



April 12, 2018

Reference No. 058502

Mr. Nate Nemani  
U.S. Environmental Protection Agency, Region 5  
Waste Management Division  
77 West Jackson Blvd., LU 9J  
Chicago, Illinois  
U.S.A. 60604 3590

**Transmitted Via Email**

Dear Mr. Nemani:

**Re: First Quarter 2018 Progress Report  
Performance Based Administrative Order on Consent  
RCRA Corrective Action  
Saginaw Nodular Iron, 2100 Veterans Memorial Parkway, Saginaw, MI  
U.S. EPA ID No. MID 041 793 340**

In accordance with the Performance-Based Administrative Order on Consent (Docket No. RCRA-05-2011-0023) between the U.S. Environmental Protection Agency Region 5 (U.S. EPA) and Revitalizing Auto Communities Environmental Response Trust (RACER), please find the attached progress report for the first quarter of 2018 (January 1, 2018 through March 31, 2018).

Please note that in the fourth quarter 2017 progress report, we requested modifying the required reporting frequency from quarterly to semi-annually. If acceptable, the semi-annual reports would be submitted after the end of the first and third calendar quarters (by April 15 and by October 15).

Please contact me if you would like to discuss this matter further.

Yours truly,

GHD

A handwritten signature in blue ink that reads 'J. Pardys'. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

John-Eric Pardys, P.Eng.

JEP/ev/41

Encl. Attachment A – First Quarter 2018 Progress Report

cc: Rick Parson, MDEQ (via e-mail)  
Saginaw Public Library (Public Information Repository)  
David Favero, RACER (via e-mail)  
Michael Tomka, GHD (via e-mail)

Attachment A  
First Quarter 2018 Progress Report  
Performance-Based Administrative  
Order on Consent  
Former Saginaw Nodular Iron, Saginaw, MI  
January 1, 2018 to March 31, 2018

# Attachment A

## Work Performed this Quarter

The following work was performed during the first quarter of 2018 for the Nodular facility:

- Prepared and submitted SWPPP annual review form on January 8, 2018
- Prepared and submitted the fourth quarter progress report for 2017 on January 12, 2018.
- Prepared and submitted responses on January 29, 2018 to U.S. EPA comments dated October 18, 2017 on the memorandum on risk screening of future habitats at the Nodular Ponds.
- Provided sample results for sample collected from the Secondary Ponds at the request of MDEQ to support NPDES renewal application.
- Prepared and submitted sampling plan to install pore water samplers in the Secondary Pond sediments to evaluate metals concentrations in pore water on January 29, 2018.
- Prepared and submitted memorandum documenting the soil characterization sampling of material stockpiled on the Nodular property associated with work being completed on the I-75 on January 30, 2018.
- Submitted monthly electronic discharge monitoring reports for the NPDES permit. There was one discharge in February from Outfall 022A (North Ditch).
- Conducted review of existing soil data on-Site and began an evaluation of the data compared to current MDEQ (2013) Part 201 criteria and the DRAFT MDEQ (2017) Part 201 criteria.
- Development of draft interim measures work plan for the removal of PCB-impacted sediment in the secondary pond is on hold pending evaluation of the results of pore water samples and need to address sediments with <50 ppm PCBs.
- Development and evaluation of options to stabilize secondary pond sediments to address unacceptable ecological risk is on hold pending evaluation of the results of pore water samples and need to address sediments with <50 ppm PCBs.
- Preparation of a request for proposal to remove PCB-impacted secondary pond sediment and stabilize remaining sediments is on hold pending evaluation of results of pore water samples and need to address sediments with <50 ppm PCBs.
- Completed periodic inspections for SWPPP and collected level measurements of secondary pond and North Ditch.

## Data Available During this Quarter

- NPDES discharge sampling data was posted by March 20, 2018 for discharges in February 2018. A copy of the electronic discharge monitoring reports is provided in Attachment A.1.
- A secondary pond water sample was collected at the request of the MDEQ to support NPDES renewal application. A copy of the laboratory analytical report is provided in Attachment A.2.

## Problems Encountered

None.

## Summary of Problem Resolution

None.

## Estimated Percent Complete and Information Summary for Selected Activities

Task		Estimated % Complete
1.	<b>IU G – Former Nodular Iron Plant OM&amp;M</b>	
	<p><u>Annual EI Sampling (6-years completed to date by RACER, 2-years completed by MLC, and 3-years completed by GMC).</u> (Estimated percent complete assumes the EI monitoring program is replaced with a revised groundwater monitoring program upon approval of the CMS by U.S. EPA, anticipated to occur in 2018.)</p> <ul style="list-style-type: none"> <li>• 2011 EI sampling was completed in November 2011 and reporting was submitted to U.S. EPA April 18, 2012.</li> <li>• 2012 EI sampling was completed in November 2012 and reporting was submitted to U.S. EPA March 11, 2013.</li> <li>• 2013 EI Sampling was completed in November 2013 and reporting was submitted to U.S. EPA February 13, 2014.</li> <li>• 2014 EI sampling was completed in November 2014 and reporting was submitted to U.S. EPA February 10, 2015.</li> <li>• 2015 EI sampling was completed in November 2015 and reporting was submitted to U.S. EPA February 10, 2016.</li> <li>• 2016 EI sampling was completed in November 2016 and reporting was submitted to U.S. EPA January 4, 2017.</li> <li>• 2017 EI sampling was completed in May 2017 and reporting was submitted to U.S. EPA December 8, 2017.</li> </ul>	88%
	<p><u>Additional delineation of impacts in soil</u></p> <ul style="list-style-type: none"> <li>• Work plan for additional delineation of manganese and PCB impacts in soil in the south portion of IU G submitted to U.S. EPA on February 27, 2015 and approved by U.S. EPA on March 2, 2015.</li> <li>• Additional delineation of manganese and PCB impacts was completed during March and April 2015. A summary of the investigation was submitted to U.S. EPA on May 8, 2015.</li> <li>• Work plan for additional delineation of PCB impacts in soil above 10 mg/kg in the south portion of IU G submitted to U.S. EPA on July 15, 2015 and approved by U.S. EPA on July 30, 2015.</li> <li>• Additional delineation of PCB impacts above 10 mg/kg was completed in August 2015. A summary of the additional investigation of manganese and PCB impacts was submitted to U.S. EPA on February 15, 2017. U.S. EPA approved via a March 8, 2017 email the report and the recommendation to address the PCB impacts through deed restrictions as an interim measure.</li> <li>• Review available data to evaluate if additional delineation is necessary for impacted soil at the overall Site.</li> </ul>	95%
	<p><u>Ammonia concentrations above MDEQ Groundwater Surface Water Interface Criteria</u></p> <ul style="list-style-type: none"> <li>• Ammonia in groundwater evaluation was submitted to U.S. EPA on April 6, 2015 and to MDEQ on April 8, 2015.</li> </ul>	85%

Task		Estimated % Complete
2.	<b>IU H – WWTP Closure</b>	
	<p data-bbox="334 275 532 300"><u>Secondary Pond</u></p> <ul data-bbox="334 317 1273 1562" style="list-style-type: none"> <li data-bbox="334 317 1214 342">• Characterization Study on Secondary Pond completed in June of 2011.</li> <li data-bbox="334 363 1247 422">• Emergency overflow for secondary pond installed on March 13, 2012. The emergency overflow was lowered approximately 6 feet on June 23, 2016.</li> <li data-bbox="334 443 1084 468">• DEQ issued NPDES permit for the Site on August 24, 2012.</li> <li data-bbox="334 489 1263 606">• MDEQ modified NPDES sampling requirements with most of the requested changes in RACER’s January 8, 2015 request. As a result of the lowering of the emergency overflow, the modification to the NPDES sampling requirements were rescinded.</li> <li data-bbox="334 627 1273 892">• Additional Characterization Studies for Secondary Pond and Lagoon 5 were completed in March 2016, May 2016, August 2016, and September 2017. A summary of the September 2017 investigation results were submitted to U.S. EPA on November 6, 2017. A sediment pore water sampling Work Plan was submitted to U.S. EPA on January 29, 2018 and was approved by U.S. EPA on March 2, 2018. Sampling will be conducted in the second quarter of 2018. Further work to address sediment with &lt;50 ppm PCBs is dependent upon the evaluation of the sediment pore water sampling results.</li> <li data-bbox="334 913 1263 1274">• NPDES renewal application was prepared and submitted April 2, 2016. Comments on the application were received and responded to on July 12 and 29, 2016. A modification to the application (addition of new outfall through the eastern portion of the northern Secondary Pond berm, referred to as outfall 24) was submitted December 22, 2016. A draft of the permit was provided on July 14, 2017. Comments on the permit were provided to MDEQ on July 24, 2017. Comments were reviewed with MDEQ and a revised submission was made on September 20, 2017. MDEQ requested additional information on November 6, 2017, which was provided on November 6 and December 18, 2017. MDEQ requested on February 8, 2018 that a sample of the secondary pond be collected and submitted for analysis. The results were submitted to MDEQ on March 12, 2018.</li> <li data-bbox="334 1295 1198 1354">• Review available sediment data to evaluate if additional delineation is necessary and to evaluate remedial alternatives.</li> <li data-bbox="334 1375 1263 1488">• Discharge of water under NPDES permit to facilitate evaluation of impacted sediments and in preparation for expected work in the Secondary Pond. RACER will evaluate and provide a proposal to U.S. EPA and MDEQ regarding the need for further sampling or other action.</li> <li data-bbox="334 1509 1143 1568">• Obtain approval for interim measure work plan for the removal of PCB-impacted sediment from the secondary pond.</li> </ul>	40%
	<p data-bbox="334 1583 516 1608"><u>Primary Basins</u></p> <ul data-bbox="334 1625 1240 1820" style="list-style-type: none"> <li data-bbox="334 1625 1240 1717">• Work plan for stabilizing primary settling basins submitted to U.S. EPA on July 31, 2012 and Work Plan approved by U.S. EPA on September 18, 2012.</li> <li data-bbox="334 1738 1240 1820">• Primary settling basin stabilization work was completed June 20, 2013. A construction completion report was submitted to U.S. EPA on September 4, 2013.</li> </ul>	100%

Task		Estimated % Complete
	<p><u>North Ditch</u></p> <ul style="list-style-type: none"> <li>• Sampling and Analysis Plan for the North Ditch submitted to U.S. EPA on April 26, 2013 and was approved by U.S. EPA on July 8, 2013.</li> <li>• North Ditch Investigation and additional monitoring completed the week of July 15, 2013. The results of the investigation were submitted to U.S. EPA on October 23, 2013.</li> <li>• Stabilization Alternative Evaluation and Recommendation for the North Ditch was submitted to U.S. EPA on February 26, 2014.</li> <li>• Obtain necessary permits/agreements to perform work <ul style="list-style-type: none"> <li>– Joint permit was received on August 19, 2015.</li> <li>– Floodplain permit application was prepared and submitted to the City of Saginaw on May 4, 2015.</li> <li>– Other permits needed include: County of Saginaw soil erosion and sedimentation control permit.</li> <li>– Other agreements: access from adjacent property owners.</li> </ul> </li> <li>• Implement approved plan (pending).</li> </ul>	45%
<b>3.</b>	<b>IU I- Area Closure</b>	
	<ul style="list-style-type: none"> <li>• Review available data to evaluate if additional characterization is necessary for impacted soil.</li> </ul>	75%
	<p><u>Classified Sand Pile</u></p> <ul style="list-style-type: none"> <li>• Removed all classified sand pile as part of the primary basin stabilization work.</li> </ul>	100%
<b>4.</b>	<b>IU I – Staging Area OM&amp;M</b>	<b>NA</b>
	<ul style="list-style-type: none"> <li>• No activities proposed or pending at this time.</li> </ul>	
<b>5.</b>	<b>Other – RCRA Corrective Action Reporting and Other Related Reporting</b>	
	<p><u>Administrative Order on Consent</u></p> <ul style="list-style-type: none"> <li>• Signed by U.S. EPA and effective September 29, 2011.</li> </ul>	100%
	<p><u>Budget Process</u></p> <ul style="list-style-type: none"> <li>• U.S. EPA approved the 2012 EA Budget Authorization Request on December 22, 2011.</li> <li>• U.S. EPA approved the 2012 Annual EA Budget Amendment No. 1 on September 19, 2012.</li> <li>• U.S. EPA approved the 2013 EA Budget Authorization Request on January 3, 2013.</li> <li>• U.S. EPA approved the 2014 EA Budget Authorization Request on November 22, 2013</li> <li>• U.S. EPA approved the 2015 EA Budget Authorization Request on November 20, 2014</li> <li>• U.S. EPA approved the 2015 Annual EA Budget Amendment No. 1 on March 20, 2015</li> </ul>	On-going

Task		Estimated % Complete
	<ul style="list-style-type: none"> <li>• U.S. EPA approved the 2016 EA Budget Authorization Request on November 20, 2015.</li> <li>• U.S. EPA approved the 2016 Annual EA Budget Amendment No. 1 on April 28, 2016.</li> <li>• U.S. EPA approved the 2017 EA Budget Authorization Request on December 7, 2016.</li> <li>• U.S. EPA approved the 2018 EA Budget Authorization Request on December 12, 2017.</li> <li>• RCRA Corrective Action Reporting</li> <li>• Submitted CCR documentation to U.S. EPA on November 18, 2011.</li> <li>• Submitted Supplemental RFI Report on September 28, 2012.</li> <li>• Submit updated RFI Summary Report to U.S. EPA - TBD</li> <li>• Submitted Draft Corrective Measures Proposal to U.S. EPA on April 1, 2013</li> <li>• Submit revised Corrective Measures Proposal – TBD.</li> <li>• Submitted Summary of WMU status to U.S. EPA on January 22, 2015 and to MDEQ on January 26, 2015. MDEQ approved the closure of Nodular Iron Oil House RCRA Hazardous Waste Area in a letter dated May 8, 2016.</li> <li>• Prepared response to comments from U.S. EPA on the Supplemental RFI and CMP – To be determined (TBD).</li> <li>• Prepare and Record Declaration of Restrictive Covenant – TBD.</li> <li>• Prepare Corrective Measures Implementation Plan – TBD.</li> <li>• Prepare Final Remedy Construction Completion Report – TBD.</li> <li>• Prepare Request for RCRA Corrective Action Complete with Controls – TBD.</li> </ul>	60%
	<p>Other Related Reporting</p> <ul style="list-style-type: none"> <li>• Submit monthly DMRs.</li> </ul>	On-going

### Summary of Contacts with Interested Parties

- There are periodic discussions with local representatives regarding the status of remediation at the Site and potential redevelopment possibilities and options.

### Projected Work for Next Reporting Period (assumed to be April 1, 2018 through September 30, 2018)

- Finalize memorandum summarizing an evaluation of existing soil data to assess if additional delineation of impacted soil is necessary anywhere at the Site.
- Conduct pore water sampling in the secondary pond and prepare memorandum summarizing and evaluating the results.
- Develop and evaluate secondary pond stabilization options, if determined necessary based on evaluation of the sediment pore water sampling results.
- Depending upon the evaluation of the sediment pore water sampling results, finalize the interim measures work plan for PCB-impacted sediments (>50 ppm) and stabilization of remaining sediment

in the Secondary Pond, if necessary, and review with U.S. EPA. Upon approval of the work plan, procure a contractor to implement the work.

- Reinstall EI monitoring wells that were previously abandoned to facilitate development.
- Evaluate the appropriate time to work with adjacent property owners to obtain needed authorizations to complete the North Ditch work and prepare bid documents.
- Prepare a plan to collect any additional data needed at the Site to delineate impacted soil if determined necessary by the evaluation in progress.
- Prepare responses to or meet with U.S. EPA to discuss any comments received on submittals, including previously submitted Supplemental RFI Report and Draft CMP.
- Begin preparation of the draft 2019 Annual Environmental Action Budget Request.
- Evaluate the appropriate time to update and submit a revised CMP.
- Begin preparation of an updated RFI Summary Report.
- Complete periodic Site inspections per the SWPPP and measure water levels in the Secondary Pond.
- Perform discharge events from secondary pond, if necessary, and complete any necessary monitoring required by the NPDES permit.

No Discharge

Parameter	Flow 50050	Total Suspended Solids 00530	pH 00400	pH 00400	Turbidity 00070
Stage	Final Effluent (1)	Final Effluent (1)	Final Effluent (1)	Final Effluent (1)	Final Effluent (1)
Limit	(Report) MGD	70 mg/L	6.5 SU	9.0 SU	160 NTU
Stat Base	Maximum Daily	Maximum Daily	Minimum Daily	Maximum Daily	Maximum Daily
2/1/2018					
2/2/2018					
2/3/2018					
2/4/2018					
2/5/2018					
2/6/2018					
2/7/2018					
2/8/2018					
2/9/2018					
2/10/2018					
2/11/2018					
2/12/2018					
2/13/2018					
2/14/2018					
2/15/2018					
2/16/2018					
2/17/2018					
2/18/2018					
2/19/2018					
2/20/2018					
2/21/2018	0.231	4 	7.6	7.6	*G
2/22/2018					
2/23/2018					
2/24/2018					
2/25/2018					
2/26/2018					
2/27/2018					
2/28/2018					

General Report Comments

No Discharge

Parameter	Quantity or Loading		Units	Quality or Concentration		Units	Sample Freq	
Flow 50050 Final Effluent (1)	Sample Measurement	0.231	0.231	MGD	****	****	****	Weekly when Discharging
	Permit Requirement	(Report) Maximum Monthly Average	(Report) Maximum Daily		****	****	****	Weekly when Discharging
Total Suspended Solids 00530 Final Effluent (1)	Sample Measurement	****	****	****	4	4	mg/L	Weekly when Discharging
	Permit Requirement	****	****	****	35 Maximum Monthly Average	70 Maximum Daily		Weekly when Discharging
pH 00400 Final Effluent (1)	Sample Measurement	****	****	****	7.6	7.6	SU	Weekly when Discharging
	Permit Requirement	****	****	****	6.5 Minimum Daily	9.0 Maximum Daily		Weekly when Discharging
Turbidity 00070 Final Effluent (1)	Sample Measurement	****	****	****	*G	*G	NTU	Weekly when Discharging
	Permit Requirement	****	****	****	80 Maximum Monthly Average	160 Maximum Daily		Weekly when Discharging

General Report Comments

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-91947-1

Client Project/Site: 58502, RACER Nodular Iron

For:

GHD Services Inc.

26850 Haggerty Rd.

Farmington Hills, Michigan 48331

Attn: James Abston



Authorized for release by:

3/11/2018 12:01:06 PM

Denise Heckler, Project Manager II

(330)966-9477

[denise.heckler@testamericainc.com](mailto:denise.heckler@testamericainc.com)

### LINKS

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[www.testamericainc.com](http://www.testamericainc.com)

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

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

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# Case Narrative

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

**Job ID: 240-91947-1**

**Laboratory: TestAmerica Canton**

## Narrative

### Job Narrative 240-91947-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 2/27/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9° C.

#### Receipt Exceptions:

For VOCs, the unpreserved volume was used for analysis.

Per GHD, the Filtered box on the COC indicates the filtration of cyanide per the field kit.

PCBs are not recorded on the COC; analyze per GHD as they are in the SSOW.

#### GC/MS VOA

Method(s) 624.1: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-316821.

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

#### GC/MS Semi VOA

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

#### GC Semi VOA

Method(s) 608: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: SW-58502-022618-SSH-1802 (240-91947-1), 3488777, 3154251, 3361890.

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

#### Metals

Method(s) 200.8: The laboratory control sample (LCS) for preparation batch 240-316475 and analytical batch 240-316837 recovered outside control limits for the following analyte: Silver. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or 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) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-316470.

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-316825.

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

# Definitions/Glossary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

### GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

## Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.

## General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

## 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)

# Sample Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-91947-1	SW-58502-022618-SSH-1802	Water	02/26/18 10:20	02/27/18 09:30
240-91947-2	TB-58502-022618-SSH-1803	Water	02/26/18 10:22	02/27/18 09:30
240-91947-4	FB-58502-022618-SSH-1805	Water	02/26/18 10:27	02/27/18 09:30

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# Detection Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Client Sample ID: SW-58502-022618-SSH-1802

## Lab Sample ID: 240-91947-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Mercury	1.1		0.50	ng/L	1		1631E	Total/NA
Copper	2.4		2.0	ug/L	1		200.8	Total Recoverable
Nickel	5.6		2.0	ug/L	1		200.8	Total Recoverable
Lead	2.9		1.0	ug/L	1		200.8	Total Recoverable
Antimony	4.0		2.0	ug/L	1		200.8	Total Recoverable
Zinc	860		20	ug/L	1		200.8	Total Recoverable

## Client Sample ID: TB-58502-022618-SSH-1803

## Lab Sample ID: 240-91947-2

No Detections.

## Client Sample ID: FB-58502-022618-SSH-1805

## Lab Sample ID: 240-91947-4

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

# Method Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
625.1	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL CAN
1631E	Mercury, Low Level (CVAFS)	EPA	TAL CAN
200.8	Metals (ICP/MS)	EPA	TAL CAN
420.1	Phenolics, Total Recoverable	MCAWW	TAL CAN
OIA - 1677	Available Cyanide by Flow Injection, Lig	EPA	TAL PIT

#### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

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

#### Laboratory References:

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

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

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Client Sample ID: SW-58502-022618-SSH-1802**

**Lab Sample ID: 240-91947-1**

**Date Collected: 02/26/18 10:20**

**Matrix: Water**

**Date Received: 02/27/18 09:30**

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Ethylbenzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Toluene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Vinyl chloride	2.0	U	2.0	ug/L			03/02/18 11:00	1
Dichlorobromomethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
Bromoform	1.0	U	1.0	ug/L			03/02/18 11:00	1
Bromomethane	2.0	U	2.0	ug/L			03/02/18 11:00	1
Carbon tetrachloride	1.0	U	1.0	ug/L			03/02/18 11:00	1
Chlorobenzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Chlorodibromomethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
Chloroethane	2.0	U	2.0	ug/L			03/02/18 11:00	1
2-Chloroethyl vinyl ether	2.0	U	2.0	ug/L			03/02/18 11:00	1
Chloroform	1.0	U	1.0	ug/L			03/02/18 11:00	1
Chloromethane	2.0	U	2.0	ug/L			03/02/18 11:00	1
1,2-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,3-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,4-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,1-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,1-Dichloroethene	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,2-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
trans-1,2-Dichloroethene	0.50	U	0.50	ug/L			03/02/18 11:00	1
1,2-Dichloropropane	1.0	U	1.0	ug/L			03/02/18 11:00	1
cis-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 11:00	1
trans-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Methylene Chloride	2.0	U	2.0	ug/L			03/02/18 11:00	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
Tetrachloroethene	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
1,1,2-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 11:00	1
Trichloroethene	1.0	U	1.0	ug/L			03/02/18 11:00	1
Acrolein	20	U	20	ug/L			03/02/18 11:00	1
Acrylonitrile	20	U	20	ug/L			03/02/18 11:00	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			03/02/18 11:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		69 - 120		03/02/18 11:00	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138		03/02/18 11:00	1
Toluene-d8 (Surr)	88		73 - 120		03/02/18 11:00	1

TestAmerica Canton

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Client Sample ID: TB-58502-022618-SSH-1803**

**Date Collected: 02/26/18 10:22**

**Date Received: 02/27/18 09:30**

**Lab Sample ID: 240-91947-2**

**Matrix: Water**

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Ethylbenzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Toluene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Vinyl chloride	2.0	U	2.0	ug/L			03/02/18 10:36	1
Dichlorobromomethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
Bromoform	1.0	U	1.0	ug/L			03/02/18 10:36	1
Bromomethane	2.0	U	2.0	ug/L			03/02/18 10:36	1
Carbon tetrachloride	1.0	U	1.0	ug/L			03/02/18 10:36	1
Chlorobenzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Chlorodibromomethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
Chloroethane	2.0	U	2.0	ug/L			03/02/18 10:36	1
2-Chloroethyl vinyl ether	2.0	U	2.0	ug/L			03/02/18 10:36	1
Chloroform	1.0	U	1.0	ug/L			03/02/18 10:36	1
Chloromethane	2.0	U	2.0	ug/L			03/02/18 10:36	1
1,2-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,3-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,4-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,1-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,1-Dichloroethene	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,2-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
trans-1,2-Dichloroethene	0.50	U	0.50	ug/L			03/02/18 10:36	1
1,2-Dichloropropane	1.0	U	1.0	ug/L			03/02/18 10:36	1
cis-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 10:36	1
trans-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Methylene Chloride	2.0	U	2.0	ug/L			03/02/18 10:36	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
Tetrachloroethene	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
1,1,2-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 10:36	1
Trichloroethene	1.0	U	1.0	ug/L			03/02/18 10:36	1
Acrolein	20	U	20	ug/L			03/02/18 10:36	1
Acrylonitrile	20	U	20	ug/L			03/02/18 10:36	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			03/02/18 10:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120		03/02/18 10:36	1
1,2-Dichloroethane-d4 (Surr)	92		61 - 138		03/02/18 10:36	1
Toluene-d8 (Surr)	90		73 - 120		03/02/18 10:36	1

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

**Client Sample ID: SW-58502-022618-SSH-1802**

**Lab Sample ID: 240-91947-1**

**Date Collected: 02/26/18 10:20**

**Matrix: Water**

**Date Received: 02/27/18 09:30**

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,4,6-Trichlorophenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,4-Dichlorophenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,4-Dimethylphenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,4-Dinitrotoluene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,6-Dinitrotoluene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2-Chloronaphthalene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2-Chlorophenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2-Nitrophenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
3,3'-Dichlorobenzidine	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
4,6-Dinitro-2-methylphenol	49	U	49	ug/L		02/28/18 08:08	03/02/18 15:18	1
4-Bromophenyl phenyl ether	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
4-Chlorophenyl phenyl ether	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
4-Nitrophenol	49	U	49	ug/L		02/28/18 08:08	03/02/18 15:18	1
Acenaphthene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Acenaphthylene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Anthracene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzidine	4.9	U	4.9	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzo[a]anthracene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzo[a]pyrene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzo[b]fluoranthene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzo[g,h,i]perylene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Benzo[k]fluoranthene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Bis(2-chloroethoxy)methane	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Bis(2-chloroethyl)ether	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Bis(2-ethylhexyl) phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,2'-oxybis[1-chloropropane]	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Butyl benzyl phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Chrysene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Dibenz(a,h)anthracene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Diethyl phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Dimethyl phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Di-n-butyl phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Di-n-octyl phthalate	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Fluoranthene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Fluorene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Hexachlorobenzene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Hexachlorobutadiene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Hexachlorocyclopentadiene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
2,4-Dinitrophenol	49	U	49	ug/L		02/28/18 08:08	03/02/18 15:18	1
Hexachloroethane	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Indeno[1,2,3-cd]pyrene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Isophorone	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Naphthalene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Nitrobenzene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
N-Nitrosodimethylamine	0.97	U	0.97	ug/L		02/28/18 08:08	03/02/18 15:18	1
N-Nitrosodi-n-propylamine	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
N-Nitrosodiphenylamine	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
4-Chloro-3-methylphenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1

TestAmerica Canton

# Client Sample Results

Client: GHD Services Inc.  
 Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: SW-58502-022618-SSH-1802

Lab Sample ID: 240-91947-1

Date Collected: 02/26/18 10:20

Matrix: Water

Date Received: 02/27/18 09:30

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Phenanthrene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Phenol	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
Pyrene	9.7	U	9.7	ug/L		02/28/18 08:08	03/02/18 15:18	1
1,2-Diphenylhydrazine	0.97	U	0.97	ug/L		02/28/18 08:08	03/02/18 15:18	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
2-Fluorophenol	32		10 - 120			02/28/18 08:08	03/02/18 15:18	1
2,4,6-Tribromophenol	79		28 - 120			02/28/18 08:08	03/02/18 15:18	1
Nitrobenzene-d5	66		32 - 120			02/28/18 08:08	03/02/18 15:18	1
Phenol-d5	17		10 - 120			02/28/18 08:08	03/02/18 15:18	1
Terphenyl-d14	65		23 - 127			02/28/18 08:08	03/02/18 15:18	1
2-Fluorobiphenyl (Surr)	59		38 - 120			02/28/18 08:08	03/02/18 15:18	1

# Client Sample Results

Client: GHD Services Inc.  
 Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Client Sample ID: SW-58502-022618-SSH-1802

Date Collected: 02/26/18 10:20

Date Received: 02/27/18 09:30

Lab Sample ID: 240-91947-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1221	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1232	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1242	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1248	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1254	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Aroclor-1260	0.095	U	0.095	ug/L		03/02/18 07:55	03/06/18 17:39	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	49		10 - 114			03/02/18 07:55	03/06/18 17:39	1
Tetrachloro-m-xylene	63		15 - 131			03/02/18 07:55	03/06/18 17:39	1

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 1631E - Mercury, Low Level (CVAFS)

Client Sample ID: SW-58502-022618-SSH-1802

Date Collected: 02/26/18 10:20

Date Received: 02/27/18 09:30

Lab Sample ID: 240-91947-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.1		0.50	ng/L		02/27/18 14:00	02/28/18 15:22	1

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

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 1631E - Mercury, Low Level (CVAFS)

Client Sample ID: FB-58502-022618-SSH-1805

Date Collected: 02/26/18 10:27

Date Received: 02/27/18 09:30

Lab Sample ID: 240-91947-4

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.50	U	0.50	ng/L		02/27/18 14:00	02/28/18 15:18	1

1

2

3

4

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# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Client Sample ID: SW-58502-022618-SSH-1802

Date Collected: 02/26/18 10:20

Date Received: 02/27/18 09:30

Lab Sample ID: 240-91947-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	1.0	U F1 *	1.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Arsenic	5.0	U	5.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Beryllium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Cadmium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Chromium	2.0	U	2.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
<b>Copper</b>	<b>2.4</b>		2.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
<b>Nickel</b>	<b>5.6</b>		2.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
<b>Lead</b>	<b>2.9</b>		1.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
<b>Antimony</b>	<b>4.0</b>		2.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Selenium	5.0	U	5.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
Thallium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:43	1
<b>Zinc</b>	<b>860</b>		20	ug/L		02/28/18 14:00	03/01/18 15:43	1

# Client Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## General Chemistry

Client Sample ID: SW-58502-022618-SSH-1802

Date Collected: 02/26/18 10:20

Date Received: 02/27/18 09:30

Lab Sample ID: 240-91947-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	0.040	U	0.040	mg/L		03/02/18 07:06	03/02/18 11:03	1
Cyanide, Available	0.0020	U	0.0020	mg/L			03/01/18 11:18	1

1

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# QC Association Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## GC/MS VOA

### Analysis Batch: 316821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	624.1	
240-91947-2	TB-58502-022618-SSH-1803	Total/NA	Water	624.1	
MB 240-316821/8	Method Blank	Total/NA	Water	624.1	
LCS 240-316821/5	Lab Control Sample	Total/NA	Water	624.1	

## GC/MS Semi VOA

### Prep Batch: 316470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	625	
MB 240-316470/4-A	Method Blank	Total/NA	Water	625	
LCS 240-316470/5-A	Lab Control Sample	Total/NA	Water	625	

### Analysis Batch: 316831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	625.1	316470
MB 240-316470/4-A	Method Blank	Total/NA	Water	625.1	316470
LCS 240-316470/5-A	Lab Control Sample	Total/NA	Water	625.1	316470

## GC Semi VOA

### Prep Batch: 316825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	608	
MB 240-316825/12-A	Method Blank	Total/NA	Water	608	
LCS 240-316825/13-A	Lab Control Sample	Total/NA	Water	608	

### Analysis Batch: 317307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	608	316825
MB 240-316825/12-A	Method Blank	Total/NA	Water	608	316825
LCS 240-316825/13-A	Lab Control Sample	Total/NA	Water	608	316825

## Metals

### Prep Batch: 316377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	1631E	
240-91947-4	FB-58502-022618-SSH-1805	Total/NA	Water	1631E	
MB 240-316377/1-A	Method Blank	Total/NA	Water	1631E	
LCS 240-316377/2-A	Lab Control Sample	Total/NA	Water	1631E	

### Prep Batch: 316475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	
MB 240-316475/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 240-316475/3-A	Lab Control Sample	Total Recoverable	Water	200.8	
240-91947-1 MS	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	
240-91947-1 MSD	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	

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# QC Association Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Metals (Continued)

### Analysis Batch: 316681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	1631E	316377
240-91947-4	FB-58502-022618-SSH-1805	Total/NA	Water	1631E	316377
MB 240-316377/1-A	Method Blank	Total/NA	Water	1631E	316377
LCS 240-316377/2-A	Lab Control Sample	Total/NA	Water	1631E	316377

### Analysis Batch: 316837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	316475
MB 240-316475/1-A	Method Blank	Total Recoverable	Water	200.8	316475
LCS 240-316475/3-A	Lab Control Sample	Total Recoverable	Water	200.8	316475
240-91947-1 MS	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	316475
240-91947-1 MSD	SW-58502-022618-SSH-1802	Total Recoverable	Water	200.8	316475

## General Chemistry

### Analysis Batch: 238268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	OIA - 1677	
MB 180-238268/44	Method Blank	Total/NA	Water	OIA - 1677	
LCS 180-238268/43	Lab Control Sample	Total/NA	Water	OIA - 1677	

### Prep Batch: 316833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	Distill/Phenol	
MB 240-316833/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 240-316833/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	
240-91947-1 MS	SW-58502-022618-SSH-1802	Total/NA	Water	Distill/Phenol	
240-91947-1 MSD	SW-58502-022618-SSH-1802	Total/NA	Water	Distill/Phenol	

### Analysis Batch: 316843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-91947-1	SW-58502-022618-SSH-1802	Total/NA	Water	420.1	316833
MB 240-316833/1-A	Method Blank	Total/NA	Water	420.1	316833
LCS 240-316833/2-A	Lab Control Sample	Total/NA	Water	420.1	316833
240-91947-1 MS	SW-58502-022618-SSH-1802	Total/NA	Water	420.1	316833
240-91947-1 MSD	SW-58502-022618-SSH-1802	Total/NA	Water	420.1	316833

# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 240-316821/8**  
**Matrix: Water**  
**Analysis Batch: 316821**

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

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Ethylbenzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Toluene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Vinyl chloride	2.0	U	2.0	ug/L			03/02/18 09:55	1
Dichlorobromomethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
Bromoform	1.0	U	1.0	ug/L			03/02/18 09:55	1
Bromomethane	2.0	U	2.0	ug/L			03/02/18 09:55	1
Carbon tetrachloride	1.0	U	1.0	ug/L			03/02/18 09:55	1
Chlorobenzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Chlorodibromomethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
Chloroethane	2.0	U	2.0	ug/L			03/02/18 09:55	1
2-Chloroethyl vinyl ether	2.0	U	2.0	ug/L			03/02/18 09:55	1
Chloroform	1.0	U	1.0	ug/L			03/02/18 09:55	1
Chloromethane	2.0	U	2.0	ug/L			03/02/18 09:55	1
1,2-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,3-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,4-Dichlorobenzene	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,1-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,1-Dichloroethene	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,2-Dichloroethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
trans-1,2-Dichloroethene	0.50	U	0.50	ug/L			03/02/18 09:55	1
1,2-Dichloropropane	1.0	U	1.0	ug/L			03/02/18 09:55	1
cis-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 09:55	1
trans-1,3-Dichloropropene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Methylene Chloride	2.0	U	2.0	ug/L			03/02/18 09:55	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
Tetrachloroethene	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
1,1,2-Trichloroethane	1.0	U	1.0	ug/L			03/02/18 09:55	1
Trichloroethene	1.0	U	1.0	ug/L			03/02/18 09:55	1
Acrolein	20	U	20	ug/L			03/02/18 09:55	1
Acrylonitrile	20	U	20	ug/L			03/02/18 09:55	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			03/02/18 09:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120		03/02/18 09:55	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138		03/02/18 09:55	1
Toluene-d8 (Surr)	89		73 - 120		03/02/18 09:55	1

**Lab Sample ID: LCS 240-316821/5**  
**Matrix: Water**  
**Analysis Batch: 316821**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	21.4		ug/L		107	65 - 135
Ethylbenzene	20.0	19.2		ug/L		96	60 - 140
Toluene	20.0	18.9		ug/L		95	70 - 130
Vinyl chloride	20.0	20.8		ug/L		104	5 - 195

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# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 240-316821/5**

**Matrix: Water**

**Analysis Batch: 316821**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	20.0	21.8		ug/L		109	65 - 135
Bromoform	20.0	19.0		ug/L		95	70 - 130
Bromomethane	20.0	21.2		ug/L		106	15 - 185
Carbon tetrachloride	20.0	21.2		ug/L		106	70 - 130
Chlorobenzene	20.0	19.1		ug/L		96	65 - 135
Chlorodibromomethane	20.0	20.3		ug/L		102	70 - 135
Chloroethane	20.0	20.3		ug/L		101	40 - 160
2-Chloroethyl vinyl ether	20.0	23.5		ug/L		118	0 - 225
Chloroform	20.0	21.0		ug/L		105	70 - 135
Chloromethane	20.0	20.5		ug/L		102	0 - 205
1,2-Dichlorobenzene	20.0	17.9		ug/L		89	65 - 135
1,3-Dichlorobenzene	20.0	17.8		ug/L		89	70 - 130
1,4-Dichlorobenzene	20.0	17.8		ug/L		89	65 - 135
1,1-Dichloroethane	20.0	20.6		ug/L		103	70 - 130
1,1-Dichloroethene	20.0	21.0		ug/L		105	50 - 150
1,2-Dichloroethane	20.0	21.2		ug/L		106	70 - 130
trans-1,2-Dichloroethene	20.0	21.1		ug/L		106	70 - 130
1,2-Dichloropropane	20.0	21.9		ug/L		110	35 - 165
cis-1,3-Dichloropropene	20.0	22.7		ug/L		113	25 - 127
trans-1,3-Dichloropropene	20.0	19.0		ug/L		95	50 - 150
Methylene Chloride	20.0	18.8		ug/L		94	60 - 140
1,1,2,2-Tetrachloroethane	20.0	18.2		ug/L		91	60 - 140
Tetrachloroethene	20.0	19.6		ug/L		98	70 - 130
1,1,1-Trichloroethane	20.0	21.3		ug/L		106	70 - 130
1,1,2-Trichloroethane	20.0	19.8		ug/L		99	70 - 130
Trichloroethene	20.0	22.1		ug/L		111	65 - 135
Acrolein	100	82.2		ug/L		82	60 - 140
Acrylonitrile	200	213		ug/L		106	60 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	89		69 - 120
1,2-Dichloroethane-d4 (Surr)	95		61 - 138
Toluene-d8 (Surr)	88		73 - 120

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 240-316470/4-A**

**Matrix: Water**

**Analysis Batch: 316831**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 316470**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,4,6-Trichlorophenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,4-Dichlorophenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,4-Dimethylphenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,4-Dinitrotoluene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,6-Dinitrotoluene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2-Chloronaphthalene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1

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# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 240-316470/4-A**  
**Matrix: Water**  
**Analysis Batch: 316831**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316470**

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
2-Chlorophenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2-Nitrophenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
3,3'-Dichlorobenzidine	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
4,6-Dinitro-2-methylphenol	50	U	50	ug/L		02/28/18 08:08	03/02/18 11:26	1
4-Bromophenyl phenyl ether	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
4-Chlorophenyl phenyl ether	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
4-Nitrophenol	50	U	50	ug/L		02/28/18 08:08	03/02/18 11:26	1
Acenaphthene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Acenaphthylene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Anthracene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzidine	5.0	U	5.0	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzo[a]anthracene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzo[a]pyrene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzo[b]fluoranthene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzo[g,h,i]perylene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Benzo[k]fluoranthene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Bis(2-chloroethoxy)methane	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Bis(2-chloroethyl)ether	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Bis(2-ethylhexyl) phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,2'-oxybis[1-chloropropane]	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Butyl benzyl phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Chrysene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Dibenz(a,h)anthracene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Diethyl phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Dimethyl phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Di-n-butyl phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Di-n-octyl phthalate	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Fluoranthene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Fluorene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Hexachlorobenzene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Hexachlorobutadiene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Hexachlorocyclopentadiene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
2,4-Dinitrophenol	50	U	50	ug/L		02/28/18 08:08	03/02/18 11:26	1
Hexachloroethane	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Indeno[1,2,3-cd]pyrene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Isophorone	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Naphthalene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Nitrobenzene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
N-Nitrosodimethylamine	1.0	U	1.0	ug/L		02/28/18 08:08	03/02/18 11:26	1
N-Nitrosodi-n-propylamine	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
N-Nitrosodiphenylamine	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
4-Chloro-3-methylphenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Pentachlorophenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Phenanthrene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Phenol	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
Pyrene	10	U	10	ug/L		02/28/18 08:08	03/02/18 11:26	1
1,2-Diphenylhydrazine	1.0	U	1.0	ug/L		02/28/18 08:08	03/02/18 11:26	1

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# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 240-316470/4-A**  
**Matrix: Water**  
**Analysis Batch: 316831**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316470**

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorophenol	43		10 - 120	02/28/18 08:08	03/02/18 11:26	1
2,4,6-Tribromophenol	56		28 - 120	02/28/18 08:08	03/02/18 11:26	1
Nitrobenzene-d5	71		32 - 120	02/28/18 08:08	03/02/18 11:26	1
Phenol-d5	25		10 - 120	02/28/18 08:08	03/02/18 11:26	1
Terphenyl-d14	82		23 - 127	02/28/18 08:08	03/02/18 11:26	1
2-Fluorobiphenyl (Surr)	70		38 - 120	02/28/18 08:08	03/02/18 11:26	1

**Lab Sample ID: LCS 240-316470/5-A**  
**Matrix: Water**  
**Analysis Batch: 316831**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316470**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,4-Trichlorobenzene	20.0	14.3		ug/L		72	44 - 142
2,4,6-Trichlorophenol	20.0	16.3		ug/L		81	37 - 144
2,4-Dichlorophenol	20.0	15.5		ug/L		78	39 - 135
2,4-Dimethylphenol	20.0	15.3		ug/L		76	32 - 120
2,4-Dinitrotoluene	20.0	18.9		ug/L		95	39 - 139
2,6-Dinitrotoluene	20.0	19.4		ug/L		97	50 - 158
2-Chloronaphthalene	20.0	16.2		ug/L		81	60 - 120
2-Chlorophenol	20.0	15.3		ug/L		76	23 - 134
2-Nitrophenol	20.0	17.0		ug/L		85	29 - 182
3,3'-Dichlorobenzidine	40.0	37.2		ug/L		93	0 - 262
4,6-Dinitro-2-methylphenol	40.0	30.7	J	ug/L		77	0 - 181
4-Bromophenyl phenyl ether	20.0	16.5		ug/L		83	53 - 127
4-Chlorophenyl phenyl ether	20.0	16.7		ug/L		84	25 - 158
4-Nitrophenol	40.0	12.2	J	ug/L		31	0 - 132
Acenaphthene	20.0	16.6		ug/L		83	47 - 145
Acenaphthylene	20.0	17.1		ug/L		86	33 - 145
Anthracene	20.0	17.9		ug/L		90	27 - 133
Benzidine	40.0	29.6		ug/L		74	5 - 120
Benzo[a]anthracene	20.0	17.1		ug/L		86	33 - 143
Benzo[a]pyrene	20.0	17.2		ug/L		86	17 - 163
Benzo[b]fluoranthene	20.0	21.1		ug/L		105	24 - 159
Benzo[g,h,i]perylene	20.0	20.0		ug/L		100	0 - 219
Benzo[k]fluoranthene	20.0	21.2		ug/L		106	11 - 162
Bis(2-chloroethoxy)methane	20.0	16.4		ug/L		82	33 - 184
Bis(2-chloroethyl)ether	20.0	15.4		ug/L		77	12 - 158
Bis(2-ethylhexyl) phthalate	20.0	16.6		ug/L		83	8 - 158
2,2'-oxybis[1-chloropropane]	20.0	16.2		ug/L		81	36 - 166
Butyl benzyl phthalate	20.0	11.8		ug/L		59	0 - 152
Chrysene	20.0	16.3		ug/L		81	17 - 168
Dibenz(a,h)anthracene	20.0	20.0		ug/L		100	0 - 227
Diethyl phthalate	20.0	15.4		ug/L		77	0 - 120
Dimethyl phthalate	20.0	10.1		ug/L		50	0 - 120
Di-n-butyl phthalate	20.0	17.9		ug/L		89	1 - 120
Di-n-octyl phthalate	20.0	18.5		ug/L		92	4 - 146
Fluoranthene	20.0	16.3		ug/L		82	26 - 137
Fluorene	20.0	18.0		ug/L		90	59 - 121

TestAmerica Canton

# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 240-316470/5-A**  
**Matrix: Water**  
**Analysis Batch: 316831**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316470**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobenzene	20.0	16.2		ug/L		81	0 - 152
Hexachlorobutadiene	20.0	13.8		ug/L		69	24 - 120
Hexachlorocyclopentadiene	20.0	13.8		ug/L		69	19 - 120
2,4-Dinitrophenol	40.0	21.6	J	ug/L		54	0 - 191
Hexachloroethane	20.0	14.0		ug/L		70	40 - 120
Indeno[1,2,3-cd]pyrene	20.0	22.2		ug/L		111	0 - 171
Isophorone	20.0	16.4		ug/L		82	21 - 196
Naphthalene	20.0	15.1		ug/L		75	21 - 133
Nitrobenzene	20.0	16.0		ug/L		80	35 - 180
N-Nitrosodimethylamine	20.0	9.94		ug/L		50	10 - 120
N-Nitrosodi-n-propylamine	20.0	17.5		ug/L		87	0 - 230
N-Nitrosodiphenylamine	20.0	17.1		ug/L		85	55 - 120
4-Chloro-3-methylphenol	20.0	16.6		ug/L		83	22 - 147
Pentachlorophenol	40.0	27.7		ug/L		69	14 - 176
Phenanthrene	20.0	16.6		ug/L		83	54 - 120
Phenol	20.0	7.42	J	ug/L		37	5 - 120
Pyrene	20.0	17.2		ug/L		86	52 - 120
1,2-Diphenylhydrazine	20.0	17.4		ug/L		87	43 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol	47		10 - 120
2,4,6-Tribromophenol	88		28 - 120
Nitrobenzene-d5	82		32 - 120
Phenol-d5	30		10 - 120
Terphenyl-d14	93		23 - 127
2-Fluorobiphenyl (Surr)	81		38 - 120

## Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

**Lab Sample ID: MB 240-316825/12-A**  
**Matrix: Water**  
**Analysis Batch: 317307**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316825**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1221	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1232	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1242	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1248	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1254	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1
Aroclor-1260	0.10	U	0.10	ug/L		03/02/18 07:58	03/06/18 18:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	75		10 - 114	03/02/18 07:58	03/06/18 18:34	1
Tetrachloro-m-xylene	68		15 - 131	03/02/18 07:58	03/06/18 18:34	1

TestAmerica Canton

# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

**Lab Sample ID: LCS 240-316825/13-A**  
**Matrix: Water**  
**Analysis Batch: 317307**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316825**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor-1016	2.50	1.78		ug/L		71	50 - 114
Aroclor-1260	2.50	1.81		ug/L		72	8 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	74		10 - 114
Tetrachloro-m-xylene	65		15 - 131

## Method: 1631E - Mercury, Low Level (CVAFS)

**Lab Sample ID: MB 240-316377/1-A**  
**Matrix: Water**  
**Analysis Batch: 316681**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316377**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.50	U	0.50	ng/L		02/27/18 14:00	02/28/18 14:27	1

**Lab Sample ID: LCS 240-316377/2-A**  
**Matrix: Water**  
**Analysis Batch: 316681**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316377**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	5.00	4.86		ng/L		97	77 - 123

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 240-316475/1-A**  
**Matrix: Water**  
**Analysis Batch: 316837**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 316475**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Arsenic	5.0	U	5.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Beryllium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Cadmium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Chromium	2.0	U	2.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Copper	2.0	U	2.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Nickel	2.0	U	2.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Lead	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Antimony	2.0	U	2.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Selenium	5.0	U	5.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Thallium	1.0	U	1.0	ug/L		02/28/18 14:00	03/01/18 15:34	1
Zinc	20	U	20	ug/L		02/28/18 14:00	03/01/18 15:34	1

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# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 240-316475/3-A**  
**Matrix: Water**  
**Analysis Batch: 316837**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 316475**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	100	150	*	ug/L		150	85 - 115
Arsenic	1000	954		ug/L		95	85 - 115
Beryllium	1000	958		ug/L		96	85 - 115
Cadmium	1000	1010		ug/L		101	85 - 115
Chromium	1000	971		ug/L		97	85 - 115
Copper	1000	1010		ug/L		101	85 - 115
Nickel	1000	952		ug/L		95	85 - 115
Lead	1000	1010		ug/L		101	85 - 115
Antimony	100	96.9		ug/L		97	85 - 115
Selenium	1000	971		ug/L		97	85 - 115
Thallium	250	247		ug/L		99	85 - 115
Zinc	1000	998		ug/L		100	85 - 115

**Lab Sample ID: 240-91947-1 MS**  
**Matrix: Water**  
**Analysis Batch: 316837**

**Client Sample ID: SW-58502-022618-SSH-1802**  
**Prep Type: Total Recoverable**  
**Prep Batch: 316475**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	1.0	U F1 *	100	151	F1	ug/L		151	70 - 130
Arsenic	5.0	U	1000	973		ug/L		97	70 - 130
Beryllium	1.0	U	1000	1010		ug/L		101	70 - 130
Cadmium	1.0	U	1000	975		ug/L		97	70 - 130
Chromium	2.0	U	1000	971		ug/L		97	70 - 130
Copper	2.4		1000	951		ug/L		95	70 - 130
Nickel	5.6		1000	985		ug/L		98	70 - 130
Lead	2.9		1000	976		ug/L		97	70 - 130
Antimony	4.0		100	104		ug/L		100	70 - 130
Selenium	5.0	U	1000	950		ug/L		95	70 - 130
Thallium	1.0	U	250	235		ug/L		94	70 - 130
Zinc	860		1000	1790		ug/L		92	70 - 130

**Lab Sample ID: 240-91947-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 316837**

**Client Sample ID: SW-58502-022618-SSH-1802**  
**Prep Type: Total Recoverable**  
**Prep Batch: 316475**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	1.0	U F1 *	100	151	F1	ug/L		151	70 - 130	0	20
Arsenic	5.0	U	1000	978		ug/L		98	70 - 130	1	20
Beryllium	1.0	U	1000	991		ug/L		99	70 - 130	2	20
Cadmium	1.0	U	1000	992		ug/L		99	70 - 130	2	20
Chromium	2.0	U	1000	985		ug/L		99	70 - 130	1	20
Copper	2.4		1000	960		ug/L		96	70 - 130	1	20
Nickel	5.6		1000	982		ug/L		98	70 - 130	0	20
Lead	2.9		1000	970		ug/L		97	70 - 130	1	20
Antimony	4.0		100	106		ug/L		102	70 - 130	1	20
Selenium	5.0	U	1000	943		ug/L		94	70 - 130	1	20
Thallium	1.0	U	250	238		ug/L		95	70 - 130	1	20
Zinc	860		1000	1800		ug/L		94	70 - 130	1	20

TestAmerica Canton

# QC Sample Results

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 420.1 - Phenolics, Total Recoverable

**Lab Sample ID: MB 240-316833/1-A**  
**Matrix: Water**  
**Analysis Batch: 316843**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316833**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	0.040	U	0.040	mg/L		03/02/18 07:06	03/02/18 10:58	1

**Lab Sample ID: LCS 240-316833/2-A**  
**Matrix: Water**  
**Analysis Batch: 316843**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316833**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenols, Total	0.887	0.656		mg/L		74	57 - 120

**Lab Sample ID: 240-91947-1 MS**  
**Matrix: Water**  
**Analysis Batch: 316843**

**Client Sample ID: SW-58502-022618-SSH-1802**  
**Prep Type: Total/NA**  
**Prep Batch: 316833**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenols, Total	0.040	U	0.100	0.0968		mg/L		97	53 - 149

**Lab Sample ID: 240-91947-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 316843**

**Client Sample ID: SW-58502-022618-SSH-1802**  
**Prep Type: Total/NA**  
**Prep Batch: 316833**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenols, Total	0.040	U	0.100	0.0983		mg/L		98	53 - 149	2	24

## Method: OIA - 1677 - Available Cyanide by Flow Injection, Lig

**Lab Sample ID: MB 180-238268/44**  
**Matrix: Water**  
**Analysis Batch: 238268**

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

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Available	0.0020	U	0.0020	mg/L			03/01/18 10:50	1

**Lab Sample ID: LCS 180-238268/43**  
**Matrix: Water**  
**Analysis Batch: 238268**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Available	0.0500	0.0542		mg/L		108	82 - 132

# Surrogate Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (69-120)	DCA (61-138)	TOL (73-120)
240-91947-1	SW-58502-022618-SSH-1802	88	94	88
240-91947-2	TB-58502-022618-SSH-1803	89	92	90
LCS 240-316821/5	Lab Control Sample	89	95	88
MB 240-316821/8	Method Blank	89	94	89

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

## Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	2FP (10-120)	TBP (28-120)	NBZ (32-120)	PHL (10-120)	TPHL (23-127)	FBP (38-120)
240-91947-1	SW-58502-022618-SSH-1802	32	79	66	17	65	59
LCS 240-316470/5-A	Lab Control Sample	47	88	82	30	93	81
MB 240-316470/4-A	Method Blank	43	56	71	25	82	70

#### Surrogate Legend

2FP = 2-Fluorophenol

TBP = 2,4,6-Tribromophenol

NBZ = Nitrobenzene-d5

PHL = Phenol-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl (Surr)

## Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP2 (10-114)	TCX2 (15-131)
240-91947-1	SW-58502-022618-SSH-1802	49	63
LCS 240-316825/13-A	Lab Control Sample	74	65
MB 240-316825/12-A	Method Blank	75	68

#### Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

# Lab Chronicle

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

**Client Sample ID: SW-58502-022618-SSH-1802**

**Lab Sample ID: 240-91947-1**

**Date Collected: 02/26/18 10:20**

**Matrix: Water**

**Date Received: 02/27/18 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	316821	03/02/18 11:00	HMB	TAL CAN
Total/NA	Prep	625			316470	02/28/18 08:08	BMB	TAL CAN
Total/NA	Analysis	625.1		1	316831	03/02/18 15:18	JMG	TAL CAN
Total/NA	Prep	608			316825	03/02/18 07:55	WKD	TAL CAN
Total/NA	Analysis	608		1	317307	03/06/18 17:39	KMG	TAL CAN
Total/NA	Prep	1631E			316377	02/27/18 14:00	DTN	TAL CAN
Total/NA	Analysis	1631E		1	316681	02/28/18 15:22	DTN	TAL CAN
Total Recoverable	Prep	200.8			316475	02/28/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	200.8		1	316837	03/01/18 15:43	DSH	TAL CAN
Total/NA	Prep	Distill/Phenol			316833	03/02/18 07:06	JAS	TAL CAN
Total/NA	Analysis	420.1		1	316843	03/02/18 11:03	JAS	TAL CAN
Total/NA	Analysis	OIA - 1677		1	238268	03/01/18 11:18	SES	TAL PIT

**Client Sample ID: TB-58502-022618-SSH-1803**

**Lab Sample ID: 240-91947-2**

**Date Collected: 02/26/18 10:22**

**Matrix: Water**

**Date Received: 02/27/18 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	316821	03/02/18 10:36	HMB	TAL CAN

**Client Sample ID: FB-58502-022618-SSH-1805**

**Lab Sample ID: 240-91947-4**

**Date Collected: 02/26/18 10:27**

**Matrix: Water**

**Date Received: 02/27/18 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631E			316377	02/27/18 14:00	DTN	TAL CAN
Total/NA	Analysis	1631E		1	316681	02/28/18 15:18	DTN	TAL CAN

**Laboratory References:**

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

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

# Accreditation/Certification Summary

Client: GHD Services Inc.  
Project/Site: 58502, RACER Nodular Iron

TestAmerica Job ID: 240-91947-1

## 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	12-31-19
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	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
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	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

## Laboratory: TestAmerica Pittsburgh

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
A2LA	A2LA		PA00164	07-31-18
Arkansas DEQ	State Program	6	88-0690	06-27-18
California	State Program	9	2891	03-31-18
Connecticut	State Program	1	PH-0688	09-30-18
Florida	NELAP	4	E871008	06-30-18
Illinois	NELAP	5	200005	06-30-18
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-18
Nevada	State Program	9	PA00164	07-31-18
New Hampshire	NELAP	1	2030	04-04-18
New Jersey	NELAP	2	PA005	06-30-18
New York	NELAP	2	11182	03-31-18 *
North Carolina (WW/SW)	State Program	4	434	12-31-18
Oregon	NELAP Secondary AB	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-18
South Carolina	State Program	4	89014	04-30-18
Texas	NELAP	6	T104704528-15-2	03-31-18 *
US Fish & Wildlife	Federal		LE94312A-1	07-31-18
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-18
Virginia	NELAP	3	460189	09-14-18
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-18

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



**TestAmerica Canton Sample Receipt Form/Narrative**

Login # : 91947

**Canton Facility**

Client GHD Site Name -

Cooler unpacked by:

Cooler Received on 2-27-18 Opened on 2-27-18

POP

FedEx: 1<sup>st</sup> 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 -0.3 °C) Observed Cooler Temp. 512 °C Corrected Cooler Temp. 4.9 °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

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

- If yes, Questions 12-16 have been checked at the originating laboratory.  
 12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC732776  
 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 # COVERED Yes No  
 16. 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): \_\_\_\_\_

Temperature readings: \_\_\_\_\_

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
SW-58502-022618-SSH-1802	240-91947-I-1	Amber Glass 250ml - Sulfuric Acid	<2	_____	_____
SW-58502-022618-SSH-1802	240-91947-J-1	Amber Plastic 250mL - NaOH	>12	_____	_____
SW-58502-022618-SSH-1802	240-91947-K-1	Plastic 500ml - with Nitric Acid	<2	_____	_____

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



# Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-91947-1

**Login Number: 91947**  
**List Number: 2**  
**Creator: Watson, Debbie**

**List Source: TestAmerica Pittsburgh**  
**List Creation: 02/28/18 12:05 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	

