



Electronic Correspondence

October 19, 2017

Re: Delineation and Remediation Scope of Work Report
Linn Operating HE West B #30 Spill 090217
Legal: T17S R31E, Eddy County, NM
Latitude/Longitude: 32.848037/ -103.876020
Etech Project Number: 253-8683
Depth to Groundwater: 300 feet – New Mexico Office of the State Engineer

Release Type: Crude Oil

Contaminants of Concern (COCs)

TPH

Benzene

BTEX

Chlorides

Threshold Levels

5000 mg/kg

10 mg/kg

50 mg/kg

600 mg/kg

Etech Environmental & Safety Solutions, Inc. (Etech) is submitting the following delineation and remediation scope of work report on the aforementioned site for review and approval.

Background

On September 11, 13 & 14, 2017, Etech responded to a reportable release at the HE West B #30 flowline site located in Eddy County, New Mexico that is operated by Linn Operating Incorporated (Linn). According to Linn's spill report, the release was caused by a failure in the poly flowline from the HE West B #30 site. There was approximately eighty (80) barrels of produced water released with no recovery. The release impacted approximately 5,400 square feet of surface area within the pasture surrounding the flowline. Contaminated soil was excavated and placed on plastic by a third party contractor.

Delineation Activities

Delineation activities were conducted at the impacted area on September 11, 13 & 14, 2017 by Etech. Soil samples from the impacted area were collected by hand auger from five (5) soil sample locations labeled Auger Hole 1 through Auger Hole 5 (See Attachment A, Annotated Aerial Imagery). Soil samples were collected at various depths ranging from one (1) foot to a maximum of sixteen (16) feet below ground surface (bgs) in Auger Hole 5. Soil samples were submitted to Permian Basin Environmental Laboratory (PBELAB) and analyzed for chlorides, TPH, benzene, and BTEX. The laboratory results determined that the chloride concentrations ranged from no analytical detection to 14270 mg/kg (See Table 1 Summary of Delineation Sampling Analytical Results below), TPH and BTEX levels were all non-detect for all samples collected.

Table 1
Summary of Delineation Sampling Analytical Results

Sample ID	Depth	Date	C6-C12	>C12-C28	>C28- C35	Total TPH (mg/kg)	Benzene (mg/kg)	BTEX (mg/kg)	Chlorides (mg/kg)
Auger Hole 1	1'	9/11/17	ND	1330	1610	2940	ND	ND	7290
Auger Hole 1	2'	9/11/17	ND	ND	ND	ND	ND	ND	8820
Auger Hole 1	3'	9/11/17	ND	ND	ND	ND	ND	ND	8970
Auger Hole 1	6'	9/11/17	-	-	-	-	-	-	6960
Auger Hole 1	9'	9/11/17	-	-	-	-	-	-	8030
Auger Hole 1	12'	9/11/17	-	-	-	-	-	-	1900
Auger Hole 1	14'	9/11/17	-	-	-	-	-	-	1770
Auger Hole 2	1'	9/13/17	ND	ND	ND	ND	ND	ND	6980
Auger Hole 2	2'	9/13/17	ND	ND	ND	ND	ND	ND	3080
Auger Hole 2	3'	9/13/17	ND	ND	ND	ND	ND	ND	274
Auger Hole 2	8'	9/13/17	-	-	-	-	-	-	459
Auger Hole 2	13'	9/13/17	-	-	-	-	-	-	348
Auger Hole 3	1'	9/13/17	ND	ND	ND	ND	ND	ND	17200
Auger Hole 3	2'	9/13/17	ND	ND	ND	ND	ND	ND	12900
Auger Hole 3	3'	9/13/17	ND	ND	ND	ND	ND	ND	1960
Auger Hole 3	4'	9/13/17	-	-	-	-	-	-	227
Auger Hole 3	9'	9/13/17	-	-	-	-	-	-	76.6
Auger Hole 3	14'	9/13/17	-	-	-	-	-	-	130
Auger Hole 4	1'	9/13/17	ND	ND	ND	ND	ND	ND	10200
Auger Hole 4	2'	9/13/17	ND	ND	ND	ND	ND	ND	5340
Auger Hole 4	3'	9/13/17	ND	ND	ND	ND	ND	ND	2280
Auger Hole 4	4'	9/13/17	-	-	-	-	-	-	902
Auger Hole 4	5'	9/13/17	-	-	-	-	-	-	739
Auger Hole 4	10'	9/13/17	-	-	-	-	-	-	407
Auger Hole 5	1'	9/13/17	ND	ND	ND	ND	ND	0.0012	15200
Auger Hole 5	2'	9/13/17	ND	ND	ND	ND	ND	ND	15000
Auger Hole 5	3'	9/13/17	ND	ND	ND	ND	ND	ND	8730
Auger Hole 5	6'	9/13/17	-	-	-	-	-	-	187
Auger Hole 5	11'	9/13/17	-	-	-	-	-	-	104
Auger Hole 5	16'	9/13/17	-	-	-	-	-	-	94.3

Bold values indicate above regulatory threshold levels

Depth to Groundwater Data

Depth to groundwater data was obtained from the New Mexico Office of the State Engineer (OSE) and indicates that the data point to the site displays a depth to ground water of 300 feet bgs

Attachment C contains a diagram displaying the location of the HE West #30 release site and depth to groundwater data.

Scope of Work for Remediation of the Release

After finding the release the initial remediation activities conducted at the site included the excavation and stockpiling on plastic of the top 1 foot of impacted soil associated with the release area. This remediation activity was conducted prior to the above referenced delineation activities.

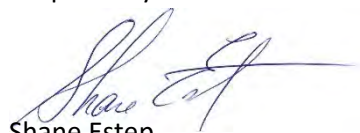
Based on the delineation of the site it was determined there is no soil impacted with hydrocarbons above OCD regulatory standards remaining within the impacted area. A review of the chloride data indicated the chloride impacts extended to an approximate depth of fourteen (14) feet within the area of auger hole 1 immediately around the release point. No more delineation could be completed within this area after refusal of the hand auger without the use of a direct push rig. Prior to closure of the site the area within auger hole 1 will be delineated for documentation of the chloride impact depths.

Based on the findings of the site delineation and the initial remediation activities it has been determined an additional 3 feet of impacted soil within the affected surface area would need to be excavated. Any remaining impacted soil would be left in place and a plastic liner placed in the bottom of the excavation prior to backfilling with clean soil. The liner will prevent any additional downward migration of the chlorides from future rainfall events.

After completing the additional remediation activities and before the installation of the plastic liner, samples will be collected from the bottom and side walls of the excavations to document the removal of the impacted soil. A final report will be generated and submitted to the OCD regional office to document the remediation and closure of the release.

Thank you for your assistance on this matter. Should you have any questions, require additional information, or have any additional stipulations for this site, please contact me at (432) 563-2200 (office) or via email at shane@etechnv.com.

Respectfully:

A handwritten signature in blue ink, appearing to read "Shane Estep", with a stylized flourish extending to the right.

Shane Estep

Geologist

Etech Environmental & Safety Solutions, Inc.

Attachment A
Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Linn Operating Inc.	Contact	Dennis Potter
Address	2130 W. Bender Blvd. Hobbs NM, 88240	Telephone No.	office: 575-738-1739 ext. 2964 / cell: 505-206-7673
Facility Name	H.E. West B #30	Facility Type	injection line

Surface Owner	Federal	Mineral Owner	API No.30-015-10705
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	09	17S	31E	1980	SOUTH	1980	WEST	EDDY

Latitude 32.8479

Longitude -103.8759

NAD83

NATURE OF RELEASE

Type of Release	PRODUCED WATER	Volume of Release	80 BBLS	Volume Recovered	0
Source of Release	FIBERGLAS PIPELINE	Date and Hour of Occurrence	09/02/2017 7:30 am	Date and Hour of Discovery	09/02/2017 8:00 am
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher / Crystal Weaver – OCD Shelly Tucker - BLM		
By Whom?	Dennis Potter	Date and Hour	09/05/2017 8:25 am		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

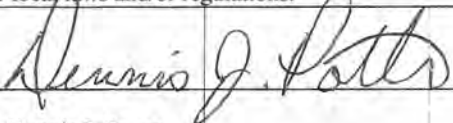
Describe Cause of Problem and Remedial Action Taken.*

2" lateral injection line ruptured approx.. 150 yards north west of injection well. Was unable to get vacuum truck to leak. Called out backhoe on 09/05/17 to remove contaminated soil on the surface.

Describe Area Affected and Cleanup Action Taken.*

Area impacted was approx.. 20' wide and 60' long. Contaminated soil was removed by backhoe.

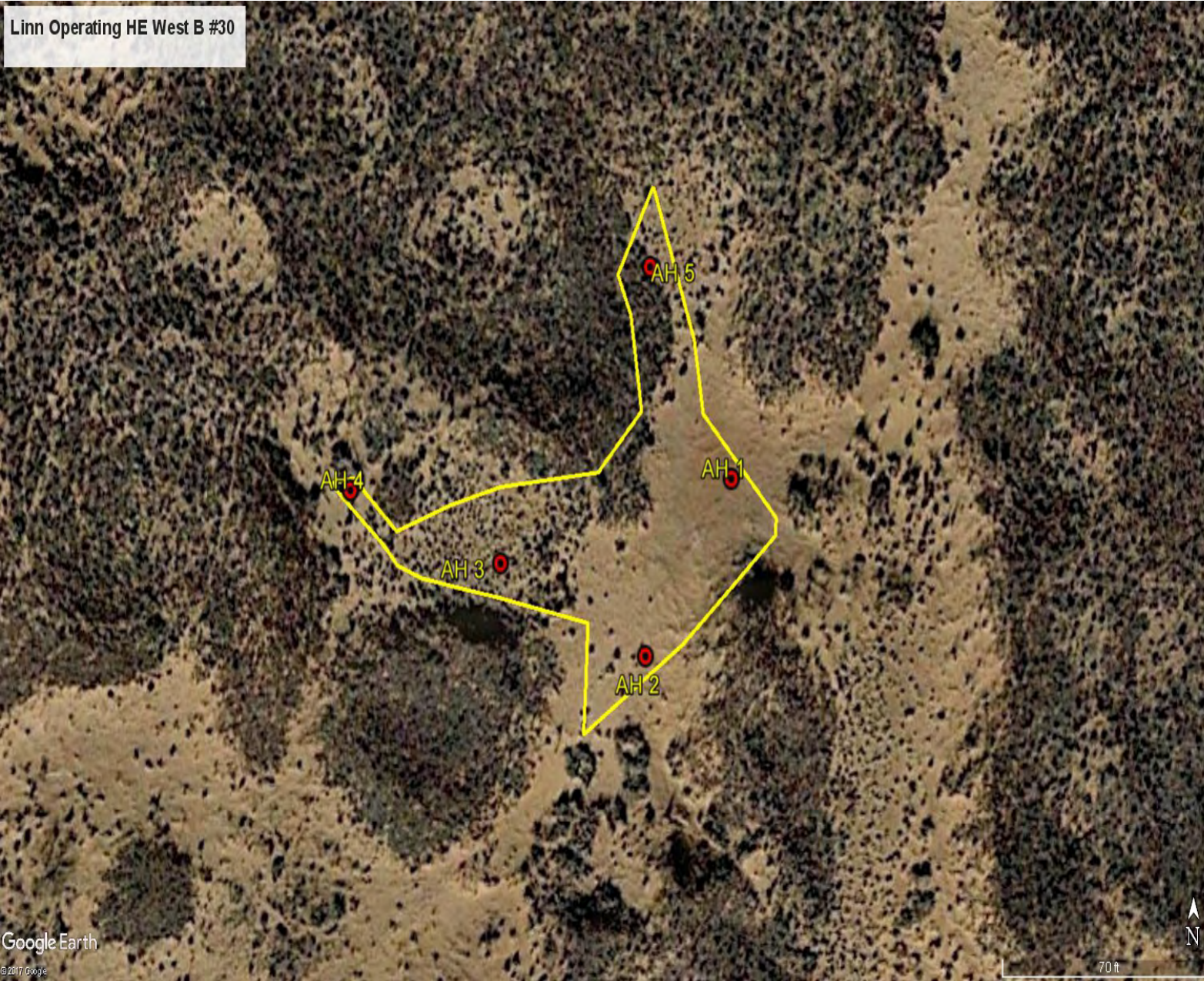
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Dennis J. Potter	Approved by Environmental Specialist:		
Title: Production Foreman	Approval Date:	Expiration Date:	
E-mail Address: dpotter@linenergy.com	Conditions of Approval:		Attached ☐
Date: 09/05/2017	Phone: 505-206-7673		

* Attach Additional Sheets If Necessary

Attachment A
Annotated Aerial Imagery

Linn Operating HE West B #30



Assessment Results		
Sample I.D.	Depth (ft.)	Chloride (mg/kg)
AH 1	1	4,870
AH 1	2	7,980
AH 1	3	7,980
AH 1	4	7,980
AH 1	5	6,130
AH 1	6	5,250
AH 1	9	7,310
AH 1	12	1,280
AH 1	13	950
AH 1	14	<320
AH 1	19	<320
AH 2	1	4,870
AH 2	2	2,880
AH 2	3	320
AH 2	5	320
AH 2	8	450
AH 2	13	510
AH 3	1	13,160
AH 3	2	10,290
AH 3	3	1,150
AH 3	4	<320
AH 3	9	<320
AH 3	14	<320
AH 4	2	4,520
AH 4	3	2,270
AH 4	4	720
AH 4	5	<320
AH 4	10	330
AH 5	2	14,270
AH 5	3	9,160
AH 5	6	<320

Attachment B
Photograph Log

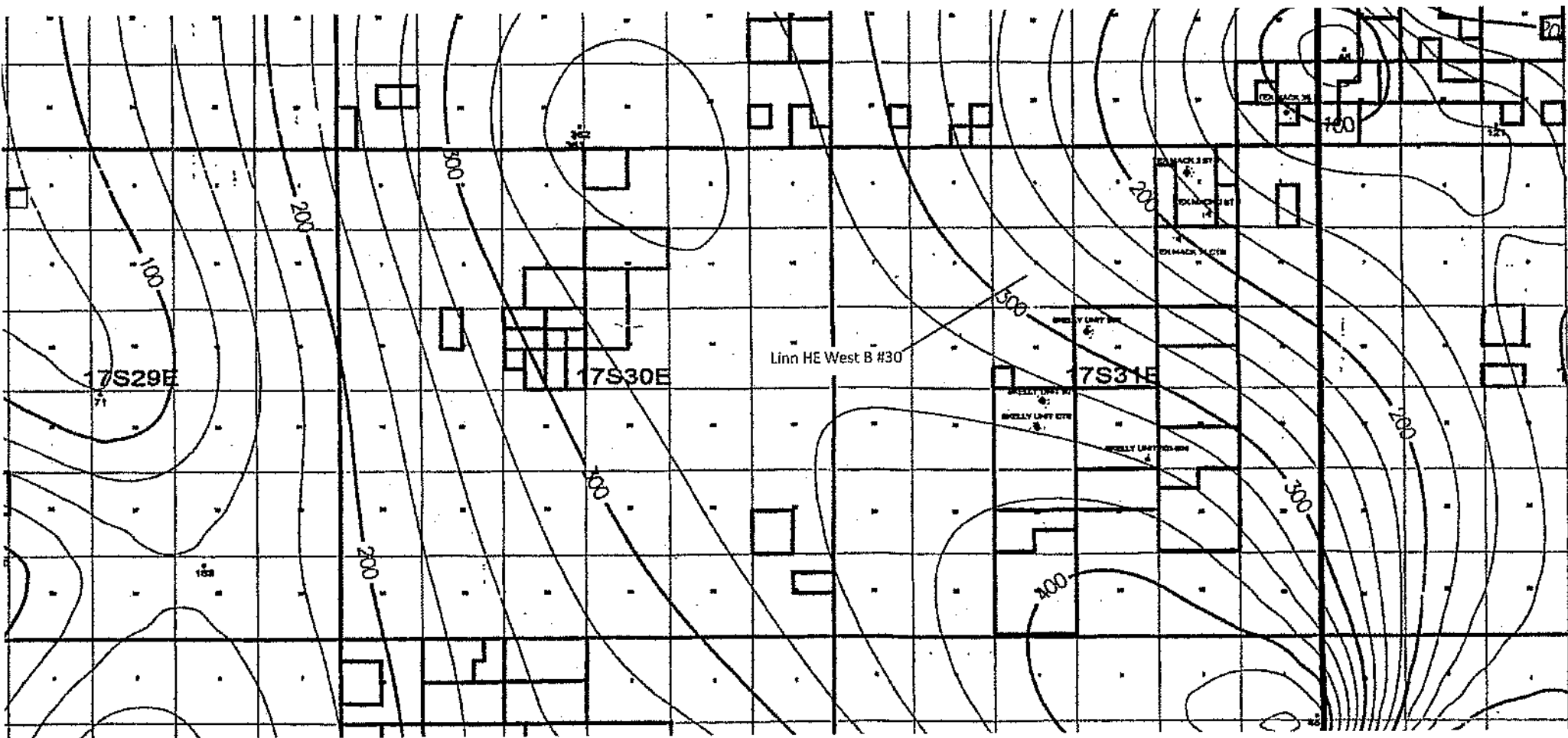


View of release point.



View of release runoff area.

Attachment
Depth to Groundwater Data



Attachment D
Analytical Results

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Shane Estep
E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa, TX 79765

Project: Linn Operating HE West B #30

Project Number: 253-8683-000

Location: Eddy Co., NM

Lab Order Number: 7113007



NELAP/TCEQ # T104704516-16-7

Report Date: 09/25/17

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #30
Project Number: 253-8683-000
Project Manager: Shane Estep

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 1 1'	7113007-01	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 2'	7113007-02	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 3'	7113007-03	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 6'	7113007-04	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 9'	7113007-05	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 12'	7113007-06	Soil	09/11/17 00:00	09-14-2017 09:00
Auger Hole 1 14'	7113007-07	Soil	09/11/17 00:00	09-14-2017 09:00

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #30
Project Number: 253-8683-000
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 1 1'

7I13007-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P7I2114	09/15/17	09/20/17	EPA 8021B	
Toluene	ND	0.00208	mg/kg dry	1	P7I2114	09/15/17	09/20/17	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.6 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.6 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	7290	26.0	mg/kg dry	25	P7I1804	09/18/17	09/19/17	EPA 300.0	
% Moisture	4.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P7I1509	09/13/17	09/15/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7I1509	09/13/17	09/15/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7I1509	09/13/17	09/15/17	TPH 8015M	
Surrogate: 1-Chlorooctane		85.1 %	70-130		P7I1509	09/13/17	09/15/17	TPH 8015M	
Surrogate: o-Terphenyl		96.4 %	70-130		P7I1509	09/13/17	09/15/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	09/13/17	09/15/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #30
Project Number: 253-8683-000
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 1 2'
7I13007-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.0211	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Toluene	ND	0.0421	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Ethylbenzene	ND	0.0211	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (p/m)	ND	0.0421	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (o)	ND	0.0211	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		88.9 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.0 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	8820	52.6	mg/kg dry	50	P7I1804	09/18/17	09/19/17	EPA 300.0	
% Moisture	5.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
Surrogate: 1-Chlorooctane		105 %	70-130		P7I2503	09/21/17	09/22/17	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P7I2503	09/21/17	09/22/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/21/17	09/22/17	calc	

E Tech Environmental & Safety Solutions, Inc.
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Odessa TX, 79765

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Auger Hole 1 3'
7I13007-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.0220	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Toluene	ND	0.0440	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Ethylbenzene	ND	0.0220	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (p/m)	ND	0.0440	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Xylene (o)	ND	0.0220	mg/kg dry	20	P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		105 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		93.6 %	75-125		P7I2114	09/15/17	09/20/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	8970	54.9	mg/kg dry	50	P7I1804	09/18/17	09/19/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P7I2503	09/21/17	09/22/17	TPH 8015M	
Surrogate: 1-Chlorooctane		112 %	70-130		P7I2503	09/21/17	09/22/17	TPH 8015M	
Surrogate: o-Terphenyl		124 %	70-130		P7I2503	09/21/17	09/22/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/21/17	09/22/17	calc	

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Odessa TX, 79765

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Auger Hole 1 6'
7I13007-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	6960	28.7	mg/kg dry	25	P7I1804	09/18/17	09/19/17	EPA 300.0
% Moisture	13.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216

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Auger Hole 1 9'
7I13007-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	8030	26.9	mg/kg dry	25	P7I1804	09/18/17	09/19/17	EPA 300.0	
% Moisture	7.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216	

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Odessa TX, 79765

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Project Number: 253-8683-000
Project Manager: Shane Estep

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Auger Hole 1 12'
7I13007-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1900	5.43	mg/kg dry	5	P7I1804	09/18/17	09/19/17	EPA 300.0
% Moisture	8.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216

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Auger Hole 1 14'
7I13007-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1770	10.9	mg/kg dry	10	P7I1804	09/18/17	09/19/17	EPA 300.0
% Moisture	8.0	0.1	%	1	P7I1505	09/15/17	09/15/17	ASTM D2216

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2114 - General Preparation (GC)

Blank (P7I2114-BLK1)

Prepared: 09/15/17 Analyzed: 09/20/17

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.0641		"	0.0600		107	75-125			
Surrogate: 4-Bromofluorobenzene	0.0639		"	0.0600		107	75-125			

LCS (P7I2114-BS1)

Prepared: 09/15/17 Analyzed: 09/20/17

Benzene	0.0804	0.00100	mg/kg wet	0.100		80.4	70-130			
Toluene	0.0804	0.00200	"	0.100		80.4	70-130			
Ethylbenzene	0.0875	0.00100	"	0.100		87.5	70-130			
Xylene (p/m)	0.149	0.00200	"				70-130			
Xylene (o)	0.0815	0.00100	"				70-130			
Surrogate: 4-Bromofluorobenzene	0.0712		"	0.0600		119	75-125			
Surrogate: 1,4-Difluorobenzene	0.0712		"	0.0600		119	75-125			

Matrix Spike (P7I2114-MS1)

Source: 7I11002-08

Prepared: 09/15/17 Analyzed: 09/20/17

Benzene	0.113	0.00101	mg/kg dry	0.101	ND	112	80-120			
Toluene	0.0526	0.00202	"	0.101	ND	52.1	80-120			QM-05
Ethylbenzene	0.0533	0.00101	"	0.101	ND	52.7	80-120			QM-05
Xylene (p/m)	0.0619	0.00202	"		ND		80-120			
Xylene (o)	0.0973	0.00101	"		ND		80-120			
Surrogate: 4-Bromofluorobenzene	0.0591		"	0.0606		97.6	75-125			
Surrogate: 1,4-Difluorobenzene	0.0632		"	0.0606		104	75-125			

Matrix Spike Dup (P7I2114-MSD1)

Source: 7I11002-08

Prepared: 09/15/17 Analyzed: 09/20/17

Benzene	0.101	0.00101	mg/kg dry	0.101	ND	100	80-120	11.0	20	
Toluene	0.0904	0.00202	"	0.101	ND	89.5	80-120	52.9	20	QM-05
Ethylbenzene	0.0915	0.00101	"	0.101	ND	90.6	80-120	52.8	20	QM-05
Xylene (p/m)	0.162	0.00202	"		ND		80-120		20	
Xylene (o)	0.108	0.00101	"		ND		80-120		20	
Surrogate: 4-Bromofluorobenzene	0.0665		"	0.0606		110	75-125			
Surrogate: 1,4-Difluorobenzene	0.0707		"	0.0606		117	75-125			

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #30
Project Number: 253-8683-000
Project Manager: Shane Estep

Fax: (432) 563-2213

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I1505 - * DEFAULT PREP *****

Blank (P7I1505-BLK1)

Prepared & Analyzed: 09/15/17

% Moisture ND 0.1 %

Duplicate (P7I1505-DUP1)

Source: 7I13011-02

Prepared & Analyzed: 09/15/17

% Moisture 6.0 0.1 % 6.0 0.00 20

Batch P7I1804 - * DEFAULT PREP *****

Blank (P7I1804-BLK1)

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride ND 1.00 mg/kg wet

LCS (P7I1804-BS1)

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride 480 1.00 mg/kg wet 400 120 80-120

LCS Dup (P7I1804-BSD1)

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride 478 1.00 mg/kg wet 400 119 80-120 0.458 20

Duplicate (P7I1804-DUP1)

Source: 7I13006-13

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride 23900 54.9 mg/kg dry 24000 0.571 20

Duplicate (P7I1804-DUP2)

Source: 7I13007-03

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride 9230 54.9 mg/kg dry 8970 2.84 20

Matrix Spike (P7I1804-MS1)

Source: 7I13006-13

Prepared: 09/18/17 Analyzed: 09/19/17

Chloride 29900 54.9 mg/kg dry 5490 24000 108 80-120

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:



Date:

9/25/2017

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

**12800 W. Hwy 80 E
Odessa, Texas 79765**

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Phone: 432-563-2200
Fax: 432-563-2213

Fax: 432-563-2213

Company Name Etech Environmental & Safety Solutions, Inc

Company Address: PO Box 8469

City/State/Zip: Midland, Texas 79708

Telephone No: 432-563-2200

Fax No: 432-563-2213

Sampler Signature: Jack Johnson

e-mail: Tim@etechenv.com

shame@etehenv.com
geoff@etehenv.com

Analyze For	Result	Unit	Reference Range
Alkaline Phosphatase (ALP)	120	U/L	40-120
Aspartate Aminotransferase (AST)	25	U/L	0-37
Alanine Aminotransferase (ALT)	18	U/L	0-40
Bilirubin	1.2	mg/dL	0.1-1.2
Gamma-Glutamyl Transaminase (GGT)	55	U/L	0-40
Lactate Dehydrogenase (LDH)	220	U/L	100-250
Prothrombin Time (PT)	12.5	sec	11.0-13.5
Partial Thromboplastin Time (PTT)	35	sec	25-35
Fibrinogen	300	mg/dL	200-400
D-Dimer	0.5	mg/L	<0.5

Report Format:

☒ Standard ☐ TRRP ☐ NPDES

PO#

Project Loc: Eddy Co., NM

Project #: 253-8683-000

Project Name: HE WEST B #30

2220 ALEXANDER

Page 13 of 13

[illegible]

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Shane Estep
E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa, TX 79765

Project: Linn Operating HE West B #32

Project Number: 253-8683

Location: Eddy Co NM

Lab Order Number: 7119001



NELAP/TCEQ # T104704516-16-7

Report Date: 09/28/17

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 2 1'	7I19001-01	Soil	09/13/17 10:45	09-19-2017 09:37
Auger Hole 2 2'	7I19001-02	Soil	09/13/17 10:48	09-19-2017 09:37
Auger Hole 2 3'	7I19001-03	Soil	09/13/17 10:50	09-19-2017 09:37
Auger Hole 2 8'	7I19001-04	Soil	09/13/17 12:50	09-19-2017 09:37
Auger Hole 2 13'	7I19001-05	Soil	09/13/17 13:50	09-19-2017 09:37
Auger Hole 3 1'	7I19001-06	Soil	09/13/17 16:50	09-19-2017 09:37
Auger Hole 3 2'	7I19001-07	Soil	09/13/17 16:52	09-19-2017 09:37
Auger Hole 3 3'	7I19001-08	Soil	09/13/17 16:55	09-19-2017 09:37
Auger Hole 3 4'	7I19001-09	Soil	09/13/17 18:10	09-19-2017 09:37
Auger Hole 3 9'	7I19001-10	Soil	09/13/17 18:40	09-19-2017 09:37
Auger Hole 3 14'	7I19001-11	Soil	09/13/17 19:20	09-19-2017 09:37
Auger Hole 4 1'	7I19001-12	Soil	09/13/17 10:40	09-19-2017 09:37
Auger Hole 4 2'	7I19001-13	Soil	09/13/17 10:42	09-19-2017 09:37
Auger Hole 4 3'	7I19001-14	Soil	09/13/17 10:45	09-19-2017 09:37
Auger Hole 4 4'	7I19001-15	Soil	09/13/17 11:00	09-19-2017 09:37
Auger Hole 4 5'	7I19001-16	Soil	09/13/17 11:45	09-19-2017 09:37
Auger Hole 4 10'	7I19001-17	Soil	09/13/17 12:50	09-19-2017 09:37
Auger Hole 5 1'	7I19001-18	Soil	09/13/17 15:10	09-19-2017 09:37
Auger Hole 5 2'	7I19001-19	Soil	09/13/17 15:12	09-19-2017 09:37
Auger Hole 5 3'	7I19001-20	Soil	09/13/17 15:15	09-19-2017 09:37
Auger Hole 5 6'	7I19001-21	Soil	09/13/17 16:10	09-19-2017 09:37
Auger Hole 5 11'	7I19001-22	Soil	09/13/17 17:35	09-19-2017 09:37
Auger Hole 5 16'	7I19001-23	Soil	09/13/17 19:10	09-19-2017 09:37
Auger Hole 5 19'	7I19001-24	Soil	09/13/17 15:15	09-19-2017 09:37

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 2 1'

7I19001-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		87.9 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		77.3 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	6980	27.2	mg/kg dry	25	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		105 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	09/19/17	09/20/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 2 2'
7I19001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00220	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.0 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		100 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3080	27.5	mg/kg dry	25	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		107 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/19/17	09/20/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 2 3'
7I19001-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00206	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.2 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		93.1 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	274	1.03	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		98.3 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	09/19/17	09/20/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

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Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 2 8'
7I19001-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	459	1.08	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	7.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

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Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 2 13'
7I19001-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	348	1.05	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	5.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 3 1'
7I19001-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00215	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		89.9 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.4 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	17200	53.8	mg/kg dry	50	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	7.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		105 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	09/19/17	09/20/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 3 2'
7I19001-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		88.5 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.5 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	12900	53.2	mg/kg dry	50	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		116 %	70-130		P7I2008	09/19/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/19/17	09/20/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 3 3'
7I19001-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		106 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1960	5.43	mg/kg dry	5	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		92.8 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		101 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 3 4'
7I19001-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	227	1.10	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 3 9'
7I19001-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	76.6	1.10	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0
% Moisture	9.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216

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Auger Hole 3 14'
7I19001-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	130	1.09	mg/kg dry	1	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 4 1'
7I19001-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		83.6 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	10200	53.2	mg/kg dry	50	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		94.2 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		100 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 4 2'
7I19001-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00215	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		91.2 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		75.9 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	5340	26.9	mg/kg dry	25	P7I2119	09/21/17	09/26/17	EPA 300.0	
% Moisture	7.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		94.6 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 4 3'
7I19001-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.6 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2280	10.9	mg/kg dry	10	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		97.0 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		104 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 4 4'
7I19001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	902	5.56	mg/kg dry	5	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	10.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 4 5'
7I19001-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	739	1.10	mg/kg dry	1	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 4 10'
7I19001-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	407	1.09	mg/kg dry	1	P7I2203	09/22/17	09/26/17	EPA 300.0
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216

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Auger Hole 5 1'
7I19001-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Toluene	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Ethylbenzene	0.00117	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.9 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P7I2201	09/21/17	09/21/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	15200	53.2	mg/kg dry	50	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		85.4 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		91.9 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 5 2'
7I19001-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B	
Toluene	ND	0.00220	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		94.4 %	75-125		P7I2301	09/23/17	09/23/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.5 %	75-125		P7I2301	09/23/17	09/23/17	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	15000	54.9	mg/kg dry	50	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	9.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: 1-Chlorooctane		76.2 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Surrogate: o-Terphenyl		82.7 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc	

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Auger Hole 5 3'
7I19001-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00108	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B
Toluene	ND	0.00215	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B
Ethylbenzene	ND	0.00108	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B
Xylene (o)	ND	0.00108	mg/kg dry	1	P7I2301	09/23/17	09/23/17	EPA 8021B
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P7I2301	09/23/17	09/23/17	EPA 8021B
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P7I2301	09/23/17	09/23/17	EPA 8021B

General Chemistry Parameters by EPA / Standard Methods

Chloride	8730	26.9	mg/kg dry	25	P7I2203	09/22/17	09/26/17	EPA 300.0
% Moisture	7.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M
>C12-C28	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M
>C28-C35	ND	26.9	mg/kg dry	1	P7I2115	09/20/17	09/20/17	TPH 8015M
Surrogate: 1-Chlorooctane		82.4 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M
Surrogate: o-Terphenyl		88.6 %	70-130		P7I2115	09/20/17	09/20/17	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	09/20/17	09/20/17	calc

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Auger Hole 5 6'
7I19001-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	187	1.09	mg/kg dry	1	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 5 11'
7I19001-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	104	1.09	mg/kg dry	1	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	8.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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Auger Hole 5 16'
7I19001-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	94.3	1.06	mg/kg dry	1	P7I2203	09/22/17	09/26/17	EPA 300.0	
% Moisture	6.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216	

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13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

Fax: (432) 563-2213

Auger Hole 5 19'
7I19001-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1250	5.38	mg/kg dry	5	P7I2203	09/22/17	09/26/17	EPA 300.0
% Moisture	7.0	0.1	%	1	P7I2001	09/20/17	09/20/17	ASTM D2216

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2201 - General Preparation (GC)

Blank (P7I2201-BLK1)

Prepared & Analyzed: 09/21/17

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.0552		"	0.0600		91.9	75-125			
Surrogate: 1,4-Difluorobenzene	0.0537		"	0.0600		89.5	75-125			

LCS (P7I2201-BS1)

Prepared & Analyzed: 09/21/17

Benzene	0.101	0.00100	mg/kg wet	0.100		101	70-130			
Toluene	0.0912	0.00200	"	0.100		91.2	70-130			
Ethylbenzene	0.109	0.00100	"	0.100		109	70-130			
Xylene (p/m)	0.187	0.00200	"				70-130			
Xylene (o)	0.102	0.00100	"				70-130			
Surrogate: 1,4-Difluorobenzene	0.0410		"	0.0600		68.4	75-125			S-GC1
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0600		69.2	75-125			S-GC1

LCS Dup (P7I2201-BSD1)

Prepared & Analyzed: 09/21/17

Benzene	0.114	0.00100	mg/kg wet	0.100		114	70-130	11.3	20	
Toluene	0.104	0.00200	"	0.100		104	70-130	13.2	20	
Ethylbenzene	0.109	0.00100	"	0.100		109	70-130	0.302	20	
Xylene (p/m)	0.202	0.00200	"				70-130		20	
Xylene (o)	0.110	0.00100	"				70-130		20	
Surrogate: 1,4-Difluorobenzene	0.0474		"	0.0600		79.1	75-125			
Surrogate: 4-Bromofluorobenzene	0.0503		"	0.0600		83.8	75-125			

Duplicate (P7I2201-DUP1)

Source: 7I08011-06

Prepared & Analyzed: 09/21/17

Benzene	ND	0.00110	mg/kg dry		ND				20	
Toluene	ND	0.00220	"		ND				20	
Ethylbenzene	ND	0.00110	"		ND				20	
Xylene (p/m)	ND	0.00220	"		ND				20	
Xylene (o)	ND	0.00110	"		ND				20	
Surrogate: 1,4-Difluorobenzene	0.0782		"	0.102		76.5	75-125			
Surrogate: 4-Bromofluorobenzene	0.0865		"	0.102		84.6	75-125			

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2201 - General Preparation (GC)

Matrix Spike (P7I2201-MS1)

Source: 7I08011-07

Prepared: 09/21/17 Analyzed: 09/22/17

Benzene	0.310	0.00100	mg/kg wet	0.288		107	80-120			
Toluene	0.243	0.00200	"	0.288		84.2	80-120			
Ethylbenzene	0.289	0.00100	"	0.288		100	80-120			
Xylene (p/m)	0.472	0.00200	"				80-120			
Xylene (o)	0.254	0.00100	"				80-120			
Surrogate: 1,4-Difluorobenzene	0.0801		"	0.0865		92.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.0858		"	0.0865		99.2	75-125			

Batch P7I2301 - General Preparation (GC)

Blank (P7I2301-BLK1)

Prepared & Analyzed: 09/23/17

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.0472		"	0.0600		78.7	75-125			
Surrogate: 4-Bromofluorobenzene	0.0528		"	0.0600		88.0	75-125			

LCS (P7I2301-BS1)

Prepared & Analyzed: 09/23/17

Benzene	0.106	0.00100	mg/kg wet	0.100		106	70-130			
Toluene	0.105	0.00200	"	0.100		105	70-130			
Ethylbenzene	0.103	0.00100	"	0.100		103	70-130			
Xylene (p/m)	0.232	0.00200	"				70-130			
Xylene (o)	0.108	0.00100	"				70-130			
Surrogate: 4-Bromofluorobenzene	0.0612		"	0.0600		102	75-125			
Surrogate: 1,4-Difluorobenzene	0.0573		"	0.0600		95.4	75-125			

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2301 - General Preparation (GC)

LCS Dup (P7I2301-BSD1)

Prepared & Analyzed: 09/23/17

Benzene	0.101	0.00100	mg/kg wet	0.100		101	70-130	5.17	20	
Toluene	0.0927	0.00200	"	0.100		92.7	70-130	12.2	20	
Ethylbenzene	0.0990	0.00100	"	0.100		99.0	70-130	4.11	20	
Xylene (p/m)	0.208	0.00200	"				70-130		20	
Xylene (o)	0.101	0.00100	"				70-130		20	
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>0.0564</i>		<i>"</i>	<i>0.0600</i>		<i>94.0</i>	<i>75-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0569</i>		<i>"</i>	<i>0.0600</i>		<i>94.9</i>	<i>75-125</i>			

Matrix Spike (P7I2301-MS1)

Source: 7I18026-01

Prepared & Analyzed: 09/23/17

Benzene	0.182	0.00106	mg/kg dry	0.213	ND	85.6	80-120			
Toluene	0.139	0.00213	"	0.213	ND	65.2	80-120			QM-07
Ethylbenzene	0.126	0.00106	"	0.213	ND	59.2	80-120			QM-07
Xylene (p/m)	0.208	0.00213	"		ND		80-120			
Xylene (o)	0.101	0.00106	"		ND		80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0686</i>		<i>"</i>	<i>0.0638</i>		<i>108</i>	<i>75-125</i>			
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>0.0685</i>		<i>"</i>	<i>0.0638</i>		<i>107</i>	<i>75-125</i>			

Matrix Spike Dup (P7I2301-MSD1)

Source: 7I18026-01

Prepared & Analyzed: 09/23/17

Benzene	0.149	0.00106	mg/kg dry	0.213	ND	69.9	80-120	20.2	20	QM-07, R2
Toluene	0.0968	0.00213	"	0.213	ND	45.5	80-120	35.6	20	QM-07, R2
Ethylbenzene	0.0725	0.00106	"	0.213	ND	34.1	80-120	53.9	20	QM-07, R2
Xylene (p/m)	0.116	0.00213	"		ND		80-120		20	
Xylene (o)	0.0593	0.00106	"		ND		80-120		20	
<i>Surrogate: 1,4-Difluorobenzene</i>	<i>0.0788</i>		<i>"</i>	<i>0.0638</i>		<i>123</i>	<i>75-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0685</i>		<i>"</i>	<i>0.0638</i>		<i>107</i>	<i>75-125</i>			

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Project Manager: Shane Estep

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2001 - * DEFAULT PREP *****

Blank (P7I2001-BLK1)		Prepared & Analyzed: 09/20/17								
% Moisture	ND	0.1	%							
Duplicate (P7I2001-DUP1)		Source: 7I18027-05		Prepared & Analyzed: 09/20/17						
% Moisture	8.0	0.1	%		8.0			0.00	20	
Duplicate (P7I2001-DUP2)		Source: 7I18032-11		Prepared & Analyzed: 09/20/17						
% Moisture	13.0	0.1	%		6.0			73.7	20	S-GC

Batch P7I2119 - * DEFAULT PREP *****

Blank (P7I2119-BLK1)		Prepared: 09/21/17 Analyzed: 09/26/17								
Chloride	ND	1.00	mg/kg wet							
LCS (P7I2119-BS1)		Prepared: 09/21/17 Analyzed: 09/26/17								
Chloride	424	1.00	mg/kg wet	400		106	80-120			
LCS Dup (P7I2119-BSD1)		Prepared: 09/21/17 Analyzed: 09/26/17								
Chloride	415	1.00	mg/kg wet	400		104	80-120	2.01	20	
Duplicate (P7I2119-DUP1)		Source: 7I18028-01		Prepared: 09/21/17 Analyzed: 09/26/17						
Chloride	42.9	1.00	mg/kg dry		42.5			0.819	20	
Duplicate (P7I2119-DUP2)		Source: 7I19001-04		Prepared: 09/21/17 Analyzed: 09/26/17						
Chloride	465	1.08	mg/kg dry		459			1.26	20	
Matrix Spike (P7I2119-MS1)		Source: 7I18028-01		Prepared: 09/21/17 Analyzed: 09/26/17						
Chloride	1210	1.00	mg/kg dry	1000	42.5	117	80-120			

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2203 - * DEFAULT PREP *****

Blank (P7I2203-BLK1)

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride ND 1.00 mg/kg wet

LCS (P7I2203-BS1)

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride 394 1.00 mg/kg wet 400 98.5 80-120

LCS Dup (P7I2203-BSD1)

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride 398 1.00 mg/kg wet 400 99.5 80-120 1.04 20

Duplicate (P7I2203-DUP1)

Source: 7I19001-14

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride 2280 10.9 mg/kg dry 2280 0.0382 20

Duplicate (P7I2203-DUP2)

Source: 7I19001-24

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride 1300 5.38 mg/kg dry 1250 3.99 20

Matrix Spike (P7I2203-MS1)

Source: 7I19001-14

Prepared: 09/22/17 Analyzed: 09/26/17

Chloride 3410 10.9 mg/kg dry 1090 2280 104 80-120

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Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

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Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2008 - General Preparation (GC)

Blank (P7I2008-BLK1)

Prepared & Analyzed: 09/19/17

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
<i>Surrogate: 1-Chlorooctane</i>	<i>103</i>		<i>"</i>	<i>100</i>		<i>103</i>	<i>70-130</i>			
<i>Surrogate: o-Terphenyl</i>	<i>54.9</i>		<i>"</i>	<i>50.0</i>		<i>110</i>	<i>70-130</i>			

LCS (P7I2008-BS1)

Prepared & Analyzed: 09/19/17

C6-C12	976	25.0	mg/kg wet	1000		97.6	75-125			
>C12-C28	947	25.0	"	1000		94.7	75-125			
<i>Surrogate: 1-Chlorooctane</i>	<i>126</i>		<i>"</i>	<i>100</i>		<i>126</i>	<i>70-130</i>			
<i>Surrogate: o-Terphenyl</i>	<i>50.9</i>		<i>"</i>	<i>50.0</i>		<i>102</i>	<i>70-130</i>			

LCS Dup (P7I2008-BSD1)

Prepared & Analyzed: 09/19/17

C6-C12	929	25.0	mg/kg wet	1000		92.9	75-125	4.88	20	
>C12-C28	892	25.0	"	1000		89.2	75-125	5.95	20	
<i>Surrogate: 1-Chlorooctane</i>	<i>121</i>		<i>"</i>	<i>100</i>		<i>121</i>	<i>70-130</i>			
<i>Surrogate: o-Terphenyl</i>	<i>48.2</i>		<i>"</i>	<i>50.0</i>		<i>96.3</i>	<i>70-130</i>			

Matrix Spike (P7I2008-MS1)

Source: 7I19001-01

Prepared: 09/19/17 Analyzed: 09/20/17

C6-C12	1050	27.2	mg/kg dry	1090	ND	96.4	75-125			
>C12-C28	994	27.2	"	1090	13.1	90.2	75-125			
<i>Surrogate: 1-Chlorooctane</i>	<i>128</i>		<i>"</i>	<i>109</i>		<i>118</i>	<i>70-130</i>			
<i>Surrogate: o-Terphenyl</i>	<i>63.0</i>		<i>"</i>	<i>54.3</i>		<i>116</i>	<i>70-130</i>			

Matrix Spike Dup (P7I2008-MSD1)

Source: 7I19001-01

Prepared: 09/19/17 Analyzed: 09/20/17

C6-C12	1070	27.2	mg/kg dry	1090	ND	98.2	75-125	1.81	20	
>C12-C28	1010	27.2	"	1090	13.1	91.9	75-125	1.89	20	
<i>Surrogate: 1-Chlorooctane</i>	<i>128</i>		<i>"</i>	<i>109</i>		<i>118</i>	<i>70-130</i>			
<i>Surrogate: o-Terphenyl</i>	<i>62.7</i>		<i>"</i>	<i>54.3</i>		<i>115</i>	<i>70-130</i>			

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Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7I2115 - TX 1005

Blank (P7I2115-BLK1)

Prepared & Analyzed: 09/20/17

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	98.6		"	100		98.6	70-130			
Surrogate: o-Terphenyl	52.1		"	50.0		104	70-130			

LCS (P7I2115-BS1)

Prepared & Analyzed: 09/20/17

C6-C12	859	25.0	mg/kg wet	1000		85.9	75-125			
>C12-C28	843	25.0	"	1000		84.3	75-125			
Surrogate: 1-Chlorooctane	119		"	100		119	70-130			
Surrogate: o-Terphenyl	52.7		"	50.0		105	70-130			

LCS Dup (P7I2115-BSD1)

Prepared & Analyzed: 09/20/17

C6-C12	888	25.0	mg/kg wet	1000		88.8	75-125	3.36	20	
>C12-C28	872	25.0	"	1000		87.2	75-125	3.34	20	
Surrogate: 1-Chlorooctane	113		"	100		113	70-130			
Surrogate: o-Terphenyl	46.5		"	50.0		93.0	70-130			

Duplicate (P7I2115-DUP1)

Source: 7119001-08

Prepared & Analyzed: 09/20/17

C6-C12	ND	27.2	mg/kg dry		ND				20	
>C12-C28	25.4	27.2	"		ND				20	
Surrogate: 1-Chlorooctane	104		"	109		95.5	70-130			
Surrogate: o-Terphenyl	56.9		"	54.3		105	70-130			

Notes and Definitions

S-GC1	Surrogate recovery outside of control limits. A second analysis confirmed the original results..
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
R2	The RPD exceeded the acceptance limit.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:



Date:

9/28/2017

Brent Barron, Laboratory Director/Technical Director

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Linn Operating HE West B #32
Project Number: 253-8683
Project Manager: Shane Estep

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If you have received this material in error, please notify us immediately at 432-686-7235.

Etech Environmental & Safety Solutions, Inc.

13000 W CR 100 Odessa, Texas 79765 Phone: 432-563-2200 Fax: 432-563-2213

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: **Shane Estep**

Company Name: **Etech Environmental & Safety Solutions, Inc.**

Company Address: **P.O. Box 8469**

City/State/Zip: **Midland, Texas 79708**

Sampler Signature: *Shane Estep* email: **shane@etechenv.com**

geoff@etechenv.com

Project Name: **Linn Operating HE-West-B #30**
 Project #: **253-8683** Project Loc: **Fiddy Cr. NM**
 Area: _____ PO#: _____

Report Format: STANDARD: ☒ TRRP: ☐ NPDES: ☐

(lab use only)
 ORDER #: **7119001**

(lab use only)		Analyze For:																																																																																																																																																																																																																																																																																																																																				
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Preservation & # of Containers															TCLP:																																																																																																																																																																																																																																																																																																																							
LAB # (lab use only)	FIELD CODE	Start Depth	End Depth	Date Sampled	Time Sampled	No. of Containers	Ice	HNO ₃	HCl	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	None	Other (Specify)	Matrix	TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO ₄ , CO ₃ , HCO ₃)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semi volatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides	RUSH TAT(Pre-Schedule) 24, 48, 72 hrs	STANDARD TAT																																																																																																																																																																																																																																																																																																										
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Special Instructions:

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Date _____ Time _____

Date _____ Time _____

Laboratory Comments:

Sample Containers Intact?

VOCs Free of Headspace?

Custody seals on container(s)?

Sample Hand Delivered?

Sar by Sampler/Client Rep.?

Sar by Courier?

UPS

DHL

FedEx

Temperature Upon Receipt:

Temperature Upon Receipt:

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Temperature Upon Receipt:

Etech Environmental & Safety Solutions, Inc.

13000 W CR 100 Odessa, Texas 79765 Phone: 432-563-2200 Fax: 432-563-2213

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: **Shane Estep**

Company Name: **Etech Environmental & Safety Solutions, Inc.**

Company Address: **P.O. Box 8469**

City/State/Zip: **Midland, Texas 79708**

Sampler Signature: *Shane Estep* email: **shane@etechenv.com**

geoff@etechenv.com

Project Name: **Linn Operating HE West B #30**

Project #: **253-8683** Project Loc: **Eddy Co., NM**

Area: _____ PO#: _____

Report Format: STANDARD ☒ TRRP ☐ NPDES ☐

(lab use only)
ORDER #: **719001**

Preservation & # of Containers

LAB # (lab use only)	FIELD CODE	Start Depth	End Depth	Date Sampled	Time Sampled	No. of Containers	Ice	HNO ₃	HCl	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	None	Other (Specify)	DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-PotableSpecify Other	TPH: 418.1 8015M 1005	Cations (Ca, Mg, Na, K)	Anions (Cl, SO ₄ , CO ₃ , HCO ₃)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg	Volatiles	Semi volatiles	BTEX 8021B/5030 or BTEX 82	RCI	N.O.R.M.	Chlorides	RUSH TAT(Pre-Schedule) 24	STANDARD TAT
15	Auger Hole 4	4'	4'	9/14/2017	11:00	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
16	Auger Hole 4	5'	5'	9/14/2017	11:45	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
17	Auger Hole 4	10'	10'	9/14/2017	12:50	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
18	Auger Hole 5	1'	1'	9/14/2017	15:10	1	☒	☐	☐	☐	☐	☐	☐		S	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
19	Auger Hole 5	2'	2'	9/14/2017	15:12	1	☒	☐	☐	☐	☐	☐	☐		S	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20	Auger Hole 5	3'	3'	9/14/2017	15:15	1	☒	☐	☐	☐	☐	☐	☐		S	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21	Auger Hole 5	6'	6'	9/14/2017	16:10	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
22	Auger Hole 5	11'	11'	9/14/2017	17:35	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
23	Auger Hole 5	16'	16'	9/14/2017	19:10	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
24	Auger Hole 5	19'	19'	9/13/2017	15:15	1	☒	☐	☐	☐	☐	☐	☐		S	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☒
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Special Instructions:

Laboratory Comments:

Relinquished by: *Shane Estep* Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date: _____ Time: _____

Sample Containers Intact? ☒
 VOCs Free of Headspace? ☒
 Custody seals on cooler(s) ☒
 Sample Hand Delivered ☒
 Sar by Sampler/Client Rep. ? ☒
 Sar by Courier? ☒
 Temperature Upon Receipt: **3.0NCT6**