

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	ESDU #2					
Company:	SM Energy Company					
Section, Township and Range	Section 13	T 18S	R 31E			
Lease Number:	API-30-015-25847					
County:	Eddy County					
GPS:	32.7411437° N			103.815492° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From intersection of HWY 529 and CR 126A (Maljamar Rd) in rural Eddy County, Travel south on 126A for approximately 4.3 miles, turn WEST and continue for approximately 1.10 mile until road turns SOUTH and continue for approximately 0.6 miles, turn NORTH onto lease road for 0.20 miles to T in road, turn EAST and continue for 0.10 miles to location					

Release Data:

Date Released:	1/29/2015
Type Release:	Produced Water and Crude Oil
Source of Contamination:	Polished rod liner leak
Fluid Released:	25.3 bbls water / 4.5 bbls oil
Fluids Recovered:	16.2 bbls water / 2.9 bbls oil

Official Communication:

Name:	Tejay Simpson	Ike Tavaréz
Company:	SM Energy Company	Tetra Tech
Address:	6301 Holiday Hoill Road	4000 N. Big Spring
		Ste 401
City:	Midland Texas, 79707	Midland, Texas
Phone number:	(432) 212-3408	(432) 687-8110
Fax:		
Email:	tsimpson@sm-energy.com	Ike.Tavaréz@tetratech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		0

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH

June 1, 2015

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

**Re: Work Plan for SM Energy Company
ESDU #2 Well
Section 13, Township 18S, Range 31E
Eddy County, New Mexico**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by SM Energy Company (SM Energy) to assess a spill at the EDSU #2, located in Section 13, Township 18S, Range 31E, Eddy County, New Mexico (Site). The spill site coordinates are N 32.741437°, W -103.815492°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on January 29, 2015. The spill at the rod liner released approximately 25.3 barrels of produced water and 4.5 barrels of oil. SM Energy was able to recover approximately 16.2 barrels of produced water and 2.9 barrels of oil with a vacuum truck. To alleviate the problem, SM Energy repaired the rods that caused the problem. The spill impacted an area on the pad approximately 130' x 135'. The spill areas are shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

Groundwater

No wells were located listed in Section 13. According to the Geology and Groundwater Resources of Eddy County, NM (Report 3) and the New Mexico State Engineers Well Reports, all wells listed in adjacent Sections showing a depth to water greater than 300' below surface. In addition, the NMOCD groundwater map showed groundwater depths between 250' and 300' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

4000 North Big Spring, Ste 401 Midland, TX 79705

Tel 432.682.4559 **Fax** 432.682.3946 www.tetratech.com



Regulatory

A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On February 16, 2015, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted areas. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, auger hole (AH-3) showed an elevated concentration of TPH and total BTEX at a depth of 0'-1' below surface of 10,970 mg/kg and 122 mg/kg, respectively. The TPH and BTEX concentrations declined with depth to below the RRALs at 1.0'-1.5' below surface. Auger holes (AH-1, AH-2, AH-4, AH-5, AH-6, and AH-7) were below the RRAL's for TPH and BTEX.

The samples collected in the area of auger holes (AH-1 and AH-6) did not show a significant chloride impact to the subsurface soils. However, samples collected in the areas of auger holes (AH-2 and AH-4) showed a shallow chloride impact with concentrations of 1,660 mg/kg and 2,900 mg/kg at depths of 0'-1.5' below surface, which then declined with depth to concentrations of 293 mg/kg and 147 mg/kg at 3.0'-3.5'. The area of auger hole (AH-3) showed a deeper chloride impact to the soils with a chloride high of 20,400 mg/kg at 5.0'-5.5' below surface, which then declined with depth to 147 mg/kg at 9.0'-9.5' below surface.

In addition, auger hole (AH-5) also showed a shallow chloride impact at 0'-1.0' of 2,700 mg/kg and auger hole (AH-7) did not show a significant impact at the surface, both areas showed chloride concentrations that increased with depth to 2,940 mg/kg at 6.0'-6.5' and 2,100 mg/kg at 4.0'-4.5' below surface, respectively. Deeper samples were not collected in these areas due to dense clay formation, and these areas were not vertically defined.



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According to the Application for Permit to Drill, Exhibit D, approved in December 1987, a closed reserve pit was previously located in the areas of auger holes (AH-4, AH-5, AH-6 and possibly AH-7). Based on this information, it appears that the deeper chloride impact encountered in these areas appear to be from the reserve pit. The Application for Permit to Drill is enclosed in Appendix D.

Work Plan

SM Energy proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of auger hole (AH-2) will be surface scraped to remove the impacted material at the surface. The area of auger hole (AH-5) will be excavated to a depth of approximately 1.0' below surface. The areas of auger hole (AH-4 and AH-3) will be excavated to a depth of 2.0' and 3.0', respectively. Once excavated to the appropriate depths, the area of auger hole (AH-3) will be lined with a 40 mil plastic liner to cap the remaining impact and prevent vertical migration. The areas will then be backfilled with clean material and brought to surface grade. The excavated soil will be transported to a proper disposal facility.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. Any remaining impact not accessible to be removed will be deferred until abandonment.

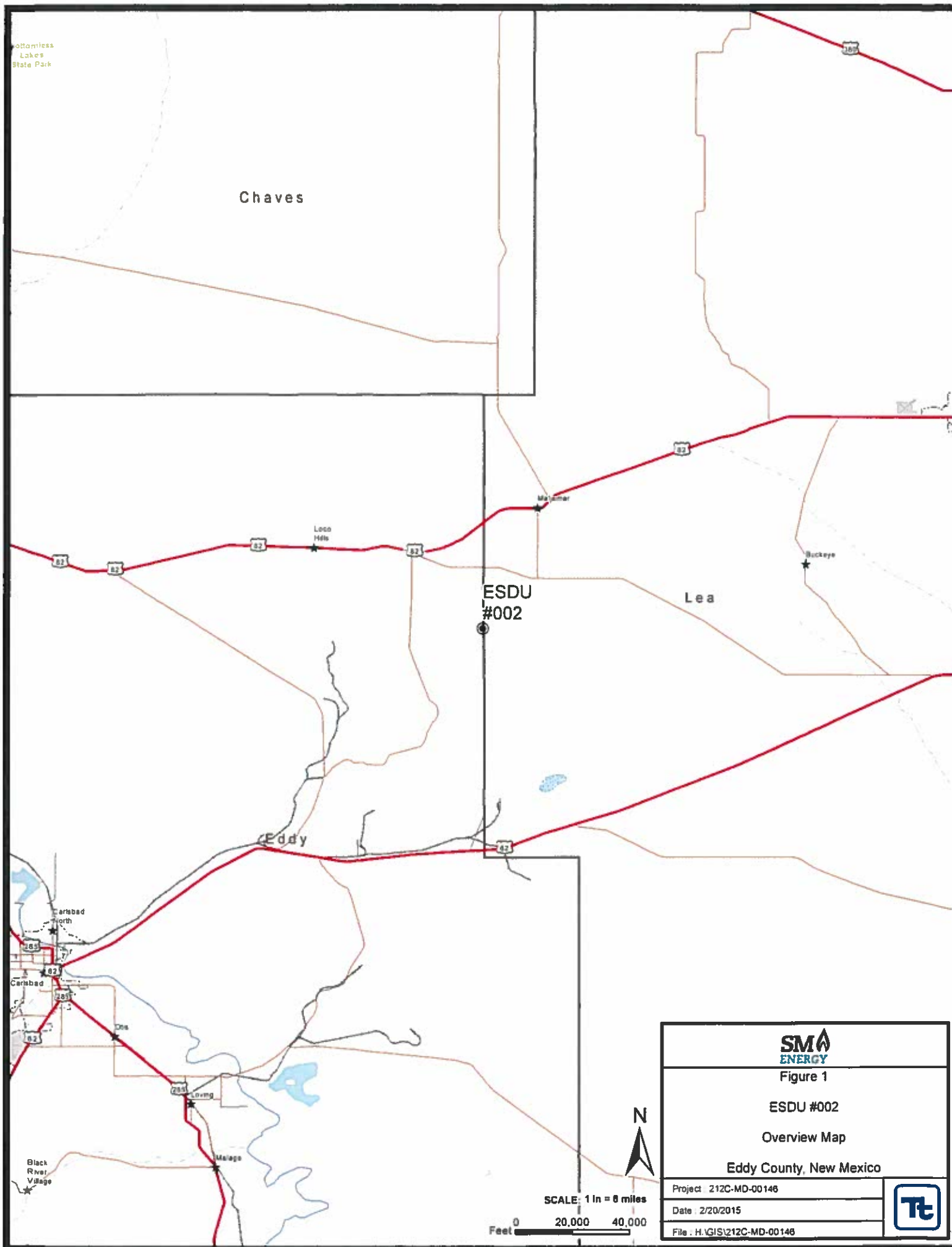
Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH, Inc.

Clair Gonzales,
Staff Geologist

cc: Tejay Simpson – SM Energy
Jim Amos - BLM

Figures



SMA
ENERGY

Figure 1

ESDU #002

Overview Map

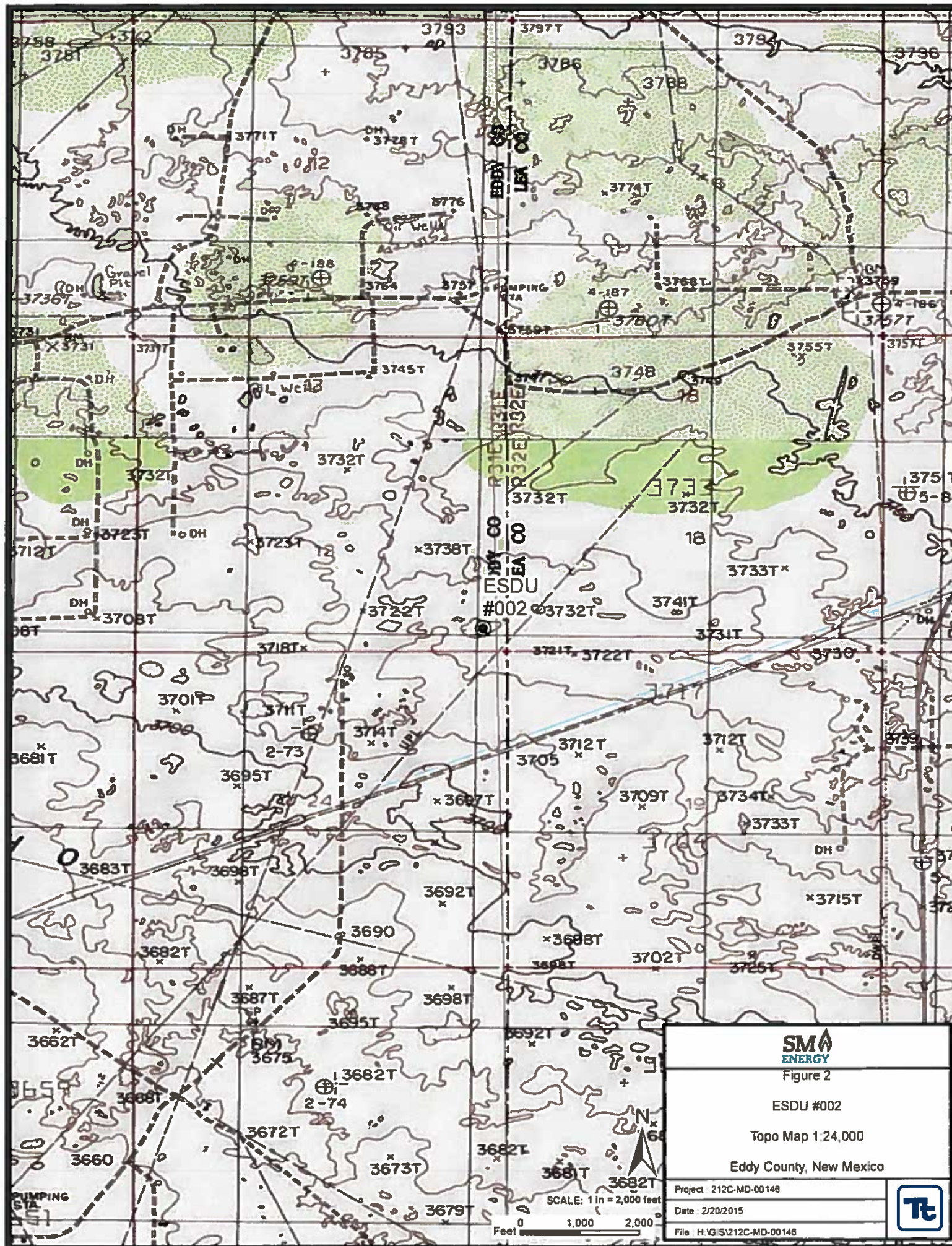
Eddy County, New Mexico

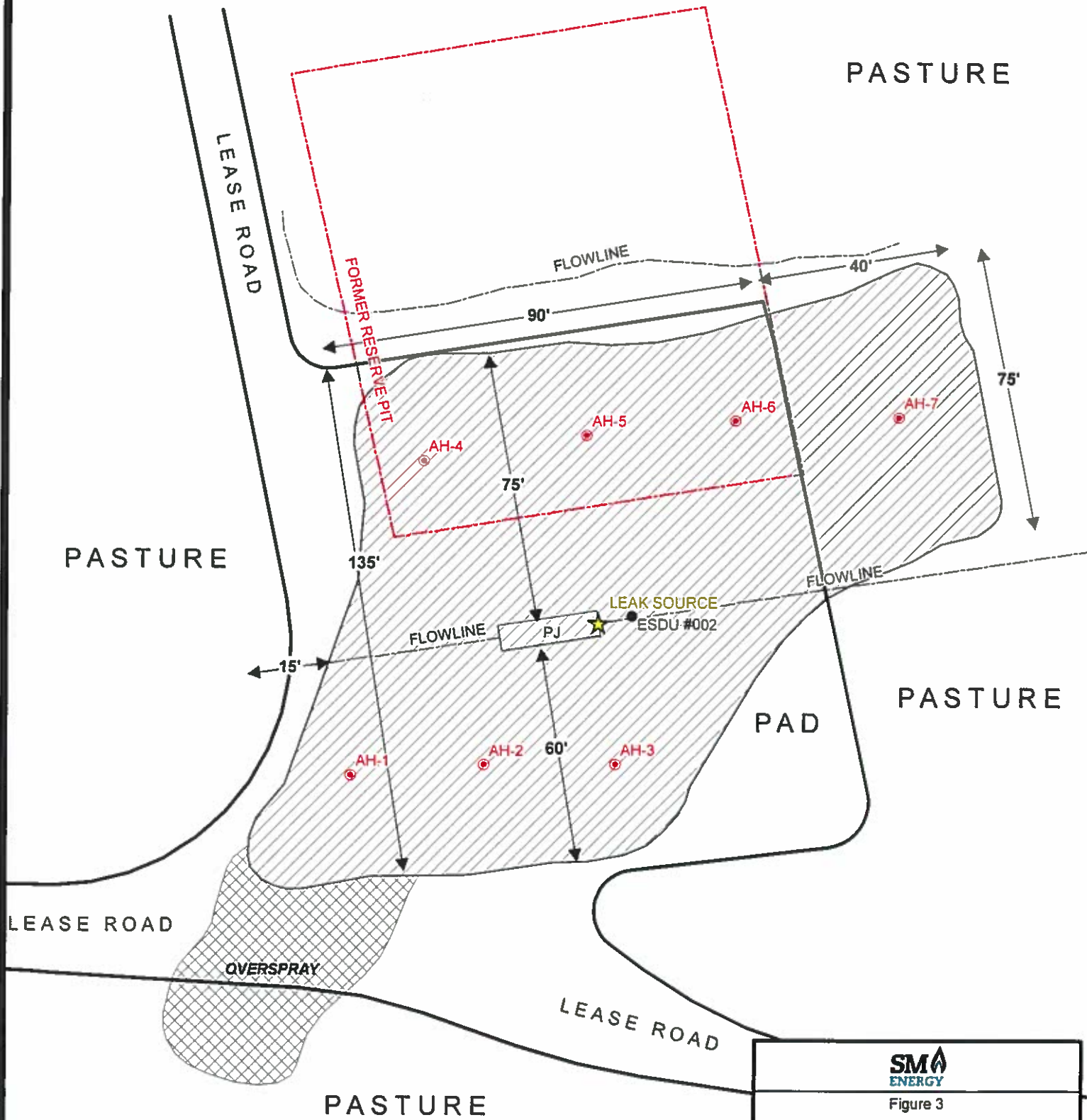
Project: 212C-MD-00146

Date: 2/20/2015

File: H:\GIS\212C-MD-00146







EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ★ LEAK SOURCE
- SPILL AREA



SCALE: 1 IN = 33 FEET

Feet 0 10 20



Figure 3

ESDU #002

Spill Assessment Map

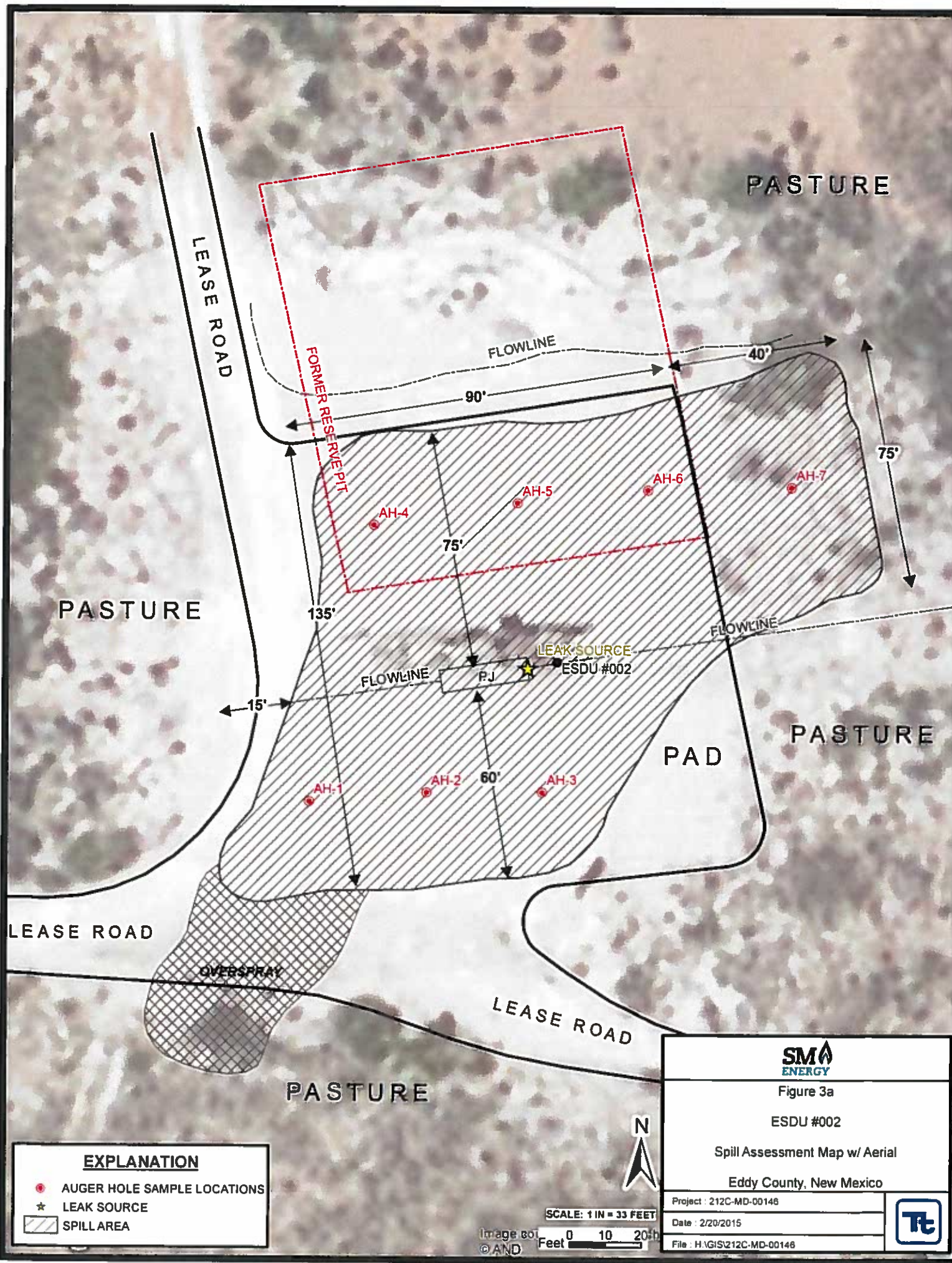
Eddy County, New Mexico

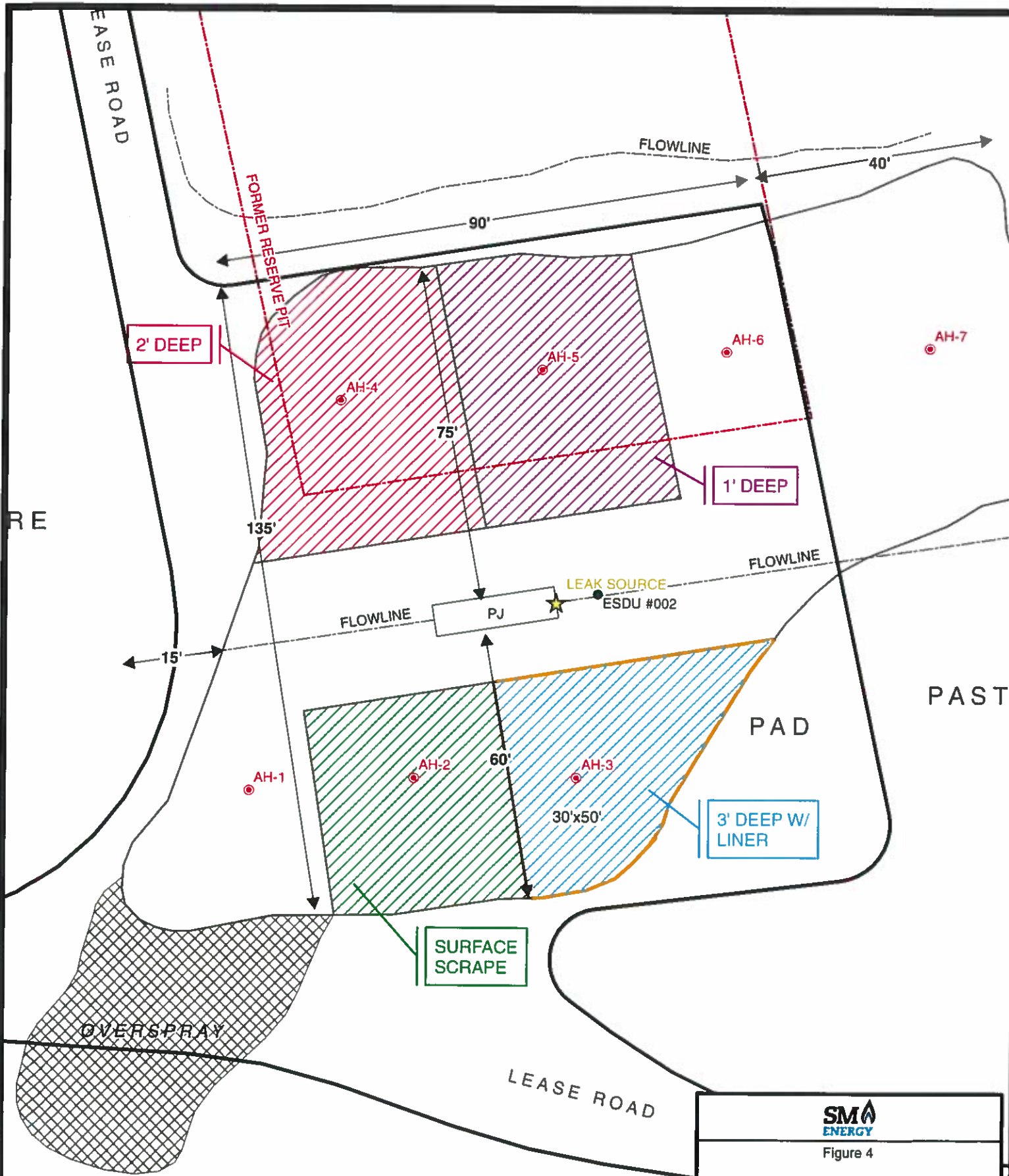
Project : 212C-MD-00148

Date : 2/20/2015

File : H:\GIS\212C-MD-00148







EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ★ LEAK SOURCE
- ▨ EXCAVATED AREAS

SCALE: 1 IN = 25 FEET

Feet 0 10 20



Figure 4

ESDU #002

Proposed Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 212C-MD-00146

Date : 05/06/2015

File : H:\GIS\212C-MD-00146



Tables

Table 1
SM Energy
EDSU #2
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	2/16/2015	0-1	X		<4.00	75.3	75.3	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	636
	"	1-1.5	X		-	-	-	-	-	-	-	-	244
	"	2-2.5	X		-	-	-	-	-	-	-	-	29.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	147
AH-2	2/16/2015	0-1	X		25.0	359	384	<0.0400	0.0425	0.0829	0.469	0.594	1,660
	"	1-1.5	X		-	-	-	-	-	-	-	-	68.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	244
	"	3-3.5	X		-	-	-	-	-	-	-	-	293
AH-3	2/16/2015	0-1	X		2,990	7,980	10,970	2.61	30.3	17.7	71.7	122	2,250
	"	1-1.5	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,320
	"	2-2.5	X		-	-	-	-	-	-	-	-	10,400
	"	3-3.5	X		-	-	-	-	-	-	-	-	12,800
	"	4-4.5	X		-	-	-	-	-	-	-	-	6,000
	"	5-5.5	X		-	-	-	-	-	-	-	-	20,400
	"	6-6.5	X		-	-	-	-	-	-	-	-	8,840
	"	7-7.5	X		-	-	-	-	-	-	-	-	1,230
	"	8-8.5	X		-	-	-	-	-	-	-	-	295
	"	9-9.5	X		-	-	-	-	-	-	-	-	147
AH-4	2/16/2015	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,560
	"	1-1.5	X		-	-	-	-	-	-	-	-	2,900
	"	2-2.5	X		-	-	-	-	-	-	-	-	69.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	147

Table 1
SM Energy
EDSU #2
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-5	2/16/2015	0-1	X		<8.00	326	326	<0.0400	<0.0400	<0.0400	0.145	0.145	2,700
	"	1-1.5	X		-	-	-	-	-	-	-	-	490
	"	2-2.5	X		-	-	-	-	-	-	-	-	588
	"	3-3.5	X		-	-	-	-	-	-	-	-	588
	"	4-4.5	X		-	-	-	-	-	-	-	-	245
	"	5-5.5	X		-	-	-	-	-	-	-	-	1,760
	"	6-6.5	X		-	-	-	-	-	-	-	-	2,940
AH-6	2/16/2015	0-1	X		<4.00	532	532	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	245
	"	1-1.5	X		-	-	-	-	-	-	-	-	29.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	20.0
AH-7	2/16/2015	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	39.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	29.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	29.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	440
	"	4-4.5	X		-	-	-	-	-	-	-	-	2,100

(-)

Not Analyzed

Proposed Excavation Depth

Proposed Liner Depth

Photos

SM Energy Company
EDSU #2
Eddy County, New Mexico



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View East – Area of AH-1, AH-2, and AH-3



View Northwest – Area of AH-4, AH-5, and AH-6

SM Energy Company
EDSU #2
Eddy County, New Mexico



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View East – Area of AH-7

Appendix A

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

NM OIL CONSERVATION

ARTESIA DISTRICT

Form C-141
Revised August 8, 2011

JAN 31 2015

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

RECEIVED

Release Notification and Corrective Action

WAB1503431252

Name of Company SM Energy 154903		OPERATOR	☒ Initial Report ☐ Final Report
Address 6301 Holiday Hill Road, Midland, TX 79707		Contact Tejay Simpson	
Facility Name ESDU No. 02		Telephone No. 432-212-3408	
		Facility Type Production Well Location - Rod Pump	
Surface Owner BLM	Mineral Owner	API No. 30-015-25847	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	13	18S	31E	330	South	330	East	Eddy

Latitude 32.741143 Longitude -103.815492

NATURE OF RELEASE

Type of Release Produced Water and Oil	Volume of Release 25.3 produced water / 4.5 oil	Volume Recovered 16.2 water / 2.9 oil
Source of Release Polished rod liner leak	Date and Hour of Occurrence 1/29/2015 approx 3:00 AM	Date and Hour of Discovery 01/29/2015 @ 7:00 AM
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? Jim Amos @ BLM 1/30/15 @ 4:50 PM Central Time Laura Tulk @ NMOCD 1/30/15 @ 5:00 PM Central Time	
By Whom? Tejay Simpson	Date and Hour 1/30/15 @ 4:50 PM Central Time	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.* N/A

Describe Cause of Problem and Remedial Action Taken.*

Upon arrival to the well location at 7:00 AM on 01/29/15 while making routine rounds, the lease operator discovered water and oil on the well pad. He found the polished rod liner had slipped and was stationary in the stuffing box while the polished rod was traveling throughout the stroke. Fluid was spraying out from between the polished rod and liner top while the unit was stroking. The lease operator shut down the pumping unit, closed in the well and tightened up the polished rod liner stopping the release of fluid.

A well pull was begun on the well on 1/23/15 and completed on 1/26/15. The well quit pumping and the crew returned to the well on the 28th and re-spaced the rods. The well was monitored the remainder of the day intermittently by the lease operator and the WSM. The well was last checked at approximately 5:30 PM by the WSM.

Estimate Spill Volume: 25.3 water / 4.5 oil
Recovered: 16.2 water / 2.9 oil
Estimated Clean up cost: \$2,000

Describe Area Affected and Cleanup Action Taken.*

Spill was contained to the well location. Vacuum truck was dispatched to the location and picked up the free liquid. Backhoe was dispatched the following day and removed the contaminated soil.

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: Tejay Simpson 1/31/15
Printed Name: Tejay Simpson

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

APPROVED BY SPECIALIST
FOR WATERSHED PATTERSON R-2777

Title: District Production Superintendent	Approval Date: 2/3/15	Expiration Date: N/A
E-mail Address: tsimpson@sm-energy.com	Conditions of Approval:	Attached ☐
Date: 01/31/2015	Phone: 432-212-3408	Remediation per O.C.D. Rules & Guidelines
* Attach Additional Sheets If Necessary		
SUBMIT REMEDIATION PROPOSAL NO		
LATER THAN: 3/3/15		

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
SM Energy - ESDU No. 2, Eddy County, New Mexico

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	80	21	22	23
30	29	28	27	26	25
31	32	33	34	35	36

17 South 31 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

17 South 32 East					
6	5	4	82	3	2
Maljamar					
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	180	29	28	27	26
31	dry	32	33	34	35

18 South 30 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	44
30	29	28	27	26	25
31	32	33	34	35	36

18 South 31 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	98	14
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 32 East					
6	5	4	65	3	2
7	460	8	9	10	11
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 30 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 31 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 32 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

- 88** New Mexico State Engineers Well Reports
- 105** USGS Well Reports
- 90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
- Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34** NMOCD - Groundwater Data

Appendix C

Summary Report

Ike Tavarez
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: February 27, 2015

Work Order: 15021802



Project Location: Eddy Co, NM
Project Name: SM Energy -EDSU #2
Project Number: 212C-MD-00146

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
387120	AH-1 0-1	soil	2015-02-16	00:00	2015-02-17
387121	AH-1 1-1.5	soil	2015-02-16	00:00	2015-02-17
387122	AH-1 2-2.5	soil	2015-02-16	00:00	2015-02-17
387123	AH-1 3-3.5	soil	2015-02-16	00:00	2015-02-17
387124	AH-2 0-1	soil	2015-02-16	00:00	2015-02-17
387125	AH-2 1-1.5	soil	2015-02-16	00:00	2015-02-17
387126	AH-2 2-2.5	soil	2015-02-16	00:00	2015-02-17
387127	AH-2 3-3.5	soil	2015-02-16	00:00	2015-02-17
387128	AH-3 0-1	soil	2015-02-16	00:00	2015-02-17
387129	AH-3 1-1.5	soil	2015-02-16	00:00	2015-02-17
387130	AH-3 2-2.5	soil	2015-02-16	00:00	2015-02-17
387131	AH-3 3-3.5	soil	2015-02-16	00:00	2015-02-17
387132	AH-3 4-4.5	soil	2015-02-16	00:00	2015-02-17
387133	AH-3 5-5.5	soil	2015-02-16	00:00	2015-02-17
387134	AH-3 6-6.5	soil	2015-02-16	00:00	2015-02-17
387135	AH-3 7-7.5	soil	2015-02-16	00:00	2015-02-17
387136	AH-3 8-8.5	soil	2015-02-16	00:00	2015-02-17
387137	AH-3 9-9.5	soil	2015-02-16	00:00	2015-02-17
387138	AH-4 0-1	soil	2015-02-16	00:00	2015-02-17
387139	AH-4 1-1.5	soil	2015-02-16	00:00	2015-02-17
387140	AH-4 2-2.5	soil	2015-02-16	00:00	2015-02-17
387141	AH-4 3-3.5	soil	2015-02-16	00:00	2015-02-17
387142	AH-5 0-1	soil	2015-02-16	00:00	2015-02-17
387143	AH-5 1-1.5	soil	2015-02-16	00:00	2015-02-17
387144	AH-5 2-2.5	soil	2015-02-16	00:00	2015-02-17
387145	AH-5 3-3.5	soil	2015-02-16	00:00	2015-02-17
387146	AH-5 4-4.5	soil	2015-02-16	00:00	2015-02-17
387147	AH-5 5-5.5	soil	2015-02-16	00:00	2015-02-17
387148	AH-5 6-6.5	soil	2015-02-16	00:00	2015-02-17
387149	AH-6 0-1	soil	2015-02-16	00:00	2015-02-17

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

This is only a summary. Please, refer to the complete report package for quality control data.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
387150	AH-6 1-1.5	soil	2015-02-16	00:00	2015-02-17
387151	AH-6 2-2.5	soil	2015-02-16	00:00	2015-02-17
387152	AH-6 3-3.5	soil	2015-02-16	00:00	2015-02-17
387153	AH-7 0-1	soil	2015-02-16	00:00	2015-02-17
387154	AH-7 1-1.5	soil	2015-02-16	00:00	2015-02-17
387155	AH-7 2-2.5	soil	2015-02-16	00:00	2015-02-17
387156	AH-7 3-3.5	soil	2015-02-16	00:00	2015-02-17
387157	AH-7 4-4.5	soil	2015-02-16	00:00	2015-02-17

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
387120 - AH-1 0-1	<0.0200	<0.0200	<0.0200	<0.0200	75.3 Qr	<4.00
387124 - AH-2 0-1	<0.0400	0.0425	0.0829	0.469	359 Qr	25.0
387128 - AH-3 0-1	2.61	30.3	17.7	71.7	7980 Qr	2990
387129 - AH-3 1-1.5	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qr	<4.00
387138 - AH-4 0-1	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qr	<4.00
387142 - AH-5 0-1	<0.0400 ¹	<0.0400	<0.0400	0.145	326 Qr	<8.00 ²
387149 - AH-6 0-1	<0.0200	<0.0200	<0.0200	<0.0200	532 Qr	<4.00
387153 - AH-7 0-1	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qr	<4.00

Sample: 387120 - AH-1 0-1

Param	Flag	Result	Units	RL
Chloride		636	mg/Kg	5

Sample: 387121 - AH-1 1-1.5

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	5

Sample: 387122 - AH-1 2-2.5

Param	Flag	Result	Units	RL
Chloride		29.0	mg/Kg	5

Sample: 387123 - AH-1 3-3.5

Param	Flag	Result	Units	RL
Chloride		147	mg/Kg	5

¹Dilution due to surfactants.²Dilution due to surfactants.

Report Date: February 27, 2015

Work Order: 15021802

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Sample: 387124 - AH-2 0-1

Param	Flag	Result	Units	RL
Chloride		1660	mg/Kg	5

Sample: 387125 - AH-2 1-1.5

Param	Flag	Result	Units	RL
Chloride		68.0	mg/Kg	5

Sample: 387126 - AH-2 2-2.5

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	5

Sample: 387127 - AH-2 3-3.5

Param	Flag	Result	Units	RL
Chloride		293	mg/Kg	5

Sample: 387128 - AH-3 0-1

Param	Flag	Result	Units	RL
Chloride		2250	mg/Kg	5

Sample: 387129 - AH-3 1-1.5

Param	Flag	Result	Units	RL
Chloride		3320	mg/Kg	5

Sample: 387130 - AH-3 2-2.5

Param	Flag	Result	Units	RL
Chloride		10400	mg/Kg	5

Sample: 387131 - AH-3 3-3.5

Param	Flag	Result	Units	RL
Chloride		12800	mg/Kg	5

Report Date: February 27, 2015

Work Order: 15021802

Page Number: 4 of 7

Sample: 387132 - AH-3 4 4-5

Param	Flag	Result	Units	RL
Chloride		6000	mg/Kg	5

Sample: 387133 - AH-3 5-5.5

Param	Flag	Result	Units	RL
Chloride		20400	mg/Kg	5

Sample: 387134 - AH-3 6-6.5

Param	Flag	Result	Units	RL
Chloride		8840	mg/Kg	5

Sample: 387135 - AH-3 7-7.5

Param	Flag	Result	Units	RL
Chloride		1230	mg/Kg	5

Sample: 387136 - AH-3 8-8.5

Param	Flag	Result	Units	RL
Chloride		295	mg/Kg	5

Sample: 387137 - AH-3 9-9.5

Param	Flag	Result	Units	RL
Chloride		147	mg/Kg	5

Sample: 387138 - AH-4 0-1

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	5

Sample: 387139 - AH-4 1-1.5

Param	Flag	Result	Units	RL
Chloride		2900	mg/Kg	5

Report Date: February 27, 2015

Work Order: 15021802

Page Number: 5 of 7

Sample: 387140 - AH-4 2-2.5

Param	Flag	Result	Units	RL
Chloride		69.0	mg/Kg	5

Sample: 387141 - AH-4 3-3.5

Param	Flag	Result	Units	RL
Chloride		147	mg/Kg	5

Sample: 387142 - AH-5 0-1

Param	Flag	Result	Units	RL
Chloride		2700	mg/Kg	5

Sample: 387143 - AH-5 1-1.5

Param	Flag	Result	Units	RL
Chloride		490	mg/Kg	5

Sample: 387144 - AH-5 2-2.5

Param	Flag	Result	Units	RL
Chloride		588	mg/Kg	5

Sample: 387145 - AH-5 3-3.5

Param	Flag	Result	Units	RL
Chloride		588	mg/Kg	5

Sample: 387146 - AH-5 4-4.5

Param	Flag	Result	Units	RL
Chloride		245	mg/Kg	5

Sample: 387147 - AH-5 5-5.5

Param	Flag	Result	Units	RL
Chloride		1760	mg/Kg	5

Report Date: February 27, 2015

Work Order: 15021802

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Sample: 387148 - AH-5 6-6.5

Param	Flag	Result	Units	RL
Chloride		2940	mg/Kg	5

Sample: 387149 - AH-6 0-1

Param	Flag	Result	Units	RL
Chloride		245	mg/Kg	5

Sample: 387150 - AH-6 1-1.5

Param	Flag	Result	Units	RL
Chloride		29.0	mg/Kg	5

Sample: 387151 - AH-6 2-2.5

Param	Flag	Result	Units	RL
Chloride		20.0	mg/Kg	5

Sample: 387152 - AH-6 3-3.5

Param	Flag	Result	Units	RL
Chloride		20.0	mg/Kg	5

Sample: 387153 - AH-7 0-1

Param	Flag	Result	Units	RL
Chloride		39.0	mg/Kg	5

Sample: 387154 - AH-7 1-1.5

Param	Flag	Result	Units	RL
Chloride		29.0	mg/Kg	5

Sample: 387155 - AH-7 2-2.5

Param	Flag	Result	Units	RL
Chloride		29.0	mg/Kg	5

Report Date: February 27, 2015

Work Order: 15021802

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Sample: 387156 - AH-7 3-3.5

Param	Flag	Result	Units	RL
Chloride		440	mg/Kg	5

Sample: 387157 - AH-7 4-4.5

Param	Flag	Result	Units	RL
Chloride		2100	mg/Kg	5

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**1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946**

8015 M.D. TX:100
8270
A Metals Ag As Ba C
P Metals Ag As Ba C
Semi Volatiles
Volatiles
AS Vol. 8240/8260/624
AS Semi. Vol. 8270/625
8080/608
ma Spec.
Bela (Al)
(Asbestos)
r Anions/Cations, pH, 7

[illegible]

RELINQUISHED BY: (Signature) <u>[Signature]</u>	Date: <u>2-17-18</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	Date: <u>2-17-18</u>	SAMPLED BY: (Print & Initial) <u>RON GARCIA / WAT McDONALD</u>	Date: _____
RELINQUISHED BY: (Signature) _____	Date: _____	RECEIVED BY: (Signature) _____	Date: _____	SAMPLE SHIPPED BY: (Circle) FEDEX <u> </u> BUS <u> </u> UPS <u> </u>	Time: _____
RELINQUISHED BY: (Signature) _____	Date: _____	RECEIVED BY: (Signature) _____	Date: _____	WAND DELIVERED <u> </u>	AIRBILL #: _____
RELINQUISHED BY: (Signature) _____	Date: _____	RECEIVED BY: (Signature) _____	Date: _____	TETRA TECH CONTACT PERSON: <u>He Tavares</u>	OTHER: _____
RECEIVING LABORATORY: <u>1746</u>	ADDRESS: _____	RECEIVED BY: (Signature) _____	DATE: _____	TIME: _____	Results by: _____
CITY: <u>Madison</u>	STATE: _____	ZIP: _____	PHONE: _____	DATE: _____	RUSH Charges Authorized: _____
CONTACT: _____	STATE: _____	ZIP: _____	PHONE: _____	DATE: _____	Yes _____ No _____

SAMPLE CONDITION WHEN RECEIVED:	REMARKS:
	

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Analysis Request of Chain of Custody Record

PAGE: 4

ANALYSIS REQUEST
(Circle or Specify Method No.)



TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: SM Energy		SITE MANAGER: Ike Tavaraz	
PROJECT NO.: 212-ma-00146		PROJECT NAME: SM Energy - ESDU #2	
LAB I.D. NUMBER		SAMPLE IDENTIFICATION	
DATE	TIME	MATRIX	COMP
2016			
387150	2/16	S	X AH 6 (1-1.5)
151			(2-2.5)
152			(3-3.5)
153			AH 7 (0-1)
154			(1-1.5)
155			(2-2.5)
156			(3-3.5)
157			(4-4.5)
RECEIVING LABORATORY: CITY: Midland STATE: TX ZIP: 79701		RECEIVED BY: (Signature) DATE: 2-17-15 TIME: 14:50	
CONTACT: NAME: PHONE: DATE: TIME:		RECEIVED BY: (Signature) DATE: 2-17-15 TIME: 14:50	
SAMPLE CONDITION WHEN RECEIVED:		RECEIVED BY: (Signature) DATE: 2-17-15 TIME: 14:50	
REMARKS:		RECEIVED BY: (Signature) DATE: 2-17-15 TIME: 14:50	

NUMBER OF CONTAINERS	PREPARED (Y/N)	PRESERVATIVE METHOD	BTX 80218	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Post. 808/608	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
1	N	ICE																
		HNO3																
		HCL																
		NONE																

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Analysis Request of Chain of Custody Record

PAGE: 1 of 4



TETRA TECH

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: <u>SM Energy</u>		SITE MANAGER: <u>Ike Tavaroz</u>		PRESERVATIVE METHOD:		ANALYSIS REQUEST	
PROJECT NO.: <u>22C-MO-00146</u>		PROJECT NAME: <u>SM Energy - EDDU #2</u>		SAMPLE IDENTIFICATION: <u>Eddy G. NM</u>		☒ HCL ☐ HNO3 ☐ ICE ☐ NONE	
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	NUMBER OF CONTAINERS	☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
387120	2/16		S			1	☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
121							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
122							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
123							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
124							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
125							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
126							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
127							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
128							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
129							☒ PAH 8270 ☒ TPH 8015 MOD ☒ BTEX 8020
RELINQUISHED BY: (Signature) <u>[Signature]</u>		RECEIVED BY: (Signature) <u>[Signature]</u>		DATE: <u>2-17-15</u>		SAMPLED BY: (Print & Initial) <u>Adria Garcia / Matt Denici</u> SAMPLE SHIPPED BY: (Circle) AIRBILL #: OTHER:	
RELINQUISHED BY: (Signature) <u>[Signature]</u>		RECEIVED BY: (Signature) <u>[Signature]</u>		DATE: <u>2-19-15</u>		RESULTS BY: RUSH CHARGES AUTHORIZED:	
RELINQUISHED BY: (Signature) <u>[Signature]</u>		RECEIVED BY: (Signature) <u>[Signature]</u>		DATE: <u>2-19-15</u>		RESULTS BY: RUSH CHARGES AUTHORIZED:	
RECEIVING LABORATORY: <u>Trace</u>		RECEIVED BY: (Signature) <u>[Signature]</u>		DATE: <u>2-25-15</u>		RESULTS BY: RUSH CHARGES AUTHORIZED:	
ADDRESS: <u>Midland</u>		STATE: <u>TX</u>		ZIP: <u>79701</u>		RESULTS BY: RUSH CHARGES AUTHORIZED:	
CONTACT: <u>[Name]</u>		PHONE: <u>[Number]</u>		DATE: <u>2-25-15</u>		RESULTS BY: RUSH CHARGES AUTHORIZED:	

Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.
 This sample is to be used for the purpose of the project.

Analysis Request of Chain of Custody Record

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TETRA TECH

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: SM Energy		SITE MANAGER: Ike Tavaraz		PROJECT NAME: SM Energy - ESDU #2		SAMPLE IDENTIFICATION Eddy Co. NM		PRESERVATIVE METHOD		ANALYSIS REQUEST (Circle or Specify Method No.)	
LAB ID. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE
130	2/1/16		S	X		1	N			X	
131											
132											
133											
134											
135											
136											
137											
138											
139											

RELINQUISHED BY: (Signature)	Date: 2-1-16	Time: 14:50	RECEIVED BY: (Signature)	Date: 2-1-16	Time: 14:50
RELINQUISHED BY: (Signature)	Date: 2-1-16	Time: 15:30	RECEIVED BY: (Signature)	Date: 2-1-16	Time: 15:30
RELINQUISHED BY: (Signature)	Date: 2-1-16	Time: 15:30	RECEIVED BY: (Signature)	Date: 2-1-16	Time: 15:30

RECEIVING LABORATORY: TARA	STATE: MIDLAND	ZIP: 79705	PHONE: (432) 682-4559
ADDRESS: 1910 N. Big Spring St.			
CITY: MIDLAND			
CONTACT: IKE TAVARAZ			

SAMPLE CONDITION WHEN RECEIVED:	REMARKS:

SAMPLED BY: (Print & Initial)	Date: 2-1-16	Time: 14:50
SAMPLE SHIPPED BY: (Circle)	FEDEX	UPS
SAFELY DELIVERED		
TETRA TECH CONTACT PERSON:	Ike Tavaraz	
Results by:	RUSH Charges Authorized: Yes No	

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Analysis Request of Chain of Custody Record



TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: SM Energy		SITE MANAGER: The Tavarot		PROJECT NAME: SM Energy - BDU #2		SAMPLE IDENTIFICATION Eddy Co. M.	
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	NUMBER OF CONTAINERS	PRESERVATIVE METHOD
140	2/16		S	X	4(2-2.5)	1	NONE
141					(3-3.5)		ICE
142					AH 5(0-1)		HNO3
143					(1-1.5)		HCL
144					(2-2.5)		FILTERED (Y/N)
145					(3-3.5)		
146					(4-4.5)		
147					(5-5.5)		
148					(6-6.5)		
149					AH 6(0-1)		

RELINQUISHED BY: (Signature)	Date: 2-17-15	Time: 14:30	RECEIVED BY: (Signature)	Date: 2-17-15	Time: 14:30
RELINQUISHED BY: (Signature)	Date: 2-18-15	Time: 15:30	RECEIVED BY: (Signature)	Date: 2-18-15	Time: 15:30
RELINQUISHED BY: (Signature)	Date: 2-18-15	Time: 15:30	RECEIVED BY: (Signature)	Date: 2-18-15	Time: 15:30

RECEIVING LABORATORY:	ADDRESS:	CITY:	STATE:	ZIP:	PHONE:	DATE:	TIME:
Midland	Midland	TX	79705	79705	79705	2-18-15	15:30

SAMPLE CONDITION WHEN RECEIVED:		REMARKS:	
LS 25190800		LS 25190800	

TETRA TECH CONTACT PERSON:		RESULTS BY:	
The Tavarot		The Tavarot	

RUSH CHARGES AUTHORIZED:		YES	
RUSH CHARGES AUTHORIZED:		NO	

Analysis Request of Chain of Custody Record

PAGE: 4



TETRA TECH

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: SM Energy		SITE MANAGER: Ike Tavares	
PROJECT NO.: 2100-ma-00146		PROJECT NAME: SM Energy - ESDU #2	
LAB I.D. NUMBER		SAMPLE IDENTIFICATION	
DATE	TIME	MATRIX	COMB
2015			
387150	2/10	Δ	X AH 6 (1-1.5)
151			(2-2.5)
152			(3-3.5)
153			AH 7 (0-1)
154			(1-1.5)
155			(2-2.5)
156			(3-3.5)
157			(4-4.5)

RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-17-15	Date: 2-17-15	Date: 2-17-15	Date: 2-17-15
Time: 14:50	Time: 14:50	Time: 14:50	Time: 14:50
RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-18-15	Date: 2-18-15	Date: 2-18-15	Date: 2-18-15
Time: 15:30	Time: 15:30	Time: 15:30	Time: 15:30
RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-19-15	Date: 2-19-15	Date: 2-19-15	Date: 2-19-15
Time: 8:30	Time: 8:30	Time: 8:30	Time: 8:30

RECEIVING LABORATORY:	DATE:	TIME:
CITY: Midland	2-19-15	190300
STATE:		
ZIP:		
PHONE:		
SAMPLE CONDITION WHEN RECEIVED:		
REMARKS:		

PAH 8270	PCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCBs 8080/808	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Al)	PLM (Asbestos)	Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-17-15	Date: 2-17-15	Date: 2-17-15	Date: 2-17-15
Time: 14:50	Time: 14:50	Time: 14:50	Time: 14:50
RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-18-15	Date: 2-18-15	Date: 2-18-15	Date: 2-18-15
Time: 15:30	Time: 15:30	Time: 15:30	Time: 15:30
RELINQUISHED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)
Date: 2-19-15	Date: 2-19-15	Date: 2-19-15	Date: 2-19-15
Time: 8:30	Time: 8:30	Time: 8:30	Time: 8:30

RECEIVING LABORATORY:	DATE:	TIME:
CITY: Midland	2-19-15	190300
STATE:		
ZIP:		
PHONE:		
SAMPLE CONDITION WHEN RECEIVED:		
REMARKS:		

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Appendix D

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(One set of instructions on
reverse side)

30-015-25847
Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

DEC 11 '87

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☒

b. TYPE OF WELL

OIL WELL ☒

GAS WELL ☐

OTHER

SINGLE ZONE ☐

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

Harvey E. Yates Company

3. ADDRESS OF OPERATOR

P.O. Box 1933, Roswell, New Mexico 88201

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)*

At surface

330' FSL & 330' FEL

At proposed prod. zone

same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

15. DISTANCE FROM PROPOSED*
LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drlg. unit line, if any)

330

16. NO. OF ACRES IN LEASE

680.06

17. NO. OF ACRES ASSIGNED
TO THIS WELL

40

18. DISTANCE FROM PROPOSED LOCATION*
TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

660

19. PROPOSED DEPTH

5450

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3715.2 GL

22. APPROX. DATE WORK WILL START*

ASAP

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4	8 5/8	24	350	Circ to surface
7 7/8	5 1/2	15.5	5450	Circ to surface

MUD PROGRAM:

0 - 350 Fresh water
350 - 5450 Brine water

RECEIVED
NOV 4 11 07 AM '87
CARL AREA HEADQUARTERS
Post 10#1
N.Y. API
12-18-87

14. ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

SIGNED A.M. Young N.M. Young TITLE Drilling Superintendent DATE Nov. 2, 1987

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE 12-8-87

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

EXHIBIT D

Harvey E. Yates Co.
South Taylor 13 Federal #2
330' FSL & 330' FEL
Sec. 13, T-18S, R-31E
Eddy Co., New Mexico

