



*P. O. Box 7192 (zip 71137-7192)  
1000 Grimmer Dr.  
Shreveport, LA 71107  
Phone: (318) 222-2424  
Fax: (318) 222-2425*

November 21, 2018

Mr. Todd Emmert  
Elm Springs, Inc.  
P.O. Box 58  
Shangaloo, LA 71072-0058

Re: LDNR-Residential Water Well Sampling Project  
Wymon McClary Water Well- Serial Number: 9342Z  
Section 20, Township 13 N, Range 15 W  
GPS via hand held (Water Well): 32.09464, -93.91906

Dear Mr. Emmert:

Approach Environmental, LLC (Approach Environmental) was retained by Elm Springs, Inc. (Elm Springs) to conduct a Residential Water Well Sampling Project at the referenced location. On October 22, 2018, Approach Environmental split groundwater samples with ICON Environmental Services, Inc. (ICON) and Hydro-Environmental Technology, Inc. (HET) from the referenced water well to evaluate specific groundwater quality requested by the Louisiana Department of Natural Resources (LDNR). ICON was the lead consultant onsite and was responsible for landowner notifications and scheduling as well as water well purging and sampling procedures.

The residential water well sampling activities included photo documentation of the water well (photos attached), water well purging (if well was not used on a regular basis), obtaining GPS coordinates (via hand-held GPS), groundwater sampling, and preparation of a brief letter report presenting the analytical data, sampling procedures, and well conditions. According to LDNR SONRIS, the Wymon McClary (LDNR serial number 9342Z) water well has a recorded total depth of 300' below ground surface, is completed in the Wilcox formation, and has a recorded depth to water of 85' below ground surface on the registration form. The depth to water could not be measured during the sampling event due to an existing pump in the well. The well is constructed of 4-inch diameter PVC piping and was located in the yard, approximately 60' North of the residence. The well was equipped with a valve, but with no access to collect the sample directly from the well. The sample was taken from the nearest faucet located in the yard

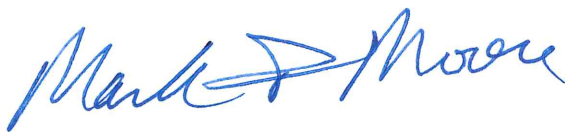
approximately 50' South of the well. The well was purged of approximately 50- 100 gallons of water since the owner stated the well water was used frequently. Once purged, the water sample was collected in laboratory supplied sample containers by an experienced Environmental Scientist wearing nitrile gloves and immediately placed on ice in an ice chest. Proper chain-of-custody procedures were followed and are documented with the attached laboratory report.

The sample was, then, delivered, via FedEx overnight, to Element Materials Technology, a LELAP Certification No.: 01997, a LDHH Certification No.: LA180028, and a ISDH Certification No.: C-LA-01 located in Lafayette, Louisiana. As requested by the LDNR, the sample was analyzed for Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO), TPH Diesel Range Organics (DRO), TPH Oil Range Organics (ORO) by method SW8015, RCRA Metals by method SW6010/7470A, Inorganic Anions in water by IC method SW9056 (Chlorides), Polynuclear Aromatic Hydrocarbons (PAH) by EPA 8270C, Semi-Volatile Organic Compounds by method SW8270C, Volatile Organic Compounds (VOC) by method SW8260B, Total Dissolved Solids (TDS) by method SM2540C, and Dissolved Methane by EPA RSK-175.

A Google Earth map illustrating the location of the referenced residential water well, photographic documentation, and the analytical laboratory report are attached for review. Based on our review of the analytical data, the following parameters were detected within the respective method detection limits: TPH-GRO was detected at 0.0439 mg/l; Chlorides was detected at 52.8 mg/l; Barium was detected at 0.0209 mg/l; Chromium was detected at 0.00100 mg/l; Selenium was detected at 0.0180 mg/l; Sodium was detected at 219 mg/l; TDS was detected at 584 mg/l and Methane was detected at 195 ug/l. No other parameters were detected above the respective method detection limits.

Should you have any questions and/or comments, please do not hesitate to contact me at (318) 222-2424.

Sincerely,



Mark S. Moore  
Louisiana Professional Geoscientist (P.G. #490)  
Approach Environmental, L.L.C.

Encl./

## **Attachments Table of Contents**

Site Photographs with Maps

Analytical Data Report





Wymon McClary-9342Z water well

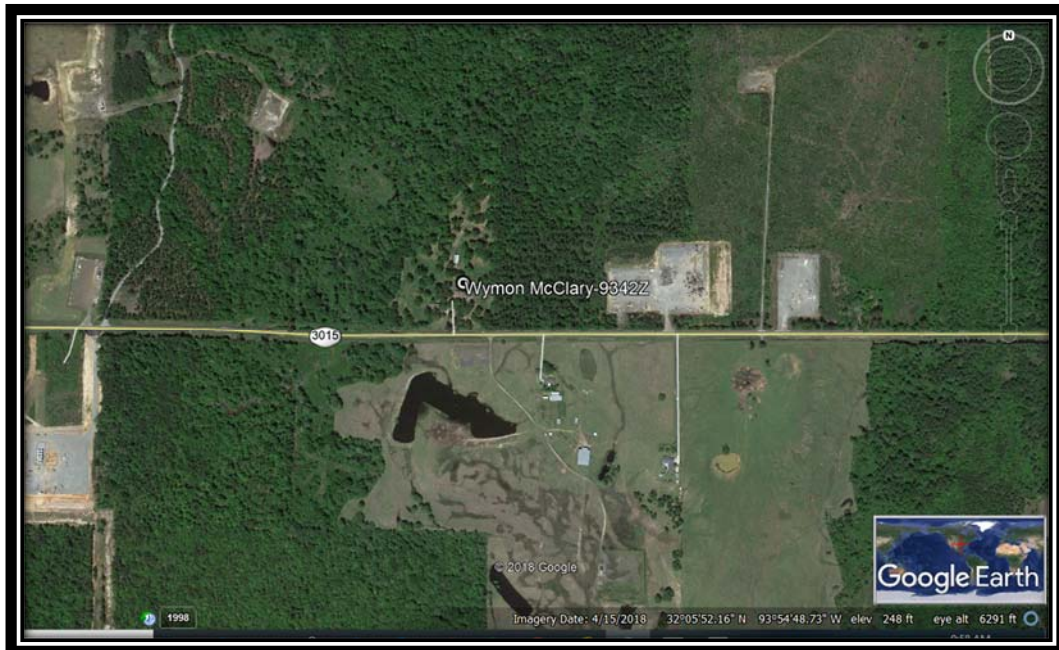


Purging and collection point





Zoomed in Google Earth Aerial Map of the Wymon McClary-9342Z water well



Zoomed out Google Earth Aerial Map of the Wymon McClary-9342Z water well



Element Materials Technology Lafayette  
2417 W. Pinhook Road  
Lafayette, LA 70508-3344  
TEL: (337) 235-0483 FAX: (337) 233-6540  
Website: www.element.com

November 06, 2018

Mark Moore  
Approach Environmental, LLC  
151 Freestate Blvd.  
Suite B  
Shreveport, LA 71107  
TEL: (318) 222-2424  
FAX

Order No.: 18100869

RE: Approach Environmental - LDNR Residential Water Wells

Dear Mark Moore:

Element Materials Technology Lafayette received 2 sample(s) on 10/23/2018 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

A handwritten signature in blue ink that reads 'Cristina Thibeaux'.

Cristina Thibeaux  
Customer Service Supervisor  
2417 W. Pinhook Road  
Lafayette, LA 70508-3344



Element Materials Technology Lafayette  
2417 W. Pinhook Road  
Lafayette, LA 70508-3344  
TEL: (337) 235-0483 FAX: (337) 233-6540  
Website: www.element.com

## Case Narrative

WO#: 18100869  
Date: 11/6/2018

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**CLIENT:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential Water Wells

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Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

The Dissolved Methane (RSK175) analysis was subcontracted to Gulf Coast Analytical Laboratories, Inc. Their report is attached in its entirety.



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# Analytical Report

(consolidated MDL)

WO#: **18100869**

Date Reported: **11/6/2018**

**CLIENT:** Approach Environmental, LLC **Collection Date:** 10/22/2018 2:15:00 PM  
**Project:** Approach Environmental - LDNR Residential Water Wells  
**Lab ID:** 18100869-002 **Matrix:** WATER  
**Client Sample ID** 9342 Z Wymon McClary

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>TPH-D/O IN WATER BY SW8015</b>					<b>SW8015B</b>	<b>SW3511</b>	Analyst: <b>CRM</b>
<b>TPH DRO/ORO IN WATER BY SW8015</b>							
TPH (Diesel Range)	< 0.135	0.00412	0.135		mg/L	1	10/24/2018 1:33:00 PM
TPH (Oil Range)	< 0.124	0.0491	0.124		mg/L	1	10/24/2018 1:33:00 PM
Surr: 4-Terphenyl-d14	73.9		51.4-146		%Rec	1	10/24/2018 1:33:00 PM
<b>TPH-GRO IN WATER BY SW8015</b>					<b>SW8015B</b>		Analyst: <b>CRM</b>
TPH (Gasoline Range)	0.0439	0.0149	0.150	J	mg/L	1	10/23/2018 12:28:00 PM
Surr: alpha, alpha, alpha-Trifluorotoluene	104		70-130		%Rec	1	10/23/2018 12:28:00 PM
<b>RCRA METALS - SW6010/7470A</b>					<b>SW7470A</b>		Analyst: <b>KML</b>
<b>MERCURY IN GROUND WATER, TOTAL</b>							
Mercury	< 0.000200	0.0000540	0.000200		mg/L	1	10/26/2018 2:45:49 PM
<b>INORGANIC ANIONS IN WATER BY IC</b>					<b>SW9056A</b>		Analyst: <b>SGP</b>
Chloride	52.8	0.332	5.00		mg/L	20	10/25/2018 10:28:28 AM
<b>RCRA METALS - SW6010/7470A</b>					<b>SW6010B</b>		Analyst: <b>STS</b>
<b>METALS IN WATER BY ICP, TOTALS</b>							
Arsenic	< 0.0100	0.00895	0.0100		mg/L	1	10/30/2018 8:25:48 PM
Barium	0.0209	0.00103	0.0100		mg/L	1	10/30/2018 8:25:48 PM
Cadmium	< 0.00500	0.000781	0.00500		mg/L	1	10/30/2018 8:25:48 PM
Chromium	0.00100	0.000483	0.0100	J	mg/L	1	10/30/2018 8:25:48 PM
Lead	< 0.0100	0.00488	0.0100		mg/L	1	10/30/2018 8:25:48 PM
Selenium	0.0180	0.00526	0.0200	J	mg/L	1	10/30/2018 8:25:48 PM
Silver	< 0.00500	0.000340	0.00500		mg/L	1	10/30/2018 8:25:48 PM
Sodium	219	2.32	5.00		mg/L	1	10/30/2018 8:25:48 PM
<b>PAH IN WATER BY EPA 8270C</b>					<b>SW8270C</b>	<b>SW3511</b>	Analyst: <b>CRM</b>
2-Methylnaphthalene	< 0.000502	0.0000189	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Acenaphthene	< 0.00100	0.0000523	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Acenaphthylene	< 0.00100	0.000113	0.00100		mg/L	1	10/23/2018 4:23:00 PM

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
C	Value is below Minimum Compound Limit.	DF	Dilution Factor
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

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Element Materials Technology Lafayette  
 2417 W. Pinhook Road  
 Lafayette, LA 70508-3344  
 TEL: (337) 235-0483 FAX: (337) 233-6540  
 Website: www.element.com

# Analytical Report

(consolidated MDL)

WO#: **18100869**

Date Reported: **11/6/2018**

**CLIENT:** Approach Environmental, LLC **Collection Date:** 10/22/2018 2:15:00 PM  
**Project:** Approach Environmental - LDNR Residential Water Wells  
**Lab ID:** 18100869-002 **Matrix:** WATER  
**Client Sample ID** 9342 Z Wymon McClary

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>PAH IN WATER BY EPA 8270C</b>				<b>SW8270C</b>	<b>SW3511</b>	Analyst: <b>CRM</b>	
Anthracene	< 0.00100	0.00000598	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Benzo(a)anthracene	< 0.000502	0.0000244	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Benzo(a)pyrene	< 0.000171	0.0000456	0.000171		mg/L	1	10/23/2018 4:23:00 PM
Benzo(b)fluoranthene	< 0.000502	0.0000429	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Benzo(k)fluoranthene	< 0.000502	0.0000617	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Chrysene	< 0.000502	0.0000242	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Dibenz(a,h)anthracene	< 0.00100	0.0000516	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Fluoranthene	< 0.00100	0.000000543	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Fluorene	< 0.000603	0.0000232	0.000603		mg/L	1	10/23/2018 4:23:00 PM
Indeno(1,2,3-cd)pyrene	< 0.000502	0.000144	0.000502		mg/L	1	10/23/2018 4:23:00 PM
Naphthalene	< 0.00100	0.0000258	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Phenanthrene	< 0.00100	0.00000299	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Pyrene	< 0.00100	0.00000117	0.00100		mg/L	1	10/23/2018 4:23:00 PM
Surr: 4-Terphenyl-d14	104	0	49.2-161		%Rec	1	10/23/2018 4:23:00 PM
<b>SEMIVOLATILE ORGANICS IN WATER</b>				<b>SW8270C</b>	<b>E625/SW351</b>	Analyst: <b>KSK</b>	
1,2,4,5-Tetrachlorobenzene	< 0.00100	0.000500	0.00100		mg/L	1	10/24/2018 2:22:00 PM
1,2,4-Trichlorobenzene	< 0.00500	0.00100	0.00500		mg/L	1	10/24/2018 2:22:00 PM
1,2-Dichlorobenzene	< 0.00500	0.00100	0.00500		mg/L	1	10/24/2018 2:22:00 PM
1,3-Dichlorobenzene	< 0.00500	0.000504	0.00500		mg/L	1	10/24/2018 2:22:00 PM
1,3-Dinitrobenzene	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
1,4-Dichlorobenzene	< 0.00500	0.00100	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,3,4,6-Tetrachlorophenol	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,4,5-Trichlorophenol	< 0.0100	0.000500	0.0100		mg/L	1	10/24/2018 2:22:00 PM
2,4,6-Trichlorophenol	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,4-Dichlorophenol	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,4-Dimethylphenol	< 0.00500	0.000556	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,4-Dinitrophenol	< 0.0200	0.00200	0.0200		mg/L	1	10/24/2018 2:22:00 PM
2,4-Dinitrotoluene	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2,6-Dinitrotoluene	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2-Chloronaphthalene	< 0.00500	0.0000614	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2-Chlorophenol	< 0.00500	0.0000539	0.00500		mg/L	1	10/24/2018 2:22:00 PM
2-Nitroaniline	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	C Value is below Minimum Compound Limit.	DF Dilution Factor
	E Value above quantitation range	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	M Matrix Interference
	ND Not Detected at the Reporting Limit	R RPD outside accepted recovery limits



Element Materials Technology Lafayette  
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 Website: www.element.com

# Analytical Report

(consolidated MDL)

WO#: 18100869

Date Reported: 11/6/2018

**CLIENT:** Approach Environmental, LLC **Collection Date:** 10/22/2018 2:15:00 PM  
**Project:** Approach Environmental - LDNR Residential Water Wells  
**Lab ID:** 18100869-002 **Matrix:** WATER  
**Client Sample ID** 9342 Z Wymon McClary

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS IN WATER</b>				<b>SW8270C</b>	<b>E625/SW351</b>	Analyst: <b>KSK</b>	
3,3'-Dichlorobenzidine	< 0.0100	0.000477	0.0100		mg/L	1	10/24/2018 2:22:00 PM
3-Nitroaniline	< 0.0200	0.000500	0.0200		mg/L	1	10/24/2018 2:22:00 PM
4-Chloroaniline	< 0.00500	0.000237	0.00500		mg/L	1	10/24/2018 2:22:00 PM
4-Nitroaniline	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
4-Nitrophenol	< 0.0200	0.00500	0.0200		mg/L	1	10/24/2018 2:22:00 PM
Aniline	< 0.00500	0.000490	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Biphenyl	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Bis(2-chloroethyl)ether	< 0.00500	0.0000817	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Bis(2-chloroisopropyl)ether	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Bis(2-ethylhexyl)phthalate	< 0.00500	0.000302	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Butyl benzyl phthalate	< 0.00500	0.000106	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Dibenzofuran	< 0.00500	0.0000800	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Diethyl phthalate	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Dimethyl phthalate	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Di-n-octyl phthalate	< 0.0100	0.000182	0.0100		mg/L	1	10/24/2018 2:22:00 PM
Dinoseb	< 0.00500	0.000300	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Hexachlorobenzene	< 0.00100	0.000500	0.00100		mg/L	1	10/24/2018 2:22:00 PM
Hexachlorobutadiene	< 0.00200	0.00100	0.00200		mg/L	1	10/24/2018 2:22:00 PM
Hexachlorocyclopentadiene	< 0.0100	0.000500	0.0100		mg/L	1	10/24/2018 2:22:00 PM
Hexachloroethane	< 0.00500	0.00200	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Isophorone	< 0.00500	0.000179	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Nitrobenzene	< 0.00100	0.000500	0.00100		mg/L	1	10/24/2018 2:22:00 PM
N-Nitrosodi-n-propylamine	< 0.00500	0.000500	0.00500		mg/L	1	10/24/2018 2:22:00 PM
N-Nitrosodiphenylamine	< 0.00500	0.000143	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Pentachlorophenol	< 0.0100	0.00100	0.0100		mg/L	1	10/24/2018 2:22:00 PM
Phenol	< 0.00500	0.0000521	0.00500		mg/L	1	10/24/2018 2:22:00 PM
Surr: 2,4,6-Tribromophenol	93.5		47.2-144		%Rec	1	10/24/2018 2:22:00 PM
Surr: 2-Fluorobiphenyl	98.9		52.2-116		%Rec	1	10/24/2018 2:22:00 PM
Surr: 2-Fluorophenol	53.3		27.3-80.6		%Rec	1	10/24/2018 2:22:00 PM
Surr: 4-Terphenyl-d14	93.2		48.1-134		%Rec	1	10/24/2018 2:22:00 PM
Surr: Nitrobenzene-d5	90.9		42.5-144		%Rec	1	10/24/2018 2:22:00 PM
Surr: Phenol-d5	35.6		10-67.1		%Rec	1	10/24/2018 2:22:00 PM

**Qualifiers:** \* Value exceeds Maximum Contaminant Level. B Analyte detected in the associated Method Blank  
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# Analytical Report

(consolidated MDL)

WO#: **18100869**

Date Reported: **11/6/2018**

**CLIENT:** Approach Environmental, LLC **Collection Date:** 10/22/2018 2:15:00 PM  
**Project:** Approach Environmental - LDNR Residential Water Wells  
**Lab ID:** 18100869-002 **Matrix:** WATER  
**Client Sample ID** 9342 Z Wymon McClary

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>VOLATILES BY GC/MS IN WATER</b>				<b>SW8260B</b>		Analyst: <b>KSK</b>	
1,1,1,2-Tetrachloroethane	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,1,1-Trichloroethane	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,1,2,2-Tetrachloroethane	< 0.000500	0.000150	0.000500		mg/L	1	10/23/2018 12:13:00 PM
1,1,2-Trichloroethane	< 0.00500	0.000172	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,1-Dichloroethane	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,1-Dichloroethene	< 0.00500	0.000361	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,2-Dibromo-3-chloropropane	< 0.00500	0.000210	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,2-Dichlorobenzene	< 0.0200	0.000500	0.0200		mg/L	1	10/23/2018 12:13:00 PM
1,2-Dichloroethane	< 0.00500	0.000500	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,2-Dichloroethene, Total	< 0.00600	0.000400	0.00600		mg/L	1	10/23/2018 12:13:00 PM
1,2-Dichloropropane	< 0.00500	0.000148	0.00500		mg/L	1	10/23/2018 12:13:00 PM
1,3-Dichlorobenzene	< 0.0100	0.000500	0.0100		mg/L	1	10/23/2018 12:13:00 PM
1,4-Dichlorobenzene	< 0.0200	0.000500	0.0200		mg/L	1	10/23/2018 12:13:00 PM
2-Butanone	< 0.0100	0.000442	0.0100		mg/L	1	10/23/2018 12:13:00 PM
4-Methyl-2-pentanone	< 0.0100	0.000325	0.0100		mg/L	1	10/23/2018 12:13:00 PM
Acetone	< 0.0100	0.00226	0.0100		mg/L	1	10/23/2018 12:13:00 PM
Benzene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Bromodichloromethane	< 0.00500	0.000136	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Bromoform	< 0.00500	0.000500	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Bromomethane	< 0.00500	0.000688	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Carbon disulfide	< 0.0100	0.000133	0.0100		mg/L	1	10/23/2018 12:13:00 PM
Carbon tetrachloride	< 0.00500	0.0000773	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Chlorobenzene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Chlorodibromomethane	< 0.00500	0.000170	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Chloroethane	< 0.0100	0.00155	0.0100		mg/L	1	10/23/2018 12:13:00 PM
Chloroform	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Chloromethane	< 0.00500	0.00200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
cis-1,2-Dichloroethene	< 0.00300	0.000200	0.00300		mg/L	1	10/23/2018 12:13:00 PM
cis-1,3-Dichloropropene	< 0.00200	0.000500	0.00200		mg/L	1	10/23/2018 12:13:00 PM
Ethylbenzene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Isobutyl alcohol	< 0.100	0.00400	0.100		mg/L	1	10/23/2018 12:13:00 PM
Methyl tert-butyl ether	< 0.00500	0.000500	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Methylene chloride	< 0.00500	0.000457	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Styrene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM

**Qualifiers:** \* Value exceeds Maximum Contaminant Level. B Analyte detected in the associated Method Blank  
 C Value is below Minimum Compound Limit. DF Dilution Factor  
 E Value above quantitation range H Holding times for preparation or analysis exceeded  
 J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit R RPD outside accepted recovery limits



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# Analytical Report

(consolidated MDL)

WO#: **18100869**

Date Reported: **11/6/2018**

**CLIENT:** Approach Environmental, LLC **Collection Date:** 10/22/2018 2:15:00 PM  
**Project:** Approach Environmental - LDNR Residential Water Wells  
**Lab ID:** 18100869-002 **Matrix:** WATER  
**Client Sample ID** 9342 Z Wymon McClary

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>VOLATILES BY GC/MS IN WATER</b>				<b>SW8260B</b>		Analyst: <b>KSK</b>	
Tetrachloroethene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Toluene	< 0.00500	0.000200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
trans-1,2-Dichloroethene	< 0.00300	0.000204	0.00300		mg/L	1	10/23/2018 12:13:00 PM
trans-1,3-Dichloropropene	< 0.00200	0.000500	0.00200		mg/L	1	10/23/2018 12:13:00 PM
Trichloroethene	< 0.00500	0.000500	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Trichlorofluoromethane	< 0.00500	0.00200	0.00500		mg/L	1	10/23/2018 12:13:00 PM
Vinyl chloride	< 0.00200	0.00200	0.00200		mg/L	1	10/23/2018 12:13:00 PM
Xylenes, Total	< 0.0150	0.00150	0.0150		mg/L	1	10/23/2018 12:13:00 PM
Surr: 4-Bromofluorobenzene	102		65.1-136		%Rec	1	10/23/2018 12:13:00 PM
Surr: Dibromofluoromethane	98.3		40.4-143		%Rec	1	10/23/2018 12:13:00 PM
Surr: Toluene-d8	105		58.2-127		%Rec	1	10/23/2018 12:13:00 PM
<b>TOTAL DISSOLVED SOLIDS</b>				<b>SM2540C</b>		Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	584	11.9	20.0		mg/L	1	10/24/2018 7:58:00 AM

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
C	Value is below Minimum Compound Limit.	DF	Dilution Factor
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits





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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28121

Sample ID	<b>LCS-D-28121</b>	SampType: <b>LCS</b>	TestCode: <b>8015_DO_W_</b> Units: <b>mg/L</b>			Prep Date: <b>10/23/2018</b>			RunNo: <b>73573</b>		
Client ID:	<b>LCSW</b>	Batch ID: <b>28121</b>	TestNo: <b>SW8015B SW3511</b>		Analysis Date: <b>10/24/2018</b>			SeqNo: <b>1840427</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

TPH (Diesel Range)	1.79	0.135	1.783	0	100	70	130				
Surr: 4-Terphenyl-d14	0.0628		0.05943		106	51.4	146				

Sample ID	<b>LCSD-D-28121</b>	SampType: <b>LCSD</b>	TestCode: <b>8015_DO_W_</b> Units: <b>mg/L</b>			Prep Date: <b>10/23/2018</b>			RunNo: <b>73573</b>		
Client ID:	<b>LCSS02</b>	Batch ID: <b>28121</b>	TestNo: <b>SW8015B SW3511</b>		Analysis Date: <b>10/24/2018</b>			SeqNo: <b>1840428</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

TPH (Diesel Range)	1.68	0.135	1.784	0	94.0	70	130	1.785	6.24	14.1
Surr: 4-Terphenyl-d14	0.0563		0.05947		94.7	51.4	146		0	40

Sample ID	<b>LCSD-M-28121</b>	SampType: <b>LCSD</b>	TestCode: <b>8015_DO_W_</b> Units: <b>mg/L</b>			Prep Date: <b>10/23/2018</b>			RunNo: <b>73573</b>		
Client ID:	<b>LCSS02</b>	Batch ID: <b>28121</b>	TestNo: <b>SW8015B SW3511</b>		Analysis Date: <b>10/24/2018</b>			SeqNo: <b>1840429</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

TPH (Oil Range)	1.63	0.124	1.774	0	91.7	70	130	1.543	5.29	23.2
Surr: 4-Terphenyl-d14	0.0649		0.05912		110	51.4	146		0	40

Sample ID	<b>LCS-M-28121</b>	SampType: <b>LCS</b>	TestCode: <b>8015_DO_W_</b> Units: <b>mg/L</b>			Prep Date: <b>10/23/2018</b>			RunNo: <b>73573</b>		
Client ID:	<b>LCSW</b>	Batch ID: <b>28121</b>	TestNo: <b>SW8015B SW3511</b>		Analysis Date: <b>10/24/2018</b>			SeqNo: <b>1840430</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

TPH (Oil Range)	1.54	0.124	1.775	0	86.9	70	130			
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**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28121

Sample ID	<b>LCS-M-28121</b>	SampType:	<b>LCS</b>	TestCode:	<b>8015_DO_W_</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73573</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>28121</b>	TestNo:	<b>SW8015B</b>	<b>SW3511</b>		Analysis Date:	<b>10/24/2018</b>	SeqNo:	<b>1840430</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14		0.0630			0.05917			106	51.4	146				

Sample ID	<b>MB-28121</b>	SampType:	<b>MBLK</b>	TestCode:	<b>8015_DO_W_</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73573</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>28121</b>	TestNo:	<b>SW8015B</b>	<b>SW3511</b>		Analysis Date:	<b>10/24/2018</b>	SeqNo:	<b>1840431</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH (Diesel Range)		< 0.134		0.134										
TPH (Oil Range)		< 0.124		0.124										
Surr: 4-Terphenyl-d14		0.0597			0.05882			102	51.4	146				

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as s



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28122

Sample ID	<b>MB-28122</b>	SampType:	<b>MBLK</b>	TestCode:	<b>8270_W_LVI_</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73545</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>28122</b>	TestNo:	<b>SW8270C</b>	<b>SW3511</b>		Analysis Date:	<b>10/23/2018</b>	SeqNo:	<b>1839998</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene		< 0.000516		0.000516										
Acenaphthene		< 0.00103		0.00103										
Acenaphthylene		< 0.00103		0.00103										
Anthracene		< 0.00103		0.00103										
Benzo(a)anthracene		< 0.000516		0.000516										
Benzo(a)pyrene		< 0.000176		0.000176										
Benzo(b)fluoranthene		< 0.000516		0.000516										
Benzo(k)fluoranthene		< 0.000516		0.000516										
Chrysene		< 0.000516		0.000516										
Dibenz(a,h)anthracene		< 0.00103		0.00103										
Fluoranthene		< 0.00103		0.00103										
Fluorene		< 0.000619		0.000619										
Indeno(1,2,3-cd)pyrene		< 0.000516		0.000516										
Naphthalene		< 0.00103		0.00103										
Phenanthrene		< 0.00103		0.00103										
Pyrene		< 0.00103		0.00103										
Surr: 4-Terphenyl-d14		0.00253				0.002364		107	49.2	161				

Sample ID	<b>LCSD-28122</b>	SampType:	<b>LCSD</b>	TestCode:	<b>8270_W_LVI_</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73545</b>			
Client ID:	<b>LCSS02</b>	Batch ID:	<b>28122</b>	TestNo:	<b>SW8270C</b>	<b>SW3511</b>		Analysis Date:	<b>10/23/2018</b>	SeqNo:	<b>1840001</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene		0.00230		0.000516		0.002358	0	97.7	60.8	127	0.002088	9.89	40	
Acenaphthene		0.00256		0.00103		0.002362	0	109	72.5	121	0.001939	27.7	40	
Acenaphthylene		0.00236		0.00103		0.002362	0	99.8	65.7	128	0.002259	4.24	40	

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28122

Sample ID	LCSD-28122	SampType:	LCSD	TestCode:	8270_W_LVI_ Units: mg/L	Prep Date:	10/23/2018	RunNo:	73545		
Client ID:	LCSS02	Batch ID:	28122	TestNo:	SW8270C SW3511	Analysis Date:	10/23/2018	SeqNo:	1840001		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Anthracene	0.00202	0.00103	0.002362	0	85.7	73.4	120	0.001827	10.2	40	
Benzo(a)anthracene	0.00249	0.000516	0.002362	0	106	69	121	0.002338	6.40	40	
Benzo(a)pyrene	0.00234	0.000175	0.002362	0	99.0	70.6	120	0.002112	10.1	40	
Benzo(b)fluoranthene	0.00239	0.000516	0.002362	0	101	65.3	127	0.002265	5.58	40	
Benzo(k)fluoranthene	0.00283	0.000516	0.002362	0	120	68.6	125	0.002706	4.47	40	
Chrysene	0.00272	0.000516	0.002362	0	115	74.4	120	0.002472	9.69	40	
Dibenz(a,h)anthracene	0.00265	0.00103	0.002362	0	112	66.4	126	0.002721	2.59	40	
Fluoranthene	0.00264	0.00103	0.002362	0	112	70.7	121	0.002742	3.60	40	
Fluorene	0.00225	0.000619	0.002362	0	95.4	62.5	134	0.001665	30.0	40	
Indeno(1,2,3-cd)pyrene	0.00276	0.000516	0.002362	0	117	66.9	120	0.002717	1.64	40	
Naphthalene	0.00234	0.00103	0.002362	0	99.1	63.5	137	0.002116	10.1	40	
Phenanthrene	0.00242	0.00103	0.002362	0	102	74.1	118	0.002313	4.52	40	
Pyrene	0.00261	0.00103	0.002362	0	111	73.2	120	0.002336	11.2	40	
Surr: 4-Terphenyl-d14	0.00277		0.002362		117	49.2	161		0	40	

Sample ID	LCS-28122	SampType:	LCS	TestCode:	8270_W_LVI_ Units: mg/L	Prep Date:	10/23/2018	RunNo:	73545		
Client ID:	LCSW	Batch ID:	28122	TestNo:	SW8270C SW3511	Analysis Date:	10/23/2018	SeqNo:	1840002		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	0.00209	0.000519	0.002372	0	88.0	60.8	127				
Acenaphthene	0.00194	0.00104	0.002376	0	81.6	72.5	121				
Acenaphthylene	0.00226	0.00104	0.002376	0	95.1	65.7	128				
Anthracene	0.00183	0.00104	0.002376	0	76.9	73.4	120				
Benzo(a)anthracene	0.00234	0.000519	0.002376	0	98.4	69	121				
Benzo(a)pyrene	0.00211	0.000176	0.002376	0	88.9	70.6	120				

**Qualifiers:** H Holding times for preparation or analysis exceeded J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit RL Reporting Limit S Spike Recovery outside accepted recovery limits  
 SDL Sample detection limit U Analyte not detected W Sample container temperature is out of limit as sf





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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28122

Sample ID	LCS-28122	SampType: LCS	TestCode: 8270_W_LVI_	Units: mg/L	Prep Date: 10/23/2018	RunNo: 73545					
Client ID: LCSW	Batch ID: 28122	TestNo: SW8270C	SW3511	Analysis Date: 10/23/2018	SeqNo: 1840002						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	0.00226	0.000519	0.002376	0	95.3	65.3	127				
Benzo(k)fluoranthene	0.00271	0.000519	0.002376	0	114	68.6	125				
Chrysene	0.00247	0.000519	0.002376	0	104	74.4	120				
Dibenz(a,h)anthracene	0.00272	0.00104	0.002376	0	115	66.4	126				
Fluoranthene	0.00274	0.00104	0.002376	0	115	70.7	121				
Fluorene	0.00167	0.000623	0.002376	0	70.1	62.5	134				
Indeno(1,2,3-cd)pyrene	0.00272	0.000519	0.002376	0	114	66.9	120				
Naphthalene	0.00212	0.00104	0.002376	0	89.1	63.5	137				
Phenanthrene	0.00231	0.00104	0.002376	0	97.3	74.1	118				
Pyrene	0.00234	0.00104	0.002376	0	98.3	73.2	120				
Surr: 4-Terphenyl-d14	0.00263		0.002376		111	49.2	161				

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	<b>MB-28129</b>	SampType:	<b>MBLK</b>	TestCode:	<b>8270_W_REC</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73575</b>
Client ID:	<b>PBW</b>	Batch ID:	<b>28129</b>	TestNo:	<b>SW8270C</b>	<b>E625/SW351</b>		Analysis Date:	<b>10/24/2018</b>	SeqNo:	<b>1840532</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4,5-Tetrachlorobenzene	< 0.00100	0.00100									
1,2,4-Trichlorobenzene	< 0.00500	0.00500									
1,2-Dichlorobenzene	< 0.00500	0.00500									
1,3-Dichlorobenzene	< 0.00500	0.00500									
1,3-Dinitrobenzene	< 0.00500	0.00500									
1,4-Dichlorobenzene	< 0.00500	0.00500									
2,3,4,6-Tetrachlorophenol	< 0.00500	0.00500									
2,4,5-Trichlorophenol	< 0.0100	0.0100									
2,4,6-Trichlorophenol	< 0.00500	0.00500									
2,4-Dichlorophenol	< 0.00500	0.00500									
2,4-Dimethylphenol	< 0.00500	0.00500									
2,4-Dinitrophenol	< 0.0200	0.0200									
2,4-Dinitrotoluene	< 0.00500	0.00500									
2,6-Dinitrotoluene	< 0.00500	0.00500									
2-Chloronaphthalene	< 0.00500	0.00500									
2-Chlorophenol	< 0.00500	0.00500									
2-Nitroaniline	< 0.00500	0.00500									
3,3'-Dichlorobenzidine	< 0.0100	0.0100									
3-Nitroaniline	< 0.0200	0.0200									
4-Chloroaniline	< 0.00500	0.00500									
4-Nitroaniline	< 0.00500	0.00500									
4-Nitrophenol	< 0.0200	0.0200									
Aniline	< 0.00500	0.00500									
Biphenyl	< 0.00500	0.00500									
Bis(2-chloroethyl)ether	< 0.00500	0.00500									
Bis(2-chloroisopropyl)ether	< 0.00500	0.00500									

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	<b>MB-28129</b>	SampType:	<b>MBLK</b>	TestCode:	<b>8270_W_REC</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/23/2018</b>	RunNo:	<b>73575</b>
Client ID:	<b>PBW</b>	Batch ID:	<b>28129</b>	TestNo:	<b>SW8270C</b>	<b>E625/SW351</b>		Analysis Date:	<b>10/24/2018</b>	SeqNo:	<b>1840532</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Bis(2-ethylhexyl)phthalate	< 0.00500	0.00500									
Butyl benzyl phthalate	< 0.00500	0.00500									
Dibenzofuran	< 0.00500	0.00500									
Diethyl phthalate	< 0.00500	0.00500									
Dimethyl phthalate	< 0.00500	0.00500									
Di-n-octyl phthalate	< 0.0100	0.0100									
Dinoseb	< 0.00500	0.00500									
Hexachlorobenzene	< 0.00100	0.00100									
Hexachlorobutadiene	< 0.00200	0.00200									
Hexachlorocyclopentadiene	< 0.0100	0.0100									
Hexachloroethane	< 0.00500	0.00500									
Isophorone	< 0.00500	0.00500									
Nitrobenzene	< 0.00100	0.00100									
N-Nitrosodi-n-propylamine	< 0.00500	0.00500									
N-Nitrosodiphenylamine	< 0.00500	0.00500									
Pentachlorophenol	< 0.0100	0.0100									
Phenol	< 0.00500	0.00500									
Surr: 2,4,6-Tribromophenol	0.0260			0.03000			86.7	47.2		144	
Surr: 2-Fluorobiphenyl	0.0186			0.02000			92.9	52.2		116	
Surr: 2-Fluorophenol	0.0153			0.03000			51.0	27.3		80.6	
Surr: 4-Terphenyl-d14	0.0212			0.02000			106	48.1		134	
Surr: Nitrobenzene-d5	0.0178			0.02000			88.9	42.5		144	
Surr: Phenol-d5	0.0108			0.03000			36.0	10		67.1	

**Qualifiers:** H Holding times for preparation or analysis exceeded J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit RL Reporting Limit S Spike Recovery outside accepted recovery limits  
 SDL Sample detection limit U Analyte not detected W Sample container temperature is out of limit as sf



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 Website: www.element.com

# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	LCSD-28129	SampType: LCSD	TestCode: 8270_W_REC	Units: mg/L	Prep Date: 10/23/2018	RunNo: 73575					
Client ID: LCSS02	Batch ID: 28129	TestNo: SW8270C	E625/SW351	Analysis Date: 10/24/2018	SeqNo: 1840535						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4,5-Tetrachlorobenzene	0.0411	0.00100	0.05000	0	82.2	51.3	119	0.04249	3.32	40	
1,2,4-Trichlorobenzene	0.0374	0.00500	0.05000	0	74.7	47.4	103	0.03492	6.73	40	
1,2-Dichlorobenzene	0.0387	0.00500	0.05000	0	77.3	32	119	0.03549	8.56	40	
1,3-Dichlorobenzene	0.0364	0.00500	0.05000	0	72.8	33.9	108	0.03359	8.07	40	
1,3-Dinitrobenzene	0.0480	0.00500	0.05000	0	96.0	56.5	132	0.04366	9.50	40	
1,4-Dichlorobenzene	0.0356	0.00500	0.05000	0	71.3	31.8	107	0.03260	8.89	40	
2,3,4,6-Tetrachlorophenol	0.0527	0.00500	0.05000	0	105	71.4	118	0.04927	6.80	40	
2,4,5-Trichlorophenol	0.0504	0.0100	0.05000	0	101	63.4	113	0.04664	7.75	40	
2,4,6-Trichlorophenol	0.0488	0.00500	0.05000	0	97.6	62.5	109	0.04523	7.63	40	
2,4-Dichlorophenol	0.0465	0.00500	0.05000	0	93.1	65.8	105	0.04323	7.40	40	
2,4-Dimethylphenol	0.0472	0.00500	0.05000	0	94.3	56.4	106	0.04350	8.09	40	
2,4-Dinitrophenol	0.0524	0.0200	0.05000	0	105	10	171	0.04678	11.3	40	
2,4-Dinitrotoluene	0.0471	0.00500	0.05000	0	94.2	72.6	107	0.04262	10.0	40	
2,6-Dinitrotoluene	0.0506	0.00500	0.05000	0	101	62.5	112	0.04618	9.15	40	
2-Chloronaphthalene	0.0417	0.00500	0.05000	0	83.5	43.2	121	0.03848	8.15	40	
2-Chlorophenol	0.0439	0.00500	0.05000	0	87.7	57.4	104	0.03997	9.30	40	
2-Nitroaniline	0.0512	0.00500	0.05000	0	102	71.4	120	0.04667	9.25	40	
3,3'-Dichlorobenzidine	0.0894	0.0100	0.1000	0	89.4	49.2	113	0.08432	5.86	40	
3-Nitroaniline	0.0427	0.0200	0.05000	0	85.4	37.7	116	0.03818	11.2	40	
4-Chloroaniline	0.0443	0.00500	0.05000	0	88.5	56.4	98.6	0.04006	9.98	40	
4-Nitroaniline	0.0516	0.00500	0.05000	0	103	64	113	0.04680	9.76	40	
4-Nitrophenol	0.0244	0.0200	0.05000	0	48.8	22.5	63.1	0.02152	12.6	40	
Aniline	0.0374	0.00500	0.05000	0	74.8	48.9	102	0.03428	8.63	40	
Biphenyl	0.0445	0.00500	0.05000	0	89.0	41.7	130	0.04096	8.28	40	
Bis(2-chloroethyl)ether	0.0430	0.00500	0.05000	0	86.0	51.9	112	0.03883	10.2	40	
Bis(2-chloroisopropyl)ether	0.0470	0.00500	0.05000	0	94.0	50.1	125	0.04230	10.5	40	

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf





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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	LCSD-28129	SampType:	LCSD	TestCode:	8270_W_REC	Units:	mg/L	Prep Date:	10/23/2018	RunNo:	73575
Client ID:	LCSS02	Batch ID:	28129	TestNo:	SW8270C	E625/SW351		Analysis Date:	10/24/2018	SeqNo:	1840535
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bis(2-ethylhexyl)phthalate	0.0556	0.00500	0.05000	0	111	46.9	137	0.04839	13.8	40	
Butyl benzyl phthalate	0.0523	0.00500	0.05000	0	105	47.6	134	0.04824	7.99	40	
Dibenzofuran	0.0480	0.00500	0.05000	0	96.1	59.5	126	0.04391	8.98	40	
Diethyl phthalate	0.0496	0.00500	0.05000	0	99.2	55.4	121	0.04526	9.16	40	
Dimethyl phthalate	0.0497	0.00500	0.05000	0	99.5	66	109	0.04550	8.91	40	
Di-n-octyl phthalate	0.0516	0.0100	0.05000	0	103	36.9	145	0.04710	9.17	40	
Dinoseb	0.0451	0.00500	0.05000	0	90.1	10	180	0.04064	10.3	40	
Hexachlorobenzene	0.0459	0.00100	0.05000	0	91.8	59.5	100	0.04242	7.92	40	
Hexachlorobutadiene	0.0352	0.00200	0.05000	0	70.5	43.1	101	0.03307	6.32	40	
Hexachlorocyclopentadiene	0.0430	0.0100	0.05000	0	86.0	10	151	0.04009	7.05	40	
Hexachloroethane	0.0335	0.00500	0.05000	0	66.9	22.2	110	0.03084	8.11	40	
Isophorone	0.0520	0.00500	0.05000	0	104	63.1	110	0.04750	9.06	40	
Nitrobenzene	0.0450	0.00100	0.05000	0	89.9	67	108	0.04126	8.58	40	
N-Nitrosodi-n-propylamine	0.0444	0.00500	0.05000	0	88.9	49.4	130	0.04007	10.4	40	
N-Nitrosodiphenylamine	0.0465	0.00500	0.05000	0	93.0	67.1	105	0.04302	7.81	40	
Pentachlorophenol	0.0405	0.0100	0.05000	0	80.9	47.1	104	0.03758	7.43	40	
Phenol	0.0220	0.00500	0.05000	0	44.1	25.2	50.1	0.01990	10.2	40	
Surr: 2,4,6-Tribromophenol	0.0272		0.03000		90.6	47.2	144		0	40	
Surr: 2-Fluorobiphenyl	0.0196		0.02000		98.1	52.2	116		0	40	
Surr: 2-Fluorophenol	0.0186		0.03000		62.0	27.3	80.6		0	40	
Surr: 4-Terphenyl-d14	0.0227		0.02000		113	48.1	134		0	40	
Surr: Nitrobenzene-d5	0.0188		0.02000		93.8	42.5	144		0	40	
Surr: Phenol-d5	0.0122		0.03000		40.6	10	67.1		0	40	

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	LCS-28129	SampType:	LCS	TestCode:	8270_W_REC	Units:	mg/L	Prep Date:	10/23/2018	RunNo:	73575
Client ID:	LCSW	Batch ID:	28129	TestNo:	SW8270C	E625/SW351		Analysis Date:	10/24/2018	SeqNo:	1840536
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4,5-Tetrachlorobenzene	0.0425	0.00100	0.05000	0	85.0	51.3	119				
1,2,4-Trichlorobenzene	0.0349	0.00500	0.05000	0	69.8	47.4	103				
1,2-Dichlorobenzene	0.0355	0.00500	0.05000	0	71.0	32	119				
1,3-Dichlorobenzene	0.0336	0.00500	0.05000	0	67.2	33.9	108				
1,3-Dinitrobenzene	0.0437	0.00500	0.05000	0	87.3	56.5	132				
1,4-Dichlorobenzene	0.0326	0.00500	0.05000	0	65.2	31.8	107				
2,3,4,6-Tetrachlorophenol	0.0493	0.00500	0.05000	0	98.5	71.4	118				
2,4,5-Trichlorophenol	0.0466	0.0100	0.05000	0	93.3	63.4	113				
2,4,6-Trichlorophenol	0.0452	0.00500	0.05000	0	90.5	62.5	109				
2,4-Dichlorophenol	0.0432	0.00500	0.05000	0	86.5	65.8	105				
2,4-Dimethylphenol	0.0435	0.00500	0.05000	0	87.0	56.4	106				
2,4-Dinitrophenol	0.0468	0.0200	0.05000	0	93.6	10	171				
2,4-Dinitrotoluene	0.0426	0.00500	0.05000	0	85.2	72.6	107				
2,6-Dinitrotoluene	0.0462	0.00500	0.05000	0	92.4	62.5	112				
2-Chloronaphthalene	0.0385	0.00500	0.05000	0	77.0	43.2	121				
2-Chlorophenol	0.0400	0.00500	0.05000	0	79.9	57.4	104				
2-Nitroaniline	0.0467	0.00500	0.05000	0	93.3	71.4	120				
3,3'-Dichlorobenzidine	0.0843	0.0100	0.1000	0	84.3	49.2	113				
3-Nitroaniline	0.0382	0.0200	0.05000	0	76.4	37.7	116				
4-Chloroaniline	0.0401	0.00500	0.05000	0	80.1	56.4	98.6				
4-Nitroaniline	0.0468	0.00500	0.05000	0	93.6	64	113				
4-Nitrophenol	0.0215	0.0200	0.05000	0	43.0	22.5	63.1				
Aniline	0.0343	0.00500	0.05000	0	68.6	48.9	102				
Biphenyl	0.0410	0.00500	0.05000	0	81.9	41.7	130				
Bis(2-chloroethyl)ether	0.0388	0.00500	0.05000	0	77.7	51.9	112				
Bis(2-chloroisopropyl)ether	0.0423	0.00500	0.05000	0	84.6	50.1	125				

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28129

Sample ID	LCS-28129	SampType:	LCS	TestCode:	8270_W_REC	Units:	mg/L	Prep Date:	10/23/2018	RunNo:	73575
Client ID:	LCSW	Batch ID:	28129	TestNo:	SW8270C	E625/SW351		Analysis Date:	10/24/2018	SeqNo:	1840536
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bis(2-ethylhexyl)phthalate	0.0484	0.00500	0.05000	0	96.8	46.9	137				
Butyl benzyl phthalate	0.0482	0.00500	0.05000	0	96.5	47.6	134				
Dibenzofuran	0.0439	0.00500	0.05000	0	87.8	59.5	126				
Diethyl phthalate	0.0453	0.00500	0.05000	0	90.5	55.4	121				
Dimethyl phthalate	0.0455	0.00500	0.05000	0	91.0	66	109				
Di-n-octyl phthalate	0.0471	0.0100	0.05000	0	94.2	36.9	145				
Dinoseb	0.0406	0.00500	0.05000	0	81.3	10	180				
Hexachlorobenzene	0.0424	0.00100	0.05000	0	84.8	59.5	100				
Hexachlorobutadiene	0.0331	0.00200	0.05000	0	66.1	43.1	101				
Hexachlorocyclopentadiene	0.0401	0.0100	0.05000	0	80.2	10	151				
Hexachloroethane	0.0308	0.00500	0.05000	0	61.7	22.2	110				
Isophorone	0.0475	0.00500	0.05000	0	95.0	63.1	110				
Nitrobenzene	0.0413	0.00100	0.05000	0	82.5	67	108				
N-Nitrosodi-n-propylamine	0.0401	0.00500	0.05000	0	80.1	49.4	130				
N-Nitrosodiphenylamine	0.0430	0.00500	0.05000	0	86.0	67.1	105				
Pentachlorophenol	0.0376	0.0100	0.05000	0	75.2	47.1	104				
Phenol	0.0199	0.00500	0.05000	0	39.8	25.2	50.1				
Surr: 2,4,6-Tribromophenol	0.0265		0.03000		88.5	47.2	144				
Surr: 2-Fluorobiphenyl	0.0194		0.02000		96.9	52.2	116				
Surr: 2-Fluorophenol	0.0180		0.03000		60.2	27.3	80.6				
Surr: 4-Terphenyl-d14	0.0221		0.02000		111	48.1	134				
Surr: Nitrobenzene-d5	0.0185		0.02000		92.6	42.5	144				
Surr: Phenol-d5	0.0119		0.03000		39.8	10	67.1				

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28150

Sample ID	<b>MB-28150</b>	SampType:	<b>MBLK</b>	TestCode:	<b>HG_W_7470</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/26/2018</b>	RunNo:	<b>73631</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>28150</b>	TestNo:	<b>SW7470A</b>			Analysis Date:	<b>10/26/2018</b>	SeqNo:	<b>1842059</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		< 0.000200		0.000200										

Sample ID	<b>LCS-28150</b>	SampType:	<b>LCS</b>	TestCode:	<b>HG_W_7470</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/26/2018</b>	RunNo:	<b>73631</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>28150</b>	TestNo:	<b>SW7470A</b>			Analysis Date:	<b>10/26/2018</b>	SeqNo:	<b>1842060</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0108		0.000200	0.01000	0		108	80	120				

Sample ID	<b>LCSD-28150</b>	SampType:	<b>LCSD</b>	TestCode:	<b>HG_W_7470</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/26/2018</b>	RunNo:	<b>73631</b>			
Client ID:	<b>LCSS02</b>	Batch ID:	<b>28150</b>	TestNo:	<b>SW7470A</b>			Analysis Date:	<b>10/26/2018</b>	SeqNo:	<b>1842061</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0106		0.000200	0.01000	0		106	80	120	0.01084	2.60	20	

Sample ID	<b>18100869-001DMS</b>	SampType:	<b>MS</b>	TestCode:	<b>HG_W_7470</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/26/2018</b>	RunNo:	<b>73631</b>			
Client ID:	<b>9313 Z Wymon McC</b>	Batch ID:	<b>28150</b>	TestNo:	<b>SW7470A</b>			Analysis Date:	<b>10/26/2018</b>	SeqNo:	<b>1842065</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0104		0.000200	0.01000	0		104	75	125				

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28150

Sample ID	18100869-001DMSD	SampType:	MSD	TestCode:	HG_W_7470	Units:	mg/L	Prep Date:	10/26/2018	RunNo:	73631											
Client ID:	9313 Z Wymon McC	Batch ID:	28150	TestNo:	SW7470A			Analysis Date:	10/26/2018	SeqNo:	1842066											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Mercury		0.0102		0.000200		0.01000		0		102		75		125		0.01041		1.60		20		

**Qualifiers:**

- |     |                                                    |    |                                            |   |                                                    |
|-----|----------------------------------------------------|----|--------------------------------------------|---|----------------------------------------------------|
| H   | Holding times for preparation or analysis exceeded | J  | Analyte detected below quantitation limits | M | Matrix Interference                                |
| ND  | Not Detected at the Reporting Limit                | RL | Reporting Limit                            | S | Spike Recovery outside accepted recovery limits    |
| SDL | Sample detection limit                             | U  | Analyte not detected                       | W | Sample container temperature is out of limit as sf |



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28160

Sample ID	<b>MB-28160</b>	SampType:	<b>MBLK</b>	TestCode:	<b>6010_W</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/29/2018</b>	RunNo:	<b>73708</b>							
Client ID:	<b>PBW</b>	Batch ID:	<b>28160</b>	TestNo:	<b>SW6010B</b>			Analysis Date:	<b>10/30/2018</b>	SeqNo:	<b>1843572</b>							
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Arsenic		< 0.0100		0.0100														J
Barium		< 0.0100		0.0100														
Cadmium		< 0.00500		0.00500														
Chromium		< 0.0100		0.0100														
Lead		< 0.0100		0.0100														
Selenium		0.0137		0.0200														J
Silver		0.000800		0.00500														J
Sodium		< 10.0		10.0														

Sample ID	<b>LCS-28160</b>	SampType:	<b>LCS</b>	TestCode:	<b>6010_W</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/29/2018</b>	RunNo:	<b>73708</b>						
Client ID:	<b>LCSW</b>	Batch ID:	<b>28160</b>	TestNo:	<b>SW6010B</b>			Analysis Date:	<b>10/30/2018</b>	SeqNo:	<b>1843573</b>						
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual
Arsenic		0.490		0.0100		0.5000		0		98.0	80	120					
Barium		0.489		0.0100		0.5000		0		97.9	80	120					
Cadmium		0.482		0.00500		0.5000		0		96.4	80	120					
Chromium		0.485		0.0100		0.5000		0		96.9	80	120					
Lead		0.488		0.0100		0.5000		0		97.5	80	120					
Selenium		0.500		0.0200		0.5000		0		100	80	120					
Silver		0.0956		0.00500		0.1000		0		95.6	80	120					
Sodium		50.0		10.0		50.00		0		100	80	120					

**Qualifiers:**

- |     |                                                    |    |                                            |   |                                                    |
|-----|----------------------------------------------------|----|--------------------------------------------|---|----------------------------------------------------|
| H   | Holding times for preparation or analysis exceeded | J  | Analyte detected below quantitation limits | M | Matrix Interference                                |
| ND  | Not Detected at the Reporting Limit                | RL | Reporting Limit                            | S | Spike Recovery outside accepted recovery limits    |
| SDL | Sample detection limit                             | U  | Analyte not detected                       | W | Sample container temperature is out of limit as sf |





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 Website: www.element.com

# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28160

Sample ID	<b>LCSD-28160</b>	SampType:	<b>LCSD</b>	TestCode:	<b>6010_W</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/29/2018</b>	RunNo:	<b>73708</b>
Client ID:	<b>LCSS02</b>	Batch ID:	<b>28160</b>	TestNo:	<b>SW6010B</b>			Analysis Date:	<b>10/30/2018</b>	SeqNo:	<b>1843574</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.501	0.0100	0.5000	0	100	80	120	0.4901	2.14	20	
Barium	0.495	0.0100	0.5000	0	99.0	80	120	0.4893	1.12	20	
Cadmium	0.486	0.00500	0.5000	0	97.2	80	120	0.4822	0.785	20	
Chromium	0.489	0.0100	0.5000	0	97.9	80	120	0.4846	0.965	20	
Lead	0.496	0.0100	0.5000	0	99.2	80	120	0.4877	1.67	20	
Selenium	0.507	0.0200	0.5000	0	101	80	120	0.5002	1.43	20	
Silver	0.0963	0.00500	0.1000	0	96.3	80	120	0.09560	0.730	20	
Sodium	47.1	10.0	50.00	0	94.2	80	120	50.01	6.01	20	

Sample ID	<b>18100889-003AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>6010_W</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/29/2018</b>	RunNo:	<b>73708</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>28160</b>	TestNo:	<b>SW6010B</b>			Analysis Date:	<b>10/30/2018</b>	SeqNo:	<b>1843578</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.514	0.0100	0.5000	0	103	75	125				
Barium	1.27	0.0100	0.5000	0.8521	83.8	75	125				
Cadmium	0.509	0.00500	0.5000	0.003600	101	75	125				
Chromium	0.481	0.0100	0.5000	0.01060	94.0	75	125				
Lead	0.446	0.0100	0.5000	0.005300	88.1	75	125				
Selenium	0.658	0.0200	0.5000	0.1699	97.7	75	125				
Silver	0.108	0.00500	0.1000	0	108	75	125				
Sodium	11,700	10.0	50.00	11,850	-280	75	125				S

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** 28160

Sample ID	18100889-003AMSD	SampType:	MSD	TestCode:	6010_W	Units:	mg/L	Prep Date:	10/29/2018	RunNo:	73708
Client ID:	ZZZZZZ	Batch ID:	28160	TestNo:	SW6010B			Analysis Date:	10/30/2018	SeqNo:	1843581
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	0.522	0.0100	0.5000	0	104	75	125	0.5143	1.39	20	
Barium	1.38	0.0100	0.5000	0.8521	107	75	125	1.271	8.58	20	
Cadmium	0.514	0.00500	0.5000	0.003600	102	75	125	0.5093	0.860	20	
Chromium	0.489	0.0100	0.5000	0.01060	95.7	75	125	0.4806	1.79	20	
Lead	0.448	0.0100	0.5000	0.005300	88.6	75	125	0.4457	0.537	20	
Selenium	0.691	0.0200	0.5000	0.1699	104	75	125	0.6584	4.89	20	
Silver	0.108	0.00500	0.1000	0	108	75	125	0.1076	0.464	20	
Sodium	11,700	10.0	50.00	11,850	-300	75	125	11,710	0.0854	20	S

**NOTES:**

S - Analyte concentration in native sample was too high for accurate spike recovery(ies). The method is in control as indicated by the laboratory control sample (LCS).

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: **18100869**  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73543

Sample ID <b>MB-R73543</b>	SampType: <b>MBLK</b>	TestCode: <b>TDS_2540C</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>73543</b>
Client ID: <b>PBW</b>	Batch ID: <b>R73543</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>10/24/2018</b>	SeqNo: <b>1841468</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filterable) < 20.0 20.0

Sample ID <b>LCS-R73543</b>	SampType: <b>LCS</b>	TestCode: <b>TDS_2540C</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>73543</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R73543</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>10/24/2018</b>	SeqNo: <b>1841469</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filterable) 1,010 20.0 1,000 0 101 85 115

Sample ID <b>LCSD-R73543</b>	SampType: <b>LCSD</b>	TestCode: <b>TDS_2540C</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>73543</b>
Client ID: <b>LCSS02</b>	Batch ID: <b>R73543</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>10/24/2018</b>	SeqNo: <b>1841470</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filterable) 1,010 20.0 1,000 0 101 85 115 1,007 0.198 10

Sample ID <b>18100869-002EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>TDS_2540C</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>73543</b>
Client ID: <b>9342 Z Wymon McC</b>	Batch ID: <b>R73543</b>	TestNo: <b>SM2540C</b>		Analysis Date: <b>10/24/2018</b>	SeqNo: <b>1841473</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Total Dissolved Solids (Residue, Filterable) 587 20.0 584.0 0.512 10

**Qualifiers:** H Holding times for preparation or analysis exceeded J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit RL Reporting Limit S Spike Recovery outside accepted recovery limits  
 SDL Sample detection limit U Analyte not detected W Sample container temperature is out of limit as s



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73543

Sample ID	18100869-002EDUP	SampType:	DUP	TestCode:	TDS_2540C	Units:	mg/L	Prep Date:		RunNo:	73543
Client ID:	9342 Z Wymon McC	Batch ID:	R73543	TestNo:	SM2540C			Analysis Date:	10/24/2018	SeqNo:	1841473
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sample ID	18100886-002ADUP	SampType:	DUP	TestCode:	TDS_2540C	Units:	mg/L	Prep Date:		RunNo:	73543
Client ID:	ZZZZZZ	Batch ID:	R73543	TestNo:	SM2540C			Analysis Date:	10/24/2018	SeqNo:	1841476
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filterable)		621		20.0						584.0	6.14 10

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	MB	SampType:	MBLK	TestCode:	8260_W_REC	Units:	mg/L	Prep Date:	RunNo:	73546	
Client ID:	PBW	Batch ID:	R73546	TestNo:	SW8260B	Analysis Date:	10/23/2018	SeqNo:	1840003		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	< 0.00500	0.00500									
1,1,1-Trichloroethane	< 0.00500	0.00500									
1,1,2,2-Tetrachloroethane	< 0.000500	0.000500									
1,1,2-Trichloroethane	< 0.00500	0.00500									
1,1-Dichloroethane	< 0.00500	0.00500									
1,1-Dichloroethene	< 0.00500	0.00500									
1,2-Dibromo-3-chloropropane	< 0.00500	0.00500									
1,2-Dichlorobenzene	< 0.0200	0.0200									
1,2-Dichloroethane	< 0.00500	0.00500									
1,2-Dichloroethene, Total	< 0.00600	0.00600									
1,2-Dichloropropane	< 0.00500	0.00500									
1,3-Dichlorobenzene	< 0.0100	0.0100									
1,4-Dichlorobenzene	< 0.0200	0.0200									
2-Butanone	< 0.0100	0.0100									
4-Methyl-2-pentanone	< 0.0100	0.0100									
Acetone	< 0.0100	0.0100									
Benzene	< 0.00500	0.00500									
Bromodichloromethane	< 0.00500	0.00500									
Bromoform	< 0.00500	0.00500									
Bromomethane	< 0.00500	0.00500									
Carbon disulfide	< 0.0100	0.0100									
Carbon tetrachloride	< 0.00500	0.00500									
Chlorobenzene	< 0.00500	0.00500									
Chlorodibromomethane	< 0.00500	0.00500									
Chloroethane	< 0.0100	0.0100									
Chloroform	< 0.00500	0.00500									

**Qualifiers:** H Holding times for preparation or analysis exceeded J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit RL Reporting Limit S Spike Recovery outside accepted recovery limits  
 SDL Sample detection limit U Analyte not detected W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	MB	SampType:	MBLK	TestCode:	8260_W_REC	Units:	mg/L	Prep Date:	RunNo:	73546	
Client ID:	PBW	Batch ID:	R73546	TestNo:	SW8260B	Analysis Date:	10/23/2018	SeqNo:	1840003		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	< 0.00500	0.00500									
cis-1,2-Dichloroethene	< 0.00300	0.00300									
cis-1,3-Dichloropropene	< 0.00200	0.00200									
Ethylbenzene	< 0.00500	0.00500									
Isobutyl alcohol	< 0.100	0.100									
Methyl tert-butyl ether	< 0.00500	0.00500									
Methylene chloride	< 0.00500	0.00500									
Styrene	< 0.00500	0.00500									
Tetrachloroethene	< 0.00500	0.00500									
Toluene	< 0.00500	0.00500									
trans-1,2-Dichloroethene	< 0.00300	0.00300									
trans-1,3-Dichloropropene	< 0.00200	0.00200									
Trichloroethene	< 0.00500	0.00500									
Trichlorofluoromethane	< 0.00500	0.00500									
Vinyl chloride	< 0.00200	0.00200									
Xylenes, Total	0.00309	0.0150									J
Surr: 4-Bromofluorobenzene	0.0314		0.03000		105	65.1	136				
Surr: Dibromofluoromethane	0.0292		0.03000		97.5	40.4	143				
Surr: Toluene-d8	0.0304		0.03000		101	58.2	127				

Sample ID	LCSD 17221A-7	SampType:	LCSD	TestCode:	8260_W_REC	Units:	mg/L	Prep Date:	RunNo:	73546	
Client ID:	LCSS02	Batch ID:	R73546	TestNo:	SW8260B	Analysis Date:	10/23/2018	SeqNo:	1840006		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	0.0485	0.00500	0.05000	0	96.9	73.4	120	0.04856	0.186	20	

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf





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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	LCSD 17221A-7	SampType: LCSD	TestCode: 8260_W_REC	Units: mg/L	Prep Date:	RunNo: 73546					
Client ID: LCSS02	Batch ID: R73546	TestNo: SW8260B	Analysis Date: 10/23/2018	SeqNo: 1840006							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	0.0480	0.00500	0.05000	0	96.1	64.5	127	0.04621	3.88	20	
1,1,2,2-Tetrachloroethane	0.0501	0.000500	0.05000	0	100	63.6	120	0.04724	5.96	20	
1,1,2-Trichloroethane	0.0468	0.00500	0.05000	0	93.5	74.9	120	0.04683	0.150	20	
1,1-Dichloroethane	0.0468	0.00500	0.05000	0	93.6	67.9	123	0.04421	5.67	20	
1,1-Dichloroethene	0.0441	0.00500	0.05000	0	88.2	60.3	135	0.04326	1.92	20	
1,2-Dibromo-3-chloropropane	0.0528	0.00500	0.05000	0	106	56.6	132	0.04777	9.95	20	
1,2-Dichlorobenzene	0.0488	0.0200	0.05000	0	97.6	76.4	120	0.04815	1.36	20	
1,2-Dichloroethane	0.0459	0.00500	0.05000	0	91.9	67.5	124	0.04516	1.71	20	
1,2-Dichloroethene, Total	0.0980	0.00600	0.1000	0	98.0	72.5	122	0.09427	3.91	20	
1,2-Dichloropropane	0.0481	0.00500	0.05000	0	96.1	77.2	120	0.04647	3.38	20	
1,3-Dichlorobenzene	0.0485	0.0100	0.05000	0	97.0	75.1	120	0.04760	1.89	20	
1,4-Dichlorobenzene	0.0487	0.0200	0.05000	0	97.4	76.1	120	0.04651	4.58	20	
2-Butanone	0.0492	0.0100	0.05000	0	98.4	61	127	0.04505	8.79	20	
4-Methyl-2-pentanone	0.0471	0.0100	0.05000	0	94.3	54.1	129	0.04363	7.73	20	
Acetone	0.0855	0.0100	0.1000	0	85.5	52.1	135	0.08135	4.93	20	
Benzene	0.0490	0.00500	0.05000	0	97.9	67.8	125	0.04717	3.72	20	
Bromodichloromethane	0.0484	0.00500	0.05000	0	96.7	72	120	0.04687	3.11	20	
Bromoform	0.0497	0.00500	0.05000	0	99.5	70.4	121	0.04913	1.21	20	
Bromomethane	0.0427	0.00500	0.05000	0	85.3	41.6	157	0.04057	5.05	20	
Carbon disulfide	0.0455	0.0100	0.05000	0	91.0	52.2	135	0.04423	2.87	20	
Carbon tetrachloride	0.0475	0.00500	0.05000	0	94.9	65.6	125	0.04657	1.89	20	
Chlorobenzene	0.0462	0.00500	0.05000	0	92.4	74.5	120	0.04553	1.42	20	
Chlorodibromomethane	0.0492	0.00500	0.05000	0	98.5	75	120	0.04987	1.29	20	
Chloroethane	0.0398	0.0100	0.05000	0	79.6	49.5	146	0.03799	4.65	20	
Chloroform	0.0467	0.00500	0.05000	0	93.3	71	120	0.04519	3.22	20	
Chloromethane	0.0441	0.00500	0.05000	0	88.3	45.8	145	0.04259	3.55	20	

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	LCSD 17221A-7	SampType: LCSD	TestCode: 8260_W_REC	Units: mg/L	Prep Date:	RunNo: 73546					
Client ID:	LCSS02	Batch ID: R73546	TestNo: SW8260B	Analysis Date: 10/23/2018	SeqNo: 1840006						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	0.0511	0.00300	0.05000	0	102	73.8	124	0.04848	5.30	20	
cis-1,3-Dichloropropene	0.0522	0.00200	0.05000	0	104	80	120	0.05147	1.50	20	
Ethylbenzene	0.0506	0.00500	0.05000	0	101	76.9	118	0.05010	0.954	20	
Isobutyl alcohol	0.522	0.100	0.5000	0	104	70	130	0.4461	15.7	20	
Methyl tert-butyl ether	0.0528	0.00500	0.05000	0	106	62.6	134	0.05044	4.52	20	
Methylene chloride	0.0468	0.00500	0.05000	0	93.6	65.8	125	0.04658	0.428	20	
Styrene	0.0452	0.00500	0.05000	0	90.4	79	120	0.04493	0.555	20	
Tetrachloroethene	0.0444	0.00500	0.05000	0	88.8	68.6	152	0.04511	1.63	20	
Toluene	0.0456	0.00500	0.05000	0	91.3	73.3	120	0.04654	1.95	20	
trans-1,2-Dichloroethene	0.0469	0.00300	0.05000	0	93.8	67.7	124	0.04578	2.44	20	
trans-1,3-Dichloropropene	0.0509	0.00200	0.05000	0	102	79.6	121	0.05153	1.25	20	
Trichloroethene	0.0475	0.00500	0.05000	0	94.9	74.5	124	0.04717	0.634	20	
Trichlorofluoromethane	0.0442	0.00500	0.05000	0	88.5	45.2	142	0.04371	1.18	20	
Vinyl chloride	0.0451	0.00200	0.05000	0	90.1	37.4	174	0.04421	1.90	20	
Xylenes, Total	0.135	0.0150	0.1500	0	90.0	80	120	0.1333	1.27	20	
Surr: 4-Bromofluorobenzene	0.0343		0.03000		114	65.1	136		0	20	
Surr: Dibromofluoromethane	0.0275		0.03000		91.7	40.4	143		0	20	
Surr: Toluene-d8	0.0292		0.03000		97.3	58.2	127		0	20	

Sample ID	LCS 17221A-79	SampType: LCS	TestCode: 8260_W_REC	Units: mg/L	Prep Date:	RunNo: 73546					
Client ID:	LCSSW	Batch ID: R73546	TestNo: SW8260B	Analysis Date: 10/23/2018	SeqNo: 1840007						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	0.0486	0.00500	0.05000	0	97.1	73.4	120				
1,1,1-Trichloroethane	0.0462	0.00500	0.05000	0	92.4	64.5	127				

**Qualifiers:** H Holding times for preparation or analysis exceeded J Analyte detected below quantitation limits M Matrix Interference  
 ND Not Detected at the Reporting Limit RL Reporting Limit S Spike Recovery outside accepted recovery limits  
 SDL Sample detection limit U Analyte not detected W Sample container temperature is out of limit as sf



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 Website: www.element.com

# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	LCS 17221A-79	SampType: LCS	TestCode: 8260_W_REC	Units: mg/L	Prep Date:	RunNo: 73546					
Client ID:	LCSW	Batch ID: R73546	TestNo: SW8260B	Analysis Date: 10/23/2018	SeqNo: 1840007						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	0.0472	0.000500	0.05000	0	94.5	63.6	120				
1,1,2-Trichloroethane	0.0468	0.00500	0.05000	0	93.7	74.9	120				
1,1-Dichloroethane	0.0442	0.00500	0.05000	0	88.4	67.9	123				
1,1-Dichloroethene	0.0433	0.00500	0.05000	0	86.5	60.3	135				
1,2-Dibromo-3-chloropropane	0.0478	0.00500	0.05000	0	95.5	56.6	132				
1,2-Dichlorobenzene	0.0482	0.0200	0.05000	0	96.3	76.4	120				
1,2-Dichloroethane	0.0452	0.00500	0.05000	0	90.3	67.5	124				
1,2-Dichloroethene, Total	0.0943	0.00600	0.1000	0	94.3	72.5	122				
1,2-Dichloropropane	0.0465	0.00500	0.05000	0	92.9	77.2	120				
1,3-Dichlorobenzene	0.0476	0.0100	0.05000	0	95.2	75.1	120				
1,4-Dichlorobenzene	0.0465	0.0200	0.05000	0	93.0	76.1	120				
2-Butanone	0.0450	0.0100	0.05000	0	90.1	61	127				
4-Methyl-2-pentanone	0.0436	0.0100	0.05000	0	87.3	54.1	129				
Acetone	0.0814	0.0100	0.1000	0	81.4	52.1	135				
Benzene	0.0472	0.00500	0.05000	0	94.3	67.8	125				
Bromodichloromethane	0.0469	0.00500	0.05000	0	93.7	72	120				
Bromoform	0.0491	0.00500	0.05000	0	98.3	70.4	121				
Bromomethane	0.0406	0.00500	0.05000	0	81.1	41.6	157				
Carbon disulfide	0.0442	0.0100	0.05000	0	88.5	52.2	135				
Carbon tetrachloride	0.0466	0.00500	0.05000	0	93.1	65.6	125				
Chlorobenzene	0.0455	0.00500	0.05000	0	91.1	74.5	120				
Chlorodibromomethane	0.0499	0.00500	0.05000	0	99.7	75	120				
Chloroethane	0.0380	0.0100	0.05000	0	76.0	49.5	146				
Chloroform	0.0452	0.00500	0.05000	0	90.4	71	120				
Chloromethane	0.0426	0.00500	0.05000	0	85.2	45.8	145				
cis-1,2-Dichloroethene	0.0485	0.00300	0.05000	0	97.0	73.8	124				

**Qualifiers:**  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 SDL Sample detection limit

J Analyte detected below quantitation limits  
 RL Reporting Limit  
 U Analyte not detected

M Matrix Interference  
 S Spike Recovery outside accepted recovery limits  
 W Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73546

Sample ID	LCS 17221A-79	SampType: LCS	TestCode: 8260_W_REC	Units: mg/L	Prep Date:	RunNo: 73546					
Client ID:	LCSW	Batch ID: R73546	TestNo: SW8260B	Analysis Date: 10/23/2018	SeqNo: 1840007						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,3-Dichloropropene	0.0515	0.00200	0.05000	0	103	80	120				
Ethylbenzene	0.0501	0.00500	0.05000	0	100	76.9	118				
Isobutyl alcohol	0.446	0.100	0.5000	0	89.2	70	130				
Methyl tert-butyl ether	0.0504	0.00500	0.05000	0	101	62.6	134				
Methylene chloride	0.0466	0.00500	0.05000	0	93.2	65.8	125				
Styrene	0.0449	0.00500	0.05000	0	89.9	79	120				
Tetrachloroethene	0.0451	0.00500	0.05000	0	90.2	68.6	152				
Toluene	0.0465	0.00500	0.05000	0	93.1	73.3	120				
trans-1,2-Dichloroethene	0.0458	0.00300	0.05000	0	91.6	67.7	124				
trans-1,3-Dichloropropene	0.0515	0.00200	0.05000	0	103	79.6	121				
Trichloroethene	0.0472	0.00500	0.05000	0	94.3	74.5	124				
Trichlorofluoromethane	0.0437	0.00500	0.05000	0	87.4	45.2	142				
Vinyl chloride	0.0442	0.00200	0.05000	0	88.4	37.4	174				
Xylenes, Total	0.133	0.0150	0.1500	0	88.9	80	120				
Surr: 4-Bromofluorobenzene	0.0348		0.03000		116	65.1	136				
Surr: Dibromofluoromethane	0.0272		0.03000		90.7	40.4	143				
Surr: Toluene-d8	0.0302		0.03000		101	58.2	127				

**Qualifiers:**

- |     |                                                    |    |                                            |   |                                                    |
|-----|----------------------------------------------------|----|--------------------------------------------|---|----------------------------------------------------|
| H   | Holding times for preparation or analysis exceeded | J  | Analyte detected below quantitation limits | M | Matrix Interference                                |
| ND  | Not Detected at the Reporting Limit                | RL | Reporting Limit                            | S | Spike Recovery outside accepted recovery limits    |
| SDL | Sample detection limit                             | U  | Analyte not detected                       | W | Sample container temperature is out of limit as sf |



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73552

Sample ID	<b>GAS LCS</b>	SampType:	<b>LCS</b>	TestCode:	<b>8015_G_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73552</b>											
Client ID:	<b>LCSW</b>	Batch ID:	<b>R73552</b>	TestNo:	<b>SW8015B</b>			Analysis Date:	<b>10/23/2018</b>	SeqNo:	<b>1840048</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
TPH (Gasoline Range)		11.8		0.150		12.50		0		94.7		80		130								

Sample ID	<b>GAS LCSD</b>	SampType:	<b>LCSD</b>	TestCode:	<b>8015_G_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73552</b>											
Client ID:	<b>LCSS02</b>	Batch ID:	<b>R73552</b>	TestNo:	<b>SW8015B</b>			Analysis Date:	<b>10/23/2018</b>	SeqNo:	<b>1840049</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
TPH (Gasoline Range)		11.9		0.150		12.50		0		95.2		80		130		11.84		0.537		20		

Sample ID	<b>MBLK</b>	SampType:	<b>MBLK</b>	TestCode:	<b>8015_G_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73552</b>											
Client ID:	<b>PBW</b>	Batch ID:	<b>R73552</b>	TestNo:	<b>SW8015B</b>			Analysis Date:	<b>10/23/2018</b>	SeqNo:	<b>1840050</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
TPH (Gasoline Range)		0.0974		0.150																		J
Surr: alpha, alpha, alpha-Trifluorotoluene		0.0515				0.05000				103		70		130								

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf



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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC  
**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73590

Sample ID	<b>MBLK</b>	SampType:	<b>MBLK</b>	TestCode:	<b>9056_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73590</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R73590</b>	TestNo:	<b>SW9056A</b>			Analysis Date:	<b>10/25/2018</b>	SeqNo:	<b>1841489</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		< 0.250		0.250										

Sample ID	<b>LCS</b>	SampType:	<b>LCS</b>	TestCode:	<b>9056_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73590</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R73590</b>	TestNo:	<b>SW9056A</b>			Analysis Date:	<b>10/25/2018</b>	SeqNo:	<b>1841490</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		10.7		0.250	10.00	0		107	80	120				

Sample ID	<b>LCSD</b>	SampType:	<b>LCSD</b>	TestCode:	<b>9056_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73590</b>			
Client ID:	<b>LCSS02</b>	Batch ID:	<b>R73590</b>	TestNo:	<b>SW9056A</b>			Analysis Date:	<b>10/25/2018</b>	SeqNo:	<b>1841491</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		10.2		0.250	10.00	0		102	80	120	10.67	4.51	15	

Sample ID	<b>18100886-002ams</b>	SampType:	<b>MS</b>	TestCode:	<b>9056_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>73590</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R73590</b>	TestNo:	<b>SW9056A</b>			Analysis Date:	<b>10/25/2018</b>	SeqNo:	<b>1841499</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		190		5.00	100.0	95.36		95.1	80	120				

**Qualifiers:**

H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	M	Matrix Interference
ND	Not Detected at the Reporting Limit	RL	Reporting Limit	S	Spike Recovery outside accepted recovery limits
SDL	Sample detection limit	U	Analyte not detected	W	Sample container temperature is out of limit as sf





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# QC SUMMARY REPORT

WO#: 18100869  
 06-Nov-18

**Client:** Approach Environmental, LLC

**Project:** Approach Environmental - LDNR Residential W

**BatchID:** R73590

Sample ID	18100886-002amsd	SampType:	MSD	TestCode:	9056_W	Units:	mg/L	Prep Date:		RunNo:	73590		
Client ID:	ZZZZZZ	Batch ID:	R73590	TestNo:	SW9056A			Analysis Date:	10/25/2018	SeqNo:	1841500		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		194		5.00	100.0	95.36	99.1	80	120	190.5	2.09	15	

**Qualifiers:**

- |     |                                                    |    |                                            |   |                                                    |
|-----|----------------------------------------------------|----|--------------------------------------------|---|----------------------------------------------------|
| H   | Holding times for preparation or analysis exceeded | J  | Analyte detected below quantitation limits | M | Matrix Interference                                |
| ND  | Not Detected at the Reporting Limit                | RL | Reporting Limit                            | S | Spike Recovery outside accepted recovery limits    |
| SDL | Sample detection limit                             | U  | Analyte not detected                       | W | Sample container temperature is out of limit as sp |



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## Sample Log-In Check List

Client Name: **APPROACH\_ENVIRONM** Work Order Number: **18100869** RcptNo: **1**

Logged by:	<b>Tammy Thibodeaux</b>	<b>10/23/2018 9:30:00 AM</b>	<i>Tammy Thibodeaux</i>
Completed By:	<b>Tammy Thibodeaux</b>	<b>10/23/2018 9:57:14 AM</b>	<i>Tammy Thibodeaux</i>
Reviewed By:	<b>Caitlin Duplantis</b>	<b>10/23/2018 11:07:22 AM</b>	<i>Caitlin Duplantis</i>

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? FedEx  
Tracking No.: 783379787031

### Log In

3. Coolers are present? Yes  No  NA   
 4. Shipping container/cooler in good condition? Yes  No   
 Custody seals intact on shipping container/cooler? Yes  No  Not Present   
 No. Seal Date: Signed By:  
 5. Was an attempt made to cool the samples? Yes  No  NA   
 6. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 7. Sample(s) in proper container(s)? Yes  No   
 8. Sufficient sample volume for indicated test(s)? Yes  No   
 9. Are samples (except VOA and ONG) properly preserved? Yes  No   
 10. Was preservative added to bottles? Yes  No  NA   
 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes  No  No VOA Vials   
 12. Were any sample containers received broken? Yes  No   
 13. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 14. Are matrices correctly identified on Chain of Custody? Yes  No   
 15. Is it clear what analyses were requested? Yes  No   
 16. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

### Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

18. Additional remarks:

### Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Not Present			

# ANALYTICAL RESULTS

PERFORMED BY

**GCAL, LLC**

7979 Innovation Park Dr.  
Baton Rouge, LA 70820

Report Date 11/06/2018

GCAL Report 218110618



**Project 18100869**

<b><i>Deliver To</i></b>	<b><i>Additional Recipients</i></b>
Annie Reedy	Caitlin Duplantis, Element Materials Technology
Element Materials Technology	Cristina Thibeaux, Element Materials Technology
2417 W Pinhook Rd	Rhonda David, Element Materials Technology
Lafayette, LA 70508	Buffy Hudson, Element Materials Technology
800-737-2378	



## Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

### Common Abbreviations that may be Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified reporting limit
<b>NO</b>	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>DL</b>	Detection Limit
<b>LOD</b>	Limit of Detection
<b>LOQ</b>	Limit of Quantitation
<b>RE</b>	Re-analysis
<b>CF</b>	HPLC or GC Confirmation
<b>00:01</b>	Reported as a time equivalent to 12:00 AM

### Reporting Flags that may be Utilized in this Report

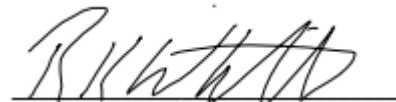
<b>J or I</b>	Indicates the result is between the MDL and LOQ
<b>J</b>	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B or V</b>	Indicates the analyte was detected in the associated Method Blank
<b>Q</b>	Indicates a non-compliant QC Result (See Q Flag Application Report)
<b>*</b>	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
<b>E</b>	Organics - The result is estimated because it exceeded the instrument calibration range
<b>E</b>	Metals - % difference for the serial dilution is > 10%
<b>L</b>	Reporting Limits adjusted to meet risk-based limit.
<b>P</b>	RPD between primary and confirmation result is greater than 40
<b>DL</b>	Diluted analysis – when appended to Client Sample ID

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature  
GCAL Report 218110618

## Certifications

Certification	Certification Number
DOD ELAP	L16-398-R5
Alabama	01955
Arkansas	18-062-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

## Case Narrative

**Client:** Element Materials Technology      **Report:** 218110618

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

### **PROJECT MANAGER COMMENTS**

Client requested that we report the samples on separate reports. (Jessica Monfore 11/06/2018 11:34)

### **VOLATILES GAS CHROMATOGRAPHY**

In the EPA RSK-175 analysis, the recovery for the surrogate is reported as diluted out for those analyses performed at a 10 or higher dilution.



## Sample Summary

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
21810247002	9342 Z Wymon McClary	Water	10/22/2018 14:15	10/24/2018 10:40

## Sample Results

<b>9342 Z Wymon McClary</b>	Collect Date	10/22/2018 14:15	GCAL ID	21810247002
	Receive Date	10/24/2018 10:40	Matrix	Water

EPA RSK-175

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	20	11/02/2018 18:47	JAR	647208

CAS#	Parameter	Result	LOQ	Units
74-82-8	Methane	195	40.0	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
115-07-1	Propene	40.50	Diluted Out	ug/L	0*	40 - 143

## GC Volatiles QC Summary

<b>Analytical Batch</b> 647208		Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	MB647208 1864685 MB NA 11/02/2018 12:25 Water	LCS647208 1864686 LCS NA 11/02/2018 16:59 Water	LCSD647208 1864687 LCSD NA 11/02/2018 17:06 Water							
<b>EPA RSK-175</b>		Units Result	ug/L LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Methane Surrogate	74-82-8	ND	2.00	17.5	14.6	83	39 - 120	17.5	16.0	91	9	27
Propene	115-07-1	34.5	85	40.5	26	64	40 - 143	40.5	28.6	71	NA	NA



# Chain of Custody

Laboratory Number: 18100829

Company Name:  
Contact Name:  
Address:  
City, State Zip:  
Phone Number:  
Fax Number:  
E-mail Address:

**Client Information:**  
Approach Environmental  
Mark Moore  
1000 Grianette Dr.  
Shreveport, La 71107  
318 464 9191  
Ext:  
msmoore@approachenv.com

**Billing Information:**  
Same

PO Number:  
Quote Number:  
Required QC Level  
Bill Monthly  
 Yes  
 No

Project Name/Number:  
Sampler's Signature  
Shipping Method:  
UPS / FedEx / NOW  
DHL / Element / Hand / Mail

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**Matrix Code**  
DW = Drinking Water  
WW = Waste Water  
GW = Ground Water  
AQ = Aqueous  
OT = Other  
SL = Sludge SOL = Solid  
O = Oil SO = Soil  
F = Food SW = Swab  
NG = Natural Gas  
NGL = Natural Gas Liquid  
PW = Produced Water  
CF = Completion Fluid

Which Regulations Apply: <input type="checkbox"/> RCRA <input type="checkbox"/> POTW <input type="checkbox"/> NPDES <input type="checkbox"/> USDA/FDA <input type="checkbox"/> RECAP/RISC <input type="checkbox"/> Drinking Water <input type="checkbox"/> Distribution <input type="checkbox"/> Special <input type="checkbox"/> State <input type="checkbox"/> Other	Turn Time <input type="checkbox"/> Standard RUSH <input type="checkbox"/> 1 Day <input checked="" type="checkbox"/> 2 Day <input type="checkbox"/> Other	(Rush turn times will incur a surcharge and must be pre-approved by lab.)	Container		Pres. HCl, HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , NaOH, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Requested Tests								Comments	
			Quantity	Type P=Plastic, G=Glass, V=Vial		Voc-8260	Semi-voc 8270	RCRA Metals	TDS	TPH-G,D,O	Dissolved Methan	Sodium	Chlorides		
Sample ID/Description	Date	Time	Grab / Composite	Matrix											
9342 Z Wynon McClary	10/22/15	1415	G	W	13	P/G	HCl HNO <sub>3</sub>	X	X	X	X	X	X	X	48-hr Rush on VOC's & Method. detection limit as discussed! 7833 7978 7031

	Relinquished by	Date/Time	Received by	Date/Time	Field Notes:
1	<u>Dan DeL...</u>	10/22/15 1200	<u>FedEx</u>	10/22/15 1700	
2	<u>FedEx</u>	10/23/15 0930	<u>Phil...</u>	10/23/15 0930	Received at lab on ice? 3.5
3					<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temp: <u>35</u>

All samples submitted to Element Materials Technology for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Element Materials Technology reserves the right to return unused sample portions.

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