

Lauridsen, Keld B - DNR

From: Miller, Roger <rmiller@geiconsultants.com>
Sent: Friday, October 5, 2018 5:01 PM
To: Lauridsen, Keld B - DNR
Cc: Michael.Moore@gapac.com; Killian, Paul
Subject: RE: BRRTS #02-05-563707 - Buth Oil Facility (Former) Additional Groundwater Testing Results

Thanks, Keld.

We will coordinate with G-P to collect an additional round from the monitoring wells in late spring/early summer 2019.

Have a good weekend.

Roger A. Miller, P.G., C.P.G.

Senior Hydrogeologist



GEI Consultants
Consulting Engineers & Scientists

GEI Consultants, Inc.

3159 Voyager Drive | Green Bay, WI 54311

T: 920.455.8657 | M: 920.737.6373

www.geiconsultants.com | [vCard](#) | [map](#) | [LinkedIn](#) | [Twitter](#) | [Facebook](#)

From: Lauridsen, Keld B - DNR <Keld.Lauridsen@wisconsin.gov>
Sent: Friday, October 5, 2018 12:11 PM
To: Miller, Roger <rmiller@geiconsultants.com>
Cc: Michael.Moore@gapac.com; Killian, Paul <pkillian@geiconsultants.com>
Subject: RE: BRRTS #02-05-563707 - Buth Oil Facility (Former) Additional Groundwater Testing Results

Thanks for the update Roger.

I have reviewed the available data, and in my opinion, the case is not yet ready for closure. A minimum of one additional sampling round would be required to confirm current contaminant concentrations in groundwater from the existing monitoring wells. I recommend to collect the next round in late spring/early summer of 2019.

Let me know if you would like to discuss anything further.

Have a nice weekend.

-Keld

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Keld B. Lauridsen

Phone: (920) 662-5420

Keld.Lauridsen@wisconsin.gov

From: Miller, Roger <rmiller@geiconsultants.com>
Sent: Wednesday, September 26, 2018 5:21 PM
To: Lauridsen, Keld B - DNR <Keld.Lauridsen@wisconsin.gov>
Cc: Michael.Moore@gapac.com; Killian, Paul <pkillian@geiconsultants.com>
Subject: BRRTS #02-05-563707 - Buth Oil Facility (Former) Additional Groundwater Testing Results

Keld,

As a follow-up to our discussion yesterday, attached is the groundwater analytical data for sampling two new NR 141 monitoring wells (BW-3 and BW-6) installed in the former Buth Oil Facility area of Lot 3 for the Georgia-Pacific Consumer Products (G-P) Broadway Mill parking lot in Green Bay. These wells were installed and sampled in response to the closure review letter dated 8/6/18 (see the last PDF). BW-3 ("Buth Well"-3) was installed near former GP-3 in an upgradient area and BW-6 was installed near former GP-6/TW-6 at the former AST location having known residual impacts.

No VOCs were detected in the sample from BW-3. Overall, the sample from BW-6 contained lower concentrations of petroleum-related VOCs compared to the last sample collected at this location from TW-6 (6/3/15). Notably, benzene decreased from 1,330 ug/L (6/3/15) to 396 ug/L (9/19/18). Two common, historically-used lead scavenger/antiknock agents were also detected in the sample from BW-6: 1,2-dichloroethane (DCA) (15.5 ug/L) above the Enforcement Standard (ES) of 5 ug/L and 1,2-dichloropropane (4.1 ug/L) above the Preventive Action Limit (PAL) of 0.5 ug/L. As summarized in attached Table A.1(i) (first PDF), these compounds were not detected in upgradient (BW-3) or previous downgradient (TW-8) or side-gradient (TW-7) monitoring wells relative to the former AST source.

Please confirm receipt and let us know if you have any questions or if this case will be transferred soon to a new PM given Colin Schmenk's recent departure. We would like to confirm it would be appropriate to resubmit the case for closure with the new data consistent with the 8/6/18 WDNR letter.

Thank you,

Roger A. Miller, P.G., C.P.G.

Senior Hydrogeologist



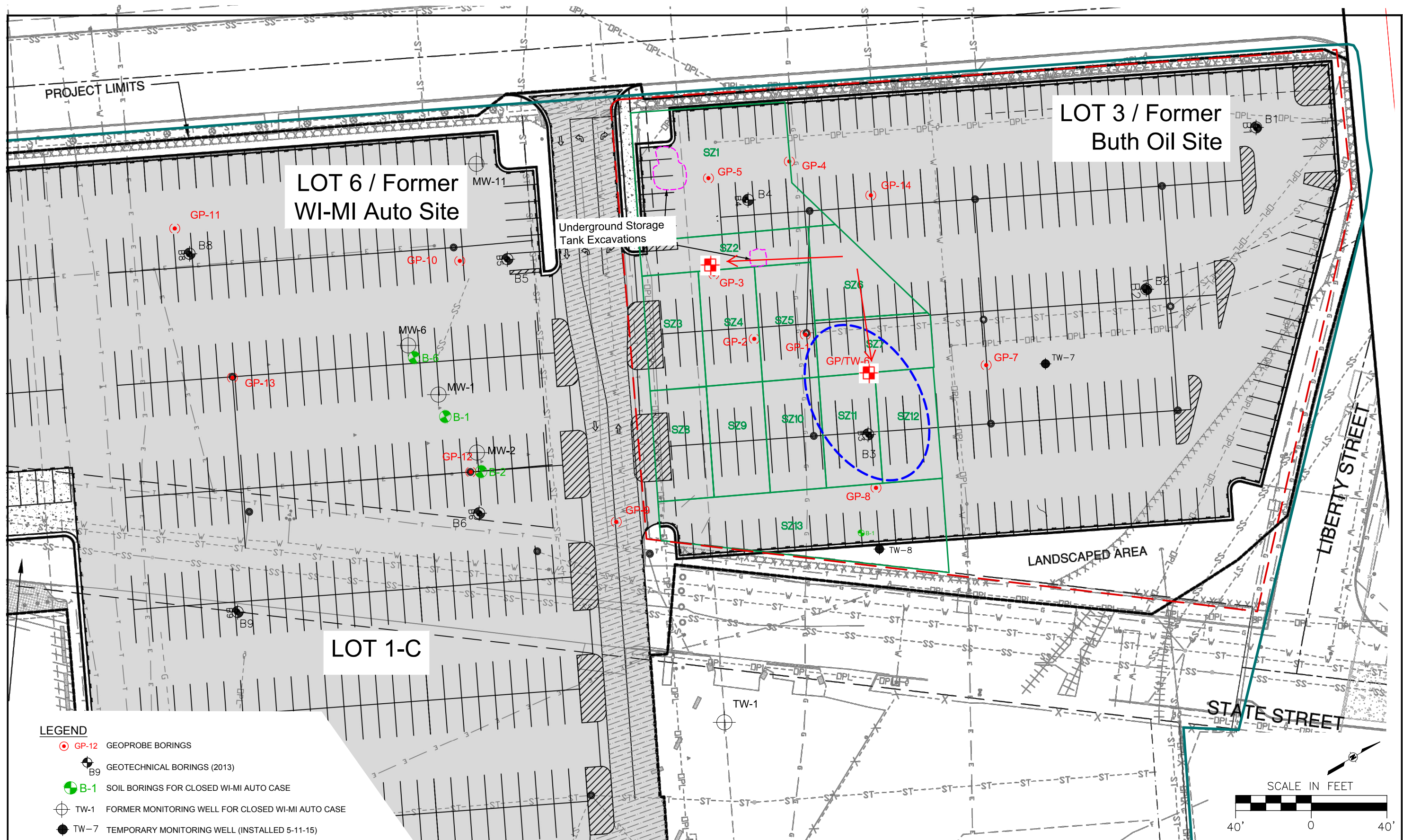
GEI Consultants
Consulting Engineers & Scientists

GEI Consultants, Inc.

3159 Voyager Drive | Green Bay, WI 54311

T: 920.455.8657 | M: 920.737.6373

www.geiconsultants.com | [vCard](#) | [map](#) | [LinkedIn](#) | [Twitter](#) | [Facebook](#)



LEGEND

- ⊙ GP-12 GEOPROBE BORINGS
- B9 GEOTECHNICAL BORINGS (2013)
- ⊙ B-1 SOIL BORINGS FOR CLOSED WI-MI AUTO CASE
- TW-1 FORMER MONITORING WELL FOR CLOSED WI-MI AUTO CASE
- TW-7 TEMPORARY MONITORING WELL (INSTALLED 5-11-15)
- SZ8 SOIL MANAGEMENT ZONE
- APPROXIMATE PROPERTY BOUNDARY
- FORMER BUTH OIL SITE BOUNDARY
- ESTIMATED EXTENT OF NR 140 PALVES EXCEEDANCE

NO.	DATE	ISSUE/REVISION	APP

Designed:	RAM
Checked:	RAM
Drawn:	WSR
Submittal Date:	December 2017



GP-BROADWAY MILL PARKING LOT
 GEI Project 1506470

FORMER BUTH OIL CLOSURE REQUEST	FIG. NO. B.3.b.
GROUNDWATER CONTAMINATION	

Table A.1(i)

Groundwater Analytical Results

Project 1506470

Georgia-Pacific Broadway Mill Parking Lot

Green Bay, Wisconsin

Former Buth Oil Site

	CAS #	Wisconsin Regulatory Standards ^{1,2}		Sample Location	BW-3	TW-7	TW-7	TW-6	TW-6	BW-6	TW-8	TW-8
		NR 140 PAL ¹	NR 140 ES ²	Sample Date	9/19/18	5/11/15	6/3/15	5/11/15	6/3/15	9/19/18	5/11/15	6/3/15
VOCs (detected analytes)³ (µg/L)												
Benzene	71-43-2	0.5	5		< 0.25	< 0.50	< 0.50	224	1330	396	< 0.50	< 0.50
n-Butylbenzene	104-51-8	NE	NE		< 0.71	< 0.50	< 0.50	< 1.2	21.4	< 0.71	< 0.50	< 0.50
sec-Butylbenzene	135-98-8	NE	NE		< 0.85	< 2.2	< 2.2	< 5.5	< 43.7	2.2 J	< 2.2	< 2.2
tert-Butylbenzene	98-06-6	NE	NE		< 0.3	< 0.18	0.38 J	0.9 J	5.5 J	2.4	3.3	1.0
1,2-Dichloroethane	107-06-2	0.5	5		< 0.28	< 0.17	< 0.17	< 0.42	< 3.4	15.5	< 0.24	< 0.17
1,2-Dichloropropane	78-87-5	0.5	5		< 0.28	< 0.23	< 0.23	< 0.58	< 4.7	4.1	< 0.23	< 0.23
Ethylbenzene	100-41-4	140	700		< 0.22	< 0.50	< 0.50	29.2	212	102	< 0.50	< 0.50
Isopropylbenzene (Cumene)	98-82-8	NE	NE		< 0.39	< 0.14	< 0.14	2.2	13.6 J	6.7	< 0.14	< 0.14
p-Isopropyltoluene	99-87-6	NE	NE		< 0.80	< 0.50	< 0.50	1.9 J	10.3 J	3.0	< 0.50	< 0.50
Naphthalene	91-20-3	10	100		< 1.2	< 2.5	< 2.5	13.7	172	50.1	< 2.5	< 2.5
n-Propylbenzene	103-65-1	NE	NE		< 0.81	< 0.50	< 0.50	3.2	23.3	9.6	< 0.50	< 0.50
Toluene	108-88-3	160	800		< 0.17	< 0.50	< 0.50	15.2	169	51.7	< 0.50	< 0.50
1,2,4-Trimethylbenzene	95-63-6	96	480		< 1.71	< 1.00	< 1.00	39.5	284	102	< 1.00	< 1.00
1,3,5-Trimethylbenzene	108-67-8											
m&p-Xylene	1330-20-7	400	2,000		< 0.7	< 1.50	< 1.5	78.5	756	205	< 1.5	< 1.5
o-Xylene												

Notes

(mg/kg) = milligrams per kilogram;

-- = not analyzed;

(µg/kg) = micrograms per kilogram;

< = not detected above method detection limit;

DC = Direct Contact;

GW = Groundwater

J = concentration between detection limit and reporting limit;

NE = Not Established;

PAHs = Polycyclic Aromatic Hydrocarbons;

VOCs = Volatile Organic Compounds;

WT = Sample below observable water table

¹ NR 140 PAL = Chapter NR 140, Wisconsin Administrative Code, Preventive Action Limit;

² NR 140 ES = Chapter NR 140, Wisconsin Administrative Code, Enforcement Standard;

³ Only detected analytes are listed; refer to the laboratory analytical report for a full list of assessed analytes

Exceeds NR 140 ES standards **100**

Exceeds NR 140 PAL standards **100**



August 6, 2018

Mr. Michael Moore
Georgia-Pacific Consumer Products
1919 S Broadway
PO Box 19130
Green Bay, WI 54307

Subject: Case Closure Denial for Additional Groundwater Investigation
Buth Oil Facility (Former), 1919 S Broadway, Green Bay, Wisconsin
DNR BRRTS Activity # 02-05-563707

Dear Mr. Moore:

On July 30, 2018, the Northeast Region Closure Committee reviewed your request for closure of the case described above. The Department of Natural Resources reviews environmental remediation cases for compliance with state and federal laws to maintain consistency in the closure of these cases. As discussed with your consultant on August 6, 2018, the closure committee has denied closure because additional requirements must be met. The purpose of this letter is to inform you of the remaining requirements for obtaining closure. We request that within 60 days of this letter, you provide us with your written response regarding the necessary work and a schedule for completion of this work.

As noted above, additional site work is necessary in order to meet the requirements for site closure because the upgradient and side gradients of groundwater contamination have not been adequately defined.

Need to Define the Degree and Extent of Contamination

Additional groundwater sampling is needed in order to define the degree and extent of contamination. A replacement permanent monitoring well should be installed at the location of GP/TW-6 and an additional well should be installed in the vicinity of GP-3/GP-5. Additional groundwater investigation may be needed based on the results.

A complete closure request should be re-submitted once all the above requirements have been satisfied, together with any required documentation, to let the Department know that applicable requirements have been met. Case closure can be considered once all the above requirements have been satisfied.

Within 60 days of the date of this letter, please respond in writing with a schedule of your plans to meet these requirements. Until requirements have been met, your site will remain "open" and you will also need to continue to submit the semi-annual progress reports, as required by s. NR 700.11, Wis. Adm. Code. You will also be responsible for any operation and maintenance activities required under s. NR 724.13, Wis. Adm. Code.

August 6, 2018
Mr. Michael Moore, Georgia-Pacific Consumer Products
Case Closure Denial for Additional Groundwater Investigation
Buth Oil Facility (Former), BRRTS #: 02-05-563707

We appreciate your efforts to restore the environment at this site. If you have any questions regarding this letter, please contact the project manager Colin Schmenk by phone at (920) 662-5120 or by email at Colin.Schmenk@Wisconsin.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Roxanne N. Chronert".

Roxanne N. Chronert
Team Supervisor, Northeast Region
Remediation & Redevelopment Program

ec: Roger Miller, GEI Consultants Inc (rmiller@geiconsultants.com)

September 21, 2018

Roger Miller
GEI Consultants, Inc.
3159 Voyager Drive
Green Bay, WI 54311

RE: Project: 1803484 G-P BUTH OIL SITE
Pace Project No.: 40176083

Dear Roger Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on September 19, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Christopher Hyska
christopher.hyska@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Paul Garvey, GEI Consultants, Inc.



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40176083001	BW-6	Water	09/19/18 11:05	09/19/18 12:42
40176083002	BW-3	Water	09/19/18 11:45	09/19/18 12:42
40176083003	TRIP	Water	09/19/18 00:00	09/19/18 12:42

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40176083001	BW-6	EPA 8260	HNW	64	PASI-G
40176083002	BW-3	EPA 8260	HNW	64	PASI-G
40176083003	TRIP	EPA 8260	HNW	64	PASI-G

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40176083001	BW-6					
EPA 8260	Benzene	396	ug/L	5.0	09/20/18 16:22	
EPA 8260	sec-Butylbenzene	2.2J	ug/L	5.0	09/20/18 15:18	
EPA 8260	tert-Butylbenzene	2.4	ug/L	1.0	09/20/18 15:18	
EPA 8260	1,2-Dichloroethane	15.5	ug/L	1.0	09/20/18 15:18	
EPA 8260	1,2-Dichloropropane	4.1	ug/L	1.0	09/20/18 15:18	
EPA 8260	Ethylbenzene	102	ug/L	1.0	09/20/18 15:18	
EPA 8260	Isopropylbenzene (Cumene)	6.7	ug/L	5.0	09/20/18 15:18	
EPA 8260	p-Isopropyltoluene	3.0	ug/L	2.7	09/20/18 15:18	
EPA 8260	Naphthalene	50.1	ug/L	5.0	09/20/18 15:18	
EPA 8260	n-Propylbenzene	9.6	ug/L	5.0	09/20/18 15:18	
EPA 8260	Toluene	51.7	ug/L	5.0	09/20/18 15:18	
EPA 8260	1,2,4-Trimethylbenzene	76.5	ug/L	2.8	09/20/18 15:18	
EPA 8260	1,3,5-Trimethylbenzene	25.7	ug/L	2.9	09/20/18 15:18	
EPA 8260	m&p-Xylene	149	ug/L	2.0	09/20/18 15:18	
EPA 8260	o-Xylene	56.1	ug/L	1.0	09/20/18 15:18	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Sample: BW-6 **Lab ID: 40176083001** Collected: 09/19/18 11:05 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	396	ug/L	5.0	1.2	5		09/20/18 16:22	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		09/20/18 15:18	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		09/20/18 15:18	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		09/20/18 15:18	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		09/20/18 15:18	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		09/20/18 15:18	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:18	104-51-8	
sec-Butylbenzene	2.2J	ug/L	5.0	0.85	1		09/20/18 15:18	135-98-8	
tert-Butylbenzene	2.4	ug/L	1.0	0.30	1		09/20/18 15:18	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		09/20/18 15:18	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:18	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		09/20/18 15:18	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		09/20/18 15:18	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		09/20/18 15:18	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		09/20/18 15:18	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		09/20/18 15:18	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		09/20/18 15:18	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		09/20/18 15:18	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		09/20/18 15:18	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		09/20/18 15:18	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:18	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		09/20/18 15:18	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		09/20/18 15:18	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		09/20/18 15:18	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 15:18	75-34-3	
1,2-Dichloroethane	15.5	ug/L	1.0	0.28	1		09/20/18 15:18	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		09/20/18 15:18	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		09/20/18 15:18	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		09/20/18 15:18	156-60-5	
1,2-Dichloropropane	4.1	ug/L	1.0	0.28	1		09/20/18 15:18	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		09/20/18 15:18	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		09/20/18 15:18	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		09/20/18 15:18	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		09/20/18 15:18	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		09/20/18 15:18	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		09/20/18 15:18	108-20-3	
Ethylbenzene	102	ug/L	1.0	0.22	1		09/20/18 15:18	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		09/20/18 15:18	87-68-3	
Isopropylbenzene (Cumene)	6.7	ug/L	5.0	0.39	1		09/20/18 15:18	98-82-8	
p-Isopropyltoluene	3.0	ug/L	2.7	0.80	1		09/20/18 15:18	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		09/20/18 15:18	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		09/20/18 15:18	1634-04-4	
Naphthalene	50.1	ug/L	5.0	1.2	1		09/20/18 15:18	91-20-3	
n-Propylbenzene	9.6	ug/L	5.0	0.81	1		09/20/18 15:18	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		09/20/18 15:18	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 15:18	630-20-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Sample: BW-6 **Lab ID: 40176083001** Collected: 09/19/18 11:05 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV									
Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		09/20/18 15:18	79-34-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		09/20/18 15:18	127-18-4	
Toluene	51.7	ug/L	5.0	0.17	1		09/20/18 15:18	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		09/20/18 15:18	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		09/20/18 15:18	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		09/20/18 15:18	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		09/20/18 15:18	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		09/20/18 15:18	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		09/20/18 15:18	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		09/20/18 15:18	96-18-4	
1,2,4-Trimethylbenzene	76.5	ug/L	2.8	0.84	1		09/20/18 15:18	95-63-6	
1,3,5-Trimethylbenzene	25.7	ug/L	2.9	0.87	1		09/20/18 15:18	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		09/20/18 15:18	75-01-4	
m&p-Xylene	149	ug/L	2.0	0.47	1		09/20/18 15:18	179601-23-1	
o-Xylene	56.1	ug/L	1.0	0.26	1		09/20/18 15:18	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		09/20/18 15:18	460-00-4	
Dibromofluoromethane (S)	98	%	70-130		1		09/20/18 15:18	1868-53-7	
Toluene-d8 (S)	99	%	70-130		1		09/20/18 15:18	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Sample: BW-3 **Lab ID: 40176083002** Collected: 09/19/18 11:45 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
Benzene	<0.25	ug/L	1.0	0.25	1		09/20/18 15:39	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		09/20/18 15:39	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		09/20/18 15:39	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		09/20/18 15:39	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		09/20/18 15:39	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		09/20/18 15:39	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:39	104-51-8	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		09/20/18 15:39	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		09/20/18 15:39	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		09/20/18 15:39	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:39	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		09/20/18 15:39	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		09/20/18 15:39	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		09/20/18 15:39	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		09/20/18 15:39	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		09/20/18 15:39	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		09/20/18 15:39	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		09/20/18 15:39	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		09/20/18 15:39	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		09/20/18 15:39	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 15:39	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		09/20/18 15:39	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		09/20/18 15:39	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		09/20/18 15:39	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 15:39	75-34-3	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		09/20/18 15:39	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		09/20/18 15:39	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		09/20/18 15:39	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		09/20/18 15:39	156-60-5	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		09/20/18 15:39	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		09/20/18 15:39	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		09/20/18 15:39	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		09/20/18 15:39	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		09/20/18 15:39	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		09/20/18 15:39	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		09/20/18 15:39	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		09/20/18 15:39	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		09/20/18 15:39	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		09/20/18 15:39	98-82-8	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		09/20/18 15:39	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		09/20/18 15:39	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		09/20/18 15:39	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		09/20/18 15:39	91-20-3	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		09/20/18 15:39	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		09/20/18 15:39	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 15:39	630-20-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE
Pace Project No.: 40176083

Sample: BW-3 **Lab ID: 40176083002** Collected: 09/19/18 11:45 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV									
Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		09/20/18 15:39	79-34-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		09/20/18 15:39	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		09/20/18 15:39	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		09/20/18 15:39	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		09/20/18 15:39	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		09/20/18 15:39	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		09/20/18 15:39	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		09/20/18 15:39	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		09/20/18 15:39	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		09/20/18 15:39	96-18-4	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		09/20/18 15:39	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		09/20/18 15:39	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		09/20/18 15:39	75-01-4	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		09/20/18 15:39	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		09/20/18 15:39	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		09/20/18 15:39	460-00-4	
Dibromofluoromethane (S)	99	%	70-130		1		09/20/18 15:39	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		09/20/18 15:39	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Sample: TRIP **Lab ID:** 40176083003 Collected: 09/19/18 00:00 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	<0.25	ug/L	1.0	0.25	1		09/20/18 09:13	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		09/20/18 09:13	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		09/20/18 09:13	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		09/20/18 09:13	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		09/20/18 09:13	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		09/20/18 09:13	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 09:13	104-51-8	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		09/20/18 09:13	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		09/20/18 09:13	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		09/20/18 09:13	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 09:13	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		09/20/18 09:13	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		09/20/18 09:13	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		09/20/18 09:13	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		09/20/18 09:13	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		09/20/18 09:13	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		09/20/18 09:13	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		09/20/18 09:13	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		09/20/18 09:13	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		09/20/18 09:13	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		09/20/18 09:13	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		09/20/18 09:13	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		09/20/18 09:13	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		09/20/18 09:13	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 09:13	75-34-3	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		09/20/18 09:13	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		09/20/18 09:13	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		09/20/18 09:13	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		09/20/18 09:13	156-60-5	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		09/20/18 09:13	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		09/20/18 09:13	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		09/20/18 09:13	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		09/20/18 09:13	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		09/20/18 09:13	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		09/20/18 09:13	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		09/20/18 09:13	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		09/20/18 09:13	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		09/20/18 09:13	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		09/20/18 09:13	98-82-8	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		09/20/18 09:13	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		09/20/18 09:13	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		09/20/18 09:13	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		09/20/18 09:13	91-20-3	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		09/20/18 09:13	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		09/20/18 09:13	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		09/20/18 09:13	630-20-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Sample: TRIP **Lab ID:** 40176083003 Collected: 09/19/18 00:00 Received: 09/19/18 12:42 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV									
Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		09/20/18 09:13	79-34-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		09/20/18 09:13	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		09/20/18 09:13	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		09/20/18 09:13	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		09/20/18 09:13	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		09/20/18 09:13	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		09/20/18 09:13	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		09/20/18 09:13	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		09/20/18 09:13	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		09/20/18 09:13	96-18-4	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		09/20/18 09:13	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		09/20/18 09:13	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		09/20/18 09:13	75-01-4	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		09/20/18 09:13	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		09/20/18 09:13	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		09/20/18 09:13	460-00-4	
Dibromofluoromethane (S)	99	%	70-130		1		09/20/18 09:13	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		09/20/18 09:13	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

QC Batch: 300688 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40176083001, 40176083002, 40176083003

METHOD BLANK: 1756050 Matrix: Water

Associated Lab Samples: 40176083001, 40176083002, 40176083003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	09/20/18 07:05	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	09/20/18 07:05	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	09/20/18 07:05	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	09/20/18 07:05	
1,1-Dichloroethane	ug/L	<0.27	1.0	09/20/18 07:05	
1,1-Dichloroethene	ug/L	<0.24	1.0	09/20/18 07:05	
1,1-Dichloropropene	ug/L	<0.54	1.8	09/20/18 07:05	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	09/20/18 07:05	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	09/20/18 07:05	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	09/20/18 07:05	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	09/20/18 07:05	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	09/20/18 07:05	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	09/20/18 07:05	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	09/20/18 07:05	
1,2-Dichloroethane	ug/L	<0.28	1.0	09/20/18 07:05	
1,2-Dichloropropane	ug/L	<0.28	1.0	09/20/18 07:05	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	09/20/18 07:05	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	09/20/18 07:05	
1,3-Dichloropropane	ug/L	<0.83	2.8	09/20/18 07:05	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	09/20/18 07:05	
2,2-Dichloropropane	ug/L	<2.3	7.6	09/20/18 07:05	
2-Chlorotoluene	ug/L	<0.93	5.0	09/20/18 07:05	
4-Chlorotoluene	ug/L	<0.76	2.5	09/20/18 07:05	
Benzene	ug/L	<0.25	1.0	09/20/18 07:05	
Bromobenzene	ug/L	<0.24	1.0	09/20/18 07:05	
Bromochloromethane	ug/L	<0.36	5.0	09/20/18 07:05	
Bromodichloromethane	ug/L	<0.36	1.2	09/20/18 07:05	
Bromoform	ug/L	<4.0	13.2	09/20/18 07:05	
Bromomethane	ug/L	<0.97	5.0	09/20/18 07:05	
Carbon tetrachloride	ug/L	<0.17	1.0	09/20/18 07:05	
Chlorobenzene	ug/L	<0.71	2.4	09/20/18 07:05	
Chloroethane	ug/L	<1.3	5.0	09/20/18 07:05	
Chloroform	ug/L	<1.3	5.0	09/20/18 07:05	
Chloromethane	ug/L	<2.2	7.3	09/20/18 07:05	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	09/20/18 07:05	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	09/20/18 07:05	
Dibromochloromethane	ug/L	<2.6	8.7	09/20/18 07:05	
Dibromomethane	ug/L	<0.94	3.1	09/20/18 07:05	
Dichlorodifluoromethane	ug/L	<0.50	5.0	09/20/18 07:05	
Diisopropyl ether	ug/L	<1.9	6.3	09/20/18 07:05	
Ethylbenzene	ug/L	<0.22	1.0	09/20/18 07:05	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

METHOD BLANK: 1756050

Matrix: Water

Associated Lab Samples: 40176083001, 40176083002, 40176083003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	09/20/18 07:05	
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	09/20/18 07:05	
m&p-Xylene	ug/L	<0.47	2.0	09/20/18 07:05	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	09/20/18 07:05	
Methylene Chloride	ug/L	<0.58	5.0	09/20/18 07:05	
n-Butylbenzene	ug/L	<0.71	2.4	09/20/18 07:05	
n-Propylbenzene	ug/L	<0.81	5.0	09/20/18 07:05	
Naphthalene	ug/L	<1.2	5.0	09/20/18 07:05	
o-Xylene	ug/L	<0.26	1.0	09/20/18 07:05	
p-Isopropyltoluene	ug/L	<0.80	2.7	09/20/18 07:05	
sec-Butylbenzene	ug/L	<0.85	5.0	09/20/18 07:05	
Styrene	ug/L	<0.47	1.6	09/20/18 07:05	
tert-Butylbenzene	ug/L	<0.30	1.0	09/20/18 07:05	
Tetrachloroethene	ug/L	<0.33	1.1	09/20/18 07:05	
Toluene	ug/L	<0.17	5.0	09/20/18 07:05	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	09/20/18 07:05	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	09/20/18 07:05	
Trichloroethene	ug/L	<0.26	1.0	09/20/18 07:05	
Trichlorofluoromethane	ug/L	<0.21	1.0	09/20/18 07:05	
Vinyl chloride	ug/L	<0.17	1.0	09/20/18 07:05	
4-Bromofluorobenzene (S)	%	98	70-130	09/20/18 07:05	
Dibromofluoromethane (S)	%	100	70-130	09/20/18 07:05	
Toluene-d8 (S)	%	101	70-130	09/20/18 07:05	

LABORATORY CONTROL SAMPLE: 1756051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	52.4	105	70-133	
1,1,2,2-Tetrachloroethane	ug/L	50	49.1	98	67-130	
1,1,2-Trichloroethane	ug/L	50	50.5	101	70-130	
1,1-Dichloroethane	ug/L	50	53.1	106	70-134	
1,1-Dichloroethene	ug/L	50	52.0	104	75-132	
1,2,4-Trichlorobenzene	ug/L	50	51.7	103	68-130	
1,2-Dibromo-3-chloropropane	ug/L	50	48.1	96	60-126	
1,2-Dibromoethane (EDB)	ug/L	50	51.8	104	70-130	
1,2-Dichlorobenzene	ug/L	50	51.1	102	70-130	
1,2-Dichloroethane	ug/L	50	49.5	99	73-134	
1,2-Dichloropropane	ug/L	50	47.8	96	79-128	
1,3-Dichlorobenzene	ug/L	50	50.8	102	70-130	
1,4-Dichlorobenzene	ug/L	50	49.9	100	70-130	
Benzene	ug/L	50	52.3	105	69-137	
Bromodichloromethane	ug/L	50	49.7	99	70-130	
Bromoform	ug/L	50	46.2	92	64-133	
Bromomethane	ug/L	50	33.7	67	29-123	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

LABORATORY CONTROL SAMPLE: 1756051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbon tetrachloride	ug/L	50	48.0	96	73-142	
Chlorobenzene	ug/L	50	50.3	101	70-130	
Chloroethane	ug/L	50	44.6	89	59-133	
Chloroform	ug/L	50	51.0	102	80-129	
Chloromethane	ug/L	50	38.3	77	27-125	
cis-1,2-Dichloroethene	ug/L	50	51.5	103	70-134	
cis-1,3-Dichloropropene	ug/L	50	46.3	93	70-130	
Dibromochloromethane	ug/L	50	53.5	107	70-130	
Dichlorodifluoromethane	ug/L	50	36.0	72	12-127	
Ethylbenzene	ug/L	50	51.8	104	86-127	
Isopropylbenzene (Cumene)	ug/L	50	52.4	105	70-130	
m&p-Xylene	ug/L	100	103	103	70-131	
Methyl-tert-butyl ether	ug/L	50	50.1	100	65-136	
Methylene Chloride	ug/L	50	52.3	105	72-133	
o-Xylene	ug/L	50	51.4	103	70-130	
Styrene	ug/L	50	51.9	104	70-130	
Tetrachloroethene	ug/L	50	48.5	97	70-130	
Toluene	ug/L	50	50.7	101	84-124	
trans-1,2-Dichloroethene	ug/L	50	53.8	108	70-133	
trans-1,3-Dichloropropene	ug/L	50	45.9	92	67-130	
Trichloroethene	ug/L	50	51.2	102	70-130	
Trichlorofluoromethane	ug/L	50	53.5	107	69-147	
Vinyl chloride	ug/L	50	45.1	90	48-134	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			102	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1756099 1756100

Parameter	Units	40176038001		MSD		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
1,1,1-Trichloroethane	ug/L	<0.24	50	50	52.3	51.2	105	102	70-136	2	20			
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	48.2	47.9	96	96	67-133	1	20			
1,1,2-Trichloroethane	ug/L	<0.55	50	50	49.4	48.1	99	96	70-130	3	20			
1,1-Dichloroethane	ug/L	<0.27	50	50	52.8	51.2	106	102	70-139	3	20			
1,1-Dichloroethene	ug/L	<0.24	50	50	52.2	50.6	104	101	72-137	3	20			
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	50.5	49.4	101	99	68-130	2	20			
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	47.4	46.7	95	93	60-130	1	21			
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	51.0	50.0	102	100	70-130	2	20			
1,2-Dichlorobenzene	ug/L	<0.71	50	50	51.0	49.0	102	98	70-130	4	20			
1,2-Dichloroethane	ug/L	<0.28	50	50	49.4	47.7	99	95	71-137	3	20			
1,2-Dichloropropane	ug/L	<0.28	50	50	47.3	45.9	95	92	78-130	3	20			
1,3-Dichlorobenzene	ug/L	<0.63	50	50	51.2	48.7	102	97	70-130	5	20			
1,4-Dichlorobenzene	ug/L	<0.94	50	50	49.8	47.8	100	96	70-130	4	20			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1756099		1756100		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40176038001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Benzene	ug/L	<0.25	50	50	51.6	50.0	103	100	66-143	3	20		
Bromodichloromethane	ug/L	<0.36	50	50	49.8	47.9	100	96	70-130	4	20		
Bromoform	ug/L	<4.0	50	50	45.2	44.7	90	89	64-134	1	20		
Bromomethane	ug/L	<0.97	50	50	34.8	34.4	70	69	29-136	1	25		
Carbon tetrachloride	ug/L	<0.17	50	50	50.3	49.1	101	98	73-142	2	20		
Chlorobenzene	ug/L	<0.71	50	50	50.8	49.2	102	98	70-130	3	20		
Chloroethane	ug/L	<1.3	50	50	43.9	42.5	88	85	58-138	3	20		
Chloroform	ug/L	<1.3	50	50	50.1	48.2	100	96	80-131	4	20		
Chloromethane	ug/L	<2.2	50	50	38.7	40.0	75	78	24-125	3	20		
cis-1,2-Dichloroethene	ug/L	<0.27	50	50	50.9	49.3	102	99	68-137	3	22		
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	46.5	45.0	93	90	70-130	3	20		
Dibromochloromethane	ug/L	<2.6	50	50	54.2	52.3	108	105	70-131	4	20		
Dichlorodifluoromethane	ug/L	0.82J	50	50	35.5	34.4	69	67	10-127	3	20		
Ethylbenzene	ug/L	<0.22	50	50	52.2	49.9	104	100	81-136	5	20		
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	52.7	50.7	105	101	70-132	4	20		
m&p-Xylene	ug/L	<0.47	100	100	104	99.3	104	99	70-135	5	20		
Methyl-tert-butyl ether	ug/L	<1.2	50	50	48.8	47.6	98	95	58-142	3	23		
Methylene Chloride	ug/L	<0.58	50	50	51.0	49.5	102	99	69-137	3	20		
o-Xylene	ug/L	<0.26	50	50	51.3	48.9	103	98	70-132	5	20		
Styrene	ug/L	<0.47	50	50	51.1	49.9	102	100	70-130	2	20		
Tetrachloroethene	ug/L	<0.33	50	50	49.2	47.2	98	94	70-132	4	20		
Toluene	ug/L	<0.17	50	50	51.1	48.5	102	97	81-130	5	20		
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	53.0	51.5	106	103	70-136	3	20		
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	45.9	44.5	92	89	67-130	3	20		
Trichloroethene	ug/L	<0.26	50	50	50.7	49.1	101	98	70-131	3	20		
Trichlorofluoromethane	ug/L	<0.21	50	50	54.2	52.3	108	105	66-150	4	20		
Vinyl chloride	ug/L	<0.17	50	50	44.2	43.5	88	87	46-134	2	20		
4-Bromofluorobenzene (S)	%						100	100	70-130				
Dibromofluoromethane (S)	%						102	103	70-130				
Toluene-d8 (S)	%						100	100	70-130				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1803484 G-P BUTH OIL SITE

Pace Project No.: 40176083

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40176083001	BW-6	EPA 8260	300688		
40176083002	BW-3	EPA 8260	300688		
40176083003	TRIP	EPA 8260	300688		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

(Please Print Clearly)

Company Name: **GEI Consultants**
 Branch/Location: **GBW**
 Project Contact: **Roger Miller**
 Phone: **920.455.8200**
 Project Number: **1803484**
 Project Name: **G-P Both Oil Site**
 Project State: **WI**
 Sampled By (Print): **Paul Garvey**
 Sampled By (Sign): *Paul Garvey*
 PO #:



UPPER MIDWEST REGION
 MN: 612-607-1700 WI: 920-469-2436

CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
 (YES/NO)
 PRESERVATION
 (CODE)*

Y/N	Pick Letter	Analyses Requested																		
N	B	VOC																		

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Y/N	Pick Letter	Analyses Requested
		DATE	TIME				
001	BW-6	9-19-18	11:05	GW	X		
002	BW-3	9-19-18	11:45	GW	X		
003	TRIP						

Quote #: **see Chris Hyska**

Mail To Contact:

Mail To Company:

Mail To Address:

Invoice To Contact: **SAME**

Invoice To Company:

Invoice To Address:

Invoice To Phone:

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

Profile #

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)
 Date Needed:

Relinquished By: *Paul Garvey* Date/Time: **9-19-18 12:42**

Received By: *Susan K. Miller* Date/Time: **9-19-18 12:42**

Transmit Prelim Rush Results by (complete what you want):

Email #1:

Email #2:

Telephone:

Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: Date/Time:

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time:

PACE Project No. **40176083**

Receipt Temp = **20.7°**

Sample Receipt pH **OK / Adjusted**

Cooler Custody Seal **Present / Not Present**

Intact / Not Intact

Sample Preservation Receipt Form

Client Name: GEF

Project # 40176083

All containers needing preservation have been checked and noted below: Yes No N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Lab #	Glass						Plastic						Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU							
001																	3													2.5 / 5 / 10
002																	3													2.5 / 5 / 10
003																	2													2.5 / 5 / 10
004																														2.5 / 5 / 10
005																														2.5 / 5 / 10
006																														2.5 / 5 / 10
007																														2.5 / 5 / 10
008																														2.5 / 5 / 10
009																														2.5 / 5 / 10
010																														2.5 / 5 / 10
011																														2.5 / 5 / 10
012																														2.5 / 5 / 10
013																														2.5 / 5 / 10
014																														2.5 / 5 / 10
015																														2.5 / 5 / 10
016																														2.5 / 5 / 10
017																														2.5 / 5 / 10
018																														2.5 / 5 / 10
019																														2.5 / 5 / 10
020																														2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : Yes No N/A *If yes look in headspace column

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	DG9A 40 mL amber ascorbic	JGFU 4 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP2N 500 mL plastic HNO3	DG9T 40 mL amber Na Thio	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP2Z 500 mL plastic NaOH, Znact	VG9U 40 mL clear vial unpres	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3U 250 mL plastic unpres	VG9H 40 mL clear vial HCL	SP5T 120 mL plastic Na Thiosulfate
AG5U 100 mL amber glass unpres	BP3C 250 mL plastic NaOH	VG9M 40 mL clear vial MeOH	
AG2S 500 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9D 40 mL clear vial DI	ZPLC ziploc bag
BG3U 250 mL clear glass unpres	BP3S 250 mL plastic H2SO4		GN:

Sample Condition Upon Receipt Form (SCUR)

Client Name: GEI

Project # _____

WO# : 40176083

Courier: CS Logistics Fed Ex Speedee UPS Walto
 Client Pace Other: _____



Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR - N/A Type of Ice: Wet Blue Dry None

Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 20 /Corr: _____

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:
Date: 9/19/18
Initials: JM

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 9/19/18