

Electronic Correspondence

November 12, 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-3264 and 2RP-3281

Memorial Production Operating, NSLU #100

Legal: Unit B, Sec 31, T16S R31E, Eddy County, NM Latitude/Longitude: 32.885231/-103.909161

Etech Proj. Number: 416-6564-000 Depth to Groundwater: >300 feet Release Type: Produced Water

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

Sillorides 1000 flig/r

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 14th, 2015 a leak was discovered and reported from the NSLU #100 injection well. A valve on the wellhead failed releasing fluid onto the location and pasture. Approximately 10 barrels of produced water was released; no fluid was able to be recovered. Memorial notified the OCD and BLM of the release on September 14th and a job number 2RP-3264 was issued.

On September 17th, 2015 another leak occurred at the location in the same area. The injection line on the well developed a leak resulting in a release of approximately 20 bbl. of produced water; no fluid was recovered. Memorial notified the OCD and BLM of the release on September 17th and a job number 2RP-3281 was issued.

An assessment of the site was conducted on September 22, 2015 by Etech. The releases flowed north from the wellhead for approximately 114 feet and had varying widths. There was also an area north of the wellhead impacted by overspray that was approximately 45 feet by 30 feet. The impacted area affected approximately 3,420 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 828 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.
- 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

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

	Release Notification and Corrective Action											
NABI	52610	12024		3030	100	OPERAT	ror	X Initia	al Report	Final Report		
Name of Co	mpany M	emorial Proc	luction O	perating LLC			ather Dolphin					
Address 500						Telephone N	No. 832-797-13	34				
Facility Nar	ne North S	Square Lake	Unit #10	0]	Facility Typ	e Well					
Surface Ow	ner			Mineral C	wner E	BLM		API No	. 30-015-1	0752		
				LOCA	TION	OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North/	South Line	Feet from the	East/West Line	County			
В	31	16S	31E						Eddy			
			La	titude 32°53'6	.83"N	Longitud	e 103°54'32.9	8"W				
	Latitude 32°53'6.83"N Longitude 103°54'32.98"W NATURE OF RELEASE											
Type of Relea	ase Produc	ed Water		11/4.1	UKE		Release 10bbls	Volume F	Recovered (Obbls		
Source of Re		OU TTULO		***************************************				e9/14/15Date and				
Was Immedia	ate Notice C					If YES, To	Whom?					
l.		X	Yes _	No 🗌 Not Re	equired	Heather	Patterson, OCE	/ Art Arias, BLM	1			
By Whom? F							our 09/14/2015		NA OU	CONSERVATIO		
Was a Watero	course Reac		(If YES, Vo	lume Impacting t	he Watercourse.	AR	TESIA DISTRICT		
		L	Yes X	No		n/a				1		
If a Watercou	rse was Imp	pacted, Descri	be Fully.*	•)		100			31	P 1 4 2015		
n/a									10			
						t)			R	ECEIVED		
Describe Cau	se of Proble	m and Remed	ial Action	Taken.*								
The main val	ve on the h	NSLU #100 i	njection v	vell developed a	leak, c	ould not SI	well due to brok	en valve, re-route	ed water to	Frac tank and		
replaced valv	e.									3.000		
Describe Area	Affected a	nd Cleanup A	ction Tak	en.*								
Off location (
30ft. x 1ft wit	h a 40' circ	cle spray - u	nrecover	able								
I haraby cartif	fu that the is	aformation give	uen ahoue	is true and comp	ete to th	e heet of my	knowledge and w	nderstand that purs	want to NM	OCD rules and		
								tive actions for rele				
public health	or the envir	onment. The	acceptance	e of a C-141 repo	rt by the	NMOCD m	arked as "Final Re	eport" does not reli	ieve the ope	rator of liability		
should their o	perations ha	ive failed to a	dequately	investigate and re	emediate	contaminati	on that pose a three	eat to ground water	r, surface wa	ater, human health		
federal, state,				tance of a C-141	ероп ас	es not renev	e the operator of i	responsibility for c	ompliance v	vith any other		
11		/					OIL CONS	SERVATION	DIVISIO	ON		
c://			0	1.					//			
Signaturo:			-	7	-1.			11	16	1		
Printed Name:	Heather	Dolphin			- /	Approved by	Environmental Sp	pecialist:	1/6			
Title: Sr. Re	gulatory Sp	pecialist			A	Approval Dat	e: 9/18/15	Expiration	Date: N	A		
E-mail Addres	ss: heather	.dolphin@m	emorialro	J.com		Conditions of	Approval:		Attached	П		
Date: 9/14/15	i		Phone:	832-797-1334	Rer	nediation	per O.C.D. R	ules & Guideli	ines]		
Attach Additi		ts If Necessa					IIIIAA	ROPOSAL NO	1	10 2011		
			50		LAT	ER THAN	: 10/22	110	14	20-30/04		

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State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

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

Release Notification and Corrective Action														
		31778		3039	200	OPERATOR Initial Report Final Report								
				perating LLC		Contact He	ather Dolphin							
		treet Housto					No. 832-797-13	34						
Facility Nar	ne North S	Square Lake	Unit #10	0		Facility Typ	e Well							
Surface Ow	ner			Mineral C	wner	BLM			API No	. 30-015-1	0752			
				LOCA		N OF REI	LEASE							
Unit Letter	Section	Township	Range	Feet from the	North	South Line	Feet from the	East/W	est Line	County				
В	31	16S	31E							Eddy				
			La	titude_ 32°53'6	.83"N	Longitud	e 103°54'32.9	8"W						
NATURE OF RELEASE														
Type of Release Produced Water Volume of Release 20bbls Volume Recovered Obbls														
Source of Rel	ease Well						our of Occurrenc	e9/17/1	Date and	Hour of Dis	covery	11:45pm		
Was Immedia	ite Notice G		V	N- [] N-4 D-		If YES, To				,				
▼ Yes No Not Required Heather Patterson, OCD / Art Arias, BLM														
By Whom? Heather Dolphin Date and Hour 09/17/2015 4pm Was a Watercourse Reached? If YES, Volume Impacting the Watercourse.														
was a watero	ourse Reac		Yes X	l No		1	fume Impacting t	ne wate	rcourse.			ì		
10						n/a								
If a Watercou	rse was imp	bacted, Descri	be rully.	•					Aina	_				
n/a									MIN	OIL CON	SER	VATION		
										ARTESIA L	DISTRI	VALION		
<u> </u>	CD-11	10	l'al A attac	Tolore #						SEP 17	7 2 2			
Describe Caus					N. Harall .	until min a name	halassed			021 17	201	5		
·		NSLU #100	well dev	eloped a leak, S	oi well u	intii pipe can	de replaced.					[
replaced valv	ė.									RECEIV	/ED			
Describe Area	Affected a	nd Cleanup A	ction Tak	en.*										
Off location (pasture)											}		
40ft. x 4ft with	h with 10' p	ouddle - unr	ecoverab	ole								Ì		
The shirt seed of		Co							1.1.4		O.C.D.	,		
regulations all	y that the in	itormation giv	renort an	is true and compl d/or file certain re	ete to th dease no	tifications an	knowledge and ur d perform correct	nderstand	d that purs	uant to NM(JCD ru	danger		
public health of	or the enviro	onment. The	acceptance	e of a C-141 repor	rt by the	NMOCD ma	rked as "Final Re	port" do	es not reli	eve the oper	ator of	liability		
should their or	perations ha	ve failed to a	dequately	investigate and re	mediate	contamination	on that pose a thre	at to gro	und water	, surface wa	ter, hur	nan health		
or the environment of the federal, state, or				tance of a C-141 r	eport do	es not relieve	the operator of r	esponsib	ility for co	ompliance w	ith any	other		
rederal, state, v	or tocal law.	s and or regul	ations.				OIL CONS	FRV	ATION	DIVISIO	N			
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Signature.			100						//					
Printed Name:	Heather E	Oolphin		•	F	Approved by I	Environmental Sp	ecialist:	the	1/10	2_			
1102/16 111														
						Approval Date			xpiration I	Jaie: W/	<u>'</u>			
E-mail Addres	s: heather.	.dolphin@me	emorialrd	l.com		Conditions of	Approval:			Attached]		
Date: 9/17/15			Phone:	832-797-1334	Reme	diation pe	r O.C.D. Rule	s & G	uideline	1				
Attach Addition	onal Sheet	s If Necessar			SUBM	IT REMED	NATION PRO	POSA	LNO		7	00-X2V		
	LATER THAN: 10/25/15													

Attachment B Annotated Aerial Imagery



Delineation Assessment Report ©

Lease Name:

NSLU #100

Case No.: 416-6564

September 25 & October 7, 2015 Date Assessed:



Attachment C Photograph Log

Photo No:

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.



Photo No: 5.

Direction Taken: West

Description: View of the impacted area..



Attachment D Analytical Results

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



Analytical Report

Prepared for:

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

Project: NSLU #100
Project Number: 416-6564
Location: Memorial

Lab Order Number: 5I29005



NELAP/TCEQ # T104704156-13-3

Report Date: 10/06/15

E Tech Environmental & Safety Solutions, Inc.

Project: NSLU #100 Project Number: 416-6564

13000 West County Road 100 Odessa TX, 79765

Project Number: 416-6564
Project Manager: Brandon Wilson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH 1 0"	5129005-01	Soil	09/25/15 10:00	09-29-2015 10:00
AH 1 2'	5129005-02	Soil	09/25/15 10:10	09-29-2015 10:00
AH 1 4'	5129005-03	Soil	09/25/15 10:20	09-29-2015 10:00
AH 2 0"	5129005-04	Soil	09/25/15 10:30	09-29-2015 10:00
AH 2 2'	5129005-05	Soil	09/25/15 10:40	09-29-2015 10:00
AH 2 4'	5129005-06	Soil	09/25/15 10:50	09-29-2015 10:00
AH 2 6'	5129005-07	Soil	09/25/15 11:00	09-29-2015 10:00

Fax: (432) 563-2213

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 1 0'' 5129005-01 (Soil)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	Environment	al Lab, l	L .P.				
General Chemistry Parameters by EPA	/ Standard Method	S							
Chloride	2590	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 80	15M							
C6-C12	ND	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	591	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	237	26.6	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		99.9 %	70-13	9	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: o-Terphenyl		118 %	70-13	9	P5J0102	09/30/15	09/30/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	828	26.6	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 1 2' 5I29005-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes					
	Pern	nian Basin I	Environme	ntal Lab,	L.P.									
General Chemistry Parameters by EPA / Standard Methods														
Chloride	2250	10.6	mg/kg dry	10	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 80)15M												
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		98.3 %	70-1	30	P5J0102	09/30/15	09/30/15	TPH 8015M						
Surrogate: o-Terphenyl		112 %	70-1	30	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						

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 1 4' 5I29005-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		ian Basin I		ntal Lah		· F ·····	,		
General Chemistry Parameters by EPA /			ziivii oiiiiici	itai Lab,	L.I .				
Chloride	537	1.06	mg/kg dry	1	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 b	oy EPA Method 80	15M							
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		95.5 %	70-1	30	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-1	30	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	

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 2 0'' 5129005-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	Environmen	tal Lab,	L.P.				
General Chemistry Parameters by EP	A / Standard Methods	5							
Chloride	1070	5.26	mg/kg dry	5	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-C3	5 by EPA Method 80	15M							
C6-C12	ND	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C12-C28	198	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
>C28-C35	34.5	26.3	mg/kg dry	1	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: 1-Chlorooctane		96.7 %	70-1.	30	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-1.	30	P5J0102	09/30/15	09/30/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	232	26.3	mg/kg dry	1	[CALC]	09/30/15	09/30/15	calc	

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 2 2' 5129005-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
	Perm	ian Basin E	Environmer	ıtal Lab,	L.P.					
General Chemistry Parameters by EPA / Standard Methods										
Chloride	6080	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 b	y EPA Method 80	15M								
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		96.8 %	70-1	30	P5J0102	09/30/15	09/30/15	TPH 8015M		
Surrogate: o-Terphenyl		112 %	70-1	30	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		

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 2 4' 5129005-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes		
	Permi	ian Basin F	Environmer	ıtal Lab,	L.P.						
General Chemistry Parameters by EPA / Standard Methods											
Chloride	4400	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 b	y EPA Method 801	15M									
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		101 %	70-1	30	P5J0102	09/30/15	09/30/15	TPH 8015M			
Surrogate: o-Terphenyl		117 %	70-1	30	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			

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

AH 2 6' 5129005-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
-	Down	ian Dagin I	`	tal Lah	T D				
	Perm	ian Basin F	Invironmen	itai Lad,	L.P.				
General Chemistry Parameters by EPA	Standard Method	s							
Chloride	2740	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 80	15M							
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		102 %	70-1	30	P5J0102	09/30/15	09/30/15	TPH 8015M	
Surrogate: o-Terphenyl		116 %	70-1	30	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	

E Tech Environmental & Safety Solutions, Inc.

Project: NSLU #100

13000 West County Road 100

Project Number: 416-6564

Odessa TX, 79765 Project Manager: Brandon Wilson

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	_			_			_		_	
Blank (P5J0101-BLK1)				Prepared &	Analyzed:	10/01/15				
% Moisture	ND	0.1	%							
Duplicate (P5J0101-DUP1)	Sou	rce: 5129003-0)3	Prepared &	Analyzed:	10/01/15				
% Moisture	8.0	0.1	%		7.0			13.3	20	
Duplicate (P5J0101-DUP2)	Sou	rce: 5I29004-0	08	Prepared & Analyzed: 10/01/15						
% Moisture	5.0	0.1	%	5.0			0.00	20		
Duplicate (P5J0101-DUP3)	Sou	rce: 5I30005-0)1	5.0 Prepared & Analyzed: 10/01/15						
% Moisture	8.0	0.1	%	8.0		0.00	20			
Duplicate (P5J0101-DUP4)	Sou	rce: 5I30011-0)4	1 2						
% Moisture	3.0	0.1	%		4.0			28.6	20	
Batch P5J0507 - *** DEFAULT PREP ***										
Blank (P5J0507-BLK1)				Prepared: 1	10/01/15 A	nalyzed: 10	0/05/15			
Chloride	ND	1.00	mg/kg wet							
LCS (P5J0507-BS1)				Prepared: 1	10/01/15 A	nalyzed: 10	0/05/15			
Chloride	104	1.00	mg/kg wet	100		104	80-120			
LCS Dup (P5J0507-BSD1)				Prepared: 1	10/01/15 A	nalyzed: 10	0/05/15			
Chloride	99.3	1.00	mg/kg wet	100		99.3	80-120	4.77	20	
Duplicate (P5J0507-DUP1)	Sou	rce: 5129004-0)3	Prepared: 1	10/01/15 A	nalyzed: 10	0/05/15			
Chloride	6060	26.6	mg/kg dry		6040			0.176	20	

Fax: (432) 563-2213

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

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

		Reporting		Spike	Source		%REC		RPD		l
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	ı

Batch P5J0507 - *** DEFAULT PREP ***

Duplicate (P5J0507-DUP2)	Source:	5129005-04	Prepared: 10/01/15 Analyzed: 10/05/15			
Chloride	1060	5.26 mg/kg dry	1070	1.14	20	

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

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

					-		0/855		222	
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1 mary c	resuit	Lillit	Units	LCVCI	Result	/OKEC	Lillino	KI D	Liiiit	110103
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)	Sour	ce: 5129004	-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)	Sour	ce: 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			

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Brandon Wilson

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

	Drew	Darron			
Report Approved By:			Date:	10/6/2015	

Brent Barron, Laboratory Director/Technical Director

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Temperature Upon Receipt:	Laboratory Comments: Sample Containers Intact? VOCs Free of Headspace? Custody seals on container(s) Custody seals on cooler(s) Sample Hand Delivered by Sampler/Client Rep. ? by Courier? UPS DI											Semivolatiles			Analyze For:	ā	1	\$ 13°		>	ne: ,
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Quantab Chloride Test Strip Analysis Sheet

Date: 9/28/2015 Client: MEMORIAL

Site: NSLU #100 Project Number: 416-6564

Technican: BB Strip Lot Number(s):

Sample ID	Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 1 0"		10	305.0	3050.00	
AH 1 1'		10	213.0	2130.00	
AH 1 2'		10	BDL	#VALUE!	
AH 1 3'		10	213.0	2130.00	
AH 1 4'		10	BDL	#VALUE!	
AH 1 5'		10	98.0	980.00	
AH 1 6'		10	98.0	980.00	
AH 2 0"		10	98.0	980.00	
AH 2 1'		10	379.0	3790.00	
AH 2 2'		10	513.0	5130.00	
AH 2 3'		10	408.0	4080.00	
AH 2 4'		10	408.0	4080.00	
AH 2 5'		10	305.0	3050.00	
AH 2 6'		10	352.0	3520.00	
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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:

Project Name: NSLU #100 Job #: 416-6564-000

> File #: 1 Matrix: SOIL

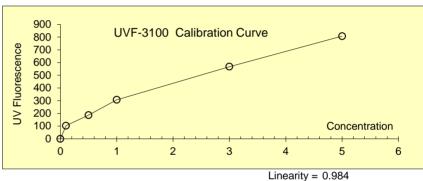
Phone: 713-588-8300 Contact: Chris Gafford Date Collected: 9/25/2015 Date Received: 9/25/2015 Date Extracted: 9/28/2015 Date Analyzed: 9/28/2015 Date Reported: 9/28/2015

Operator: Britney Beaty

Signature:

Date: 9/28/15 Time: 1600

Standard	UVF-3100 Calibration
Concentration	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



UVF Run#:	Sample ID & Description	UVF Raw Fluorescence	Test Sample Concentration	Dilution Factor	Test Result:
rtain.	Description	i idorocconoc	(ppm)	1 dotor	
7	AH 1 0"	172.20	0.431	1,000	431.0 ppm
8	AH 1 1'	-3.68	-0.004	1,000	Concentration Too Low (ND)
9	AH 1 2'	-5.75	-0.006	1,000	Concentration Too Low (ND)
10	AH 1 3'	-5.45	-0.005	1,000	Concentration Too Low (ND)
11	AH 1 4'	-4.19	-0.004	1,000	Concentration Too Low (ND)
12	AH 1 5'	21.31	0.021	1,000	Concentration Too Low (ND)
13	AH 1 6'	-5.21	-0.005	1,000	Concentration Too Low (ND)
14	AH 2 0"	99.36	0.096	1,000	Concentration Too Low (ND)
15	AH 2 1'	-4.41	-0.004	1,000	Concentration Too Low (ND)
16	AH 2 2'	-5.66	-0.005	1,000	Concentration Too Low (ND)
18	AH 2 3'	-5.03	-0.005	1,000	Concentration Too Low (ND)
19	AH 2 4'	-5.59	-0.005	1,000	Concentration Too Low (ND)
20	AH 2 5'	-5.77	-0.006	1,000	Concentration Too Low (ND)
21	AH 2 6'	-4.52	-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



Analytical Report

Prepared for:

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

Project: NSLU #100 Project Number: 416-6564 Location: Loco Hill, NM

Lab Order Number: 5J16006



NELAP/TCEQ # T104704156-13-3

Report Date: 10/26/15

E Tech Environmental & Safety Solutions, Inc.

Project: NSLU #100

13000 West County Road 100 Odessa TX, 79765 Project Number: 416-6564 Project Manager: Tim McMinn

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH1 7'	5J16006-01	Soil	10/07/15 11:30	10-15-2015 16:40
AH1 8'	5J16006-02	Soil	10/07/15 11:40	10-15-2015 16:40
AH1 9'	5J16006-03	Soil	10/07/15 11:50	10-15-2015 16:40
AH2 7'	5J16006-05	Soil	10/07/15 11:35	10-15-2015 16:40
AH2 8'	5J16006-06	Soil	10/07/15 11:45	10-15-2015 16:40

Fax: (432) 563-2213

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

AH1 7' 5J16006-01 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	8250	28.4 mg/kg dry	25	P5J2005	10/20/15	10/20/15	EPA 300.0
% Moisture	12.0	0.1 %	1	P5J1610	10/16/15	10/16/15	% calculation

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

AH1 8' 5J16006-02 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	580	1.16 mg/kg dry	1	P5J2005	10/20/15	10/20/15	EPA 300.0
% Moisture	14.0	0.1 %	1	P5J1610	10/16/15	10/16/15	% calculation

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

AH1 9' 5J16006-03 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	544	1.11 mg/kg dry	1	P5J2005	10/20/15	10/20/15	EPA 300.0
% Moisture	10.0	0.1 %	1	P5J1610	10/16/15	10/16/15	% calculation

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

AH2 7' 5J16006-05 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	184	1.14 mg/kg dry	1	P5J2005	10/20/15	10/20/15	EPA 300.0
% Moisture	12.0	0.1 %	1	P5J1610	10/16/15	10/16/15	% calculation

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

AH2 8' 5J16006-06 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	245	1.10 mg/kg dry	1	P5J2103	10/20/15	10/21/15	EPA 300.0
% Moisture	9.0	0.1 %	1	P5J1610	10/16/15	10/16/15	% calculation

E Tech Environmental & Safety Solutions, Inc.

Project Number: 416-6564

13000 West County Road 100 Odessa TX, 79765 Project Number: 416-6564 Project Manager: Tim McMinn

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
Maryo	Result	Limit	Units	LCVCI	Result	70KEC	Lillius	KI D	Liiiit	Notes
Batch P5J1610 - % Solids										
Blank (P5J1610-BLK1)				Prepared &	Analyzed:	10/16/15				
% Moisture	ND	0.1	%							
Duplicate (P5J1610-DUP1)	Sour	ce: 5J16001-	01	Prepared &	Analyzed:	10/16/15				
% Moisture	2.0	0.1	%		2.0			0.00	20	
Duplicate (P5J1610-DUP2)	Source: 5J16005-07 Pro				Analyzed:	10/16/15				
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P5J1610-DUP3)	Sour	Prepared &	Analyzed:	10/16/15						
% Moisture	4.0	-	4.0			0.00	20			
Batch P5J2005 - *** DEFAULT PREP ***										
Blank (P5J2005-BLK1)				Prepared &	Analyzed:	10/20/15				
Chloride	ND	1.00	mg/kg wet							
LCS (P5J2005-BS1)				Prepared &	Analyzed:	10/20/15				
Chloride	106	1.00	mg/kg wet	100	1111117201	106	80-120			
LCS Dup (P5J2005-BSD1)				Prepared &	Analyzed:	10/20/15				
Chloride	107	1.00	mg/kg wet	100	Tinary Zea.	107	80-120	0.610	20	
Duplicate (P5J2005-DUP1)	Sour	ce: 5J16011-	N1	Prepared &	Analyzed:	10/20/15				
Chloride	414		mg/kg dry	1 repared &	413	10/20/13		0.143	20	
D. H				D 10		10/20/15				
Duplicate (P5J2005-DUP2)		ce: 5J16010-		Prepared &		10/20/15				
Chloride	10400	28.4	mg/kg dry		10400			0.737	20	

Fax: (432) 563-2213

E Tech Environmental & Safety Solutions, Inc.

Project: NSLU #100 Project Number: 416-6564

13000 West County Road 100 Odessa TX, 79765

Project Number: 416-6564
Project Manager: Tim McMinn

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 Limits	RPD	RPD Limit	Notes
Batch P5J2005 - *** DEFAULT PREP ***										
Matrix Spike (P5J2005-MS1)	Sou	Source: 5J16011-01 Prepared & Analyzed: 10/20/15								
Chloride	663	5.38	mg/kg dry	269	413	93.0	80-120			
Batch P5J2103 - *** DEFAULT PREP ***										
Blank (P5J2103-BLK1)				Prepared: 1	10/20/15	Analyzed:	10/21/15			
Chloride	ND	1.00	mg/kg wet							
LCS (P5J2103-BS1)				Prepared: 1	10/20/15	Analyzed:	10/21/15			
Chloride	100	1.00	mg/kg wet	100		100	80-120	·		
LCS Dup (P5J2103-BSD1)				Prepared: 1	10/20/15	Analyzed:	10/21/15			
Chloride	101	1.00	mg/kg wet	100		101	80-120	1.19	20	
Duplicate (P5J2103-DUP1)	Sou	rce: 5J16011	-02	Prepared: 1	10/20/15	Analyzed:	10/21/15			
Chloride	440	1.09	mg/kg dry		436			1.12	20	
Duplicate (P5J2103-DUP2)					10/20/15	Analyzed:	10/21/15			
Chloride	2390	6.10	mg/kg dry		2370			0.833	20	
Matrix Spike (P5J2103-MS1)	Sou	rce: 5J16011	-02	Prepared: 1	10/20/15	Analyzed:	10/21/15			
Chloride	515	1.09	mg/kg dry	67.9	436	117	80-120			

Fax: (432) 563-2213

13000 West County Road 100 Project Number: 416-6564
Odessa TX, 79765 Project Manager: Tim McMinn

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

	Bren Barron		
Report Approved By:		Date:	10/26/2015

Brent Barron, Laboratory Director/Technical Director

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