

## **ATTACHMENT 2: DATA VALIDATION REPORTS**

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This attachment contains the data validation reports performed by an independent subcontractor, Laboratory Data Consultants, Inc. (LDC), of Carlsbad, California.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tidewater, Inc.  
3761 Attucks Drive  
Powell, OH 43065  
ATTN: Mr. David Conner

December 6, 2017

SUBJECT: NASA JPL, 4Q2017, Data Validation

Dear Mr. Conner,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 14, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### **LDC Project #39849:**

#### **SDG #**

#### **Fraction**

17-29474, 17-29664

Volatiles, Chromium, Wet Chemistry

17-29790, 17-29969

The data validation was performed under Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007, update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng  
Project Manager/Senior Chemist

90/10 (client select)

LDC #39849 (Tidewater- Powell, OH / NASA JPL, 4Q2017)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO <sub>2</sub> (314.0)		Cr(VI) (7196)		CL, SO <sub>4</sub> , NO <sub>3</sub> -N (300.0)		NO <sub>2</sub> -N (353.2)		O-PO <sub>4</sub> -P (365.1)																					
				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S		
Matrix: Water/Soil																																					
A	17-29474	11/14/17	12/07/17	12	0	11	0	11	0	11	0	-	-	-	-	-	-																				
A	17-29474	11/14/17	12/07/17	1	0	1	0	1	0	1	0	-	-	-	-	-	-																				
B	17-29664	11/14/17	12/07/17	12	0	11	0	11	0	11	0	-	-	-	-	-	-																				
C	17-29790	11/14/17	12/07/17	14	0	13	0	13	0	13	0	-	-	-	-	-	-																				
D	17-29969	11/14/17	12/07/17	12	0	11	0	11	0	11	0	1	0	1	0	1	0																				
D	17-29969	11/14/17	12/07/17	1	0	1	0	1	0	1	0	0	0	0	0	0	0																				
Total	J/PG			52	0	48	0	48	0	48	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199	

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 4, 2017

**Parameters:** Volatiles

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29474

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-1-101617	1729474-01	Water	10/16/17
MW-20-5	1729474-02	Water	10/16/17
MW-20-4	1729474-03	Water	10/16/17
MW-20-3	1729474-04	Water	10/16/17
DUP-1-4Q17	1729474-05	Water	10/16/17
MW-20-2	1729474-06	Water	10/16/17
MW-19-5**	1729474-07**	Water	10/16/17
MW-19-4	1729474-08	Water	10/16/17
MW-19-3	1729474-09	Water	10/16/17
MW-19-2	1729474-10	Water	10/16/17
MW-19-1	1729474-11	Water	10/16/17
EB-1-101617	1729474-12	Water	10/16/17
SB-1-101617	1729474-13	Water	10/16/17
MW-20-5MS	1729474-02MS	Water	10/16/17
MW-20-5MSD	1729474-02MSD	Water	10/16/17

\*\*Indicates sample underwent Level IV review

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
10/19/17	Methyl iodide	34.6	All samples in SDG 17-29474	UJ (all non-detects)	P

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample TB-1-101617 was identified as a trip blank. No contaminants were found.

Sample EB-1-101617 was identified as an equipment blank. No contaminants were found.

Sample SB-1-101617 was identified as a source blank. No contaminants were found.

### VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### X. Field Duplicates

Samples MW-20-3 and DUP-1-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-20-3	DUP-1-4Q17	
Ethylbenzene	0.15	0.15U	200
Styrene	0.39	0.33	17
Tetrachloroethene	0.28	0.23U	200
Acrylonitrile	1.6	1.8	12
Carbon disulfide	0.57	0.67	16

### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

### XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.



**NASA JPL, 4Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-29474**

Sample	Compound	Flag	A or P	Reason
TB-1-101617 MW-20-5 MW-20-4 MW-20-3 DUP-1-4Q17 MW-20-2 MW-19-5** MW-19-4 MW-19-3 MW-19-2 MW-19-1 EB-1-101617 SB-1-101617	Methyl iodide	UJ (all non-detects)	P	Continuing calibration (%D)

**NASA JPL, 4Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-29474**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-01 File ID: 19OCT09.D  
Sampled: 10/16/17 07:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:12  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
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ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-01 File ID: 19OCT09.D  
Sampled: 10/16/17 07:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:12  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[J]1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*Handwritten signature/initials*



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Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-01 File ID: 19OCT09.D  
Sampled: 10/16/17 07:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:12  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.620	106	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9100	99.1	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9400	99.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	252354	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	97321	9.62	103370	9.62	
1,4-Difluorobenzene (IS)	410108	7.38	431275	7.38	

\* Values outside of QC limits

*11/6/17*



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Reported: 11/9/2017 10:15:14AM  
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Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-01 File ID: 19OCT09.D  
Sampled: 10/16/17 07:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:12  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/9/17 &



Tidewater Inc.  
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Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-5

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-02 File ID: 19OCT10.D  
Sampled: 10/16/17 08:30 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:35  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[J]1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-5

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-02 File ID: 19OCT10.D  
 Sampled: 10/16/17 08:30 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:35  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.19	J
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-5

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-02 File ID: 19OCT10.D  
Sampled: 10/16/17 08:30 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:35  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.490	105	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9800	99.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9000	99.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	243411	6.58	271007	6.58	
Chlorobenzene-d5 (IS)	94680	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	404678	7.38	431275	7.38	

\* Values outside of QC limits

*11/6/17 J*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29474</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729474-02</u>	File ID:	<u>19OCT10.D</u>		
Sampled:	<u>10/16/17 08:30</u>	Prepared:	<u>10/19/17 07:00</u>	Analyzed:	<u>10/19/17 08:35</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ1966</u>	Sequence:	<u>1719131</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-4

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-03 File ID: 19OCT11.D  
 Sampled: 10/16/17 09:10 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:58  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*H/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

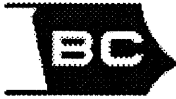
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-4

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-03 File ID: 19OCT11.D  
Sampled: 10/16/17 09:10 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:58  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-4

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-03 File ID: 19OCT11.D  
Sampled: 10/16/17 09:10 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:58  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[J]1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UJ</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.280	113	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.130	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.6100	96.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	249147	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	97332	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	402034	7.38	431275	7.38	

\* Values outside of QC limits

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-4

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-03 File ID: 19OCT11.D  
 Sampled: 10/16/17 09:10 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 08:58  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

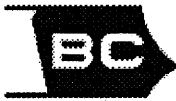
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-3

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-04 File ID: 19OCT12.D  
Sampled: 10/16/17 09:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-3

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-04 File ID: 19OCT12.D  
 Sampled: 10/16/17 09:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:21  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	J
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.39	J
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.28	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.6	J
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

12/6/17 Q



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-3

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-04 File ID: 19OCT12.D  
Sampled: 10/16/17 09:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.57	J
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

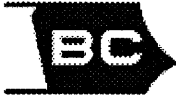
SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.700	107	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.210	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7700	97.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	245582	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	96109	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	392188	7.38	431275	7.38	

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-3

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-04 File ID: 19OCT12.D  
 Sampled: 10/16/17 09:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:21  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-1-4Q17

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-05 File ID: 19OCT13.D  
Sampled: 10/16/17 09:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:44  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-1-4Q17

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-05 File ID: 19OCT13.D  
 Sampled: 10/16/17 09:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:44  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.33	J
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.8	J
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-1-4Q17

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-05 File ID: 19OCT13.D  
Sampled: 10/16/17 09:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 09:44  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.67	J
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.340	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8900	98.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9100	99.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	243537	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	91788	9.62	103370	9.62	
1,4-Difluorobenzene (IS)	396422	7.38	431275	7.38	

\* Values outside of QC limits

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-1-4Q17

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29474</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729474-05</u>	File ID:	<u>19OCT13.D</u>		
Sampled:	<u>10/16/17 09:45</u>	Prepared:	<u>10/19/17 07:00</u>	Analyzed:	<u>10/19/17 09:44</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ1966</u>	Sequence:	<u>1719131</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-06 File ID: 19OCT14.D  
Sampled: 10/16/17 10:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:08  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.22	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-06 File ID: 19OCT14.D  
Sampled: 10/16/17 10:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:08  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.66	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-20-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-06 File ID: 19OCT14.D  
Sampled: 10/16/17 10:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:08  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.57	J
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.940	109	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.580	106	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.240	102	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	243938	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	92803	9.62	103370	9.62	
1,4-Difluorobenzene (IS)	381823	7.38	431275	7.38	

\* Values outside of QC limits

*11/9/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-20-2

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-06 File ID: 19OCT14.D  
 Sampled: 10/16/17 10:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:08  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

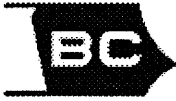
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-5

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-07 File ID: 19OCT15.D  
 Sampled: 10/16/17 12:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:31  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	2.0	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-5

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-07 File ID: 19OCT15.D  
Sampled: 10/16/17 12:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/17/17



Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM
Project: JPL- GW Monitoring Wells
Project Number: 4Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

MW-19-5

Laboratory: BC Laboratories SDG: 17-29474
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells
Matrix: Water Laboratory ID: 1729474-07 File ID: 19OCT15.D
Sampled: 10/16/17 12:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:31
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

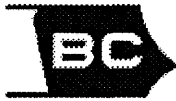
Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various compounds like Carbon disulfide, trans-1,4-Dichloro-2-butene, Diethyl ether, etc.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Lists surrogate compounds like 1,2-Dichloroethane-d4, Toluene-d8, 4-Bromofluorobenzene.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards like Pentafluorobenzene (IS), Chlorobenzene-d5 (IS), 1,4-Difluorobenzene (IS).

\* Values outside of QC limits

Handwritten signature/initials



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:15:14AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-5
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29474</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729474-07</u>	File ID:	<u>19OCT15.D</u>		
Sampled:	<u>10/16/17 12:35</u>	Prepared:	<u>10/19/17 07:00</u>	Analyzed:	<u>10/19/17 10:31</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJ1966</u>	Sequence:	<u>1719131</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-4

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-08 File ID: 19OCT16.D  
Sampled: 10/16/17 13:15 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:54  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.54	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-4

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-08 File ID: 19OCT16.D  
Sampled: 10/16/17 13:15 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:54  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.26	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-4

Laboratory: BC Laboratories      SDG: 17-29474  
Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
Matrix: Water      Laboratory ID: 1729474-08      File ID: 19OCT16.D  
Sampled: 10/16/17 13:15      Prepared: 10/19/17 07:00      Analyzed: 10/19/17 10:54  
Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
Batch: BJ1966      Sequence: 1719131      Calibration: 1710006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.070	111	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.290	103	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9600	99.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	237535	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	93421	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	391252	7.38	431275	7.38	

\* Values outside of QC limits

*11/16/17 9*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

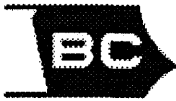
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-4

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-08 File ID: 19OCT16.D  
 Sampled: 10/16/17 13:15 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 10:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-3

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-09 File ID: 19OCT17.D  
Sampled: 10/16/17 13:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	1.7	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/16/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-3

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-09 File ID: 19OCT17.D  
Sampled: 10/16/17 13:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[J]1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.38	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.22	J
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-3

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-09 File ID: 19OCT17.D  
Sampled: 10/16/17 13:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.920	109	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.150	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9300	99.3	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	240691	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	91063	9.62	103370	9.62	
1,4-Difluorobenzene (IS)	389153	7.38	431275	7.38	

\* Values outside of QC limits

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-3

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-09 File ID: 19OCT17.D  
 Sampled: 10/16/17 13:35 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:18  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-10 File ID: 19OCT18.D  
Sampled: 10/16/17 14:25 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:41  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	1.7	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.96	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17 2



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-10 File ID: 19OCT18.D  
Sampled: 10/16/17 14:25 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:41  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.380	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.000	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.060	101	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	231836	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	89634	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	381709	7.38	431275	7.38	

\* Values outside of QC limits

*11/9/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-19-2

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-10 File ID: 19OCT18.D  
Sampled: 10/16/17 14:25 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 11:41  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/16/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-1

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-11 File ID: 19OCT19.D  
Sampled: 10/16/17 14:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	1.0	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-1

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-11 File ID: 19OCT19.D  
Sampled: 10/16/17 14:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-19-1

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-11 File ID: 19OCT19.D  
Sampled: 10/16/17 14:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UTS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.390	114	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.200	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.6400	96.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	231857	6.57	271007	6.58	
Chlorobenzene-d5 (IS)	92513	9.61	103370	9.62	
1,4-Difluorobenzene (IS)	381026	7.38	431275	7.38	

\* Values outside of QC limits

*Handwritten signature and date: 11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**MW-19-1**

Laboratory: BC Laboratories SDG: 17-29474  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729474-11 File ID: 19OCT19.D  
 Sampled: 10/16/17 14:45 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:03  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-12 File ID: 19OCT20.D  
Sampled: 10/16/17 14:55 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:26  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoforn	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-12 File ID: 19OCT20.D  
Sampled: 10/16/17 14:55 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:26  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17 9



Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM
Project: JPL- GW Monitoring Wells
Project Number: 4Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

EB-1-101617

Laboratory: BC Laboratories SDG: 17-29474
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells
Matrix: Water Laboratory ID: 1729474-12 File ID: 19OCT20.D
Sampled: 10/16/17 14:55 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:26
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various organic compounds and their concentrations.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Shows surrogate compounds and their recovery percentages.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards used for calibration.

\* Values outside of QC limits

Handwritten signature and date: 11/9/17





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**EB-1-101617**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29474</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729474-12</u>
		File ID:	<u>19OCT20.D</u>
Sampled:	<u>10/16/17 14:55</u>	Prepared:	<u>10/19/17 07:00</u>
		Analyzed:	<u>10/19/17 12:26</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BJJ1966</u>	Sequence:	<u>1719131</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/9/17



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Environmental Testing Laboratory Since 1949



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3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

SB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-13 File ID: 19OCT21.D  
Sampled: 10/16/17 15:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:49  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoforn	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17



Tidewater Inc.  
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Powell, OH 43065

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Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

SB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-13 File ID: 19OCT21.D  
Sampled: 10/16/17 15:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:49  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17 [Signature]



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3761 Attucks Drive
Powell, OH 43065

Reported: 11/9/2017 10:15:14AM
Project: JPL- GW Monitoring Wells
Project Number: 4Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

SB-1-101617

Laboratory: BC Laboratories SDG: 17-29474
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells
Matrix: Water Laboratory ID: 1729474-13 File ID: 19OCT21.D
Sampled: 10/16/17 15:00 Prepared: 10/19/17 07:00 Analyzed: 10/19/17 12:49
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml
Batch: BJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various organic compounds and their concentrations.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Shows surrogate compounds and their recovery percentages.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards used for calibration.

\* Values outside of QC limits

Handwritten signature and date 11/6/17



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Powell, OH 43065

Reported: 11/9/2017 10:15:14AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

SB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-13 File ID: 19OCT21.D  
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Batch: BJJ1966 Sequence: 1719131 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*

LDC #: 39849A1

## VALIDATION COMPLETENESS WORKSHEET

Date: 11/27/17

SDG #: 17-29474

Level III/IV

Page: 1 of 7

Laboratory: BC Laboratories, Inc.

Reviewer: DG2nd Reviewer: CF

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAV $\leq 20\%$ $r^2$ ICV $\leq 30\%$
IV.	Continuing calibration	SW	CW $\leq 30\%$
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1, EB = 12 SB = 13
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	NA	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 4/5
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation
XIII.	Target compound identification	A	Not reviewed for Level III validation
XIV.	System performance	A	Not reviewed for Level III validation
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

\*\* Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	TB-1-101617	1729474-01	Water	10/16/17
2	MW-20-5	1729474-02	Water	10/16/17
3	MW-20-4	1729474-03	Water	10/16/17
4	MW-20-3	1729474-04	Water	10/16/17
5	DUP-1-4Q17	1729474-05	Water	10/16/17
6	MW-20-2	1729474-06	Water	10/16/17
7	MW-19-5**	1729474-07**	Water	10/16/17
8	MW-19-4	1729474-08	Water	10/16/17
9	MW-19-3	1729474-09	Water	10/16/17
10	MW-19-2	1729474-10	Water	10/16/17
11	MW-19-1	1729474-11	Water	10/16/17
12	EB-1-101617	1729474-12	Water	10/16/17
13	SB-1-101617	1729474-13	Water	10/16/17

LDC #: 39849A1

# VALIDATION COMPLETENESS WORKSHEET

Date: 11/27/17

SDG #: 17-29474

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: *SV*

2nd Reviewer: *[Signature]*

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-20-5MS	1729474-02MS	Water	10/16/17
15	MW-20-5MSD	1729474-02MSD	Water	10/16/17
16				
17				
18				
19				
20				

Notes:

-	BJ1966 - Blk 1				

LDC #: 39849 A1

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: JVG  
2nd Reviewer: [Signature]

Method: Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Was cooler temperature criteria met?	/			
<b>II. GC/MS Instrument performance check</b>				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	/			
Were the BFB performance results reviewed and found to be within the specified criteria?	/			
<b>III. Initial calibration</b>				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) < 20%?	/			
<b>IIIa. Initial Calibration Verification calibration</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) < 30%?	/			
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	/			
Were all percent differences (%D) of continuing calibration < 30%?		/		
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed with each analysis batch?	/			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		/		
<b>VI. Field blanks</b>				
Field blanks were identified in this SDG.	/			
Target compounds were detected in the field blanks.		/		
<b>VII. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	/			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	/			



LDC #: 39849 A1

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: JYG  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) within 70-130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/-30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Diisopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1. Methyl iodide
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

### VALIDATION FINDINGS WORKSHEET Continuing Calibration

METHOD: GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N / N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y N / N/A Were all percent differences (%D) ≤ 30% ?

#	Date	Standard ID	Compound	Finding %D (Limit: <30.0%)	Associated Samples	Qualifications
	10/19/17	19oct03	Y1	34.6	All (ND)	J/uJ/P

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

**METHOD:** GC/MS VOA (EPA Method 524.2)

Y N N/A  
Y N N/A

Were field duplicate pairs identified in this SDG?  
 Were target compounds detected in the field duplicate pairs?


Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)
	A	B	
EE	0.15	0.15 u	200
FF	0.39	0.33	17
AA	0.28	0.23 u	200
GGGG	1.6	1.8	12
G	0.57	0.67	16

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

LDC #: 39849A1

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: 

METHOD: GC/MS VOA (EPA Method 524.2)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

$A_x$  = Area of Compound

$C_x$  = Concentration of compound,

S = Standard deviation of the RRFs,

$A_{is}$  = Area of associated internal standard

$C_{is}$  = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL MS V5	10/0517	1,1-DCA (FB)	0.949780	0.949780	0.930250	0.930250	7.165	7.165
			Trichloroethene (DFB)	0.305019	0.305019	0.296404	0.296404	4.748	4.748
			1,2,4-TMB (CBZ)	5.026954	5.026954	4.834027	4.834027	13.490	13.490

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

METHOD: GC/MS VOA (EPA Method 524.2)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

$A_x$  = Area of Compound

$C_x$  = Concentration of compound,

S = Standard deviation of the RRFs,

$A_{is}$  = Area of associated internal standard

$C_{is}$  = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL MS V5	10/0517	Chloroform (FB)	0.845812	0.845812	0.823019	0.823019	5.349	5.349
			Trichloroethene (DFB)	0.305019	0.305019	0.296404	0.296404	4.748	4.748
			1,2,4-TMB (CBZ)	5.026954	5.026954	4.834027	4.834027	13.490	13.490

LDC #: 39849A1

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
Reviewer: JVG  
2nd reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: 7

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8	10.0	10.08	101	101	0
Bromofluorobenzene	↓	10.0	100	100	↓
1,2-Dichlorobenzene-d4	↓	10.93	109	109	↓
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

LDC #: 39849 A1

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

Page: 1 of 1

Reviewer: JVG

2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $|MSC - MSDC| * 2 / (MSC + MSDC)$

MSC = Matrix spike percent recovery

MSDC = Matrix spike duplicate percent recovery

MS/MSD sample: 14/15

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
1,1-Dichloroethene	25.0	25.0	0	29.6	26.22	118	118	105	105	12.1	12.1
Trichloroethene	↓	↓	↓	27.05	25.5	108	108	102	102	5.90	5.90
Benzene	↓	↓	↓	28.91	26.11	116	116	104	104	10.2	10.2
Toluene	↓	↓	↓	28.57	26.37	114	114	105	105	8.01	8.01
Chlorobenzene	↓	↓	↓	27.39	26.38	110	110	106	106	3.76	3.76

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 39849A1

**VALIDATION FINDINGS WORKSHEET**  
**Laboratory Control Sample Results Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = |LCS - LCSD| \* 2 / (LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: BJ1966-BS1

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	25.0	NA	27.18	NA	109	109				
Trichloroethene	↓	↓	26.09	↓	104	104				
Benzene	↓	↓	25.97	↓	104	104				
Toluene	↓	↓	26.61	↓	106	106				
Chlorobenzene	↓	↓	25.61	↓	102	102				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA Method 524.2)

Compound results reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample purged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 7, k:

$$\begin{aligned} \text{Conc.} &= \frac{(39738)(10.0)}{(243285)(6.823019)} \\ &= 1.98 \\ &\approx 2.0 \mu\text{g/L} \end{aligned}$$

#	Sample ID	Compound	Reported Concentration ( $\mu\text{g/L}$ )	Calculated Concentration ( )	Acceptable (Y/N)
			2.0		

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Chromium

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29474

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-20-5	1729474-02	Water	10/16/17
MW-20-4	1729474-03	Water	10/16/17
MW-20-3	1729474-04	Water	10/16/17
DUP-1-4Q17	1729474-05	Water	10/16/17
MW-20-2	1729474-06	Water	10/16/17
MW-19-5**	1729474-07**	Water	10/16/17
MW-19-4	1729474-08	Water	10/16/17
MW-19-3	1729474-09	Water	10/16/17
MW-19-2	1729474-10	Water	10/16/17
MW-19-1	1729474-11	Water	10/16/17
EB-1-101617	1729474-12	Water	10/16/17
SB-1-101617	1729474-13	Water	10/16/17
MW-20-5MS	1729474-02MS	Water	10/16/17
MW-20-5MSD	1729474-02MSD	Water	10/16/17
MW-20-5DUP	1729474-02DUP	Water	10/16/17
EB-1-101617MS	1729474-12MS	Water	10/16/17
EB-1-101617MSD	1729474-12MSD	Water	10/16/17
EB-1-101617DUP	1729474-12DUP	Water	10/16/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chromium by Environmental Protection Agency (EPA) Method 200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the method.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
10/20/17	CCVI (22:59)	Chromium	112 (90-110)	SB-1-101617	NA	-

## IV. ICP Interference Check Sample Analysis

ICP interference check sample analyses were not required by the method.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	0.55400 ug/L	SB-1-101617

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

## VI. Field Blanks

Sample EB-1-101617 was identified as an equipment blank. No contaminants were found.

Sample SB-1-101617 was identified as a source blank. No contaminants were found.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution analysis was performed on an associated project sample. Percent differences (%D) were within QC limits.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

Samples MW-20-3 and DUP-1-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-20-3	DUP-1-4Q17	
Chromium	0.50U	0.65	200

## XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## XIII. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Chromium - Data Qualification Summary - SDG 17-29474**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Chromium - Laboratory Blank Data Qualification Summary - SDG 17-29474**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:35:24AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-20-5

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-02

File ID: PE\_EL2\_171020-119

Sampled: 10/16/17 08:30

Prepared: 10/20/17 08:30

Analyzed: 10/20/17 15:42

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2123

Sequence: 1719290

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*12/6/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-20-4

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-03

File ID: PE\_EL2\_171020-127

Sampled: 10/16/17 09:10

Prepared: 10/20/17 08:30

Analyzed: 10/20/17 16:10

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2123

Sequence: 1719290

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-20-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-04</u>	File ID: <u>PE_EL2_171020-128</u>	
Sampled: <u>10/16/17 09:35</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:14</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*11/9/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**DUP-1-4Q17**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-05</u>	File ID: <u>PE_EL2_171020-129</u>	
Sampled: <u>10/16/17 09:45</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:17</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.65	1	J	EPA-200.8

*11/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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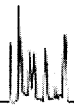
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-20-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-06</u>	File ID: <u>PE_EL2_171020-130</u>	
Sampled: <u>10/16/17 10:45</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:21</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BfJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*12/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

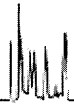
**EPA-200.8**

**MW-19-5**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-07</u>	File ID: <u>PE_EL2 171020-131</u>	
Sampled: <u>10/16/17 12:35</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:24</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	3.7	1		EPA-200.8

*12/10/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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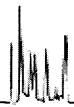
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-19-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-08</u>	File ID: <u>PE_EL2_171020-132</u>	
Sampled: <u>10/16/17 13:15</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:28</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.9	1	J	EPA-200.8

*11/16/17 J*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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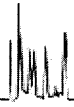
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-19-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-09</u>	File ID: <u>PE_EL2_171020-133</u>	
Sampled: <u>10/16/17 13:35</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:31</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.5	1	J	EPA-200.8

*11/16/17* ✓



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-19-2**

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-10

File ID: PE\_EL2 171020-134

Sampled: 10/16/17 14:25

Prepared: 10/20/17 08:30

Analyzed: 10/20/17 16:35

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2123

Sequence: 1719290

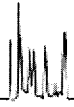
Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.4	1	J	EPA-200.8

*12/6/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-19-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-11</u>	File ID: <u>PE_EL2 171020-135</u>	
Sampled: <u>10/16/17 14:45</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 16:38</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2123</u>	Sequence: <u>1719290</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*12/6/17* &



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**EB-1-101617**

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-12

File ID: PE\_EL2 171020-176

Sampled: 10/16/17 14:55

Prepared: 10/20/17 08:30

Analyzed: 10/20/17 21:50

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2125

Sequence: 1719295

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

12/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:35:24AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

SB-1-101617
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-13</u>	File ID: <u>PE_EL2_171020-186</u>	
Sampled: <u>10/16/17 15:00</u>	Prepared: <u>10/20/17 08:30</u>	Analyzed: <u>10/20/17 22:25</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJJ2125</u>	Sequence: <u>1719295</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*10/16/17 R*

**METHOD:** Chromium (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	not required
V.	Laboratory Blanks	SW	
VI.	Field Blanks	ND	EB=11, SB=12
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	A	SD: 1, 11
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D= 3+4
XII.	Internal Standard (ICP-MS)	A	not reviewed for Level III
XIII.	Sample Result Verification	A	Not reviewed for Level III validation
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

\*\* Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	MW-20-5	1729474-02	Water	10/16/17
2	MW-20-4	1729474-03	Water	10/16/17
3	MW-20-3	1729474-04	Water	10/16/17
4	DUP-1-4Q17	1729474-05	Water	10/16/17
5	MW-20-2	1729474-06	Water	10/16/17
6	MW-19-5**	1729474-07**	Water	10/16/17
7	MW-19-4	1729474-08	Water	10/16/17
8	MW-19-3	1729474-09	Water	10/16/17
9	MW-19-2	1729474-10	Water	10/16/17
10	MW-19-1	1729474-11	Water	10/16/17
11	EB-1-101617	1729474-12	Water	10/16/17
12	SB-1-101617	1729474-13	Water	10/16/17
13	MW-20-5MS	1729474-02MS	Water	10/16/17
14	MW-20-5MSD	1729474-02MSD	Water	10/16/17
15	MW-20-5DUP	1729474-02DUP	Water	10/16/17

LDC #: 39849A4a

### VALIDATION COMPLETENESS WORKSHEET

Date: 11-29-17

SDG #: 17-29474

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG

2nd Reviewer: CJ

**METHOD:** Chromium (EPA Method 200.8)

	Client ID	Lab ID	Matrix	Date
16	2 EB-1-101617MS	1729474-12MS	Water	10/16/17
17	2 EB-1-101617MSD	1729474-12MSD	Water	10/16/17
18	2 EB-1-101617DUP	1729474-12DUP	Water	10/16/17
19				
20				
21				
22	1 PBW1			
23	2 PBW2			

Notes:

**Method:Metals (EPA SW 846 Method 6010/7000/6020)**

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. ICP/MS Tune</b>				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution $\leq 5\%$ ?	✓			
<b>III. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?		✓		
Were all initial calibration correlation coefficients $> 0.995$ ?	✓			
<b>IV. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>V. ICP Interference Check Sample</b>				
Were ICP interference check samples performed daily?		✓		
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?			✓	
<b>VI. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters and $\leq 35\%$ for soil samples? A control limit of $\pm 2X$ RL ( $\pm 2X$ RL for soil) was used for samples that were $\leq 5X$ the RL, including when only one of the duplicate sample values were $\leq 5X$ the RL.	✓			
<b>VII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)</b>				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
<b>IX. ICP Serial Dilution</b>				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
<b>X. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XI. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XII. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
<b>XIII. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 39849A4a

**VALIDATION FINDINGS WORKSHEET**  
**Calibration**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?
- N N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%) and cyanide (85-115%)?

**LEVEL IV ONLY:**

- N N/A Was a midrange cyanide standard distilled?
- N N/A Are all correlation coefficients  $\geq 0.995$ ?
- N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
1	10-20-17	CCVI (22:59)	Cr	112 (90-110)	12	Jdets / P (N.D.)

Comments: \_\_\_\_\_



LDC #: 39849A4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 200.8)

Sample Concentration units, unless otherwise noted: ug/L

VALIDATION FINDINGS WORKSHEET

PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: NA

Associated Samples: 12 (ND)

Page: 1 of 1

Reviewer: AG

2nd Reviewer: AG

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual.									
Cr			0.55400	2.77										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC#: 39849A4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** Metals (EPA Method 200.8)

Y N NA

Were field duplicate pairs identified in this SDG?

Y N NA

Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	3	4		
Chromium	0.50U	0.65	200	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849A4a.WPD

LDC #: 39849A4a

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: MG  
 2nd Reviewer: [Signature]

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$       Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
	ICP (Initial calibration)						
<u>0815 ICV</u>	ICP/MS (Initial calibration)	<u>Cr</u>	<u>52.202</u>	<u>50.000</u>	<u>104</u>	<u>104</u>	<u>Y</u>
	CVAA (Initial calibration)						↓
	ICP (Continuing calibration)						
<u>1604 CCVB</u>	ICP/MS (Continuing calibration)	<u>Cr</u>	<u>40.261</u>	<u>40.000</u>	<u>101</u>	<u>101</u>	
	CVAA (Continuing calibration)						
	GFAA (Initial calibration)						
	GFAA (Continuing calibration)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39849A4a

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1  
 Reviewer: MG  
 2nd Reviewer: [Signature]

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
 D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
 SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
—	ICP interference check	—	—	—	—	—	—
<u>1535</u> <u>LCS</u>	Laboratory control sample	<u>Cr</u>	<u>38.36 (mg/L)</u>	<u>40.00 (mg/L)</u>	<u>95.9</u>	<u>95.9</u>	<u>Y</u>
<u>1553</u> <u>13</u>	Matrix spike	<u>Cr</u>	<u>(SSR-SR)</u> <u>37.77 (mg/L)</u>	<u>40.00 (mg/L)</u>	<u>94.4</u>	<u>94.4</u>	
<u>1542 / 1546</u> <u>15</u>	Duplicate	<u>Cr</u>	<u>0.50 u (mg/L)</u>	<u>0.50 u (mg/L)</u>	<u>0</u>	—	
<u>1542 / 1549</u> <u>1</u>	ICP serial dilution	<u>Cr</u>	<u>0.50 u mg/L</u>	<u>2.5 u mg/L</u>	<u>0</u>	—	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39849A4a

### VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: X

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Have results been reported and calculated correctly?
- N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
- N N/A Are all detection limits below the CRDL?

Detected analyte results for #6, Cr were recalculated and verified using the following equation:

Concentration =  $\frac{(RD)(FV)(Dil)}{(In. Vol.)}$

Recalculation:

- RD = Raw data concentration
- FV = Final volume (ml)
- In. Vol. = Initial volume (ml) or weight (G)
- Dil = Dilution factor

$$\frac{(3.745 \text{ mg/L})(0.050 \text{ L})}{0.050 \text{ L}} = 3.745 \text{ mg/L}$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	6	Cr	3.7	3.7	Y

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29474

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-20-5	1729474-02	Water	10/16/17
MW-20-4	1729474-03	Water	10/16/17
MW-20-3	1729474-04	Water	10/16/17
DUP-1-4Q17	1729474-05	Water	10/16/17
MW-20-2	1729474-06	Water	10/16/17
MW-19-5**	1729474-07**	Water	10/16/17
MW-19-4	1729474-08	Water	10/16/17
MW-19-3	1729474-09	Water	10/16/17
MW-19-2	1729474-10	Water	10/16/17
MW-19-1	1729474-11	Water	10/16/17
EB-1-101617	1729474-12	Water	10/16/17
SB-1-101617	1729474-13	Water	10/16/17
MW-20-5MS	1729474-02MS	Water	10/16/17
MW-20-5MSD	1729474-02MSD	Water	10/16/17
MW-20-5DUP	1729474-02DUP	Water	10/16/17
MW-19-5MS	1729474-07MS	Water	10/16/17
MW-19-5MSD	1729474-07MSD	Water	10/16/17
MW-19-5DUP	1729474-07DUP	Water	10/16/17
EB-1-101617MS	1729474-12MS	Water	10/16/17
EB-1-101617MSD	1729474-12MSD	Water	10/16/17
EB-1-101617DUP	1729474-12DUP	Water	10/16/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7196

Perchlorate by EPA Method 314.0

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample EB-1-101617 was identified as an equipment blank. No contaminants were found.

Sample SB-1-101617 was identified as a source blank. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

Samples MW-20-3 and DUP-1-4Q17 were identified as field duplicates. No results were detected in any of the samples.

## **X. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Wet Chemistry - Data Qualification Summary - SDG 17-29474**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-29474**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-20-5

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-02

File ID: F102817.seq-41.0000.txt

Sampled: 10/16/17 08:30

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 03:04

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J2948

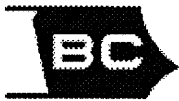
Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*11/6/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

## INORGANIC ANALYSIS DATA SHEET EPA-314.0

MW-20-4

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-03

File ID: F102817.seq-42.0000.txt

Sampled: 10/16/17 09:10

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 03:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BfJ2948

Sequence:

1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*11/16/17 [Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-20-3

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-04

File ID: F102817.seq-43.0000.txt

Sampled: 10/16/17 09:35

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 03:33

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence:

1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

DUP-1-4Q17

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-05

File ID: F102817.seq-44.0000.txt

Sampled: 10/16/17 09:45

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 03:47

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence:

1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-20-2

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-06

File ID: F102817.seq-45.0000.txt

Sampled: 10/16/17 10:45

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 04:02

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.2	1	J	EPA-314.0

11/6/17 R





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-19-5

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-07

File ID: F102817.seq-46.0000.txt

Sampled: 10/16/17 12:35

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 04:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.0	1	J	EPA-314.0

11/9/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-19-4

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-08

File ID: F102817.seq-52.0000.txt

Sampled: 10/16/17 13:15

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 17:33

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.4	1	J	EPA-314.0

*2/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-19-3

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-09

File ID: F102817.seq-53.0000.txt

Sampled: 10/16/17 13:35

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 17:47

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.9	1	J	EPA-314.0

11/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-19-2

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-10

File ID: F102817.seq-54.0000.txt

Sampled: 10/16/17 14:25

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 18:02

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.1	1		EPA-314.0

11/16/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-19-1

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-11

File ID: F102817.seq-55.0000.txt

Sampled: 10/16/17 14:45

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 18:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

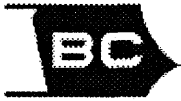
Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

EB-1-101617

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-12

File ID: F102817.seq-56.0000.txt

Sampled: 10/16/17 14:55

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 18:30

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/9/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

SB-1-101617

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-13

File ID: F102817.seq-57.0000.txt

Sampled: 10/16/17 15:00

Prepared: 10/28/17 23:30

Analyzed: 10/29/17 18:45

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2948

Sequence: 1719910

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/9/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-20-5

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-02

File ID: 171016 2352 CR6-061

Sampled: 10/16/17 08:30

Prepared: 10/16/17 23:52

Analyzed: 10/17/17 07:27

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ1963

Sequence: 1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

11/6/17 ✓





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-20-4

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-03

File ID: 171016 2352 CR6-009

Sampled: 10/16/17 09:10

Prepared: 10/16/17 23:52

Analyzed: 10/16/17 23:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ1963

Sequence: 1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-20-3

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-04

File ID: 171016 2352 CR6-010

Sampled: 10/16/17 09:35

Prepared: 10/16/17 23:52

Analyzed: 10/16/17 23:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1963

Sequence: 1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

11/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

DUP-1-4Q17

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-05

File ID: 171016 2352 CR6-011

Sampled: 10/16/17 09:45

Prepared: 10/16/17 23:52

Analyzed: 10/16/17 23:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ1963

Sequence: 1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*12/6/17 Q*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-20-2

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-06

File ID: 171016 2352 CR6-012

Sampled: 10/16/17 10:45

Prepared: 10/16/17 23:52

Analyzed: 10/16/17 23:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J]1963

Sequence:

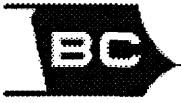
1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-19-5

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-07

File ID: 171016 2352 CR6-035

Sampled: 10/16/17 12:35

Prepared: 10/16/17 23:52

Analyzed: 10/17/17 00:26

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J]1963

Sequence:

1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0020	1		EPA-7196

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-19-4

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-08

File ID: 171016 2352 CR6-036

Sampled: 10/16/17 13:15

Prepared: 10/16/17 23:52

Analyzed: 10/17/17 00:26

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J]1963

Sequence:

1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0015	1	J	EPA-7196

11/6/17 0



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-19-3

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-09

File ID: 171016 2352 CR6-065

Sampled: 10/16/17 13:35

Prepared: 10/16/17 23:52

Analyzed: 10/17/17 07:27

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1963

Sequence:

1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0012	1	J	EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-19-2

Laboratory: BC Laboratories

SDG: 17-29474

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729474-10

File ID: 171016 2352 CR6-018

Sampled: 10/16/17 14:25

Prepared: 10/16/17 23:52

Analyzed: 10/16/17 23:59

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J]1963

Sequence: 1719205

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00074	1	J	EPA-7196

11/9/17 [Signature]





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:32:08AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
--	--

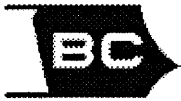
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

**MW-19-1**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-11</u>
	File ID: <u>171016 2352 CR6-019</u>
Sampled: <u>10/16/17 14:45</u>	Prepared: <u>10/16/17 23:52</u>
	Analyzed: <u>10/16/17 23:59</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BJJ1963</u>	Sequence: <u>1719205</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*12/6/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

EB-1-101617

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29474</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729474-12</u>	File ID: <u>171016 2352 CR6-022</u>	
Sampled: <u>10/16/17 14:55</u>	Prepared: <u>10/16/17 23:52</u>	Analyzed: <u>10/16/17 23:59</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJ1965</u>	Sequence: <u>1719205</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/9/17 [Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:32:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

SB-1-101617

Laboratory: BC Laboratories SDG: 17-29474  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729474-13 File ID: 171016 2352 CR6-028  
Sampled: 10/16/17 15:00 Prepared: 10/16/17 23:52 Analyzed: 10/16/17 23:59  
Solids: 0.00 Preparation: No Prep Initial/Final: 20 ml / 20 ml  
Batch: BJ1965 Sequence: 1719205 Calibration: UNASSIGNED Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*12/8/17*

LDC #: 39849A6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 11-29-17

SDG #: 17-29474

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG

2nd Reviewer:

**METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)**

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	EB=11, SB=12
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	ND	D=3+4
X.	Sample result verification	A	Not reviewed for Level III validation
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	MW-20-5	1729474-02	Water	10/16/17
2	MW-20-4	1729474-03	Water	10/16/17
3	MW-20-3	1729474-04	Water	10/16/17
4	DUP-1-4Q17	1729474-05	Water	10/16/17
5	MW-20-2	1729474-06	Water	10/16/17
6	MW-19-5**	1729474-07**	Water	10/16/17
7	MW-19-4	1729474-08	Water	10/16/17
8	MW-19-3	1729474-09	Water	10/16/17
9	MW-19-2	1729474-10	Water	10/16/17
10	MW-19-1	1729474-11	Water	10/16/17
11	EB-1-101617	1729474-12	Water	10/16/17
12	SB-1-101617	1729474-13	Water	10/16/17
13	MW-20-5MS	1729474-02MS	Water	10/16/17
14	MW-20-5MSD	1729474-02MSD	Water	10/16/17
15	MW-20-5DUP	1729474-02DUP	Water	10/16/17
16	MW-19-5MS	1729474-07MS	Water	10/16/17
17	MW-19-5MSD	1729474-07MSD	Water	10/16/17

LDC #: 39849A6

### VALIDATION COMPLETENESS WORKSHEET

Date: 11-29-17

SDG #: 17-29474

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)

	Client ID	Lab ID	Matrix	Date
18	MW-19-5DUP	1729474-07DUP	Water	10/16/17
19	EB-1-101617MS	1729474-12MS	Water	10/16/17
20	EB-1-101617MSD	1729474-12MSD	Water	10/16/17
21	EB-1-101617DUP	1729474-12DUP	Water	10/16/17
22				
23				
24				
25	PBW1			
26	PBW2			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method: Inorganics (EPA Method See cover )**

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.		✓		
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 → 12	W	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC (CR <sup>6+</sup> ) (ClO <sub>4</sub> )
QC 13 → 15, 19 → 21	↓	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC (CR <sup>6+</sup> ) ClO <sub>4</sub>
↓ 16 → 18	↓	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> (ClO <sub>4</sub> )
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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Comments: \_\_\_\_\_



LDC #: 39849A6

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: MG  
 2nd Reviewer: Q

METHOD: Inorganics, Method See CoverThe correlation coefficient (r) for the calibration of Cr VI was recalculated. Calibration date: 9-13-17

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte	Standard ID	Conc. Found (units)	Abs. True (units)	Recalculated	Reported	Acceptable (Y/N)
					r or %R	r or %R	
Initial calibration	Cr VI	Blank	0.000 (mg/L)	0.00054	$r^2 = 0.999944$	$r^2 = 0.999945$	Y
		Standard 1	0.002 ( )	0.00201			
		Standard 2	0.005 ( )	0.00420			
		Standard 3	0.025 ( )	0.01882			
		Standard 4	0.050 ( )	0.03796			
		Standard 5	0.100 (↓)	0.07444			
		Standard 6	-	-			
		Standard 7	-	-			
Calibration verification	Cr VI	0221 CCV3	9.584 (mg/L)	10.00 (mg/L)	95.8	95.8	
Calibration verification	Cr VI	0026 CCV5	0.0498 (mg/L)	0.050 (mg/L)	99.6	99.7	
Calibration verification	-	-	-	-	-	-	-

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39849A6

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1  
 Reviewer: MG  
 2nd Reviewer:           

**METHOD:** Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$     Where,    Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$     Where,    S = Original sample concentration  
 D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
0124 LCS	Laboratory control sample	ClO <sub>4</sub>	10.00 (µg/L)	10.00 (µg/L)	100	99.4	Y
0727 13	Matrix spike sample	Cr VI	(SSR-SR) 0.0520 (mg/L)	0.052632 (mg/L)	98.8	98.5	↓
0416 / 0430 18	Duplicate sample	ClO <sub>4</sub>	2.31 (µg/L)	1.54 (µg/L)	40.0	7.64	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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LDC #: 39849A6

VALIDATION FINDINGS WORKSHEET  
Sample Calculation Verification

Page: 1 of 1  
Reviewer: MG  
2nd reviewer:

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Have results been reported and calculated correctly?
- Y  N  N/A Are results within the calibrated range of the instruments?
- Y  N  N/A Are all detection limits below the CRQL?

Compound (analyte) results for # 6, ClO4 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$y = mx + b$   
 where  
 $m = 0.0013$   
 $b = 0.0000$   
 $dil = 1x$

$$0.003 = 0.0013(x) + 0.0000$$

$$2.308 \mu\text{g/L} = x$$

#	Sample ID	Analyte	Reported Concentration (μg/L)	Calculated Concentration (μg/L)	Acceptable (Y/N)
1	6	ClO4	2.0	2.3	Y
	↓		(mg/L)	(mg/L)	↓
		Cr VI	0.0020	0.0022	↓

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 4, 2017

**Parameters:** Volatiles

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29664

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-2-101717	1729664-01	Water	10/17/17
MW-14-5	1729664-02	Water	10/17/17
MW-14-4	1729664-03	Water	10/17/17
MW-14-3	1729664-04	Water	10/17/17
MW-14-2	1729664-05	Water	10/17/17
MW-25-5	1729664-06	Water	10/17/17
MW-25-4	1729664-07	Water	10/17/17
MW-25-3	1729664-08	Water	10/17/17
MW-25-2	1729664-09	Water	10/17/17
DUP-2-4Q17	1729664-10	Water	10/17/17
MW-25-1	1729664-11	Water	10/17/17
EB-2-101717	1729664-12	Water	10/17/17
MW-14-5MS	1729664-02MS	Water	10/17/17
MW-14-5MSD	1729664-02MSD	Water	10/17/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
10/20/17 (20oct20)	Bromomethane	45.9	All samples in SDG 17-29664	UJ (all non-detects)	P
10/20/17 (20oct03)	Methyl iodide	47.5	All samples in SDG 17-29664	UJ (all non-detects)	P

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample TB-2-101717 was identified as a trip blank. No contaminants were found.

Sample EB-2-101717 was identified as an equipment blank. No contaminants were found.

### VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### X. Field Duplicates

Samples MW-25-2 and DUP-2-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-25-2	DUP-2-4Q17	
Chloroform	0.14	0.14	0

### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

### XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

### XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

### XIV. System Performance

Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to continuing calibration %D, data were qualified as estimated in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.



**NASA JPL, 4Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-29664**

Sample	Compound	Flag	A or P	Reason
TB-2-101717 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-25-5 MW-25-4 MW-25-3 MW-25-2 DUP-2-4Q17 MW-25-1 EB-2-101717	Bromomethane Methyl iodide	UJ (all non-detects) UJ (all non-detects)	P	Continuing calibration (%D)

**NASA JPL, 4Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-29664**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-2-101717

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-01 File ID: 20OCT08.D  
Sampled: 10/17/17 07:00 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 07:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-2-101717

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-01 File ID: 20OCT08.D  
Sampled: 10/17/17 07:00 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 07:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

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ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-2-101717

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-01 File ID: 20OCT08.D  
Sampled: 10/17/17 07:00 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 07:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.1000	91.0	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.6500	96.5	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.6800	96.8	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	267538	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	102144	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	441726	7.38	459400	7.38	

\* Values outside of QC limits

*A/6/17*



Tidewater Inc.  
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Powell, OH 43065

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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**TB-2-101717**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-01</u>	File ID:	<u>20OCT08.D</u>		
Sampled:	<u>10/17/17 07:00</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 07:53</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BIJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-02 File ID: 20OCT09.D  
Sampled: 10/17/17 07:30 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:16  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-02 File ID: 20OCT09.D  
Sampled: 10/17/17 07:30 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:16  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
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ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-02 File ID: 20OCT09.D  
Sampled: 10/17/17 07:30 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:16  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.6200	96.2	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.120	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7000	97.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	268841	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	105584	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	432085	7.38	459400	7.38	

\* Values outside of QC limits

11/16/17 *[Signature]*







Tidewater Inc.  
3761 Attucks Drive  
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Reported: 11/10/2017 12:28:37PM  
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Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-4

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-03 File ID: 20OCT10.D  
Sampled: 10/17/17 07:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:39  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>KS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-4

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-03 File ID: 20OCT10.D  
Sampled: 10/17/17 07:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:39  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/10/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-4

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-03 File ID: 20OCT10.D  
Sampled: 10/17/17 07:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 08:39  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>45</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.110	101	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7900	97.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5900	95.9	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	263713	6.58	278883	6.57	
Chlorobenzene-d5 (IS)	101613	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	433830	7.38	459400	7.38	

\* Values outside of QC limits

*11/10/17* *[Signature]*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-3

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-04 File ID: 20OCT18.D  
Sampled: 10/17/17 08:30 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 11:45  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.37	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.25	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-3

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-04</u>
		File ID:	<u>20OCT18.D</u>
Sampled:	<u>10/17/17 08:30</u>	Prepared:	<u>10/20/17 07:00</u>
		Analyzed:	<u>10/20/17 11:45</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.8200	98.2	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.100	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9100	99.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	267743	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	101531	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	438103	7.38	459400	7.38	

\* Values outside of QC limits





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**MW-14-3**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-04</u>	File ID:	<u>20OCT18.D</u>		
Sampled:	<u>10/17/17 08:30</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 11:45</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-05 File ID: 20OCT19.D  
Sampled: 10/17/17 08:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.39	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-05 File ID: 20OCT19.D  
Sampled: 10/17/17 08:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.36	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.3	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-05 File ID: 20OCT19.D  
Sampled: 10/17/17 08:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U UT
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.160	102	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.200	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.140	101	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	261543	6.58	278883	6.57	
Chlorobenzene-d5 (IS)	99626	9.62	109818	9.61	
1,4-Difluorobenzene (IS)	418365	7.38	459400	7.38	

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-2

Laboratory: BC Laboratories SDG: 17-29664  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729664-05 File ID: 20OCT19.D  
 Sampled: 10/17/17 08:50 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:07  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET

EPA-524.2

MW-25-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-06 File ID: 20OCT20.D  
Sampled: 10/17/17 10:40 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U UT
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-06 File ID: 20OCT20.D  
Sampled: 10/17/17 10:40 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/10/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-5

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-06 File ID: 20OCT20.D  
Sampled: 10/17/17 10:40 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.8500	98.5	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9800	99.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.6600	96.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	266371	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	99572	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	422765	7.38	459400	7.38	

\* Values outside of QC limits

*Handwritten signature*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**

**EPA-524.2**

MW-25-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-06</u>	File ID:	<u>20OCT20.D</u>		
Sampled:	<u>10/17/17 10:40</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 12:31</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-4

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-07 File ID: 20OCT21.D  
Sampled: 10/17/17 11:10 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 12:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*11/10/17*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**MW-25-4**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-07</u>
Sampled:	<u>10/17/17 11:10</u>	Prepared:	<u>10/20/17 07:00</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
Batch:	<u>B[J]2091</u>	Sequence:	<u>1719225</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29664</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729664-07</u>	File ID: <u>20OCT21.D</u>	
Sampled: <u>10/17/17 11:10</u>	Prepared: <u>10/20/17 07:00</u>	Analyzed: <u>10/20/17 12:53</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>BJ2091</u>	Sequence: <u>1719225</u>	Calibration: <u>1710006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.170	102	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9500	99.5	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7100	97.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	258391	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	100379	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	419450	7.38	459400	7.38	

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-4

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-07</u>
		File ID:	<u>20OCT21.D</u>
Sampled:	<u>10/17/17 11:10</u>	Prepared:	<u>10/20/17 07:00</u>
		Analyzed:	<u>10/20/17 12:53</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET

EPA-524.2

MW-25-3

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-08 File ID: 20OCT22.D  
Sampled: 10/17/17 11:40 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 13:16  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U UT
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.34	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-3

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-08</u>
		File ID:	<u>20OCT22.D</u>
Sampled:	<u>10/17/17 11:40</u>	Prepared:	<u>10/20/17 07:00</u>
		Analyzed:	<u>10/20/17 13:16</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BIJ2091</u>	Sequence:	<u>1719225</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.31	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/10/17 *[Signature]*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29664</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729664-08</u>	File ID: <u>20OCT22.D</u>	
Sampled: <u>10/17/17 11:40</u>	Prepared: <u>10/20/17 07:00</u>	Analyzed: <u>10/20/17 13:16</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>BJJ2091</u>	Sequence: <u>1719225</u>	Calibration: <u>1710006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.270	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.080	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7400	97.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	256263	6.58	278883	6.57	
Chlorobenzene-d5 (IS)	100154	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	420817	7.38	459400	7.38	

\* Values outside of QC limits

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-3

Laboratory: BC Laboratories                      SDG: 17-29664  
Client: Tidewater Inc.                                  Project: JPL- GW Monitoring Wells  
Matrix: Water                                      Laboratory ID: 1729664-08                      File ID: 20OCT22.D  
Sampled: 10/17/17 11:40                      Prepared: 10/20/17 07:00                      Analyzed: 10/20/17 13:16  
Solids:    Preparation: EPA 5030 Water MS                      Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091                      Sequence: 1719225                      Calibration: 1710006                      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/16/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-09 File ID: 20OCT23.D  
Sampled: 10/17/17 11:55 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 13:38  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>KS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*10/16/17* *KS*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-09 File ID: 20OCT23.D  
Sampled: 10/17/17 11:55 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 13:38  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-2

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-09 File ID: 20OCT23.D  
Sampled: 10/17/17 11:55 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 13:38  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.180	102	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9400	99.4	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7600	97.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	252873	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	97639	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	413877	7.38	459400	7.38	

\* Values outside of QC limits

*12/6/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

**MW-25-2**

Laboratory: BC Laboratories                                      SDG: 17-29664  
 Client: Tidewater Inc.    Project: JPL- GW Monitoring Wells  
 Matrix: Water    Laboratory ID: 1729664-09                                  File ID: 20OCT23.D  
 Sampled: 10/17/17 11:55    Prepared: 10/20/17 07:00                                      Analyzed: 10/20/17 13:38  
 Solids:    Preparation: EPA 5030 Water MS                              Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2091    Sequence: 1719225    Calibration: 1710006    Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/07*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

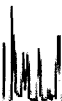
Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-2-4Q17

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-10 File ID: 20OCT24.D  
Sampled: 10/17/17 12:05 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U UT
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-2-4Q17

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-10 File ID: 20OCT24.D  
Sampled: 10/17/17 12:05 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,1,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17 9

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**DUP-2-4Q17**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-10</u>	File ID:	<u>20OCT24.D</u>		
Sampled:	<u>10/17/17 12:05</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 14:01</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>MS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.480	105	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7900	97.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.4500	94.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	250686	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	98910	9.61	109818	9.61	
1,4-Difluorobenzene (IS)	409066	7.38	459400	7.38	

\* Values outside of QC limits





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/10/2017 12:28:37PM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**

**EPA-524.2**

**DUP-2-4Q17**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-10</u>	File ID:	<u>20OCT24.D</u>		
Sampled:	<u>10/17/17 12:05</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 14:01</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*Handwritten signature and date: 11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-1

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-11 File ID: 20OCT25.D  
Sampled: 10/17/17 12:45 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:25  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.42	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*11/10/17 Q*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29664</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729664-11</u>	File ID:	<u>20OCT25.D</u>		
Sampled:	<u>10/17/17 12:45</u>	Prepared:	<u>10/20/17 07:00</u>	Analyzed:	<u>10/20/17 14:25</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2091</u>	Sequence:	<u>1719225</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.46	J
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,1,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.87	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-25-1

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-11 File ID: 20OCT25.D  
Sampled: 10/17/17 12:45 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:25  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>MS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.400	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.240	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7200	97.2	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	244422	6.57	278883	6.57	
Chlorobenzene-d5 (IS)	97317	9.62	109818	9.61	
1,4-Difluorobenzene (IS)	403215	7.38	459400	7.38	

\* Values outside of QC limits

*11/10/17 J*



Tidewater Inc. Reported: 11/10/2017 12:28:37PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-25-1

Laboratory: BC Laboratories SDG: 17-29664  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729664-11 File ID: 20OCT25.D  
 Sampled: 10/17/17 12:45 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:25  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/10/17 DC*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-2-101717

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-12 File ID: 20OCT26.D  
Sampled: 10/17/17 13:00 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-2-101717

Laboratory: BC Laboratories SDG: 17-29664  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729664-12 File ID: 20OCT26.D  
Sampled: 10/17/17 13:00 Prepared: 10/20/17 07:00 Analyzed: 10/20/17 14:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2091 Sequence: 1719225 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17 8



Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 11/10/2017 12:28:37PM
Project: JPL- GW Monitoring Wells
Project Number: 4Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

EB-2-101717

Laboratory: BC Laboratories
Client: Tidewater Inc.
Matrix: Water
Sampled: 10/17/17 13:00
Solids:
Batch: BJJ2091
SDG: 17-29664
Project: JPL- GW Monitoring Wells
Laboratory ID: 1729664-12
Prepared: 10/20/17 07:00
Preparation: EPA 5030 Water MS
File ID: 20OCT26.D
Analyzed: 10/20/17 14:48
Initial/Final: 25 ml / 25 ml
Sequence: 1719225
Calibration: 1710006
Instrument: MS-V5

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various organic compounds and their concentrations.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Shows surrogate compounds and their recovery percentages.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards used for calibration.

\* Values outside of QC limits

Handwritten signature and date: 11/10/17





LDC #: 39849B1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 11/27/17

SDG #: 17-29664

Level III

Page: 1 of 7

Laboratory: BC Laboratories, Inc.

Reviewer: JY

2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL $\leq$ 20%      ICV $\leq$ 30%
IV.	Continuing calibration	SW	CCV $\leq$ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	MD	TB = 1      EB = 12
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 9/10
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-2-101717	1729664-01	Water	10/17/17
2 <sup>+</sup>	MW-14-5	1729664-02	Water	10/17/17
3 <sup>-</sup>	MW-14-4	1729664-03	Water	10/17/17
4 <sup>+</sup>	MW-14-3	1729664-04	Water	10/17/17
5 <sup>+</sup>	MW-14-2	1729664-05	Water	10/17/17
6 <sup>-</sup>	MW-25-5	1729664-06	Water	10/17/17
7 <sup>-</sup>	MW-25-4	1729664-07	Water	10/17/17
8 <sup>+</sup>	MW-25-3	1729664-08	Water	10/17/17
9 <sup>+</sup>	MW-25-2      b	1729664-09	Water	10/17/17
10 <sup>+</sup>	DUP-2-4Q17      D	1729664-10	Water	10/17/17
11 <sup>+</sup>	MW-25-1	1729664-11	Water	10/17/17
12 <sup>-</sup>	EB-2-101717	1729664-12	Water	10/17/17
13	MW-14-5MS	1729664-02MS	Water	10/17/17

LDC #: 39849B1  
SDG #: 17-29664  
Laboratory: BC Laboratories, Inc.

### VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 11/27/17  
Page: 2 of 2  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-14-5MSD	1729664-02MSD	Water	10/17/17
15				
16				
17				
18				
19				

Notes:

BJ 2091-bk1				

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1. <i>Methyl iodide</i>
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.



LDC #: 39849 b1

### VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 1 of 7  
Reviewer: JVG  
2nd reviewer:

METHOD: GC/MS VOA (EPA Method 524.2)

- Y N N/A Were field duplicate pairs identified in this SDG?
- Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)
	9	10	
K	0.14	0.14	0

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Chromium

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29664

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-14-5	1729664-02	Water	10/17/17
MW-14-4	1729664-03	Water	10/17/17
MW-14-3	1729664-04	Water	10/17/17
MW-14-2	1729664-05	Water	10/17/17
MW-25-5	1729664-06	Water	10/17/17
MW-25-4	1729664-07	Water	10/17/17
MW-25-3	1729664-08	Water	10/17/17
MW-25-2	1729664-09	Water	10/17/17
DUP-2-4Q17	1729664-10	Water	10/17/17
MW-25-1	1729664-11	Water	10/17/17
EB-2-101717	1729664-12	Water	10/17/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chromium by Environmental Protection Agency (EPA) Method 200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



### I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

### II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

### III. Instrument Calibration

Initial and continuing calibrations were performed as required by the method.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
10/23/17	CCVF (19:02)	Chromium	86.3 (90-110)	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-25-5 MW-25-4 MW-25-3 MW-25-2 DUP-2-4Q17	J (all detects) UJ (all non-detects)	P

### IV. ICP Interference Check Sample Analysis

ICP interference check sample analyses were not required by the method.

### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

### VI. Field Blanks

Sample EB-2-101717 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (ug/L)
EB-2-101717	Chromium	0.61

## VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## VIII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

Samples MW-25-2 and DUP-2-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-25-2	DUP-2-4Q17	
Chromium	3.0	2.6	14

## XII. Internal Standards (ICP-MS)

Raw data were not reviewed for Level III validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Level III validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to instrument calibration %R, data were qualified as estimated in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Chromium - Data Qualification Summary - SDG 17-29664**

Sample	Analyte	Flag	A or P	Reason
MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-25-5 MW-25-4 MW-25-3 MW-25-2 DUP-2-4Q17	Chromium	J (all detects) UJ (all non-detects)	P	Instrument calibration (CCV %R)

**NASA JPL, 4Q2017**  
**Chromium - Laboratory Blank Data Qualification Summary - SDG 17-29664**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-02

File ID: PE\_EL2 171023-169

Sampled: 10/17/17 07:30

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:16

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJ2274

Sequence: 1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.85	1	JJ	EPA-200.8

*Handwritten signature and date: 11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-03

File ID: PE EL2 171023-170

Sampled: 10/17/17 07:50

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:19

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2274

Sequence:

1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.3	1	J J	EPA-200.8

*Handwritten signature and date: 11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-3

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-04

File ID: PE\_EL2\_171023-171

Sampled: 10/17/17 08:30

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:23

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2274

Sequence:

1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U <i>UT</i>	EPA-200.8

*11/10/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-05

File ID: PE\_EL2\_171023-172

Sampled: 10/17/17 08:50

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:26

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[J2274

Sequence: 1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U <u>LS</u>	EPA-200.8

*12/6/17* *8*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-25-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-06

File ID: PE\_EL2\_171023-173

Sampled: 10/17/17 10:40

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:29

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2274

Sequence: 1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U <u>UT</u>	EPA-200.8

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-25-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-07

File ID: PE\_EL2\_171023-174

Sampled: 10/17/17 11:10

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:33

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B1J2274

Sequence:

1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.7	1	JJ	EPA-200.8

11/10/17 J



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-25-3

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-08

File ID: PE\_EL2\_171023-175

Sampled: 10/17/17 11:40

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:36

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B{J2274

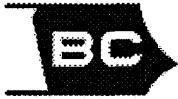
Sequence: 1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	3.1	1	J	EPA-200.8

11/10/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-25-2

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-09

File ID: PE\_EL2\_171023-176

Sampled: 10/17/17 11:55

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:40

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BfJ2274

Sequence:

1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	3.0	1	J	EPA-200.8

11/6/17 [Signature]



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

DUP-2-4Q17

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-10

File ID: PE\_EL2\_171023-177

Sampled: 10/17/17 12:05

Prepared: 10/23/17 08:00

Analyzed: 10/23/17 18:43

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2274

Sequence:

1719389

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.6	1	J	EPA-200.8

11/6/17 J



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-25-1

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-11

File ID: PE\_EL2\_171025-348

Sampled: 10/17/17 12:45

Prepared: 10/24/17 08:30

Analyzed: 10/26/17 04:52

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2443

Sequence:

1719630

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.8	1	J	EPA-200.8

11/6/17 Q



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:32:48PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

EB-2-101717

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-12

File ID: PE\_EL2\_171025-349

Sampled: 10/17/17 13:00

Prepared: 10/24/17 08:30

Analyzed: 10/26/17 04:55

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B1J2443

Sequence:

1719630

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.61	1	J	EPA-200.8

12/6/17 *[Signature]*

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 11-29-17

Page: 1 of 1

Reviewer: MG

2nd Reviewer: [Signature]

**METHOD:** Chromium (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	not required
V.	Laboratory Blanks	A	
VI.	Field Blanks	SW	EB = 11
VII.	Matrix Spike/Matrix Spike Duplicates	N	client specified
VIII.	Duplicate sample analysis	N	" "
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 8+9
XII.	Internal Standard (ICP-MS)	N	not reviewed for Level III
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB = Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-14-5	1729664-02	Water	10/17/17
2	MW-14-4	1729664-03	Water	10/17/17
3	MW-14-3	1729664-04	Water	10/17/17
4	MW-14-2	1729664-05	Water	10/17/17
5	MW-25-5	1729664-06	Water	10/17/17
6	MW-25-4	1729664-07	Water	10/17/17
7	MW-25-3	1729664-08	Water	10/17/17
8	MW-25-2	1729664-09	Water	10/17/17
9	DUP-2-4Q17	1729664-10	Water	10/17/17
10	MW-25-1	1729664-11	Water	10/17/17
11	EB-2-101717	1729664-12	Water	10/17/17
12	PBW1			
13	PBW2			

Notes: \_\_\_\_\_



VALIDATION FINDINGS WORKSHEET  
Calibration

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?
- Y  N  N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%) and cyanide (85-115%)?

LEVEL IV ONLY:

- Y  N  N/A Was a midrange cyanide standard distilled?
- Y  N  N/A Are all correlation coefficients  $\geq 0.995$ ?
- Y  N  N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
1	10-23-17	CCVF (19:02)	Cr	86.3 (90-110)	1 → 9	J/UJ/P (det & N.D.)

Comments: \_\_\_\_\_



LDC#: 39849B4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: MG

**METHOD:** Metals (EPA Method 200.8)

- N NA Were field duplicate pairs identified in this SDG?  
 N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	8	9		
Chromium	3.0	2.6	14	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849B4a.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29664

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-14-5	1729664-02	Water	10/17/17
MW-14-4	1729664-03	Water	10/17/17
MW-14-3	1729664-04	Water	10/17/17
MW-14-2	1729664-05	Water	10/17/17
MW-25-5	1729664-06	Water	10/17/17
MW-25-4	1729664-07	Water	10/17/17
MW-25-3	1729664-08	Water	10/17/17
MW-25-2	1729664-09	Water	10/17/17
DUP-2-4Q17	1729664-10	Water	10/17/17
MW-25-1	1729664-11	Water	10/17/17
EB-2-101717	1729664-12	Water	10/17/17
MW-14-5MS	1729664-02MS	Water	10/17/17
MW-14-5MSD	1729664-02MSD	Water	10/17/17
MW-14-5DUP	1729664-02DUP	Water	10/17/17
EB-2-101717MS	1729664-12MS	Water	10/17/17
EB-2-101717MSD	1729664-12MSD	Water	10/17/17
EB-2-101717DUP	1729664-12DUP	Water	10/17/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7196

Perchlorate by EPA Method 314.0

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample EB-2-101717 was identified as an equipment blank. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

Samples MW-25-2 and DUP-2-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-25-2	DUP-2-4Q17	
Hexavalent Chromium	0.0027 mg/L	0.0021 mg/L	25
Perchlorate	12 ug/L	12 ug/L	0

**X. Sample Result Verification**

Raw data were not reviewed for Level III validation.

**XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Wet Chemistry - Data Qualification Summary - SDG 17-29664**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-29664**

No Sample Data Qualified in this SDG





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-02

File ID: F103017.seq-16.0000.txt

Sampled: 10/17/17 07:30

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 16:18

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*H/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-14-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-03

File ID: F103017.seq-22.0000.txt

Sampled: 10/17/17 07:50

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 17:50

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.0	1		EPA-314.0

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-3

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-04

File ID: F103017.seq-23.0000.txt

Sampled: 10/17/17 08:30

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 18:06

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.5	1		EPA-314.0

12/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-05

File ID: F103017.seq-24.0000.txt

Sampled: 10/17/17 08:50

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 18:21

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.5	1	J	EPA-314.0

12/6/17



Tidewater Inc.  
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Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-25-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-06

File ID: F103017.seq-25.0000.txt

Sampled: 10/17/17 10:40

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 18:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/16/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-25-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-07

File ID: F103017.seq-26.0000.txt

Sampled: 10/17/17 11:10

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 18:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	8.1	1		EPA-314.0

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

**MW-25-3**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-08

File ID: F103017.seq-27.0000.txt

Sampled: 10/17/17 11:40

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 19:07

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	9.8	1		EPA-314.0

*Handwritten signature*



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Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-25-2

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-09

File ID: F103017.seq-28.0000.txt

Sampled: 10/17/17 11:55

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 19:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	12	1		EPA-314.0

*11/10/17*





Tidewater Inc.  
3761 Attucks Drive  
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Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

**DUP-2-4Q17**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-10

File ID: F103017.seq-29.0000.txt

Sampled: 10/17/17 12:05

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 19:38

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	12	1		EPA-314.0

12/6/17 8



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Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

**MW-25-1**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-11

File ID: F103017.seq-30.0000.txt

Sampled: 10/17/17 12:45

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 19:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ3016

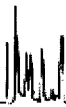
Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	7.1	1		EPA-314.0

11/10/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

**EB-2-101717**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-12

File ID: F103017.seq-31.0000.txt

Sampled: 10/17/17 13:00

Prepared: 10/30/17 14:00

Analyzed: 10/30/17 20:09

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3016

Sequence: 1720007

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*12/6/17*



Tidewater Inc.  
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Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-02

File ID: 171018 0053 CR6-005

Sampled: 10/17/17 07:30

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BFJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

11/16/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-14-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-03

File ID: 171018 0053 CR6-009

Sampled: 10/17/17 07:50

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0018	1	J	EPA-7196

11/10/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-14-3**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-04

File ID: 171018 0053 CR6-010

Sampled: 10/17/17 08:30

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*Handwritten signature/initials: H/6/17*



Tidewater Inc.  
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Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-05

File ID: 171018 0053 CR6-011

Sampled: 10/17/17 08:50

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17 *[Signature]*



Tidewater Inc.  
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Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-25-5

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-06

File ID: 171018 0053 CR6-012

Sampled: 10/17/17 10:40

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17 8





Tidewater Inc.  
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Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-25-4

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-07

File ID: 171018 0053 CR6-015

Sampled: 10/17/17 11:10

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:59

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0016	1	J	EPA-7196

*11/10/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-25-3**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-08

File ID: 171018 0053 CR6-032

Sampled: 10/17/17 11:40

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 01:14

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0032	1		EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-25-2**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-09

File ID: 171018 0053 CR6-033

Sampled: 10/17/17 11:55

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 01:14

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0027	1		EPA-7196

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**DUP-2-4Q17**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-10

File ID: 171018 0053 CR6-034

Sampled: 10/17/17 12:05

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 01:14

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0021	1		EPA-7196

*Handwritten signature: HGL 7 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-25-1

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-11

File ID: 171018 0053 CR6-019

Sampled: 10/17/17 12:45

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:59

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ1971

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*Handwritten signature*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/10/2017 12:30:41PM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**EB-2-101717**

Laboratory: BC Laboratories

SDG: 17-29664

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729664-12

File ID: 171018 0053 CR6-022

Sampled: 10/17/17 13:00

Prepared: 10/18/17 00:53

Analyzed: 10/18/17 00:59

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BfJ1972

Sequence: 1719312

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/10/17*

LDC #: 39849B6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 11-29-17

SDG #: 17-29664

Level III

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG

2nd Reviewer: **METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)**

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	EB = 11
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	D = 8 + 9
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-14-5	1729664-02	Water	10/17/17
2	MW-14-4	1729664-03	Water	10/17/17
3	MW-14-3	1729664-04	Water	10/17/17
4	MW-14-2	1729664-05	Water	10/17/17
5	MW-25-5	1729664-06	Water	10/17/17
6	MW-25-4	1729664-07	Water	10/17/17
7	MW-25-3	1729664-08	Water	10/17/17
8	MW-25-2	1729664-09	Water	10/17/17
9	DUP-2-4Q17	1729664-10	Water	10/17/17
10	MW-25-1	1729664-11	Water	10/17/17
11	EB-2-101717	1729664-12	Water	10/17/17
12	MW-14-5MS	1729664-02MS	Water	10/17/17
13	MW-14-5MSD	1729664-02MSD	Water	10/17/17
14	MW-14-5DUP	1729664-02DUP	Water	10/17/17
15	EB-2-101717MS	1729664-12MS	Water	10/17/17
16	EB-2-101717MSD	1729664-12MSD	Water	10/17/17
17	EB-2-101717DUP	1729664-12DUP	Water	10/17/17

LDC #: 39849B6

# VALIDATION COMPLETENESS WORKSHEET

Date: 11-29-17

SDG #: 17-29664

Level III

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)

	Client ID	Lab ID	Matrix	Date
18				
19				
20				
21	PBW1			
22	PBW2			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Inorganics, Method See Cover

Analyte	Concentration (mg/L)		RPD	
	8	9		
Hexavalent Chromium	0.0027	0.0021	25	
Perchlorate (ug/L)	12	12	0	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849B6.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Volatiles

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29790

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-3-101817	1729790-01	Water	10/18/17
MW-17-5	1729790-02	Water	10/18/17
MW-17-4	1729790-03	Water	10/18/17
MW-17-3	1729790-04	Water	10/18/17
MW-17-2	1729790-05	Water	10/18/17
MW-17-1	1729790-06	Water	10/18/17
MW-18-5	1729790-07	Water	10/18/17
MW-18-4	1729790-08	Water	10/18/17
MW-18-3	1729790-09	Water	10/18/17
DUP-3-4Q17	1729790-10	Water	10/18/17
MW-18-2	1729790-11	Water	10/18/17
MW-26-2	1729790-12	Water	10/18/17
MW-26-1	1729790-13	Water	10/18/17
EB-3-1018117	1729790-14	Water	10/18/17
MW-18-2MS	1729790-11MS	Water	10/18/17
MW-18-2MSD	1729790-11MSD	Water	10/18/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample TB-3-101817 was identified as a trip blank. No contaminants were found.

Sample EB-3-1018117 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Compound	Concentration (ug/L)
EB-3-1018117	Acetone	120

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## X. Field Duplicates

Samples MW-18-3 and DUP-3-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-18-3	DUP-3-4Q17	
Carbon tetrachloride	0.54	0.48	12
Chloroform	0.18	0.18	0

## XI. Internal Standards

All internal standard areas and retention times were within QC limits.

## XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

## XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

## XIV. System Performance

Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-3-101817

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-01 File ID: 21OCT13.D  
Sampled: 10/18/17 07:00 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:11  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*Handwritten signature*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-3-101817

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-01 File ID: 21OCT13.D  
Sampled: 10/18/17 07:00 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:11  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.9800	99.8	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.060	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.050	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	251604	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	97554	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	419107	7.38	452784	7.38	

\* Values outside of QC limits

*Handwritten signature/initials*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**TB-3-101817**

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-01 File ID: 21OCT13.D  
 Sampled: 10/18/17 07:00 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:11  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-5

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-02 File ID: 21OCT14.D  
Sampled: 10/18/17 08:10 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:34  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.44	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-5

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-02 File ID: 21OCT14.D  
Sampled: 10/18/17 08:10 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:34  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.27	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.87	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/16/17 &



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-5

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-02 File ID: 21OCT14.D  
Sampled: 10/18/17 08:10 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:34  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.040	100	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.080	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.020	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	251469	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	98046	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	414618	7.38	452784	7.38	

\* Values outside of QC limits

12/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-5

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-02 File ID: 21OCT14.D  
 Sampled: 10/18/17 08:10 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:34  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-4

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-03 File ID: 21OCT15.D  
 Sampled: 10/18/17 08:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:58  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BIJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.38	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-4

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-03</u>
		File ID:	<u>21OCT15.D</u>
Sampled:	<u>10/18/17 08:45</u>	Prepared:	<u>10/21/17 07:00</u>
		Analyzed:	<u>10/21/17 18:58</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BJJ2093</u>	Sequence:	<u>1719297</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.30	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.63	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*11/6/17*

Tidewater Inc.  
 3761 Attucks Drive  
 Powell, OH 43065

 Reported: 11/9/2017 10:08:13AM  
 Project: JPL- GW Monitoring Wells  
 Project Number: 4Q17  
 Project Manager: David Conner

### ORGANIC ANALYSIS DATA SHEET

EPA-524.2

MW-17-4

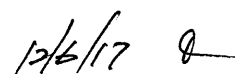
Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29790</u>	Project: <u>JPL- GW Monitoring Wells</u>
Client: <u>Tidewater Inc.</u>	Laboratory ID: <u>1729790-03</u>	File ID: <u>21OCT15.D</u>
Matrix: <u>Water</u>	Prepared: <u>10/21/17 07:00</u>	Analyzed: <u>10/21/17 18:58</u>
Sampled: <u>10/18/17 08:45</u>	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>
Solids:	Batch: <u>BIJ2093</u>	Sequence: <u>1719297</u>
Calibration: <u>1710006</u>	Instrument: <u>MS-V5</u>	

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.000	100	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.070	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9100	99.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	249005	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	96378	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	411473	7.38	452784	7.38	

\* Values outside of QC limits





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-4

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-03 File ID: 21OCT15.D  
Sampled: 10/18/17 08:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 18:58  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-3

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-04 File ID: 21OCT16.D  
 Sampled: 10/18/17 09:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:21  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.40	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.18	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-3

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-04 File ID: 21OCT16.D  
Sampled: 10/18/17 09:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.34	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.3	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-3

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-04 File ID: 21OCT16.D  
Sampled: 10/18/17 09:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.380	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8600	98.6	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5700	95.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	246183	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	99613	9.62	104537	9.61	
1,4-Difluorobenzene (IS)	410165	7.38	452784	7.38	

\* Values outside of QC limits

11/9/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-3

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-04 File ID: 21OCT16.D  
Sampled: 10/18/17 09:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/21/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-2

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-05 File ID: 21OCT17.D  
 Sampled: 10/18/17 09:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:44  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-05 File ID: 21OCT17.D  
Sampled: 10/18/17 09:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:44  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-05 File ID: 21OCT17.D  
Sampled: 10/18/17 09:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:44  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.280	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.140	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8100	98.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	246406	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	96065	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	397472	7.38	452784	7.38	

\* Values outside of QC limits

11/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-17-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-05 File ID: 21OCT17.D  
Sampled: 10/18/17 09:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 19:44  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-1

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-06 File ID: 21OCT18.D  
Sampled: 10/18/17 10:05 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*10/26/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-1

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-06 File ID: 21OCT18.D  
Sampled: 10/18/17 10:05 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-17-1

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-06 File ID: 21OCT18.D  
Sampled: 10/18/17 10:05 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:07  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.450	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.340	103	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5500	95.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	240426	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	95103	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	390042	7.38	452784	7.38	

\* Values outside of QC limits

11/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:08:13AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**
**MW-17-1**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-06</u>
Sampled:	<u>10/18/17 10:05</u>	Prepared:	<u>10/21/17 07:00</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
Batch:	<u>BJ2093</u>	Sequence:	<u>1719297</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>
		File ID:	<u>21OCT18.D</u>
		Analyzed:	<u>10/21/17 20:07</u>
		Initial/Final:	<u>25 ml / 25 ml</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-5

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-07 File ID: 21OCT19.D  
 Sampled: 10/18/17 11:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:31  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**MW-18-5**

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-07 File ID: 21OCT19.D  
Sampled: 10/18/17 11:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-18-5

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-07 File ID: 21OCT19.D  
Sampled: 10/18/17 11:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.320	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9800	99.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.210	102	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	247347	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	92716	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	397828	7.38	452784	7.38	

\* Values outside of QC limits

11/6/17 X



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:08:13AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-18-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-07</u>	File ID:	<u>21OCT19.D</u>		
Sampled:	<u>10/18/17 11:45</u>	Prepared:	<u>10/21/17 07:00</u>	Analyzed:	<u>10/21/17 20:31</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2093</u>	Sequence:	<u>1719297</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-4

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-08 File ID: 21OCT20.D  
Sampled: 10/18/17 12:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:54  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	4.3	
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	1.4	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-18-4

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-08 File ID: 21OCT20.D  
Sampled: 10/18/17 12:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:54  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	2.0	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	2.2	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-4

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-08 File ID: 21OCT20.D  
 Sampled: 10/18/17 12:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.500	105	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.210	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.300	103	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	240929	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	88966	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	389389	7.38	452784	7.38	

\* Values outside of QC limits

11/16/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-4

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-08 File ID: 21OCT20.D  
 Sampled: 10/18/17 12:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 20:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

11/6/17 8





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-3

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-09 File ID: 21OCT21.D  
 Sampled: 10/18/17 12:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:17  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.54	
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.18	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/9/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-3

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-09 File ID: 21OCT21.D  
 Sampled: 10/18/17 12:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:17  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-3

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-09 File ID: 21OCT21.D  
Sampled: 10/18/17 12:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:17  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.460	105	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.020	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8500	98.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	234844	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	91059	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	386509	7.38	452784	7.38	

\* Values outside of QC limits

*11/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-3

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-09 File ID: 21OCT21.D  
 Sampled: 10/18/17 12:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:17  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-3-4Q17

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-10 File ID: 21OCT22.D  
Sampled: 10/18/17 12:55 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:40  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.48	J
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.18	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/16/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-3-4Q17

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-10 File ID: 21OCT22.D  
 Sampled: 10/18/17 12:55 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:40  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-3-4Q17

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-10 File ID: 21OCT22.D  
Sampled: 10/18/17 12:55 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:40  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.710	107	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.400	104	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5600	95.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	235816	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	92573	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	378227	7.38	452784	7.38	

\* Values outside of QC limits

*12/6/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-3-4Q17

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-10 File ID: 21OCT22.D  
 Sampled: 10/18/17 12:55 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 21:40  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-11 File ID: 21OCT07.D  
Sampled: 10/18/17 13:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 15:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-11 File ID: 21OCT07.D  
Sampled: 10/18/17 13:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 15:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-2

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-11 File ID: 21OCT07.D  
 Sampled: 10/18/17 13:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 15:53  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.080	101	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9500	99.5	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.020	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	258619	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	101912	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	439158	7.38	452784	7.38	

\* Values outside of QC limits

12/6/17 &



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-18-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-11 File ID: 21OCT07.D  
Sampled: 10/18/17 13:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 15:53  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-2

Laboratory: BC Laboratories SDG: 17-29790  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729790-12 File ID: 21OCT23.D  
 Sampled: 10/18/17 15:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:03  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	J
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	1.3	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.29	J
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-12 File ID: 21OCT23.D  
Sampled: 10/18/17 15:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	1.5	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-26-2

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-12 File ID: 21OCT23.D  
Sampled: 10/18/17 15:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.080	111	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.030	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.010	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	236280	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	89003	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	381897	7.38	452784	7.38	

\* Values outside of QC limits

11/9/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-26-2

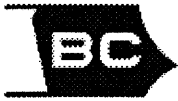
Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-12 File ID: 21OCT23.D  
Sampled: 10/18/17 15:15 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:03  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*Handwritten signature and date: 11/21/17*





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-13</u>
		File ID:	<u>21OCT24.D</u>
Sampled:	<u>10/18/17 15:35</u>	Prepared:	<u>10/21/17 07:00</u>
		Analyzed:	<u>10/21/17 22:26</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>BJJ2093</u>	Sequence:	<u>1719297</u>
		Calibration:	<u>1710006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.16	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-1

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-13 File ID: 21OCT24.D  
Sampled: 10/18/17 15:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:26  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.43	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	J
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-1

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-13 File ID: 21OCT24.D  
Sampled: 10/18/17 15:35 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:26  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.130	111	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.080	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8700	98.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	230276	6.58	275853	6.57	
Chlorobenzene-d5 (IS)	92032	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	373701	7.38	452784	7.38	

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-26-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-13</u>	File ID:	<u>21OCT24.D</u>		
Sampled:	<u>10/18/17 15:35</u>	Prepared:	<u>10/21/17 07:00</u>	Analyzed:	<u>10/21/17 22:26</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2093</u>	Sequence:	<u>1719297</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-3-1018117

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-14 File ID: 21OCT25.D  
Sampled: 10/18/17 15:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:50  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJI2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-3-1018117

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-14 File ID: 21OCT25.D  
Sampled: 10/18/17 15:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:50  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJI2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	120	
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-3-1018117

Laboratory: BC Laboratories SDG: 17-29790  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729790-14 File ID: 21OCT25.D  
Sampled: 10/18/17 15:45 Prepared: 10/21/17 07:00 Analyzed: 10/21/17 22:50  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJI2093 Sequence: 1719297 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.920	109	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9200	99.2	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8000	98.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	232716	6.57	275853	6.57	
Chlorobenzene-d5 (IS)	92450	9.61	104537	9.61	
1,4-Difluorobenzene (IS)	389097	7.38	452784	7.38	

\* Values outside of QC limits

*11/9/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:08:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-3-1018117

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29790</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729790-14</u>	File ID:	<u>21OCT25.D</u>		
Sampled:	<u>10/18/17 15:45</u>	Prepared:	<u>10/21/17 07:00</u>	Analyzed:	<u>10/21/17 22:50</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2093</u>	Sequence:	<u>1719297</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

12/6/17



LDC #: 39849C1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 11/27/17

SDG #: 17-29790

Level III

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: JY

2nd Reviewer: JY

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	ICV $\leq 20\%$ ICV $\leq 30\%$
IV.	Continuing calibration	A	CW $\leq 30\%$
V.	Laboratory Blanks	A	
VI.	Field blanks	SW	TB = 1      EB = 14
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 9/16
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

\*ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-3-101817	1729790-01	Water	10/18/17
2	MW-17-5	1729790-02	Water	10/18/17
3	MW-17-4	1729790-03	Water	10/18/17
4	MW-17-3	1729790-04	Water	10/18/17
5	MW-17-2	1729790-05	Water	10/18/17
6	MW-17-1	1729790-06	Water	10/18/17
7	MW-18-5	1729790-07	Water	10/18/17
8	MW-18-4	1729790-08	Water	10/18/17
9	MW-18-3	1729790-09	Water	10/18/17
10	DUP-3-4Q17	1729790-10	Water	10/18/17
11	MW-18-2	1729790-11	Water	10/18/17
12	MW-26-2	1729790-12	Water	10/18/17
13	MW-26-1	1729790-13	Water	10/18/17

LDC #: 39849C1

### VALIDATION COMPLETENESS WORKSHEET

Date: 11/27/17

SDG #: 17-29790

Level III

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: *JG*

2nd Reviewer: *JG*

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	EB-3-1018117	1729790-14	Water	10/18/17
15	MW-18-2MS	1729790-11MS	Water	10/18/17
16	MW-18-2MSD	1729790-11MSD	Water	10/18/17
17				
18				
19				
20				
21				
22				

Notes:

	BJ2093-BK1				

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 39849C1

# VALIDATION FINDINGS WORKSHEET

## Field Blanks

Page: 1 of 7

Reviewer: JVG  
2nd reviewer: [Signature]

METHOD: GC/MS VOA (EPA Method 524.2)

N N/A Were field blanks identified in this SDG?  
 N N/A Were target compounds detected in the field blanks?

Sample: 14 Field Blank / Trip Blank / Rinsate / Equipment Blank (circle one)

Compound	Concentration Units ( ug/L )
F	120

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Equipment Blank (circle one)

Compound	Concentration Units ( ug/L )

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Equipment Blank (circle one)

Compound	Concentration Units ( ug/L )

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

**METHOD:** GC/MS VOA (EPA Method 524.2)

- N N/A    Were field duplicate pairs identified in this SDG?
- N N/A    Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)
	9	10	
0	0.54	0.48	12
K	0.18	0.18	0

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

Compound	Concentration ( ug/L )		RPD ( <del>≤</del> %)

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Chromium

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29790

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-17-5	1729790-02	Water	10/18/17
MW-17-4	1729790-03	Water	10/18/17
MW-17-3	1729790-04	Water	10/18/17
MW-17-2	1729790-05	Water	10/18/17
MW-17-1	1729790-06	Water	10/18/17
MW-18-5	1729790-07	Water	10/18/17
MW-18-4	1729790-08	Water	10/18/17
MW-18-3	1729790-09	Water	10/18/17
DUP-3-4Q17	1729790-10	Water	10/18/17
MW-18-2	1729790-11	Water	10/18/17
MW-26-2	1729790-12	Water	10/18/17
MW-26-1	1729790-13	Water	10/18/17
EB-3-1018117	1729790-14	Water	10/18/17
MW-18-2MS	1729790-11MS	Water	10/18/17
MW-18-2MSD	1729790-11MSD	Water	10/18/17
MW-18-2DUP	1729790-11DUP	Water	10/18/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chromium by Environmental Protection Agency (EPA) Method 200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. ICPMS Tune**

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## **III. Instrument Calibration**

Initial and continuing calibrations were performed as required by the method.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## **IV. ICP Interference Check Sample Analysis**

ICP interference check sample analyses were not required by the method.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample EB-3-1018117 was identified as an equipment blank. No contaminants were found.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Duplicate Sample Analysis**

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

## **IX. Serial Dilution**

Serial dilution was not performed for this SDG.



## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

Samples MW-18-3 and DUP-3-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-18-3	DUP-3-4Q17	
Chromium	1.5	1.5	0

## XII. Internal Standards (ICP-MS)

Raw data were not reviewed for Level III validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Level III validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

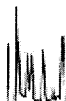
The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Chromium - Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Chromium - Laboratory Blank Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-02

File ID: PE\_EL2\_171027-058

Sampled: 10/18/17 08:10

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:03

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

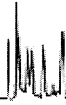
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.4	1	J	EPA-200.8

11/9/17 X



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-03

File ID: PE\_EL2\_171027-059

Sampled: 10/18/17 08:45

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:06

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

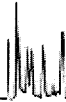
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.3	1	J	EPA-200.8

12/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-17-3

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-04

File ID: PE\_EL2\_171027-060

Sampled: 10/18/17 09:15

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:10

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIJ2545

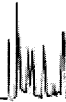
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-05

File ID: PE\_EL2\_171027-061

Sampled: 10/18/17 09:35

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:13

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

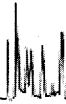
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*H/c/v 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-06

File ID: PE\_EL2 171027-066

Sampled: 10/18/17 10:05

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:31

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIJ2545

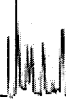
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-18-5**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-07

File ID: PE\_EL2 171027-067

Sampled: 10/18/17 11:45

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:34

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

Sequence: 1719773

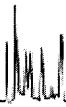
Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-18-4**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-08

File ID: PE\_EL2\_171027-068

Sampled: 10/18/17 12:15

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:38

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.7	1	J	EPA-200.8

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-18-3**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-09

File ID: PE\_EL2\_171027-069

Sampled: 10/18/17 12:45

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:41

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.5	1	J	EPA-200.8

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

DUP-3-4Q17

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-10

File ID: PE\_EL2\_171027-070

Sampled: 10/18/17 12:55

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 11:45

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2545

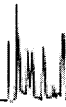
Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.5	1	J	EPA-200.8

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-18-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-11

File ID: PE\_EL2\_171027-047

Sampled: 10/18/17 13:45

Prepared: 10/25/17 08:30

Analyzed: 10/27/17 10:18

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJ2545

Sequence: 1719773

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-26-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-12

File ID: PE\_EL2\_171025-168

Sampled: 10/18/17 15:15

Prepared: 10/25/17 08:30

Analyzed: 10/25/17 17:56

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2541

Sequence: 1719585

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.4	1	J	EPA-200.8

11/6/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-26-1**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-13

File ID: PE\_EL2\_171025-169

Sampled: 10/18/17 15:35

Prepared: 10/25/17 08:30

Analyzed: 10/25/17 18:00

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJ2541

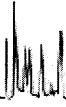
Sequence: 1719585

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

*A/G/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:12:36AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

EB-3-1018117

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-14

File ID: PE\_EL2\_171025-170

Sampled: 10/18/17 15:45

Prepared: 10/25/17 08:30

Analyzed: 10/25/17 18:03

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2541

Sequence: 1719585

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

12/6/17

**METHOD:** Chromium (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	not required
V.	Laboratory Blanks	A	
VI.	Field Blanks	ND	EB = 13
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 8+9
XII.	Internal Standard (ICP-MS)	N	not reviewed for Level III
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	<sup>2</sup> MW-17-5	1729790-02	Water	10/18/17
2	<sup>2</sup> MW-17-4	1729790-03	Water	10/18/17
3	<sup>2</sup> MW-17-3	1729790-04	Water	10/18/17
4	<sup>2</sup> MW-17-2	1729790-05	Water	10/18/17
5	<sup>2</sup> MW-17-1	1729790-06	Water	10/18/17
6	<sup>2</sup> MW-18-5	1729790-07	Water	10/18/17
7	<sup>2</sup> MW-18-4	1729790-08	Water	10/18/17
8	<sup>2</sup> MW-18-3	1729790-09	Water	10/18/17
9	<sup>2</sup> DUP-3-4Q17	1729790-10	Water	10/18/17
10	<sup>2</sup> MW-18-2	1729790-11	Water	10/18/17
11	<sup>1</sup> MW-26-2	1729790-12	Water	10/18/17
12	<sup>1</sup> MW-26-1	1729790-13	Water	10/18/17
13	<sup>1</sup> EB-3-1018117	1729790-14	Water	10/18/17
14	<sup>2</sup> MW-18-2MS	1729790-11MS	Water	10/18/17
15	<sup>2</sup> MW-18-2MSD	1729790-11MSD	Water	10/18/17



LDC #: 39849C4a  
SDG #: 17-29790  
Laboratory: BC Laboratories, Inc.

### VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 11-30-17  
Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** Chromium (EPA Method 200.8)

	Client ID	Lab ID	Matrix	Date
16 <sup>2</sup>	MW-18-2DUP	1729790-11DUP	Water	10/18/17
17				
18				
19				
20 <sup>1</sup>	PBW1			
21 <sup>2</sup>	PBW2			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LDC#: 39849C4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: CL

**METHOD:** Metals (EPA Method 200.8)

- N NA Were field duplicate pairs identified in this SDG?  
 N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	8	9		
Chromium	1.5	1.5	0	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849C4a.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29790

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-17-5	1729790-02	Water	10/18/17
MW-17-4	1729790-03	Water	10/18/17
MW-17-3	1729790-04	Water	10/18/17
MW-17-2	1729790-05	Water	10/18/17
MW-17-1	1729790-06	Water	10/18/17
MW-18-5	1729790-07	Water	10/18/17
MW-18-4	1729790-08	Water	10/18/17
MW-18-3	1729790-09	Water	10/18/17
DUP-3-4Q17	1729790-10	Water	10/18/17
MW-18-2	1729790-11	Water	10/18/17
MW-26-2	1729790-12	Water	10/18/17
MW-26-1	1729790-13	Water	10/18/17
EB-3-1018117	1729790-14	Water	10/18/17
MW-18-2MS	1729790-11MS	Water	10/18/17
MW-18-2MSD	1729790-11MSD	Water	10/18/17
MW-18-2DUP	1729790-11DUP	Water	10/18/17
MW-26-2MS	1729790-12MS	Water	10/18/17
MW-26-2MSD	1729790-12MSD	Water	10/18/17
MW-26-2DUP	1729790-12DUP	Water	10/18/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Hexavalent Chromium by Environmental Protection Agency (EPA) SW 846 Method 7196

Perchlorate by EPA Method 314.0

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample EB-3-1018117 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (mg/L)
EB-3-1018117	Hexavalent chromium	0.00094

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

### IX. Field Duplicates

Samples MW-18-3 and DUP-3-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-18-3	DUP-3-4Q17	
Hexavalent Chromium	0.0012 mg/L	0.0019 mg/L	45
Perchlorate	3.5 ug/L	3.8 ug/L	8

### X. Sample Result Verification

Raw data were not reviewed for Level III validation.

### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Wet Chemistry - Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-29790**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-02

File ID: F103117.seq-8.0000.txt

Sampled: 10/18/17 08:10

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 21:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.3	1		EPA-314.0

*11/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-03

File ID: F103117.seq-9.0000.txt

Sampled: 10/18/17 08:45

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 21:52

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.7	1		EPA-314.0

10/30/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-3

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-04

File ID: F103117.seq-10.0000.txt

Sampled: 10/18/17 09:15

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 22:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

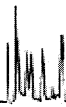
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.9	1		EPA-314.0

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-05

File ID: F103117.seq-11.0000.txt

Sampled: 10/18/17 09:35

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 22:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

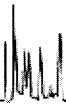
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

12/6/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-06

File ID: F103117.seq-12.0000.txt

Sampled: 10/18/17 10:05

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 22:38

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

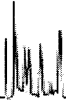
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

12/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-18-5

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-07

File ID: F103117.seq-15.0000.txt

Sampled: 10/18/17 11:45

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 23:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-18-4

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-08

File ID: F103117.seq-16.0000.txt

Sampled: 10/18/17 12:15

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 23:40

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	14	1		EPA-314.0

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-18-3

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-09

File ID: F103117.seq-17.0000.txt

Sampled: 10/18/17 12:45

Prepared: 10/31/17 19:00

Analyzed: 10/31/17 23:55

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.5	1	J	EPA-314.0

12/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

DUP-3-4Q17

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-10

File ID: F103117.seq-18.0000.txt

Sampled: 10/18/17 12:55

Prepared: 10/31/17 19:00

Analyzed: 11/01/17 00:10

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.8	1	J	EPA-314.0

12/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-18-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-11

File ID: F103117.seq-19.0000.txt

Sampled: 10/18/17 13:45

Prepared: 10/31/17 19:00

Analyzed: 11/01/17 00:26

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

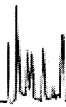
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-26-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-12

File ID: F103117.seq-23.0000.txt

Sampled: 10/18/17 15:15

Prepared: 10/31/17 19:00

Analyzed: 11/01/17 01:27

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

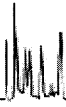
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.5	1	J	EPA-314.0

*Handwritten signature/initials: H/G/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

**MW-26-1**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-13

File ID: F103117.seq-24.0000.txt

Sampled: 10/18/17 15:35

Prepared: 10/31/17 19:00

Analyzed: 11/01/17 01:42

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

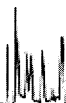
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	1.7	1	J	EPA-314.0

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

**EB-3-1018117**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-14

File ID: F103117.seq-27.0000.txt

Sampled: 10/18/17 15:45

Prepared: 10/31/17 19:00

Analyzed: 11/01/17 02:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ3216

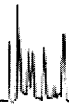
Sequence: 1720097

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-02

File ID: 171019 0101 CR6-041

Sampled: 10/18/17 08:10

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0013	1	J	EPA-7196

11/2/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-03

File ID: 171019 0101 CR6-018

Sampled: 10/18/17 08:45

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

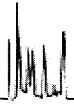
Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0019	1	J	EPA-7196

12/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:10:25AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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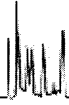
**INORGANIC ANALYSIS DATA SHEET**  
EPA-7196

MW-17-3
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29790</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729790-04</u>	File ID: <u>171019 0101 CR6-019</u>	
Sampled: <u>10/18/17 09:15</u>	Prepared: <u>10/19/17 01:01</u>	Analyzed: <u>10/19/17 01:01</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJJ2097</u>	Sequence: <u>1719311</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-05

File ID: 171019 0101 CR6-020

Sampled: 10/18/17 09:35

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

Sequence: 1719311

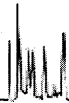
Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-06

File ID: 171019 0101 CR6-021

Sampled: 10/18/17 10:05

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:10:25AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-7196

**MW-18-5**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29790</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1729790-07</u>
	File ID: <u>171019 0101 CR6-022</u>
Sampled: <u>10/18/17 11:45</u>	Prepared: <u>10/19/17 01:01</u>
	Analyzed: <u>10/19/17 01:01</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BJJ2097</u>	Sequence: <u>1719311</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/6/17* &



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-18-4

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-08

File ID: 171019 0101 CR6-023

Sampled: 10/18/17 12:15

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2097

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0018	1	J	EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

**MW-18-3**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-09

File ID: 171019 0101 CR6-045

Sampled: 10/18/17 12:45

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

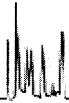
Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0012	1	J	EPA-7196

*Handwritten signature and date: 11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

DUP-3-4Q17

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-10

File ID: 171019 0101 CR6-027

Sampled: 10/18/17 12:55

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0019	1	J	EPA-7196

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-18-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-11

File ID: 171019 0101 CR6-052

Sampled: 10/18/17 13:45

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 07:55

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2097

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-26-2

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-12

File ID: 171019 0101 CR6-031

Sampled: 10/18/17 15:15

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2098

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0015	1	J	EPA-7196

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-26-1

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-13

File ID: 171019 0101 CR6-035

Sampled: 10/18/17 15:35

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2098

Sequence: 1719311

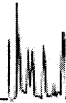
Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:10:25AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**EB-3-1018117**

Laboratory: BC Laboratories

SDG: 17-29790

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729790-14

File ID: 171019 0101 CR6-036

Sampled: 10/18/17 15:45

Prepared: 10/19/17 01:01

Analyzed: 10/19/17 01:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2098

Sequence: 1719311

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00094	1	J	EPA-7196

*11/6/17*

LDC #: 39849C6

**VALIDATION COMPLETENESS WORKSHEET**Date: 11-30-17SDG #: 17-29790

Level III

Page: 1 of 2Laboratory: BC Laboratories, Inc.Reviewer: MG2nd Reviewer: Q**METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)**

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	SW	EB = 13
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	D = 8+9
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-17-5	1729790-02	Water	10/18/17
2	MW-17-4	1729790-03	Water	10/18/17
3	MW-17-3	1729790-04	Water	10/18/17
4	MW-17-2	1729790-05	Water	10/18/17
5	MW-17-1	1729790-06	Water	10/18/17
6	MW-18-5	1729790-07	Water	10/18/17
7	MW-18-4	1729790-08	Water	10/18/17
8	MW-18-3	1729790-09	Water	10/18/17
9	DUP-3-4Q17	1729790-10	Water	10/18/17
10	MW-18-2	1729790-11	Water	10/18/17
11	MW-26-2	1729790-12	Water	10/18/17
12	MW-26-1	1729790-13	Water	10/18/17
13	EB-3-1018117	1729790-14	Water	10/18/17
14	MW-18-2MS	1729790-11MS	Water	10/18/17
15	MW-18-2MSD	1729790-11MSD	Water	10/18/17
16	MW-18-2DUP	1729790-11DUP	Water	10/18/17
17	MW-26-2MS	1729790-12MS	Water	10/18/17

LDC #: 39849C6

# VALIDATION COMPLETENESS WORKSHEET

Date: 11-30-17

SDG #: 17-29790

Level III

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: MG

2nd Reviewer: [Signature]

**METHOD:** (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0)

	Client ID	Lab ID	Matrix	Date
18	MW-26-2MSD	1729790-12MSD	Water	10/18/17
19	MW-26-2DUP	1729790-12DUP	Water	10/18/17
20				
21				
22				
23	PBW1			
24	PBW2			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→13	W	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC <u>CR<sup>6+</sup></u> <u>ClO<sub>4</sub></u>
QC 14→16	↓	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC <u>CR<sup>6+</sup></u> <u>ClO<sub>4</sub></u>
↓ 17→19	↓	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC <u>CR<sup>6+</sup></u> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
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		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>
		pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> PO <sub>4</sub> ALK CN <sup>-</sup> NH <sub>3</sub> TKN TOC CR <sup>6+</sup> ClO <sub>4</sub>

Comments: \_\_\_\_\_

LDC #: 39849C6

# VALIDATION FINDINGS WORKSHEET

## Field Blanks

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: [Signature]

METHOD: Inorganics, EPA Method see cover

- N N/A Were field blanks identified in this SDG?
- N N/A Were target analytes detected in the field blanks?

Sample: 13 Field Blank / Trip Blank / Rinsate (circle one) EB

Analyte	Concentration Units ( )
Hexavalent Chromium	0.00094 (mg/L)

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate (circle one)

Analyte	Concentration Units ( )

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Inorganics, Method See Cover

Analyte	Concentration (mg/L)		RPD	
	8	9		
Hexavalent Chromium	0.0012	0.0019	45	
Perchlorate (ug/L)	3.5	3.8	8	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849C6.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Volatiles

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29969

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-4-101917	1729969-01	Water	10/19/17
MW-22-5	1729969-02	Water	10/19/17
MW-22-4	1729969-03	Water	10/19/17
MW-22-3	1729969-04	Water	10/19/17
DUP-4-4Q17	1729969-05	Water	10/19/17
MW-22-2	1729969-06	Water	10/19/17
MW-22-1	1729969-07	Water	10/19/17
MW-24-5	1729969-08	Water	10/19/17
MW-24-4	1729969-09	Water	10/19/17
MW-24-3**	1729969-10**	Water	10/19/17
MW-24-2	1729969-11	Water	10/19/17
MW-24-1	1729969-12	Water	10/19/17
EB-4-101917	1729969-13	Water	10/19/17
MW-22-2MS	1729969-06MS	Water	10/19/17
MW-22-2MSD	1729969-06MSD	Water	10/19/17
MW-22-2DUP	1729969-06DUP	Water	10/19/17
MW-24-1MS	1729969-12MS	Water	10/19/17
MW-24-1MSD	1729969-12MSD	Water	10/19/17

\*\*Indicates sample underwent Level IV review

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample TB-4-101917 was identified as a trip blank. No contaminants were found.

Sample EB-4-101917 was identified as an equipment blank. No contaminants were found.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **X. Field Duplicates**

Samples MW-22-3 and DUP-4-4Q17 were identified as field duplicates. No results were detected in any of the samples.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-4-101917

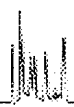
Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-01 File ID: 26OCT17.D  
Sampled: 10/19/17 07:00 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**TB-4-101917**

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-01 File ID: 26OCT17.D  
Sampled: 10/19/17 07:00 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*







Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-5

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-02 File ID: 26OCT18.D  
Sampled: 10/19/17 07:40 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:24  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17 [Signature]



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3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-5

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-02 File ID: 26OCT18.D  
Sampled: 10/19/17 07:40 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:24  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.2300	92.3	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.050	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7100	97.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	285886	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	110409	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	466794	7.38	490838	7.38	

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-5

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-02 File ID: 26OCT18.D  
 Sampled: 10/19/17 07:40 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:24  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BIJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/6/17*



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Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-03 File ID: 26OCT19.D  
Sampled: 10/19/17 08:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-03 File ID: 26OCT19.D  
Sampled: 10/19/17 08:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

11/9/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-03 File ID: 26OCT19.D  
Sampled: 10/19/17 08:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.2400	92.4	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.120	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9200	99.2	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	283634	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	108026	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	455836	7.38	490838	7.38	

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-03 File ID: 26OCT19.D  
Sampled: 10/19/17 08:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 16:48  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

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Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 9:53:12AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-3

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29969</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729969-04</u>
File ID:		<u>26OCT20.D</u>	
Sampled:	<u>10/19/17 08:40</u>	Prepared:	<u>10/26/17 08:05</u>
Analyzed:		<u>10/26/17 17:11</u>	
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
Initial/Final:		<u>25 ml / 25 ml</u>	
Batch:	<u>BJJ2681</u>	Sequence:	<u>1719642</u>
Calibration:		<u>1710006</u>	Instrument:
			<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*11/6/17* *2*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-3

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-04 File ID: 26OCT20.D  
Sampled: 10/19/17 08:40 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:11  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*Handwritten signature and date: 11/6/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-3

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-04 File ID: 26OCT20.D  
Sampled: 10/19/17 08:40 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:11  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.3600	93.6	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.110	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8600	98.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	283841	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	108927	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	461623	7.38	490838	7.38	

\* Values outside of QC limits

11/9/17 *[Signature]*

<p>Tidewater Inc. 3761 Attucks Drive Powell, OH 43065</p>	<p>Reported: 11/9/2017 9:53:12AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner</p>
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-3

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-29969</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1729969-04</u>	File ID:	<u>26OCT20.D</u>		
Sampled:	<u>10/19/17 08:40</u>	Prepared:	<u>10/26/17 08:05</u>	Analyzed:	<u>10/26/17 17:11</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJJ2681</u>	Sequence:	<u>1719642</u>	Calibration:	<u>1710006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17 8*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-4-4Q17

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-05 File ID: 26OCT21.D  
 Sampled: 10/19/17 08:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:34  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*12/6/17*

BC Laboratories, Inc., Page 33 of 314



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-4-4Q17

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-05 File ID: 26OCT21.D  
Sampled: 10/19/17 08:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:34  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.2500	92.5	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.210	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.010	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	282570	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	107109	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	445105	7.38	490838	7.38	

\* Values outside of QC limits

11/6/17 8



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-4-4Q17

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-05 File ID: 26OCT21.D  
Sampled: 10/19/17 08:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:34  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-2

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-06 File ID: 26OCT10.D  
Sampled: 10/19/17 09:45 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 13:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-2

Laboratory: BC Laboratories      SDG: 17-29969  
Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
Matrix: Water      Laboratory ID: 1729969-06      File ID: 26OCT10.D  
Sampled: 10/19/17 09:45      Prepared: 10/26/17 08:05      Analyzed: 10/26/17 13:18  
Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681      Sequence: 1719642      Calibration: 1710006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.2600	92.6	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.050	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7800	97.8	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	289675	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	112115	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	481767	7.38	490838	7.38	

\* Values outside of QC limits

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-22-2

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-06 File ID: 26OCT10.D  
 Sampled: 10/19/17 09:45 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 13:18  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BIJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

12/6/17

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065


Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-1

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-07 File ID: 26OCT22.D  
Sampled: 10/19/17 10:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:58  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.34	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

12/6/17 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-1

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-07 File ID: 26OCT22.D  
 Sampled: 10/19/17 10:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:58  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml./ 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.76	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*12/6/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-22-1

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-07 File ID: 26OCT22.D  
Sampled: 10/19/17 10:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:58  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.5100	95.1	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8900	98.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7600	97.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	282229	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	110824	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	461049	7.38	490838	7.38	

\* Values outside of QC limits

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-22-1

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-07 File ID: 26OCT22.D  
 Sampled: 10/19/17 10:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 17:58  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-5

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-08 File ID: 26OCT23.D  
Sampled: 10/19/17 11:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*10/26/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-5

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-08 File ID: 26OCT23.D  
Sampled: 10/19/17 11:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-5

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-08 File ID: 26OCT23.D  
Sampled: 10/19/17 11:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:21  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.6400	96.4	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8600	98.6	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8400	98.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	279102	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	110032	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	459606	7.38	490838	7.38	

\* Values outside of QC limits

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-5

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-08 File ID: 26OCT23.D  
 Sampled: 10/19/17 11:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:21  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-09 File ID: 26OCT24.D  
Sampled: 10/19/17 11:20 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:45  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

12/6/17 Q



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-09 File ID: 26OCT24.D  
Sampled: 10/19/17 11:20 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:45  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.22	J
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-4

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-09 File ID: 26OCT24.D  
Sampled: 10/19/17 11:20 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:45  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.4600	94.6	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.010	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7200	97.2	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	289724	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	111145	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	455552	7.38	490838	7.38	

\* Values outside of QC limits

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-4

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-09 File ID: 26OCT24.D  
 Sampled: 10/19/17 11:20 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 18:45  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-3

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-10 File ID: 26OCT25.D  
 Sampled: 10/19/17 12:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:08  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.17	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/6/17 8





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-3

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-10 File ID: 26OCT25.D  
Sampled: 10/19/17 12:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:08  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

### ORGANIC ANALYSIS DATA SHEET EPA-524.2

MW-24-3

Laboratory: BC Laboratories SDG: 17-29969  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1729969-10 File ID: 26OCT25.D  
 Sampled: 10/19/17 12:15 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:08  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.2600	92.6	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.040	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5000	95.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	280301	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	111250	9.62	116076	9.61	
1,4-Difluorobenzene (IS)	454226	7.38	490838	7.38	

\* Values outside of QC limits

*12/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 9:53:12AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29969</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729969-10</u>	File ID: <u>26OCT25.D</u>	
Sampled: <u>10/19/17 12:15</u>	Prepared: <u>10/26/17 08:05</u>	Analyzed: <u>10/26/17 19:08</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>BJJ2681</u>	Sequence: <u>1719642</u>	Calibration: <u>1710006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/26/17 J*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-2

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-11 File ID: 26OCT26.D  
Sampled: 10/19/17 12:45 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[J]2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.15	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-2

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-11 File ID: 26OCT26.D  
Sampled: 10/19/17 12:45 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-2

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-11 File ID: 26OCT26.D  
Sampled: 10/19/17 12:45 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 19:31  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2681 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.060	101	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.120	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8000	98.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	274947	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	109417	9.62	116076	9.61	
1,4-Difluorobenzene (IS)	441136	7.38	490838	7.38	

\* Values outside of QC limits

11/6/17 [Signature]



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 9:53:12AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29969</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729969-11</u>	File ID: <u>26OCT26.D</u>	
Sampled: <u>10/19/17 12:45</u>	Prepared: <u>10/26/17 08:05</u>	Analyzed: <u>10/26/17 19:31</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>BJJ2681</u>	Sequence: <u>1719642</u>	Calibration: <u>1710006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

12/6/17 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-1

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-12 File ID: 26OCT28.D  
Sampled: 10/19/17 13:30 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 20:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2682 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.31	J
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.96	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

12/6/17 J





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-1

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-12 File ID: 26OCT28.D  
Sampled: 10/19/17 13:30 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 20:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2682 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-24-1

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-12 File ID: 26OCT28.D  
Sampled: 10/19/17 13:30 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 20:18  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2682 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.5000	95.0	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7900	97.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7700	97.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	274300	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	105679	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	453405	7.38	490838	7.38	

\* Values outside of QC limits

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-4-101917

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-13 File ID: 26OCT29.D  
Sampled: 10/19/17 13:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 20:41  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BJJ2682 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

11/9/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-4-101917

Laboratory: BC Laboratories SDG: 17-29969  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1729969-13 File ID: 26OCT29.D  
Sampled: 10/19/17 13:50 Prepared: 10/26/17 08:05 Analyzed: 10/26/17 20:41  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIJ2682 Sequence: 1719642 Calibration: 1710006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.6000	96.0	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8800	98.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5800	95.8	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	277309	6.57	304486	6.57	
Chlorobenzene-d5 (IS)	109562	9.61	116076	9.61	
1,4-Difluorobenzene (IS)	459717	7.38	490838	7.38	

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:53:12AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**EB-4-101917**

Laboratory: BC Laboratories      SDG: 17-29969  
Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
Matrix: Water      Laboratory ID: 1729969-13      File ID: 26OCT29.D  
Sampled: 10/19/17 13:50      Prepared: 10/26/17 08:05      Analyzed: 10/26/17 20:41  
Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
Batch: BJJ2682      Sequence: 1719642      Calibration: 1710006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*11/9/17*

LDC #: 39849D1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 11/27/17

SDG #: 17-29969

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: *JK*2nd Reviewer: *JK***METHOD:** GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL $\leq 20\%$ $r^2$ ICV $\leq 30\%$
IV.	Continuing calibration	A	CCV $\leq 30\%$
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1 EB = 13
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	<del>A</del> A	
IX.	Laboratory control samples	A	VCS
X.	Field duplicates	ND	D = 4/5
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation
XIII.	Target compound identification	A	Not reviewed for Level III validation
XIV.	System performance	A	Not reviewed for Level III validation
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	TB-4-101917	1729969-01	Water	10/19/17
2	MW-22-5	1729969-02	Water	10/19/17
3	MW-22-4	1729969-03	Water	10/19/17
4	MW-22-3 D	1729969-04	Water	10/19/17
5	DUP-4-4Q17 D	1729969-05	Water	10/19/17
6	MW-22-2	1729969-06	Water	10/19/17
7	MW-22-1	1729969-07	Water	10/19/17
8	MW-24-5	1729969-08	Water	10/19/17
9	MW-24-4	1729969-09	Water	10/19/17
10	MW-24-3**	1729969-10**	Water	10/19/17
11	MW-24-2	1729969-11	Water	10/19/17
12	MW-24-1	1729969-12	Water	10/19/17
13	EB-4-101917	1729969-13	Water	10/19/17



LDC #: 39849D1

# VALIDATION COMPLETENESS WORKSHEET

Date: 11/27/17

SDG #: 17-29969

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: [Signature]  
2nd Reviewer: [Signature]

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-22-2MS	1729969-06MS	Water	10/19/17
15	MW-22-2MSD	1729969-06MSD	Water	10/19/17
16	<del>MW-22-2DUP</del>	<del>1729969-06DUP</del>	<del>Water</del>	<del>10/19/17</del>
17	MW-24-1MS	1729969-12MS	Water	10/19/17
18	MW-24-1MSD	1729969-12MSD	Water	10/19/17
19				
20				
21				
22				
23				

Notes:

1	BJ 2681 - B1k1						
2	BJ 2682 -						

LDC #: 39849 D1

## VALIDATION FINDINGS CHECKLIST

Page: 1 of 2  
Reviewer: JVG  
2nd Reviewer: G

Method: Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Initial calibration</b>				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) $\leq$ 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial Calibration Verification calibration</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) $\leq$ 30%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) of continuing calibration $\leq$ 30%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed with each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Field blanks were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 39849 b1

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: JVG  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) within 70-130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/-30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	


## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 39849D1

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: 

METHOD: GC/MS VOA (EPA Method 524.2)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

average RRF = sum of the RRFs/number of standards

$$\%RSD = 100 * (S/X)$$

$A_x$  = Area of Compound

$C_x$  = Concentration of compound,

S= Standard deviation of the RRFs,

$A_{is}$  = Area of associated internal standard

$C_{is}$  = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL MS V5	10/0517	1,1-DCA (FB)	0.949780	0.949780	0.930250	0.930250	7.165	7.165
			Trichloroethene (DFB)	0.305019	0.305019	0.296404	0.296404	4.748	4.748
			1,2,4-TMB (CBZ)	5.026954	5.026954	4.834027	4.834027	13.490	13.490

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

METHOD: GC/MS VOA (EPA Method 524.2)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (\text{Ax})(\text{Cis}) / (\text{Ais})(\text{Cx})$$

Where:

ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

Ax = Area of compound,

Cx = Concentration of compound,

Ais = Area of associated internal standard

Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	26oct05 MS V5	10/26/17	1,1-DCA (FB)	0.930250	0.987792	0.987792	6.2	6.2
			Trichloroethene (DFB)	0.296404	0.297770	0.297770	0.5	0.5
			1,2,4-TMB (CBZ)	4.83403	4.81534	4.81534	0.4	0.4

LDC #: 35 849 D1

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
Reviewer: JVG  
2nd reviewer: X

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: 10

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8	10.0	10.04	100	100	0
Bromofluorobenzene	↓	9.50	95	95	↓
1,2-Dichlorobenzene-d4	↓	9.26	92.6	92.6	↓
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

LDC #: 39849 D1

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1  
 Reviewer: JVG  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * (SSC - SC) / SA$

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD =  $100 * |MSC - MSDC| / (MSC + MSDC)$

MSC = Matrix spike percent recovery

MSDC = Matrix spike duplicate percent recovery

MS/MSD sample: 14 / 15

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalc
1,1-Dichloroethene	25.0	25.0	0	27.95	27.56	117	117	110	110	1.41	1.41
Trichloroethene				25.57	26.06	107	107	104	104	2.13	2.13
Benzene				26.93	26.61	108	108	106	106	1.2	1.20
Toluene				26.39	26.11	106	106	104	104	1.07	1.07
Chlorobenzene				23.47	24.19	93.9	93.9	96.8	96.8	3.02	3.02

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 39849 D1

## VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: JVG  
2nd Reviewer:

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery =  $100 * SSC/SA$

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD =  $100 * (LCS - LCSD) / (LCS + LCSD)$

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: BJ2681-BS1

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	25.0	NA	26.40	NA	106	106				
Trichloroethene	↓	↓	25.13	↓	101	101				
Benzene	↓	↓	25.63	↓	103	103				
Toluene	↓	↓	25.59	↓	102	102				
Chlorobenzene	↓	↓	23.06	↓	92.2	92.2				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** GC/MS VOA (EPA Method 524.2)

Compound results reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

- $A_x$  = Area of the characteristic ion (EICP) for the compound to be measured
- $A_{is}$  = Area of the characteristic ion (EICP) for the specific internal standard
- $I_s$  = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- $V_o$  = Volume or weight of sample purged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 10, 1,1-DGA

$$\begin{aligned} \text{Conc.} &= \frac{(4382)(10)}{(280301)(0.93025)(\quad)(\quad)} \\ &= 0.168 \\ &\approx 0.17 \text{ } \mu\text{g/L} \end{aligned}$$

#	Sample ID	Compound	Reported Concentration ( $\mu\text{g/L}$ )	Calculated Concentration ( )	Acceptable (Y/N)
			0.17		

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Chromium

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29969

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-22-5	1729969-02	Water	10/19/17
MW-22-4	1729969-03	Water	10/19/17
MW-22-3	1729969-04	Water	10/19/17
DUP-4-4Q17	1729969-05	Water	10/19/17
MW-22-2	1729969-06	Water	10/19/17
MW-22-1	1729969-07	Water	10/19/17
MW-24-5	1729969-08	Water	10/19/17
MW-24-4	1729969-09	Water	10/19/17
MW-24-3**	1729969-10**	Water	10/19/17
MW-24-2	1729969-11	Water	10/19/17
MW-24-1	1729969-12	Water	10/19/17
EB-4-101917	1729969-13	Water	10/19/17
MW-22-2MS	1729969-06MS	Water	10/19/17
MW-22-2MSD	1729969-06MSD	Water	10/19/17
MW-22-2DUP	1729969-06DUP	Water	10/19/17
MW-24-1MS	1729969-12MS	Water	10/19/17
MW-24-1MSD	1729969-12MSD	Water	10/19/17
MW-24-1DUP	1729969-12DUP	Water	10/19/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Chromium by Environmental Protection Agency (EPA) Method 200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the method.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

ICP interference check sample analyses were not required by the method.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample EB-4-101917 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (ug/L)
EB-4-101917	Chromium	0.98

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

**IX. Serial Dilution**

Serial dilution analysis was performed on an associated project sample. Percent differences (%D) were within QC limits.

**X. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

**XI. Field Duplicates**

Samples MW-22-3 and DUP-4-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-22-3	DUP-4-4Q17	
Chromium	2.4	2.4	0

**XII. Internal Standards (ICP-MS)**

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

**XIII. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

**XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017  
Chromium - Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017  
Chromium - Laboratory Blank Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-22-5

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-02

File ID: PE\_EL2\_171027-350

Sampled: 10/19/17 07:40

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 05:51

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8

12/4/17 [Signature]





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-22-4**

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-03

File ID: PE\_EL2\_171027-351

Sampled: 10/19/17 08:15

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 05:55

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.4	1	J	EPA-200.8

*11/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-22-3

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-04

File ID: PE\_EL2\_171027-352

Sampled: 10/19/17 08:40

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 05:58

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.4	1	J	EPA-200.8

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

DUP-4-4Q17

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-05

File ID: PE\_EL2\_171027-353

Sampled: 10/19/17 08:50

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 06:02

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.4	1	J	EPA-200.8

12/6/17



Tidewater Inc.  
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Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-22-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-06

File ID: PE\_EL2 171027-341

Sampled: 10/19/17 09:45

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 05:20

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.6	1	J	EPA-200.8

*Handwritten signature and date: 11/6/17*



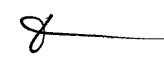
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 10:02:13AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
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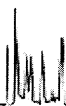
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-22-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29969</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729969-07</u>	File ID: <u>PE_EL2 171027-354</u>	
Sampled: <u>10/19/17 10:15</u>	Prepared: <u>10/26/17 08:30</u>	Analyzed: <u>10/28/17 06:05</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[J2708</u>	Sequence: <u>1719823</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.84	1	J	EPA-200.8

*11/2/17* 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-5

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-08

File ID: PE\_EL2 171027-355

Sampled: 10/19/17 11:50

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 06:09

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

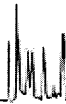
Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	3.0	1		EPA-200.8

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-4

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-09

File ID: PE\_EL2\_171027-356

Sampled: 10/19/17 11:20

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 06:12

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.53	1	J	EPA-200.8

*12/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-3

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-10

File ID: PE\_EL2 171027-357

Sampled: 10/19/17 12:15

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 06:15

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

Sequence: 1719823

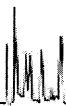
Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.58	1	J	EPA-200.8

*12/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-24-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-11

File ID: PE\_EL2\_171027-358

Sampled: 10/19/17 12:45

Prepared: 10/26/17 08:30

Analyzed: 10/28/17 06:19

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2708

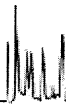
Sequence: 1719823

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.9	1	J	EPA-200.8

*Handwritten signature/initials: H/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-12

File ID: PE\_EL2\_171030-028

Sampled: 10/19/17 13:30

Prepared: 10/27/17 08:30

Analyzed: 10/30/17 08:10

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2845

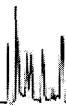
Sequence: 1719868

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.1	1	J	EPA-200.8

11/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 10:02:13AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

EB-4-101917

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-13

File ID: PE\_EL2\_171030-034

Sampled: 10/19/17 13:50

Prepared: 10/27/17 08:30

Analyzed: 10/30/17 08:31

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJJ2845

Sequence: 1719868

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.98	1	J	EPA-200.8

*Handwritten signature/initials*

LDC #: 39849D4a  
 SDG #: 17-29969  
 Laboratory: BC Laboratories, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level III/IV

Date: 11-30-17  
 Page: 1 of 2  
 Reviewer: MG  
 2nd Reviewer: *[Signature]*

**METHOD:** Chromium (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	not required
V.	Laboratory Blanks	A	
VI.	Field Blanks	SW	EB = 12
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	A	SD: 5, 11
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 3+4
XII.	Internal Standard (ICP-MS)	A	not reviewed for Level III
XIII.	Sample Result Verification	A	Not reviewed for Level III validation
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

\*\* Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	MW-22-5	1729969-02	Water	10/19/17
2	MW-22-4	1729969-03	Water	10/19/17
3	MW-22-3	1729969-04	Water	10/19/17
4	DUP-4-4Q17	1729969-05	Water	10/19/17
5	MW-22-2	1729969-06	Water	10/19/17
6	MW-22-1	1729969-07	Water	10/19/17
7	MW-24-5	1729969-08	Water	10/19/17
8	MW-24-4	1729969-09	Water	10/19/17
9	MW-24-3**	1729969-10**	Water	10/19/17
10	MW-24-2	1729969-11	Water	10/19/17
11 <sup>a</sup>	MW-24-1	1729969-12	Water	10/19/17
12 <sup>a</sup>	EB-4-101917	1729969-13	Water	10/19/17
13	MW-22-2MS	1729969-06MS	Water	10/19/17
14	MW-22-2MSD	1729969-06MSD	Water	10/19/17
15	MW-22-2DUP	1729969-06DUP	Water	10/19/17

LDC #: 39849D4a  
SDG #: 17-29969  
Laboratory: BC Laboratories, Inc.

### VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 11-30-17  
Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: Q

**METHOD:** Chromium (EPA Method 200.8)

	Client ID	Lab ID	Matrix	Date
16	2 MW-24-1MS	1729969-12MS	Water	10/19/17
17	2 MW-24-1MSD	1729969-12MSD	Water	10/19/17
18	2 MW-24-1DUP	1729969-12DUP	Water	10/19/17
19				
20				
21				
22	1 PBW1			
23	2 PBW2			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method:Metals (EPA SW 846 Method 6010/7000/6020)**

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. ICP/MS Tune</b>				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution $\leq$ 5%?	✓			
<b>III. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients $>$ 0.995?	✓			
<b>IV. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
<b>V. ICP Interference Check Sample</b>				
Were ICP interference check samples performed daily?		✓		
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?			✓	
<b>VI. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq$ 20% for waters and $\leq$ 35% for soil samples? A control limit of $\pm$ RL ( $\pm$ 2X RL for soil) was used for samples that were $\leq$ 5X the RL, including when only one of the duplicate sample values were $\leq$ 5X the RL.	✓			
<b>VII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

LDC #: 39849D4a

## VALIDATION FINDINGS CHECKLIST

Page: 2 of 2  
Reviewer: MS  
2nd Reviewer: CS

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)</b>				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
<b>IX. ICP Serial Dilution</b>				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL (ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
<b>X. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XI. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XII. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
<b>XIII. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 39849D4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Blanks**

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: Q

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

- N/A Were field blanks identified in this SDG?
- N/A Were target analytes detected in the field blanks?

Sample: 12 Field Blank / Trip Blank / Rinsate / Other EB (circle one)

Analyte	Concentration Units ( )
Cr	0.98 (mg/L)

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )



LDC#: 39849D4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: [Signature]

**METHOD:** Metals (EPA Method 200.8)

Y N NA

Were field duplicate pairs identified in this SDG?

Y N NA

Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	3	4		
Chromium	2.4	2.4	0	

V:\FIELD DUPLICATES\Field Duplicates\FD\_inorganic\2017\39849D4a.WPD

LDC #: 39849D4a

**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: MG  
 2nd Reviewer: Q

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$       Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
	ICP (Initial calibration)						
<u>0758 ICV</u>	ICP/MS (Initial calibration)	<u>Cr</u>	<u>52.334</u>	<u>50.000</u>	<u>105</u>	<u>105</u>	<u>Y</u>
	CVAA (Initial calibration)						↓
	ICP (Continuing calibration)						
<u>0544 CCVU</u>	ICP/MS (Continuing calibration)	<u>Cr</u>	<u>39.999</u>	<u>40.000</u>	<u>100</u>	<u>100</u>	
	CVAA (Continuing calibration)						
	GFAA (Initial calibration)						
	GFAA (Continuing calibration)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 39849D4a

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1Reviewer: MG2nd Reviewer: CE**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
 D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)  
 SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
-	ICP interference check	-	-	-	-	-	-
0513 LCS	Laboratory control sample	Cr	38.31 (µg/L)	40.00 (µg/L)	95.8	95.8	Y
0531 13	Matrix spike	Cr	(SSR-SR) 35.03 (µg/L)	40.00 (µg/L)	87.6	87.6	↓
0520/0524 15	Duplicate	Cr	1.595 (µg/L)	1.744 (µg/L)	8.92	8.92	↓
0520/0527 5	ICP serial dilution	Cr	1.595 (µg/L)	2.5 U (µg/L)	100	not reported	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 4Q2017

**LDC Report Date:** December 5, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-29969

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-22-5	1729969-02	Water	10/19/17
MW-22-4	1729969-03	Water	10/19/17
MW-22-3	1729969-04	Water	10/19/17
DUP-4-4Q17	1729969-05	Water	10/19/17
MW-22-2	1729969-06	Water	10/19/17
MW-22-1	1729969-07	Water	10/19/17
MW-24-5	1729969-08	Water	10/19/17
MW-24-4	1729969-09	Water	10/19/17
MW-24-3**	1729969-10**	Water	10/19/17
MW-24-2	1729969-11	Water	10/19/17
MW-24-1	1729969-12	Water	10/19/17
EB-4-101917	1729969-13	Water	10/19/17
MW-22-2MS	1729969-06MS	Water	10/19/17
MW-22-2MSD	1729969-06MSD	Water	10/19/17
MW-22-2DUP	1729969-06DUP	Water	10/19/17
MW-24-1MS	1729969-12MS	Water	10/19/17
MW-24-1MSD	1729969-12MSD	Water	10/19/17
MW-24-1DUP	1729969-12DUP	Water	10/19/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Nitrite as Nitrogen by EPA Method 353.2

Hexavalent Chromium by EPA SW 846 Method 7196

Orthophosphate as Phosphorus by EPA Method 365.1

Perchlorate by EPA Method 314.0

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample EB-1-101617 was identified as an equipment blank. No contaminants were found.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

Samples MW-22-3 and DUP-4-4Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:



Analyte	Concentration		RPD
	MW-22-3	DUP-4-4Q17	
Hexavalent Chromium	0.0024 mg/L	0.0025 mg/L	4
Perchlorate	2.1 ug/L	2.3 ug/L	9

### X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

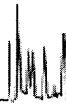
The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 4Q2017**  
**Wet Chemistry - Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG

**NASA JPL, 4Q2017**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-29969**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:56:35AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

**MW-24-1**

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-12

File ID: A102017.seq-29

Sampled: 10/19/17 13:30

Prepared: 10/20/17 18:00

Analyzed: 10/21/17 04:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2218

Sequence: 1719489

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	89	1		EPA-300.0
14797-55-8	Nitrate as N	1.4	1		EPA-300.0
14808-79-8	Sulfate	54	1		EPA-300.0

*11/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:56:35AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-12

File ID: 171020 0811 NO2-197

Sampled: 10/19/17 13:30

Prepared: 10/20/17 08:11

Analyzed: 10/20/17 14:04

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J2286

Sequence: 1719751

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-22-5

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-02

File ID: F110117.seq-19.0000.txt

Sampled: 10/19/17 07:40

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 15:56

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJK0077

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

12/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-22-4

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-03

File ID: F110117.seq-22.0000.txt

Sampled: 10/19/17 08:15

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 16:42

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJK0077

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.64	1	J	EPA-314.0

*11/6/17 J*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-22-3

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-04

File ID: F110117.seq-23.0000.txt

Sampled: 10/19/17 08:40

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 16:57

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BfK0077

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.1	1	J	EPA-314.0

11/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

DUP-4-4Q17

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-05

File ID: F110117.seq-24.0000.txt

Sampled: 10/19/17 08:50

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 17:12

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[K0077

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.3	1	J	EPA-314.0

*12/6/17* *[Signature]*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-22-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-06

File ID: F110117.seq-25.0000.txt

Sampled: 10/19/17 09:45

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 17:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIK0077

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.7	1	J	EPA-314.0

*12/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-22-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-07

File ID: F110117.seq-29.0000.txt

Sampled: 10/19/17 10:15

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 18:29

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIK0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.0	1	J	EPA-314.0

11/16/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-5

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-08

File ID: F110117.seq-30.0000.txt

Sampled: 10/19/17 11:50

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 18:45

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJK0078

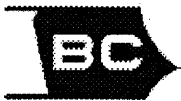
Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

11/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-4

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-09

File ID: F110117.seq-31.0000.txt

Sampled: 10/19/17 11:20

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 19:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BfK0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-3

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-10

File ID: F110117.seq-34.0000.txt

Sampled: 10/19/17 12:15

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 19:46

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[K0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-11

File ID: F110117.seq-35.0000.txt

Sampled: 10/19/17 12:45

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 20:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[K0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.2	1	J	EPA-314.0

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-12

File ID: F110117.seq-38.0000.txt

Sampled: 10/19/17 13:30

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 20:47

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[K0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.1	1	J	EPA-314.0

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

EB-4-101917

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-13

File ID: F110117.seq-42.0000.txt

Sampled: 10/19/17 13:50

Prepared: 11/01/17 11:00

Analyzed: 11/01/17 21:49

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[K0078

Sequence: 1720211

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*Handwritten signature/initials: H/L/17 Q*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 11/9/2017 9:58:59AM Project: JPL- GW Monitoring Wells Project Number: 4Q17 Project Manager: David Conner
--	---

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-22-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-29969</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1729969-02</u>	File ID: <u>171020 0121 CR6-015</u>	
Sampled: <u>10/19/17 07:40</u>	Prepared: <u>10/20/17 01:21</u>	Analyzed: <u>10/20/17 01:27</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJJ2150</u>	Sequence: <u>1719495</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/9/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-22-4

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-03

File ID: 171020 0121 CR6-039

Sampled: 10/19/17 08:15

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 02:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[J2150

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0025	1		EPA-7196

*12/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-22-3

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-04

File ID: 171020 0121 CR6-040

Sampled: 10/19/17 08:40

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 02:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2150

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0024	1		EPA-7196

11/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

DUP-4-4Q17

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-05

File ID: 171020 0121 CR6-041

Sampled: 10/19/17 08:50

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 02:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2150

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0025	1		EPA-7196

12/6/17 *QC*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-22-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-06

File ID: 171020 0121 CR6-005

Sampled: 10/19/17 09:45

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:21

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2150

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0017	1	J	EPA-7196

11/16/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-22-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-07

File ID: 171020 0121 CR6-028

Sampled: 10/19/17 10:15

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:30

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-24-5

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-08

File ID: 171020 0121 CR6-019

Sampled: 10/19/17 11:50

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:27

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2150

Sequence:

1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*11/9/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-24-4

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-09

File ID: 171020 0121 CR6-042

Sampled: 10/19/17 11:20

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 02:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0025	1		EPA-7196

12/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-24-3**

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-10

File ID: 171020 0121 CR6-030

Sampled: 10/19/17 12:15

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:31

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

11/16/17 [Signature]



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-24-2

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-11

File ID: 171020 0121 CR6-043

Sampled: 10/19/17 12:45

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 02:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0019	1	J	EPA-7196

*11/9/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-12

File ID: 171020 0121 CR6-022

Sampled: 10/19/17 13:30

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 11/9/2017 9:58:59AM  
Project: JPL- GW Monitoring Wells  
Project Number: 4Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

EB-4-101917

Laboratory: BC Laboratories

SDG: 17-29969

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1729969-13

File ID: 171020 0121 CR6-032

Sampled: 10/19/17 13:50

Prepared: 10/20/17 01:21

Analyzed: 10/20/17 01:31

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJJ2151

Sequence: 1719495

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

12/6/17