Environmental & Safety Solutions, Inc.

Electronic Correspondence

October 27, 2015

Mr. Mike Bratcher
State of New Mexico
Oil Conservation Division
811 S. 1st Street
Artesia, NM 88210
mike.bratcher@state.nm.us

Re: Corrective Action Plan- 2RP-3261
Memorial Production Operating, NSLU #69
Legal: Unit O, Sec 25, T16S R30E, Eddy County, NM
Latitude/Longitude: 32.888980/ -103.923224
Etech Proj. Number: 416-6562-000
Depth to Groundwater: >300 feet
Release Type: Produced Water

Contaminants of Concern (COC's)	Threshold Levels
Chlorides	1000 mg/kg
SAR	<12

Dear Mike:

Etech Environmental & Safety Solutions, Inc. (Etech) is submitting the following corrective action plan on the aforementioned site for your review and approval.

Background

On September 13th, 2015 a leak was discovered and reported from the NSLU #51 & #69 injection line. The injection line failed to due corrosion releasing fluid into the pasture. Approximately 20 barrels of produced water was released; no fluid was able to be recovered. An assessment of the site was conducted on September 22, 2015 by Etech. The release flowed east from the line for approximately from the wellhead for approximately 90 feet and was approximately 14 feet wide. The impacted area affected approximately 1,300 square feet of surface area.

An initial sampling was conducted of the impacted area on September 22, 2015. Samples were collected from the first 10 feet in two (2) locations of the impacted area. Note: All of the samples were collected from low areas to present a "worse case" basis. The samples were sent for laboratory analyses for TPH and Chlorides. The results of analyses determined that TPH values ranged from non-detect to 225 mg/kg. Chloride levels ranged from 184 mg/kg to 8,250 mg/kg. A copy of the assessment sheet and the analytical results are attached.

Scope of Work

The corrective action for this site will be to treat the top three feet of impacted soil with DeSalt Plus to lower the chloride and sodium levels in the root zone. Depth to groundwater in the area is greater than

300 feet. Therefore, the corrective action goals for this project will be 1,000 mg/kg of chlorides. The levels of TPH found from the assessment are below action levels for this project. The particulars for remediation will involve the actions summarized as follows:

1. Placement of a one-call for utility location.
2. The first eighteen inches of soil will be mechanically tilled to break up the soil. The impacted area will then be treated with a mixture of DeSalt and fresh water. The impacted area will then be blended again.
3. Once screening determines the remediation objectives have been reached, confirmation samples will be collected from the remediation to confirm that remediation goals have been reached.
4. If the results of analysis indicate that the chloride levels are above regulatory threshold levels, additional treatment will be performed until the remediation objectives are met.
5. The site will be seeded with BLM #2. Seeding will take place when the seasonal conditions are conducive to maximizing the potential for seed germination. Actual seeding will be accomplished by broadcast or drilling; whichever is the most practical for the site.

Notifications and Special Conditions

1. The OCD and BLM will be notified prior to the commencement of on-site operations.
2. The OCD and BLM will be notified prior to each sampling event to allow the opportunity to witness the sampling events. Splits will be made available if requested.
3. Prior to seeding, the OCD and BLM will be notified when the site is closed for final inspection.
4. A final report documenting the closure of the site will be submitted along with a final C-141.

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 me at (432) 563-2200 (office) or via email at tim@etechenv.com.

Respectfully:

Tim McMinn

cc: Heather Patterson, NMOCD Division 2 Office
Shelly Tucker, BLM Carlsbad District Office

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 August 8, 2011

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

Release Notification and Corrective Action

nAB1526127389 303900 **OPERATOR** ☒ Initial Report ☐ Final Report

Name of Company Memorial Production Operating LLC	Contact Heather Dolphin
Address 500 Dallas Street Houston TX 77002	Telephone No. 832-797-1334
Facility Name North Square Lake Unit (closest well #69)	Facility Type Well

Surface Owner	Mineral Owner BLM	API No. 30-015-03925

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	25	16S	30E					Eddy

Latitude 32°53'13.24"N **Longitude** 103°55'22.20"W

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 20bbls	Volume Recovered 0bbls
Source of Release Injection Line	Date and Hour of Occurrence 9/13/15	Date and Hour of Discovery 2pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Heather Patterson, OCD / Art Arias, BLM	
By Whom? Heather Dolphin	Date and Hour 09/14/2015 2pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. n/a	

NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 14 2015
RECEIVED

If a Watercourse was Impacted, Describe Fully.*

n/a

Describe Cause of Problem and Remedial Action Taken.*

Underground injection line developed hole between NSLU #51 & NSLU #69. Line was dug up and repaired.

Describe Area Affected and Cleanup Action Taken.*

Off location (along side lease road and into pasture)

40ft. x 2ft with a 12' puddle - unrecoverable

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:

Printed Name: Heather Dolphin

Title: Sr. Regulatory Specialist

E-mail Address: heather.dolphin@memorialrd.com

Date: 9/14/15 Phone: 832-797-1334

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 9/18/15 Expiration Date: N/A

Conditions of Approval: Attached ☐

Remediation per O.C.D. Rules & Guidelines
SUBMIT REMEDIATION PROPOSAL NO LATER THAN: 10/22/15

2RP-326

* Attach Additional Sheets If Necessary

Attachment B
Annotated Aerial Imagery

eTECH Environmental & Safety Solutions, Inc.	Delineation & Assessment Report ©	Lease Name:	NSLU 51 & 69 Inj Line	Case No.: 416-6562
		Date Assessed:	September 28 & October 7, 2015	

Assessment Results

Sample I.D.	Depth (ft.)	Chlorides (mg/kg)
AH 1	0”	4310
AH 1	1	5130
AH 1	2	4500
AH 1	3	6030
AH 1	4	6040
AH 1	5	2840
AH 1	6	3500
AH 1	7	1820
AH 1	8	3130
AH 1	9	573
AH 1	10	594
AH 2	0”	1440
AH 2	1	ND
AH 2	2	24
AH 2	3	ND
AH 2	4	23.5
AH 2	5	820
AH 2	6	289

Attachment C
Photograph Log

Photo No: **1.**	
Direction Taken: North	
Description: View of the impacted area.	

Photo No: **2.**	
Direction Taken: Northeast	
Description: View of the impacted area.	

Photo No: **3.**	
Direction Taken: Southeast	
Description: View of the impacted area.	

Photo No: **4.**	
Direction Taken: South	
Description: View of the impacted area.	

Attachment D
Analytical Results

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
10014 SCR 1213
Midland, TX 79706

PBELAB

Analytical Report

Prepared for:

Brandon Wilson

E Tech Environmental & Safety Solutions, Inc.

13000 West County Road 100

Odessa, TX 79765

Project: NSLU INJ #69

Project Number: 416-6562

Location: Memorial

Lab Order Number: 5I29004

NELAP/TCEQ # T104704156-13-3

Report Date: 10/06/15

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

Project: NSLU INJ #69
Project Number: 416-6562
Project Manager: Brandon Wilson

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH 1 0"	5I29004-01	Soil	09/24/15 14:15	09-29-2015 10:00
AH 1 2'	5I29004-02	Soil	09/24/15 14:20	09-29-2015 10:00
AH 1 4'	5I29004-03	Soil	09/24/15 14:26	09-29-2015 10:00
AH 1 6'	5I29004-04	Soil	09/24/15 14:32	09-29-2015 10:00
AH 2 0"	5I29004-05	Soil	09/24/15 14:40	09-29-2015 10:00
AH 2 2'	5I29004-06	Soil	09/24/15 14:44	09-29-2015 10:00
AH 2 4'	5I29004-07	Soil	09/24/15 14:50	09-29-2015 10:00
AH 2 6'	5I29004-08	Soil	09/24/15 14:55	09-29-2015 10:00

AH 1 0''

5I29004-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**4310**	26.9	mg/kg dry	25	P5I3003	09/30/15	09/30/15	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C12-C28	**187**	26.9	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C28-C35	**37.4**	26.9	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.8 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*112 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**225**	26.9	mg/kg dry	1	[CALC]	09/29/15	09/30/15	calc	

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AH 1 2'

5I29004-02 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**4500**	26.3	mg/kg dry	25	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.7 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*115 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/29/15	09/30/15	calc	

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AH 1 4'

5I29004-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**6040**	26.6	mg/kg dry	25	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.0 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*110 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/29/15	09/30/15	calc	

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AH 1 6'

5I29004-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3500**	26.3	mg/kg dry	25	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P5I3001	09/29/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.7 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P5I3001*	*09/29/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/29/15	09/30/15	calc	

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AH 2 0''

5I29004-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1440**	5.32	mg/kg dry	5	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.4 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*118 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

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AH 2 2'

5I29004-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**24.0**	1.03	mg/kg dry	1	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*98.5 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*118 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

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AH 2 4'

5I29004-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**23.5**	1.04	mg/kg dry	1	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*98.0 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*117 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

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AH 2 6'

5I29004-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**289**	1.05	mg/kg dry	1	P5J0507	10/01/15	10/05/15	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P5J0101	10/01/15	10/01/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		*98.3 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Surrogate: o-Terphenyl		*115 %*	*70-130*		*P5J0102*	*09/30/15*	*09/30/15*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

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
Batch P5I3003 - * DEFAULT PREP *** **										
Blank (P5I3003-BLK1)				Prepared & Analyzed: 09/30/15						
Chloride	ND	1.00	mg/kg wet							
LCS (P5I3003-BS1)				Prepared & Analyzed: 09/30/15						
Chloride	101	1.00	mg/kg wet	100		101	80-120			
LCS Dup (P5I3003-BSD1)				Prepared & Analyzed: 09/30/15						
Chloride	102	1.00	mg/kg wet	100		102	80-120	0.0887	20	
Duplicate (P5I3003-DUP1)		**Source: 5I28014-01**		Prepared & Analyzed: 09/30/15						
Chloride	1540	27.8	mg/kg dry		1520			0.962	20	
Duplicate (P5I3003-DUP2)		**Source: 5I29002-08**		Prepared & Analyzed: 09/30/15						
Chloride	ND	1.02	mg/kg dry		ND				20	
Batch P5J0101 - % Solids										
Blank (P5J0101-BLK1)				Prepared & Analyzed: 10/01/15						
% Moisture	ND	0.1	%							
Duplicate (P5J0101-DUP1)		**Source: 5I29003-03**		Prepared & Analyzed: 10/01/15						
% Moisture	8.0	0.1	%		7.0			13.3	20	
Duplicate (P5J0101-DUP2)		**Source: 5I29004-08**		Prepared & Analyzed: 10/01/15						
% Moisture	5.0	0.1	%		5.0			0.00	20	
Duplicate (P5J0101-DUP3)		**Source: 5I30005-01**		Prepared & Analyzed: 10/01/15						
% Moisture	8.0	0.1	%		8.0			0.00	20	

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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
Batch P5J0101 - % Solids										
Duplicate (P5J0101-DUP4)	**Source: 5I30011-04**			Prepared & Analyzed: 10/01/15						
% Moisture	3.0	0.1	%		4.0			28.6	20	
Batch P5J0507 - * DEFAULT PREP *** **										
Blank (P5J0507-BLK1)				Prepared: 10/01/15 Analyzed: 10/05/15						
Chloride	ND	1.00	mg/kg wet							
LCS (P5J0507-BS1)				Prepared: 10/01/15 Analyzed: 10/05/15						
Chloride	104	1.00	mg/kg wet	100		104	80-120			
LCS Dup (P5J0507-BSD1)				Prepared: 10/01/15 Analyzed: 10/05/15						
Chloride	99.3	1.00	mg/kg wet	100		99.3	80-120	4.77	20	
Duplicate (P5J0507-DUP1)	**Source: 5I29004-03**			Prepared: 10/01/15 Analyzed: 10/05/15						
Chloride	6060	26.6	mg/kg dry		6040			0.176	20	
Duplicate (P5J0507-DUP2)	**Source: 5I29005-04**			Prepared: 10/01/15 Analyzed: 10/05/15						
Chloride	1060	5.26	mg/kg dry		1070			1.14	20	

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
Batch P5I3001 - TX 1005										
Blank (P5I3001-BLK1)				Prepared & Analyzed: 09/29/15						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*108*		*"*	*100*		*108*	*70-130*			
Surrogate: o-Terphenyl	*62.3*		*"*	*50.0*		*125*	*70-130*			
LCS (P5I3001-BS1)				Prepared & Analyzed: 09/29/15						
C6-C12	971	25.0	mg/kg wet	1000		97.1	75-125			
>C12-C28	1070	25.0	"	1000		107	75-125			
Surrogate: 1-Chlorooctane	*106*		*"*	*100*		*106*	*70-130*			
Surrogate: o-Terphenyl	*67.5*		*"*	*50.0*		*135*	*70-130*			*S-GC*
LCS Dup (P5I3001-BSD1)				Prepared & Analyzed: 09/29/15						
C6-C12	953	25.0	mg/kg wet	1000		95.3	75-125	1.84	20	
>C12-C28	1060	25.0	"	1000		106	75-125	1.38	20	
Surrogate: 1-Chlorooctane	*104*		*"*	*100*		*104*	*70-130*			
Surrogate: o-Terphenyl	*66.3*		*"*	*50.0*		*133*	*70-130*			*S-GC*
Matrix Spike (P5I3001-MS1)	**Source: 5I29002-01**			Prepared: 09/29/15 Analyzed: 09/30/15						
C6-C12	899	25.3	mg/kg dry	1010	ND	89.0	75-125			
>C12-C28	887	25.3	"	1010	ND	87.8	75-125			
Surrogate: 1-Chlorooctane	*89.0*		*"*	*101*		*88.1*	*70-130*			
Surrogate: o-Terphenyl	*50.0*		*"*	*50.5*		*99.0*	*70-130*			
Matrix Spike Dup (P5I3001-MSD1)	**Source: 5I29002-01**			Prepared: 09/29/15 Analyzed: 09/30/15						
C6-C12	919	25.3	mg/kg dry	1010	ND	91.0	75-125	2.17	20	
>C12-C28	925	25.3	"	1010	ND	91.6	75-125	4.17	20	
Surrogate: 1-Chlorooctane	*92.0*		*"*	*101*		*91.1*	*70-130*			
Surrogate: o-Terphenyl	*52.1*		*"*	*50.5*		*103*	*70-130*			

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

Project: NSLU INJ #69
Project Number: 416-6562
Project Manager: Brandon Wilson

Fax: (432) 563-2213

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
Batch P5J0102 - TX 1005										
Blank (P5J0102-BLK1)				Prepared & Analyzed: 09/30/15						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*110*		*"*	*100*		*110*	*70-130*			
Surrogate: o-Terphenyl	*63.7*		*"*	*50.0*		*127*	*70-130*			
LCS (P5J0102-BS1)				Prepared & Analyzed: 09/30/15						
C6-C12	893	25.0	mg/kg wet	1000		89.3	75-125			
>C12-C28	920	25.0	"	1000		92.0	75-125			
Surrogate: 1-Chlorooctane	*94.4*		*"*	*100*		*94.4*	*70-130*			
Surrogate: o-Terphenyl	*57.5*		*"*	*50.0*		*115*	*70-130*			
LCS Dup (P5J0102-BSD1)				Prepared & Analyzed: 09/30/15						
C6-C12	918	25.0	mg/kg wet	1000		91.8	75-125	2.78	20	
>C12-C28	940	25.0	"	1000		94.0	75-125	2.12	20	
Surrogate: 1-Chlorooctane	*97.4*		*"*	*100*		*97.4*	*70-130*			
Surrogate: o-Terphenyl	*58.7*		*"*	*50.0*		*117*	*70-130*			
Matrix Spike (P5J0102-MS1)	**Source: 5I29004-07**			Prepared & Analyzed: 09/30/15						
C6-C12	913	26.0	mg/kg dry	1040	ND	87.6	75-125			
>C12-C28	970	26.0	"	1040	ND	93.1	75-125			
Surrogate: 1-Chlorooctane	*93.7*		*"*	*104*		*89.9*	*70-130*			
Surrogate: o-Terphenyl	*60.0*		*"*	*52.1*		*115*	*70-130*			
Matrix Spike Dup (P5J0102-MSD1)	**Source: 5I29004-07**			Prepared & Analyzed: 09/30/15						
C6-C12	927	26.0	mg/kg dry	1040	ND	89.0	75-125	1.58	20	
>C12-C28	982	26.0	"	1040	ND	94.2	75-125	1.20	20	
Surrogate: 1-Chlorooctane	*99.1*		*"*	*104*		*95.1*	*70-130*			
Surrogate: o-Terphenyl	*60.9*		*"*	*52.1*		*117*	*70-130*			

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
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: 10/6/2015

Brent Barron, Laboratory Director/Technical Director

Etech Environmental & Safety Solutions, Inc.

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12800 W. Hwy 80 E
Odessa, Texas 79765

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

Project Manager: Brandon Wilson

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:

e-mail: Brandon@etechenv.com

Project Name: NJLU INJ #69

Project #: 416-0542

Project Loc: ~~Pioneer~~ memorial

PO #:

Report Format: ☑ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 5I29004

LAB # (lab use only)	FIELD CODE			Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge / GW=Groundwater S=Soil/Solid / NP=Non-Potable Specify Other	Analyze For: TPH: 418.1 / 8015M / 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	(chlorides)			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	AH1	0'		9.24.15	2:15	1	☑								S	☑													☑
02	AH1	2'			2:20	1	☑								S	☑													☑
03	AH1	4'			2:26	1	☑								S	☑													☑
04	AH1	6'			2:32	1	☑								S	☑													☑
05	AH2	0'			2:40	1	☑								S	☑													☑
06	AH2	2'			2:44	1	☑								S	☑													☑
07	AH2	4'			2:50	1	☑								S	☑													☑
08	AH2	6'		V	2:55	1	☑								S	☑													☑
							☐									☐													☐
							☐									☐													☐

Special Instructions:

Relinquished by	Date	Time	Received by:	Date	Time
	9.29.15	4:00			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				9/29/15	10:00

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 4.0 °C

Quantab Chloride Test Strip Analysis Sheet

Date: 9/28/2015 **Client:** MEMORIAL

Site: NSLU INJ 69 **Project Number:** 416-6562

Technican: BB **Strip Lot Number(s):**

Sample ID	Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 1 0"		10	408.0	4080.00	
AH 1 1'		10	513.0	5130.00	
AH 1 2'		10	328.0	3280.00	
AH 1 3'		10	603.0	6030.00	
AH 1 4'		10	603.0	6030.00	
AH 1 5'		10	284.0	2840.00	
AH 1 6'		10	229.0	2290.00	
AH 2 0"		10	67.0	670.00	
AH 2 1'		10	BDL	#VALUE!	
AH 2 2'		10	BDL	#VALUE!	
AH 2 3'		10	BDL	#VALUE!	
AH 2 4'		10	BDL		
AH 2 5'		10	82.0	820.00	
AH 2 6'		10	BDL		
		10			
		10			
		10			
		10			
		10			
		10			
		10			
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		10			
		10			
		10			
		10			
		10			
		10			
		10			
		10			

Titrator Range: A= 30-600 B=300-6000 ppm
Soil Sample Volume: 10 Grams
Distilled Water Volume = 100 ml

Extended Diesel Range Organic Hydrocarbons Analysis Report

site LAB® **EDRO C10-C40 Aromatics in Soil, Sediment & Water**

Client: MEMORIAL
Address:

Phone: 713-588-8300
Contact: Chris Gafford

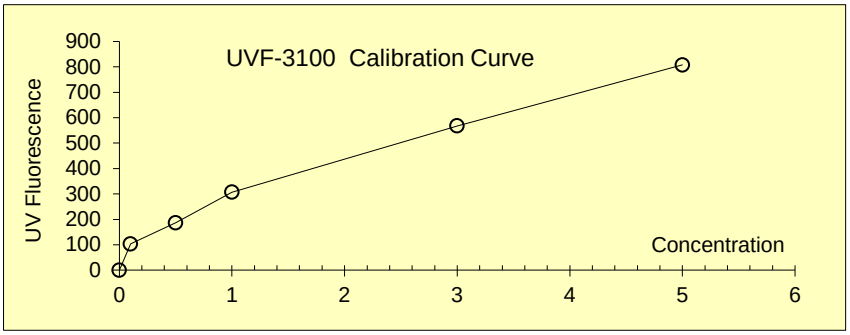
Operator: Britney Beaty
Signature:

Date: 9/28/15 Time:

Project Name: NSLU INJ #69
Job #: 416-6562-00
File #: 1
Matrix: SOIL
Date Collected: 9/215
Date Received: 9/25/2015
Date Extracted: 9/28/2015
Date Analyzed: 9/28/2015
Date Reported: 9/28/2015

Standard Concentration	UVF-3100 Calibration Raw Fluorescence
0	0
0.1	103.5
0.5	186.5
1.0	306.8
3.0	567.7
5.0	807.8

site LAB
Calibration Product #: CAL-042
Units (ppm or mg/Kg): ppm



Linearity = 0.984

UVF Run#:	Sample ID & Description	UVF Raw Fluorescence	Test Sample Concentration (ppm)	Dilution Factor	Test Result:
22	**AH 1 0"**	3.26	0.003	1,000	**Concentration... Too Low (ND)**
23	**AH 1 1'**	-2.46	-0.002	1,000	**Concentration... Too Low (ND)**
24	**AH 1 2'**	-5.58	-0.005	1,000	**Concentration... Too Low (ND)**
25	**AH 1 3'**	-5.61	-0.005	1,000	**Concentration... Too Low (ND)**
26	**AH 1 4'**	-5.82	-0.006	1,000	**Concentration... Too Low (ND)**
27	**AH 1 5'**	-6.08	-0.006	1,000	**Concentration... Too Low (ND)**
28	**AH 1 6'**	-2.90	-0.003	1,000	**Concentration... Too Low (ND)**
29	**AH 2 0"**	-1.61	-0.002	1,000	**Concentration... Too Low (ND)**
30	**AH 2 1'**	43.14	0.042	1,000	**Concentration... Too Low (ND)**
31	**AH 2 2'**	20.65	0.02	1,000	**Concentration... Too Low (ND)**
32	**AH 2 3'**	-3.27	-0.003	1,000	**Concentration... Too Low (ND)**
33	**AH 2 4'**	-3.61	-0.003	1,000	**Concentration... Too Low (ND)**
34	**AH 2 5'**	-1.99	-0.002	1,000	**Concentration... Too Low (ND)**
35	**AH 2 6'**	-3.89	-0.004	1,000	**Concentration... Too Low (ND)**
15		1.00	1	1	**1.0 ppm**
16		1.00	1	1	**1.0 ppm**
17		1.00	1	1	**1.0 ppm**
18		1.00	1	1	**1.0 ppm**
19		1.00	1	1	**1.0 ppm**
20		1.00	1	1	**1.0 ppm**

Comments: Results reported in wet weight.

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
10014 SCR 1213
Midland, TX 79706

PBELAB

Analytical Report

Prepared for:

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Location: Loco Hill, NM

Lab Order Number: 5J16005

NELAP/TCEQ # T104704156-13-3

Report Date: 10/21/15

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH1 7'	5J16005-01	Soil	10/07/15 13:15	10-15-2015 16:40
AH1 8'	5J16005-02	Soil	10/07/15 13:20	10-15-2015 16:40
AH1 9'	5J16005-03	Soil	10/07/15 13:25	10-15-2015 16:40
AH1 10'	5J16005-04	Soil	10/07/15 13:30	10-15-2015 16:40

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

AH1 7'

5J16005-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1820**	5.26	mg/kg dry	5	P5J2002	10/20/15	10/20/15	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P5J1610	10/16/15	10/16/15	% calculation	

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

AH1 8'

5J16005-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	**3130**	10.6	mg/kg dry	10	P5J2002	10/20/15	10/20/15	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P5J1610	10/16/15	10/16/15	% calculation	

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

AH1 9'

5J16005-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**573**	1.04	mg/kg dry	1	P5J2002	10/20/15	10/20/15	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P5J1610	10/16/15	10/16/15	% calculation	

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

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

AH1 10'

5J16005-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**594**	1.05	mg/kg dry	1	P5J2002	10/20/15	10/20/15	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P5J1610	10/16/15	10/16/15	% calculation	

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
Batch P5J1610 - % Solids										
Blank (P5J1610-BLK1)				Prepared & Analyzed: 10/16/15						
% Moisture	ND	0.1	%							
Duplicate (P5J1610-DUP1)		**Source: 5J16001-01**		Prepared & Analyzed: 10/16/15						
% Moisture	2.0	0.1	%		2.0			0.00	20	
Duplicate (P5J1610-DUP3)		**Source: 5J16010-01**		Prepared & Analyzed: 10/16/15						
% Moisture	4.0	0.1	%		4.0			0.00	20	
Batch P5J2002 - * DEFAULT PREP *** **										
Blank (P5J2002-BLK1)				Prepared & Analyzed: 10/20/15						
Chloride	ND	1.00	mg/kg wet							
LCS (P5J2002-BS1)				Prepared & Analyzed: 10/20/15						
Chloride	108	1.00	mg/kg wet	100		108	80-120			
LCS Dup (P5J2002-BSD1)				Prepared & Analyzed: 10/20/15						
Chloride	110	1.00	mg/kg wet	100		110	80-120	1.56	20	
Duplicate (P5J2002-DUP1)		**Source: 5J15007-01**		Prepared & Analyzed: 10/20/15						
Chloride	1050	30.5	mg/kg dry		1050			0.319	20	
Duplicate (P5J2002-DUP2)		**Source: 5J15008-02**		Prepared & Analyzed: 10/20/15						
Chloride	1830	28.1	mg/kg dry		1850			0.902	20	

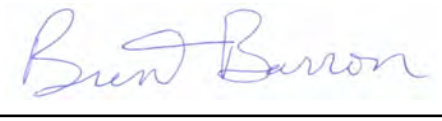
E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: NSLU Inj Line 51 & 69
Project Number: 416-6562
Project Manager: Tim McMinn

Fax: (432) 563-2213

Notes and Definitions

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: 10/21/2015

Brent Barron, Laboratory Director/Technical Director

Etech Environmental & Safety Solutions, Inc.

P.O. Box 8469
Midland, Texas 79708

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

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

Project Manager: Tim McMinn
Company Name: Etech Environmental & Safety Solutions, Inc.
Company Address: P.O. Box 8469
City/State/Zip: Midland/TX/79708
Telephone No: 432-563-2200 Fax No: 432-563-2213
Sampler Signature: Cody Nikolai
e-mail: tm@etechenv.com

Project Name: NSLU Ivy Line 51+69
Project #: 416-6562
Project Loc: Loco Hills, NM
PO #:
Report Format: ☑ Standard ☐ TRRP ☐ NPDES

LAB: SPL - Lafayette, LA
ORDER #: 563160005

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge / GW=Groundwater S=Soil/Solid / NP=Non-Potable Specify Other	Analyze For: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	TOC	RUSH TAT (Pre-Schedule) 24HOUR	Standard TAT
01	AH1		7'	10/7/15	1315	1	☑								S			☒										☑
02	AH1		8'	10/7/15	1320	1	☑								S			☒										☑
03	AH1		9'	10/7/15	1325	1	☑								S			☒										☑
04	AH1		10'	10/7/15	1330	1	☒								S			☒										☑
05	AH1		11'	10/7/15	1335	1	☒								S			☒										☑
06	AH1		12'	10/7/15	1340	1	☒								S			☒										☑
07	AH1		13'	10/7/15	1345	1	☒								S			☒										☑
							☐																					
							☐																					
							☐																					

Special Instructions: Analyze progressively, after 2 consecutive samples are ≤1000 ppm stop analysis

Relinquished by:	Date	Time	Received by:	Date	Time
Tim McMinn	10/15/15	1440			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				10/15/15	1646

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 4.0 NCF °C