



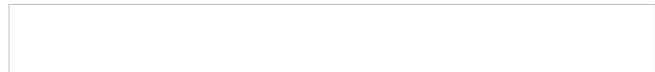
CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: Tidewater GH (43654.00)
ESS Laboratory Work Order Number: 1108003

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director



Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

SAMPLE RECEIPT

The following samples were received on August 01, 2011 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

<u>Lab Number</u>	<u>SampleName</u>	<u>Matrix</u>	<u>Analysis</u>
1108003-01	Riverside Pipe	Solid	8260B



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1108003-01 [Surrogate recovery\(ies\) diluted below the MRL \(SD\).](#)

1,2-Dichloroethane-d4 (236% @ 70-130%), 4-Bromofluorobenzene (356% @ 70-130%),
Dibromofluoromethane (220% @ 70-130%), Toluene-d8 (212% @ 70-130%)

CUH0027-CCV1 [Continuing Calibration recovery is below lower control limit \(C-\).](#)

1,4-Dioxane - Screen (61% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH
 Client Sample ID: Riverside Pipe
 Date Sampled: 08/01/11 15:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1108003
 ESS Laboratory Sample ID: 1108003-01
 Sample Matrix: Solid
 Units: mg/kg wet
 Analyst: MD

All methods used are in accordance with 40 CFR 136.

5035/8260B Volatile Organic Compounds / Methanol

RI - RES DEC

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (30.0)	2.61	2.2	100	08/03/11 14:23	CUH0027	CH10319
1,1,1-Trichloroethane	ND (15.0)	2.64	540	100	08/03/11 14:23	CUH0027	CH10319
1,1,2,2-Tetrachloroethane	ND (15.0)	4.08	1.3	100	08/03/11 14:23	CUH0027	CH10319
1,1,2-Trichloroethane	ND (15.0)	3.75	3.6	100	08/03/11 14:23	CUH0027	CH10319
1,1-Dichloroethane	ND (15.0)	2.40	920	100	08/03/11 14:23	CUH0027	CH10319
1,1-Dichloroethene	ND (15.0)	3.69	0.2	100	08/03/11 14:23	CUH0027	CH10319
1,1-Dichloropropene	ND (15.0)	2.31		100	08/03/11 14:23	CUH0027	CH10319
1,2,3-Trichlorobenzene	ND (15.0)	5.01		100	08/03/11 14:23	CUH0027	CH10319
1,2,3-Trichloropropane	ND (15.0)	3.72		100	08/03/11 14:23	CUH0027	CH10319
1,2,4-Trichlorobenzene	ND (15.0)	3.30	96	100	08/03/11 14:23	CUH0027	CH10319
1,2,4-Trimethylbenzene	16.5 (15.0)	2.88		100	08/03/11 14:23	CUH0027	CH10319
1,2-Dibromo-3-Chloropropane	ND (90.0)	30.0	0.5	100	08/03/11 14:23	CUH0027	CH10319
1,2-Dibromoethane	ND (15.0)	3.81	0.01	100	08/03/11 14:23	CUH0027	CH10319
1,2-Dichlorobenzene	ND (15.0)	2.13	510	100	08/03/11 14:23	CUH0027	CH10319
1,2-Dichloroethane	ND (15.0)	4.02	0.9	100	08/03/11 14:23	CUH0027	CH10319
1,2-Dichloropropane	ND (15.0)	3.93	1.9	100	08/03/11 14:23	CUH0027	CH10319
1,3,5-Trimethylbenzene	J 5.70 (15.0)	2.64		100	08/03/11 14:23	CUH0027	CH10319
1,3-Dichlorobenzene	ND (15.0)	1.89	430	100	08/03/11 14:23	CUH0027	CH10319
1,3-Dichloropropane	ND (15.0)	3.36		100	08/03/11 14:23	CUH0027	CH10319
1,4-Dichlorobenzene	ND (15.0)	3.99	27	100	08/03/11 14:23	CUH0027	CH10319
1,4-Dioxane - Screen	ND (1500)	501		100	08/03/11 14:23	CUH0027	CH10319
1-Chlorohexane	ND (15.0)	2.85		100	08/03/11 14:23	CUH0027	CH10319
2,2-Dichloropropane	ND (30.0)	5.13		100	08/03/11 14:23	CUH0027	CH10319
2-Butanone	ND (375)	86.7	10000	100	08/03/11 14:23	CUH0027	CH10319
2-Chlorotoluene	ND (15.0)	4.23		100	08/03/11 14:23	CUH0027	CH10319
2-Hexanone	ND (150)	25.8		100	08/03/11 14:23	CUH0027	CH10319
4-Chlorotoluene	ND (15.0)	1.95		100	08/03/11 14:23	CUH0027	CH10319
4-Isopropyltoluene	ND (15.0)	2.67		100	08/03/11 14:23	CUH0027	CH10319
4-Methyl-2-Pentanone	ND (150)	18.1	1200	100	08/03/11 14:23	CUH0027	CH10319
Acetone	ND (375)	111	7800	100	08/03/11 14:23	CUH0027	CH10319
Benzene	23.7 (15.0)	2.43	2.5	100	08/03/11 14:23	CUH0027	CH10319



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH
Client Sample ID: Riverside Pipe
Date Sampled: 08/01/11 15:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1108003
ESS Laboratory Sample ID: 1108003-01
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

All methods used are in accordance with 40 CFR 136.

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>RI - RES DEC</u>		<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
			<u>Limit</u>	<u>DF</u>			
Bromobenzene	ND (15.0)	4.11		100	08/03/11 14:23	CUH0027	CH10319
Bromochloromethane	ND (15.0)	4.86		100	08/03/11 14:23	CUH0027	CH10319
Bromodichloromethane	ND (15.0)	2.07	10	100	08/03/11 14:23	CUH0027	CH10319
Bromoform	ND (15.0)	4.32	81	100	08/03/11 14:23	CUH0027	CH10319
Bromomethane	ND (30.0)	10.0	0.8	100	08/03/11 14:23	CUH0027	CH10319
Carbon Disulfide	ND (15.0)	2.22		100	08/03/11 14:23	CUH0027	CH10319
Carbon Tetrachloride	ND (15.0)	2.61	1.5	100	08/03/11 14:23	CUH0027	CH10319
Chlorobenzene	ND (15.0)	2.37	210	100	08/03/11 14:23	CUH0027	CH10319
Chloroethane	ND (30.0)	9.99		100	08/03/11 14:23	CUH0027	CH10319
Chloroform	ND (15.0)	3.09	1.2	100	08/03/11 14:23	CUH0027	CH10319
Chloromethane	ND (30.0)	3.81		100	08/03/11 14:23	CUH0027	CH10319
cis-1,2-Dichloroethene	ND (15.0)	3.72	630	100	08/03/11 14:23	CUH0027	CH10319
cis-1,3-Dichloropropene	ND (15.0)	3.39		100	08/03/11 14:23	CUH0027	CH10319
Dibromochloromethane	ND (15.0)	3.78	7.6	100	08/03/11 14:23	CUH0027	CH10319
Dibromomethane	ND (15.0)	4.74		100	08/03/11 14:23	CUH0027	CH10319
Dichlorodifluoromethane	ND (15.0)	2.61		100	08/03/11 14:23	CUH0027	CH10319
Diethyl Ether	ND (15.0)	3.81		100	08/03/11 14:23	CUH0027	CH10319
Di-isopropyl ether	ND (15.0)	2.82		100	08/03/11 14:23	CUH0027	CH10319
Ethyl tertiary-butyl ether	ND (15.0)	3.78		100	08/03/11 14:23	CUH0027	CH10319
Ethylbenzene	J 6.90 (15.0)	1.95	71	100	08/03/11 14:23	CUH0027	CH10319
Hexachlorobutadiene	ND (15.0)	5.01	8.2	100	08/03/11 14:23	CUH0027	CH10319
Isopropylbenzene	ND (15.0)	2.64	27	100	08/03/11 14:23	CUH0027	CH10319
Methyl tert-Butyl Ether	ND (15.0)	2.40	390	100	08/03/11 14:23	CUH0027	CH10319
Methylene Chloride	ND (75.0)	3.93	45	100	08/03/11 14:23	CUH0027	CH10319
Naphthalene	1930 (15.0)	3.93	54	100	08/03/11 14:23	CUH0027	CH10319
n-Butylbenzene	ND (15.0)	3.69		100	08/03/11 14:23	CUH0027	CH10319
n-Propylbenzene	ND (15.0)	3.66		100	08/03/11 14:23	CUH0027	CH10319
sec-Butylbenzene	ND (15.0)	2.01		100	08/03/11 14:23	CUH0027	CH10319
Styrene	39.0 (15.0)	1.98	13	100	08/03/11 14:23	CUH0027	CH10319
tert-Butylbenzene	ND (15.0)	3.51		100	08/03/11 14:23	CUH0027	CH10319
Tertiary-amyl methyl ether	ND (15.0)	2.16		100	08/03/11 14:23	CUH0027	CH10319



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH
 Client Sample ID: Riverside Pipe
 Date Sampled: 08/01/11 15:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1108003
 ESS Laboratory Sample ID: 1108003-01
 Sample Matrix: Solid
 Units: mg/kg wet
 Analyst: MD

All methods used are in accordance with 40 CFR 136.

5035/8260B Volatile Organic Compounds / Methanol

RI - RES DEC

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrachloroethene	ND (15.0)	5.01	12	100	08/03/11 14:23	CUH0027	CH10319
Tetrahydrofuran	ND (15.0)	38.7		100	08/03/11 14:23	CUH0027	CH10319
Toluene	45.9 (15.0)	3.81	190	100	08/03/11 14:23	CUH0027	CH10319
trans-1,2-Dichloroethene	ND (15.0)	4.92	1100	100	08/03/11 14:23	CUH0027	CH10319
trans-1,3-Dichloropropene	ND (15.0)	4.62		100	08/03/11 14:23	CUH0027	CH10319
Trichloroethene	ND (15.0)	3.09	13	100	08/03/11 14:23	CUH0027	CH10319
Trichlorofluoromethane	ND (15.0)	3.96		100	08/03/11 14:23	CUH0027	CH10319
Vinyl Acetate	ND (75.0)	3.09		100	08/03/11 14:23	CUH0027	CH10319
Vinyl Chloride	ND (15.0)	4.95	0.02	100	08/03/11 14:23	CUH0027	CH10319
Xylene O	J 15.0 (15.0)	2.88	110	100	08/03/11 14:23	CUH0027	CH10319
Xylene P,M	33.9 (30.0)	5.82	110	100	08/03/11 14:23	CUH0027	CH10319
Xylenes (Total)	48.9 (45.0)		110	100	08/03/11 14:23		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	236 %	SD	70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	356 %	SD	70-130
<i>Surrogate: Dibromofluoromethane</i>	220 %	SD	70-130
<i>Surrogate: Toluene-d8</i>	212 %	SD	70-130

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.100	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0500	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0500	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethene	ND	0.0500	mg/kg wet							
1,1-Dichloropropene	ND	0.0500	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0500	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.300	mg/kg wet							
1,2-Dibromoethane	ND	0.0500	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,2-Dichloroethane	ND	0.0500	mg/kg wet							
1,2-Dichloropropane	ND	0.0500	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,3-Dichloropropane	ND	0.0500	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,4-Dioxane - Screen	ND	5.00	mg/kg wet							
1-Chlorohexane	ND	0.0500	mg/kg wet							
2,2-Dichloropropane	ND	0.100	mg/kg wet							
2-Butanone	ND	1.25	mg/kg wet							
2-Chlorotoluene	ND	0.0500	mg/kg wet							
2-Hexanone	ND	0.500	mg/kg wet							
4-Chlorotoluene	ND	0.0500	mg/kg wet							
4-Isopropyltoluene	ND	0.0500	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.500	mg/kg wet							
Acetone	ND	1.25	mg/kg wet							
Benzene	ND	0.0500	mg/kg wet							
Bromobenzene	ND	0.0500	mg/kg wet							
Bromochloromethane	ND	0.0500	mg/kg wet							
Bromodichloromethane	ND	0.0500	mg/kg wet							
Bromoform	ND	0.0500	mg/kg wet							
Bromomethane	ND	0.100	mg/kg wet							
Carbon Disulfide	ND	0.0500	mg/kg wet							
Carbon Tetrachloride	ND	0.0500	mg/kg wet							
Chlorobenzene	ND	0.0500	mg/kg wet							
Chloroethane	ND	0.100	mg/kg wet							
Chloroform	ND	0.0500	mg/kg wet							
Chloromethane	ND	0.100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0500	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0500	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

Dibromochloromethane	ND	0.0500	mg/kg wet							
Dibromomethane	ND	0.0500	mg/kg wet							
Dichlorodifluoromethane	ND	0.0500	mg/kg wet							
Diethyl Ether	ND	0.0500	mg/kg wet							
Di-isopropyl ether	ND	0.0500	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0500	mg/kg wet							
Ethylbenzene	ND	0.0500	mg/kg wet							
Hexachlorobutadiene	ND	0.0500	mg/kg wet							
Isopropylbenzene	ND	0.0500	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0500	mg/kg wet							
Methylene Chloride	0.0210	0.250	mg/kg wet							J
Naphthalene	ND	0.0500	mg/kg wet							
n-Butylbenzene	ND	0.0500	mg/kg wet							
n-Propylbenzene	ND	0.0500	mg/kg wet							
sec-Butylbenzene	ND	0.0500	mg/kg wet							
Styrene	ND	0.0500	mg/kg wet							
tert-Butylbenzene	ND	0.0500	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0500	mg/kg wet							
Tetrachloroethene	ND	0.0500	mg/kg wet							
Tetrahydrofuran	ND	0.500	mg/kg wet							
Toluene	ND	0.0500	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0500	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0500	mg/kg wet							
Trichloroethene	ND	0.0500	mg/kg wet							
Vinyl Acetate	ND	0.250	mg/kg wet							
Vinyl Chloride	ND	0.0500	mg/kg wet							
Xylene O	ND	0.0500	mg/kg wet							
Xylene P,M	ND	0.100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	2.36		mg/kg wet	2.500		95	70-130			
Surrogate: 4-Bromofluorobenzene	2.36		mg/kg wet	2.500		94	70-130			
Surrogate: Dibromofluoromethane	2.46		mg/kg wet	2.500		98	70-130			
Surrogate: Toluene-d8	2.38		mg/kg wet	2.500		95	70-130			

LCS

1,1,1,2-Tetrachloroethane	2.54	0.100	mg/kg wet	2.500		102	70-130			
1,1,1-Trichloroethane	2.44	0.0500	mg/kg wet	2.500		98	70-130			
1,1,2,2-Tetrachloroethane	2.44	0.0500	mg/kg wet	2.500		98	70-130			
1,1,2-Trichloroethane	2.48	0.0500	mg/kg wet	2.500		99	70-130			
1,1-Dichloroethane	2.39	0.0500	mg/kg wet	2.500		96	70-130			
1,1-Dichloroethene	2.68	0.0500	mg/kg wet	2.500		107	70-130			
1,1-Dichloropropene	2.52	0.0500	mg/kg wet	2.500		101	70-130			
1,2,3-Trichlorobenzene	2.51	0.0500	mg/kg wet	2.500		100	70-130			
1,2,3-Trichloropropane	2.39	0.0500	mg/kg wet	2.500		96	70-130			
1,2,4-Trichlorobenzene	2.60	0.0500	mg/kg wet	2.500		104	70-130			
1,2,4-Trimethylbenzene	2.57	0.0500	mg/kg wet	2.500		103	70-130			
1,2-Dibromo-3-Chloropropane	2.41	0.300	mg/kg wet	2.500		96	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

1,2-Dibromoethane	2.47	0.0500	mg/kg wet	2.500		99	70-130			
1,2-Dichlorobenzene	2.48	0.0500	mg/kg wet	2.500		99	70-130			
1,2-Dichloroethane	2.59	0.0500	mg/kg wet	2.500		103	70-130			
1,2-Dichloropropane	2.30	0.0500	mg/kg wet	2.500		92	70-130			
1,3,5-Trimethylbenzene	2.62	0.0500	mg/kg wet	2.500		105	70-130			
1,3-Dichlorobenzene	2.52	0.0500	mg/kg wet	2.500		101	70-130			
1,3-Dichloropropane	2.45	0.0500	mg/kg wet	2.500		98	70-130			
1,4-Dichlorobenzene	2.53	0.0500	mg/kg wet	2.500		101	70-130			
1,4-Dioxane - Screen	49.8	5.00	mg/kg wet	50.00		100	44-241			
1-Chlorohexane	2.67	0.0500	mg/kg wet	2.500		107	70-130			
2,2-Dichloropropane	2.70	0.100	mg/kg wet	2.500		108	70-130			
2-Butanone	13.0	1.25	mg/kg wet	12.50		104	70-130			
2-Chlorotoluene	2.44	0.0500	mg/kg wet	2.500		98	70-130			
2-Hexanone	12.9	0.500	mg/kg wet	12.50		103	70-130			
4-Chlorotoluene	2.51	0.0500	mg/kg wet	2.500		100	70-130			
4-Isopropyltoluene	2.49	0.0500	mg/kg wet	2.500		99	70-130			
4-Methyl-2-Pentanone	12.7	0.500	mg/kg wet	12.50		102	70-130			
Acetone	14.6	1.25	mg/kg wet	12.50		117	70-130			
Benzene	2.43	0.0500	mg/kg wet	2.500		97	70-130			
Bromobenzene	2.56	0.0500	mg/kg wet	2.500		102	70-130			
Bromochloromethane	2.71	0.0500	mg/kg wet	2.500		108	70-130			
Bromodichloromethane	2.64	0.0500	mg/kg wet	2.500		105	70-130			
Bromoform	2.65	0.0500	mg/kg wet	2.500		106	70-130			
Bromomethane	2.44	0.100	mg/kg wet	2.500		98	70-130			
Carbon Disulfide	2.77	0.0500	mg/kg wet	2.500		111	70-130			
Carbon Tetrachloride	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Chlorobenzene	2.47	0.0500	mg/kg wet	2.500		99	70-130			
Chloroethane	2.95	0.100	mg/kg wet	2.500		118	70-130			
Chloroform	2.49	0.0500	mg/kg wet	2.500		100	70-130			
Chloromethane	2.42	0.100	mg/kg wet	2.500		97	70-130			
cis-1,2-Dichloroethene	2.59	0.0500	mg/kg wet	2.500		104	70-130			
cis-1,3-Dichloropropene	2.56	0.0500	mg/kg wet	2.500		103	70-130			
Dibromochloromethane	2.55	0.0500	mg/kg wet	2.500		102	70-130			
Dibromomethane	2.38	0.0500	mg/kg wet	2.500		95	70-130			
Dichlorodifluoromethane	2.80	0.0500	mg/kg wet	2.500		112	70-130			
Diethyl Ether	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Di-isopropyl ether	2.50	0.0500	mg/kg wet	2.500		100	70-130			
Ethyl tertiary-butyl ether	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Ethylbenzene	2.63	0.0500	mg/kg wet	2.500		105	70-130			
Hexachlorobutadiene	2.73	0.0500	mg/kg wet	2.500		109	70-130			
Isopropylbenzene	2.20	0.0500	mg/kg wet	2.500		88	70-130			
Methyl tert-Butyl Ether	2.55	0.0500	mg/kg wet	2.500		102	70-130			
Methylene Chloride	2.49	0.250	mg/kg wet	2.500		100	70-130			
Naphthalene	2.69	0.0500	mg/kg wet	2.500		108	70-130			
n-Butylbenzene	2.70	0.0500	mg/kg wet	2.500		108	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

n-Propylbenzene	2.55	0.0500	mg/kg wet	2.500		102	70-130			
sec-Butylbenzene	2.59	0.0500	mg/kg wet	2.500		104	70-130			
Styrene	2.61	0.0500	mg/kg wet	2.500		104	70-130			
tert-Butylbenzene	2.67	0.0500	mg/kg wet	2.500		107	70-130			
Tertiary-amyl methyl ether	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Tetrachloroethene	2.21	0.0500	mg/kg wet	2.500		88	70-130			
Tetrahydrofuran	2.24	0.500	mg/kg wet	2.500		90	70-130			
Toluene	2.54	0.0500	mg/kg wet	2.500		102	70-130			
trans-1,2-Dichloroethene	2.33	0.0500	mg/kg wet	2.500		93	70-130			
trans-1,3-Dichloropropene	2.35	0.0500	mg/kg wet	2.500		94	70-130			
Trichloroethene	2.49	0.0500	mg/kg wet	2.500		100	70-130			
Vinyl Acetate	2.63	0.250	mg/kg wet	2.500		105	70-130			
Vinyl Chloride	2.84	0.0500	mg/kg wet	2.500		113	70-130			
Xylene O	2.51	0.0500	mg/kg wet	2.500		100	70-130			
Xylene P,M	5.17	0.100	mg/kg wet	5.000		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	2.47		mg/kg wet	2.500		99	70-130			
Surrogate: 4-Bromofluorobenzene	2.48		mg/kg wet	2.500		99	70-130			
Surrogate: Dibromofluoromethane	2.42		mg/kg wet	2.500		97	70-130			
Surrogate: Toluene-d8	2.46		mg/kg wet	2.500		98	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	2.51	0.100	mg/kg wet	2.500		100	70-130	1	25	
1,1,1-Trichloroethane	2.43	0.0500	mg/kg wet	2.500		97	70-130	0.3	25	
1,1,2,2-Tetrachloroethane	2.46	0.0500	mg/kg wet	2.500		98	70-130	0.7	25	
1,1,2-Trichloroethane	2.57	0.0500	mg/kg wet	2.500		103	70-130	4	25	
1,1-Dichloroethane	2.37	0.0500	mg/kg wet	2.500		95	70-130	1	25	
1,1-Dichloroethene	2.69	0.0500	mg/kg wet	2.500		108	70-130	0.4	25	
1,1-Dichloropropene	2.50	0.0500	mg/kg wet	2.500		100	70-130	0.8	25	
1,2,3-Trichlorobenzene	2.48	0.0500	mg/kg wet	2.500		99	70-130	0.9	25	
1,2,3-Trichloropropane	2.33	0.0500	mg/kg wet	2.500		93	70-130	3	25	
1,2,4-Trichlorobenzene	2.61	0.0500	mg/kg wet	2.500		104	70-130	0.1	25	
1,2,4-Trimethylbenzene	2.56	0.0500	mg/kg wet	2.500		103	70-130	0.2	25	
1,2-Dibromo-3-Chloropropane	2.40	0.300	mg/kg wet	2.500		96	70-130	0.2	25	
1,2-Dibromoethane	2.44	0.0500	mg/kg wet	2.500		98	70-130	0.9	25	
1,2-Dichlorobenzene	2.50	0.0500	mg/kg wet	2.500		100	70-130	1	25	
1,2-Dichloroethane	2.59	0.0500	mg/kg wet	2.500		104	70-130	0.2	25	
1,2-Dichloropropane	2.26	0.0500	mg/kg wet	2.500		90	70-130	2	25	
1,3,5-Trimethylbenzene	2.60	0.0500	mg/kg wet	2.500		104	70-130	0.7	25	
1,3-Dichlorobenzene	2.52	0.0500	mg/kg wet	2.500		101	70-130	0.04	25	
1,3-Dichloropropane	2.44	0.0500	mg/kg wet	2.500		97	70-130	0.6	25	
1,4-Dichlorobenzene	2.53	0.0500	mg/kg wet	2.500		101	70-130	0.3	25	
1,4-Dioxane - Screen	57.7	5.00	mg/kg wet	50.00		115	44-241	15	200	
1-Chlorohexane	2.64	0.0500	mg/kg wet	2.500		106	70-130	1	25	
2,2-Dichloropropane	2.68	0.100	mg/kg wet	2.500		107	70-130	0.5	25	
2-Butanone	12.6	1.25	mg/kg wet	12.50		101	70-130	3	25	
2-Chlorotoluene	2.33	0.0500	mg/kg wet	2.500		93	70-130	5	25	

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

2-Hexanone	12.3	0.500	mg/kg wet	12.50		99	70-130	5	25	
4-Chlorotoluene	2.47	0.0500	mg/kg wet	2.500		99	70-130	2	25	
4-Isopropyltoluene	2.47	0.0500	mg/kg wet	2.500		99	70-130	0.6	25	
4-Methyl-2-Pentanone	12.8	0.500	mg/kg wet	12.50		103	70-130	0.7	25	
Acetone	12.9	1.25	mg/kg wet	12.50		103	70-130	12	25	
Benzene	2.40	0.0500	mg/kg wet	2.500		96	70-130	1	25	
Bromobenzene	2.54	0.0500	mg/kg wet	2.500		102	70-130	0.6	25	
Bromochloromethane	2.68	0.0500	mg/kg wet	2.500		107	70-130	1	25	
Bromodichloromethane	2.59	0.0500	mg/kg wet	2.500		103	70-130	2	25	
Bromoform	2.61	0.0500	mg/kg wet	2.500		104	70-130	1	25	
Bromomethane	2.60	0.100	mg/kg wet	2.500		104	70-130	6	25	
Carbon Disulfide	2.58	0.0500	mg/kg wet	2.500		103	70-130	7	25	
Carbon Tetrachloride	2.58	0.0500	mg/kg wet	2.500		103	70-130	2	25	
Chlorobenzene	2.44	0.0500	mg/kg wet	2.500		98	70-130	1	25	
Chloroethane	3.00	0.100	mg/kg wet	2.500		120	70-130	2	25	
Chloroform	2.46	0.0500	mg/kg wet	2.500		98	70-130	1	25	
Chloromethane	2.38	0.100	mg/kg wet	2.500		95	70-130	2	25	
cis-1,2-Dichloroethene	2.56	0.0500	mg/kg wet	2.500		102	70-130	1	25	
cis-1,3-Dichloropropene	2.48	0.0500	mg/kg wet	2.500		99	70-130	3	25	
Dibromochloromethane	2.55	0.0500	mg/kg wet	2.500		102	70-130	0.1	25	
Dibromomethane	2.35	0.0500	mg/kg wet	2.500		94	70-130	1	25	
Dichlorodifluoromethane	2.79	0.0500	mg/kg wet	2.500		112	70-130	0.1	25	
Diethyl Ether	2.48	0.0500	mg/kg wet	2.500		99	70-130	2	25	
Di-isopropyl ether	2.49	0.0500	mg/kg wet	2.500		100	70-130	0.4	25	
Ethyl tertiary-butyl ether	2.51	0.0500	mg/kg wet	2.500		101	70-130	0.6	25	
Ethylbenzene	2.59	0.0500	mg/kg wet	2.500		104	70-130	1	25	
Hexachlorobutadiene	2.78	0.0500	mg/kg wet	2.500		111	70-130	2	25	
Isopropylbenzene	2.19	0.0500	mg/kg wet	2.500		88	70-130	0.5	25	
Methyl tert-Butyl Ether	2.51	0.0500	mg/kg wet	2.500		100	70-130	2	25	
Methylene Chloride	2.46	0.250	mg/kg wet	2.500		99	70-130	1	25	
Naphthalene	2.73	0.0500	mg/kg wet	2.500		109	70-130	2	25	
n-Butylbenzene	2.66	0.0500	mg/kg wet	2.500		107	70-130	1	25	
n-Propylbenzene	2.61	0.0500	mg/kg wet	2.500		105	70-130	2	25	
sec-Butylbenzene	2.58	0.0500	mg/kg wet	2.500		103	70-130	0.4	25	
Styrene	2.60	0.0500	mg/kg wet	2.500		104	70-130	0.3	25	
tert-Butylbenzene	2.66	0.0500	mg/kg wet	2.500		106	70-130	0.3	25	
Tertiary-amyl methyl ether	2.50	0.0500	mg/kg wet	2.500		100	70-130	0.8	25	
Tetrachloroethene	2.18	0.0500	mg/kg wet	2.500		87	70-130	2	25	
Tetrahydrofuran	2.28	0.500	mg/kg wet	2.500		91	70-130	2	25	
Toluene	2.52	0.0500	mg/kg wet	2.500		101	70-130	0.7	25	
trans-1,2-Dichloroethene	2.32	0.0500	mg/kg wet	2.500		93	70-130	0.6	25	
trans-1,3-Dichloropropene	2.33	0.0500	mg/kg wet	2.500		93	70-130	0.6	25	
Trichloroethene	2.49	0.0500	mg/kg wet	2.500		100	70-130	0.08	25	
Vinyl Acetate	2.61	0.250	mg/kg wet	2.500		104	70-130	0.6	25	
Vinyl Chloride	2.81	0.0500	mg/kg wet	2.500		112	70-130	0.8	25	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CH10319 - 5035

Xylene O	2.47	0.0500	mg/kg wet	2.500		99	70-130	2	25	
Xylene P,M	5.08	0.100	mg/kg wet	5.000		102	70-130	2	25	
Surrogate: 1,2-Dichloroethane-d4	2.49		mg/kg wet	2.500		100	70-130			
Surrogate: 4-Bromofluorobenzene	2.47		mg/kg wet	2.500		99	70-130			
Surrogate: Dibromofluoromethane	2.43		mg/kg wet	2.500		97	70-130			
Surrogate: Toluene-d8	2.46		mg/kg wet	2.500		99	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

Notes and Definitions

- U Analyte included in the analysis, but not detected
- SD Surrogate recovery(ies) diluted below the MRL (SD).
- J Reported between MDL and MRL; Estimated value.
- D Diluted.
- C- Continuing Calibration recovery is below lower control limit (C-).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Tidewater GH

ESS Laboratory Work Order: 1108003

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/labs/waterlabs-instate.php>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002

http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/labcert/labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://www4.egov.nh.gov/des/nhelap/namesearch.asp>

New York (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301

http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

South Carolina Volatile Organic Compounds in Potable Water: 78003

New Jersey Potable (VOA) and Non Potable Water (RCRA), Solids and Hazardous Waste: RI002

<http://www.nj.gov/dep/oqa/certlabs.htm>

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 11080003
Date Project Due: 8/3/11
Days For Project: 2 Day

Items to be checked upon receipt:

- | | | | |
|--|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> * No | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| Cooler Temp: NA | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Iced With: None | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	8 oz Soil Jar	1	NP

Completed By: mk Date/Time: 8/1/11

Reviewed By: _____ Date/Time: 8/1/11

