

# Initial Application Part I

Received 10/13/20

*This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete*



October 7, 2020

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

Subject: Overflow Energy, LLC – Rose SWD # 1  
Application for Authorization to Inject

To Whom It May Concern,

On behalf of Overflow Energy, LLC (Overflow), ALL Consulting, LLC (ALL) is submitting the enclosed Application for Authorization to Inject for the Rose SWD #1, a proposed salt water disposal well (SWD), in Eddy County, NM.

The purpose of this C-108 application is to receive a renewed Authorization to Inject for the Rose SWD #1 (30-015-45221). The original Authorization to Inject was approved on December 14, 2018 for Lilystream Water Solutions. Overflow purchased the permit and subsequently drilled the well on September 22, 2019 and completed on December 20, 2019. However, the original Authorization to Inject expired prior to commencement of injection operations and an extension was not requested prior to the expiration. At the direction of the New Mexico Oil Conservation Division, ALL is submitting the application to obtain a new Authorization to Inject for this SWD.

Should you have any questions regarding the enclosed application, please contact Nate Alleman at (918) 382-7581 or [nalleman@all-llc.com](mailto:nalleman@all-llc.com).

Sincerely,  
ALL Consulting

A handwritten signature in black ink that reads "Nate Alleman".


Nate Alleman  
Sr. Regulatory Specialist

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL  
RESOURCES DEPARTMENT

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

FORM C-108  
Revised June 10, 2003

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance   X   Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval?   X   Yes \_\_\_\_\_ No
- II. OPERATOR: Overflow Energy, LLC  
ADDRESS: 111 S. Main Street Booker, Texas 79005  
CONTACT PARTY: Nathan Alleman (ALL Consulting, LLC) PHONE: 918-382-7581
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? \_\_\_\_\_ Yes   X   No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Nathan Alleman TITLE: Sr. Regulatory Specialist  
SIGNATURE:  DATE: 10/7/2020  
E-MAIL ADDRESS: Nalleman@all-llc.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

### III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.



Revised March 23, 2017

AW84M-201013-C-1080

RECEIVED: 10/13/20	REVIEWER:	TYPE: SWD	APP NO: pBL2029341930
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION  
 - Geological & Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



## ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Applicant: \_\_\_\_\_ OGRID Number: \_\_\_\_\_  
 Well Name: \_\_\_\_\_ API: \_\_\_\_\_  
 Pool: \_\_\_\_\_ Pool Code: \_\_\_\_\_

SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW

## 1) TYPE OF APPLICATION: Check those which apply for [A]

A. Location – Spacing Unit – Simultaneous Dedication

☐ NSL☐ NSP (PROJECT AREA)☐ NSP (PRORATION UNIT)☐ SD

SWD-2395

B. Check one only for [ I ] or [ II ]

[ I ] Commingling – Storage – Measurement

☐ DHC☐ CTB☐ PLC☐ PC☐ OLS☐ OLM

[ II ] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery

☐ WFX☐ PMX☐ SWD☐ IPI☐ EOR☐ PPR

## 2) NOTIFICATION REQUIRED TO: Check those which apply.

A. ☐ Offset operators or lease holdersB. ☐ Royalty, overriding royalty owners, revenue ownersC. ☐ Application requires published noticeD. ☐ Notification and/or concurrent approval by SLOE. ☐ Notification and/or concurrent approval by BLMF. ☐ Surface ownerG. ☐ For all of the above, proof of notification or publication is attached, and/or,H. ☐ No notice required

## FOR OCD ONLY

☐

Notice Complete

☐Application  
Content  
Complete

- 3) **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Print or Type Name

Signature

Date

Phone Number

e-mail Address

Application for Authorization to Inject  
Well Name: Rose SWD #1

### III – Well Data *(The Wellbore Diagram is included as Attachment 1)*

A.

#### (1) General Well Information:

Operator: Overflow Energy, LLC (OGRID No. 292641)  
Lease Name & Well Number: Rose SWD #1  
API number 30-015-45221  
Location Footage Calls: 2,019 FNL & 617 FWL  
Legal Location: Unit Letter E, S14 T23S R27E  
Ground Elevation: 3,118'  
Proposed Injection Interval: 13,390' – 14,295'  
County: Eddy

#### (2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	26"	20"	94.0 lb/ft	414'	1,295	Surface	Circulation
Intermediate 1	17-1/2"	13-3/8"	61.0 lb/ft	2,200'	1,285	Surface	Circulation
Intermediate 2	12-1/4"	9-5/8"	43.5 lb/ft	9,455'	2,094	Surface	Circulation
Liner	8-1/2"	7"	32.0 lb/ft	9,199' - 13,390'	475	9,199'	CBL

*(The Wellbore Diagram is attached)* Note: A DV Tool will be set in the second Intermediate Casing at 5,000 ft.

#### (3) Tubing Information:

4.5" (13.5 lb/ft.) Internal Plastic Coated (IPC) tubing with setting depth of 13,291'

(4) Packer Information: Arrowset ASI-X packer set at 13,291'

B.

(1) Injection Formation Name: Devonian - Silurian

Pool Name: SWD; Devonian - Silurian

Pool Code: 97869

(2) Injection Interval: Open-hole injection between 13,390' – 14,295'

(3) Drilling Purpose: New Drill for Salt Water Disposal

(4) Other Perforated Intervals: No perforated intervals exist.

(5) Overlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.

- Brushy Canyon: 4,166'
- Morrow: 11,540'
- Mississippian: 12,780'
- Woodford Shale: 13,295'

Underlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.

- Ellenburger: 16,500'

## V – Well and Lease Maps

The following maps are included in **Attachment 2**:

- 2-Mile Oil & Gas Well Map
- 1-Mile Well Detail List
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- 1.5-Mile Deep SWD Map (Devonian/Silurian SWDs)
- Potash Lease Map

## VI – AOR Well List

There are 35 wells within the 1-mile AOR, but none of the wells penetrate the proposed injection zone.

A list of the wells within the 1-mile AOR is included in **Attachment 2**.

## VII – Proposed Operation

- (1) **Proposed Maximum Injection Rate:** 30,000 bpd  
**Proposed Average Injection Rate:** 17,500 bpd
- (2) A closed system will be used.
- (3) **Proposed Maximum Injection Pressure:** 2,678 psi (surface)  
**Proposed Average Injection Pressure:** approximately 1,606 psi (surface)
- (4) **Source Water Analysis:** It is expected that the injectate will consist of produced water from production wells completed in the Wolfcamp and Bone Springs formations. Analysis of water from these formations is included in **Attachment 3**.
- (5) **Injection Formation Water Analysis:** The proposed SWD will be injecting water into Devonian and Silurian formations which are non-productive zones known to be compatible with formation water from the Wolfcamp and Bone Springs formations. Water analyses from the Devonian formation in the area are included in **Attachment 4**.

## VIII – Geologic Description

The proposed injection interval includes the Devonian and Silurian formations from 13,390 – 14,295 feet. These formations consist of carbonates including light colored dolomite and chert intervals interspersed with some tight limestone intervals. Several thick sections of porous dolomite capable of taking water are believed present within the subject formations in the area.

The freshwater formation is the Salado at a depth of approximately 394 feet. Water well depths in the area range from approximately 50- 150 feet below ground surface.

## **IX – Proposed Stimulation Program**

A small cleanup acid job may be used to remove mud and drill cuttings from the formation. However, no other formation stimulation is currently planned.

## **X – Logging and Test Data**

Logs have been submitted to the Division.

## **XI – Fresh Groundwater Samples**

Based on a review of data from the New Mexico Office of the State Engineer, 21 groundwater wells are located within 1 mile of the SWD location; two of the water wells have been sampled and their sampling results are included in **Attachment 5**.

A water well map, details of water wells within 1-mile, and any associated water analyses are included in **Attachment 5**.

## **XII – No Hydrologic Connection Statement**

No faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs. A letter from a knowledgeable and qualified expert stating that there is a low risk of seismic activity from the proposed injection activities is included in **Attachment 6**.

## **XIII – Proof of Notice**

A Public Notice was filed with the Carlsbad Argus newspaper and an affidavit is included in **Attachment 7**.

A copy of the application was mailed to the OCD District Office, landowner, and leasehold operators within 1-mile of the proposed SWD location. A list of the recipients, as well as delivery confirmations, are included in **Attachment 7**.

# Attachments

**Attachment 1:**

- C-102
- Wellbore Diagram

**Attachment 2:** Area of Review Information:

- 2-mile Oil & Gas Well Map
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- 1-mile Well Detail List
- Potash Lease Map

**Attachment 3:** Source Water Analyses

**Attachment 4:** Injection Formation Water Analyses

**Attachment 5:** Water Well Map and Well Data

**Attachment 6:** Induced Seismicity Assessment Letter

**Attachment 7:** Public Notice Affidavit and Notice of Application Confirmations

**Attachment 1**

- C-102
- Wellbore Diagram

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

AUG 30 2018

☐ AMENDED REPORT

RECEIVED

## WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number		<sup>2</sup> Pool Code 97869		<sup>3</sup> Pool Name SWD; Devonian-Silurian	
<sup>4</sup> Property Code 322315		<sup>5</sup> Property Name Rose SWD			<sup>6</sup> Well Number 1
<sup>7</sup> OGRID No. 373500		<sup>8</sup> Operator Name Lilystream Water Solutions, LLC			<sup>9</sup> Elevation 3118'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	14	23S	27E		2019'	NORTH	1017'	WEST	EDDY

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

FD. 1.5" B.C. N 89°47'30"E 2654.57' FD. SPINDLE N 89°45'18"E 2653.86' FD. MAG NAIL

2654.97' N 0°03'35"W 2655.15' N 0°03'08"W 2655.15' FD. 3" BLM B.C. 1969 S 89°51'49"W 5279.90' FD. 2" METAL SPIKE

FD. 1/2" RBR. FD. 1/2" RBR. T23S R27E

SEC. 14

SHL LAT. N32°18'25.3" LONG. W104°10'02.9" NAD 83

ROSE, JD & TRICIA 1095 / 468

SCALE: 1" = 600' DRAFT ONLY

Line	Bearing	Distance
1	N 0°00'00"E	500.00'
2	N 90°00'00"E	500.00'
3	S 0°00'00"E	500.00'
4	N 90°00'00"W	500.00'
5	S 1°47'22"W	457.93'
6	S 89°54'43"W	421.54'

NOTE: BASIS OF BEARINGS ARE GRID "NM E ZONE (3001)" NAD 83. DISTANCES ARE GROUND. DATE OF FIELD SURVEY 8/21/18

SCALE: 1" = 1500'

FILE: T232714A.ZAK

**<sup>17</sup> OPERATOR CERTIFICATION**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Ben Stone* Date: 8/30/2018

Printed Name: Ben Stone

E-mail Address: ben@sosconsulting.us

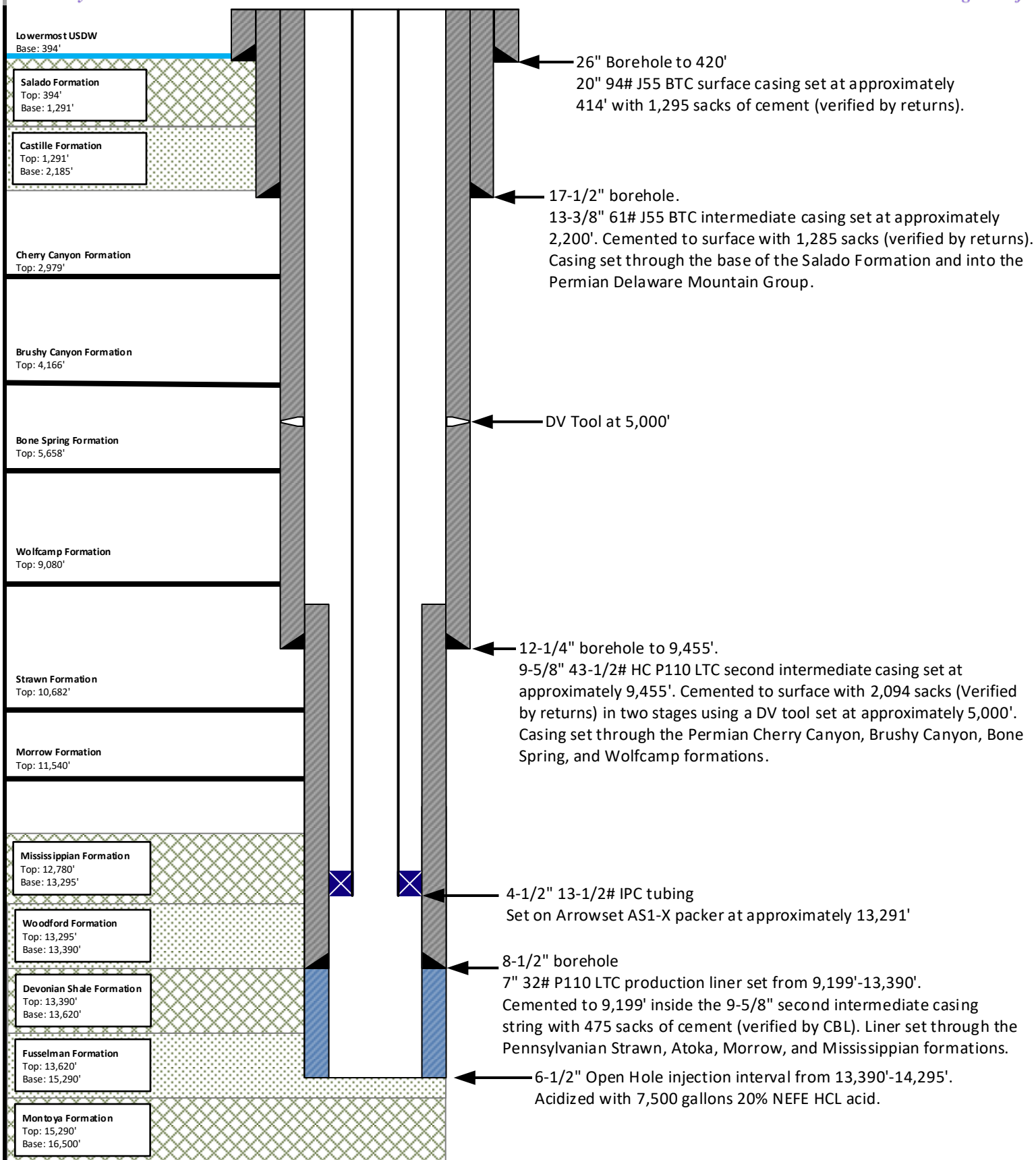
**<sup>18</sup> SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey: 8/21/18

Signature and Seal of Professional Surveyor: *Matthew D. Norman*

Certificate Number: 17821



NOT TO SCALE

Prepared by:  
**ALL CONSULTING**

Prepared for:  
**OE OVERFLOW ENERGY**

Drawn by: Joshua Ticknor

Project Manager:  
Dan Arthur

Date: 10/07/2020

Overflow Energy, LLC  
Rose SWD #1

API: 30-015-45221

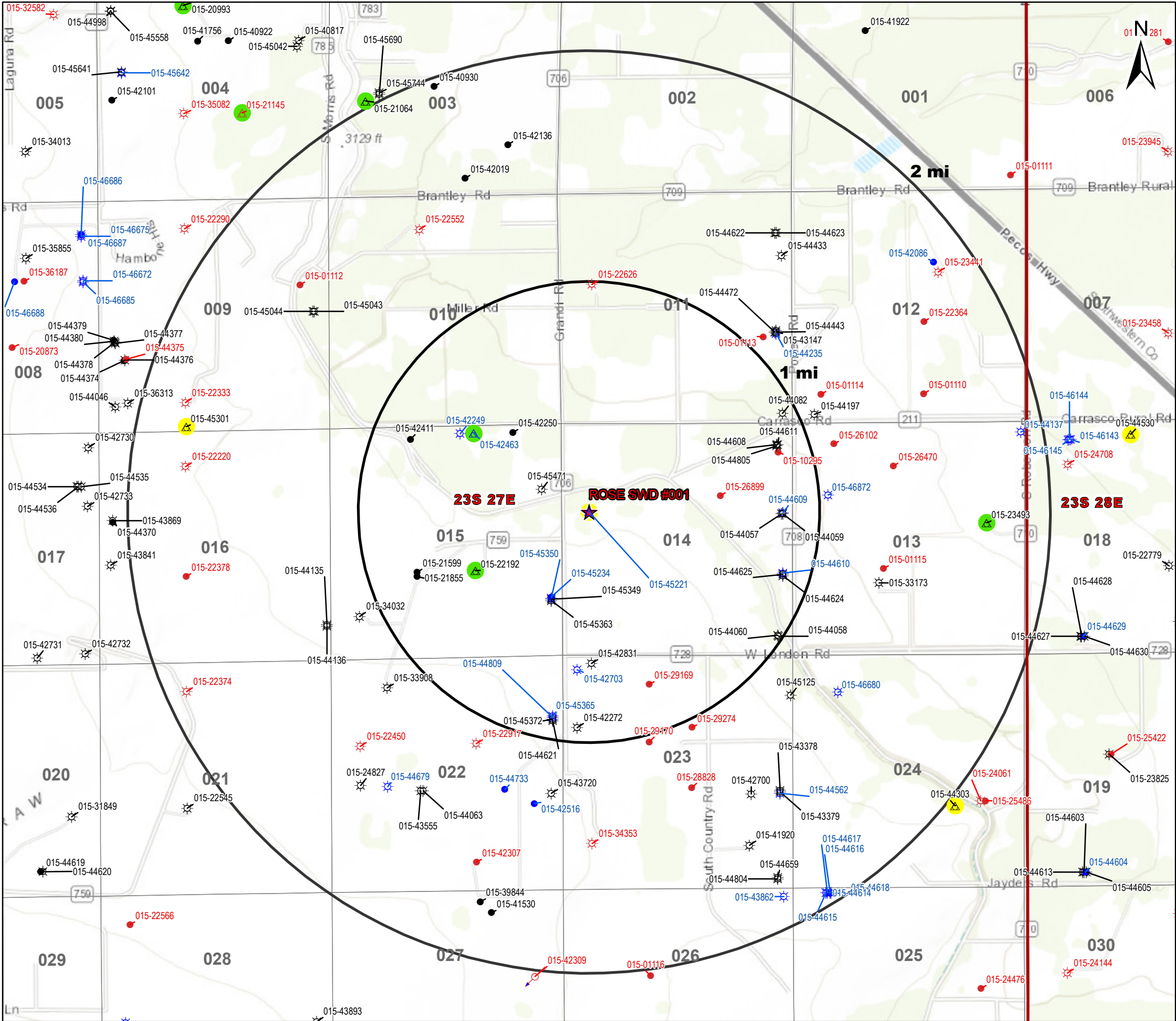
Unit Letter E, Section 14, Township 23S, Range 27E  
2,019 FNL 617 FWL  
Eddy County, NM



## **Attachment 2**

### Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1-mile Well Detail List
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- Potash Lease Map



Legend

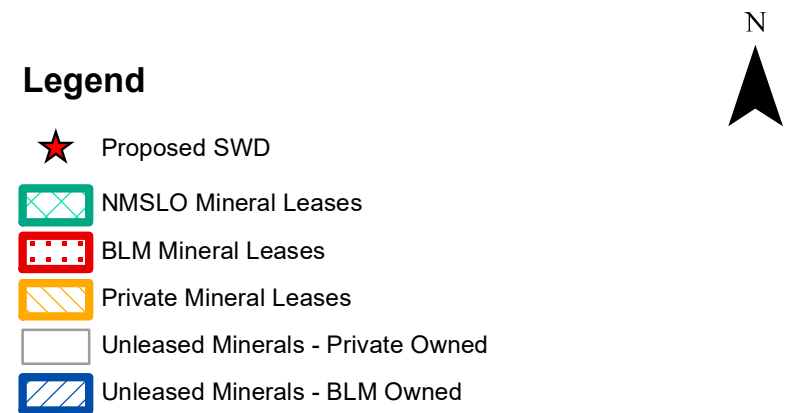
- ★ Proposed SWD
- ☼ Gas, Active (79)
- ☼ Gas, New (27)
- ☼ Gas, Plugged (18)
- 📌 Injection, Plugged (1)
- Oil, Active (17)
- Oil, New (9)
- Oil, Plugged (26)
- △ Salt Water Injection, Active (7)
- △ Salt Water Injection, New (2)
- △ Salt Water Injection, Plugged (1)
- Deep Injection Zone (4)
- Shallow Injection Zone (6)

Source Info: NMOCD O&G Wells updated 9/16/2020  
(<http://www.emnrd.state.nm.us/OCD/ocdgis.html>)

O&G Wells Area of Review		
ROSE SWD #1 Eddy County, New Mexico		
Proj Mgr: Dan Arthur	September 28, 2020	Mapped by: Ben Bockelmann
Prepared for: OVERFLOW ENERGY		Prepared by: 

**Notes:**



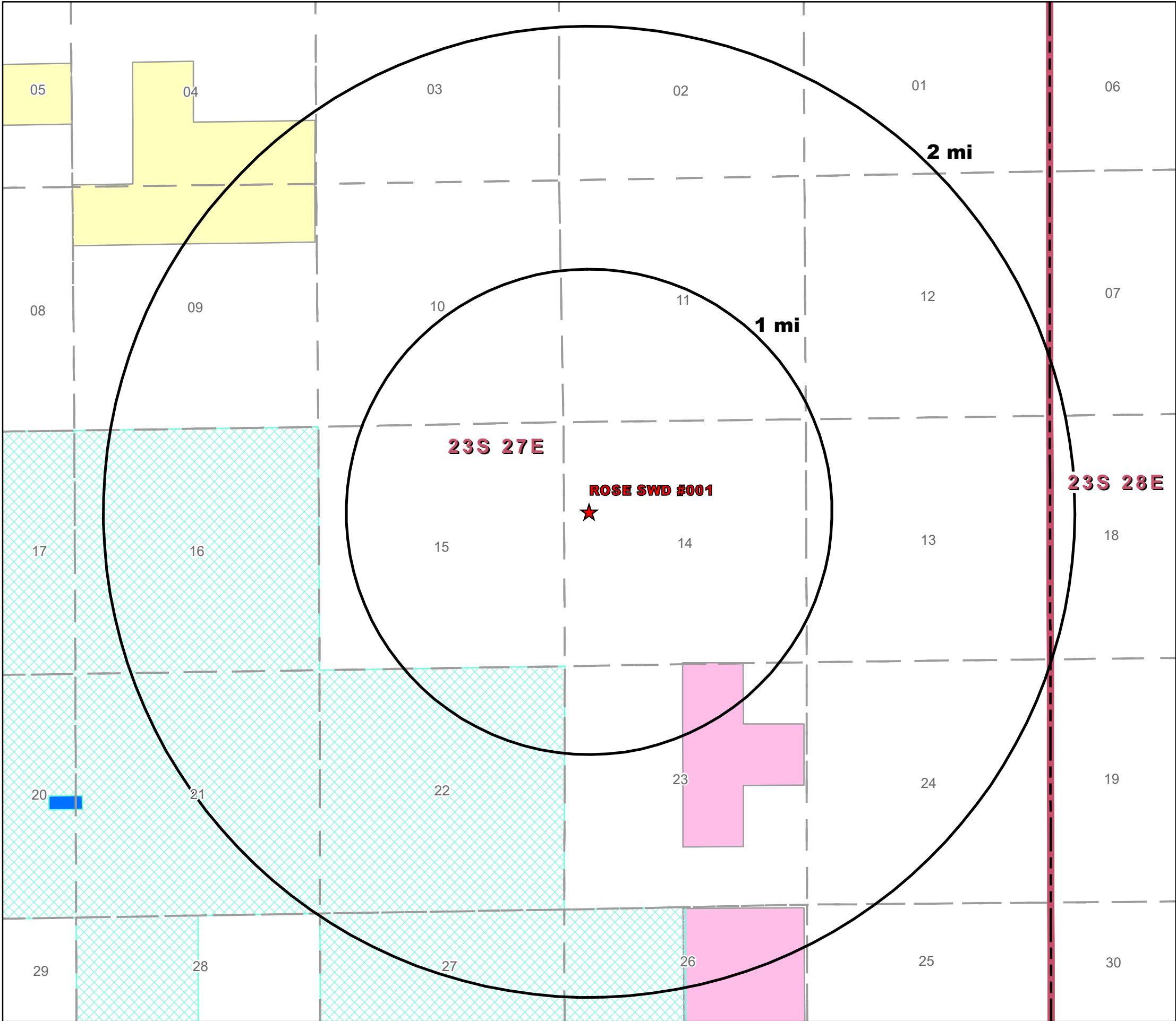


**ROSE SWD #1**  
Eddy County, New Mexico

Proj Mgr: Dan Arthur	September 30, 2020	Mapped by: Ben Bockelmann
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<p>Prepared for:</p> <p><b>OE</b> OVERFLOW ENERGY</p>	<p>Prepared by:</p> <p><b>ALL</b>CONSULTING</p>
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Source Info: BLM Mineral Leases (<https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership>)  
& NMSLO O&G Leases (<http://www.nmstatelands.org/maps-gis/gis-data-download/>)



**Legend**

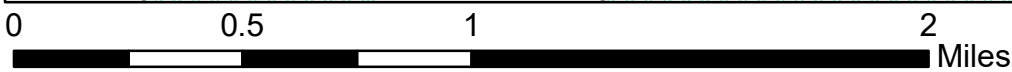
★ Proposed SWD

**Mineral Ownership**

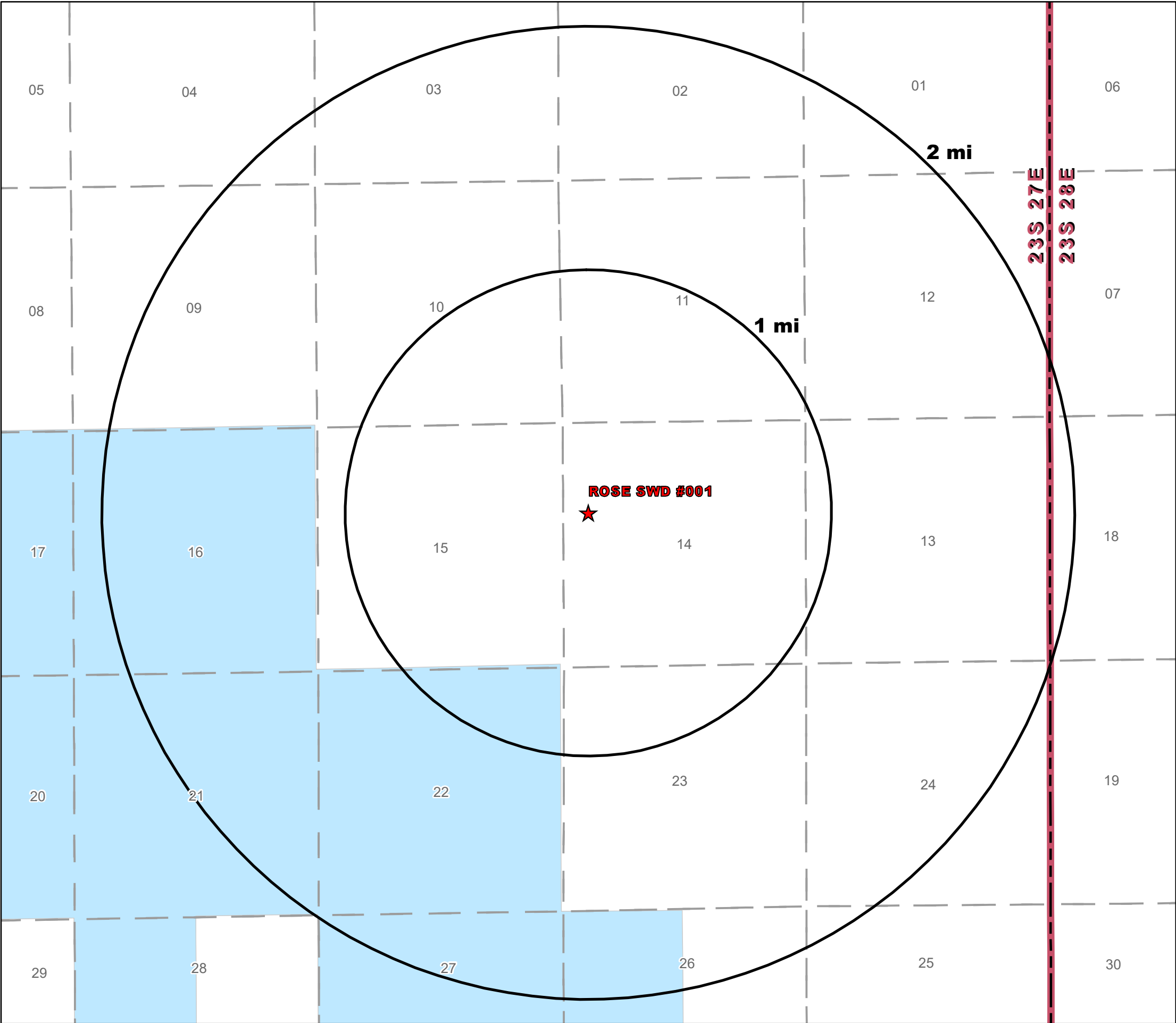
- Only oil and gas are owned by the U.S.
- Other minerals are owned by the U.S. (BLM)
- Private minerals
- Subsurface minerals (NMSLO)
- Surface and Subsurface minerals (NMSLO)



<b>Mineral Ownership Area of Review</b>		
<b>ROSE SWD #1</b> Eddy County, New Mexico		
Proj Mgr: Dan Arthur	September 04, 2020	Mapped by: Ben Bockelmann
Prepared for: OVERFLOW ENERGY		Prepared by: ALLCONSULTING



Source Info: BLM Mineral Ownership (<https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership>) & NMSLO Ownership (<http://www.nmstatelands.org/maps-gis/gis-data-download/>)



**Legend**

★ Proposed SWD

**Surface Ownership**

Private

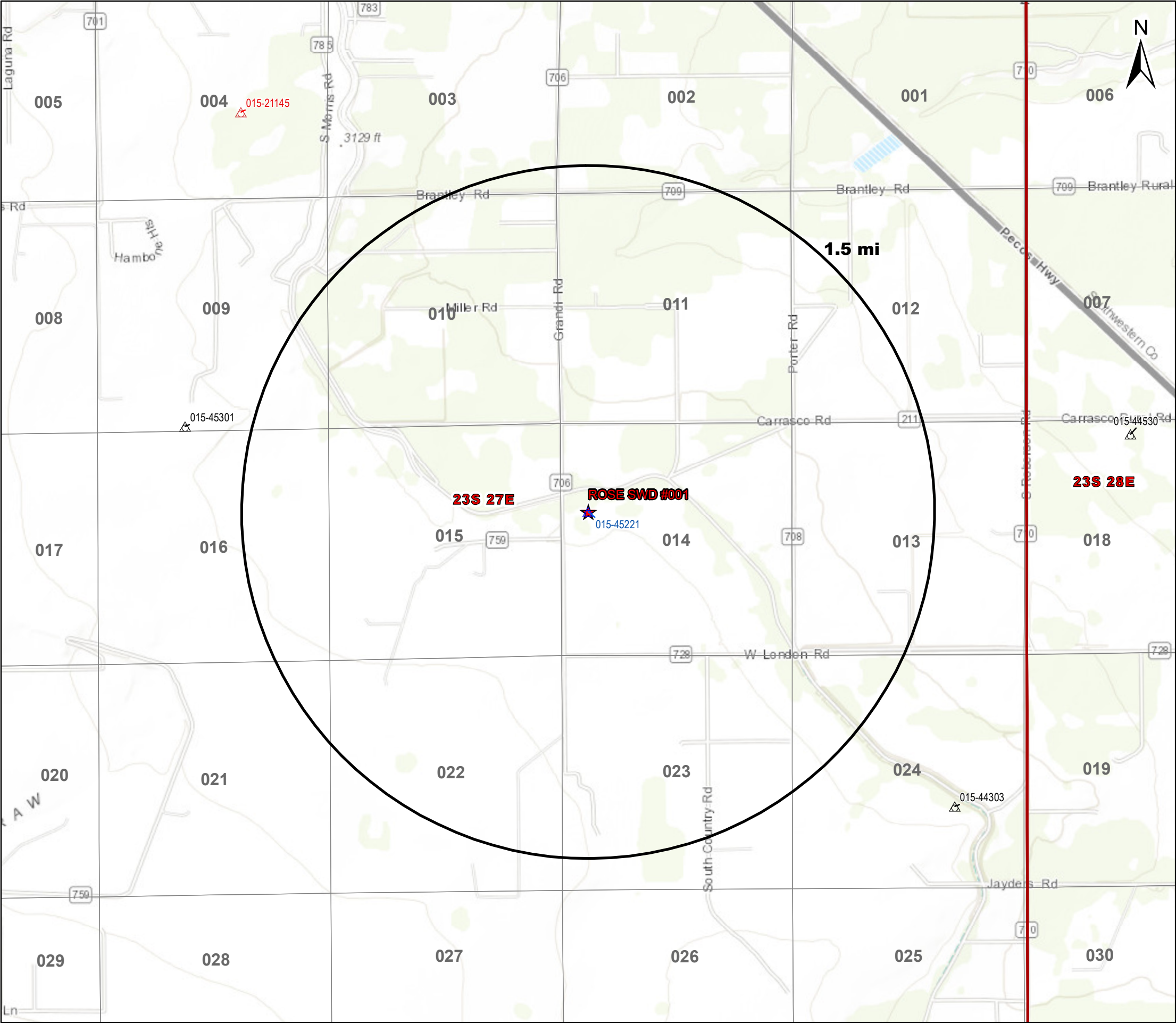
State

<b>Surface Ownership Area of Review</b>		
<b>ROSE SWD #1</b> Eddy County, New Mexico		
Proj Mgr: Dan Arthur	September 04, 2020	Mapped by: Ben Bockelmann
<div>Prepared for:  OVERFLOW ENERGY</div>		<div>Prepared by: </div>



Source Info: BLM Mineral Ownership (<https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership>) & NMSLO Ownership (<http://www.nmstatelands.org/maps-gis/gis-data-download/>)





Legend

- ★ Proposed SWD
- Deep Devonian/Silurian SWDs
  - △ Salt Water Injection, Active (3)
  - △ Salt Water Injection, New (1)
  - △ Salt Water Injection, Plugged (1)

Source Info: NMOCD O&G Wells updated 8/3/2020  
(<http://www.emnrd.state.nm.us/OCD/ocdgis.html>)

Deep SWDs Area of Review

ROSE SWD #1  
Eddy County, New Mexico

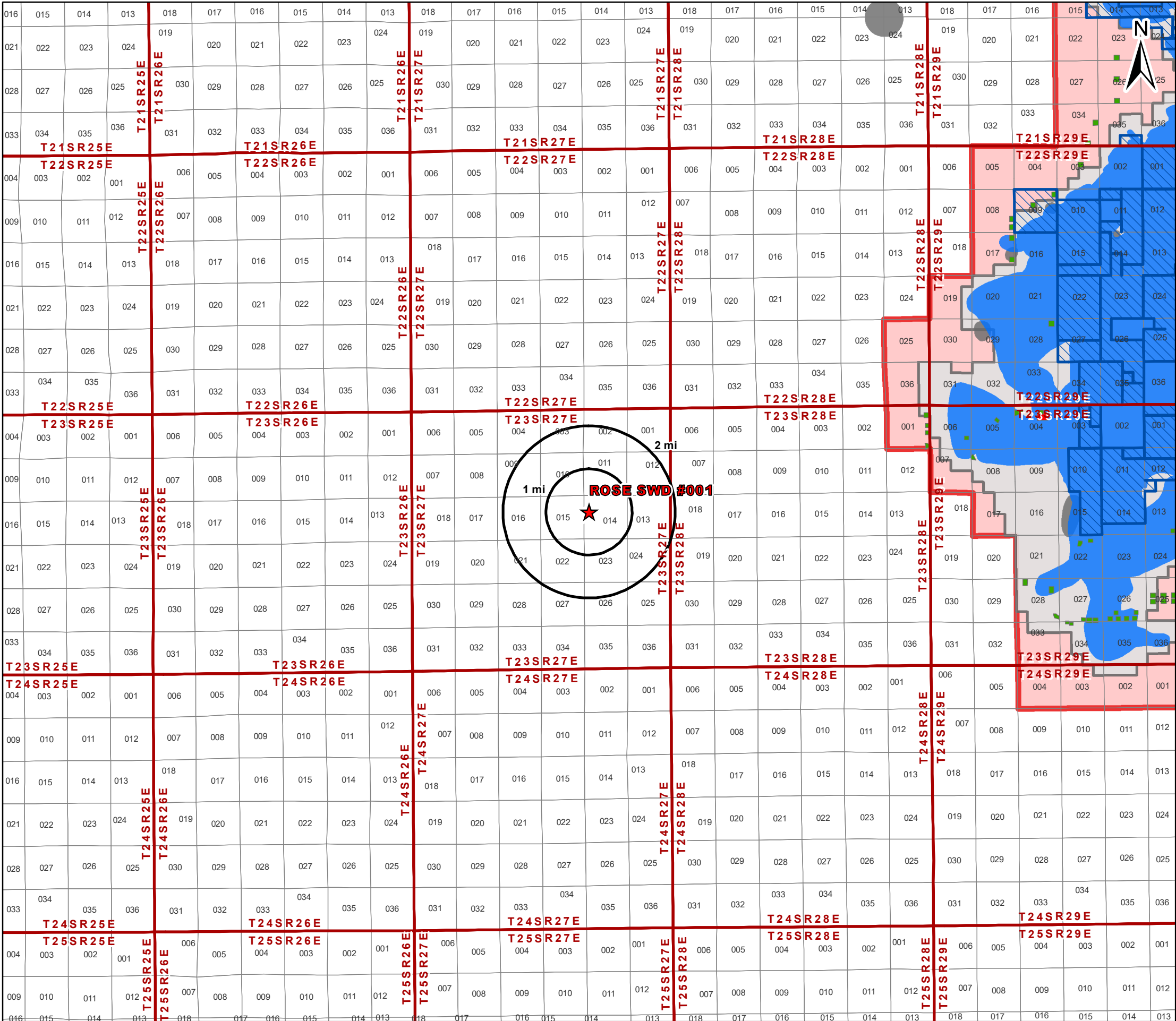
Proj Mgr:  
Dan Arthur

September 04, 2020

Mapped by:  
Ben Bockelmann

Prepared for:  
 OVERFLOW ENERGY

Prepared by:



Legend

- ★ Proposed SWD
- Potash Leases
- Ore Type - Measured
- Ore Type - Indicated
- KPLA
- SOPA
- Drill Islands**
- Status**
- Approved
- Denied

Potash Leases  
Area of Review

ROSE SWD #1  
Eddy County, New Mexico

Proj Mgr:  
Dan Arthur

September 04, 2020

Mapped by:  
Ben Bockelmann

Prepared for:  
 OVERFLOW ENERGY

Prepared by:



**Attachment 3**

Source Water Analyses

Source Formation Water Analysis																	
Overflow Energy, LLC																	
Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	TDS (Mg/L)	Chloride (Mg/L)	Bicarbonate (Mg/L)	Sulfate (Mg/L)
LONE RANGER 33 STATE #002H	3001541240	32.2592392	-104.1868896	33	23S	27E	I	1895S	50E	EDDY	NM		BONE SPRING 2ND SAND	138166.5	78243	110	0
BOSS HOGG 15 STATE COM #003H	3001541837	32.3115501	-104.2776184	15	23S	26E	B	100N	1650E	EDDY	NM		BONE SPRING 2ND SAND	175341.6	107328.3	573	776.1
CLETUS 28 STATE COM #004H	3001542625	32.2684135	-104.291832	28	23S	26E	P	175S	660E	EDDY	NM		BONE SPRING 2ND SAND	176248.8	108190.9	1110	0
BO DUKE FEDERAL 5 #003H	3001542693	32.32679915	-104.3135222	5	23S	26E	O	175S	1980E	EDDY	NM		BONE SPRING 2ND SAND	165576.3	100583.3	1098	0
HABANERO 17 FEDERAL COM #001H	3001536108	32.2218475	-104.2062683	17	24S	27E	A	990N	660E	EDDY	NM		WOLFCAMP	108205	65927.2	146	0
SERRANO 29 FEDERAL #001H	3001537763	32.1898842	-104.2062149	29	24S	27E	H	1980N	660E	EDDY	NM		WOLFCAMP	100994.9	63450.1	268	0

**Attachment 4**

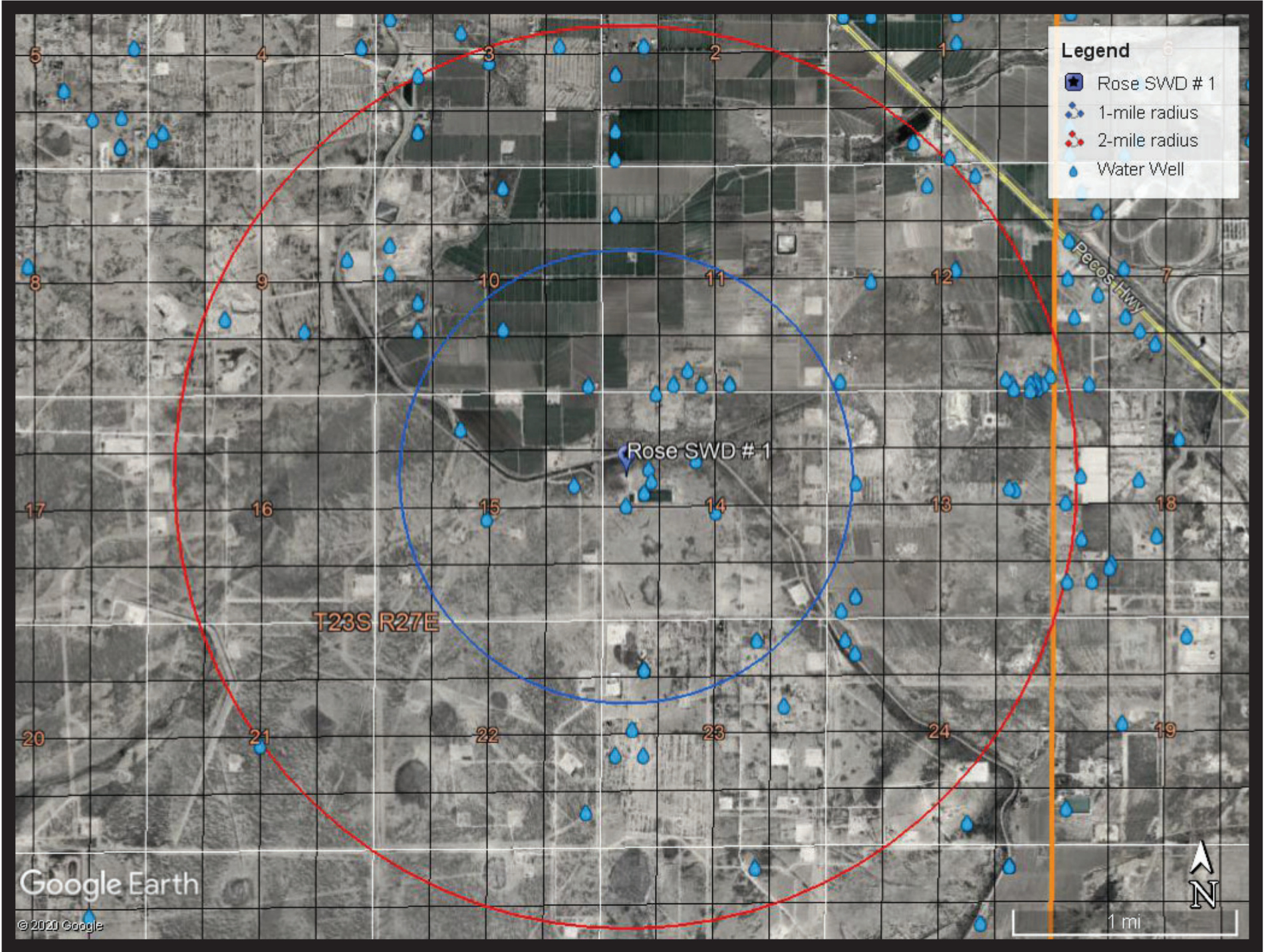
Injection Formation Water Analyses

Injection Formation Water Analysis																	
Overflow Energy, LLC																	
Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	TDS (Mg/L)	Chloride (Mg/L)	Bicarbonate (Mg/L)	Sulfate (Mg/L)
BANDANA POINT UT #001	3001500044	32.2986107	-104.5515823	13	23S	23E	O	750S	1900E	EDDY	NM	BANDANA POINT	DEVONIAN	15500	8020	500	1190
REMUDA BASIN UNIT #001	3001503691	32.2886238	-103.9360428	24	23S	29E	J	1980S	1980E	EDDY	NM	REMUDA	DEVONIAN	56922	29000	1740	4980
TORTOISE ASB COM #001	3001510490	32.2766914	-104.5190887	29	23S	24E	G	1980N	2250E	EDDY	NM		DEVONIAN	15601	7780	476	1600

**Attachment 5**

Water Well Map and Well Data





21 Water wells are located within 1-mile of the Rose SWD # 1  
Water Column Depths range from 52' to 280' with an average of 128'



Overflow Energy, LLC  
111 S. Main St. | PO Box 354  
Booker TX, 79005  
PH: 806-658-7832 | Fax: 806-658-7836

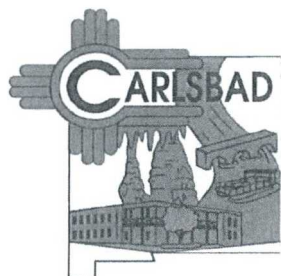
**Water Wells**  
**Rose SWD # 1**  
**Overflow Energy, LLC**  
**Eddy County, New Mexico**

Water Well Sampling Rationale														
Overflow Energy, llc - Rose SWD #1														
POD Number		Sec		Tws	Rng	X	Y	Latitude	Longitude	Distance (m)Distance (mi Depth Well		Depth Water	Water Column	
C	03767 POD1	14		23S	27E	578503	3574702	32.306382	-104.16612	150	0.0932057	235	140	95
C	03766 POD1	14		23S	27E	578373	3574609	32.305553	-104.1675	164	0.1019048	260	25	235
C	04076 POD1	14		23S	27E	578554	3574786	32.307136	-104.16557	183	0.1137109	245	99	146
C	03997 POD1	14		23S	27E	578534	3574872	32.307914	-104.16577	191	0.1186819	230	125	105
C	01083	15		23S	27E	578003	3574751	32.306859	-104.17142	368	0.2286645	325	45	280
C	04126 POD1	14		23S	27E	578870	3574935	32.308458	-104.1622	524	0.3255984	282	135	147
C	00291	11		23S	27E	578581	3575407	32.312736	-104.16523	666	0.4138331	180	70	110
C	04045 POD1	14		23S	27E	579013	3574571	32.305165	-104.16071	673	0.4181827	240	150	90
C	03060	10		23S	27E	578098	3575460	32.313248	-104.17035	737	0.4579504	139	87	52
C	00291 CLW198354	11		23S	27E	578705	3575472	32.313314	-104.16391	773	0.4803198	180	70	110
C	02456	11		23S	27E	578905	3575472	32.3133	-104.16178	878	0.5455637	140	60	80
C	02113	11		23S	27E	578806	3575573	32.314218	-104.16283	909	0.5648262	235	80	155
C	00310	11		23S	27E	579107	3575477	32.313331	-104.15964	1017	0.6319343	185	25	160
C	00310 CLW201186	11		23S	27E	579107	3575477	32.313331	-104.15964	1017	0.6319343	180	30	150
C	00187	15		23S	27E	577380	3574509	32.30472	-104.17806	1025	0.6369053	210	125	85
C	00623	15		23S	27E	577189	3575142	32.310443	-104.18004	1237	0.7686359	200		
C	00231 AS	23		23S	27E	578512	3573447	32.295061	-104.16612	1334	0.8289089	230	100	130
C	00498	23		23S	27E	578512	3573447	32.295061	-104.16612	1334	0.8289089	210	120	90
C	00498 CLW194833	23		23S	27E	578512	3573447	32.295061	-104.16612	1334	0.8289089	165	80	85
C	00508	10		23S	27E	577487	3575855	32.316854	-104.17681	1395	0.8668125	190		
C	02999	23		23S	27E	579314	3573661	32.296935	-104.15759	1459	0.9065803		160	
Notes: Water wells C-3767 and C-3766 were sampled on 10/12/2018. Water sampling results are included in attachment 5.											MAX	325	160	280
											MIN	139	25	52
											AVE	213	91	128



Water Well Sampling Results - Summary Table											
Overflow Energy, LLC - Rose SWD #1											
Water Well	Sampling Date	Alkaliunity - M (PPM as CaCO3)	Alkalinity - P (PPM)	Total Hardness (PPM as CaCO3)	Calcium (PPM)	Magnesium (PPM)	Chlorides (PPM)	Flourides (PPM)	PH	Specific Conductance (u-mhos/cm)	TDS (As NaCL) (PPM)
C-3766	10/12/2018	134	0	2275	607	189.25	993	1.06	6.95	5252	2574
C-3767	10/12/*2018	146	0	2151	592	137.75	864	1.23	6.96	4802	2353
Notes: Water sampling results are included in attachment 5.											





**CITY of CARLSBAD  
WATER ANALYSIS REPORT  
CARLSBAD CITY LABORATORY  
Wastewater Treatment Plant  
Carlsbad, New Mexico 88220**

CUSTOMER : Water Spur  
ADDRESS: PO Drawer 1322  
CITY/STATE: Carlsbad, NM 88221-1322

ANALYSIS No. \_\_\_\_\_  
SAMPLE RECEIVED 10/12/18

SAMPLE LOCATION: C-3766  
SAMPLE SOURCE: Well

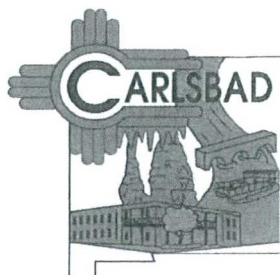
**Physical Characteristics as Received**

COLOR \_\_\_\_\_: ODOR \_\_\_\_\_: TURBIDITY \_\_\_\_\_:

CHEMICAL CHARACTERISTICS	Parts per	PPM as	GRAINS per
	Million	CaCO <sub>3</sub>	GALLON
Alkalinity-M Alkalinity as Calcium Carbonate		134	
Alkalinity-P		0	
Total Hardness		2275	133.04
Calcium	607	1518	88.77
Magnesium	189.25	757	44.27
Chlorides	993		
Fluorides	1.06		
pH ( as received )	6.95		
Specific Conductance (u-mhos/cm)	5252		
TDS (as NaCl)	2574		

Note:

ANALYST: Jose C. Ramirez



**CITY of CARLSBAD  
WATER ANALYSIS REPORT  
CARLSBAD CITY LABORATORY  
Wastewater Treatment Plant  
Carlsbad, New Mexico 88220**

CUSTOMER : Water Spur  
ADDRESS: PO Drawer 1322  
CITY/STATE: Carlsbad, NM 88221-1322

ANALYSIS No. \_\_\_\_\_  
SAMPLE RECEIVED 10/12/18

SAMPLE LOCATION: C-3767  
SAMPLE SOURCE: Well

**Physical Characteristics as Received**

COLOR \_\_\_\_\_: ODOR \_\_\_\_\_: TURBIDITY \_\_\_\_\_:

CHEMICAL CHARACTERISTICS	Parts per Million	PPM as CaCO <sub>3</sub>	GRAINS per GALLON
Alkalinity-M Alkalinity as Calcium Carbonate		146	
Alkalinity-P		0	
Total Hardness		2151	125.79
Calcium	592	1480	86.55
Magnesium	167.75	671	39.24
Chlorides	864		
Fluorides	1.23		
pH ( as received )	6.96		
Specific Conductance (u-mhos/cm)	4802		
TDS (as NaCl)	2353		

Note:

ANALYST: Jose C. Ramirez

**Attachment 6**

Induced Seismicity Assessment Letter



October 5, 2020

Mr. Phillip Goetze, P.G.  
NM EMNRD – Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Subject: Induced Seismicity Potential Statement for the Rose SWD #1

Dear Mr. Goetze,

This letter provides information regarding the seismic potential associated with injection operations associated with Overflow Energy, LLC (Overflow), proposed Rose SWD No. 1, hereinafter referred to as the “Subject Well.”

As outlined herein, based on my experience as an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low fault slip potential (FSP) of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

The Subject Well, is located 2,019’ FNL & 617’ FWL of Section 14, in T23-S and R27-E of Eddy County, New Mexico. Historically, the Eddy and Lea Counties area has experienced very limited recorded seismic activity (per the U.S. Geological Survey [USGS] earthquake catalog database). There has been one known seismic event located within a 25-mile radius of the proposed Subject Well. The closest recorded seismic event was a M3.9 that occurred on November 28<sup>th</sup>, 1974 and was located approximately 1.5 miles northeast of the Subject Well (See Exhibit 1). The closest Class IID well injecting into the same formations (Devonian-Silurian) of the Subject Well is approximately 1.8 miles to the northwest (See Exhibit 1).

Overflow does not own either 2D or 3D seismic reflection data in the area of the Subject Well. Fault data from USGS indicates that the closest known fault is approximately 2.3 miles northwest of the Subject Well (See Exhibit 1).

In a recent paper written by Snee and Zoback (2018) entitled “State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity,” the authors found that large groups of mostly north-south striking Precambrian basement faults, predominantly located along the Central Basin Platform, the western Delaware Basin, and large parts of the Northwest Shelf (which includes Eddy and Lea counties, New Mexico) have low FSP at the modeled fluid-pressure

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020

perturbation. The map in Exhibit 2 depicts the low probability risk of FSP for the Delaware Basin and Northwest Shelf areas (Snee and Zoback 2018).

Geologic analysis indicates that the proposed Devonian-Silurian injection zone is overlain by approximately 200 to 400 feet of Woodford Shale, which is the upper confining zone and will serve as a barrier for upward injection fluid migration. Additionally, the Simpson Group that lies directly below the Montoya Formation will act as a lower confining zone to prohibit fluids from migrating downward into the underlying Ellenberger Formation and Precambrian basement rock. See the stratigraphic column for the Delaware Basin included in Exhibit 3.

In the Eddy and Lea Counties area of New Mexico, the Simpson Group is comprised of a series of Middle to Upper Ordovician carbonates, several sandstones, and sandy shales that range from approximately 350 to 650 feet thick (Jones 2008). This group of rocks is capped by the limestones of the Bromide Formation, which is approximately 200 feet thick in this area (Jones 2008). The closest deep well drilled into the Precambrian basement was completed by the Skelly Oil Company in 1975. This well is located in Section 17, Range 36E, Township 25S of Lea County (API No.30-025-25046) and encountered 602 feet of Ellenburger Formation before reaching the top of the Precambrian granite at a depth of 18,920 feet. Based on the estimated thickness of the Simpson Group and Ellenburger Formation in this area, the Precambrian basement should be approximately 1,000 to 1,200 feet below the bottom of the proposed injection zones in the Subject Well.

### **Conclusion**

As an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low FSP of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

Sincerely,  
ALL Consulting



J. Daniel Arthur, P.E., SPEC  
President and Chief Engineer

Enclosures  
References  
Exhibits

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020

## **References**

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020

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Green, G.N., and G.E. Jones. 1997. "The Digital Geologic Map of New Mexico in ARC/INFO Format." U.S. Geological Survey Open-File Report 97-0052. <https://mrdata.usgs.gov/geology/state/state.php?state=NM> (accessed June 14, 2018).

Jones, Rebecca H. 2008. "The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, and Reservoir Development." [http://www.beg.utexas.edu/resprog/permianbasin/PBGSP\\_members/writ\\_synth/Simpson.pdf](http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf) (accessed June 19, 2018).

Snee, Jens-Erik Lund, and Mark D. Zoback. 2018. "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity." *The Leading Edge* 37, no. 2 (February 2018): 127-34.

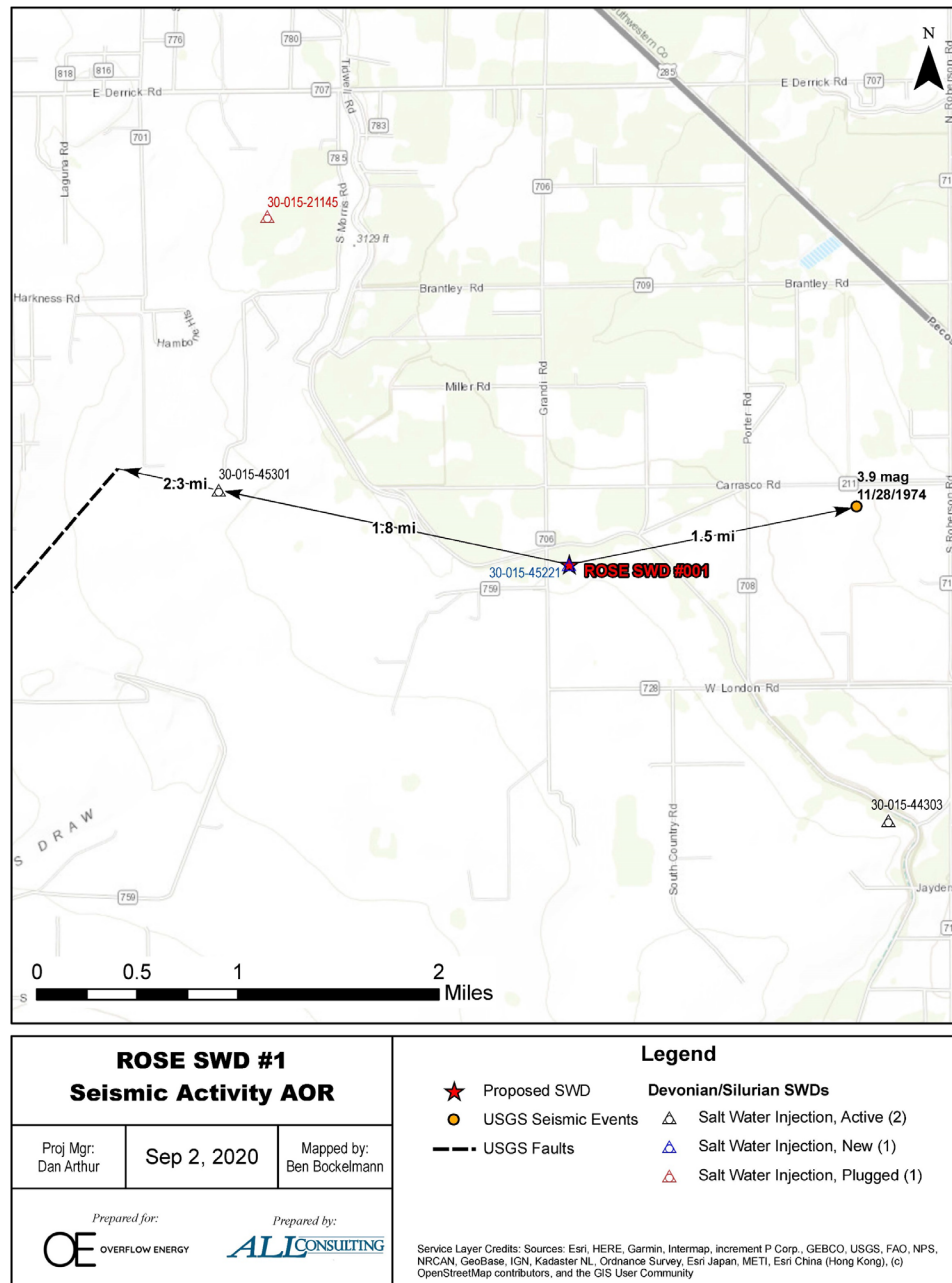
U.S. Geological Survey (USGS). No date. Earthquakes Hazard Program: Earthquake Catalog. <https://earthquake.usgs.gov/earthquakes/search/> (accessed June 14, 2018).

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020

## **Exhibits**

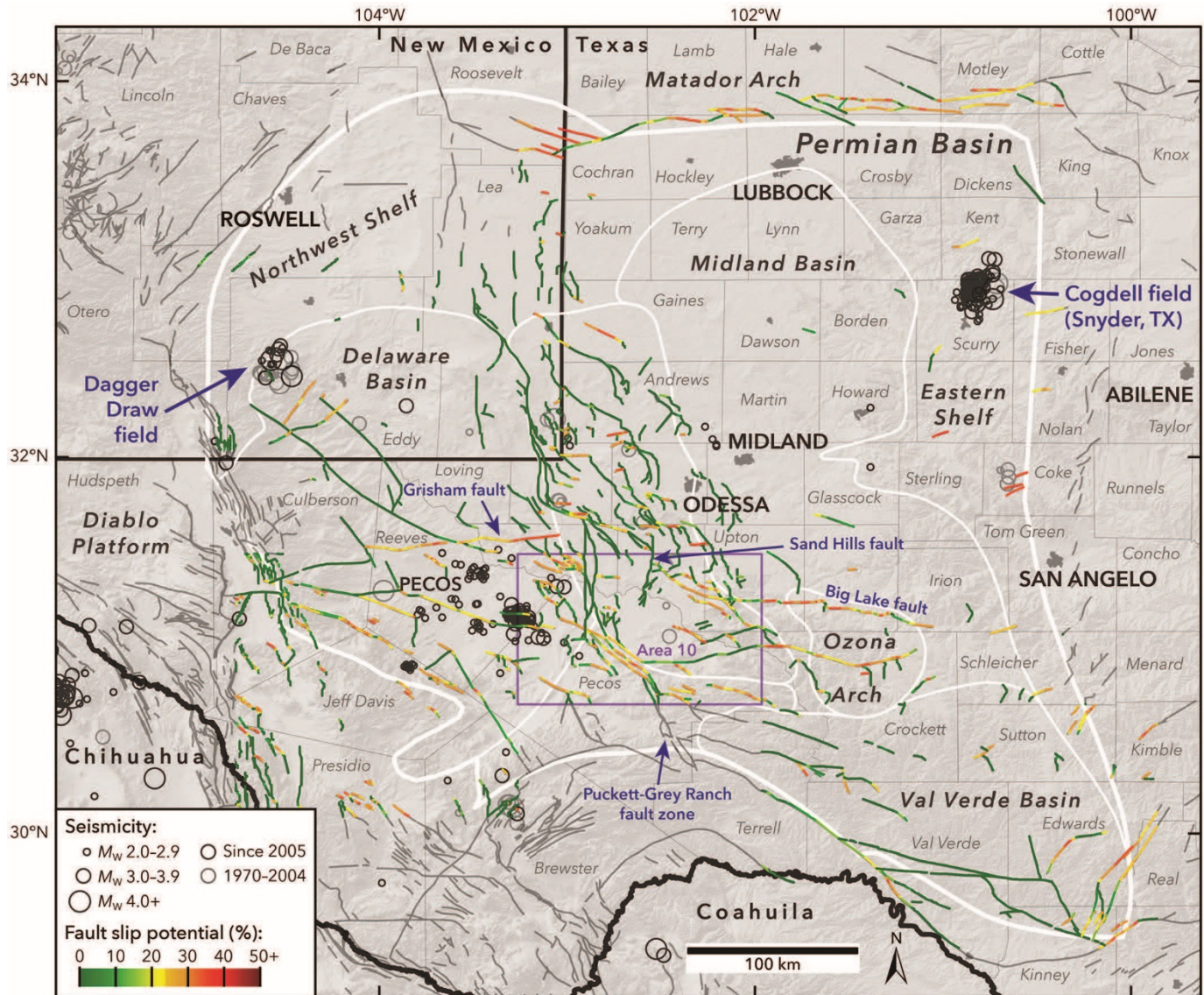


Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020



**Exhibit 1. Map Showing the Distances from Known and Inferred Faults, Seismic Event, and Closest Deep Injection Well**

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020



**Exhibit 2. Results of the Snee and Zoback (2018) Probabilistic FSP Analysis Across the Permian Basin**

Induced Seismicity Potential Statement for the Rose SWD #1  
October 5, 2020

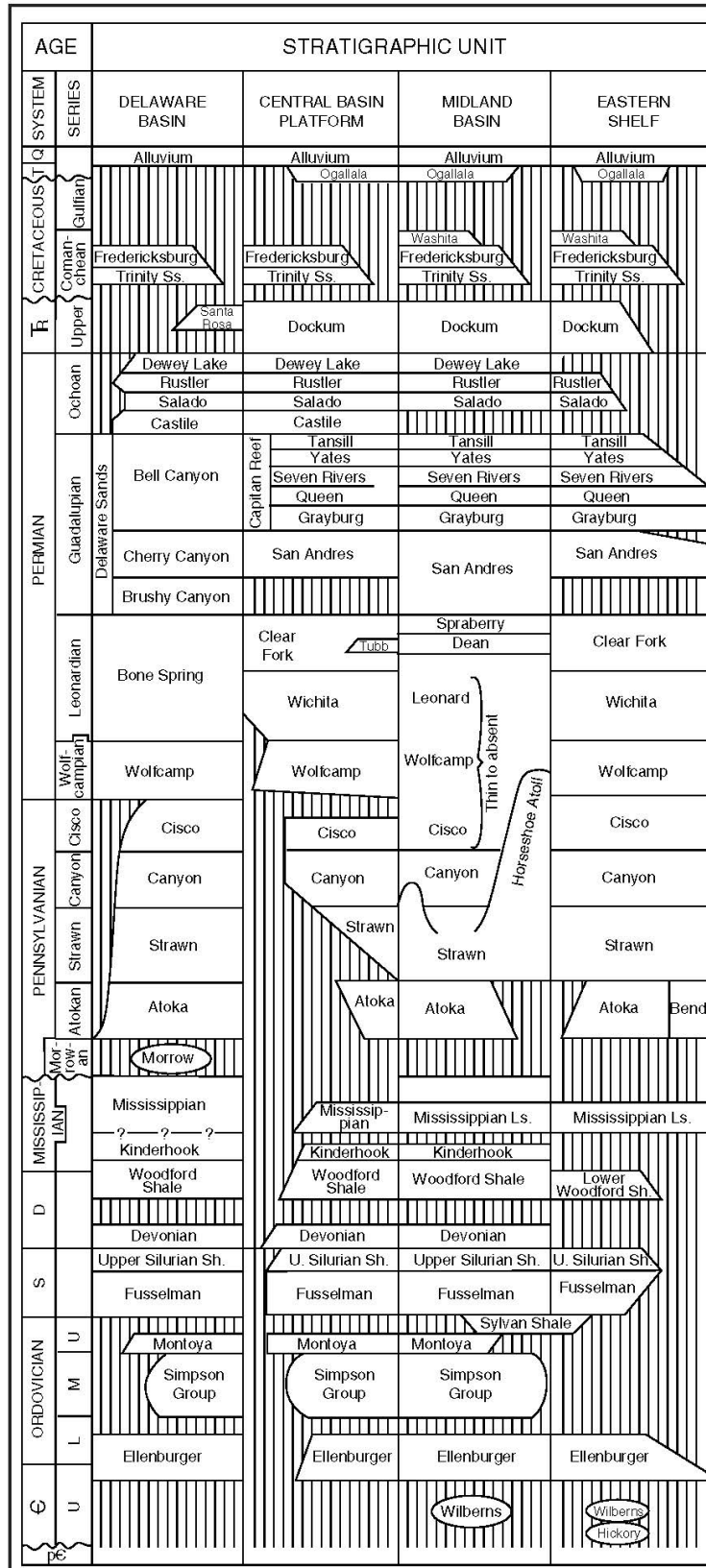


Exhibit 3. Delaware Basin Stratigraphic Chart (Ball 1995)

**Attachment 7**

Public Notice Affidavit and Notice of Application Confirmations



**APPLICATION FOR AUTHORIZATION TO INJECT**

NOTICE IS HEREBY GIVEN: That Overflow Energy, LLC 111 S. Main St. Booker, Texas 79005, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORIZATION TO INJECT as follows:

PURPOSE: The intended purpose of the injection well is to dispose of salt water produced from permitted oil and gas wells.

WELL NAME AND LOCATION: Rose SWD #1  
Located 4.41 miles northwest of Loving, NM  
SW ¼ NW ¼, Section 14, Township 23S, Range 27E  
2,019' FNL & 617' FWL  
Eddy, NM

NAME AND DEPTH OF DISPOSAL ZONE: Devonian - Silurian (13,390' – 14,295')  
EXPECTED MAXIMUM INJECTION RATE: 30,000 Bbls/day  
EXPECTED MAXIMUM INJECTION PRESSURE: 2,678 psi (surface)

Objections or requests for hearing must be filed with the New Mexico Oil Conservation Division within fifteen (15) days. Any objection or request for hearing should be mailed to the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505.

Additional information may be obtained by contacting Nate Alleman at 918-382-7581.

## AFFIDAVIT OF PUBLICATION

Ad No.  
4399445

ALL CONSULTING CARLSBAD  
1718 SOUTH CHEYENNE AVENUE  
TULSA OK 74119

I, a legal clerk of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

9/30/2020



Legal Clerk

Subscribed and sworn before me this  
10/2/2020



State of WI, County of Brown  
NOTARY PUBLIC

10/23/2023

My Commission Expires

APPLICATION FOR  
AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That Overflow Energy, LLC 111 S. Main St. Booker, Texas 79005, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORIZATION TO INJECT as follows:

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SW ¼ NW ¼, Section 14, Township 23S, Range 27E  
2,019' FNL & 617' FWL  
Eddy, NM

NAME AND DEPTH OF DISPOSAL ZONE: Devonian - Silurian (13,390' - 14,295')

EXPECTED MAXIMUM INJECTION RATE: 30,000  
Bbls/day

EXPECTED MAXIMUM INJECTION PRESSURE: 2,678  
psi (surface)

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Additional information may be obtained by contacting Nate Alleman at 918-382-7581.

#4399445, Current Argus, Sept. 30, 2020

Ad#:4399445  
P O :  
# of Affidavits :0.00

PANG PAPPATHOPOULOS  
Notary Public  
State of Wisconsin

**APPLICATION FOR  
AUTHORIZATION TO INJECT**

NOTICE IS HEREBY GIVEN:  
That Overflow Energy, LLC  
111 S. Main St. Booker,  
Texas 79005, is requesting  
that the New Mexico Oil  
Conservation Division ad-  
ministratively approve the  
APPLICATION FOR AUTHOR-  
IZATION TO INJECT as fol-  
lows:

PURPOSE: The intended pur-  
pose of the injection well is  
to dispose of salt water pro-  
duced from permitted oil  
and gas wells.

WELL NAME AND LOCA-  
TION: Rose SWD #1  
Located 4.41 miles north-  
west of Loving, NM  
SW  $\frac{1}{4}$  NW  $\frac{1}{4}$ , Section 14,  
Township 23S, Range 27E  
2,019' FNL & 617' FWL  
Eddy, NM

NAME AND DEPTH OF DIS-  
POSAL ZONE: Devonian - Si-  
lurian (13,390' - 14,295')  
EXPECTED MAXIMUM IN-  
JECTION RATE: 30,000  
Bbls/day  
EXPECTED MAXIMUM IN-  
JECTION PRESSURE: 2,678 psi  
(surface)

Objections or requests for  
hearing must be filed with  
the New Mexico Oil Conser-  
vation Division within fif-  
teen (15) days. Any objec-  
tion or request for hearing  
should be mailed to the Oil  
Conservation Division, 1220  
South St. Francis Dr., Santa  
Fe, New Mexico 87505.

Additional information may  
be obtained by contacting  
Nate Alleman at 918-382-  
7581.  
#4399445, Current Argus,  
Sept. 30, 2020

Rose SWD #1 - Notice of Application Recipients				
Entity	Address	City	State	Zip Code
Land & Mineral Owner				
J.D. Rose	P.O. Box 1322	Carlsbad	NM	88221
OCD District				
NMOCD District 2	811 S. First St.	Artesia	NM	88210
Leasehold Operators				
BC Operating, INC. (BC OPERATING)	P.O. Box 50820	Midland	TX	79710
Caza Operating, LLC (CAZA PET, LLC)	200 N Loraine Street Ste. 1550	Midland	TX	79701
Chase Oil Corporation (CHASE OIL ETAL, Chase Oil)	P.O. Box 1767	Artesia	NM	88211
Chesapeake Operating, Inc. (CHESAPEAKE)	P.O. Box 18496	Oklahoma City	OK	73154-0496
COG Production, LLC (COG)	600 W. Illinois Ave.	Midland	TX	79701
Commision of Public Lands - State Land Office	310 Old Santa Fe Trail	Santa Fe	NM	87501
Crown Oil Partners L.P. (CROWN OIL ETAL)	P.O. Box 50820	Midland	TX	79710
D.S. Guevara	873 Libson Ave SE	Rio Rancho	NM	87124
EOG Resources, Inc. (EOG M RESOURCES, INC)	5509 Champions Drive	Midland	TX	79706
Featherstone Development Corp. (FEATHERSTONE)	P.O. Box 429	Roswell	NM	88202
Lanexco Inc. (LANEXCO)	7505 Memorial Woods Dr. Apt 60	Houston	TX	77024
Matador Production Company	5400 LBJ Freeway, Ste. 1500	Dallas	TX	75240
MRC Permian Company (MRC PERMIAN)	5400 LBJ Freeway, Ste. 1500	Dallas	TX	75241
MYCO Industries Inc. (MYCO LAND)	P.O. Box 840	Artesia	NM	88211
New Mexico BLM	620 E. Greene St.	Carlsbad	NM	88220
Pandandle Oil & Gas Inc. (PANHANDLE)	1601 NM Expressway STE. 1100	Oklahoma City	OK	73118
Pogo Production Company, LLC (POGO PRODUCTION)	300 N Marienfeld St, Suite 600	Midland	TX	79701
Ray Westall Operating, Inc.	P.O. Box 4	Loco Hills	NM	88255
RKI Exploration & Production, LLC (RKI EXPLORATION)	3500 One Williams Center	Tulsa	OK	74172
VDP, Inc. (VPD NEW MEXICO)	749 Carver Road	Las Cruces	NM	88005
Westall Oil & Gas, LLC (WESTALL O&G)	P.O. Box 4	Loco Hills	NM	88255
WPX Energy Permian, LLC	P.O. Box 21218	Tulsa	OK	74121
Yates Petroleum Corporation (YATES PET, YATES PER, ETAL)	207 S. 4th Street	Artesia	NM	88210
<b>Notes:</b> <ul style="list-style-type: none"> <li>•The table above shows the Entities who were identified as parties of interest requiring notification on either the 1-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2). The names listed above in parenthesis, are the abbreviated entity names used on either the 1-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2).</li> <li>•Yates Petroleum has been acquired by EOG. For the purposes of consistency, both parties have been notified of this application.</li> </ul>				



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