



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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August 18, 2015

HARLEY EVERHART

FRONTIER FIELD SERVICES

4200 SKELLY DRIVE, SUITE 700

TULSA, OK 74135

RE: CEDAR BREAK LATERAL 10"

Enclosed are the results of analyses for samples received by the laboratory on 08/12/15 11:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

FRONTIER FIELD SERVICES  
HARLEY EVERHART  
4200 SKELLY DRIVE, SUITE 700  
TULSA OK, 74135  
Fax To: (575) 676-2401

Received:	08/12/2015	Sampling Date:	08/12/2015
Reported:	08/18/2015	Sampling Type:	Soil
Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #1 - NE WALL (H502098-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2015	ND	2.25	113	2.00	0.0430	
Toluene*	<0.050	0.050	08/14/2015	ND	2.15	107	2.00	0.127	
Ethylbenzene*	<0.050	0.050	08/14/2015	ND	2.34	117	2.00	0.668	
Total Xylenes*	<0.150	0.150	08/14/2015	ND	6.57	110	6.00	0.479	
Total BTX	<0.300	0.300	08/14/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 85.6-137

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	08/13/2015	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	<10.0	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 77.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 85.8 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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Fax To: (575) 676-2401

Received:	08/12/2015	Sampling Date:	08/12/2015
Reported:	08/18/2015	Sampling Type:	Soil
Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #2 - SE WALL (H502098-02)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2015	ND	2.25	113	2.00	0.0430	
Toluene*	<0.050	0.050	08/14/2015	ND	2.15	107	2.00	0.127	
Ethylbenzene*	<0.050	0.050	08/14/2015	ND	2.34	117	2.00	0.668	
Total Xylenes*	<0.150	0.150	08/14/2015	ND	6.57	110	6.00	0.479	
Total BTX	<0.300	0.300	08/14/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 85.6-137

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	08/13/2015	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	<10.0	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 74.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 82.4 % 52.1-176

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\*=Accredited Analyte

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Received:	08/12/2015	Sampling Date:	08/12/2015
Reported:	08/18/2015	Sampling Type:	Soil
Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #3 - S FLOOR (H502098-03)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2015	ND	2.25	113	2.00	0.0430	
Toluene*	<0.050	0.050	08/14/2015	ND	2.15	107	2.00	0.127	
Ethylbenzene*	<0.050	0.050	08/14/2015	ND	2.34	117	2.00	0.668	
Total Xylenes*	<0.150	0.150	08/14/2015	ND	6.57	110	6.00	0.479	
Total BTX	<0.300	0.300	08/14/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 85.6-137

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	08/13/2015	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	<10.0	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 79.1 % 47.2-157

Surrogate: 1-Chlorooctadecane 82.0 % 52.1-176

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Reported:	08/18/2015	Sampling Type:	Soil
Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #4 - N FLOOR (H502098-04)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/15/2015	ND	2.23	112	2.00	1.51	
Toluene*	<0.050	0.050	08/15/2015	ND	2.12	106	2.00	2.75	
Ethylbenzene*	<0.050	0.050	08/15/2015	ND	2.33	116	2.00	2.48	
Total Xylenes*	<0.150	0.150	08/15/2015	ND	6.49	108	6.00	2.28	
Total BTX	<0.300	0.300	08/15/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 85.6-137

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	08/13/2015	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	<10.0	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 72.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 79.3 % 52.1-176

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Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #5 - SW WALL (H502098-05)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/15/2015	ND	2.23	112	2.00	1.51	
Toluene*	<0.050	0.050	08/15/2015	ND	2.12	106	2.00	2.75	
Ethylbenzene*	<0.050	0.050	08/15/2015	ND	2.33	116	2.00	2.48	
Total Xylenes*	<0.150	0.150	08/15/2015	ND	6.49	108	6.00	2.28	
Total BTX	<0.300	0.300	08/15/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 85.6-137

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/13/2015	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	42.4	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 76.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 85.7 % 52.1-176

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4200 SKELLY DRIVE, SUITE 700  
TULSA OK, 74135  
Fax To: (575) 676-2401

Received:	08/12/2015	Sampling Date:	08/12/2015
Reported:	08/18/2015	Sampling Type:	Soil
Project Name:	CEDAR BREAK LATERAL 10"	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	CEDAR BREAK		

**Sample ID: CBL #6 - NW WALL (H502098-06)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/15/2015	ND	2.23	112	2.00	1.51	
Toluene*	<0.050	0.050	08/15/2015	ND	2.12	106	2.00	2.75	
Ethylbenzene*	<0.050	0.050	08/15/2015	ND	2.33	116	2.00	2.48	
Total Xylenes*	<0.150	0.150	08/15/2015	ND	6.49	108	6.00	2.28	
Total BTX	<0.300	0.300	08/15/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 85.6-137

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/13/2015	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2015	ND	182	91.2	200	0.0636	
DRO >C10-C28	159	10.0	08/13/2015	ND	194	97.2	200	0.823	

Surrogate: 1-Chlorooctane 78.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 85.0 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager





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