August 6, 2018

Olivia Yu

NMOCD District 1

1625 N. French Drive

Hobbs, New Mexico 88240

Re: Work Plan

Transfer line from Terrapin Frac Pond to Arabian 30-19 Fed Com 2H

NMOCD Reference #: 1RP-4854

Ms. Olivia Yu:

RXSoil, Inc. is pleased to submit the work plan summarizing the on-site remediation of treated produced water impacted soil for the above release, associated with the Arabian 30-19 Fed Com 2H site located in Lea County, New Mexico. Remediation work plan follows in the attached report.

Sincerely,

Jace Caraway
Chief Operating Officer
RXSoil, Inc.
(940) 210-2051

Zach Robbins
Technical and Engineering Analyst
RXSoil, Inc.
(210) 400-7645

Table of Contents

Figures

Appendix

I. Introduction

On behalf of Devon Energy Production Co LP and Swiftwater Energy Services ("Swiftwater"), RXSoil, Inc. ("RXSoil") has prepared this work plan that describes the assessment and corrective action plan for remediation of the release of 1RP-4854 associated with the Arabian 30-19 Fed Com 2H site with API #30-025-43773.

The release occurred in Unit Letter M, Section 2, Township 26S, Range 31E (see *Figure 1* for Vicinity Map) at coordinates (32.067261, -103.757277). The Release Notification and Corrective Action document (C-141, *Appendix A*), approved October 27, 2017, indicates a booster pump over pressured and a lay flat hose ruptured on October 10, 2017. It was reported that 281 barrels of produced water were released, and 145 barrels were recovered during the initial response. This was reported to have affected approximately 10,244 square feet running south then east of the rupture point.

II. Regulatory Guidelines

Figure 2 includes a 1,000-foot radius from the site showing no surface water within 1,000 feet of the release on the NM OCD Oil and Gas Map with Hydrology Layer. An Eddy County depth to ground water map (2005, *Figure 3*) indicates groundwater is between 275' and 300' below ground surface (bgs). According to the New Mexico Office of the State Engineer Water Column database, the nearest wells are greater than 1.75 miles from the affected area and have a depth to water range between 300 and 365 feet (*Appendix B*). The total ranking score for this site's threat to public health, ground water and environmental therefore is 0.

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	
	>100 feet	0 points	**X**
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	**X**
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	**X**
RANKING SCORE (TOTAL POINTS)			**0**

The target cleanup levels are determined using *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). The Recommended Remediation Action Levels (RRAL) are **10** parts per million (ppm) benzene, **50** ppm combined benzene, toluene, ethyl benzene, and total xylenes (BTEX), **5,000** ppm total petroleum hydrocarbons (TPH) and **600** ppm chlorides.

As discussed in the later portion of **Section IV**, post-remediation discrete confirmation samples will be taken and properly packaged, preserved and transported to a third-party laboratory by chain of custody, and analyzed for chlorides via Method 300 or Method 4500, per revised Rule 29. The results

will be included in the closure report along with chain of custody and quality control.

III. Delineation Report

An initial delineation plan was submitted by Talon LPE on January 4, 2018. On February 15, 2018 the report was approved with the following stipulation:

> *"NMOCD approves of the proposed additional delineation for 1RP-4854 with the clarification that each sample location (S-4, S-5, and S-15) must have two depths demonstrating permissible levels of chlorides in laboratory analyses: depth obtained and depth maintained at least 2 ft. further in depth."*

RXSoil contracted Atkins Engineering Associates to drill the bore holes to finish vertical delineation. RXSoil had personnel present during the drilling of boreholes to guide delineation. Drilling occurred at the borehole locations marked S-4 and S-5 until two depths at least 2' apart with permissible chloride levels were discovered. Samples (mapped on *Figure 4*) were field screened for chlorides to guide the delineation activity and then transported on ice to Cardinal Laboratories in Hobbs, NM, for confirmation.

It was determined by Swiftwater that the area surrounding borehole location S-15 was not part of this release and therefore will not be addressed in this remediation plan.

Results, including a summary table, laboratory reports and digital field notes, are shown in *Appendix C*.

Further horizontal delineation will be completed during excavation and is specified in **Section IV**.

IV. Soil Remediation Work Plan

RXSoil's core process of on-site remediation will be used to address the contamination. RXSoil will supervise all excavation with approval from area utilities owners via NM 811.

RXSoil will construct two in-ground treatment cells adjacent to the contaminated area (see *Figure 4* for projected placement). Once the final location of the treatment cells has been field verified, District 1 will be notified. These cells will be excavated to a depth of 4'. A 30-mil poly liner will be installed on the bottom and sides of cells to contain treatment (to be demarcated on map in Closure Report). A proprietary drainage and collection system will be installed. The background material (not affected by the release) will be staged away from any contaminated material to avoid cross-contamination. The cells are planned to cover an area of 150' by 320' each. Final dimensions will be included in the closure report and the area will be demarcated on a map.

Sidewall and bottom samples will be taken using a stainless-steel hand shovel while remediation samples will be taken using a stainless-steel bucket auger. All tools will be decontaminated before each sample, as specified in *Field Equipment Cleaning and Decontamination* (EPA, 2015). This includes wiping the equipment clean, water-rinsing the equipment, washing the equipment in detergent and water, and rinsing the equipment in water.

Delineation shows evidence that there is no BTEX or TPH contamination in the release area. Because of this, all samples will be tested for chlorides only.

Samples will be temporarily transferred to a new plastic bag in the field. Once in a location safer for handling glass, the samples will be transferred to glass jars, supplied by an approved laboratory. The threads on all jars will be wiped clean to allow an air-tight seal. Samples will be placed on ice and transferred to a third-party laboratory to ensure tests are completed within 28 days (as recommended in the EPA Method 300.0 handbook). RXSoil will make reasonable efforts to minimize this transfer time.

The affected material (as reported by Talon) will be excavated and placed into the RXSoil treatment cells. Sidewall samples in each cardinal direction will be collected (with samples no further than 50' apart) and transferred to a third-party lab for confirmation (via approved chloride tests) that all affected material has been excavated. Excavation will continue until all sidewall samples are below 600 ppm chlorides.

Based on the delineation table produced by Talon (see map, *Figure* 5) and the additional delineation done by RXSoil, there is evidence that the areas surrounding the following sample points must be excavated to at least the following depths to reach clean material:

S-2: 2' **S-4**: 4' **S-5**: 4' **S-8**: 2'

The above depths will be used as guidelines for excavation, while the bottom samples will be used for confirmation.

Throughout excavation one bottom sample will be taken near each sample point labeled **S-*X*** on *Figure 4*, where ***X*** is the sample number. Excavation occurs until testing determines that the chloride levels are below 600 ppm or until excavation depth reaches 4'.

Whenever excavation depth changes, at least one bottom sample will be taken. If the bottom sampling should lead excavation to a depth of 4', excavation in that area will halt and a bottom sample will be collected. These samples will be appropriately transferred to a third-party lab for confirmation that excavation was to the appropriate depth. If chloride levels of the bottom samples are above 600 ppm, a 20-mil poly liner will be placed on the subsurface. This area will be then backfilled and demarcated in the Closure Report.

This remediation project will also be combined with that of 1RP-4871. Clean material from the treatment cell areas described above will be transported to the site of 1RP-4871. Contaminated material will be transported to the treatment cells described in this report. Sampling for closure of 1RP-4871 is described in the Work Plan for that remediation.

The clean material previously staged will be used to backfill the excavated areas (see *Figure 3*). A proprietary delivery system will be installed in the treatment cell to apply RXSoil chemicals for remediation of the soil. RXSoil chemicals and biological agents will go through the profile of the soil before entering the collection system. RXSoil will collect this leachate and properly dispose of all collected leachate. No subsoil will be exposed to leachate from the treatment cells during

remediation. No harmful or hazardous chemicals are used in the RXSoil Process.

Final discrete soil samples will be collected and tested for every 50 cubic yards of treated material at the end of treatment to confirm impacted soil has been remediated to required chloride levels directed by NMOCD standards, as specified in **Section II**. All samples will consist of enough material for at least one (1) field screening and two (2) laboratory tests. A portion of each sample will be field screened and 50% of these samples will have a portion transferred to a third-party laboratory for confirmation that all soil passes NMOCD standards utilizing approved chloride tests. Lab reports and a map with sample points from a GPS device will all be included in the final report.

The current proposed cell dimensions are approximately 150' by 320' by 4' depth each. This cell would hold 7,111 cubic yards, requiring no fewer than 143 samples per cell (7,111 cubic yards * 1 sample per 50 cubic yards). The planned sample grid will be an evenly spaced grid of 16 columns by 9 rows (144 samples) with samples taken at a depth of 36"-48". Due to the nature of the RXSoil Process, deeper samples tend to clean up last, since all contamination must push through the bottom of the profile. A diagram of the spacing can be seen in *Figure 6*, representing the sampling plan for one cell. A cross section view of the sampling can be seen in *Figure 7*.

Based on this cell size, 144 samples will be taken with 72 duplicates being sent to a third-party laboratory for chloride testing.

If data from concurrent RXSoil remediation projects indicates that there is sufficient correlation of precision between the lab analysis and field screenings, the lab analysis of samples may be reduced from 50% of all samples to 25% of all samples. This reduction will only take place with written approval from District 1 after review and analysis of the data from these projects. Field screenings will continue to represent no more than 50 cubic yards unless District 1 determines that density of samples is not required. All samples that are collected for lab analysis and not submitted will be preserved for future analysis if required with the understanding that the recommended hold time of 28 days may be exceeded.

If any sample points test for a chloride concentration greater than 600 ppm, RXSoil will continue treatment in that area of the treatment cell. Following re-treatment, samples will be redrawn from any location that initially tested above regulations. This will be done until all sample locations test below threshold. All sample points throughout the project will be GPS located and demarcated on a final sampling map, provided in the closure report.

After completion of the remedial phase of the project a minimum of three composite samples (one from each remedial cell and one from the restored area) will be collected for agricultural analysis (CEC, SAR, ESP, anions and cations). These results will be provided to an agronomist so that proper soil amendments can be determined to provide for the landowner approved vegetative cover. The amendments and seed will be applied at the discretion of the land owner (State Land Office).

A closure report summarizing all remediation activities, including scaled maps and all test results stated above, will be submitted upon completion of the project.

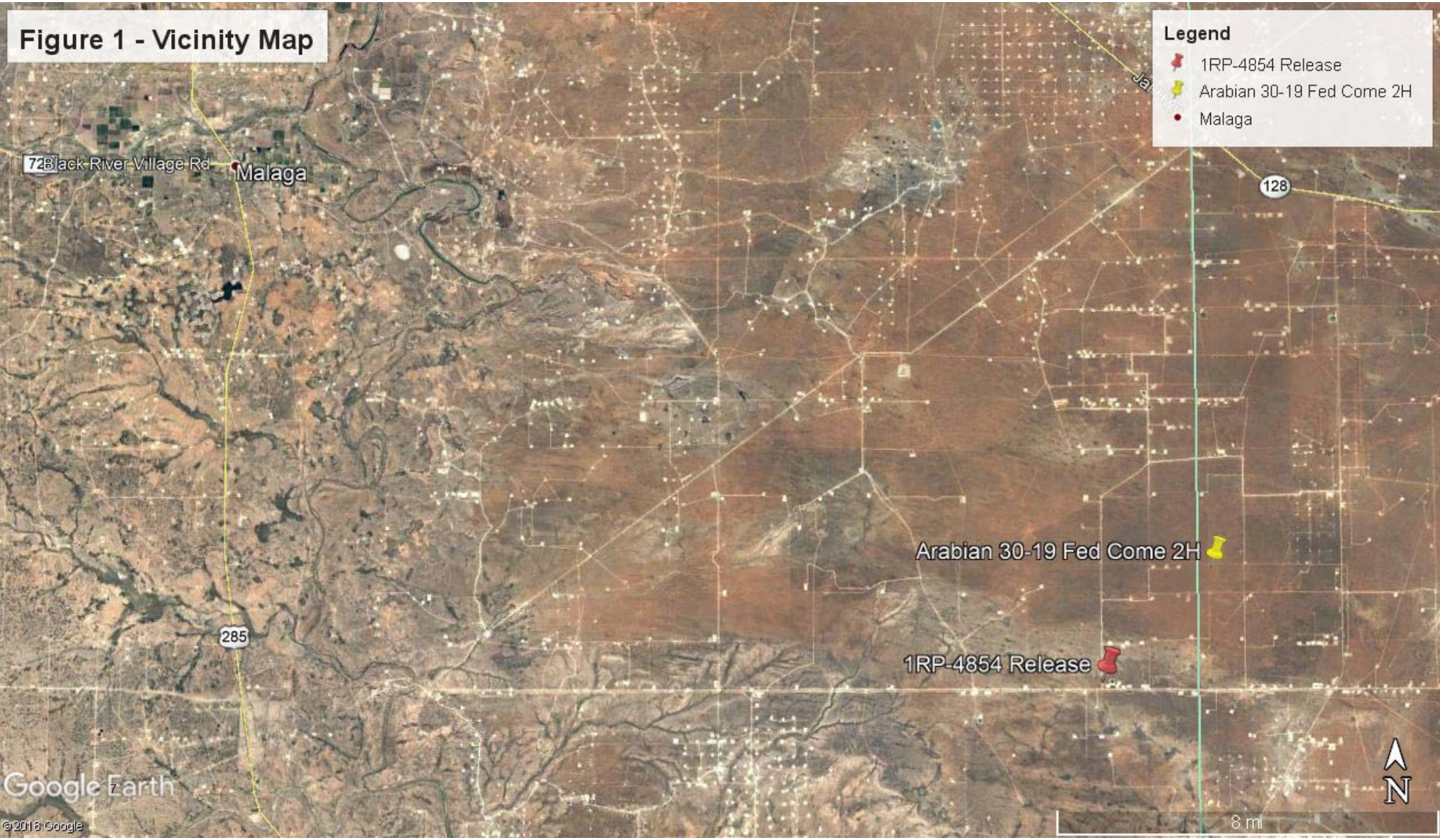
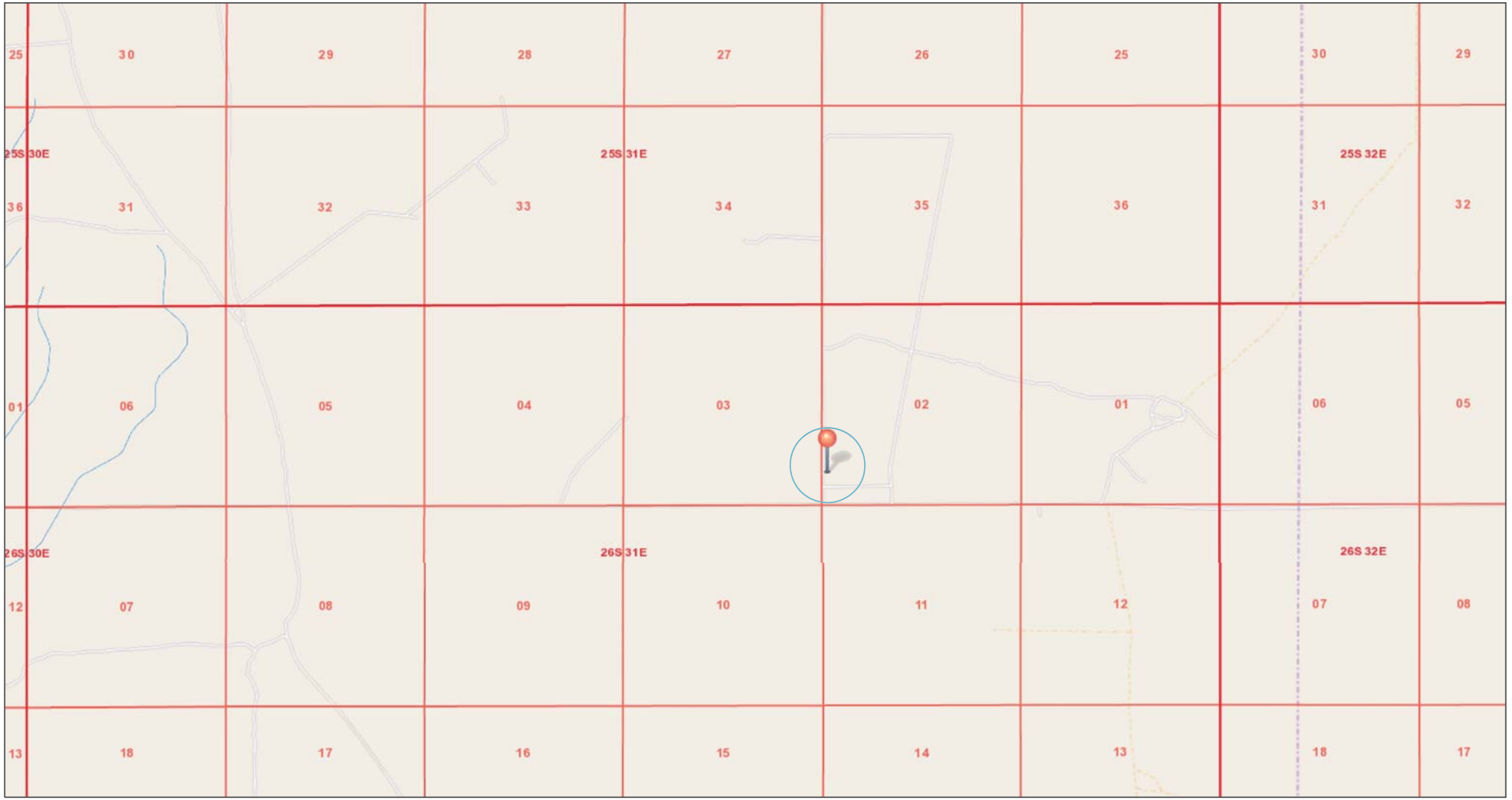


Figure 1 - Vicinity Map
Legend
1RP-4854 Release
Arabian 30-19 Fed Come 2H
Malaga
72
Black River Village Rd
Malaga
128
Arabian 30-19 Fed Come 2H
285
1RP-4854 Release
Google Earth
© 2018 Google
8 mi
N

Figure 2. Hydrology Map



6/25/2018, 12:32:46 PM

1:36,112

Points

Release

Areas

1000' Radius

PLSS First Division

PLSS Second Division

PLSS Townships

OSE Water-bodies

PLJV Probable Playas

OSE Streams

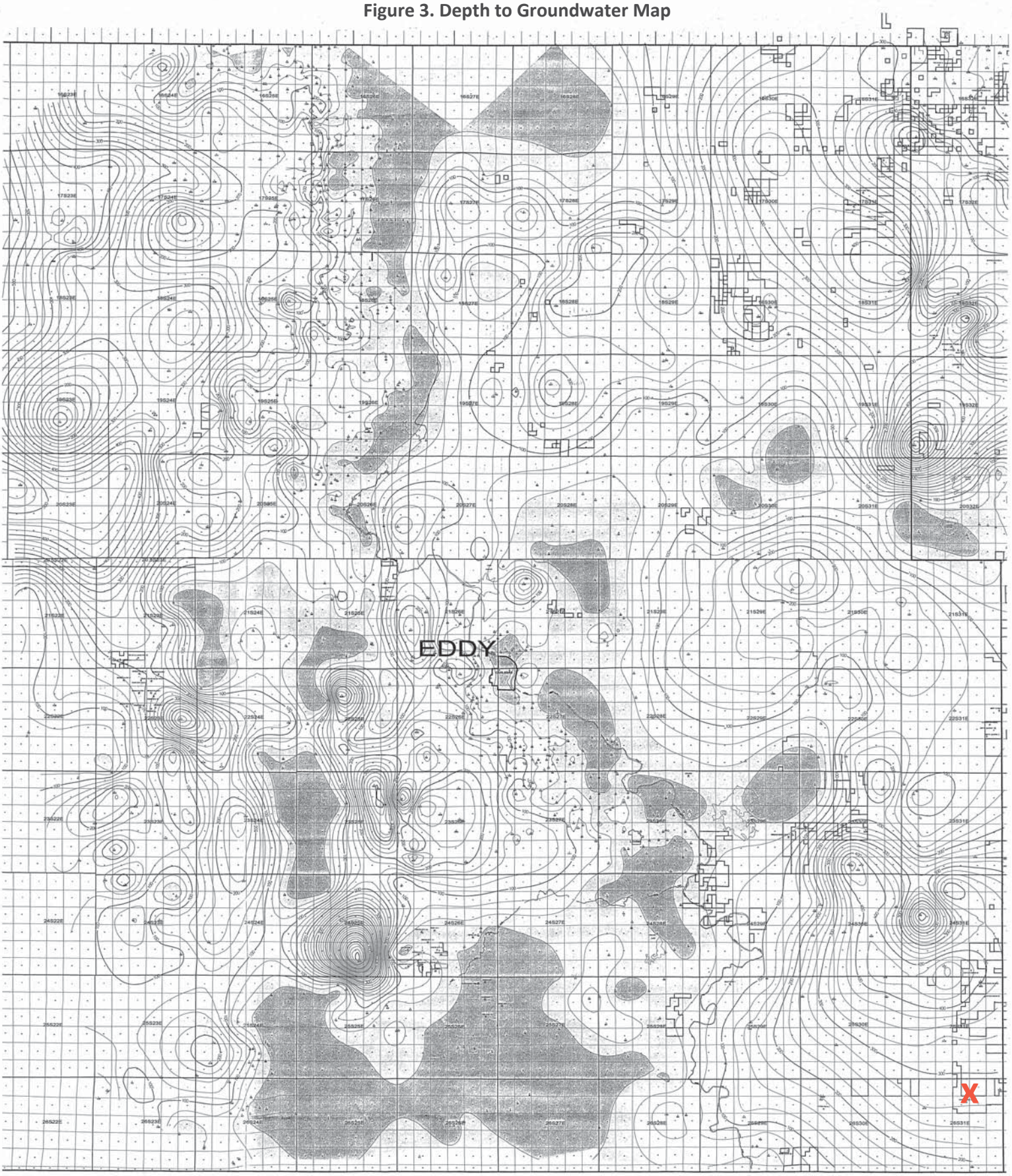
0 0.38 0.75 1.5 mi

0 0.5 1 2 km

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/: New Mexico Oil Conservation Division

Figure 3. Depth to Groundwater Map



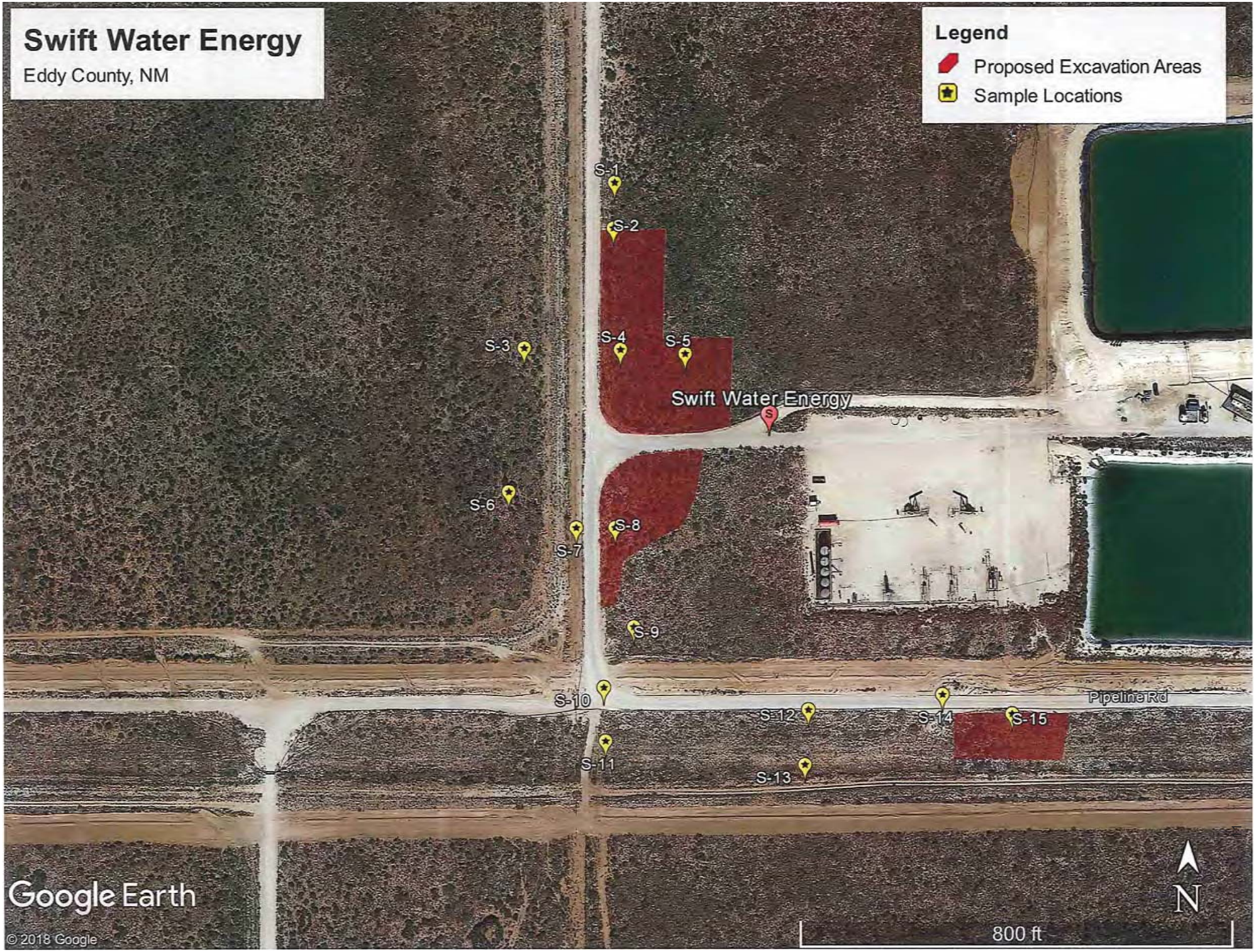
X - Release Location

ChevronTexaco

Eddy Co. Depth To Ground Water
Water Wells
Facilities


Figure 4. Spill Map
Legend
Borehole Location
Spill Area
Treatment Cells
SW1 S-4
SW1 S-5
Google Earth
©2018 Google
Pipeline Rd
400 ft
N

Figure 5. Initial Delineation Map



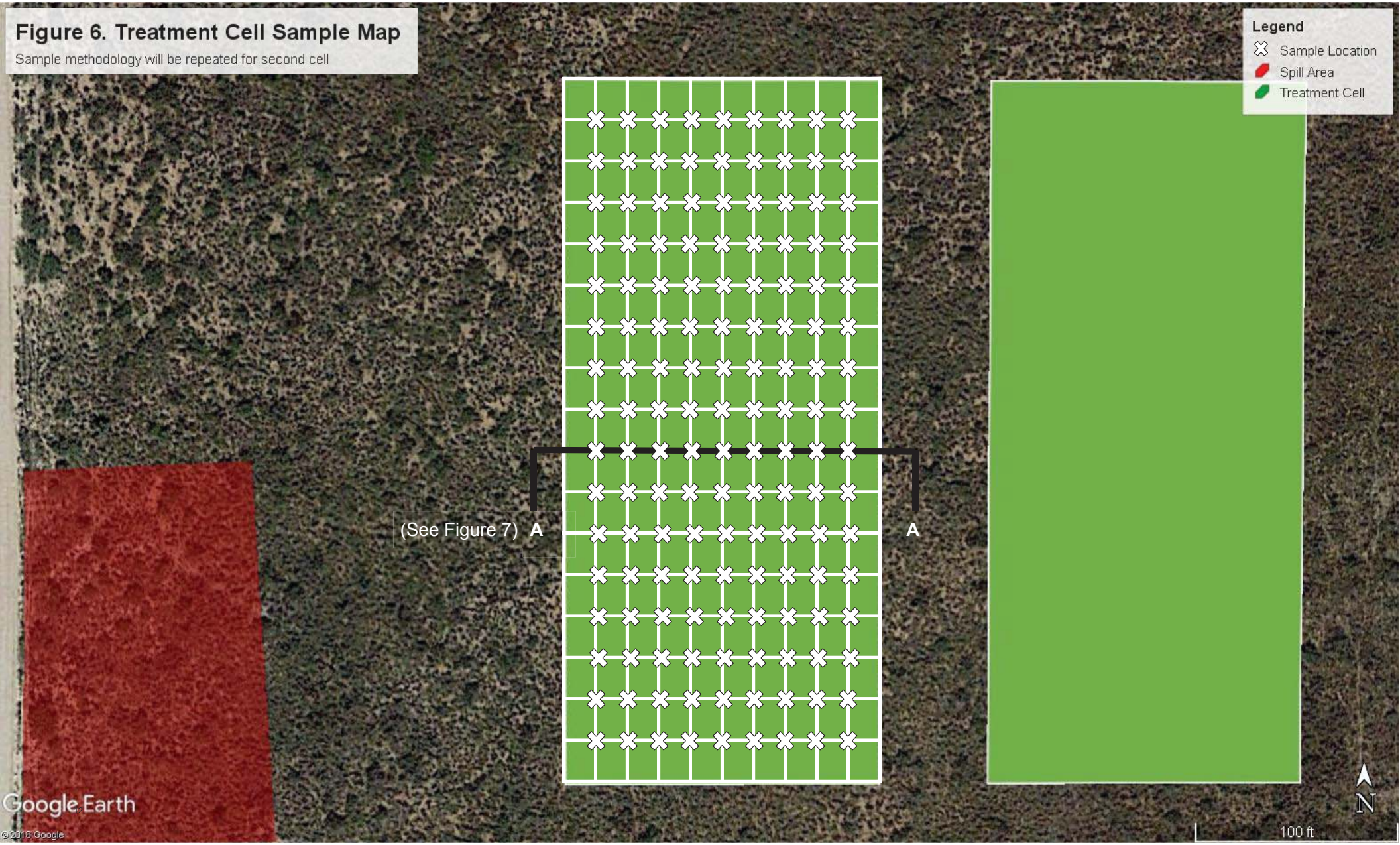
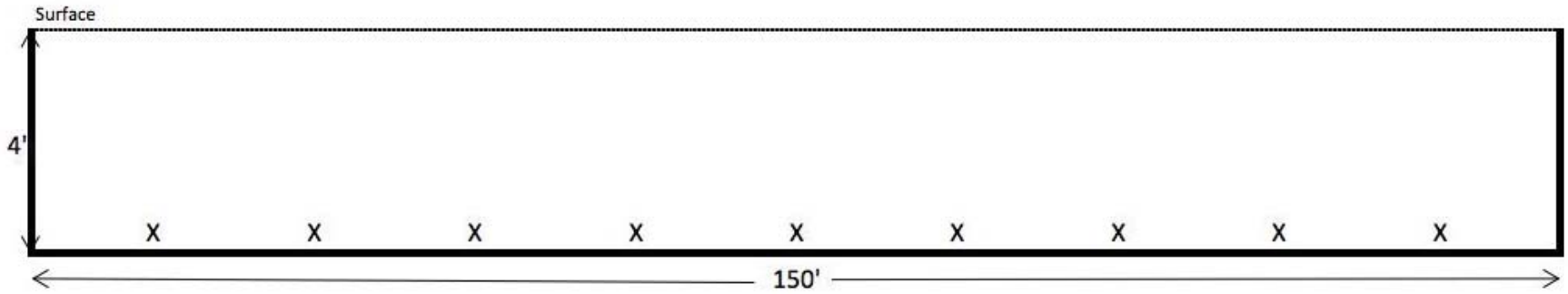


Figure 6. Treatment Cell Sample Map
Sample methodology will be repeated for second cell
Legend
Sample Location
Spill Area
Treatment Cell
(See Figure 7)
A
A
Google Earth
©2018 Google
N
100 ft

Figure 7. Cross-Sectional View of Cell



Section A-A

Legend
X - Sample at 4'

*diagram not to scale

APPENDIX A

C-141, RELEASE NOTIFICATION AND CORRECTIVE ACTION DOCUMENT

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy Production Co LP	Contact Stephen Richards, Devon Completions Foreman
Address PO BOX 250, Artesia, NM 88211	Telephone No. (575) 252-3717
Facility Name: Transfer line from Terrapin Frac Pond to Arabian 30-19 Fed Com 2H	Facility Type Oil well

Surface Owner: State / Federal	Mineral Owner: State / Federal	API No. 30-025-43773

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	2	26S	31E	407	NORTH	46	WEST	LEA

Latitude 32.067261 N **Longitude** -103.757277 W NAD83

NATURE OF RELEASE

Type of Release: Treated Produced Water	Volume of Release: 281 bbls	Volume Recovered: 145 bbls
Source of Release: Lay Flat Transfer Line	Date and Hour of Occurrence: 10/10/2017, 9:45 AM	Date and Hour of Discovery 10/10/2017, 9:45 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD: Olivia Yu, Dist. 1 BLM: Shelly Tucker	
By Whom? Mike Shoemaker, EHS Professional	Date and Hour: OCD: 10/11/17, 9:15 AM BLM: 10/11/17, 9:45 AM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.* NA

RECEIVED
By Olivia Yu at 3:45 pm, Oct 27, 2017

Describe Cause of Problem and Remedial Action Taken.*
While transferring treated produced water from the Terrapin Frac Pond to the Arabian 30-19 Fed Com #2H, the booster pump over pressured and the lay flat hose ruptured, releasing produced water on the ground. The pump was shut down and the hose was repaired.

Describe Area Affected and Cleanup Action Taken.*

The spill affected approximately 10,244 square feet (1711 cubic feet) running south then east of the rupture point located approximately at 32.067261 N, -103.757277 W and is approximately 3.3 miles southwest from the Arabian 30-19 Fed Com 2H well pad. An estimated 281 barrels of treated produced water was spilled and 145 barrels were recovered. A remediation contractor will be contacted to assist with the delineation and remediation efforts.

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: Denise Menoud	OIL CONSERVATION DIVISION
Printed Name: Denise Menoud	Approved by Environmental Specialist:
Title: Admin Field Support	Approval Date: 10/27/2017 Expiration Date:
E-mail Address: denise.menoud@dvn.com	Conditions of Approval: see attached directive Attached ☑
Date: 10/13/2017 Phone: (575)746-5544	

* Attach Additional Sheets If Necessary

fOY1730056854 1RP-4854 nOY1730057049 pOY1730057379

APPENDIX B

WATER COLUMN/AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 02090		C	ED		4	4	01	26S	31E	620329	3548533*	350	335	15
C 03554 POD1		CUB	ED	2	1	4	01	26S	31E	620547	3549148	630	300	330
C 03639 POD1		CUB	ED	3	4	2	01	26S	31E	620168	3549279	700	365	335

Average Depth to Water: **333 feet**

Minimum Depth: **300 feet**

Maximum Depth: **365 feet**

Record Count: 3

PLSS Search:

Section(s): 1, 2, 3, 10, 11, 12 **Township:** 26S **Range:** 31E

***UTM location was derived from PLSS - see Help**

6/26/18 9:35 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

APPENDIX C.1

DELINEATION REPORT

DELINEATION SUMMARY TABLE

Delineation Data: Swiftwater 1							
Sample Date: 06/06/2018			Submittal Date: 06/08/2018		Laboratory: Cardinal Laboratories		
Borehole	Depth (ft)	Lab ID Sample	Chloride		Benzene	BTEX	TPH
			Field Screening	Method 4500	8021B		8015M
S.4	1	SW1 S.4 - 1'	**4768**	**2400**	-	-	-
S.4	2	SW1 S.4 - 2'	**2704**	**4000**	-	-	-
S.4	3	SW1 S.4 - 3'	**3192**	**3560**	-	-	-
S.4	4	SW1 S.4 - 4'	332	416	-	-	-
S.4	6	SW1 S.4 - 6'	256	288	-	-	-
S.4	11	SW1 S.4 - 11'	ND	48.0	-	-	-
S.5	1	SW1 S.5 - 1'	**9316**	**12700**	-	-	-
S.5	2	SW1 S.5 - 2'	**3460**	**3840**	-	-	-
S.5	3	SW1 S.5 - 3'	**5164**	**6560**	-	-	-
S.5	4	SW1 S.5 - 4'	**776**	**1230**	-	-	-
S.5	6	SW1 S.5 - 6'	120	128	-	-	-
S.5	11	SW1 S.5 - 11'	ND	32.0	-	-	-
NMOCD Thresholds				**600**	**10**	**50**	**5000**

BOLD results indicate results above RRAL

- indicates tests were not ran

APPENDIX C.2

DELINEATION REPORT

DELINEATION LABORATORY REPORT

CARDINAL Laboratories

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

June 13, 2018

JACE CARAWAY

RX-SOIL INC.

201 MAIN STREET, SUITE 1360

FORT WORTH, TX 76102

RE: SWIFTWATER

Enclosed are the results of analyses for samples received by the laboratory on 06/08/18 9:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/07/2018
Reported:	06/13/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#1	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW1 S.4 - 1' (H801576-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2400**	16.0	06/12/2018	ND	400	100	400	3.92	

Sample ID: SW1 S.4 - 2' (H801576-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4000**	16.0	06/12/2018	ND	400	100	400	3.92	

Sample ID: SW1 S.4 - 3' (H801576-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3560**	16.0	06/12/2018	ND	400	100	400	3.92	

Sample ID: SW1 S.4 - 4' (H801576-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**416**	16.0	06/12/2018	ND	400	100	400	3.92	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/07/2018
Reported:	06/13/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#1	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW1 S.4 - 6' (H801576-05)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	06/12/2018	ND	400	100	400	3.92	

Sample ID: SW1 S.4 - 11' (H801576-06)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	06/12/2018	ND	400	100	400	3.92	

Sample ID: SW1 S.5 - 1' (H801576-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**12700**	16.0	06/12/2018	ND	448	112	400	3.64	QM-07

Sample ID: SW1 S.5 - 2' (H801576-08)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3840**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW1 S.5 - 3' (H801576-09)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6560**	16.0	06/12/2018	ND	448	112	400	3.64	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/07/2018
Reported:	06/13/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#1	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW1 S.5 - 4' (H801576-10)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1230**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW1 S.5 - 6' (H801576-11)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW1 S.5 - 11' (H801576-12)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	06/12/2018	ND	448	112	400	3.64	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

1 of 2 TO. 6/8/18

Company Name:	RXSOIL	**BILL TO**	P.O. #:
Project Manager:	JALE CARAWAY		Company:
Address:			Attn:
City:	State: Zip:		Address:
Phone #:	940-210-2051 Fax #:		City:
Project #:	Project Owner:		State: Zip:
Project Name:	SWIFTWATER #1		Phone #:
Project Location:			Fax #:
Sampler Name:	JACOB MICKLE		

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CHLORIDES
H801576															
1	SW1 S.4 - 1'	G				x					x		06/07	1000	x
2	SW1 S.4 - 2'	↓				↓					↓		↓	↓	↓
3	SW1 S.4 - 3'														
4	SW1 S.4 - 4'														
5	SW1 S.4 - 6'														
6	SW1 S.4 - 11'	↓				↓					↓		↓	1200	↓

Relinquished By:	Date: 6-8-18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 9:35		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other: 2.8° Corrected 2.75°

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials) TO. #15

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2 of 2 T.O. 6/8/18

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	RXSOIL	**BILL TO**	
Project Manager:	JALE LARAWAY	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	940-210-2051 Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	SWIFTWATER #1	State: Zip:	
Project Location:		Phone #:	
Sampler Name:	JACOB MICKLE	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	CHLORIDES
H801576															
7	SW1S.5 - 1'	G				X					X		06/07	0730	X
8	SW1S.5 - 2'														
9	SW1S.5 - 3'														
10	SW1S.5 - 4'														
11	SW1S.5 - 6'														
12	SW1S.5 - 11'													0930	

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 6-8-18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 9:35		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	2.8° Corrected 2.7°	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) T.O. #15

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

APPENDIX C.3

DELINEATION REPORT

DELINEATION DIGITAL FIELD NOTES

RXSOIL

Form Information

Form Name:	**RXSoil Field Test**
Submitter Name:	Jacob Mickle (jacob.mickle@rxsoil.solutions)
Submission Date:	Jun 8, 2018 12:02:34 AM MDT
Server Receive Date:	Jun 8, 2018 12:02:46 AM MDT
Reference Number:	20180608-1880312475
Location:	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:25:50 PM MDT [View Map]

Project Overview

Client Name	Travelers Insurance
Project Name	SwiftWater #1
Type of Form	Field Test
Date/Time	Jun 7, 2018 10:42:50 PM MDT
RXSoil Sampler	Jacob Mickle

Sample 1

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-1’
Method of Sample Collecting	DRILL RIG
Depth (inches)	12"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 5.4 = 4,768 PPM

Picture of Result or Sample Taken

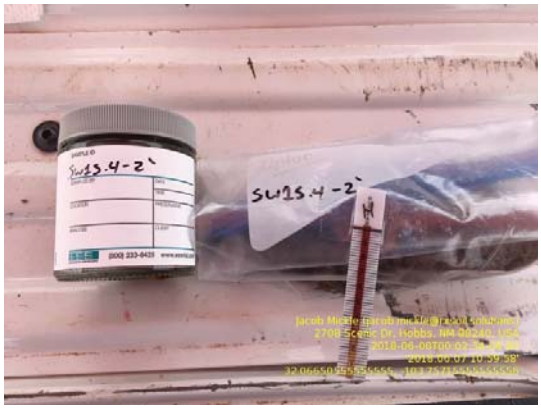
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 10:49:45 PM MDT [View Map]

Team Leader Signature

Sample 2

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-2’
Method of Sample Collecting	DRILL RIG
Depth (inches)	24"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.0 = 2,704 PPM

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 10:53:33 PM MDT [View Map]

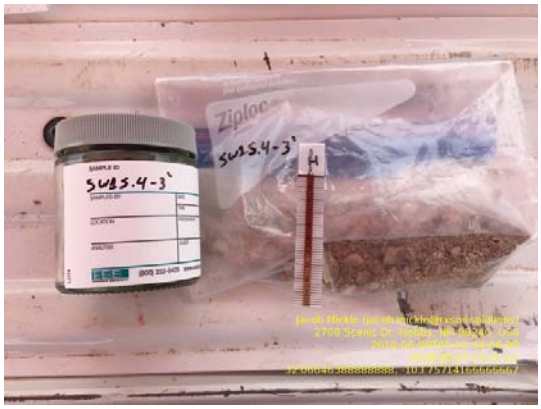
Team Leader Signature

Sample 3

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-3’

Method of Sample Collecting	DRILL RIG
Depth (inches)	36"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.4 = 3,192 PPM

Picture of Result or Sample Taken



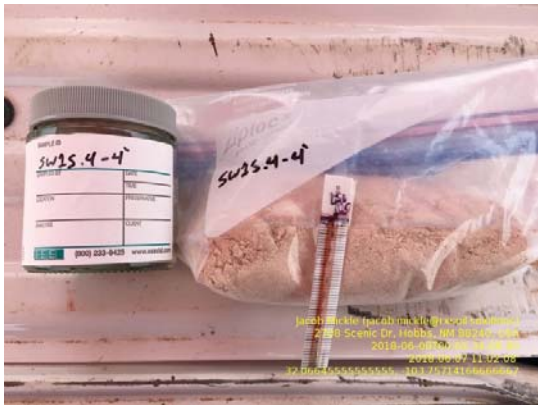
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 10:54:06 PM MDT [View Map]

Team Leader Signature

Sample 4

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-4’
Method of Sample Collecting	DRILL RIG
Depth (inches)	48"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 3.0 = 332 PPM HIGH: -

Picture of Result or Sample Taken



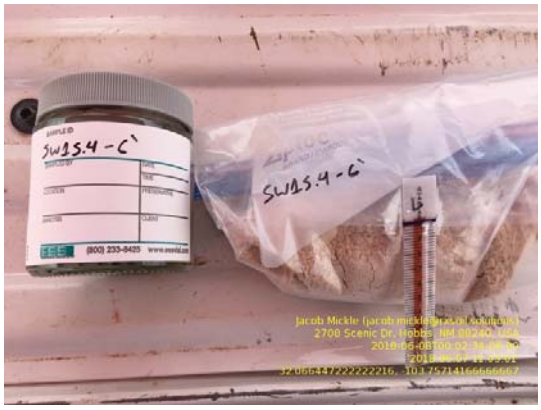
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 10:54:37 PM MDT [View Map]

Team Leader Signature

Sample 5

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-6’
Method of Sample Collecting	DRILL RIG
Depth (inches)	6’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 2.6 = 256 PPM HIGH: -

Picture of Result or Sample Taken



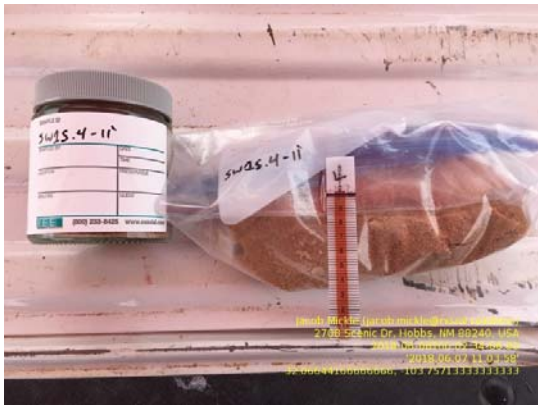
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 10:55:06 PM MDT [View Map]

Team Leader Signature

Sample 6

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.4-11’
Method of Sample Collecting	DRILL RIG
Depth (inches)	11’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.2 = ND HIGH: -

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:01:29 PM MDT [View Map]

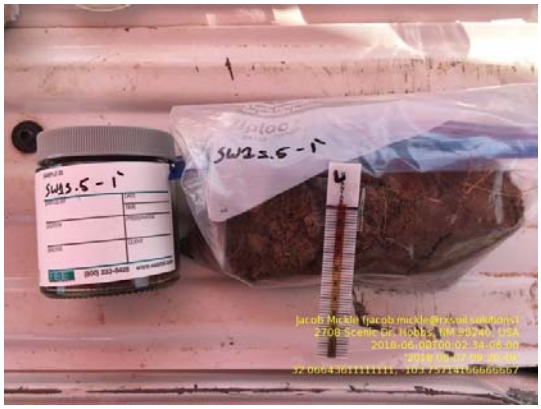
Team Leader Signature

Sample 7

Type of Field Test	Soil
Method of Testing	Sample to Lab

Name of Sample Point	SW1S.5-1’
Method of Sample Collecting	DRILL RIG
Depth (inches)	12"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 7.0 = 9,316 PPM

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:02:11 PM MDT [View Map]

Team Leader Signature

Sample 8

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.5-2’
Method of Sample Collecting	DRILL RIG
Depth (inches)	24"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.6 =3,460 PPM

Picture of Result or Sample Taken

Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:02:41 PM MDT [View Map]

Team Leader Signature

Sample 9

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.5-3’
Method of Sample Collecting	DRILL RIG
Depth (inches)	36"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 5.6 = 5,164 PPM

Picture of Result or Sample Taken

Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:04:20 PM MDT [View Map]

Team Leader Signature

Sample 10

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.5-4’
Method of Sample Collecting	DRILL RIG
Depth (inches)	48"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 4.8 = 776 PPM HIGH: ND

Picture of Result or Sample Taken

Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:04:51 PM MDT [View Map]

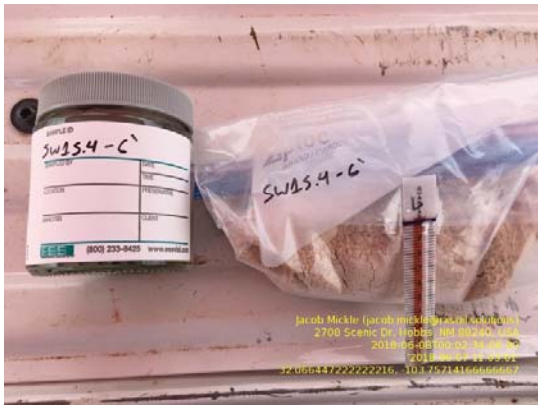
Team Leader Signature

Sample 11

Type of Field Test	Soil
Method of Testing	Sample to Lab

Name of Sample Point	SW1S.5-6’
Method of Sample Collecting	DRILL RIG
Depth (inches)	6’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.6 = 120 PPM HIGH: -

Picture of Result or Sample Taken



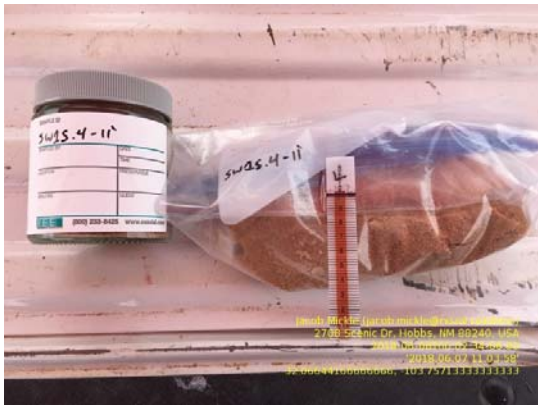
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:05:15 PM MDT [View Map]

Team Leader Signature

Sample 12

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW1S.5-11’
Method of Sample Collecting	DRILL RIG
Depth (inches)	11’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.0 = ND HIGH: -

Picture of Result or Sample Taken



Lab Name

sample location

Team Leader Signature

Cardinal Labs

2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 7, 2018 11:05:46 PM MDT [View Map]