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**From:** Tim.Ree@ghd.com  
**Sent:** Monday, June 17, 2019 3:17 PM  
**To:** Richard, Philip E - DNR  
**Cc:** Ryan.Aamot@ghd.com  
**Subject:** Penta Wood - New Well MW32 Lab Report  
**Attachments:** Lab Report-500-163656-1-086165-06-09-2019-06-04.pdf

Phil,

Please find attached a copy of the lab report for the groundwater sample collected from the new well MW32 at the Penta Wood site in May 2019. PCP was detected at a concentration of 0.14 ug/L, which meets the ES (1 ug/L) but exceeds the PAL (0.1 ug/L). This well and sampling result delineate the extent of PCP along the eastern site property (northeast of wells MW29 and MW30). GHD recommends that this well be sampled again during the October 2019 semiannual groundwater sampling event.

We will include these results in the next Semiannual Report – January through June 2019. You may want to update USEPA prior to issuance of that report, which is due at the end of July 2019.

Regards,

**Tim Ree**  
Project Engineer / Project Manager

**GHD**  
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## ANALYTICAL REPORT

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

Laboratory Job ID: 500-163656-1  
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

*Jodie Bracken*

Authorized for release by:  
6/4/2019 10:30:07 AM  
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### LINKS

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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

Job ID: 500-163656-1

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## Job ID: 500-163656-1

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### Laboratory: Eurofins TestAmerica, Chicago

#### Narrative

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#### Job Narrative 500-163656-1

#### Receipt

The samples were received on 5/20/2019 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7° C.

#### Receipt Exceptions

The following sample(s) was received outside of holding time for nitrate by IC.

#### 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 surrogate in the continuing calibration verification (CCV) failed criteria low at 20.7%. The analytes in the CCV passed criteria and all the samples passed surrogate. After careful evaluation the data is reported. (CCV 240-383685/56)

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

#### GC Semi VOA

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

#### Metals

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

#### General Chemistry

Method(s) 300.0: The following IC 8 sample was received outside of holding time for Nitrate as N: W-190517-RA-30 (500-163656-1).

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

Job ID: 500-163656-1

## Client Sample ID: W-190517-RA-30

## Lab Sample ID: 500-163656-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.14		0.095	0.086	ug/L	1		8151A	Total/NA
Copper	1.6	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	46.8	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	135		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	17.0	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	40.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	1.7		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	1.3	H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	11.3		0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	35.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

## Client Sample ID: Trip Blank

## Lab Sample ID: 500-163656-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Method Summary

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

Job ID: 500-163656-1

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 CHI
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
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CHI
3010A	Preparation, Total Metals	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	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 = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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

# Sample Summary

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

Job ID: 500-163656-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-163656-1	W-190517-RA-30	Water	05/17/19 10:23	05/20/19 10:10	
500-163656-2	Trip Blank	Water	05/17/19 00:00	05/20/19 10:10	

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# Client Sample Results

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

Job ID: 500-163656-1

**Client Sample ID: W-190517-RA-30**

**Lab Sample ID: 500-163656-1**

Date Collected: 05/17/19 10:23

Matrix: Water

Date Received: 05/20/19 10:10

## 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			05/31/19 15:56	1
Toluene	<0.15		0.50	0.15	ug/L			05/31/19 15:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/31/19 15:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/31/19 15:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		05/31/19 15:56	1
Toluene-d8 (Surr)	92		75 - 120		05/31/19 15:56	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/31/19 15:56	1
Dibromofluoromethane	106		75 - 120		05/31/19 15:56	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		05/22/19 07:47	05/22/19 16:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	52		36 - 120	05/22/19 07:47	05/22/19 16:15	1
2-Fluorobiphenyl (Surr)	46		34 - 110	05/22/19 07:47	05/22/19 16:15	1
Terphenyl-d14 (Surr)	71		40 - 145	05/22/19 07:47	05/22/19 16:15	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			05/31/19 02:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80	^c	60 - 140		05/31/19 02:27	1

## Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.14		0.095	0.086	ug/L		05/21/19 10:19	05/25/19 02:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	78		25 - 130	05/21/19 10:19	05/25/19 02:34	1

## 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		05/23/19 16:03	05/24/19 12:53	1
Copper	1.6	J	2.0	0.50	ug/L		05/23/19 16:03	05/28/19 18:54	1
Iron	46.8	J	100	46.7	ug/L		05/23/19 16:03	05/24/19 12:53	1
Manganese	135		2.5	0.79	ug/L		05/23/19 16:03	05/24/19 12:53	1
Zinc	17.0	J	20.0	6.9	ug/L		05/23/19 16:03	05/24/19 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	40.3		1.3	0.66	mg/L		05/21/19 16:21	05/23/19 06:38	1

## General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.7		0.20	0.17	mg/L			05/20/19 17:54	1
Nitrate as N	1.3	H	0.20	0.068	mg/L			05/20/19 17:54	1
Sulfate	11.3		0.40	0.19	mg/L			06/01/19 17:33	2
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L			05/31/19 10:00	1

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# Client Sample Results

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

Job ID: 500-163656-1

**Client Sample ID: W-190517-RA-30**

**Lab Sample ID: 500-163656-1**

**Date Collected: 05/17/19 10:23**

**Matrix: Water**

**Date Received: 05/20/19 10:10**

## General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	35.9		5.0	3.7	mg/L			05/31/19 12:40	1

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# Client Sample Results

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

Job ID: 500-163656-1

**Client Sample ID: Trip Blank**

**Lab Sample ID: 500-163656-2**

**Date Collected: 05/17/19 00:00**

**Matrix: Water**

**Date Received: 05/20/19 10:10**

**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			05/30/19 12:13	1
Toluene	<0.15		0.50	0.15	ug/L			05/30/19 12:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/30/19 12:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/30/19 12:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 126		05/30/19 12:13	1
Toluene-d8 (Surr)	107		75 - 120		05/30/19 12:13	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/30/19 12:13	1
Dibromofluoromethane	90		75 - 120		05/30/19 12:13	1

# Definitions/Glossary

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

Job ID: 500-163656-1

## Qualifiers

### GC VOA

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.

### Metals

Qualifier	Qualifier Description
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.
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

## 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

Job ID: 500-163656-1

## GC/MS VOA

### Analysis Batch: 487803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-2	Trip Blank	Total/NA	Water	8260B	
MB 500-487803/7	Method Blank	Total/NA	Water	8260B	
LCS 500-487803/5	Lab Control Sample	Total/NA	Water	8260B	

### Analysis Batch: 488118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8260B	
MB 500-488118/6	Method Blank	Total/NA	Water	8260B	
LCS 500-488118/4	Lab Control Sample	Total/NA	Water	8260B	

## GC/MS Semi VOA

### Prep Batch: 486466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	3510C	
MB 500-486466/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-486466/2-A	Lab Control Sample	Total/NA	Water	3510C	

### Analysis Batch: 486534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8270D	486466
MB 500-486466/1-A	Method Blank	Total/NA	Water	8270D	486466
LCS 500-486466/2-A	Lab Control Sample	Total/NA	Water	8270D	486466

## GC VOA

### Analysis Batch: 383685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	RSK-175	
MB 240-383685/33	Method Blank	Total/NA	Water	RSK-175	
LCS 240-383685/34	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 240-383685/36	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-383685/35	Lab Control Sample Dup	Total/NA	Water	RSK-175	
LCSD 240-383685/37	Lab Control Sample Dup	Total/NA	Water	RSK-175	

## GC Semi VOA

### Prep Batch: 486324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8151A	
MB 500-486324/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-486324/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-486324/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

### Analysis Batch: 487108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8151A	486324
MB 500-486324/1-A	Method Blank	Total/NA	Water	8151A	486324
LCS 500-486324/2-A	Lab Control Sample	Total/NA	Water	8151A	486324
LCSD 500-486324/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	486324

Eurofins TestAmerica, Chicago

# QC Association Summary

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

Job ID: 500-163656-1

## Metals

### Prep Batch: 486409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	3010A	

### Analysis Batch: 486682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	SM 2340B	486409

### Prep Batch: 486864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	3005A	
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	3005A	
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	3005A	
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	3005A	

### Analysis Batch: 487377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	6020A	486864
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	6020A	486864
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486864
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	6020A	486864

### Analysis Batch: 487621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	6020A	486864
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	6020A	486864
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486864
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	6020A	486864

## General Chemistry

### Analysis Batch: 486212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	300.0	
MB 500-486212/9	Method Blank	Total/NA	Water	300.0	
LCS 500-486212/10	Lab Control Sample	Total/NA	Water	300.0	

### Analysis Batch: 488142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	9060A	
MB 500-488142/4	Method Blank	Total/NA	Water	9060A	
LCS 500-488142/5	Lab Control Sample	Total/NA	Water	9060A	
500-163656-1 MS	W-190517-RA-30	Total/NA	Water	9060A	
500-163656-1 MSD	W-190517-RA-30	Total/NA	Water	9060A	

# QC Association Summary

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

Job ID: 500-163656-1

## General Chemistry

### Analysis Batch: 488151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	SM 2320B	
MB 500-488151/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-488151/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-163656-1 DU	W-190517-RA-30	Total/NA	Water	SM 2320B	

### Analysis Batch: 488237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	300.0	
MB 500-488237/20	Method Blank	Total/NA	Water	300.0	
LCS 500-488237/21	Lab Control Sample	Total/NA	Water	300.0	

# Surrogate Summary

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

Job ID: 500-163656-1

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

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-163656-1	W-190517-RA-30	98	92	89	106
500-163656-2	Trip Blank	80	107	89	90
LCS 500-487803/5	Lab Control Sample	86	104	92	97
LCS 500-488118/4	Lab Control Sample	99	95	93	108
MB 500-487803/7	Method Blank	90	101	89	96
MB 500-488118/6	Method Blank	99	93	90	106

#### Surrogate Legend

DCA = 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	NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-163656-1	W-190517-RA-30	52	46	71
LCS 500-486466/2-A	Lab Control Sample	66	55	73
MB 500-486466/1-A	Method Blank	54	53	74

#### Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = 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	TFE2 (60-140)
500-163656-1	W-190517-RA-30	80 ^c
LCS 240-383685/34	Lab Control Sample	84
LCS 240-383685/36	Lab Control Sample	83
LCSD 240-383685/35	Lab Control Sample Dup	85
LCSD 240-383685/37	Lab Control Sample Dup	84
MB 240-383685/33	Method Blank	86

#### Surrogate Legend

TFE = 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	DCPAA1 (25-130)
500-163656-1	W-190517-RA-30	78
LCS 500-486324/2-A	Lab Control Sample	80

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# Surrogate Summary

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

Job ID: 500-163656-1

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

**Matrix: Water**

**Prep Type: Total/NA**

## Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
LCSD 500-486324/3-A	Lab Control Sample Dup	82
MB 500-486324/1-A	Method Blank	80

### Surrogate Legend

DCPAA = DCAA

- 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

Job ID: 500-163656-1

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

**Lab Sample ID: MB 500-487803/7**  
**Matrix: Water**  
**Analysis Batch: 487803**

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

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/30/19 11:20	1
Toluene	<0.15		0.50	0.15	ug/L			05/30/19 11:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/30/19 11:20	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/30/19 11:20	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		05/30/19 11:20	1
Toluene-d8 (Surr)	101		75 - 120		05/30/19 11:20	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/30/19 11:20	1
Dibromofluoromethane	96		75 - 120		05/30/19 11:20	1

**Lab Sample ID: LCS 500-487803/5**  
**Matrix: Water**  
**Analysis Batch: 487803**

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	48.9		ug/L		98	70 - 120
Toluene	50.0	47.6		ug/L		95	70 - 125
Ethylbenzene	50.0	51.5		ug/L		103	70 - 123
Xylenes, Total	100	99.7		ug/L		100	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
Toluene-d8 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	92		72 - 124
Dibromofluoromethane	97		75 - 120

**Lab Sample ID: MB 500-488118/6**  
**Matrix: Water**  
**Analysis Batch: 488118**

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

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/31/19 13:20	1
Toluene	<0.15		0.50	0.15	ug/L			05/31/19 13:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/31/19 13:20	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/31/19 13:20	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		05/31/19 13:20	1
Toluene-d8 (Surr)	93		75 - 120		05/31/19 13:20	1
4-Bromofluorobenzene (Surr)	90		72 - 124		05/31/19 13:20	1
Dibromofluoromethane	106		75 - 120		05/31/19 13:20	1

# QC Sample Results

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

Job ID: 500-163656-1

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

**Lab Sample ID: LCS 500-488118/4**  
**Matrix: Water**  
**Analysis Batch: 488118**

**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	50.7		ug/L		101	70 - 120
Toluene	50.0	49.2		ug/L		98	70 - 125
Ethylbenzene	50.0	52.4		ug/L		105	70 - 123
Xylenes, Total	100	103		ug/L		103	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		75 - 126
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	93		72 - 124
Dibromofluoromethane	108		75 - 120

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

**Lab Sample ID: MB 500-486466/1-A**  
**Matrix: Water**  
**Analysis Batch: 486534**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 486466**

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		05/22/19 07:47	05/22/19 15:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	54		36 - 120	05/22/19 07:47	05/22/19 15:45	1
2-Fluorobiphenyl (Surr)	53		34 - 110	05/22/19 07:47	05/22/19 15:45	1
Terphenyl-d14 (Surr)	74		40 - 145	05/22/19 07:47	05/22/19 15:45	1

**Lab Sample ID: LCS 500-486466/2-A**  
**Matrix: Water**  
**Analysis Batch: 486534**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 486466**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	16.3		ug/L		51	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	66		36 - 120
2-Fluorobiphenyl (Surr)	55		34 - 110
Terphenyl-d14 (Surr)	73		40 - 145

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

**Lab Sample ID: MB 240-383685/33**  
**Matrix: Water**  
**Analysis Batch: 383685**

**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			05/30/19 20:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		60 - 140		05/30/19 20:10	1

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# QC Sample Results

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

Job ID: 500-163656-1

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

**Lab Sample ID: LCS 240-383685/34**  
**Matrix: Water**  
**Analysis Batch: 383685**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	480	393		ug/L		82	80 - 120
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>				
1,1,1-Trifluoroethane	84		60 - 140				

**Lab Sample ID: LCS 240-383685/36**  
**Matrix: Water**  
**Analysis Batch: 383685**

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

<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>
1,1,1-Trifluoroethane	83		60 - 140

**Lab Sample ID: LCSD 240-383685/35**  
**Matrix: Water**  
**Analysis Batch: 383685**

**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	480	399		ug/L		83	80 - 120	1	35
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
1,1,1-Trifluoroethane	85		60 - 140						

**Lab Sample ID: LCSD 240-383685/37**  
**Matrix: Water**  
**Analysis Batch: 383685**

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

<b>Surrogate</b>	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>
1,1,1-Trifluoroethane	84		60 - 140

## Method: 8151A - Herbicides (GC)

**Lab Sample ID: MB 500-486324/1-A**  
**Matrix: Water**  
**Analysis Batch: 487108**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 486324**

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.36		0.40	0.36	ug/L		05/21/19 10:19	05/25/19 01:20	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>MB Qualifier</b>	<b>Limits</b>						
DCAA	80		25 - 130						
							<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
							05/21/19 10:19	05/25/19 01:20	1

**Lab Sample ID: LCS 500-486324/2-A**  
**Matrix: Water**  
**Analysis Batch: 487108**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 486324**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	10.1	7.23		ug/L		72	40 - 122

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# QC Sample Results

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

Job ID: 500-163656-1

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

**Lab Sample ID: LCS 500-486324/2-A**  
**Matrix: Water**  
**Analysis Batch: 487108**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 486324**

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCAA	80		25 - 130

**Lab Sample ID: LCSD 500-486324/3-A**  
**Matrix: Water**  
**Analysis Batch: 487108**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 486324**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Pentachlorophenol	10.1	7.86		ug/L		78	40 - 122	8	20	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
DCAA	82		25 - 130

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

**Lab Sample ID: MB 500-486864/1-A**  
**Matrix: Water**  
**Analysis Batch: 487377**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 486864**

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared		Analyzed		Dil Fac
	Result	Qualifier									
Arsenic	<0.23		1.0	0.23	ug/L		05/23/19 16:03	05/24/19 10:49		1	
Iron	<46.7		100	46.7	ug/L		05/23/19 16:03	05/24/19 10:49		1	
Manganese	<0.79		2.5	0.79	ug/L		05/23/19 16:03	05/24/19 10:49		1	
Zinc	<6.9		20.0	6.9	ug/L		05/23/19 16:03	05/24/19 10:49		1	

**Lab Sample ID: MB 500-486864/1-A**  
**Matrix: Water**  
**Analysis Batch: 487621**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 486864**

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared		Analyzed		Dil Fac
	Result	Qualifier									
Copper	<0.50		2.0	0.50	ug/L		05/23/19 16:03	05/28/19 18:46		1	

**Lab Sample ID: LCS 500-486864/2-A**  
**Matrix: Water**  
**Analysis Batch: 487377**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 486864**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	
Arsenic	100	97.45		ug/L		97	80 - 120	
Iron	1000	1043		ug/L		104	80 - 120	
Manganese	500	516.6		ug/L		103	80 - 120	
Zinc	500	507.8		ug/L		102	80 - 120	

**Lab Sample ID: LCS 500-486864/2-A**  
**Matrix: Water**  
**Analysis Batch: 487621**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 486864**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	
Copper	250	252.6		ug/L		101	80 - 120	

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# QC Sample Results

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

Job ID: 500-163656-1

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

**Lab Sample ID: 500-163656-1 MS**  
**Matrix: Water**  
**Analysis Batch: 487377**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	<0.23		100	98.73		ug/L		99	75 - 125
Iron	46.8	J	1000	1069		ug/L		102	75 - 125
Manganese	135		500	634.1		ug/L		100	75 - 125
Zinc	17.0	J	500	516.8		ug/L		100	75 - 125

**Lab Sample ID: 500-163656-1 MS**  
**Matrix: Water**  
**Analysis Batch: 487621**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Copper	1.6	J	250	247.5		ug/L		98	75 - 125

**Lab Sample ID: 500-163656-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 487377**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	<0.23		100	99.43		ug/L		99	75 - 125	1	20
Iron	46.8	J	1000	1055		ug/L		101	75 - 125	1	20
Manganese	135		500	720.4		ug/L		117	75 - 125	13	20
Zinc	17.0	J	500	519.7		ug/L		101	75 - 125	1	20

**Lab Sample ID: 500-163656-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 487621**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Copper	1.6	J	250	251.7		ug/L		100	75 - 125	2	20

**Lab Sample ID: 500-163656-1 DU**  
**Matrix: Water**  
**Analysis Batch: 487377**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	<0.23		<0.23		ug/L		NC	20
Iron	46.8	J	<46.7		ug/L		NC	20
Manganese	135		120.3		ug/L		12	20
Zinc	17.0	J	9.54	J F5	ug/L		56	20

**Lab Sample ID: 500-163656-1 DU**  
**Matrix: Water**  
**Analysis Batch: 487621**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Dissolved**  
**Prep Batch: 486864**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Copper	1.6	J	1.41	J	ug/L		10	20

# QC Sample Results

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

Job ID: 500-163656-1

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 500-486212/9**  
**Matrix: Water**  
**Analysis Batch: 486212**

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

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<0.17		0.20	0.17	mg/L			05/20/19 17:28	1
Nitrate as N	<0.068		0.20	0.068	mg/L			05/20/19 17:28	1
Sulfate	<0.095		0.20	0.095	mg/L			05/20/19 17:28	1

**Lab Sample ID: LCS 500-486212/10**  
**Matrix: Water**  
**Analysis Batch: 486212**

**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	2.02		mg/L		101	90 - 110
Sulfate	5.00	4.92		mg/L		98	90 - 110

**Lab Sample ID: MB 500-488237/20**  
**Matrix: Water**  
**Analysis Batch: 488237**

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

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Sulfate	<0.095		0.20	0.095	mg/L			06/01/19 17:08	1

**Lab Sample ID: LCS 500-488237/21**  
**Matrix: Water**  
**Analysis Batch: 488237**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

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

**Lab Sample ID: MB 500-488142/4**  
**Matrix: Water**  
**Analysis Batch: 488142**

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

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/31/19 07:21	1

**Lab Sample ID: LCS 500-488142/5**  
**Matrix: Water**  
**Analysis Batch: 488142**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

**Lab Sample ID: 500-163656-1 MS**  
**Matrix: Water**  
**Analysis Batch: 488142**

**Client Sample ID: W-190517-RA-30**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
	Total Organic Carbon - Duplicates	1.1			10.0				

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# QC Sample Results

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

Job ID: 500-163656-1

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

Lab Sample ID: 500-163656-1 MSD  
Matrix: Water  
Analysis Batch: 488142

Client Sample ID: W-190517-RA-30  
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	1.1		10.0	11.30		mg/L		102	75 - 125	1	20

## Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-488151/3  
Matrix: Water  
Analysis Batch: 488151

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			05/31/19 11:42	1

Lab Sample ID: LCS 500-488151/4  
Matrix: Water  
Analysis Batch: 488151

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	104.2		mg/L		104	90 - 110

Lab Sample ID: 500-163656-1 DU  
Matrix: Water  
Analysis Batch: 488151

Client Sample ID: W-190517-RA-30  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	35.9		36.89		mg/L		3	20

# Lab Chronicle

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

Job ID: 500-163656-1

**Client Sample ID: W-190517-RA-30**

**Lab Sample ID: 500-163656-1**

**Date Collected: 05/17/19 10:23**

**Matrix: Water**

**Date Received: 05/20/19 10:10**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	488118	05/31/19 15:56	JDD	TAL CHI
Total/NA	Prep	3510C			486466	05/22/19 07:47	JVD	TAL CHI
Total/NA	Analysis	8270D		1	486534	05/22/19 16:15	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	383685	05/31/19 02:27	LKG	TAL CAN
Total/NA	Prep	8151A			486324	05/21/19 10:19	JVD	TAL CHI
Total/NA	Analysis	8151A		1	487108	05/25/19 02:34	JBj	TAL CHI
Dissolved	Prep	3005A			486864	05/23/19 16:03	BDE	TAL CHI
Dissolved	Analysis	6020A		1	487377	05/24/19 12:53	FXG	TAL CHI
Dissolved	Prep	3005A			486864	05/23/19 16:03	BDE	TAL CHI
Dissolved	Analysis	6020A		1	487621	05/28/19 18:54	FXG	TAL CHI
Total/NA	Prep	3010A			486409	05/21/19 16:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	486682	05/23/19 06:38	EEN	TAL CHI
Total/NA	Analysis	300.0		1	486212	05/20/19 17:54	EAT	TAL CHI
Total/NA	Analysis	300.0		2	488237	06/01/19 17:33	EAT	TAL CHI
Total/NA	Analysis	9060A		1	488142	05/31/19 10:00	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	488151	05/31/19 12:40	SMO	TAL CHI

**Client Sample ID: Trip Blank**

**Lab Sample ID: 500-163656-2**

**Date Collected: 05/17/19 00:00**

**Matrix: Water**

**Date Received: 05/20/19 10:10**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	487803	05/30/19 12:13	EMA	TAL CHI

**Laboratory References:**

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

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



# Accreditation/Certification Summary

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

Job ID: 500-163656-1

## Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Alkalinity

## Laboratory: Eurofins 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	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Illinois	NELAP	5	200004	07-31-19 *
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19 *
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

\* 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-02873**

PAGE 1 OF 1

(See Reverse Side for Instructions)

500-163656

Project No/Phase/Task Code: 086165-06-09			Laboratory Name: Test America				Lab Location:			SSOW ID:																																																																							
Project Name: Penta Wood			Lab Contact:				Lab Quote No:			Cooler No:																																																																							
Project Location: Silver WI			<table border="1"> <thead> <tr> <th rowspan="2">SAMPLE TYPE</th> <th colspan="7">CONTAINER QUANTITY &amp; PRESERVATION</th> <th colspan="3">ANALYSIS REQUESTED (See Back of COC for Definitions)</th> </tr> <tr> <th>Matrix Code (see back of COC)</th> <th>Grab (G) or Comp (C)</th> <th>Unpreserved</th> <th>Hydrochloric Acid (HCl)</th> <th>Nitric Acid (HNO<sub>3</sub>)</th> <th>Sulfuric Acid (H<sub>2</sub>SO<sub>4</sub>)</th> <th>Sodium Hydroxide (NaOH)</th> <th>Methanol/Water (Soil VOC)</th> <th>EnCores 3x5-g, 1x25-g</th> <th>Other:</th> <th>Total Containers/Sample</th> <th>BTEX</th> <th>Naphthalene</th> <th>PCP</th> <th>Metals *</th> <th>Hardness</th> <th>Al, Cl, SO<sub>4</sub>, Mn, Ni</th> <th>TOC</th> <th>Methane</th> <th>MS/MSD Request</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>15</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</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> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				SAMPLE TYPE	CONTAINER QUANTITY & PRESERVATION							ANALYSIS REQUESTED (See Back of COC for Definitions)			Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO <sub>3</sub> )	Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	BTEX	Naphthalene	PCP	Metals *	Hardness	Al, Cl, SO <sub>4</sub> , Mn, Ni	TOC	Methane	MS/MSD Request												15	X	X	X	X	X	X	X	X													1										Carrier:	
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											15	X	X	X	X	X	X	X	X																																																														
											1																																																																						
Chemistry Contact: G. Anderson			Sampler(s): Raman				500-163656 COC			Airbill No:																																																																							
Date Shipped:			COMMENTS/ SPECIAL INSTRUCTIONS:																																																																														
1	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)		DATE (mm/dd/yy)	TIME (hh:mm)							Metals - Field filled																																																																						
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TAT Required in business days (use separate COCs for different TATs): <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 type="checkbox"/> Other:					Total Number of Containers: 16		Notes/ Special Requirements: 2.7																																																																										
All Samples in Cooler must be on COC																																																																																	
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME																																																																										
1. [Signature]	GIXD	5/17/19	1500	1. [Signature]	TA-CPL	5/20/19	1010																																																																										
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THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

**FedEx** Express *Package US Airbill*

FedEx Tracking Number

8131 9057 3528

Form ID No. **0200**



500-163656 Waybill

fedex.com 1.800.GoFedEx 1.800.463.3339

**1 From**

Date 5/17/19

Sender's Name RAAMOT Phone 651 639-0913

Company GHD

Address 1801 Old Highway 8 NW 114  
Dept./Floor/Suite/Room

City St. Paul State MN ZIP 55112

**2 Your Internal Billing Reference** 086165-06-09

**3 To**

Recipient's Name Sample Receiving Phone \_\_\_\_\_

Company TAT America

Address 2417 Bond St  
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address \_\_\_\_\_  
Use this line for the HLDL location address or for continuation of your shipping address.

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.



8131 9057 3528

48 qt.

**4 Express Package Service** \*To most locations. Packages up to 150 lbs. For packages over 150 lbs., use the 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** Fees may apply. See the FedEx Service Guide.

**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.

**Indirect Signature**  
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

**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, 8, UN 1845 \_\_\_\_\_ x \_\_\_\_\_ kg

Restrictions apply for dangerous goods — see the current FedEx Service Guide.  **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 1 Total Weight 40 lbs. Credit Card Auth. \_\_\_\_\_

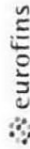
\*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

Rev. Date 3/15 • Part #187001 • ©2012-2015 FedEx • PRINTED IN U.S.A. SRM

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# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>	Carrier Tracking No(s):	COC No: 500-121319.1	
Client Contact: Shipping/Receiving	State of Origin:	Page: 1 of 1	
Company: TestAmerica Laboratories, Inc.	Address:	Job #: 500-163656-1	
Address: 4101 Shuffel Street NW,	City:	Preservation Codes:	
City: North Canton	State, Zip:	M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	FO #:	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:	
Email: Project #: 50013796	WO #:		
Project Name: Penta Wood 086165	SSOW#:		
Site:			
<b>Sample Identification - Client ID (Lab ID)</b>			
W-190517-RA-30 (500-163656-1)		RSK	
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewat, BT=tissue, A=Air)
5/17/19	10:23 Central		Water
Due Date Requested:	TAT Requested (days):	Special Instructions/Note:	
6/3/2019		RSK 15/ (MOD) Methane	
Field Filtered Sample (Yes or No)	Form MS/MSD (Yes or No)	Field Filtered Sample (Yes or No)	Form MS/MSD (Yes or No)
<b>Analysis Requested</b>			
Total Number of containers			
3 WI			
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 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 Record to TestAmerica Laboratories, Inc.			
<b>Possible Hazard Identification</b>			
Unconfirmed			
Deliverable Requested: I, II, III, IV, Other (specify)			
Primary Deliverable Rank: 2			
Empty Kit Relinquished by:			
Date Relinquished by: 5/21/19 1500			
Date Relinquished by: 5/21/19 1500			
Date Relinquished by:			
Date Relinquished by:			
Custody Seal No.:			
Custody Seal Intact: Yes No			
Cooler Temperature(s) °C and Other Remarks:			



**TestAmerica Canton Sample Receipt Form/Narrative**  
**Canton Facility**

Login # : \_\_\_\_\_

Client Chicago Site Name \_\_\_\_\_  
 Cooler Received on 5-21-19 Opened on 5-21-19  
 FedEx: 1<sup>st</sup> Grd  Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: \_\_\_\_\_

**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 -0.2 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 2.2 °C  
 IR GUN #36 (CF +0.7°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
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No ~~NA~~ pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials?  Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes No
16. 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 \_\_\_\_\_

**17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES**

Samples processed by: \_\_\_\_\_

**18. 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)

**19. SAMPLE PRESERVATION**

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

VOA Sample Preservation - Date/Time VOAs Frozen: \_\_\_\_\_

# Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-163656-1

**Login Number: 163656**

**List Source: Eurofins TestAmerica, Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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	2.7
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)	False	
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	

