17:44	1
Toluene	1.0		0.50	0.15	ug/L			10/17/17 17:44	1
Ethylbenzene	1.0		0.50	0.18	ug/L			10/17/17 17:44	1
Xylenes, Total	14		1.0	0.22	ug/L			10/17/17 17:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 126		10/17/17 17:44	1
Toluene-d8 (Surr)	92		75 - 120		10/17/17 17:44	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/17/17 17:44	1
Dibromofluoromethane	100		75 - 120		10/17/17 17:44	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	16	*	0.80	0.25	ug/L		10/10/17 07:26	10/15/17 17:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	61		27 - 110	10/10/17 07:26	10/15/17 17:35	1
Phenol-d5 (Surr)	49		20 - 100	10/10/17 07:26	10/15/17 17:35	1
Nitrobenzene-d5 (Surr)	73		36 - 120	10/10/17 07:26	10/15/17 17:35	1
2-Fluorobiphenyl (Surr)	64		34 - 110	10/10/17 07:26	10/15/17 17:35	1
2,4,6-Tribromophenol (Surr)	87		40 - 145	10/10/17 07:26	10/15/17 17:35	1
Terphenyl-d14 (Surr)	81		40 - 145	10/10/17 07:26	10/15/17 17:35	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	52		0.50	0.080	ug/L			10/18/17 23:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		76 - 121		10/18/17 23:15	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	8700		190	88	ug/L		10/10/17 15:50	10/13/17 08:07	8000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	0	X D	20 - 100	10/10/17 15:50	10/13/17 08:07	8000

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12.4		1.0	0.23	ug/L		10/09/17 07:12	10/09/17 15:58	1
Copper	0.93	J	2.0	0.50	ug/L		10/09/17 07:12	10/09/17 15:58	1
Iron	10400		100	46.7	ug/L		10/09/17 07:12	10/09/17 15:58	1
Manganese	2010		2.5	0.79	ug/L		10/09/17 07:12	10/09/17 15:58	1
Zinc	<6.9		20.0	6.9	ug/L		10/09/17 07:12	10/09/17 15:58	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	276		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	34.5		2.0	1.7	mg/L			10/20/17 13:41	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-20

Lab Sample ID: 500-135273-1

Date Collected: 10/05/17 13:15

Matrix: Water

Date Received: 10/07/17 10:35

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.075	J H	0.20	0.068	mg/L			10/07/17 16:20	1
Sulfate	13.6		0.40	0.19	mg/L			10/20/17 13:28	2
Total Organic Carbon - Duplicates	34.9		1.0	0.47	mg/L			10/10/17 03:42	1
Alkalinity	276		5.0	3.7	mg/L			10/12/17 12:03	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-21

Lab Sample ID: 500-135273-2

Date Collected: 10/05/17 13:45

Matrix: Water

Date Received: 10/07/17 10:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/16/17 23:47	1
Toluene	<0.15		0.50	0.15	ug/L			10/16/17 23:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/16/17 23:47	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/16/17 23:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		10/16/17 23:47	1
Toluene-d8 (Surr)	90		75 - 120		10/16/17 23:47	1
4-Bromofluorobenzene (Surr)	87		72 - 124		10/16/17 23:47	1
Dibromofluoromethane	106		75 - 120		10/16/17 23:47	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25	*	0.80	0.25	ug/L		10/10/17 07:26	10/15/17 17:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	58		27 - 110	10/10/17 07:26	10/15/17 17:58	1
Phenol-d5 (Surr)	48		20 - 100	10/10/17 07:26	10/15/17 17:58	1
Nitrobenzene-d5 (Surr)	79		36 - 120	10/10/17 07:26	10/15/17 17:58	1
2-Fluorobiphenyl (Surr)	73		34 - 110	10/10/17 07:26	10/15/17 17:58	1
2,4,6-Tribromophenol (Surr)	68		40 - 145	10/10/17 07:26	10/15/17 17:58	1
Terphenyl-d14 (Surr)	96		40 - 145	10/10/17 07:26	10/15/17 17:58	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.11	J	0.50	0.080	ug/L			10/18/17 23:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	85		76 - 121		10/18/17 23:32	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	2.1		0.099	0.046	ug/L		10/10/17 15:50	10/11/17 19:27	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	50		20 - 100	10/10/17 15:50	10/11/17 19:27	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/09/17 07:12	10/09/17 16:02	1
Copper	1.1	J	2.0	0.50	ug/L		10/09/17 07:12	10/09/17 16:02	1
Iron	49.4	J	100	46.7	ug/L		10/09/17 07:12	10/09/17 16:02	1
Manganese	31.5		2.5	0.79	ug/L		10/09/17 07:12	10/09/17 16:02	1
Zinc	<6.9		20.0	6.9	ug/L		10/09/17 07:12	10/09/17 16:02	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	52.3		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.55		0.20	0.17	mg/L			10/07/17 16:32	1

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-21

Lab Sample ID: 500-135273-2

Date Collected: 10/05/17 13:45

Matrix: Water

Date Received: 10/07/17 10:35

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	2.0	H	0.20	0.068	mg/L			10/07/17 16:32	1
Sulfate	4.6		0.20	0.095	mg/L			10/07/17 16:32	1
Total Organic Carbon - Duplicates	1.6		1.0	0.47	mg/L			10/10/17 03:52	1
Alkalinity	48.4		5.0	3.7	mg/L			10/12/17 12:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-22

Lab Sample ID: 500-135273-3

Date Collected: 10/05/17 15:15

Matrix: Water

Date Received: 10/07/17 10:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/17/17 00:17	1
Toluene	<0.15		0.50	0.15	ug/L			10/17/17 00:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/17/17 00:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/17/17 00:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		10/17/17 00:17	1
Toluene-d8 (Surr)	91		75 - 120		10/17/17 00:17	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/17/17 00:17	1
Dibromofluoromethane	108		75 - 120		10/17/17 00:17	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26	*	0.83	0.26	ug/L		10/10/17 07:26	10/15/17 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	53		27 - 110	10/10/17 07:26	10/15/17 18:22	1
Phenol-d5 (Surr)	52		20 - 100	10/10/17 07:26	10/15/17 18:22	1
Nitrobenzene-d5 (Surr)	76		36 - 120	10/10/17 07:26	10/15/17 18:22	1
2-Fluorobiphenyl (Surr)	76		34 - 110	10/10/17 07:26	10/15/17 18:22	1
2,4,6-Tribromophenol (Surr)	73		40 - 145	10/10/17 07:26	10/15/17 18:22	1
Terphenyl-d14 (Surr)	105		40 - 145	10/10/17 07:26	10/15/17 18:22	1

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			10/18/17 23:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		76 - 121		10/18/17 23:49	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.38		0.10	0.046	ug/L		10/10/17 15:50	10/11/17 19:51	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	61		20 - 100	10/10/17 15:50	10/11/17 19:51	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/09/17 07:12	10/09/17 16:05	1
Copper	0.54	J	2.0	0.50	ug/L		10/09/17 07:12	10/09/17 16:05	1
Iron	<46.7		100	46.7	ug/L		10/09/17 07:12	10/09/17 16:05	1
Manganese	<0.79		2.5	0.79	ug/L		10/09/17 07:12	10/09/17 16:05	1
Zinc	<6.9		20.0	6.9	ug/L		10/09/17 07:12	10/09/17 16:05	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	69.3		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28.0		2.0	1.7	mg/L			10/20/17 14:06	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-22

Lab Sample ID: 500-135273-3

Date Collected: 10/05/17 15:15

Matrix: Water

Date Received: 10/07/17 10:35

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	4.0	H F1	0.40	0.14	mg/L			10/20/17 13:53	2
Sulfate	9.5	F1	0.40	0.19	mg/L			10/20/17 13:53	2
Total Organic Carbon - Duplicates	0.75	J	1.0	0.47	mg/L			10/10/17 04:39	1
Alkalinity	25.9		5.0	3.7	mg/L			10/12/17 12:14	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-23

Lab Sample ID: 500-135273-4

Date Collected: 10/05/17 15:50

Matrix: Water

Date Received: 10/07/17 10:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/17/17 00:46	1
Toluene	<0.15		0.50	0.15	ug/L			10/17/17 00:46	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/17/17 00:46	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/17/17 00:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		10/17/17 00:46	1
Toluene-d8 (Surr)	90		75 - 120		10/17/17 00:46	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/17/17 00:46	1
Dibromofluoromethane	108		75 - 120		10/17/17 00:46	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.27	*	0.86	0.27	ug/L		10/10/17 07:26	10/15/17 18:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	50		27 - 110	10/10/17 07:26	10/15/17 18:46	1
Phenol-d5 (Surr)	66		20 - 100	10/10/17 07:26	10/15/17 18:46	1
Nitrobenzene-d5 (Surr)	72		36 - 120	10/10/17 07:26	10/15/17 18:46	1
2-Fluorobiphenyl (Surr)	73		34 - 110	10/10/17 07:26	10/15/17 18:46	1
2,4,6-Tribromophenol (Surr)	79		40 - 145	10/10/17 07:26	10/15/17 18:46	1
Terphenyl-d14 (Surr)	95		40 - 145	10/10/17 07:26	10/15/17 18:46	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			10/19/17 00:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		76 - 121		10/19/17 00:06	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.32		0.098	0.046	ug/L		10/10/17 15:50	10/11/17 20:16	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	56		20 - 100	10/10/17 15:50	10/11/17 20:16	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/09/17 07:12	10/09/17 16:09	1
Copper	5.5		2.0	0.50	ug/L		10/09/17 07:12	10/09/17 16:09	1
Iron	<46.7		100	46.7	ug/L		10/09/17 07:12	10/09/17 16:09	1
Manganese	4.0		2.5	0.79	ug/L		10/09/17 07:12	10/09/17 16:09	1
Zinc	7.2 J		20.0	6.9	ug/L		10/09/17 07:12	10/09/17 16:09	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	283		1.3	0.66	mg/L		10/09/17 07:13	10/10/17 10:17	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18.2		1.0	0.85	mg/L			10/20/17 15:35	5

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-23

Lab Sample ID: 500-135273-4

Date Collected: 10/05/17 15:50

Matrix: Water

Date Received: 10/07/17 10:35

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	6.6	H	1.0	0.34	mg/L			10/20/17 15:35	5
Sulfate	8.0		0.20	0.095	mg/L			10/07/17 15:42	1
Total Organic Carbon - Duplicates	1.8		1.0	0.47	mg/L			10/10/17 04:48	1
Alkalinity	225		5.0	3.7	mg/L			10/12/17 12:23	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: Trip Blank-004

Lab Sample ID: 500-135273-5

Date Collected: 10/06/17 12:00

Matrix: Water

Date Received: 10/07/17 10:35

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/17/17 01:16	1
Toluene	<0.15		0.50	0.15	ug/L			10/17/17 01:16	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/17/17 01:16	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/17/17 01:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		10/17/17 01:16	1
Toluene-d8 (Surr)	91		75 - 120		10/17/17 01:16	1
4-Bromofluorobenzene (Surr)	89		72 - 124		10/17/17 01:16	1
Dibromofluoromethane	106		75 - 120		10/17/17 01:16	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits

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.

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.
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.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

GC/MS VOA

Analysis Batch: 405572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-2	W-171005-PS-21	Total/NA	Water	8260B	
500-135273-3	W-171005-PS-22	Total/NA	Water	8260B	
500-135273-4	W-171005-PS-23	Total/NA	Water	8260B	
500-135273-5	Trip Blank-004	Total/NA	Water	8260B	
MB 500-405572/6	Method Blank	Total/NA	Water	8260B	
LCS 500-405572/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 405651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	8260B	
MB 500-405651/8	Method Blank	Total/NA	Water	8260B	
LCS 500-405651/6	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 404630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	3510C	
500-135273-2	W-171005-PS-21	Total/NA	Water	3510C	
500-135273-3	W-171005-PS-22	Total/NA	Water	3510C	
500-135273-4	W-171005-PS-23	Total/NA	Water	3510C	
MB 500-404630/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-404630/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-404630/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 405067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-404630/1-A	Method Blank	Total/NA	Water	8270D	404630
LCS 500-404630/2-A	Lab Control Sample	Total/NA	Water	8270D	404630
LCSD 500-404630/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	404630

Analysis Batch: 405403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	8270D	404630
500-135273-2	W-171005-PS-21	Total/NA	Water	8270D	404630
500-135273-3	W-171005-PS-22	Total/NA	Water	8270D	404630
500-135273-4	W-171005-PS-23	Total/NA	Water	8270D	404630

GC VOA

Analysis Batch: 299664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	RSK-175	
500-135273-2	W-171005-PS-21	Total/NA	Water	RSK-175	
500-135273-3	W-171005-PS-22	Total/NA	Water	RSK-175	
500-135273-4	W-171005-PS-23	Total/NA	Water	RSK-175	
MB 240-299664/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-299664/5	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-299664/6	Lab Control Sample Dup	Total/NA	Water	RSK-175	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

GC Semi VOA

Prep Batch: 225436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	8151A	
500-135273-2	W-171005-PS-21	Total/NA	Water	8151A	
500-135273-3	W-171005-PS-22	Total/NA	Water	8151A	
500-135273-4	W-171005-PS-23	Total/NA	Water	8151A	
MB 180-225436/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-225436/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 180-225436/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 225489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-2	W-171005-PS-21	Total/NA	Water	8151A	225436
500-135273-3	W-171005-PS-22	Total/NA	Water	8151A	225436
500-135273-4	W-171005-PS-23	Total/NA	Water	8151A	225436
MB 180-225436/1-A	Method Blank	Total/NA	Water	8151A	225436
LCS 180-225436/2-A	Lab Control Sample	Total/NA	Water	8151A	225436
LCSD 180-225436/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	225436

Analysis Batch: 225738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	8151A	225436

Metals

Prep Batch: 404460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Dissolved	Water	3005A	
500-135273-2	W-171005-PS-21	Dissolved	Water	3005A	
500-135273-3	W-171005-PS-22	Dissolved	Water	3005A	
500-135273-4	W-171005-PS-23	Dissolved	Water	3005A	
MB 500-404460/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-404460/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 404461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	3010A	
500-135273-2	W-171005-PS-21	Total/NA	Water	3010A	
500-135273-3	W-171005-PS-22	Total/NA	Water	3010A	
500-135273-4	W-171005-PS-23	Total/NA	Water	3010A	

Analysis Batch: 404658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Dissolved	Water	6020A	404460
500-135273-2	W-171005-PS-21	Dissolved	Water	6020A	404460
500-135273-3	W-171005-PS-22	Dissolved	Water	6020A	404460
500-135273-4	W-171005-PS-23	Dissolved	Water	6020A	404460
MB 500-404460/1-A	Method Blank	Total Recoverable	Water	6020A	404460
LCS 500-404460/2-A	Lab Control Sample	Total Recoverable	Water	6020A	404460

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Metals (Continued)

Analysis Batch: 404670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	SM 2340B	404461
500-135273-2	W-171005-PS-21	Total/NA	Water	SM 2340B	404461
500-135273-3	W-171005-PS-22	Total/NA	Water	SM 2340B	404461
500-135273-4	W-171005-PS-23	Total/NA	Water	SM 2340B	404461

General Chemistry

Analysis Batch: 404657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	300.0	
500-135273-2	W-171005-PS-21	Total/NA	Water	300.0	
500-135273-4	W-171005-PS-23	Total/NA	Water	300.0	
MB 500-404657/12	Method Blank	Total/NA	Water	300.0	
LCS 500-404657/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 404764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	9060A	
500-135273-2	W-171005-PS-21	Total/NA	Water	9060A	
500-135273-3	W-171005-PS-22	Total/NA	Water	9060A	
500-135273-4	W-171005-PS-23	Total/NA	Water	9060A	
MB 500-404764/4	Method Blank	Total/NA	Water	9060A	
LCS 500-404764/5	Lab Control Sample	Total/NA	Water	9060A	
500-135273-2 MS	W-171005-PS-21	Total/NA	Water	9060A	
500-135273-2 MSD	W-171005-PS-21	Total/NA	Water	9060A	

Analysis Batch: 405136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	SM 2320B	
500-135273-2	W-171005-PS-21	Total/NA	Water	SM 2320B	
500-135273-3	W-171005-PS-22	Total/NA	Water	SM 2320B	
500-135273-4	W-171005-PS-23	Total/NA	Water	SM 2320B	
MB 500-405136/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-405136/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 406285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135273-1	W-171005-PS-20	Total/NA	Water	300.0	
500-135273-1	W-171005-PS-20	Total/NA	Water	300.0	
500-135273-3	W-171005-PS-22	Total/NA	Water	300.0	
500-135273-3	W-171005-PS-22	Total/NA	Water	300.0	
500-135273-4	W-171005-PS-23	Total/NA	Water	300.0	
MB 500-406285/8	Method Blank	Total/NA	Water	300.0	
LCS 500-406285/9	Lab Control Sample	Total/NA	Water	300.0	
500-135273-3 MS	W-171005-PS-22	Total/NA	Water	300.0	
500-135273-3 MS	W-171005-PS-22	Total/NA	Water	300.0	
500-135273-3 MSD	W-171005-PS-22	Total/NA	Water	300.0	
500-135273-3 MSD	W-171005-PS-22	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-135273-1	W-171005-PS-20	100	92	89	100
500-135273-2	W-171005-PS-21	94	90	87	106
500-135273-3	W-171005-PS-22	96	91	89	108
500-135273-4	W-171005-PS-23	97	90	89	108
500-135273-5	Trip Blank-004	94	91	89	106
LCS 500-405572/4	Lab Control Sample	89	92	89	100
LCS 500-405651/6	Lab Control Sample	102	94	85	98
MB 500-405572/6	Method Blank	93	91	91	107
MB 500-405651/8	Method Blank	104	96	99	98

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-135273-1	W-171005-PS-20	61	49	73	64	87	81
500-135273-2	W-171005-PS-21	58	48	79	73	68	96
500-135273-3	W-171005-PS-22	53	52	76	76	73	105
500-135273-4	W-171005-PS-23	50	66	72	73	79	95
LCS 500-404630/2-A	Lab Control Sample	52	43	69	64	89	83
LCSD 500-404630/3-A	Lab Control Sample Dup	54	43	68	66	94	89
MB 500-404630/1-A	Method Blank	60	44	69	61	78	90

Surrogate Legend

2FP = 2-Fluorophenol (Surr)

PHL = Phenol-d5 (Surr)

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TBP = 2,4,6-Tribromophenol (Surr)

TPH = Terphenyl-d14 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroet (76-121)
500-135273-1	W-171005-PS-20	83
500-135273-2	W-171005-PS-21	85
500-135273-3	W-171005-PS-22	84
500-135273-4	W-171005-PS-23	83
LCS 240-299664/5	Lab Control Sample	91
LCSD 240-299664/6	Lab Control Sample Dup	87

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Trifluoroet (76-121)
MB 240-299664/4	Method Blank	90

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 (20-100)	DCPA2 (20-100)
500-135273-1	W-171005-PS-20	0 X D	0 X D
500-135273-2	W-171005-PS-21	50	39
500-135273-3	W-171005-PS-22	61	56
500-135273-4	W-171005-PS-23	56	52
LCS 180-225436/2-A	Lab Control Sample	58	59
LCSD 180-225436/3-A	Lab Control Sample Dup	56	58
MB 180-225436/1-A	Method Blank	30	32

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

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

Lab Sample ID: MB 500-405572/6

Matrix: Water

Analysis Batch: 405572

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/16/17 23:17	1
Toluene	<0.15		0.50	0.15	ug/L			10/16/17 23:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/16/17 23:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/16/17 23:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		10/16/17 23:17	1
Toluene-d8 (Surr)	91		75 - 120		10/16/17 23:17	1
4-Bromofluorobenzene (Surr)	91		72 - 124		10/16/17 23:17	1
Dibromofluoromethane	107		75 - 120		10/16/17 23:17	1

Lab Sample ID: LCS 500-405572/4

Matrix: Water

Analysis Batch: 405572

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	45.0		ug/L		90	70 - 120
Toluene	50.0	43.4		ug/L		87	70 - 125
Ethylbenzene	50.0	45.9		ug/L		92	70 - 120
Xylenes, Total	100	87.0		ug/L		87	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 126
Toluene-d8 (Surr)	92		75 - 120
4-Bromofluorobenzene (Surr)	89		72 - 124
Dibromofluoromethane	100		75 - 120

Lab Sample ID: MB 500-405651/8

Matrix: Water

Analysis Batch: 405651

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/17/17 16:52	1
Toluene	<0.15		0.50	0.15	ug/L			10/17/17 16:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/17/17 16:52	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/17/17 16:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		75 - 126		10/17/17 16:52	1
Toluene-d8 (Surr)	96		75 - 120		10/17/17 16:52	1
4-Bromofluorobenzene (Surr)	99		72 - 124		10/17/17 16:52	1
Dibromofluoromethane	98		75 - 120		10/17/17 16:52	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

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

Lab Sample ID: LCS 500-405651/6
Matrix: Water
Analysis Batch: 405651

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.3		ug/L		95	70 - 120
Toluene	50.0	51.0		ug/L		102	70 - 125
Ethylbenzene	50.0	51.4		ug/L		103	70 - 120
Xylenes, Total	100	106		ug/L		106	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		75 - 126
Toluene-d8 (Surr)	94		75 - 120
4-Bromofluorobenzene (Surr)	85		72 - 124
Dibromofluoromethane	98		75 - 120

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

Lab Sample ID: MB 500-404630/1-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404630

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/10/17 07:26	10/12/17 19:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	60		27 - 110	10/10/17 07:26	10/12/17 19:04	1
Phenol-d5 (Surr)	44		20 - 100	10/10/17 07:26	10/12/17 19:04	1
Nitrobenzene-d5 (Surr)	69		36 - 120	10/10/17 07:26	10/12/17 19:04	1
2-Fluorobiphenyl (Surr)	61		34 - 110	10/10/17 07:26	10/12/17 19:04	1
2,4,6-Tribromophenol (Surr)	78		40 - 145	10/10/17 07:26	10/12/17 19:04	1
Terphenyl-d14 (Surr)	90		40 - 145	10/10/17 07:26	10/12/17 19:04	1

Lab Sample ID: LCS 500-404630/2-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404630

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	16.6		ug/L		52	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	52		27 - 110
Phenol-d5 (Surr)	43		20 - 100
Nitrobenzene-d5 (Surr)	69		36 - 120
2-Fluorobiphenyl (Surr)	64		34 - 110
2,4,6-Tribromophenol (Surr)	89		40 - 145
Terphenyl-d14 (Surr)	83		40 - 145

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

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

Lab Sample ID: LCSD 500-404630/3-A
Matrix: Water
Analysis Batch: 405067

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 404630

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	32.0	12.3	*	ug/L		38	36 - 110	30	20
Surrogate									
		%Recovery	Qualifier						
2-Fluorophenol (Surr)		54					27 - 110		
Phenol-d5 (Surr)		43					20 - 100		
Nitrobenzene-d5 (Surr)		68					36 - 120		
2-Fluorobiphenyl (Surr)		66					34 - 110		
2,4,6-Tribromophenol (Surr)		94					40 - 145		
Terphenyl-d14 (Surr)		89					40 - 145		

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-299664/4
Matrix: Water
Analysis Batch: 299664

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			10/18/17 21:50	1
Surrogate									
		%Recovery	Qualifier				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane		90						10/18/17 21:50	1

Lab Sample ID: LCS 240-299664/5
Matrix: Water
Analysis Batch: 299664

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	281		ug/L		99	80 - 130
Surrogate							
		%Recovery	Qualifier				Limits
1,1,1-Trifluoroethane		91					76 - 121

Lab Sample ID: LCSD 240-299664/6
Matrix: Water
Analysis Batch: 299664

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
Methane	285	293		ug/L		103	80 - 130	4	35
Surrogate									
		%Recovery	Qualifier				Limits		
1,1,1-Trifluoroethane		87					76 - 121		

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-225436/1-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225436

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/10/17 15:50	10/11/17 16:12	4
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	32		20 - 100				10/10/17 15:50	10/11/17 16:12	4

Lab Sample ID: LCS 180-225436/2-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Pentachlorophenol	5.00	3.92		ug/L		78	34 - 150		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	59		20 - 100						

Lab Sample ID: LCSD 180-225436/3-A
Matrix: Water
Analysis Batch: 225489

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 225436

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	5.00	4.29		ug/L		86	34 - 150	9	35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
2,4-Dichlorophenylacetic acid	58		20 - 100						

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-404460/1-A
Matrix: Water
Analysis Batch: 404658

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 404460

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/09/17 07:12	10/09/17 15:46	1
Copper	<0.50		2.0	0.50	ug/L		10/09/17 07:12	10/09/17 15:46	1
Iron	<46.7		100	46.7	ug/L		10/09/17 07:12	10/09/17 15:46	1
Manganese	<0.79		2.5	0.79	ug/L		10/09/17 07:12	10/09/17 15:46	1
Zinc	<6.9		20.0	6.9	ug/L		10/09/17 07:12	10/09/17 15:46	1

Lab Sample ID: LCS 500-404460/2-A
Matrix: Water
Analysis Batch: 404658

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Arsenic	100	91.41		ug/L		91	80 - 120		
Copper	250	236.7		ug/L		95	80 - 120		
Iron	1000	982.5		ug/L		98	80 - 120		
Manganese	500	479.2		ug/L		96	80 - 120		

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-404460/2-A
Matrix: Water
Analysis Batch: 404658

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 404460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	500	473.0		ug/L		95	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-404657/12
Matrix: Water
Analysis Batch: 404657

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/07/17 15:54	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/07/17 15:54	1
Sulfate	<0.095		0.20	0.095	mg/L			10/07/17 15:54	1

Lab Sample ID: LCS 500-404657/4
Matrix: Water
Analysis Batch: 404657

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.87		mg/L		96	90 - 110
Nitrate as N	2.00	1.95		mg/L		98	90 - 110
Sulfate	5.00	5.24		mg/L		105	90 - 110

Lab Sample ID: MB 500-406285/8
Matrix: Water
Analysis Batch: 406285

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/20/17 11:11	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/20/17 11:11	1
Sulfate	<0.095		0.20	0.095	mg/L			10/20/17 11:11	1

Lab Sample ID: LCS 500-406285/9
Matrix: Water
Analysis Batch: 406285

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.95		mg/L		98	90 - 110
Nitrate as N	2.00	2.03		mg/L		101	90 - 110
Sulfate	5.00	5.46		mg/L		109	90 - 110

Lab Sample ID: 500-135273-3 MS
Matrix: Water
Analysis Batch: 406285

Client Sample ID: W-171005-PS-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	4.0	H F1	2.00	6.42	F1	mg/L		122	80 - 120
Sulfate	9.5	F1	5.00	15.64	F1	mg/L		123	80 - 120

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-135273-3 MS
Matrix: Water
Analysis Batch: 406285

Client Sample ID: W-171005-PS-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	28.0		10.0	38.50		mg/L		105	80 - 120

Lab Sample ID: 500-135273-3 MSD
Matrix: Water
Analysis Batch: 406285

Client Sample ID: W-171005-PS-22
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	4.0	H F1	2.00	6.41	F1	mg/L		121	80 - 120	0	20
Sulfate	9.5	F1	5.00	15.66	F1	mg/L		123	80 - 120	0	20

Lab Sample ID: 500-135273-3 MSD
Matrix: Water
Analysis Batch: 406285

Client Sample ID: W-171005-PS-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	28.0		10.0	38.69		mg/L		106	80 - 120	0	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-404764/4
Matrix: Water
Analysis Batch: 404764

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/09/17 17:48	1

Lab Sample ID: LCS 500-404764/5
Matrix: Water
Analysis Batch: 404764

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 - Duplicates	10.0	9.85		mg/L		99	80 - 120

Lab Sample ID: 500-135273-2 MS
Matrix: Water
Analysis Batch: 404764

Client Sample ID: W-171005-PS-21
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	1.6		10.0	10.79		mg/L		92	75 - 125

Lab Sample ID: 500-135273-2 MSD
Matrix: Water
Analysis Batch: 404764

Client Sample ID: W-171005-PS-21
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 - Duplicates	1.6		10.0	10.62		mg/L		90	75 - 125	2	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-405136/3
Matrix: Water
Analysis Batch: 405136

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/12/17 11:17	1

Lab Sample ID: LCS 500-405136/4
Matrix: Water
Analysis Batch: 405136

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	107.5		mg/L		107	85 - 115

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-20

Date Collected: 10/05/17 13:15

Date Received: 10/07/17 10:35

Lab Sample ID: 500-135273-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405651	10/17/17 17:44	EMA	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 17:35	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299664	10/18/17 23:15	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		8000	225738	10/13/17 08:07	JMO	TAL PIT
Dissolved	Prep	3005A			404460	10/09/17 07:12	JEF	TAL CHI
Dissolved	Analysis	6020A		1	404658	10/09/17 15:58	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404657	10/07/17 16:20	EAT	TAL CHI
Total/NA	Analysis	300.0		2	406285	10/20/17 13:28	CCK	TAL CHI
Total/NA	Analysis	300.0		10	406285	10/20/17 13:41	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/10/17 03:42	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:03	SMO	TAL CHI

Client Sample ID: W-171005-PS-21

Date Collected: 10/05/17 13:45

Date Received: 10/07/17 10:35

Lab Sample ID: 500-135273-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405572	10/16/17 23:47	PMF	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 17:58	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299664	10/18/17 23:32	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225489	10/11/17 19:27	JMO	TAL PIT
Dissolved	Prep	3005A			404460	10/09/17 07:12	JEF	TAL CHI
Dissolved	Analysis	6020A		1	404658	10/09/17 16:02	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404657	10/07/17 16:32	EAT	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/10/17 03:52	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:09	SMO	TAL CHI

Client Sample ID: W-171005-PS-22

Date Collected: 10/05/17 15:15

Date Received: 10/07/17 10:35

Lab Sample ID: 500-135273-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405572	10/17/17 00:17	PMF	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Client Sample ID: W-171005-PS-22

Lab Sample ID: 500-135273-3

Date Collected: 10/05/17 15:15

Matrix: Water

Date Received: 10/07/17 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		1	405403	10/15/17 18:22	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299664	10/18/17 23:49	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225489	10/11/17 19:51	JMO	TAL PIT
Dissolved	Prep	3005A			404460	10/09/17 07:12	JEF	TAL CHI
Dissolved	Analysis	6020A		1	404658	10/09/17 16:05	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		2	406285	10/20/17 13:53	CCK	TAL CHI
Total/NA	Analysis	300.0		10	406285	10/20/17 14:06	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/10/17 04:39	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:14	SMO	TAL CHI

Client Sample ID: W-171005-PS-23

Lab Sample ID: 500-135273-4

Date Collected: 10/05/17 15:50

Matrix: Water

Date Received: 10/07/17 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405572	10/17/17 00:46	PMF	TAL CHI
Total/NA	Prep	3510C			404630	10/10/17 07:26	BSO	TAL CHI
Total/NA	Analysis	8270D		1	405403	10/15/17 18:46	GES	TAL CHI
Total/NA	Analysis	RSK-175		1	299664	10/19/17 00:06	BPM	TAL CAN
Total/NA	Prep	8151A			225436	10/10/17 15:50	CBY	TAL PIT
Total/NA	Analysis	8151A		4	225489	10/11/17 20:16	JMO	TAL PIT
Dissolved	Prep	3005A			404460	10/09/17 07:12	JEF	TAL CHI
Dissolved	Analysis	6020A		1	404658	10/09/17 16:09	FXG	TAL CHI
Total/NA	Prep	3010A			404461	10/09/17 07:13	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	404670	10/10/17 10:17	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	404657	10/07/17 15:42	EAT	TAL CHI
Total/NA	Analysis	300.0		5	406285	10/20/17 15:35	CCK	TAL CHI
Total/NA	Analysis	9060A		1	404764	10/10/17 04:48	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	405136	10/12/17 12:23	SMO	TAL CHI

Client Sample ID: Trip Blank-004

Lab Sample ID: 500-135273-5

Date Collected: 10/06/17 12:00

Matrix: Water

Date Received: 10/07/17 10:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405572	10/17/17 01:16	PMF	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Laboratory References:

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

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

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Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-135273-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
 Phone: 708.534.5200 Fax: 708.534.5211

Report To _____ (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 E-Mail: _____


Bill To _____ (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 PO#/Reference# _____

Chain of Custody Record

Lab Job #: 500-135273
 Chain of Custody Number: 004
 Page 1 of 1
 Temperature °C of Cooler: 30, 4.1

Client		Client Project #		Preservative		Parameter		Matrix		Matrix		Matrix		Matrix		Matrix		Matrix		
GHD		036165-04-05		none		ACU		H ₂ O ₄		HNO ₃										
Project Name		Project Location/State		Lab Project #		Sampler		Lab PM												
Penta Wood		Siren, WI				P-Sturliu														
Lab ID	MS/MSD	Sample ID	Sampling		# of Containers	Matrix	AIK-2320	Nitrates, CL-1504	300.0-28D	Naphth. 8270	PCP-8151	BTEX-8260	Methane 175	TOC-9060	Hardness-2340	Metals-6020	Field Filtered	As, Cu, Fe, Mn, Zn	Preservative Key	Comments
			Date	Time																
1		W-171005-PS-20	10/5/17	1315	15	W	X	X	X	X	X	X	X	X	X	X	X	X		
2		21		1345	15		X	X	X	X	X	X	X	X	X	X	X	X		
3		22		1515	15		X	X	X	X	X	X	X	X	X	X	X	X		
4		23		1550	15		X	X	X	X	X	X	X	X	X	X	X	X		
5		Trip Blank-004	10/6/17	1200	2						X									
6		Trip Blank-005			2															

Preservative Key
 1. HCL, Cool to 4°
 2. H2SO4, Cool to 4°
 3. HNO3, Cool to 4°
 Cool to 4°



500-135273 COC

Note!
 Nitrates need extraction 48hrs.

Turnaround Time Required (Business Days)
 ___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other
 Requested Due Date _____

Sample Disposal
 Return to Client Disposal by Lab Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: <u>[Signature]</u> Company: <u>GHD</u> Date: <u>10/6/17</u> Time: <u>1400</u>	Received By: <u>[Signature]</u> Company: <u>TALM</u> Date: <u>10/07/17</u> Time: <u>1035</u>	Lab Courier: _____
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Shipped: <u>FX Saturday</u>
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____	Hand Delivered: _____

- Matrix Key
- WW - Wastewater
 - W - Water
 - S - Soil
 - SL - Sludge
 - MS - Miscellaneous
 - OL - Oil
 - A - Air
 - SE - Sediment
 - SO - Soil
 - L - Leachate
 - WI - Wipe
 - DW - Drinking Water
 - O - Other

Client Comments: _____

Lab Comments: _____

ORIGIN ID: GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

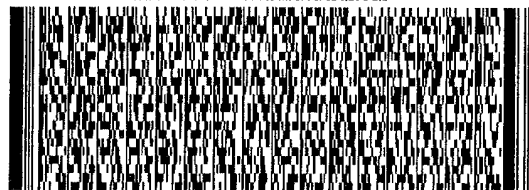
SHIP DATE: 06OCT17
ACTWGT: 50.00 LB
CAD: 9292115/NET3920
DIMS: 25x14x14 IN
BILL SENDER

TO **SAMPLE RECEIVING**
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF 086165-04-05 P STORLIE
INV PO DEPT

549.G/A699/04C



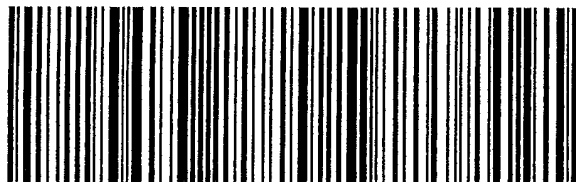
SATURDAY 12:00P
PRIORITY OVERNIGHT

2 of 2
MPS# 7704 3875 0346
0263
Mstr# 7704 3875 0232

0201

X0 JOTA

60484
IL-US ORD



500-135273 Waybill

ORIGIN ID: GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

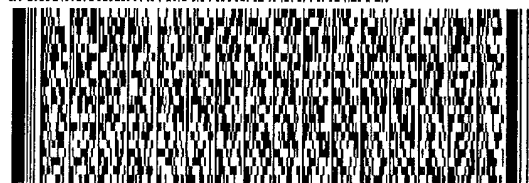
SHIP DATE: 06OCT17
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CAD: 9292115/NET3920
DIMS: 25x14x14 IN
BILL SENDER

TO **SAMPLE RECEIVING**
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF 086165-04-05 P STORLIE
INV PO DEPT

549.G/A699/04C



SATURDAY 12:00P
PRIORITY OVERNIGHT

1 of 2
TRK# 7704 3875 0232
0201
MASTER

X0 JOTA

60484
IL-US ORD



Chain of Custody Record



4.0/4.0

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard C	Carrier Tracking No(s): 500-94017-1																																																																																																														
Client Contact: Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	Page: Page 1 of 1																																																																																																														
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin	Job #: 500-135273-1																																																																																																														
Address: 4101 Shuffel Street NW		Analysis Requested																																																																																																															
City: North Canton	Due Date Requested: 10/19/2017	<table border="1"> <thead> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (W=Water, S=solid, O=wastewater)</th> <th>Preservation Code: (B1=15min, A=As)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>RSK 175 (MOD) Methane</th> <th>Total Number of Containers</th> <th>Special Instructions/Note:</th> </tr> </thead> <tbody> <tr> <td>W-171005-PS-20 (500-135273-1)</td> <td>10/5/17</td> <td>13:15 Central</td> <td>Water</td> <td>Water</td> <td></td> <td>X</td> <td>X</td> <td></td> <td>3</td> <td>WI</td> </tr> <tr> <td>W-171005-PS-21 (500-135273-2)</td> <td>10/5/17</td> <td>13:45 Central</td> <td>Water</td> <td>Water</td> <td></td> <td>X</td> <td>X</td> <td></td> <td>3</td> <td>WI</td> </tr> <tr> <td>W-171005-PS-22 (500-135273-3)</td> <td>10/5/17</td> <td>15:15 Central</td> <td>Water</td> <td>Water</td> <td></td> <td>X</td> <td>X</td> <td></td> <td>3</td> <td>WI</td> </tr> <tr> <td>W-171005-PS-23 (500-135273-4)</td> <td>10/5/17</td> <td>15:50 Central</td> <td>Water</td> <td>Water</td> <td></td> <td>X</td> <td>X</td> <td></td> <td>3</td> <td>WI</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=wastewater)	Preservation Code: (B1=15min, A=As)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK 175 (MOD) Methane	Total Number of Containers	Special Instructions/Note:	W-171005-PS-20 (500-135273-1)	10/5/17	13:15 Central	Water	Water		X	X		3	WI	W-171005-PS-21 (500-135273-2)	10/5/17	13:45 Central	Water	Water		X	X		3	WI	W-171005-PS-22 (500-135273-3)	10/5/17	15:15 Central	Water	Water		X	X		3	WI	W-171005-PS-23 (500-135273-4)	10/5/17	15:50 Central	Water	Water		X	X		3	WI																																																							
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State, Zip: OH, 44720	TAT Requested (days):	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Antichlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:																																																																																																															
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:	M - Hexane N - None O - AsNaO2 P - Na2O4S R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate																																																																																																															
Email: Penta Wood 086165-04	WO #:	U - Acetone V - MCAA W - pH 4-5 Z - other (specify)																																																																																																															
Project Name: 50013796	SSOW#:	Other:																																																																																																															
Site:																																																																																																																	
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements:</p>																																																																																																																	
<p>Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2</p>																																																																																																																	
<p>Empty Kit Relinquished by: Relinquished by: <i>Alvin Scott</i> Relinquished by: <i>TA-CHE</i> Relinquished by:</p>																																																																																																																	
<p>Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>																																																																																																																	
<p>Cooler Temperature(s) °C and Other Remarks:</p>																																																																																																																	



TestAmerica Canton Sample Receipt Form/Narrative Login # : _____

Canton Facility

Client Chicago Site Name _____ Cooler unpacked by: [Signature]

Cooler Received on 10-10-17 Opened on 10-10-17

FedEx: 1st Grd UPS FAS Clipper 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: Water Blue Ice Dry Ice Water None

See Multiple Cooler Form

- Cooler temperature upon receipt
 - IR GUN# IR-8 (CF +0 °C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C
 - IR GUN #36 (CF +0.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 - IR GUN # 627 (CF -1.3 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
- Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 - Yes No
 - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes ~~No~~
 - Were tamper/custody seals intact and uncompromised? Yes No NA
- Shippers' packing slip attached to the cooler(s)? Yes No
- Did custody papers accompany the sample(s)? Yes No
- Were the custody papers relinquished & signed in the appropriate place? Yes No
- Was/were the person(s) who collected the samples clearly identified on the COC? Yes ~~No~~
- Did all bottles arrive in good condition (Unbroken)? Yes No
- Could all bottle labels be reconciled with the COC? Yes No
- Were correct bottle(s) used for the test(s) indicated? Yes No
- Sufficient quantity received to perform indicated analyses? Yes No
- Are these work share samples? Yes No
- If yes, Questions 11-15 have been checked at the originating laboratory.
- Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
- Were VOAs on the COC? Yes No
- Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
- Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
- Was a LL Hg or Me Hg trip blank present? _____ Yes No

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

Concerning _____

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

17. 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)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135273-1

Login Number: 135273

List Source: TestAmerica Chicago

List Number: 1

Creator: Sanchez, Ariel M

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	3.0, 4.1
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	



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135273-1

Login Number: 135273

List Number: 3

Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh

List Creation: 10/10/17 01:08 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 <math><6\text{mm}</math> (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 Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-135665-1
Client Project/Site: Penta Wood 086165

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

Attn: Mr. Grant Anderson



Authorized for release by:
10/31/2017 2:13:40 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Job ID: 500-135665-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-135665-1

Comments

No additional comments.

Receipt

The samples were received on 10/14/2017 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.5° C, 2.8° C and 3.4° 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 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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-24

Lab Sample ID: 500-135665-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	2.1		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.55	^c	0.098	0.046	ug/L	4		8151A	Total/NA
Copper	2.0		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	59.7	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	12.5		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	298		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	50.1		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.0		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	13.9		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	1.4		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	272		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171013-PS-25

Lab Sample ID: 500-135665-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Copper	1.3	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	61.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	29.7		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	4.2		2.0	0.68	mg/L	10		300.0	Total/NA
Sulfate	10.4		0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	0.66	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	24.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171013-PS-26

Lab Sample ID: 500-135665-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.051	J p ^c	0.097	0.045	ug/L	4		8151A	Total/NA
Copper	1.3	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	125		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	36.1		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	3.2		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	79.5		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-171013-PS-27

Lab Sample ID: 500-135665-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.083	J B	0.094	0.044	ug/L	4		8151A	Total/NA
Copper	1.1	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	122		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	35.0		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	3.2		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.81	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	78.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank-005

Lab Sample ID: 500-135665-5

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL PIT
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI

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 CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-135665-1	W-171013-PS-24	Water	10/13/17 10:20	10/14/17 11:45
500-135665-2	W-171013-PS-25	Water	10/13/17 11:00	10/14/17 11:45
500-135665-3	W-171013-PS-26	Water	10/13/17 12:30	10/14/17 11:45
500-135665-4	W-171013-PS-27	Water	10/13/17 12:35	10/14/17 11:45
500-135665-5	Trip Blank-005	Water	10/13/17 13:30	10/14/17 11:45

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-24

Lab Sample ID: 500-135665-1

Date Collected: 10/13/17 10:20

Matrix: Water

Date Received: 10/14/17 11:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/20/17 05:09	1
Toluene	<0.15		0.50	0.15	ug/L			10/20/17 05:09	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/20/17 05:09	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/20/17 05:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		10/20/17 05:09	1
Toluene-d8 (Surr)	104		75 - 120		10/20/17 05:09	1
4-Bromofluorobenzene (Surr)	94		72 - 124		10/20/17 05:09	1
Dibromofluoromethane	98		75 - 120		10/20/17 05:09	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		10/18/17 07:28	10/19/17 12:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	63		27 - 110	10/18/17 07:28	10/19/17 12:58	1
Phenol-d5 (Surr)	63		20 - 100	10/18/17 07:28	10/19/17 12:58	1
Nitrobenzene-d5 (Surr)	92		36 - 120	10/18/17 07:28	10/19/17 12:58	1
2-Fluorobiphenyl (Surr)	81		34 - 110	10/18/17 07:28	10/19/17 12:58	1
2,4,6-Tribromophenol (Surr)	81		40 - 145	10/18/17 07:28	10/19/17 12:58	1
Terphenyl-d14 (Surr)	99		40 - 145	10/18/17 07:28	10/19/17 12:58	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	2.1		1.0	0.17	ug/L			10/25/17 12:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		60 - 140		10/25/17 12:50	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.55	^c	0.098	0.046	ug/L		10/17/17 14:45	10/19/17 16:21	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	62		20 - 100	10/17/17 14:45	10/19/17 16:21	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/16/17 07:33	10/18/17 11:33	1
Copper	2.0		2.0	0.50	ug/L		10/16/17 07:33	10/18/17 11:33	1
Iron	59.7	J	100	46.7	ug/L		10/16/17 07:33	10/18/17 11:33	1
Manganese	12.5		2.5	0.79	ug/L		10/16/17 07:33	10/18/17 11:33	1
Zinc	<6.9		20.0	6.9	ug/L		10/16/17 07:33	10/18/17 11:33	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	298		1.3	0.66	mg/L		10/16/17 07:33	10/17/17 07:19	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	50.1		2.0	1.7	mg/L			10/14/17 23:10	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-24

Lab Sample ID: 500-135665-1

Date Collected: 10/13/17 10:20

Matrix: Water

Date Received: 10/14/17 11:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	2.0		0.20	0.068	mg/L			10/14/17 22:58	1
Sulfate	13.9		2.0	0.95	mg/L			10/14/17 23:10	10
Total Organic Carbon - Duplicates	1.4		1.0	0.47	mg/L			10/24/17 00:57	1
Alkalinity	272		5.0	3.7	mg/L			10/25/17 19:49	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-25

Lab Sample ID: 500-135665-2

Date Collected: 10/13/17 11:00

Matrix: Water

Date Received: 10/14/17 11:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/20/17 05:35	1
Toluene	<0.15		0.50	0.15	ug/L			10/20/17 05:35	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/20/17 05:35	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/20/17 05:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		10/20/17 05:35	1
Toluene-d8 (Surr)	103		75 - 120		10/20/17 05:35	1
4-Bromofluorobenzene (Surr)	95		72 - 124		10/20/17 05:35	1
Dibromofluoromethane	96		75 - 120		10/20/17 05:35	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		10/18/17 07:28	10/19/17 13:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	47		27 - 110	10/18/17 07:28	10/19/17 13:24	1
Phenol-d5 (Surr)	41		20 - 100	10/18/17 07:28	10/19/17 13:24	1
Nitrobenzene-d5 (Surr)	64		36 - 120	10/18/17 07:28	10/19/17 13:24	1
2-Fluorobiphenyl (Surr)	53		34 - 110	10/18/17 07:28	10/19/17 13:24	1
2,4,6-Tribromophenol (Surr)	52		40 - 145	10/18/17 07:28	10/19/17 13:24	1
Terphenyl-d14 (Surr)	90		40 - 145	10/18/17 07:28	10/19/17 13:24	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			10/25/17 13:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		60 - 140		10/25/17 13:07	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046	^c	0.10	0.046	ug/L		10/17/17 14:45	10/19/17 15:06	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	58	^c	20 - 100	10/17/17 14:45	10/19/17 15:06	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/16/17 07:33	10/18/17 11:37	1
Copper	1.3	J	2.0	0.50	ug/L		10/16/17 07:33	10/18/17 11:37	1
Iron	<46.7		100	46.7	ug/L		10/16/17 07:33	10/18/17 11:37	1
Manganese	<0.79		2.5	0.79	ug/L		10/16/17 07:33	10/18/17 11:37	1
Zinc	<6.9		20.0	6.9	ug/L		10/16/17 07:33	10/18/17 11:37	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	61.3		1.3	0.66	mg/L		10/16/17 07:33	10/17/17 07:19	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	29.7		2.0	1.7	mg/L			10/14/17 23:36	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-25

Lab Sample ID: 500-135665-2

Date Collected: 10/13/17 11:00

Matrix: Water

Date Received: 10/14/17 11:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	4.2		2.0	0.68	mg/L			10/14/17 23:36	10
Sulfate	10.4		0.40	0.19	mg/L			10/30/17 05:47	2
Total Organic Carbon - Duplicates	0.66	J	1.0	0.47	mg/L			10/24/17 01:15	1
Alkalinity	24.7		5.0	3.7	mg/L			10/25/17 19:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-26

Lab Sample ID: 500-135665-3

Date Collected: 10/13/17 12:30

Matrix: Water

Date Received: 10/14/17 11:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/20/17 06:01	1
Toluene	<0.15		0.50	0.15	ug/L			10/20/17 06:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/20/17 06:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/20/17 06:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		10/20/17 06:01	1
Toluene-d8 (Surr)	103		75 - 120		10/20/17 06:01	1
4-Bromofluorobenzene (Surr)	94		72 - 124		10/20/17 06:01	1
Dibromofluoromethane	99		75 - 120		10/20/17 06:01	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		10/18/17 07:28	10/19/17 13:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	64		27 - 110	10/18/17 07:28	10/19/17 13:51	1
Phenol-d5 (Surr)	61		20 - 100	10/18/17 07:28	10/19/17 13:51	1
Nitrobenzene-d5 (Surr)	90		36 - 120	10/18/17 07:28	10/19/17 13:51	1
2-Fluorobiphenyl (Surr)	80		34 - 110	10/18/17 07:28	10/19/17 13:51	1
2,4,6-Tribromophenol (Surr)	81		40 - 145	10/18/17 07:28	10/19/17 13:51	1
Terphenyl-d14 (Surr)	103		40 - 145	10/18/17 07:28	10/19/17 13:51	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			10/25/17 13:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		60 - 140		10/25/17 13:24	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.051	J p ^c	0.097	0.045	ug/L		10/17/17 14:45	10/19/17 15:31	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	54	^c	20 - 100	10/17/17 14:45	10/19/17 15:31	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/16/17 07:33	10/18/17 11:41	1
Copper	1.3	J	2.0	0.50	ug/L		10/16/17 07:33	10/18/17 11:41	1
Iron	<46.7		100	46.7	ug/L		10/16/17 07:33	10/18/17 11:41	1
Manganese	<0.79		2.5	0.79	ug/L		10/16/17 07:33	10/18/17 11:41	1
Zinc	<6.9		20.0	6.9	ug/L		10/16/17 07:33	10/18/17 11:41	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	125		1.3	0.66	mg/L		10/16/17 07:33	10/17/17 07:19	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	36.1		2.0	1.7	mg/L			10/15/17 00:01	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-26

Lab Sample ID: 500-135665-3

Date Collected: 10/13/17 12:30

Matrix: Water

Date Received: 10/14/17 11:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	3.2		0.20	0.068	mg/L			10/14/17 23:48	1
Sulfate	7.0		0.20	0.095	mg/L			10/14/17 23:48	1
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L			10/24/17 01:32	1
Alkalinity	79.5		5.0	3.7	mg/L			10/25/17 20:04	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-27

Lab Sample ID: 500-135665-4

Date Collected: 10/13/17 12:35

Matrix: Water

Date Received: 10/14/17 11:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/20/17 06:27	1
Toluene	<0.15		0.50	0.15	ug/L			10/20/17 06:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/20/17 06:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/20/17 06:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		10/20/17 06:27	1
Toluene-d8 (Surr)	105		75 - 120		10/20/17 06:27	1
4-Bromofluorobenzene (Surr)	92		72 - 124		10/20/17 06:27	1
Dibromofluoromethane	96		75 - 120		10/20/17 06:27	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/18/17 07:28	10/19/17 14:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	68		27 - 110	10/18/17 07:28	10/19/17 14:18	1
Phenol-d5 (Surr)	64		20 - 100	10/18/17 07:28	10/19/17 14:18	1
Nitrobenzene-d5 (Surr)	94		36 - 120	10/18/17 07:28	10/19/17 14:18	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/18/17 07:28	10/19/17 14:18	1
2,4,6-Tribromophenol (Surr)	82		40 - 145	10/18/17 07:28	10/19/17 14:18	1
Terphenyl-d14 (Surr)	102		40 - 145	10/18/17 07:28	10/19/17 14:18	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			10/25/17 14:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	87		60 - 140		10/25/17 14:15	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.083	J B	0.094	0.044	ug/L		10/17/17 14:45	10/19/17 15:56	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	64	^c	20 - 100	10/17/17 14:45	10/19/17 15:56	4

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/16/17 07:33	10/18/17 12:01	1
Copper	1.1	J	2.0	0.50	ug/L		10/16/17 07:33	10/18/17 12:01	1
Iron	<46.7		100	46.7	ug/L		10/16/17 07:33	10/18/17 12:01	1
Manganese	<0.79		2.5	0.79	ug/L		10/16/17 07:33	10/18/17 12:01	1
Zinc	<6.9		20.0	6.9	ug/L		10/16/17 07:33	10/18/17 12:01	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	122		1.3	0.66	mg/L		10/16/17 07:33	10/17/17 07:19	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	35.0		2.0	1.7	mg/L			10/15/17 02:08	10

TestAmerica Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-27

Lab Sample ID: 500-135665-4

Date Collected: 10/13/17 12:35

Matrix: Water

Date Received: 10/14/17 11:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	3.2		0.20	0.068	mg/L			10/15/17 01:55	1
Sulfate	7.0		0.20	0.095	mg/L			10/15/17 01:55	1
Total Organic Carbon - Duplicates	0.81	J	1.0	0.47	mg/L			10/24/17 02:08	1
Alkalinity	78.7		5.0	3.7	mg/L			10/25/17 20:10	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: Trip Blank-005

Lab Sample ID: 500-135665-5

Date Collected: 10/13/17 13:30

Matrix: Water

Date Received: 10/14/17 11:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/20/17 06:53	1
Toluene	<0.15		0.50	0.15	ug/L			10/20/17 06:53	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/20/17 06:53	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/20/17 06:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		10/20/17 06:53	1
Toluene-d8 (Surr)	104		75 - 120		10/20/17 06:53	1
4-Bromofluorobenzene (Surr)	95		72 - 124		10/20/17 06:53	1
Dibromofluoromethane	99		75 - 120		10/20/17 06:53	1



Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
^C	CCV Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
B	Compound was found in the blank and sample.

Metals

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

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.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

GC/MS VOA

Analysis Batch: 406096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	8260B	
500-135665-2	W-171013-PS-25	Total/NA	Water	8260B	
500-135665-3	W-171013-PS-26	Total/NA	Water	8260B	
500-135665-4	W-171013-PS-27	Total/NA	Water	8260B	
500-135665-5	Trip Blank-005	Total/NA	Water	8260B	
MB 500-406096/7	Method Blank	Total/NA	Water	8260B	
LCS 500-406096/5	Lab Control Sample	Total/NA	Water	8260B	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	8260B	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 405784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	3510C	
500-135665-2	W-171013-PS-25	Total/NA	Water	3510C	
500-135665-3	W-171013-PS-26	Total/NA	Water	3510C	
500-135665-4	W-171013-PS-27	Total/NA	Water	3510C	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	3510C	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	3510C	

Analysis Batch: 406002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	8270D	405784
500-135665-2	W-171013-PS-25	Total/NA	Water	8270D	405784
500-135665-3	W-171013-PS-26	Total/NA	Water	8270D	405784
500-135665-4	W-171013-PS-27	Total/NA	Water	8270D	405784
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	8270D	405784
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	8270D	405784

GC VOA

Analysis Batch: 300504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	RSK-175	
500-135665-2	W-171013-PS-25	Total/NA	Water	RSK-175	
500-135665-3	W-171013-PS-26	Total/NA	Water	RSK-175	
500-135665-4	W-171013-PS-27	Total/NA	Water	RSK-175	
MB 240-300504/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-300504/5	Lab Control Sample	Total/NA	Water	RSK-175	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	RSK-175	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 226124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	8151A	
500-135665-2	W-171013-PS-25	Total/NA	Water	8151A	
500-135665-3	W-171013-PS-26	Total/NA	Water	8151A	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

GC Semi VOA (Continued)

Prep Batch: 226124 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-4	W-171013-PS-27	Total/NA	Water	8151A	
MB 180-226124/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-226124/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	8151A	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	8151A	

Analysis Batch: 226312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	8151A	226124
500-135665-2	W-171013-PS-25	Total/NA	Water	8151A	226124
500-135665-3	W-171013-PS-26	Total/NA	Water	8151A	226124
500-135665-4	W-171013-PS-27	Total/NA	Water	8151A	226124
MB 180-226124/1-A	Method Blank	Total/NA	Water	8151A	226124
MB 180-226124/1-A	Method Blank	Total/NA	Water	8151A	226124
LCS 180-226124/2-A	Lab Control Sample	Total/NA	Water	8151A	226124
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	8151A	226124
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	8151A	226124

Metals

Prep Batch: 405443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Dissolved	Water	3005A	
500-135665-2	W-171013-PS-25	Dissolved	Water	3005A	
500-135665-3	W-171013-PS-26	Dissolved	Water	3005A	
500-135665-4	W-171013-PS-27	Dissolved	Water	3005A	
MB 500-405443/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-405443/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-135665-3 MS	W-171013-PS-26	Dissolved	Water	3005A	
500-135665-3 MSD	W-171013-PS-26	Dissolved	Water	3005A	
500-135665-3 DU	W-171013-PS-26	Dissolved	Water	3005A	

Prep Batch: 405444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	3010A	
500-135665-2	W-171013-PS-25	Total/NA	Water	3010A	
500-135665-3	W-171013-PS-26	Total/NA	Water	3010A	
500-135665-4	W-171013-PS-27	Total/NA	Water	3010A	

Analysis Batch: 405619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	SM 2340B	405444
500-135665-2	W-171013-PS-25	Total/NA	Water	SM 2340B	405444
500-135665-3	W-171013-PS-26	Total/NA	Water	SM 2340B	405444
500-135665-4	W-171013-PS-27	Total/NA	Water	SM 2340B	405444

Analysis Batch: 405921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Dissolved	Water	6020A	405443
500-135665-2	W-171013-PS-25	Dissolved	Water	6020A	405443

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Metals (Continued)

Analysis Batch: 405921 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-3	W-171013-PS-26	Dissolved	Water	6020A	405443
500-135665-4	W-171013-PS-27	Dissolved	Water	6020A	405443
MB 500-405443/1-A	Method Blank	Total Recoverable	Water	6020A	405443
LCS 500-405443/2-A	Lab Control Sample	Total Recoverable	Water	6020A	405443
500-135665-3 MS	W-171013-PS-26	Dissolved	Water	6020A	405443
500-135665-3 MSD	W-171013-PS-26	Dissolved	Water	6020A	405443
500-135665-3 DU	W-171013-PS-26	Dissolved	Water	6020A	405443

General Chemistry

Analysis Batch: 405462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	300.0	
500-135665-1	W-171013-PS-24	Total/NA	Water	300.0	
500-135665-2	W-171013-PS-25	Total/NA	Water	300.0	
500-135665-3	W-171013-PS-26	Total/NA	Water	300.0	
500-135665-3	W-171013-PS-26	Total/NA	Water	300.0	
500-135665-4	W-171013-PS-27	Total/NA	Water	300.0	
500-135665-4	W-171013-PS-27	Total/NA	Water	300.0	
MB 500-405462/27	Method Blank	Total/NA	Water	300.0	
LCS 500-405462/5	Lab Control Sample	Total/NA	Water	300.0	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	300.0	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	300.0	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	300.0	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	300.0	

Analysis Batch: 406794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	9060A	
500-135665-2	W-171013-PS-25	Total/NA	Water	9060A	
500-135665-3	W-171013-PS-26	Total/NA	Water	9060A	
500-135665-4	W-171013-PS-27	Total/NA	Water	9060A	
MB 500-406794/4	Method Blank	Total/NA	Water	9060A	
LCS 500-406794/5	Lab Control Sample	Total/NA	Water	9060A	
500-135665-3 MS	W-171013-PS-26	Total/NA	Water	9060A	
500-135665-3 MSD	W-171013-PS-26	Total/NA	Water	9060A	

Analysis Batch: 407066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-1	W-171013-PS-24	Total/NA	Water	SM 2320B	
500-135665-2	W-171013-PS-25	Total/NA	Water	SM 2320B	
500-135665-3	W-171013-PS-26	Total/NA	Water	SM 2320B	
500-135665-4	W-171013-PS-27	Total/NA	Water	SM 2320B	
MB 500-407066/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-407066/4	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 407616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-135665-2	W-171013-PS-25	Total/NA	Water	300.0	
MB 500-407616/23	Method Blank	Total/NA	Water	300.0	

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

General Chemistry (Continued)

Analysis Batch: 407616 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 500-407616/29	Lab Control Sample	Total/NA	Water	300.0	

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Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-135665-1	W-171013-PS-24	97	104	94	98
500-135665-2	W-171013-PS-25	98	103	95	96
500-135665-3	W-171013-PS-26	97	103	94	99
500-135665-3 MS	W-171013-PS-26	98	103	93	100
500-135665-3 MSD	W-171013-PS-26	99	103	91	101
500-135665-4	W-171013-PS-27	97	105	92	96
500-135665-5	Trip Blank-005	98	104	95	99
LCS 500-406096/5	Lab Control Sample	95	101	90	98
MB 500-406096/7	Method Blank	97	104	93	97

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (27-110)	PHL (20-100)	NBZ (36-120)	FBP (34-110)	TBP (40-145)	TPH (40-145)
500-135665-1	W-171013-PS-24	63	63	92	81	81	99
500-135665-2	W-171013-PS-25	47	41	64	53	52	90
500-135665-3	W-171013-PS-26	64	61	90	80	81	103
500-135665-3 MS	W-171013-PS-26	82	59	93	76	89	100
500-135665-3 MSD	W-171013-PS-26	80	59	93	86	90	104
500-135665-4	W-171013-PS-27	68	64	94	84	82	102

Surrogate Legend

2FP = 2-Fluorophenol (Surr)

PHL = Phenol-d5 (Surr)

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TBP = 2,4,6-Tribromophenol (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	Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroet (60-140)
500-135665-1	W-171013-PS-24	84
500-135665-2	W-171013-PS-25	87
500-135665-3	W-171013-PS-26	87
500-135665-3 MS	W-171013-PS-26	87
500-135665-3 MSD	W-171013-PS-26	86
500-135665-4	W-171013-PS-27	87
LCS 240-300504/5	Lab Control Sample	85

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Trifluoroet (60-140)
MB 240-300504/4	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 (20-100)	DCPA2 (20-100)
500-135665-1	W-171013-PS-24	62	56 ^c
500-135665-2	W-171013-PS-25	56	58 ^c
500-135665-3	W-171013-PS-26	51	54 ^c
500-135665-3 MS	W-171013-PS-26	58	60
500-135665-3 MSD	W-171013-PS-26	67	69
500-135665-4	W-171013-PS-27	60	64 ^c
LCS 180-226124/2-A	Lab Control Sample	43	46
MB 180-226124/1-A	Method Blank	35	39
MB 180-226124/1-A	Method Blank	33	35

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

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

Lab Sample ID: MB 500-406096/7

Matrix: Water

Analysis Batch: 406096

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/19/17 22:34	1
Toluene	<0.15		0.50	0.15	ug/L			10/19/17 22:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/19/17 22:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/19/17 22:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		10/19/17 22:34	1
Toluene-d8 (Surr)	104		75 - 120		10/19/17 22:34	1
4-Bromofluorobenzene (Surr)	93		72 - 124		10/19/17 22:34	1
Dibromofluoromethane	97		75 - 120		10/19/17 22:34	1

Lab Sample ID: LCS 500-406096/5

Matrix: Water

Analysis Batch: 406096

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	49.4		ug/L		99	70 - 120
Toluene	50.0	49.1		ug/L		98	70 - 125
Ethylbenzene	50.0	49.8		ug/L		100	70 - 120
Xylenes, Total	100	95.9		ug/L		96	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		75 - 126
Toluene-d8 (Surr)	101		75 - 120
4-Bromofluorobenzene (Surr)	90		72 - 124
Dibromofluoromethane	98		75 - 120

Lab Sample ID: 500-135665-3 MS

Matrix: Water

Analysis Batch: 406096

Client Sample ID: W-171013-PS-26

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	47.1		ug/L		94	70 - 120
Toluene	<0.15		50.0	47.6		ug/L		95	70 - 125
Ethylbenzene	<0.18		50.0	47.8		ug/L		96	70 - 120
Xylenes, Total	<0.22		100	92.9		ug/L		93	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		75 - 126
Toluene-d8 (Surr)	103		75 - 120
4-Bromofluorobenzene (Surr)	93		72 - 124
Dibromofluoromethane	100		75 - 120

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

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

Lab Sample ID: 500-135665-3 MSD

Matrix: Water

Analysis Batch: 406096

Client Sample ID: W-171013-PS-26

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	47.5		ug/L		95	70 - 120	1	20
Toluene	<0.15		50.0	48.6		ug/L		97	70 - 125	2	20
Ethylbenzene	<0.18		50.0	49.1		ug/L		98	70 - 120	3	20
Xylenes, Total	<0.22		100	94.5		ug/L		95	70 - 125	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		75 - 126
Toluene-d8 (Surr)	103		75 - 120
4-Bromofluorobenzene (Surr)	91		72 - 124
Dibromofluoromethane	101		75 - 120

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

Lab Sample ID: 500-135665-3 MS

Matrix: Water

Analysis Batch: 406002

Client Sample ID: W-171013-PS-26

Prep Type: Total/NA

Prep Batch: 405784

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	<0.24		33.1	24.3		ug/L		73	36 - 110

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorophenol (Surr)	82		27 - 110
Phenol-d5 (Surr)	59		20 - 100
Nitrobenzene-d5 (Surr)	93		36 - 120
2-Fluorobiphenyl (Surr)	76		34 - 110
2,4,6-Tribromophenol (Surr)	89		40 - 145
Terphenyl-d14 (Surr)	100		40 - 145

Lab Sample ID: 500-135665-3 MSD

Matrix: Water

Analysis Batch: 406002

Client Sample ID: W-171013-PS-26

Prep Type: Total/NA

Prep Batch: 405784

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	<0.24		31.5	22.2		ug/L		71	36 - 110	9	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorophenol (Surr)	80		27 - 110
Phenol-d5 (Surr)	59		20 - 100
Nitrobenzene-d5 (Surr)	93		36 - 120
2-Fluorobiphenyl (Surr)	86		34 - 110
2,4,6-Tribromophenol (Surr)	90		40 - 145
Terphenyl-d14 (Surr)	104		40 - 145

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-300504/4
Matrix: Water
Analysis Batch: 300504

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			10/25/17 12:15	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	89		60 - 140					10/25/17 12:15	1

Lab Sample ID: LCS 240-300504/5
Matrix: Water
Analysis Batch: 300504

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	285	287		ug/L		100	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	85		60 - 140				

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 300504

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	<0.17		285	294		ug/L		103	50 - 150
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,1,1-Trifluoroethane	87		60 - 140						

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 300504

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	<0.17		285	290		ug/L		102	50 - 150	1	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,1,1-Trifluoroethane	86		60 - 140								

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 180-226124/1-A
Matrix: Water
Analysis Batch: 226312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226124

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.23		0.50	0.23	ug/L		10/17/17 14:45	10/19/17 07:03	20
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	35		20 - 100				10/17/17 14:45	10/19/17 07:03	20

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: MB 180-226124/1-A
Matrix: Water
Analysis Batch: 226312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226124

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/17/17 14:45	10/19/17 13:51	4
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	39		20 - 100				10/17/17 14:45	10/19/17 13:51	4

Lab Sample ID: LCS 180-226124/2-A
Matrix: Water
Analysis Batch: 226312

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226124

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	5.00	3.61		ug/L		72	34 - 150
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
2,4-Dichlorophenylacetic acid	46		20 - 100				

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 226312

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA
Prep Batch: 226124

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	0.051	J p ^c	0.943	0.840		ug/L		84	34 - 150
Surrogate	MS %Recovery	MS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	60		20 - 100						

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 226312

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA
Prep Batch: 226124

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	0.051	J p ^c	0.943	0.887		ug/L		89	34 - 150	5	35
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
2,4-Dichlorophenylacetic acid	69		20 - 100								

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-405443/1-A
Matrix: Water
Analysis Batch: 405921

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 405443

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		10/16/17 07:33	10/18/17 11:25	1
Copper	<0.50		2.0	0.50	ug/L		10/16/17 07:33	10/18/17 11:25	1
Iron	<46.7		100	46.7	ug/L		10/16/17 07:33	10/18/17 11:25	1
Manganese	<0.79		2.5	0.79	ug/L		10/16/17 07:33	10/18/17 11:25	1
Zinc	<6.9		20.0	6.9	ug/L		10/16/17 07:33	10/18/17 11:25	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Lab Sample ID: LCS 500-405443/2-A
Matrix: Water
Analysis Batch: 405921

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 405443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	103.4		ug/L		103	80 - 120
Copper	250	269.7		ug/L		108	80 - 120
Iron	1000	1171		ug/L		117	80 - 120
Manganese	500	529.7		ug/L		106	80 - 120
Zinc	500	540.1		ug/L		108	80 - 120

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 405921

Client Sample ID: W-171013-PS-26
Prep Type: Dissolved
Prep Batch: 405443

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.23		100	101.5		ug/L		102	75 - 125
Copper	1.3	J	250	261.7		ug/L		104	75 - 125
Iron	<46.7		1000	1070		ug/L		107	75 - 125
Manganese	<0.79		500	516.2		ug/L		103	75 - 125
Zinc	<6.9		500	522.8		ug/L		105	75 - 125

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 405921

Client Sample ID: W-171013-PS-26
Prep Type: Dissolved
Prep Batch: 405443

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.23		100	101.2		ug/L		101	75 - 125	0	20
Copper	1.3	J	250	260.1		ug/L		104	75 - 125	1	20
Iron	<46.7		1000	1062		ug/L		106	75 - 125	1	20
Manganese	<0.79		500	513.2		ug/L		103	75 - 125	1	20
Zinc	<6.9		500	526.5		ug/L		105	75 - 125	1	20

Lab Sample ID: 500-135665-3 DU
Matrix: Water
Analysis Batch: 405921

Client Sample ID: W-171013-PS-26
Prep Type: Dissolved
Prep Batch: 405443

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	<0.23		<0.23		ug/L		NC	20
Copper	1.3	J	1.50	J	ug/L		18	20
Iron	<46.7		<46.7		ug/L		NC	20
Manganese	<0.79		<0.79		ug/L		NC	20
Zinc	<6.9		<6.9		ug/L		NC	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-405462/27
Matrix: Water
Analysis Batch: 405462

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/14/17 17:41	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/14/17 17:41	1
Sulfate	<0.095		0.20	0.095	mg/L			10/14/17 17:41	1

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 500-405462/5
Matrix: Water
Analysis Batch: 405462

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.90		mg/L		97	90 - 110
Nitrate as N	2.00	1.99		mg/L		100	90 - 110
Sulfate	5.00	5.32		mg/L		106	90 - 110

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 405462

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	3.2		1.00	4.30		mg/L		112	80 - 120
Sulfate	7.0		2.50	9.72		mg/L		109	80 - 120

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 405462

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	36.1		10.0	45.58		mg/L		95	80 - 120

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 405462

Client Sample ID: W-171013-PS-26
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	3.2		1.00	4.32		mg/L		113	80 - 120	0	20
Sulfate	7.0		2.50	9.74		mg/L		110	80 - 120	0	20

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 405462

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	36.1		10.0	45.67		mg/L		96	80 - 120	0	20

Lab Sample ID: MB 500-407616/23
Matrix: Water
Analysis Batch: 407616

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			10/30/17 00:17	1
Nitrate as N	<0.068		0.20	0.068	mg/L			10/30/17 00:17	1
Sulfate	<0.095		0.20	0.095	mg/L			10/30/17 00:17	1

Lab Sample ID: LCS 500-407616/29
Matrix: Water
Analysis Batch: 407616

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	2.95		mg/L		98	90 - 110

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 500-407616/29
Matrix: Water
Analysis Batch: 407616

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	4.96		mg/L		99	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-406794/4
Matrix: Water
Analysis Batch: 406794

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 - Duplicates	<0.47		1.0	0.47	mg/L			10/24/17 00:21	1

Lab Sample ID: LCS 500-406794/5
Matrix: Water
Analysis Batch: 406794

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 - Duplicates	10.0	9.63		mg/L		96	80 - 120

Lab Sample ID: 500-135665-3 MS
Matrix: Water
Analysis Batch: 406794

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	0.84	J	10.0	10.42		mg/L		96	75 - 125

Lab Sample ID: 500-135665-3 MSD
Matrix: Water
Analysis Batch: 406794

Client Sample ID: W-171013-PS-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Total Organic Carbon - Duplicates	0.84	J	10.0	10.48		mg/L		96	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-407066/3
Matrix: Water
Analysis Batch: 407066

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			10/25/17 17:25	1

Lab Sample ID: LCS 500-407066/4
Matrix: Water
Analysis Batch: 407066

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	106.8		mg/L		107	85 - 115

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-24

Date Collected: 10/13/17 10:20

Date Received: 10/14/17 11:45

Lab Sample ID: 500-135665-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	406096	10/20/17 05:09	PMF	TAL CHI
Total/NA	Prep	3510C			405784	10/18/17 07:28	BSO	TAL CHI
Total/NA	Analysis	8270D		1	406002	10/19/17 12:58	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	300504	10/25/17 12:50	BPM	TAL CAN
Total/NA	Prep	8151A			226124	10/17/17 14:45	CBY	TAL PIT
Total/NA	Analysis	8151A		4	226312	10/19/17 16:21	JMO	TAL PIT
Dissolved	Prep	3005A			405443	10/16/17 07:33	JEF	TAL CHI
Dissolved	Analysis	6020A		1	405921	10/18/17 11:33	FXG	TAL CHI
Total/NA	Prep	3010A			405444	10/16/17 07:33	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	405619	10/17/17 07:19	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	405462	10/14/17 22:58	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405462	10/14/17 23:10	EAT	TAL CHI
Total/NA	Analysis	9060A		1	406794	10/24/17 00:57	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	407066	10/25/17 19:49	SMO	TAL CHI

Client Sample ID: W-171013-PS-25

Date Collected: 10/13/17 11:00

Date Received: 10/14/17 11:45

Lab Sample ID: 500-135665-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	406096	10/20/17 05:35	PMF	TAL CHI
Total/NA	Prep	3510C			405784	10/18/17 07:28	BSO	TAL CHI
Total/NA	Analysis	8270D		1	406002	10/19/17 13:24	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	300504	10/25/17 13:07	BPM	TAL CAN
Total/NA	Prep	8151A			226124	10/17/17 14:45	CBY	TAL PIT
Total/NA	Analysis	8151A		4	226312	10/19/17 15:06	JMO	TAL PIT
Dissolved	Prep	3005A			405443	10/16/17 07:33	JEF	TAL CHI
Dissolved	Analysis	6020A		1	405921	10/18/17 11:37	FXG	TAL CHI
Total/NA	Prep	3010A			405444	10/16/17 07:33	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	405619	10/17/17 07:19	PJ1	TAL CHI
Total/NA	Analysis	300.0		10	405462	10/14/17 23:36	EAT	TAL CHI
Total/NA	Analysis	300.0		2	407616	10/30/17 05:47	PMF	TAL CHI
Total/NA	Analysis	9060A		1	406794	10/24/17 01:15	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	407066	10/25/17 19:58	SMO	TAL CHI

Client Sample ID: W-171013-PS-26

Date Collected: 10/13/17 12:30

Date Received: 10/14/17 11:45

Lab Sample ID: 500-135665-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	406096	10/20/17 06:01	PMF	TAL CHI
Total/NA	Prep	3510C			405784	10/18/17 07:28	BSO	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Client Sample ID: W-171013-PS-26

Lab Sample ID: 500-135665-3

Date Collected: 10/13/17 12:30

Matrix: Water

Date Received: 10/14/17 11:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8270D		1	406002	10/19/17 13:51	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	300504	10/25/17 13:24	BPM	TAL CAN
Total/NA	Prep	8151A			226124	10/17/17 14:45	CBY	TAL PIT
Total/NA	Analysis	8151A		4	226312	10/19/17 15:31	JMO	TAL PIT
Dissolved	Prep	3005A			405443	10/16/17 07:33	JEF	TAL CHI
Dissolved	Analysis	6020A		1	405921	10/18/17 11:41	FXG	TAL CHI
Total/NA	Prep	3010A			405444	10/16/17 07:33	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	405619	10/17/17 07:19	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	405462	10/14/17 23:48	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405462	10/15/17 00:01	EAT	TAL CHI
Total/NA	Analysis	9060A		1	406794	10/24/17 01:32	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	407066	10/25/17 20:04	SMO	TAL CHI

Client Sample ID: W-171013-PS-27

Lab Sample ID: 500-135665-4

Date Collected: 10/13/17 12:35

Matrix: Water

Date Received: 10/14/17 11:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	406096	10/20/17 06:27	PMF	TAL CHI
Total/NA	Prep	3510C			405784	10/18/17 07:28	BSO	TAL CHI
Total/NA	Analysis	8270D		1	406002	10/19/17 14:18	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	300504	10/25/17 14:15	BPM	TAL CAN
Total/NA	Prep	8151A			226124	10/17/17 14:45	CBY	TAL PIT
Total/NA	Analysis	8151A		4	226312	10/19/17 15:56	JMO	TAL PIT
Dissolved	Prep	3005A			405443	10/16/17 07:33	JEF	TAL CHI
Dissolved	Analysis	6020A		1	405921	10/18/17 12:01	FXG	TAL CHI
Total/NA	Prep	3010A			405444	10/16/17 07:33	JEF	TAL CHI
Total/NA	Analysis	SM 2340B		1	405619	10/17/17 07:19	PJ1	TAL CHI
Total/NA	Analysis	300.0		1	405462	10/15/17 01:55	EAT	TAL CHI
Total/NA	Analysis	300.0		10	405462	10/15/17 02:08	EAT	TAL CHI
Total/NA	Analysis	9060A		1	406794	10/24/17 02:08	HMW	TAL CHI
Total/NA	Analysis	SM 2320B		1	407066	10/25/17 20:10	SMO	TAL CHI

Client Sample ID: Trip Blank-005

Lab Sample ID: 500-135665-5

Date Collected: 10/13/17 13:30

Matrix: Water

Date Received: 10/14/17 11:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	406096	10/20/17 06:53	PMF	TAL CHI

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Laboratory References:

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

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

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Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

TestAmerica Job ID: 500-135665-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Report To _____ (optional)
Contact: _____
Company: _____
Address: _____
Address: _____
Phone: _____
Fax: _____
E-Mail: _____

Bill To _____ (optional)
Contact: _____
Company: _____
Address: _____
Address: _____
Phone: _____
Fax: _____
PO#/Reference# _____

Chain of Custody Record

Lab Job #: 500-135665
Chain of Custody Number: 005
Page 1 of 1
Temperature °C of Cooler: 3, 4, 28, 2.5

Client		Client Project #		Preservative		Parameter		HCL		H ₂ SO ₄		HNO ₃		Preservative Key 1. HCL, Cool to 4° 2. H ₂ SO ₄ , Cool to 4° 3. HNO ₃ , Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO ₄ 7. Cool to 4° 8. None 9. Other		
GHD		086165-04-05		none		AIX-2320 Nimate, CL, SOY 300.0-2-80		PCP-8151		BTEX-8260		Methane-175			Toc-9060	
Project Name Penta Wood		Lab Project #		Matrix		Napht. - 8270		Metals - 6029 Field Filtered As, Cu, Fe, Mn, Zn		Hardness-2340						
Project Location/State Siren, WI		Lab PM														
Lab ID	MS/MSD	Sample ID	Date	Time	# of Containers	Matrix								Comments		
1		W-171013-PS-24	10/13/17	1020	15	W	X	X	X	X	X	X	X			
2		25		1100	15		X	X	X	X	X	X	X			
3	X	26		1230	30		X	X	X	X	X	X	X			
4		27		1235	15		X	X	X	X	X	X	X			
5		Trip BLANK-005		1330	2											

Note: Nitrites need extraction 48 hrs.

Turnaround Time Required (Business Days)

___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other

Sample Disposal

Return to Client Disposal by Lab Archive for ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By: <u>[Signature]</u> Company: <u>GHD</u> Date: <u>10/13/17</u> Time: <u>1500</u>	Received By: <u>[Signature]</u> Company: <u>TA-CRT</u> Date: <u>10/14/17</u> Time: <u>1145</u>
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____
Relinquished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____

Lab Courier: _____
Shipped: Fedex
Hand Delivered: _____

- Matrix Key
- WW - Wastewater
 - W - Water
 - S - Soil
 - SL - Sludge
 - MS - Miscellaneous
 - OL - Oil
 - A - Air
 - SE - Sediment
 - SO - Soil
 - L - Leachate
 - WI - Wipe
 - DW - Drinking Water
 - O - Other

Client Comments

Lab Comments:

ORIGIN ID:GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

SHIP DATE: 13OCT17
ACTWGT: 50.00 LB
CAD: 9292115/NET3920
DIMS: 25x15x15 IN

BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET



UNIVERSITY PARK IL 60484

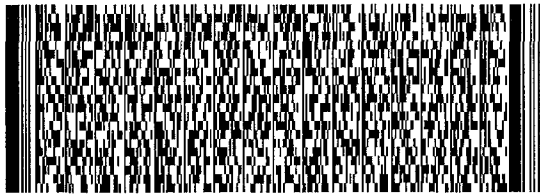
(708) 534-5200

REF 086165-04-05 P.STORLIE

500-135665 Waybill

INV:

DEPT:



FedEx
Express



4727178888888

3 of 3

SATURDAY 12:00P
PRIORITY OVERNIGHT

MPS#
0263

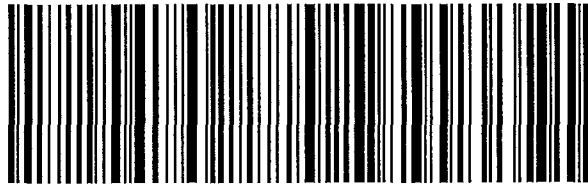
7704 9724 7378

Mstr# 7704 9724 6772

0201

X0 JOTA

60484
IL-US ORD



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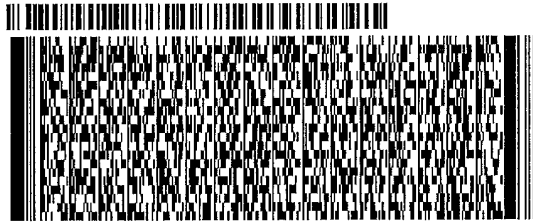
ORIGIN ID: GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

SHIP DATE: 13OCT17
ACTWGT: 50.00 LB
CAD: 9292115/IN/NET3920
DIMS: 25x15x15 IN
BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF: 066165-04-05 P. STORLIE
INV. PO. DEPT:



549JA84FC/D4C

JT21109390ur

2 of 3

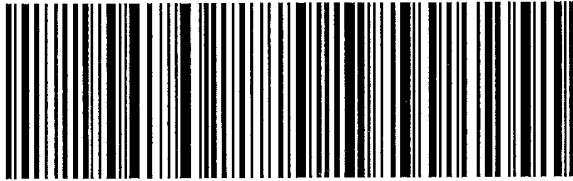
SATURDAY 12:00P
PRIORITY OVERNIGHT

MPS# 7704 9724 7058
0263
Mstr# 7704 9724 6772

0201

X0 JOTA

IL-US 60484
ORD



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ORIGIN ID:GPZA (851) 838-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

SHIP DATE: 13OCT17
ACTWGT: 50.00 LB
CAD: 9292115/NET3920
DIMS: 25x15x15 IN
BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET

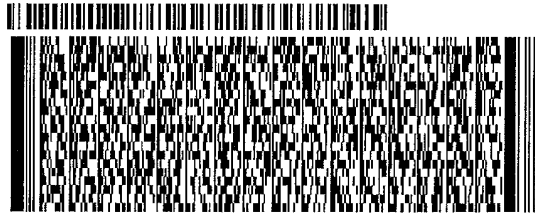
UNIVERSITY PARK IL 60484

(708) 534-5200
INV.
PO:

REF: 086165-04-05 P STORLIE

DEPT:

549.4454FC/D4C



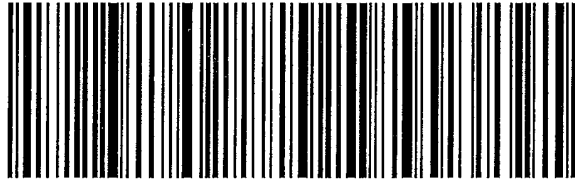
1 of 3

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK#
0201 7704 9724 6772
MASTER

X0 JOTA

60484
IL-US ORD



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



TestAmerica Chicago
 2417 Bond Street
 University Park, IL 60484
 Phone (708) 534-5200 Fax (708) 534-5211

Chain of Custody Record



TestAmerica
 LABORATORY ENVIRONMENTAL TESTING

500-135665 Chain of Custody

Lab PM: Wright, Richard C
 E-Mail: richard.wright@testamericainc.com
 State of Origin: Wisconsin
 Page: Page 1 of 1
 Job #: 500-135665-1

Client Information (Sub Contract Lab)

Shipping/Receiving
 Company: TestAmerica Laboratories, Inc.
 Address: 301 Alpha Drive, RIDC Park,
 City: Pittsburgh
 State: PA, Zip: 15238
 Phone: 412-963-7058(Tel) 412-963-2468(Fax)
 Email:
 Project Name: Penta Wood 086165-04
 Site:

Accreditations Required (See note):
 State Program - Wisconsin

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
 Other:
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 R - Na2SO3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4.5
 Z - other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/oil, BT=Tissue, Ash)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A/8151A_AP (MOD) Pentachlorophenol	Total Number of Containers	Special Instructions/Note:
W-171013-PS-24 (500-135665-1)	10/13/17	10:20 Central	Water	Water	X	X		2	WI Use 200 ul spike, and x4 dilution
W-171013-PS-25 (500-135665-2)	10/13/17	11:00 Central	Water	Water	X	X		2	WI Use 200 ul spike, and x4 dilution
W-171013-PS-26 (500-135665-3)	10/13/17	12:30 Central	Water	Water	X	X		2	WI Use 200 ul spike, and x4 dilution
W-171013-PS-26 (500-135665-3MS)	10/13/17	12:30 Central	MS	Water	X	X		2	WI Use 200 ul spike, and x4 dilution
W-171013-PS-26 (500-135665-3MSD)	10/13/17	12:30 Central	MSD	Water	X	X		2	WI Use 200 ul spike, and x4 dilution
W-171013-PS-27 (500-135665-4)	10/13/17	12:35 Central	Water	Water	X	X		2	WI Use 200 ul spike, and x4 dilution

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2

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

Relinquished by:	Date/Time:	Company:	Method of Shipment:
<i>[Signature]</i>	10/16/17 @ 1600	Company	
Received by:	Date/Time:	Company:	
<i>[Signature]</i>	10-17-17	Company	
Received by:	Date/Time:	Company:	
<i>[Signature]</i>	9:05	Company	
Received by:	Date/Time:	Company:	

Cooler Temperature(s) °C and Other Remarks:
 Custody Seal No.:
 Δ Yes Δ No



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Wright, Richard C	Carrier Tracking No(s):
Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin	
Address: 4101 Shuffel Street NW, City: North Canton, State, Zip: OH, 44720		COC No: 500-94316.1	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)		Page: Page 1 of 1	
Email:		Job #: 500-135665-1	
Project Name: Penta Wood 086165-04		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 Other:	
Site:		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)	
Due Date Requested: 10/26/2017		Analysis Requested	
TAT Requested (days):		Total Number of containers	
PO #:		Field Filtered Sample (Yes or No)	
WO #:		Perform MS/MSD (Yes or No)	
Project #: 50013796		RSK_175/(MOD) Methane	
SSOW#:		Special Instructions/Note: Rsk	
Sample Identification - Client ID (Lab ID)			
W-171013-PS-24 (500-135665-1)	Sample Date: 10/13/17	Sample Time: 10:20 Central	Preservation Code: Water
W-171013-PS-25 (500-135665-2)	Sample Date: 10/13/17	Sample Time: 11:00 Central	Preservation Code: Water
W-171013-PS-26 (500-135665-3)	Sample Date: 10/13/17	Sample Time: 12:30 Central	Preservation Code: Water
W-171013-PS-26 (500-135665-3MS)	Sample Date: 10/13/17	Sample Time: 12:30 Central	Preservation Code: MS
W-171013-PS-26 (500-135665-3MSD)	Sample Date: 10/13/17	Sample Time: 12:30 Central	Preservation Code: MSD
W-171013-PS-27 (500-135665-4)	Sample Date: 10/13/17	Sample Time: 12:35 Central	Preservation Code: Water
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>			
Possible Hazard Identification			
Unconfirmed			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	
Empty Kit Relinquished by:		Date:	
Relinquished by: <i>[Signature]</i>		Date/Time: 10/16/17 @ 1600	
Relinquished by:		Date/Time:	
Relinquished by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
Special Instructions/QC Requirements:			
Method of Shipment:			
Relinquished by: <i>[Signature]</i>		Date/Time: 10/17-17	
Relinquished by:		Date/Time:	
Relinquished by:		Date/Time:	
Cooler Temperature(s) °C and Other Remarks:		Company: TAC	



TestAmerica Canton Sample Receipt Form/Narrative Login # : _____

Canton Facility _____ Site Name _____ Cooler unpacked by: POP

Client TA CHICAGO Cooler Received on 10-17-17 Opened on 10-17-17

FedEx: 1st Grd. Exp UPS FAS Clipper 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. 1.8 °C Corrected Cooler Temp. 1.8 °C
IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
-Were tamper/custody seals intact and uncompromised? Yes No NA

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 all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Larger than this. 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 _____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

17. 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)

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135665-1

Login Number: 135665

List Source: TestAmerica Chicago

List Number: 1

Creator: Scott, Sherri L

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	3.4,2.8,2.5
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	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-135665-1

Login Number: 135665

List Number: 2

Creator: Watson, Debbie

List Source: TestAmerica Pittsburgh

List Creation: 10/17/17 12:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix C

Residential Well and Onsite Supply Well Water Sample Laboratory Report and Data Validation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-136062-1
Client Project/Site: Penta Wood 086165-04

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

Attn: Mr. Grant Anderson



Authorized for release by:
11/6/2017 12:52:43 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

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results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

- 1
- 2
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- 14
- 15



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Job ID: 500-136062-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative 500-136062-1

Comments

No additional comments.

Receipt

The samples were received on 10/21/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 3.1° C, 3.3° C, 4.4° C and 4.7° 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 Semi VOA

Method(s) 8151A: The matrix spike / matrix spike duplicate (MS/MSD) precision for 226837 was outside control limits. Sample matrix interference is suspected.

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.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R1

Lab Sample ID: 500-136062-1

No Detections.

Client Sample ID: W-171020-PS-R2

Lab Sample ID: 500-136062-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.37	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-171020-PS-R3

Lab Sample ID: 500-136062-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.33	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-171020-PS-R4

Lab Sample ID: 500-136062-4

No Detections.

Client Sample ID: W-171020-PS-R5

Lab Sample ID: 500-136062-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.29	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-171020-PS-R6

Lab Sample ID: 500-136062-6

No Detections.

Client Sample ID: W-171020-PS-R7

Lab Sample ID: 500-136062-7

No Detections.

Client Sample ID: W-171020-PS-R8

Lab Sample ID: 500-136062-8

No Detections.

Client Sample ID: W-171020-PS-R9

Lab Sample ID: 500-136062-9

No Detections.

Client Sample ID: Trip Blank-006

Lab Sample ID: 500-136062-10

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
8151A	Herbicides (GC)	SW846	TAL PIT

Protocol References:

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

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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



Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-136062-1	W-171020-PS-R1	Water	10/20/17 09:15	10/21/17 10:00
500-136062-2	W-171020-PS-R2	Water	10/20/17 10:15	10/21/17 10:00
500-136062-3	W-171020-PS-R3	Water	10/20/17 10:40	10/21/17 10:00
500-136062-4	W-171020-PS-R4	Water	10/20/17 11:20	10/21/17 10:00
500-136062-5	W-171020-PS-R5	Water	10/20/17 12:00	10/21/17 10:00
500-136062-6	W-171020-PS-R6	Water	10/20/17 12:30	10/21/17 10:00
500-136062-7	W-171020-PS-R7	Water	10/20/17 12:35	10/21/17 10:00
500-136062-8	W-171020-PS-R8	Water	10/20/17 12:45	10/21/17 10:00
500-136062-9	W-171020-PS-R9	Water	10/20/17 12:50	10/21/17 10:00
500-136062-10	Trip Blank-006	Water	10/20/17 00:00	10/21/17 10:00



Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R1

Lab Sample ID: 500-136062-1

Date Collected: 10/20/17 09:15

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 14:27	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 14:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 14:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 14:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	122		75 - 126		10/31/17 14:27	1
Toluene-d8 (Surr)	100		75 - 120		10/31/17 14:27	1
4-Bromofluorobenzene (Surr)	121		72 - 124		10/31/17 14:27	1
Dibromofluoromethane	106		75 - 120		10/31/17 14:27	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.81	0.25	ug/L		10/25/17 10:34	10/30/17 21:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	91		36 - 120	10/25/17 10:34	10/30/17 21:20	1
2-Fluorobiphenyl (Surr)	78		34 - 110	10/25/17 10:34	10/30/17 21:20	1
Terphenyl-d14 (Surr)	107		40 - 145	10/25/17 10:34	10/30/17 21:20	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.044		0.095	0.044	ug/L		10/24/17 14:30	10/26/17 17:20	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	56		20 - 100	10/24/17 14:30	10/26/17 17:20	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R2

Lab Sample ID: 500-136062-2

Date Collected: 10/20/17 10:15

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/02/17 02:58	1
Toluene	0.37	J	0.50	0.15	ug/L			11/02/17 02:58	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/02/17 02:58	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/02/17 02:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		11/02/17 02:58	1
Toluene-d8 (Surr)	95		75 - 120		11/02/17 02:58	1
4-Bromofluorobenzene (Surr)	98		72 - 124		11/02/17 02:58	1
Dibromofluoromethane	92		75 - 120		11/02/17 02:58	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.27		0.87	0.27	ug/L		10/25/17 10:34	10/30/17 21:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	96		36 - 120	10/25/17 10:34	10/30/17 21:47	1
2-Fluorobiphenyl (Surr)	78		34 - 110	10/25/17 10:34	10/30/17 21:47	1
Terphenyl-d14 (Surr)	110		40 - 145	10/25/17 10:34	10/30/17 21:47	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.048		0.10	0.048	ug/L		10/24/17 14:30	10/26/17 17:44	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	71		20 - 100	10/24/17 14:30	10/26/17 17:44	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R3

Lab Sample ID: 500-136062-3

Date Collected: 10/20/17 10:40

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/02/17 03:25	1
Toluene	0.33	J	0.50	0.15	ug/L			11/02/17 03:25	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/02/17 03:25	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/02/17 03:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		11/02/17 03:25	1
Toluene-d8 (Surr)	95		75 - 120		11/02/17 03:25	1
4-Bromofluorobenzene (Surr)	98		72 - 124		11/02/17 03:25	1
Dibromofluoromethane	94		75 - 120		11/02/17 03:25	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		10/25/17 10:34	10/30/17 22:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	98		36 - 120	10/25/17 10:34	10/30/17 22:14	1
2-Fluorobiphenyl (Surr)	85		34 - 110	10/25/17 10:34	10/30/17 22:14	1
Terphenyl-d14 (Surr)	108		40 - 145	10/25/17 10:34	10/30/17 22:14	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/24/17 14:30	10/26/17 18:09	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	51		20 - 100	10/24/17 14:30	10/26/17 18:09	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R4

Lab Sample ID: 500-136062-4

Date Collected: 10/20/17 11:20

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/02/17 03:52	1
Toluene	<0.15		0.50	0.15	ug/L			11/02/17 03:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/02/17 03:52	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/02/17 03:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		11/02/17 03:52	1
Toluene-d8 (Surr)	93		75 - 120		11/02/17 03:52	1
4-Bromofluorobenzene (Surr)	101		72 - 124		11/02/17 03:52	1
Dibromofluoromethane	91		75 - 120		11/02/17 03:52	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.81	0.25	ug/L		10/25/17 10:34	10/30/17 22:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	82		36 - 120	10/25/17 10:34	10/30/17 22:41	1
2-Fluorobiphenyl (Surr)	72		34 - 110	10/25/17 10:34	10/30/17 22:41	1
Terphenyl-d14 (Surr)	102		40 - 145	10/25/17 10:34	10/30/17 22:41	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.045		0.096	0.045	ug/L		10/24/17 14:30	10/26/17 18:33	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	65		20 - 100	10/24/17 14:30	10/26/17 18:33	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R5

Lab Sample ID: 500-136062-5

Date Collected: 10/20/17 12:00

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/02/17 04:18	1
Toluene	0.29	J	0.50	0.15	ug/L			11/02/17 04:18	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/02/17 04:18	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/02/17 04:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 126		11/02/17 04:18	1
Toluene-d8 (Surr)	95		75 - 120		11/02/17 04:18	1
4-Bromofluorobenzene (Surr)	95		72 - 124		11/02/17 04:18	1
Dibromofluoromethane	94		75 - 120		11/02/17 04:18	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		10/25/17 10:34	10/30/17 23:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	94		36 - 120	10/25/17 10:34	10/30/17 23:07	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/25/17 10:34	10/30/17 23:07	1
Terphenyl-d14 (Surr)	105		40 - 145	10/25/17 10:34	10/30/17 23:07	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.045		0.096	0.045	ug/L		10/24/17 14:30	10/26/17 18:57	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	55		20 - 100	10/24/17 14:30	10/26/17 18:57	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R6

Lab Sample ID: 500-136062-6

Date Collected: 10/20/17 12:30

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 16:56	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 16:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 16:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 16:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 126		10/31/17 16:56	1
Toluene-d8 (Surr)	102		75 - 120		10/31/17 16:56	1
4-Bromofluorobenzene (Surr)	84		72 - 124		10/31/17 16:56	1
Dibromofluoromethane	103		75 - 120		10/31/17 16:56	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		10/25/17 10:34	10/30/17 23:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	95		36 - 120	10/25/17 10:34	10/30/17 23:34	1
2-Fluorobiphenyl (Surr)	70		34 - 110	10/25/17 10:34	10/30/17 23:34	1
Terphenyl-d14 (Surr)	109		40 - 145	10/25/17 10:34	10/30/17 23:34	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.044		0.095	0.044	ug/L		10/24/17 14:30	10/26/17 19:21	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	71		20 - 100	10/24/17 14:30	10/26/17 19:21	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R7

Lab Sample ID: 500-136062-7

Date Collected: 10/20/17 12:35

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 17:26	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 17:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 17:26	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 17:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 126		10/31/17 17:26	1
Toluene-d8 (Surr)	102		75 - 120		10/31/17 17:26	1
4-Bromofluorobenzene (Surr)	103		72 - 124		10/31/17 17:26	1
Dibromofluoromethane	101		75 - 120		10/31/17 17:26	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.83	0.26	ug/L		10/25/17 10:34	10/31/17 00:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	96		36 - 120	10/25/17 10:34	10/31/17 00:01	1
2-Fluorobiphenyl (Surr)	77		34 - 110	10/25/17 10:34	10/31/17 00:01	1
Terphenyl-d14 (Surr)	105		40 - 145	10/25/17 10:34	10/31/17 00:01	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/24/17 14:30	10/26/17 20:34	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	65		20 - 100	10/24/17 14:30	10/26/17 20:34	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R8

Lab Sample ID: 500-136062-8

Date Collected: 10/20/17 12:45

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 17:56	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 17:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 17:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 17:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		75 - 126		10/31/17 17:56	1
Toluene-d8 (Surr)	102		75 - 120		10/31/17 17:56	1
4-Bromofluorobenzene (Surr)	101		72 - 124		10/31/17 17:56	1
Dibromofluoromethane	104		75 - 120		10/31/17 17:56	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.83	0.26	ug/L		10/25/17 10:34	10/31/17 00:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	98		36 - 120	10/25/17 10:34	10/31/17 00:28	1
2-Fluorobiphenyl (Surr)	82		34 - 110	10/25/17 10:34	10/31/17 00:28	1
Terphenyl-d14 (Surr)	110		40 - 145	10/25/17 10:34	10/31/17 00:28	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/24/17 14:30	10/26/17 20:58	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	39		20 - 100	10/24/17 14:30	10/26/17 20:58	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R9

Lab Sample ID: 500-136062-9

Date Collected: 10/20/17 12:50

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 18:25	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 18:25	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 18:25	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 18:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		75 - 126		10/31/17 18:25	1
Toluene-d8 (Surr)	102		75 - 120		10/31/17 18:25	1
4-Bromofluorobenzene (Surr)	102		72 - 124		10/31/17 18:25	1
Dibromofluoromethane	101		75 - 120		10/31/17 18:25	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.27		0.88	0.27	ug/L		10/25/17 10:34	10/31/17 00:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	100		36 - 120	10/25/17 10:34	10/31/17 00:55	1
2-Fluorobiphenyl (Surr)	84		34 - 110	10/25/17 10:34	10/31/17 00:55	1
Terphenyl-d14 (Surr)	110		40 - 145	10/25/17 10:34	10/31/17 00:55	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/24/17 14:30	10/26/17 22:11	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	47		20 - 100	10/24/17 14:30	10/26/17 22:11	4

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: Trip Blank-006

Lab Sample ID: 500-136062-10

Date Collected: 10/20/17 00:00

Matrix: Water

Date Received: 10/21/17 10:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 18:55	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 18:55	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 18:55	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 18:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		75 - 126		10/31/17 18:55	1
Toluene-d8 (Surr)	104		75 - 120		10/31/17 18:55	1
4-Bromofluorobenzene (Surr)	101		72 - 124		10/31/17 18:55	1
Dibromofluoromethane	105		75 - 120		10/31/17 18:55	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Qualifiers

GC/MS VOA

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

GC Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

GC/MS VOA

Analysis Batch: 407742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-1	W-171020-PS-R1	Total/NA	Water	8260B	
500-136062-6	W-171020-PS-R6	Total/NA	Water	8260B	
500-136062-7	W-171020-PS-R7	Total/NA	Water	8260B	
500-136062-8	W-171020-PS-R8	Total/NA	Water	8260B	
500-136062-9	W-171020-PS-R9	Total/NA	Water	8260B	
500-136062-10	Trip Blank-006	Total/NA	Water	8260B	
MB 500-407742/5	Method Blank	Total/NA	Water	8260B	
LCS 500-407742/3	Lab Control Sample	Total/NA	Water	8260B	
500-136062-8 MS	W-171020-PS-R8	Total/NA	Water	8260B	

Analysis Batch: 407875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-407875/5	Method Blank	Total/NA	Water	8260B	
LCS 500-407875/3	Lab Control Sample	Total/NA	Water	8260B	
500-136062-8 MSD	W-171020-PS-R8	Total/NA	Water	8260B	

Analysis Batch: 407985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-2	W-171020-PS-R2	Total/NA	Water	8260B	
500-136062-3	W-171020-PS-R3	Total/NA	Water	8260B	
500-136062-4	W-171020-PS-R4	Total/NA	Water	8260B	
500-136062-5	W-171020-PS-R5	Total/NA	Water	8260B	
MB 500-407985/6	Method Blank	Total/NA	Water	8260B	
LCS 500-407985/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 406882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-1	W-171020-PS-R1	Total/NA	Water	3510C	
500-136062-2	W-171020-PS-R2	Total/NA	Water	3510C	
500-136062-3	W-171020-PS-R3	Total/NA	Water	3510C	
500-136062-4	W-171020-PS-R4	Total/NA	Water	3510C	
500-136062-5	W-171020-PS-R5	Total/NA	Water	3510C	
500-136062-6	W-171020-PS-R6	Total/NA	Water	3510C	
500-136062-7	W-171020-PS-R7	Total/NA	Water	3510C	
500-136062-8	W-171020-PS-R8	Total/NA	Water	3510C	
500-136062-9	W-171020-PS-R9	Total/NA	Water	3510C	
MB 500-406882/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-406882/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-136062-8 MS	W-171020-PS-R8	Total/NA	Water	3510C	
500-136062-8 MSD	W-171020-PS-R8	Total/NA	Water	3510C	

Analysis Batch: 407674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-1	W-171020-PS-R1	Total/NA	Water	8270D	406882
500-136062-2	W-171020-PS-R2	Total/NA	Water	8270D	406882
500-136062-3	W-171020-PS-R3	Total/NA	Water	8270D	406882
500-136062-4	W-171020-PS-R4	Total/NA	Water	8270D	406882
500-136062-5	W-171020-PS-R5	Total/NA	Water	8270D	406882

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

GC/MS Semi VOA (Continued)

Analysis Batch: 407674 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-6	W-171020-PS-R6	Total/NA	Water	8270D	406882
500-136062-7	W-171020-PS-R7	Total/NA	Water	8270D	406882
500-136062-8	W-171020-PS-R8	Total/NA	Water	8270D	406882
500-136062-9	W-171020-PS-R9	Total/NA	Water	8270D	406882
MB 500-406882/1-A	Method Blank	Total/NA	Water	8270D	406882
LCS 500-406882/2-A	Lab Control Sample	Total/NA	Water	8270D	406882
500-136062-8 MS	W-171020-PS-R8	Total/NA	Water	8270D	406882
500-136062-8 MSD	W-171020-PS-R8	Total/NA	Water	8270D	406882

GC Semi VOA

Leach Batch: 226706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 180-226706/1-C	Method Blank	Total/NA	Water	1311	

Leach Batch: 226710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 180-226710/1-C	Method Blank	Total/NA	Water	1311	

Prep Batch: 226837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-1	W-171020-PS-R1	Total/NA	Water	8151A	
500-136062-2	W-171020-PS-R2	Total/NA	Water	8151A	
500-136062-3	W-171020-PS-R3	Total/NA	Water	8151A	
500-136062-4	W-171020-PS-R4	Total/NA	Water	8151A	
500-136062-5	W-171020-PS-R5	Total/NA	Water	8151A	
500-136062-6	W-171020-PS-R6	Total/NA	Water	8151A	
500-136062-7	W-171020-PS-R7	Total/NA	Water	8151A	
500-136062-8	W-171020-PS-R8	Total/NA	Water	8151A	
500-136062-9	W-171020-PS-R9	Total/NA	Water	8151A	
LB 180-226706/1-C	Method Blank	Total/NA	Water	8151A	226706
LB 180-226710/1-C	Method Blank	Total/NA	Water	8151A	226710
MB 180-226837/1-A	Method Blank	Total/NA	Water	8151A	
LCS 180-226837/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-136062-8 MS	W-171020-PS-R8	Total/NA	Water	8151A	
500-136062-8 MSD	W-171020-PS-R8	Total/NA	Water	8151A	

Analysis Batch: 227067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-136062-1	W-171020-PS-R1	Total/NA	Water	8151A	226837
500-136062-2	W-171020-PS-R2	Total/NA	Water	8151A	226837
500-136062-3	W-171020-PS-R3	Total/NA	Water	8151A	226837
500-136062-4	W-171020-PS-R4	Total/NA	Water	8151A	226837
500-136062-5	W-171020-PS-R5	Total/NA	Water	8151A	226837
500-136062-6	W-171020-PS-R6	Total/NA	Water	8151A	226837
500-136062-7	W-171020-PS-R7	Total/NA	Water	8151A	226837
500-136062-8	W-171020-PS-R8	Total/NA	Water	8151A	226837
500-136062-9	W-171020-PS-R9	Total/NA	Water	8151A	226837
LB 180-226706/1-C	Method Blank	Total/NA	Water	8151A	226837
LB 180-226710/1-C	Method Blank	Total/NA	Water	8151A	226837

TestAmerica Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

GC Semi VOA (Continued)

Analysis Batch: 227067 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-226837/1-A	Method Blank	Total/NA	Water	8151A	226837
LCS 180-226837/2-A	Lab Control Sample	Total/NA	Water	8151A	226837
500-136062-8 MS	W-171020-PS-R8	Total/NA	Water	8151A	226837
500-136062-8 MSD	W-171020-PS-R8	Total/NA	Water	8151A	226837

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Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-136062-1	W-171020-PS-R1	122	100	121	106
500-136062-2	W-171020-PS-R2	96	95	98	92
500-136062-3	W-171020-PS-R3	99	95	98	94
500-136062-4	W-171020-PS-R4	96	93	101	91
500-136062-5	W-171020-PS-R5	100	95	95	94
500-136062-6	W-171020-PS-R6	120	102	84	103
500-136062-7	W-171020-PS-R7	119	102	103	101
500-136062-8	W-171020-PS-R8	118	102	101	104
500-136062-8 MS	W-171020-PS-R8	114	105	104	99
500-136062-8 MSD	W-171020-PS-R8	121	93	91	112
500-136062-9	W-171020-PS-R9	119	102	102	101
500-136062-10	Trip Blank-006	120	104	101	105
LCS 500-407742/3	Lab Control Sample	110	104	102	98
LCS 500-407875/3	Lab Control Sample	104	101	95	101
LCS 500-407985/4	Lab Control Sample	94	95	92	92
MB 500-407742/5	Method Blank	118	101	100	102
MB 500-407875/5	Method Blank	112	97	94	108
MB 500-407985/6	Method Blank	96	93	97	90

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	FBP (34-110)	TPH (40-145)
500-136062-1	W-171020-PS-R1	91	78	107
500-136062-2	W-171020-PS-R2	96	78	110
500-136062-3	W-171020-PS-R3	98	85	108
500-136062-4	W-171020-PS-R4	82	72	102
500-136062-5	W-171020-PS-R5	94	77	105
500-136062-6	W-171020-PS-R6	95	70	109
500-136062-7	W-171020-PS-R7	96	77	105
500-136062-8	W-171020-PS-R8	98	82	110
500-136062-8 MS	W-171020-PS-R8	93	87	96
500-136062-8 MSD	W-171020-PS-R8	94	94	106
500-136062-9	W-171020-PS-R9	100	84	110
LCS 500-406882/2-A	Lab Control Sample	101	85	105
MB 500-406882/1-A	Method Blank	93	80	109

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPH = Terphenyl-d14 (Surr)

TestAmerica Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPA1 (20-100)	DCPA2 (20-100)
500-136062-1	W-171020-PS-R1	52	56
500-136062-2	W-171020-PS-R2	65	71
500-136062-3	W-171020-PS-R3	48	51
500-136062-4	W-171020-PS-R4	61	65
500-136062-5	W-171020-PS-R5	51	55
500-136062-6	W-171020-PS-R6	64	71
500-136062-7	W-171020-PS-R7	60	65
500-136062-8	W-171020-PS-R8	36	39
500-136062-8 MS	W-171020-PS-R8	47	49
500-136062-8 MSD	W-171020-PS-R8	68	72
500-136062-9	W-171020-PS-R9	42	47
LB 180-226706/1-C	Method Blank	46	50
LB 180-226710/1-C	Method Blank	42	47
LCS 180-226837/2-A	Lab Control Sample	57	57
MB 180-226837/1-A	Method Blank	37	39

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

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

Lab Sample ID: MB 500-407742/5
Matrix: Water
Analysis Batch: 407742

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			10/31/17 13:57	1
Toluene	<0.15		0.50	0.15	ug/L			10/31/17 13:57	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			10/31/17 13:57	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			10/31/17 13:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		75 - 126		10/31/17 13:57	1
Toluene-d8 (Surr)	101		75 - 120		10/31/17 13:57	1
4-Bromofluorobenzene (Surr)	100		72 - 124		10/31/17 13:57	1
Dibromofluoromethane	102		75 - 120		10/31/17 13:57	1

Lab Sample ID: LCS 500-407742/3
Matrix: Water
Analysis Batch: 407742

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.9		ug/L		96	70 - 120
Toluene	50.0	48.8		ug/L		98	70 - 125
Ethylbenzene	50.0	49.5		ug/L		99	70 - 120
Xylenes, Total	100	102		ug/L		102	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		75 - 126
Toluene-d8 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	102		72 - 124
Dibromofluoromethane	98		75 - 120

Lab Sample ID: 500-136062-8 MS
Matrix: Water
Analysis Batch: 407742

Client Sample ID: W-171020-PS-R8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	45.9		ug/L		92	70 - 120
Toluene	<0.15		50.0	47.0		ug/L		94	70 - 125
Ethylbenzene	<0.18		50.0	46.3		ug/L		93	70 - 120
Xylenes, Total	<0.22		100	97.0		ug/L		97	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	114		75 - 126
Toluene-d8 (Surr)	105		75 - 120
4-Bromofluorobenzene (Surr)	104		72 - 124
Dibromofluoromethane	99		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

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

Lab Sample ID: MB 500-407875/5

Matrix: Water

Analysis Batch: 407875

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/01/17 15:25	1
Toluene	<0.15		0.50	0.15	ug/L			11/01/17 15:25	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/01/17 15:25	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/01/17 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 126		11/01/17 15:25	1
Toluene-d8 (Surr)	97		75 - 120		11/01/17 15:25	1
4-Bromofluorobenzene (Surr)	94		72 - 124		11/01/17 15:25	1
Dibromofluoromethane	108		75 - 120		11/01/17 15:25	1

Lab Sample ID: LCS 500-407875/3

Matrix: Water

Analysis Batch: 407875

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.9		ug/L		96	70 - 120
Toluene	50.0	46.4		ug/L		93	70 - 125
Ethylbenzene	50.0	48.8		ug/L		98	70 - 120
Xylenes, Total	100	96.2		ug/L		96	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		75 - 126
Toluene-d8 (Surr)	101		75 - 120
4-Bromofluorobenzene (Surr)	95		72 - 124
Dibromofluoromethane	101		75 - 120

Lab Sample ID: 500-136062-8 MSD

Matrix: Water

Analysis Batch: 407875

Client Sample ID: W-171020-PS-R8

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Benzene	<0.15		50.0	46.3		ug/L		93	70 - 120	1	20
Toluene	<0.15		50.0	42.6		ug/L		85	70 - 125	10	20
Ethylbenzene	<0.18		50.0	45.8		ug/L		92	70 - 120	1	20
Xylenes, Total	<0.22		100	92.8		ug/L		93	70 - 125	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	121		75 - 126
Toluene-d8 (Surr)	93		75 - 120
4-Bromofluorobenzene (Surr)	91		72 - 124
Dibromofluoromethane	112		75 - 120

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

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

Lab Sample ID: MB 500-407985/6
Matrix: Water
Analysis Batch: 407985

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			11/01/17 22:04	1
Toluene	<0.15		0.50	0.15	ug/L			11/01/17 22:04	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/01/17 22:04	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			11/01/17 22:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		11/01/17 22:04	1
Toluene-d8 (Surr)	93		75 - 120		11/01/17 22:04	1
4-Bromofluorobenzene (Surr)	97		72 - 124		11/01/17 22:04	1
Dibromofluoromethane	90		75 - 120		11/01/17 22:04	1

Lab Sample ID: LCS 500-407985/4
Matrix: Water
Analysis Batch: 407985

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.8		ug/L		94	70 - 120
Toluene	50.0	49.0		ug/L		98	70 - 125
Ethylbenzene	50.0	46.9		ug/L		94	70 - 120
Xylenes, Total	100	94.8		ug/L		95	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		75 - 126
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	92		72 - 124
Dibromofluoromethane	92		75 - 120

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

Lab Sample ID: MB 500-406882/1-A
Matrix: Water
Analysis Batch: 407674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 406882

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		10/25/17 10:34	10/30/17 20:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	93		36 - 120	10/25/17 10:34	10/30/17 20:54	1
2-Fluorobiphenyl (Surr)	80		34 - 110	10/25/17 10:34	10/30/17 20:54	1
Terphenyl-d14 (Surr)	109		40 - 145	10/25/17 10:34	10/30/17 20:54	1

Lab Sample ID: LCS 500-406882/2-A
Matrix: Water
Analysis Batch: 407674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 406882

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	16.5		ug/L		52	36 - 110

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	101		36 - 120
2-Fluorobiphenyl (Surr)	85		34 - 110
Terphenyl-d14 (Surr)	105		40 - 145

Lab Sample ID: 500-136062-8 MS
Matrix: Water
Analysis Batch: 407674

Client Sample ID: W-171020-PS-R8
Prep Type: Total/NA
Prep Batch: 406882

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Naphthalene	<0.26		31.8	22.5		ug/L		71	36 - 110

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	93		36 - 120
2-Fluorobiphenyl (Surr)	87		34 - 110
Terphenyl-d14 (Surr)	96		40 - 145

Lab Sample ID: 500-136062-8 MSD
Matrix: Water
Analysis Batch: 407674

Client Sample ID: W-171020-PS-R8
Prep Type: Total/NA
Prep Batch: 406882

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Naphthalene	<0.26		32.9	21.7		ug/L		66	36 - 110	4	20

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	94		36 - 120
2-Fluorobiphenyl (Surr)	94		34 - 110
Terphenyl-d14 (Surr)	106		40 - 145

Method: 8151A - Herbicides (GC)

Lab Sample ID: LB 180-226706/1-C
Matrix: Water
Analysis Batch: 227067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226837

Analyte	LB	LB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pentachlorophenol	<0.46		1.0	0.46	ug/L		10/24/17 14:30	10/26/17 22:35	4

Surrogate	LB	LB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4-Dichlorophenylacetic acid	50		20 - 100	10/24/17 14:30	10/26/17 22:35	4

Lab Sample ID: LB 180-226710/1-C
Matrix: Water
Analysis Batch: 227067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226837

Analyte	LB	LB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pentachlorophenol	<0.46		1.0	0.46	ug/L		10/24/17 14:30	10/26/17 19:46	4

Surrogate	LB	LB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4-Dichlorophenylacetic acid	47		20 - 100	10/24/17 14:30	10/26/17 19:46	4

TestAmerica Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: MB 180-226837/1-A
Matrix: Water
Analysis Batch: 227067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226837

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.046		0.10	0.046	ug/L		10/24/17 14:30	10/26/17 16:55	4
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	39		20 - 100				10/24/17 14:30	10/26/17 16:55	4

Lab Sample ID: LCS 180-226837/2-A
Matrix: Water
Analysis Batch: 227067

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226837

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	1.00	0.808		ug/L		81	34 - 150
Surrogate	%Recovery	LCS Qualifier	Limits				
2,4-Dichlorophenylacetic acid	57		20 - 100				

Lab Sample ID: 500-136062-8 MS
Matrix: Water
Analysis Batch: 227067

Client Sample ID: W-171020-PS-R8
Prep Type: Total/NA
Prep Batch: 226837

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	<0.046		0.990	0.607		ug/L		61	34 - 150
Surrogate	%Recovery	MS Qualifier	Limits						
2,4-Dichlorophenylacetic acid	49		20 - 100						

Lab Sample ID: 500-136062-8 MSD
Matrix: Water
Analysis Batch: 227067

Client Sample ID: W-171020-PS-R8
Prep Type: Total/NA
Prep Batch: 226837

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	<0.046		1.00	0.914	F2	ug/L		91	34 - 150	40	35
Surrogate	%Recovery	MSD Qualifier	Limits								
2,4-Dichlorophenylacetic acid	72		20 - 100								

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R1

Date Collected: 10/20/17 09:15

Date Received: 10/21/17 10:00

Lab Sample ID: 500-136062-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 14:27	PMF	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 21:20	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 17:20	JMO	TAL PIT

Client Sample ID: W-171020-PS-R2

Date Collected: 10/20/17 10:15

Date Received: 10/21/17 10:00

Lab Sample ID: 500-136062-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407985	11/02/17 02:58	EMA	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 21:47	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 17:44	JMO	TAL PIT

Client Sample ID: W-171020-PS-R3

Date Collected: 10/20/17 10:40

Date Received: 10/21/17 10:00

Lab Sample ID: 500-136062-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407985	11/02/17 03:25	EMA	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 22:14	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 18:09	JMO	TAL PIT

Client Sample ID: W-171020-PS-R4

Date Collected: 10/20/17 11:20

Date Received: 10/21/17 10:00

Lab Sample ID: 500-136062-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407985	11/02/17 03:52	EMA	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 22:41	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 18:33	JMO	TAL PIT

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R5

Lab Sample ID: 500-136062-5

Date Collected: 10/20/17 12:00

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407985	11/02/17 04:18	EMA	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 23:07	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 18:57	JMO	TAL PIT

Client Sample ID: W-171020-PS-R6

Lab Sample ID: 500-136062-6

Date Collected: 10/20/17 12:30

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 16:56	PMF	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/30/17 23:34	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 19:21	JMO	TAL PIT

Client Sample ID: W-171020-PS-R7

Lab Sample ID: 500-136062-7

Date Collected: 10/20/17 12:35

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 17:26	PMF	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/31/17 00:01	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 20:34	JMO	TAL PIT

Client Sample ID: W-171020-PS-R8

Lab Sample ID: 500-136062-8

Date Collected: 10/20/17 12:45

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 17:56	PMF	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/31/17 00:28	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 20:58	JMO	TAL PIT

TestAmerica Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Client Sample ID: W-171020-PS-R9

Lab Sample ID: 500-136062-9

Date Collected: 10/20/17 12:50

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 18:25	PMF	TAL CHI
Total/NA	Prep	3510C			406882	10/25/17 10:34	DX	TAL CHI
Total/NA	Analysis	8270D		1	407674	10/31/17 00:55	GES	TAL CHI
Total/NA	Prep	8151A			226837	10/24/17 14:30	CBY	TAL PIT
Total/NA	Analysis	8151A		4	227067	10/26/17 22:11	JMO	TAL PIT

Client Sample ID: Trip Blank-006

Lab Sample ID: 500-136062-10

Date Collected: 10/20/17 00:00

Matrix: Water

Date Received: 10/21/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	407742	10/31/17 18:55	PMF	TAL CHI

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165-04

TestAmerica Job ID: 500-136062-1

Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-18

Laboratory: TestAmerica Pittsburgh

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	998027800	08-31-18

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
 Phone: 708.534.5200 Fax: 708.534.5211

Report To _____ (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 E-Mail: _____

Bill To _____ (optional)
 Contact: _____
 Company: _____
 Address: _____
 Address: _____
 Phone: _____
 Fax: _____
 PO#/Reference# _____

Chain of Custody Record

Lab Job #: 500736062
 Chain of Custody Number: 006
 Page 1 of 1
 Temperature °C of Cooler: 21, 33, 44, 47

Client		Client Project #		Preservative		Parameter		None		None		HCL		Preservative Key	
GHD		086165-04-06		None		None		None		None		None		1. HCL, Cool to 4° 2. H2SO4, Cool to 4° 3. HNO3, Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO4 7. Cool to 4° 8. None 9. Other	
Project Name		Project Location/State		Lab Project #		Lab PM		None		None		None		Comments	
Penta Wood - Residential		Siren, WI						None		None		None			
Sampler		Sample ID		Sampling		# of Containers		Matrix							
P. Storlie				Date Time											
Lab ID	MS/MSD	Sample ID		Date		Time		# of Containers		Matrix					
1		W-171020-PS-R1		10-20-17		7		W							
2		R2		↓		7		↓							
3		R3		↓		7		↓							
4		R4		↓		7		↓							
5		R5		↓		7		↓							
6		R6		↓		7		↓							
7		R7		↓		7		↓							
8	X	R8		↓		14		↓							
9		R9		↓		7		↓							
10		TRIP Blank-006		↓		7		↓							



500-136062 COC

MS/MSD

Turnaround Time Required (Business Days)

___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other

Requested Due Date

Sample Disposal

Return to Client

Disposal by Lab

Archive for ___ Months

(A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
<i>[Signature]</i>	GHD	10/20/17	1530	<i>[Signature]</i>	TAHT	10/21/17	1000
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Lab Courier

Shipped FX Saturday

Hand Delivered

Matrix Key

- WW - Wastewater
- W - Water
- S - Soil
- SL - Sludge
- MS - Miscellaneous
- OL - Oil
- A - Air
- SE - Sediment
- SO - Soil
- L - Leachate
- WI - Wipe
- DW - Drinking Water
- O - Other

Client Comments

Lab Comments:

TestAmerica


THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
 Phone: 708.634.6200 Fax: 700.634.5211

Report To _____ (optional)	Bill To _____ (optional)
Contact: _____	Contact: _____
Company: _____	Company: _____
Address: _____	Address: _____
Address: _____	Address: _____
Phone: _____	Phone: _____
Fax: _____	Fax: _____
E-Mail: _____	PO#Reference# _____

Chain of Custody Record

Lab Job #: 500136062
 Chain of Custody Number: 006
 Page 1 of 1
 Temperature °C of Cooler: 21, 33, 44, 47

Client		Client Project #		Preservative		Parameter		Matrix		Preservative Key 1. HCL, Cool to 4° 2. H2SO4, Cool to 4° 3. HNO3, Cool to 4° 4. NaOH, Cool to 4° 5. NaOH/Zn, Cool to 4° 6. NaHSO4 7. Cool to 4° 8. None 9. Other	
Project Name		Lab Project #		Date		Time		# of Containers			
GHD		086165-04-06		None		None		HCL		 600-136062 COC M/S/M/S/L	
Penta Wood - Residential				Map the leave - 8270		PCP - 8151		BTBZ - 8260			
Siren, WI											
P-sterile											
Lab ID	MISMSD	Sample ID	Date	Time	# of Containers	Matrix					Comments
1		W-171020-PS-R1	10-20-17	9:15	7	W	X	X	X		
2		R2		10:45	7		X	X	X		
3		R3		10:40	7		X	X	X		
4		R4		11:20	7		X	X	X		
5		R5		12:00	7		X	X	X		
6		R6		12:30	7		X	X	X		
7		R7		12:35	7		X	X	X		
8	X	R8		12:45	14		X	X	X		
9		R9		12:50	7		X	X	X		
10		TRIP Blank-006							X		

Turnaround Time Required (Business Days)
 ___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days ___ Other

Requested Due Date: _____

Sample Disposal: Return to Client Disposal by Lab Archive for ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Retrievished By: <u>[Signature]</u> Company: <u>GHD</u> Date: <u>10/20/17</u> Time: <u>1530</u>	Received By: <u>Deil Semel</u> Company: <u>TALHE</u> Date: <u>10/21/17</u> Time: <u>1000</u>
Retrievished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____
Retrievished By: _____ Company: _____ Date: _____ Time: _____	Received By: _____ Company: _____ Date: _____ Time: _____

Lab Courier: _____

Shipped: FX Saturday

Hand Delivered: _____

- Matrix Key
- WW - Wastewater
 - W - Water
 - S - Soil
 - SL - Sludge
 - MIS - Miscellaneous
 - OL - Oil
 - A - Air
 - SE - Sediment
 - SO - Soil
 - L - Leachate
 - WI - Wipe
 - DW - Drinking Water
 - O - Other

Client Comments: _____

Lab Comments: _____

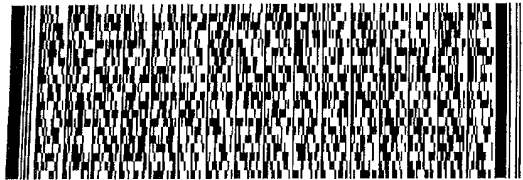
ORIGIN ID:GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

SHIP DATE: 20OCT17
ACTWGT: 50.00 LB
CAD: 9292115/NET3920
DIMS: 24x14x14 IN
BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF 086165-04-06 P STORLIE
INV DEPT
PO



549JH94FC104C

500-136062 Waybill

1 of 4
TRK# 7705 5427 7418
0201
MASTER

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 JOTA

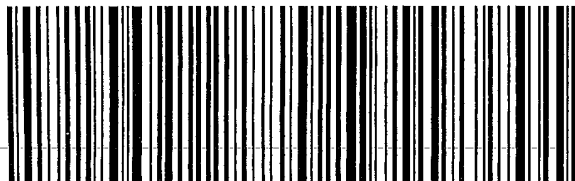
60484
IL-US ORD

2 of 4
MPS# 7705 5427 7510
0263
Mstr# 7705 5427 7418 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 JOTA

60484
IL-US ORD



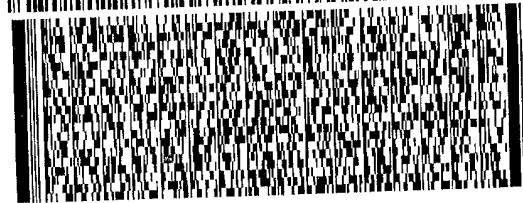
ORIGIN ID:GPZA (651) 639-0913
ST. PAUL FRONT DESK
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
SAINT PAUL, MN 55112
UNITED STATES US

SHIP DATE: 20OCT17
ACTWGT: 50.00 LB
CAD: 9292115/NET3920
DIMS: 24x14x14 IN
BILL SENDER

TO TEST AMERICA - CHICAGO
TEST AMERICA - CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484

(708) 534-5200 REF 086165-04-06 P STORLIE
INV DEPT
PO



549JH94FC104C

3 of 4
MPS# 7705 5427 7267
0263
Mstr# 7705 5427 7418 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

4 of 4
MPS# 7705 5427 7646
0263
Mstr# 7705 5427 7418 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 JOTA

60484
IL-US ORD



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- 14
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TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Phone: (708) 534-5200 Fax: (708) 534-5211

Chain of Custody Record



Client Information (Sub Contract Lab) Company: TestAmerica Laboratories, Inc. Address: 301 Alpha Drive, RIDC Park, Pittsburgh, PA, 15238 Phone: 412-963-7058(Tel) 412-963-2468(Fax) Email: Pentia Wood 086165-04 Project #: 50013796 Site:		Sampler: Lab PM Wright, Richard C Phone: E-Mail: richard.wright@testamericainc.com Accreditations Required (See note): State Program - Wisconsin								
Due Date Requested: 11/2/2017 TAT Requested (days): PO #: WO #: Project #: 50013796 SSW#:		No: -94662.1 Job #: 500-136062-1 Page 1 of 2 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastliq, BT=Issue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A/8151A_AP (MOD) Pentachlorophenol	Analysis Requested	Total Number of Containers	Special Instructions/Note:
W-171020-PS-R1 (500-136062-1)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R2 (500-136062-2)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R3 (500-136062-3)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R4 (500-136062-4)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R5 (500-136062-5)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R6 (500-136062-6)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R7 (500-136062-7)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R8 (500-136062-8)	10/20/17	Central	Water	Water	X	X			2	WI Use 200 ul spike, and x4 dilution
W-171020-PS-R8 (500-136062-8MS)	10/20/17	Central	MS	Water					2	WI Use 200 ul spike, and x4 dilution

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: _____ Date/Time: 10/23/17 @ 1600 Company: TA
 Relinquished by: _____ Date/Time: _____ Company: Company
 Relinquished by: _____ Date/Time: _____ Company: Company

Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

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

Special Instructions/QC Requirements:

Received by: _____ Date/Time: 10/11/17 Company: JAP
 Received by: _____ Date/Time: _____ Company: Company
 Received by: _____ Date/Time: _____ Company: Company

Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record

Client Information (Sub Contract Lab) Client Contact: Wright, Richard C Shipping/Receiving: richard.wright@testamericainc.com Company: TestAmerica Laboratories, Inc. Address: 301 Alpha Drive, RIDC Park, Pittsburgh State, Zip: PA, 15238 Phone: 412-963-7058(Tel) 412-963-2488(Fax) Email: Project Name: Penta Wood 086165-04 Site:		Lab PM: Wright, Richard C E-Mail: richard.wright@testamericainc.com Carrier Tracking No(s): State of Origin: Wisconsin Page: Page 2 of 2 Job #: 500-136062-1 Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)				
Due Date Requested: 11/2/2017 TAT Requested (days): PO #: WO #: Project #: 50013796 SSOW#:		Analysis Requested 8151A/8151A_AP (MOD) Pentachlorophenol Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers				
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=Air)	Preservation Code:	Special Instructions/Note:
W-171020-PS-R8 (500-136062-8MSD)	10/20/17	Central	MSD	Water		WI Use 200 ul spike, and x4 dilution
W-171020-PS-R9 (500-136062-9)	10/20/17	Central	Water	Water		WI Use 200 ul spike, and x4 dilution
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. 1						
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Empty Kit Relinquished by: _____ Date: _____ Method of Shipment: _____						
Relinquished by: <i>[Signature]</i> Date/Time: 10/23/17 @ 1600 Company: TA Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____						
Custody Seals Intact: _____ Custody Seal No.: _____ Δ Yes Δ No						



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-136062-1

Login Number: 136062

List Source: TestAmerica Chicago

List Number: 1

Creator: Sanchez, Ariel M

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	3.1, 3.3, 4.4, 4.7
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	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-136062-1

Login Number: 136062
List Number: 2
Creator: Say, Thomas C

List Source: TestAmerica Pittsburgh
List Creation: 10/24/17 10:45 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	





Memorandum

December 8, 2017

To: Tim Ree, GHD Ref. No.: 086165-04-06

From:  Grant Anderson/sb/6 Tel: 651-639-0913

CC: Tim Braun, GHD

**Subject: Analytical Results and Reduced Validation
Residential Water Sampling Event
Penta Wood Products Superfund Site
Siren, Wisconsin
October 2017**

1. Introduction

This document details a reduced validation of analytical results for residential water samples collected at the Penta Wood Products Superfund Site during October 2017. Samples were submitted to TestAmerica Laboratories, Inc. (TA) located in University Park, Illinois. BTEX and naphthalene analyses were performed at TA's University Park laboratory. Pentachlorophenol analyses were performed at TA's Pittsburgh, Pennsylvania laboratory. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD Services, Inc. (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

- i) "Quality Assurance Project Plan, Long Term Response Action, Rev. II, February 2005 with addendums
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", USEPA 540/R-99/008, October 1999

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.



2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody documents and analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

Laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for BTEX, naphthalene, and pentachlorophenol analyses were spiked with the appropriate number of surrogate compounds prior to sample extraction or analysis.

Each individual surrogate compound is expected to meet the laboratory control limits.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.



6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of the sample preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. The RPD for pentachlorophenol was above the control limits (RPD 40, limit 35). However, the associated sample result was non-detect; therefore, no qualification of data was necessary. The remaining percent recoveries and RPD values were within the laboratory control limits.

7. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample, one field blank sample and one field duplicate sample set.

Trip Blank Sample Analysis

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

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, a field blank was submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, a field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate samples must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value.

All field duplicate results were within acceptable agreement (all results were non-detect), demonstrating acceptable sampling and analytical precision.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated



(J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the MDL in Table 2.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Table 1

**Sample Collection and Analysis Summary
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
October 2017**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					BTEX	Naphthalene	Pentachlorophenol	
W-171020-PS-R1	RW05	water	10/20/2017	09:15	X	X	X	
W-171020-PS-R2	RW01	water	10/20/2017	10:15	X	X	X	
W-171020-PS-R3	RW02	water	10/20/2017	10:40	X	X	X	
W-171020-PS-R4	RW04	water	10/20/2017	11:20	X	X	X	
W-171020-PS-R5	RW03	water	10/20/2017	12:00	X	X	X	
W-171020-PS-R6	RW06	water	10/20/2017	12:30	X	X	X	
W-171020-PS-R7	DW01	water	10/20/2017	12:35	X	X	X	field blank
W-171020-PS-R8	DW01	water	10/20/2017	12:45	X	X	X	MS/MSD
W-171020-PS-R9	DW01	water	10/20/2017	12:50	X	X	X	duplicate (PS-R8)
Trip Blank-006	Lab	water	10/20/2017	00:00	X	-	-	trip blank

Notes:

MS/MSD - Matrix spike/matrix spike duplicate

BTEX - Benzene, toluene, ethylbenzene, and xylenes (total)

**Validated Analytical Results Summary
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
October 2017**

Location ID:	DW01	DW01	DW01	RW01	RW02	RW03	RW04	RW05	RW06
Sample Name:	W-171020-PS-R8	W-171020-PS-R7	W-171020-PS-R9	W-171020-PS-R2	W-171020-PS-R3	W-171020-PS-R5	W-171020-PS-R4	W-171020-PS-R1	W-171020-PS-R6
Sample Date:	10/20/2017	10/20/2017	10/20/2017	10/20/2017	10/20/2017	10/20/2017	10/20/2017	10/20/2017	10/20/2017
		Field Blank	Duplicate						

Parameters	Unit									
Volatile Organic Compounds										
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.37 J	0.33 J	0.29 J	0.50 U	0.50 U	0.50 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Semivolatile Organic Compounds										
Naphthalene	µg/L	0.83 U	0.83 U	0.88 U	0.87 U	0.75 U	0.79 U	0.81 U	0.81 U	0.75 U
Herbicides										
Pentachlorophenol	µg/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.096 U	0.096 U	0.095 U	0.095 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

**Analytical Methods and Holding Time Criteria
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
October 2017**

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
BTEX	SW 8260B	Water	-	14
Naphthalene	SW 8270C	Water	7	40
Pentachlorophenol	SW 8151	Water	7	40

Notes:

Method References:

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

Appendix D

Site Inspection Forms

Well Inspection Form
Penta Wood Products Superfund Site
Siren, Wisconsin

086165

	Protective Casing	Lock & Cover	J-Plug	Well Casing	Ground Surface	Notes
Monitoring Wells						
MW1	✓	✓	✓	✓	✓	
MW2	↓	↓	↓	↓	↓	
MW3	↓	↓	↓	↓	↓	
MW4	↓	↓	↓	↓	↓	
MW5	↓	↓	↓	↓	↓	
MW6	↓	↓	↓	↓	↓	
MW6S	↓	↓	↓	↓	↓	
MW7	↓	↓	↓	↓	↓	
MW8	↓	↓	↓	↓	↓	
MW9	↓	↓	↓	↓	↓	
MW10	↓	↓	↓	↓	↓	
MW10S	↓	↓	↓	↓	↓	
MW11	↓	↓	↓	↓	↓	
MW12	↓	↓	↓	↓	↓	
MW13	↓	↓	↓	↓	↓	
MW14	↓	↓	↓	↓	↓	
MW15	↓	↓	↓	↓	↓	
MW16	↓	↓	↓	↓	↓	
MW17	↓	↓	↓	↓	↓	
MW18	↓	↓	↓	↓	↓	
MW19	↓	↓	↓	↓	↓	
MW20	↓	↓	↓	↓	↓	
MW21	↓	↓	↓	↓	↓	
MW22	↓	↓	↓	↓	↓	
MW23	↓	↓	↓	↓	↓	
MW24	↓	↓	↓	↓	↓	
MW25	↓	↓	↓	↓	↓	
MW26	↓	↓	↓	↓	↓	
MW27	↓	↓	↓	↓	↓	
MW28	↓	↓	↓	↓	↓	
MW29	↓	↓	↓	↓	↓	
MW30	↓	↓	↓	↓	↓	
MW31	↓	↓	↓	↓	↓	

	Vault & Cover	Well Casings	Ground Surface	Notes
Extraction Wells				
EW2	✓	✓	✓	
EW3	↓	↓	↓	
EW4	↓	↓	↓	
EW5	↓	↓	↓	
EW6	↓	↓	↓	
EW7	↓	↓	↓	
EW10	↓	↓	↓	
EW12	↓	↓	↓	
EW13	↓	↓	↓	
EW14	↓	↓	↓	

	Protective Casing	Lock & Cover	Ground Surface	Inner Casing/Tubing	Notes
Gas Probes					

SG-04DIS	✓	✓	✓	
SG-05DIS	↓	↓	↓	
SG-06DIS	↓	↓	↓	
SG-07DIS	↓	↓	↓	
SG-22	↓	↓	↓	
SG-23	↓	↓	↓	
SG-24	↓	↓	↓	
SG-25	↓	↓	↓	
SG-26	↓	↓	↓	

Inspected By:  (Peter Stulize)

Date: 9-28-2017

Additional Notes: _____

Continuing Obligations Inspection Form
 Penta Wood Products Superfund Site
 Siren, Wisconsin

086165

Verified	Notes
✓	
✓	
✓	
✓	
✓	
✓	
✓	
✓	

Verify Site Conditions

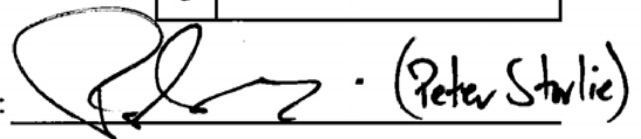
- CAMU area fence condition is satisfactory
- CAMU signage is present/visible at all fence gates
- CAMU surface soil condition is satisfactory and does not require erosion/settlement repairs
- Perimeter area fence is satisfactory and does not require repairs
- Perimeter signage is present/visible
- Site 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 occurring

- 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: _____

9-28-2017

www.ghd.com

