SWD

Initial

Application

Received: 09/06/19

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

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
9/6/2019		SWD	pKAM1925539651

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: AWR Disposal LLC **OGRID Number:** 328805
Well Name: Pop SWD #1 **API:**
Pool: Proposed: SWD, Devonian, Fusselman, Montoya **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

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

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
A. ☒ Offset operators or lease holders
B. ☐ Royalty, overriding royalty owners, revenue owners
C. ☒ Application requires published notice
D. ☒ Notification and/or concurrent approval by SLO
E. ☒ Notification and/or concurrent approval by BLM
F. ☒ Surface owner
G. ☒ For all of the above, proof of notification or publication is attached, and/or,
H. ☐ No notice required

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.

09/06/2019
Date

Randy Hicks (agent)
Print or Type Name

505 238 9515
Phone Number

Signature

r@rthicksconsult.com
e-mail Address

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

☐ **AMENDED REPORT**

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name

[4]Property Code	[5]Property Name	[6]Well Number
	POP SWD	1

[7]OGRID No.	[8]Operator Name	[9]Elevation
328805	AWR DISPOSAL, LLC	3390'

[10]Surface Location

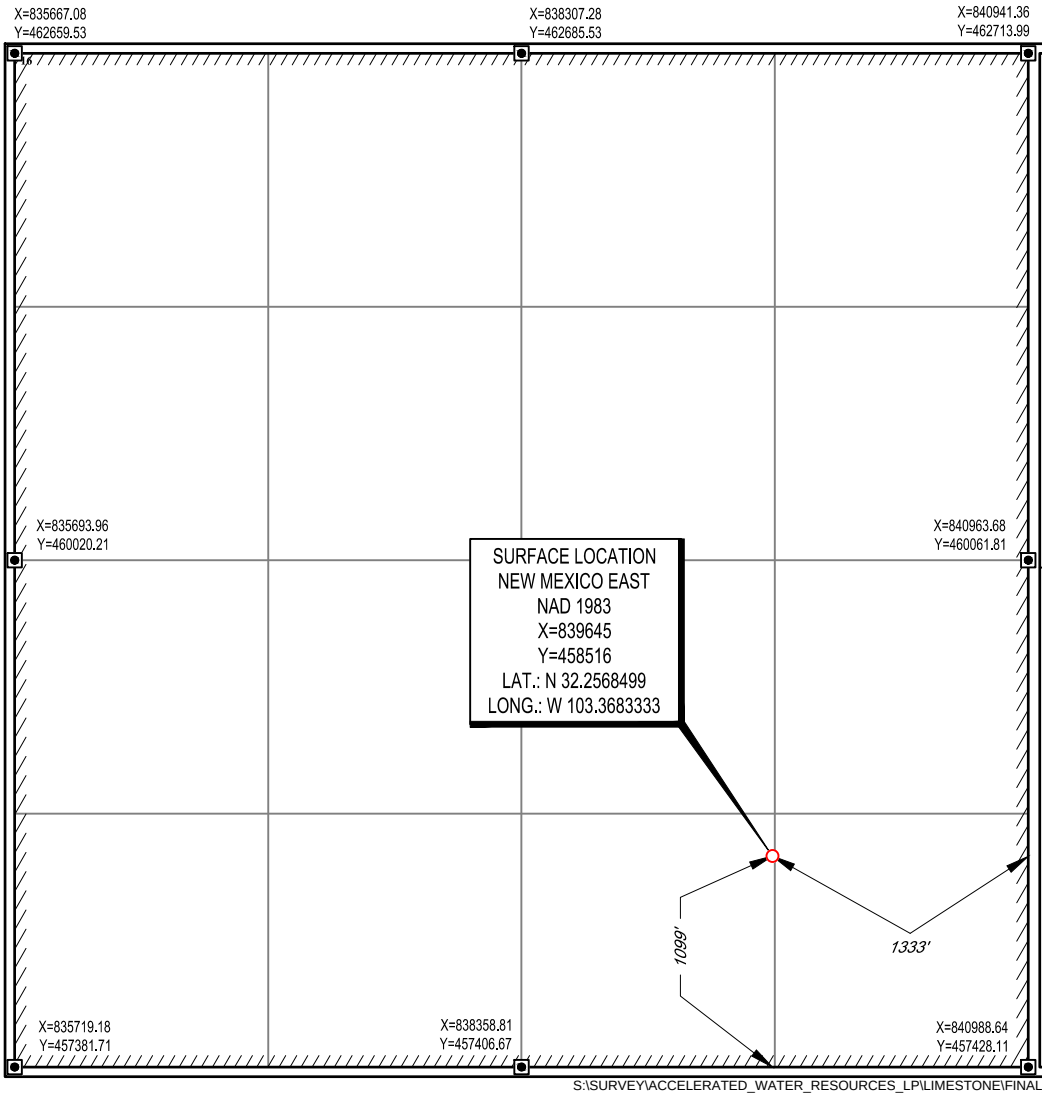
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	33	23-S	35-E	-	1099'	SOUTH	1333'	EAST	LEA

[11]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

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]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.



[17]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 Date

Printed Name

E-mail Address

[18]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 to the best of my belief.

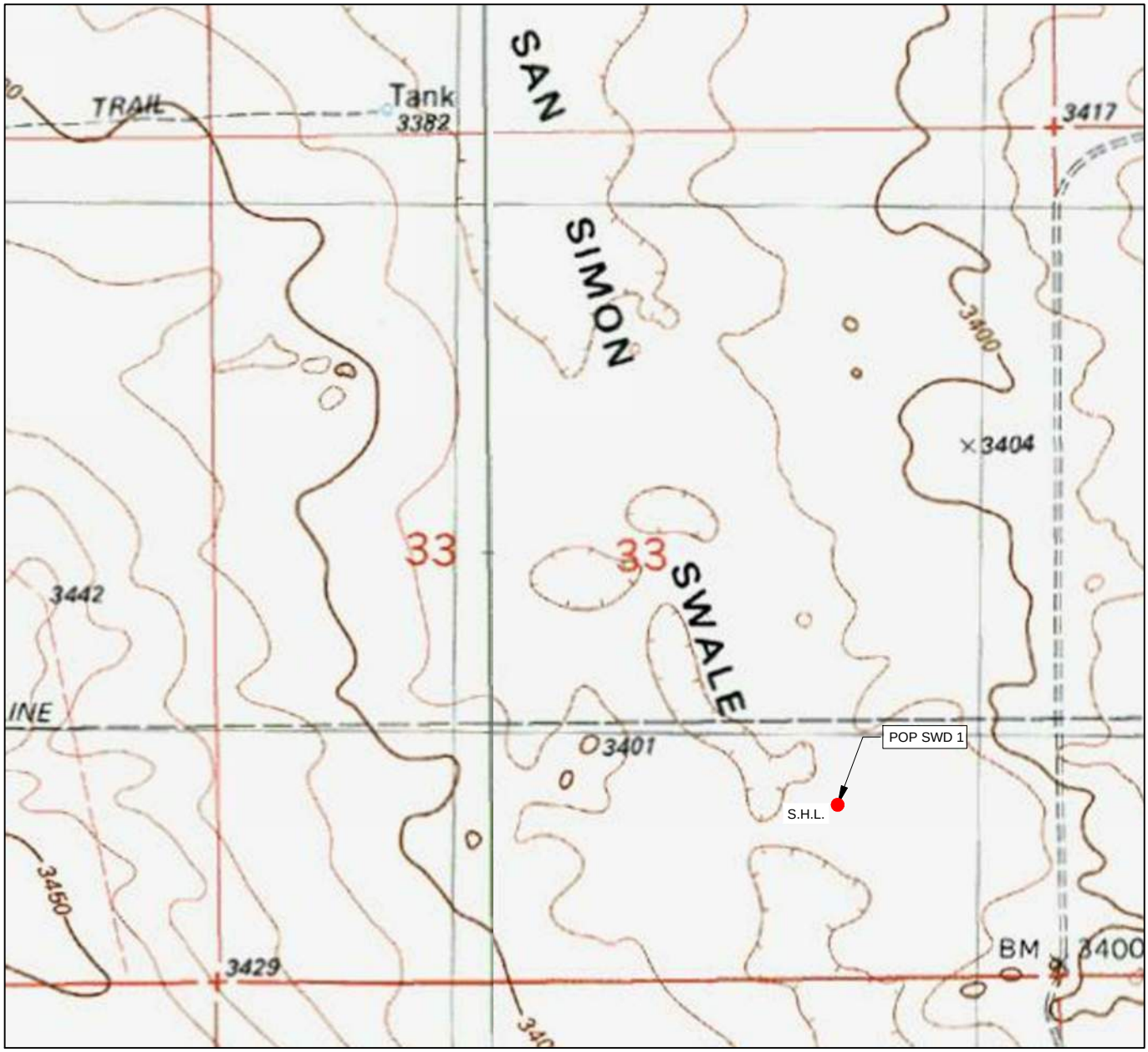
07/31/2019
Date of Survey
Signature and Seal of Professional Surveyor

JOHN R. CARNEGIE
NEW MEXICO
11401
REGISTERED PROFESSIONAL SURVEYOR

Certificate Number

S:\SURVEY\ACCELERATED_WATER_RESOURCES_LP\LIMESTONE\FINAL_PRODUCTS\LO_POP_SWD_1.DWG 8/28/2019 6:30:08 AM hperezgomez

LOCATION & ELEVATION VERIFICATION MAP

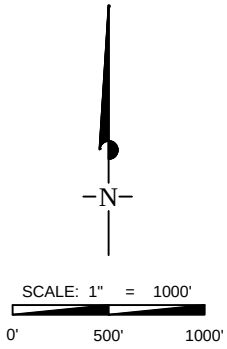


AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: POP SWD 1

SECTION 33 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM ELEVATION 3390'
DESCRIPTION 1099' FSL & 1333' FEL

LATITUDE N 32.2568499 LONGITUDE W 103.3683333



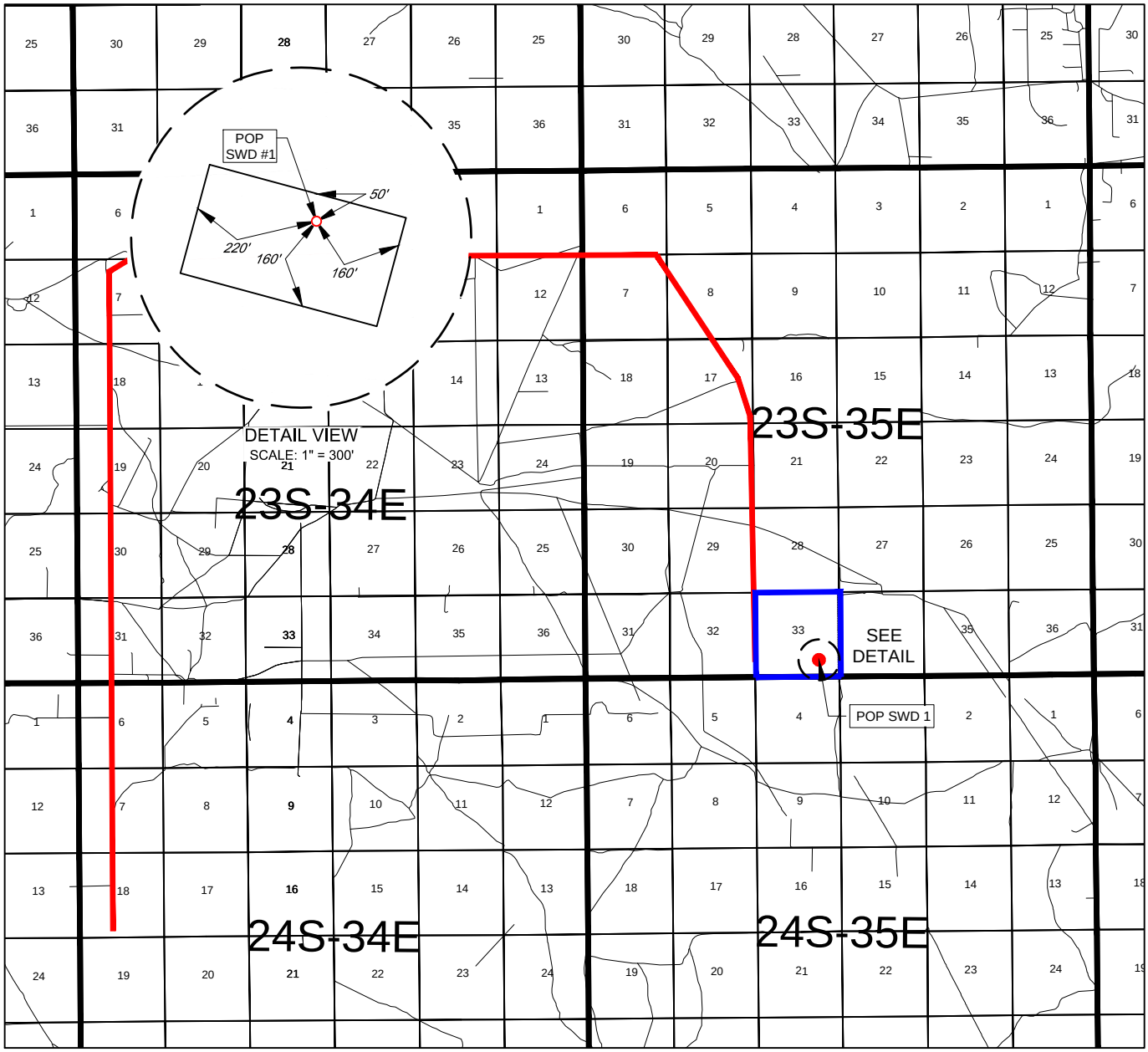
THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

EXHIBIT 2

VICINITY MAP



AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: POP SWD 1

SECTION 33 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 1099' FSL & 1333' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±14.4 MILES, THENCE GO EAST (RIGHT) ON LEASE RD. ± 5.1 MILES, TO A POINT ±3937 FEET WEST OF THE LOCATION.

N

SCALE: 1" = 10000'
0' 5000' 10000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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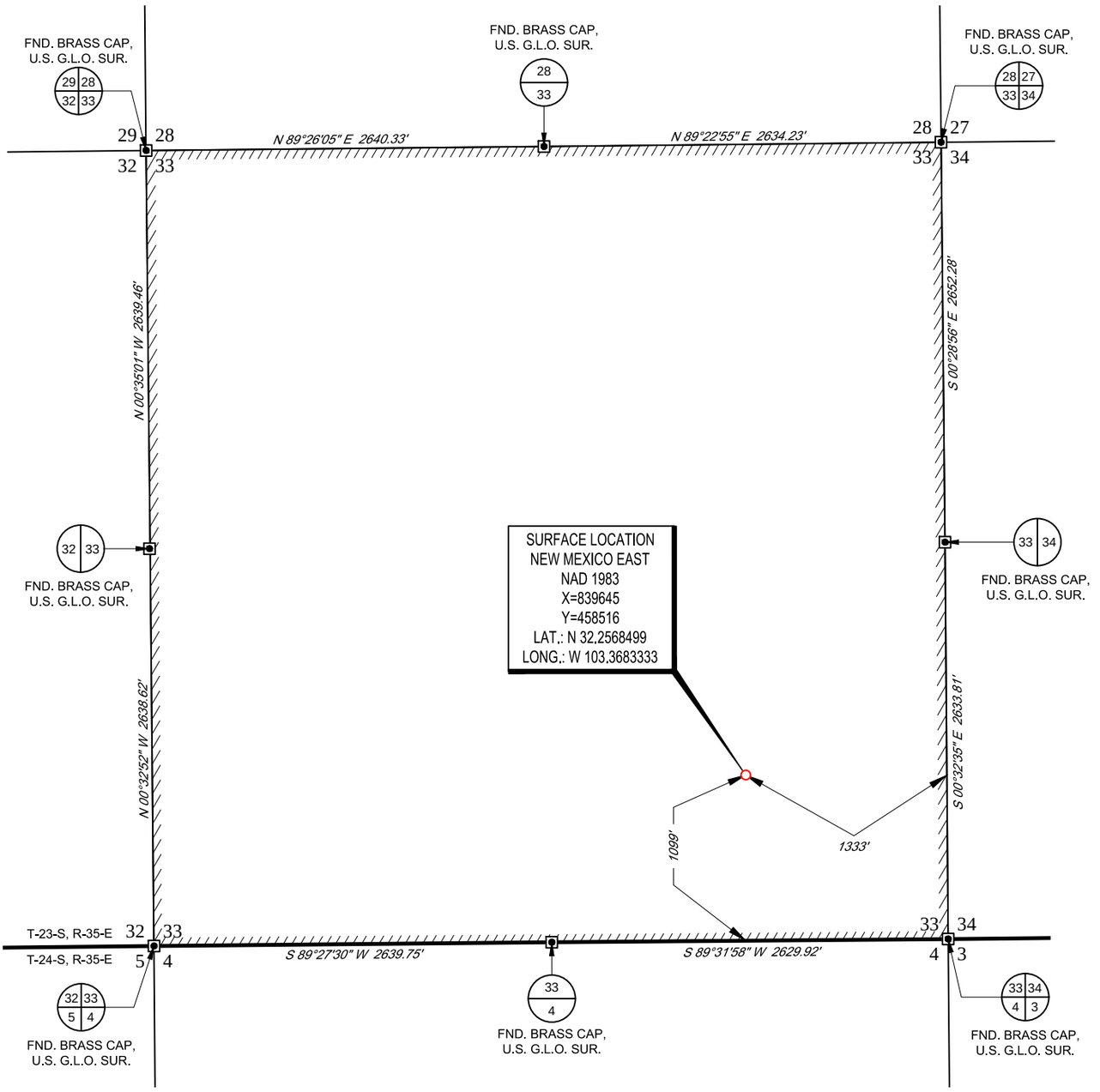
WWW.TOPOGRAPHIC.COM

EXHIBIT 2A
AWR DISPOSAL, LLC

SCALE: 1" = 1000'
0' 500' 1000'

SECTION 33, TOWNSHIP 23-S, RANGE 35-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: POP SWD 1

SECTION 33 TWP 23-S RGE 35-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 1099' FSL & 1333' FEL

DISTANCE & DIRECTION

FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE BASIN RD. ±14.4 MILES, THENCE GO EAST (RIGHT) ON LEASE RD. ± 5.1 MILES, TO A POINT ±3937 FEET WEST OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

JOHN TREVOR CARNEGIE
NEW MEXICO
11401
REGISTERED PROFESSIONAL SURVEYOR

John Trevor Carnegie, P.S. No. 11401
AUGUST 27, 2019

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
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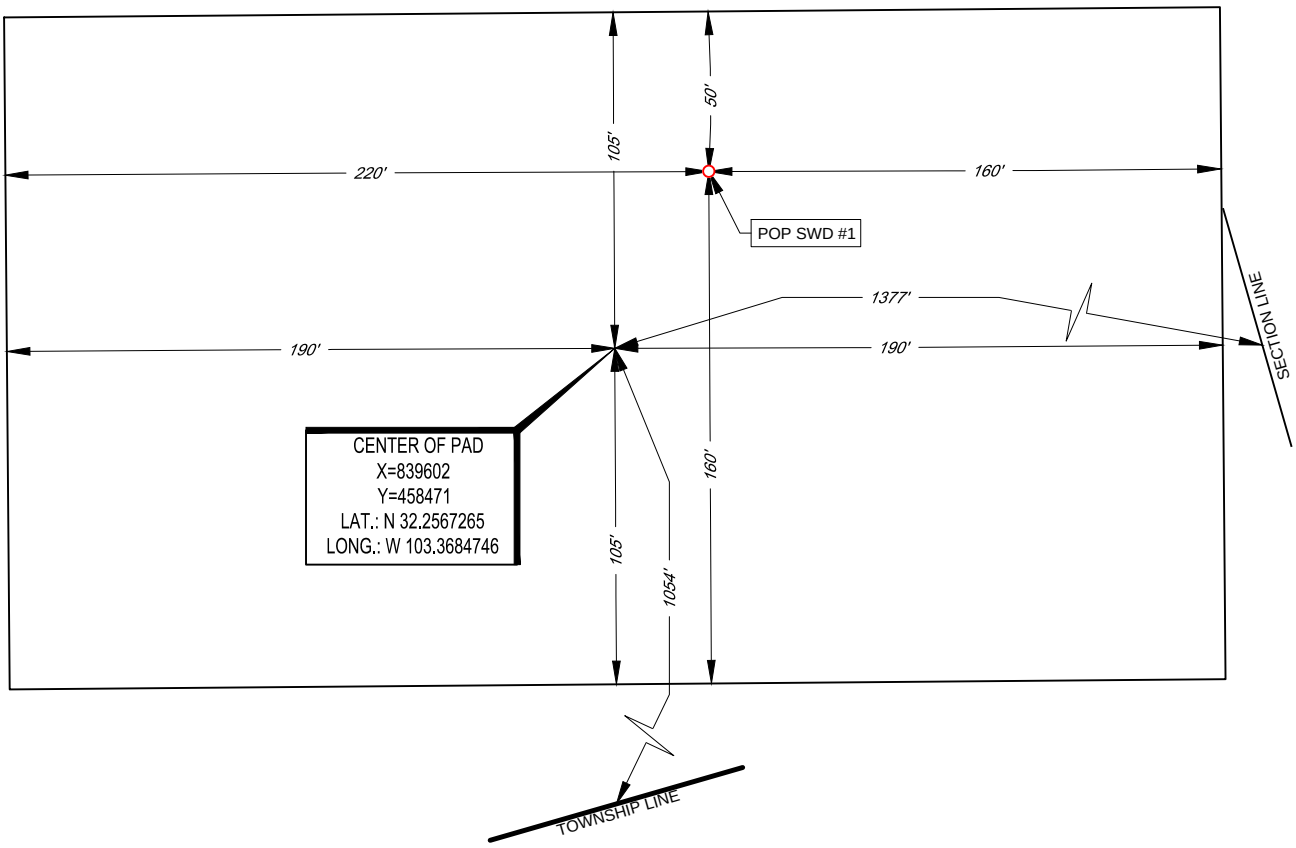
WWW.TOPOGRAPHIC.COM

EXHIBIT 2B

AWR DISPOSAL, LLC

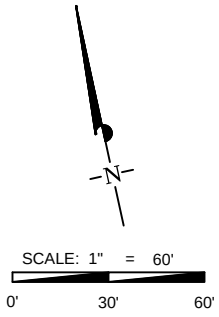
SECTION 33, TOWNSHIP 23-S, RANGE 35-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: POP SWD 1

1 LATITUDE N 32.2568499 1 LONGITUDE W 103.3683333

CENTER OF PAD IS 1054' FSL & 1377' FEL



ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AWR DISPOSAL, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

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: ____AWR Disposal, LLC_____

ADDRESS: ____3300 N. A Street, Ste 220, Midland, Texas 79705_____

CONTACT PARTY: ____Randall Hicks (agent)_____PHONE: __505 238 9515_____

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: _____Randall Hicks_____TITLE: _____Agent_____

SIGNATURE: _  _____ _____DATE: __09/06/2019_____

E-MAIL ADDRESS: _____r@rthicksconsult.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

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.

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.

INJECTION WELL DATA SHEET

OPERATOR: **AWR Disposal, LLC.**

WELL NAME & NUMBER: **Pop SWD #1**

WELL LOCATION: **1,099' FSL & 1,333' FEL** | **O** | **33** | **23S** | **35E**
FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: ___See attachments_____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Intermediate Casing

Hole Size: _____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: _____ Casing Size:_____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Total Depth: _____

Injection Interval

_____feet to_____

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: _____See attachments_____Lining Material: _____

Type of Packer: _____

Packer Setting Depth: _____

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? __**X**_____Yes _____No

   If no, for what purpose was the well originally drilled? _____

   _____

2. Name of the Injection Formation: _____

3. Name of Field or Pool (if applicable): _Proposed: SWD, Devonian, Fusselman, Montoya_____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. ____No_____

   _____

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: ___See attachments_____

   _____

   _____

   _____

Attachments to C-108

Copy of well bore diagram

Section III-XII Written descriptions to supplement C-108

Plates referenced in written descriptions

Tables referenced in written descriptions

OSE well logs referenced in written descriptions

Section XIII Proof of Notice

Directions

From Carlsbad:

Date Spudded: TBD

AWR Disposal, LLC

Pop SWD #1

Unit Letter O, Sec.33, T23S, R35E
1,099' FSL & 1,333' FEL
Lea County, NM

Latitude + 32° 15' 24.65" N, Longitude -103° 22' 05.99" W

20", 133#, J-55 casing @ 1,050'.

Cmt w/ 450 sks, 13.7 lead and 450 sks, 14.8 tail

24" Hole

13-3/8", 68# L-80 EZ-GO FJ3 casing @ 4,550'.
DV Tool w/ 10' pkr at 4,000'

1st Stg Cmt w/ 1000 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 1000 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

17.5" Hole

9-5/8", 35.5#, HCP-110 BTC casing @ 11,000'.

Upper DV Tool w/ 10' pkr at 7,000'
Lower DV Tool w/ 10' pkr at 9,000'

1st Stg Cmt w/ 600 sks 11.8 ppg lead & 400 sks 13.2 ppg tail.

2nd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

3rd Stg Cmt w/ 600 sks 11.8 ppg lead & 380 sks 13.2 ppg tail.

5.5" Tubing

12.25" Hole

5" Tubing

Maximum Proposed Injection Rate: 40,000 BBLS PER DAY

Maximum Proposed Injections Pressure: 3,000 psi

7-5/8" Liner, 39#, P-110 casing @ 15,888'.

Cmt w/ 230 sks 11.9 ppg Class C

8.5" Hole

Packer set @ 15,788

6.5" Openhole

Injection Interval:

15,888	-	17,117	DVNN
17,117	-	17,704	FSLM
17,704	-	18,044	MNTY

TD : 18,044

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

Lease Name: Pop SWD #1
Unit Letter O, Section 33, T23S R35E, 1,099' FSL, 1,333 FEL

Limestone Basin Prop Ranch, LLC owns the surface upon which the SWD is located.

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

The attached Wellbore Data Sheet provides the design specifics required and a tabulation of these data are shown on the diagram.

The formation tops for the Pop SWD #1 were established by Geologist Herb Wacker TBPG license #4517.

For the deepest formations, we used the log from the Shell Oil Co Antelope Ridge Unit #1 (30-325-20444) that has a total depth of 17,895 feet in the Granite Wash. The distance from Pop SWD #1 location to this well is 6 miles to the northwest.

For picking tops of more shallow formations, we used the log from the Midwest Oil Custer Mountain Fed #1 (30-025-20756) with a total depth of 16,590 feet in the Devonian. The distance from Pop SWD #1 location is 1.9 miles to the south.

AWR 214 POP Sec. 33 Twp 23S Rge 35E		
	GL	**3390**
Geologist	**KB**	**3420**
H. Wacker	**MD**	**SS**
Dockum	404	**3016**
Santa Rosa	608	**2812**
Dewey Lake	1038	**2382**
Rustler	1486	**1934**
Salt	1851	**1569**
Delaware	5343	**-1923**
Bell Canyon	5417	**-1997**
Cherry Canyon	6299	**-2879**
Brushy Canyon	7591	**-4171**
Bone Spring	8899	**-5479**
Avalon	9196	**-5776**
1st Bone Spring	9969	**-6549**
2nd Bone Spring	10504	**-7084**
3rd Bone Spring	11404	**-7984**
Wolfcamp	11726	**-8306**
Strawn	12243	**-8823**
Atoka	12621	**-9201**
Morrow	13347	**-9927**
Barnett	14708	**-11288**
Miss Limestone	15178	**-11758**
Woodford	15682	**-12262**
Devonian	15858	**-12438**
Fusselman	17117	**-13697**
Montoya	17704	**-14284**
Simpson	18074	**-14654**

Top of Interval	15888'	Devonian +30'
Bottom of Interval	18044'	Simpson -30'
TD	18044'	
Thickness of Injection Interval = 2156'		

3. A description of the tubing to be used including its size, lining material, and setting depth

5-1/2" (20#) internal plastic coated tubing swaged down to 5" (18#) with setting depth of 15,788'.

4. The name, model, and setting depth of the packer used or a description of any other seal system or assembly used

Tryton Tools, 7" Arrow Set 1-X Nickel Plated Injection Packer will be set at 15,788'.

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

The proposed injection intervals include the Devonian, Fusselman and Montoya in an open-hole interval.

(2) The injection interval and whether it is perforated or open-hole.

The depth interval of the open-hole injection interval is 15,888-18,044 (2,156 feet).

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

The well will be drilled for disposal.

(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

There are no perforated intervals, only the open-hole completion described above.

(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.

Overlying Oil & Gas Zone (Using GL of 3,390'):

Cherry Canyon	6299
Brushy Canyon	7591
Bone Spring	8899
Avalon	9196
1st Bone Spring	9969
2nd Bone Spring	10504
3rd Bone Spring	11404
Wolfcamp	11726
Strawn	12243
Atoka	12621
Morrow	13347

Underlying Oil & Gas Zones:

Devonian	17124

IV. Is this an expansion of an existing project

No.

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

Plate 1a identifies all OCD listed wells and API numbers and shows circles with radii of 0.5, 1.0, and 2.0 miles. Note that where numerous wells are closely spaced, the API number may not be labeled for clarity. New wells, active wells, plugged wells, and canceled wells have color-coded symbols. Plate 1b shows only new and active wells and circles with radii of 0.5 and 1.0 miles.

Plate 2 identifies the leases within 2-miles of the proposed SWD as well as leases within the 1-mile area of review.

- Plate 2a presents the lease numbers for the SLO and BLM oil and gas leases. Also shown is mineral rights owned by the U.S. that are unleased at this time.
- Plate 2b presents land ownership for the same area and identifies the oil and gas mineral rights ownership.

Table 1 and Table 2 identify all affected persons within the 1 mile area of review

- Table 1 lists all of the Oil and Gas Well Operators shown on Plate 1a within the circle having a 1.0 mile radius.
- Table 2 lists all leasees, leassors/mineral interests and surface owners (affected persons) within the 1-mile AOR presented on Plate 2a.

Note that T23S R35E Section27 , northeast of the proposed SWDis shown as unleased in Plate 2a. Plate 2a and Table 2 show that the US owns the mineral rights. This is supported by the fact that two wells were permitted with the BLM in Section 27. As indicated below, the lease expired in 2017, but the mineral are clearly owned by the US.

EOG Y Resources Inc
105 South Fourth St
Artesia, NM 88210

HOBBS OCD
JUN 02 2017
RECEIVED

Gentlemen:

Your Application for Permit to Drill (APDs) for the well listed below has expired because drilling has not commenced per Onshore Order #1:

LEASE	WELL NAME AND LOCATION	EXPIRATION
NM107398	Viking BRU Federal – 1H 330'/S & 660'/W, sec. 27, T 23 S., R 35 E. 30-025-42603	May 25, 2017

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

Table 1 shows that there are no wells that penetrate the proposed injection zone within the 1-mile AOR.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected

Proposed Maximum Injection Rate: 40,000 bbl/day
Proposed Average Injection Rate: 30,000 bbl/day

2. Whether the system is open or closed

This is will be an open system. All AWR Disposal, LLC SWDs may receive produced water from recycling storage facilities, such as in-ground containments or above-ground steel-walled containments, which are registered or permitted under Rule 34.

3. Proposed average and maximum injection pressure

Proposed Maximum Injection Pressure: 3,000 psi
Proposed Average Injection Rate: 2,000 psi

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water

The attached Table 3 “Produced Water Chemistry of Nearby Wells” provides the requisite analyses. The Delaware and Bone Spring Formations are the subjects of the analyses. These formations and the Wolfcamp will provide most of the produced water to the proposed SWD. At the time of writing, we are unaware of any problems associated with disposal of produced water derived from any Formations into the Devonian, Fusselman and Montoya injection zone.

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.).

Table 4 presents formational water quality data from the Go-Tech site for Devonian-Fusselman-Montoya producing wells. As stated above, we are unaware of any problems associated with disposal of produced water derived from the Delaware, Avalon, Bone Spring, and Wolfcamp Formations into the Devonian, Fusselman and Montoya injection zone.

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth.

The proposed injection intervals include the Devonian, Fusselman and Montoya in an open-hole interval. The proposed injection intervals in the Pre-Mississippian Carbonates are well cemented and will provide the necessary open hole integrity while allowing salt water to be injected. Because of the competency of the rock, the open hole section has very little chance of collapsing.

As indicated in Section III.A.2, the approximate depths to the top of the Devonian and the base of the Montoya are 15,858 and 18,074 respectively. The depth interval of the injection interval is 15,888 - 18,044 (2,156 feet), within the Devonian, Fusselman and Montoya Formations.

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.

The Rustler Formation and the Chinle Formation yield water to supply wells in southeastern Eddy County and southwestern Lea County. In the immediate area of the Pop SWD #1, the closest water well (well Misc-182) is an active well supplying water to oil and gas activities and stock and is about 1.5 miles to the northeast (Plate 3a). This well is the same as USGS-14711. In January of 1971, the USGS measured a depth to water of 117 feet. The well Misc-305 (AKA CP-573), which is mapped about 1.5 miles south of the Pop SWD #1 location, appears to be an active windmill for stock.

In this area of Lea County, the Chinle yields water to wells from 100-200 feet below the ground surface (bgs) to a depth of about 600 feet. The upper portion of the Rustler Formation yields fresh water to wells in Lea County and in the area of the Pop SWD #1, the depth interval of this potential source of fresh water is about 1400-1600 feet. Based upon investigation of the area by Hicks Consultants, we conclude most water supply wells are completed in the Chinle or Santa Rosa at depth of less than 1000 feet. Groundwater in the Rustler in this area is probably brackish.

IX. Describe the proposed stimulation program, if any

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

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)

Logs will be submitted to OCD upon completion of the well.

*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

No active water supply wells with water chemistry data were identified within one mile of the proposed SWD. Data from various sources permit a conclusion that groundwater within the Chinle Formation is potable. In this area, groundwater in the underlying Rustler formation may be relatively brackish.

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

Randall T. Hicks, a Professional Geologist with decades of experience in hydrogeology, affirms, on behalf of AWR Disposal, LLC, that

- The USGS has mapped quaternary faults in New Mexico and no such faults are mapped in the area of the proposed Pop SWD #1[1]
- The Texas Bureau of Economic Geology has mapped older faults (e.g. basement and Woodford) in New Mexico and the closest mapped fault is about 5 miles to the east[2]
- With respect to migration of produced water from the injection zone to underground sources of drinking water via faults or other natural conduits, the following conditions were considered
    - The lowest underground source of drinking water is the middle and upper Rustler Formation.
    - More than 10,000 feet of sedimentary rock separates the bottom of the Rustler Formation and the top of the injection zone. Many of the formations that lie between the injection zone and the lowermost aquifer are permeable and contain oil, gas or water at various pressures. Any excursion of injected fluids from the Devonian disposal zone would undoubtedly enter these permeable formations prior to moving into the Rustler Formation.
    - There is no evidence that the pressure regime in the oil and gas reservoirs is sufficient to cause the upward migration of formation water through the bedded salt and into the Rustler or Chinle aquifers.
- There is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water

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[1] https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

[2] Bureau of Economic Geology (Accessed April 2019). University of Texas at Austin. Basement Faults (Ewing 1990, Tectonic Map of Texas); Precambrian Faults (Frenzel et al. 1988, Figure 6); Woodford Faults (Comer 1991, plate 1). Http://www.beg.utexas.edu/resprog/permianbasin/gis.htm

Plates

Plates 1	OCD wells within the area of review
Plate 1a	Oil and Gas Wells within 2 Miles
Plate 1b	Oil and Gas Wells within 1 mile (active and new only)
Plates 2	Mineral leases within the area of review
Plate 2a	Oil and Gas Leases with Mineral Ownership within 2 miles
Plate 2b	Surface and Mineral Ownership within 2 Miles
Plates 3	Water supply wells within the area of review
Plate 3a	Water Wells with Potentiometric and Geology
Plate 3b	Nearby OSE Water Wells
Plate 4	Surface water within the area of review

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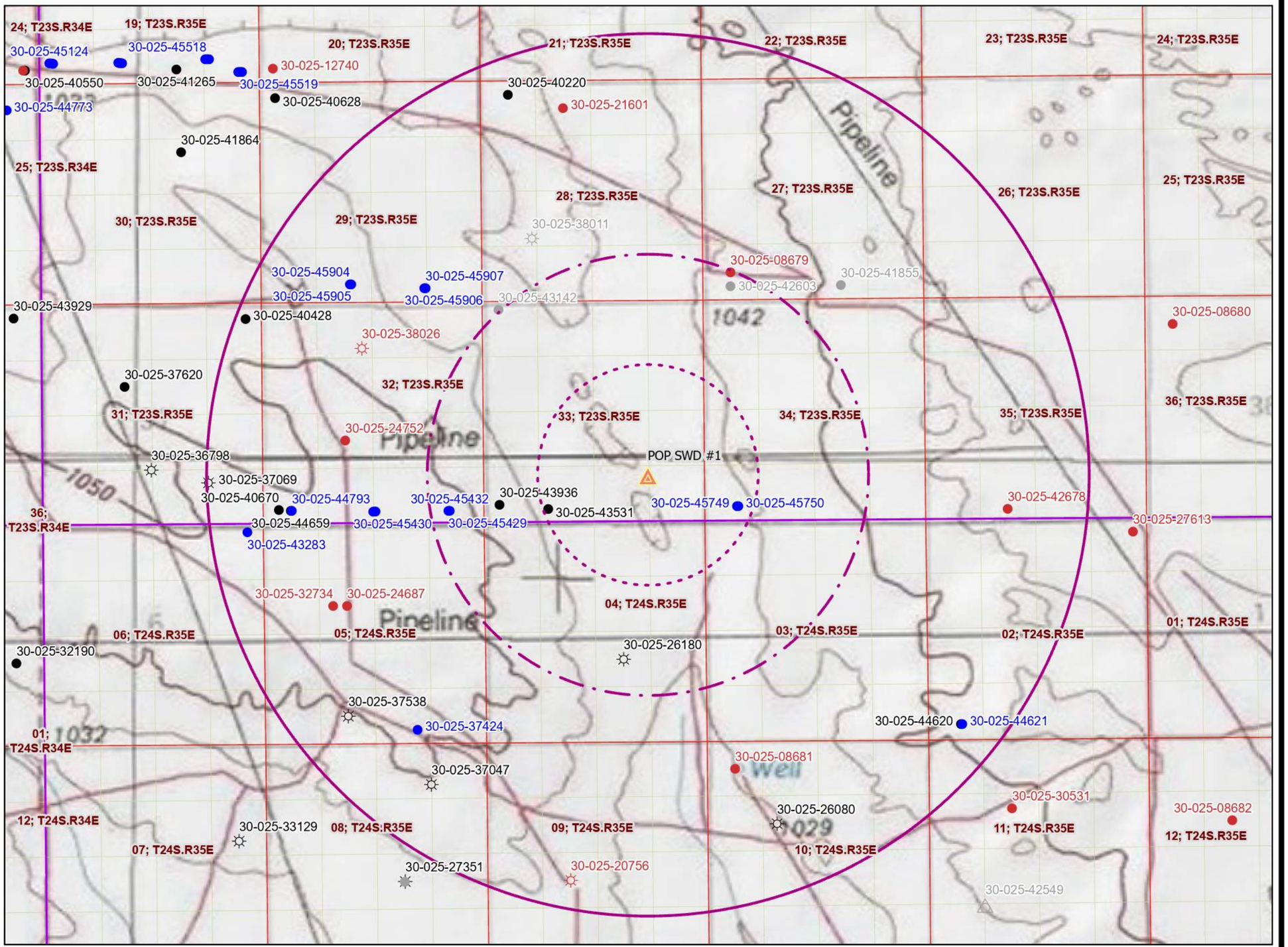

SWD

Distance (miles)

0.5

1

2

Oil and Gas (NMOCD)

Gas, Active

Gas, Cancelled

Gas, Plugged

Oil, Active

Oil, Cancelled

Oil, New

Oil, Plugged

Salt Water Injection, Cancelled

Township Range Section

Township Range

Section

UL (qq)

N W E S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Oil and Gas Wells within 2-Miles of SWD AWR Disposal, LLC POP SWD #1	Plate 1a 09/01/2019

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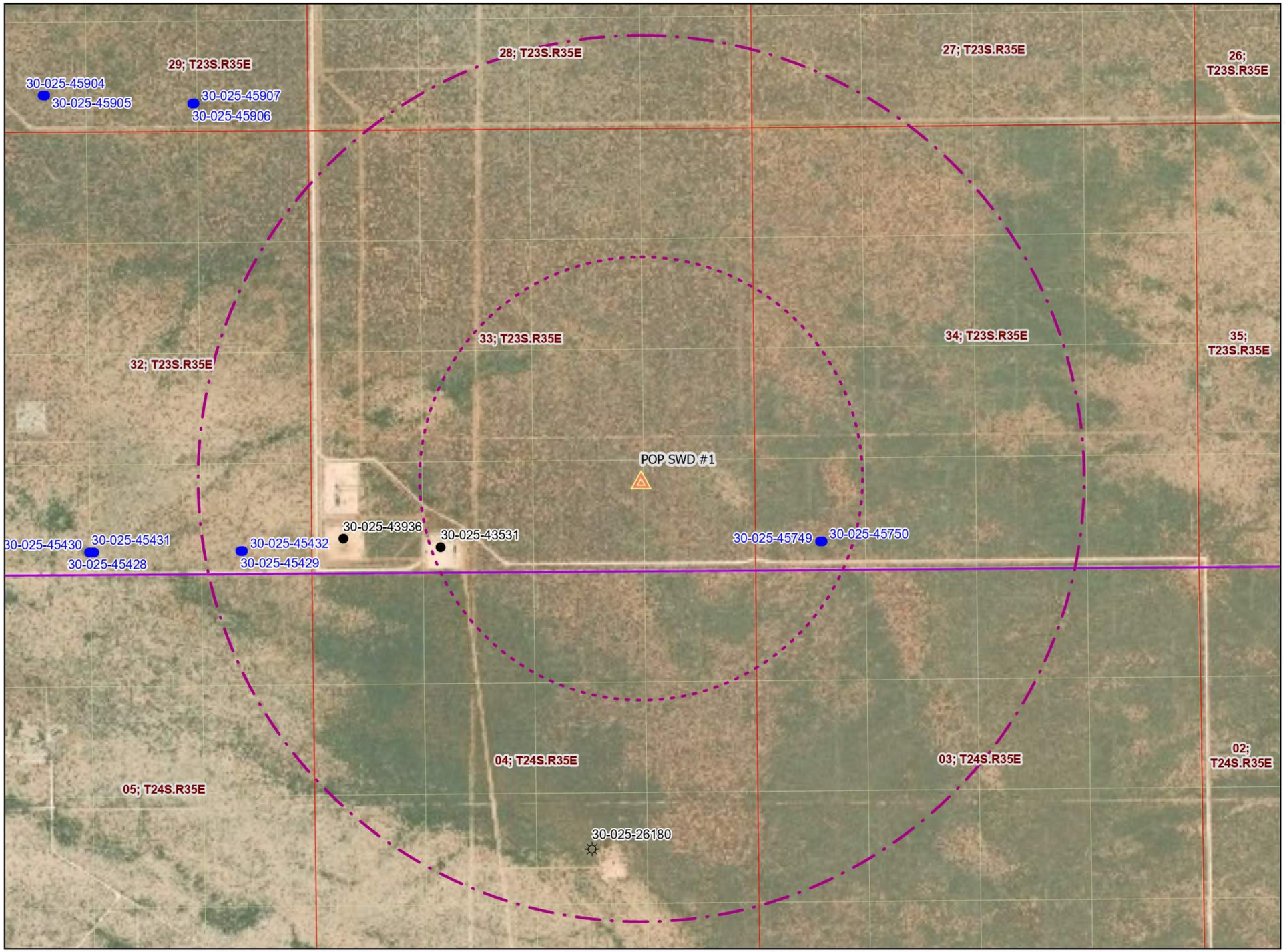

SWD
Distance (miles)
0.5
1
2
Oil and Gas (NMOCD)
Gas, Active
Oil, Active
Oil, New
Township Range Section
Township Range
Section
UL (qq)

N
W E
S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Oil and Gas Wells within 1-Mile of SWD
(Active and New Only)
AWR Disposal, LLC
POP SWD #1

Plate 1b
09/01/2019

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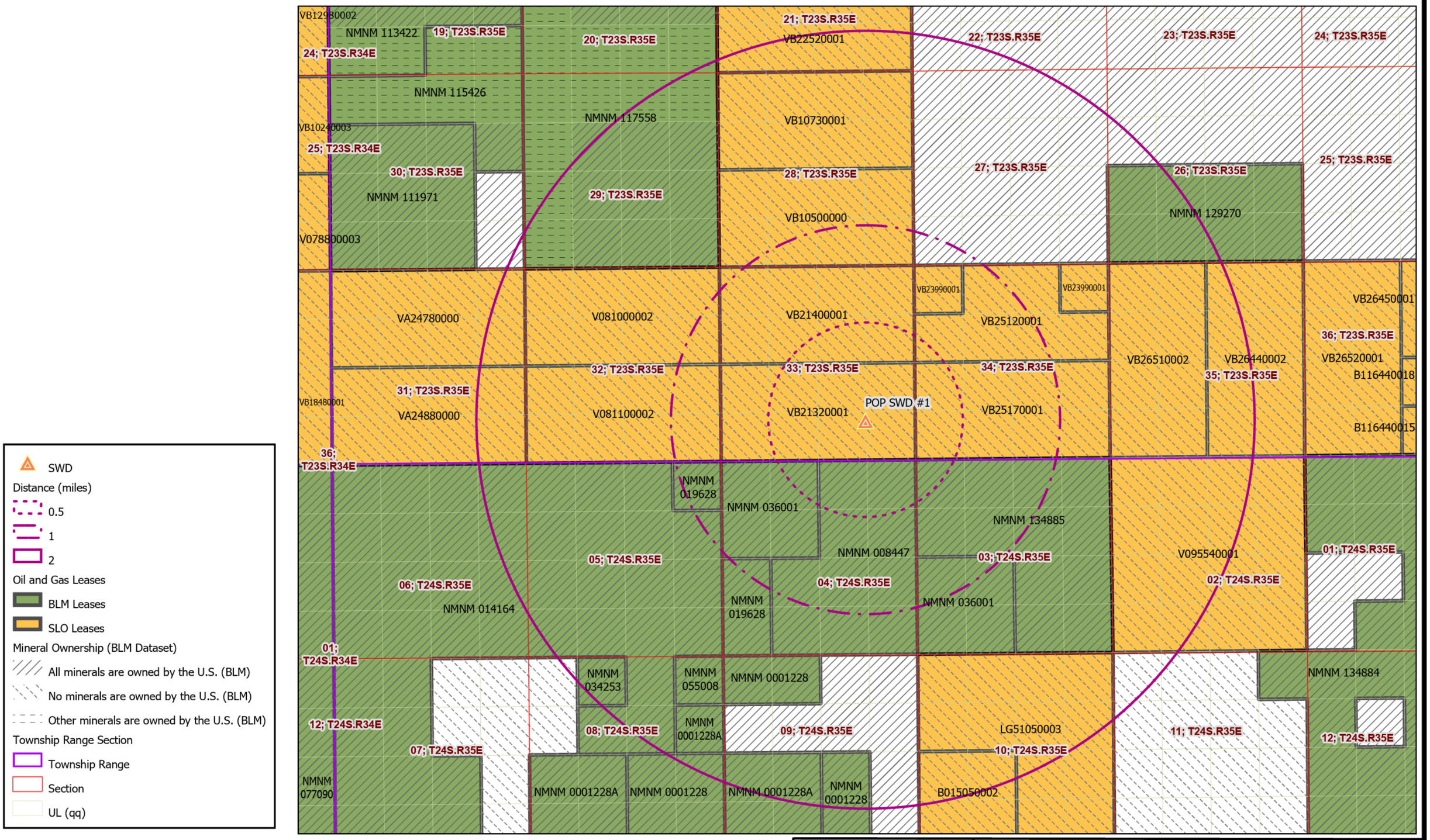

SWD

Distance (miles)

0.5

1

2

Oil and Gas Leases

BLM Leases

SLO Leases

Mineral Ownership (BLM Dataset)

All minerals are owned by the U.S. (BLM)

No minerals are owned by the U.S. (BLM)

Other minerals are owned by the U.S. (BLM)

Township Range Section

Township Range

Section

UL (qq)

N W E S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Oil & Gas Leases and Mineral Ownership within 2-Miles of SWD

AWR Disposal, LLC
POP SWD #1

Plate 2a

09/01/2019

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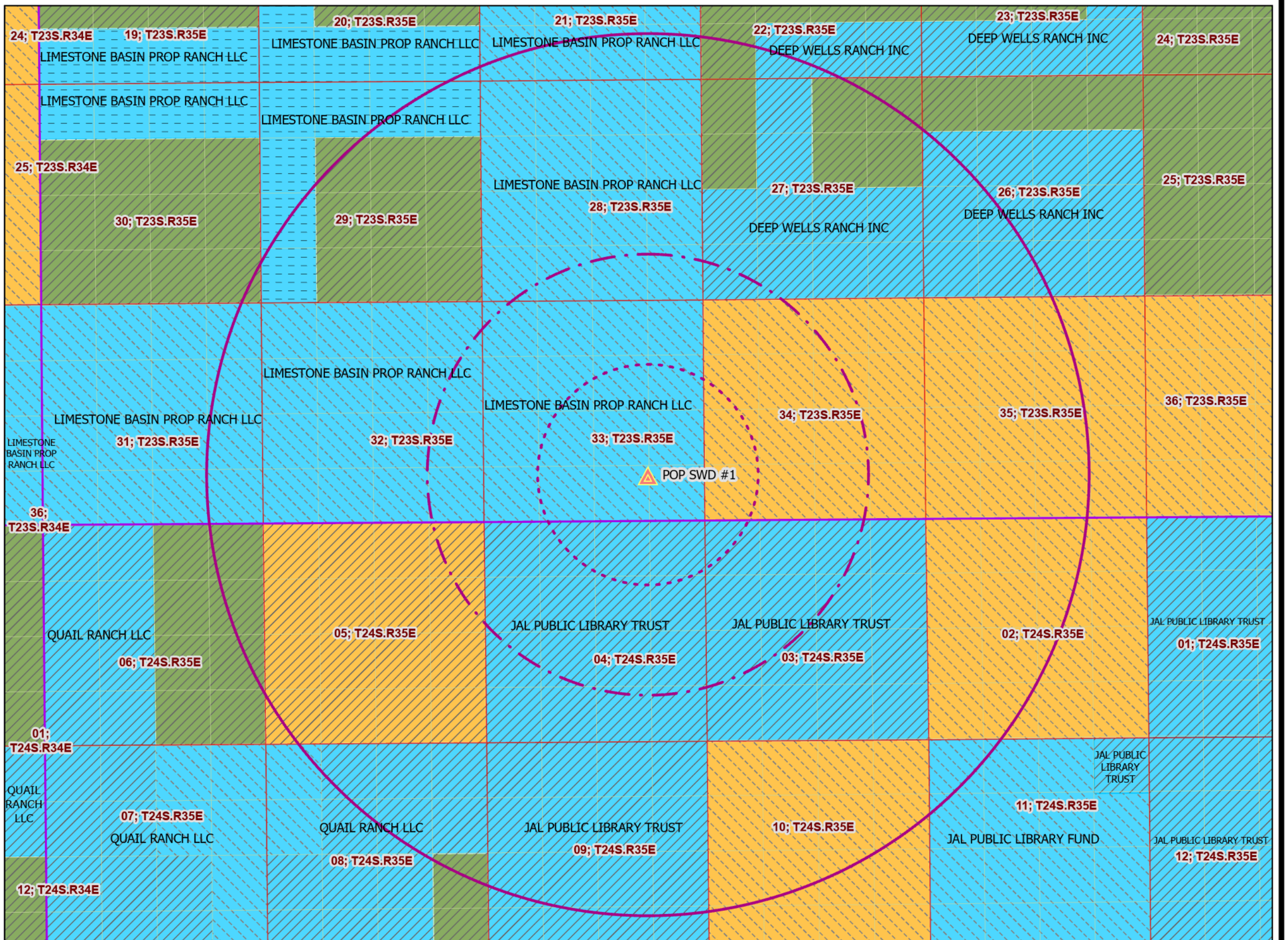

SWD

Distance (miles)

0.5

1

2

NM Land Ownership

BLM

State

Private

Mineral Ownership (BLM Dataset)

All minerals are owned by the U.S. (BLM)

No minerals are owned by the U.S. (BLM)

Other minerals are owned by the U.S. (BLM)

Township Range Section

Township Range

Section

UL (qq)

N W E S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Surface and Mineral Ownership within 2-Miles of SWD

AWR Disposal, LLC
POP SWD #1

Plate 2b

09/01/2019

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SWD

Potentiometric Surface (ft msl)

Isocontours

Isocontour

USGS Gauging Station (DTW, Date)

Aquifer Code, Well Status

Alluvium/Bolsom

Ogallala

Chinle

Santa Rosa

Not Defined

Misc. Water Wells (Well ID, DTW)

Well Depth (ft)

No Data

151 - 350

351 - 500

> 500

OSE Water Wells (DTW/Date)

Well Depth (ft)

151-350

351-500

<1000

NM Geology

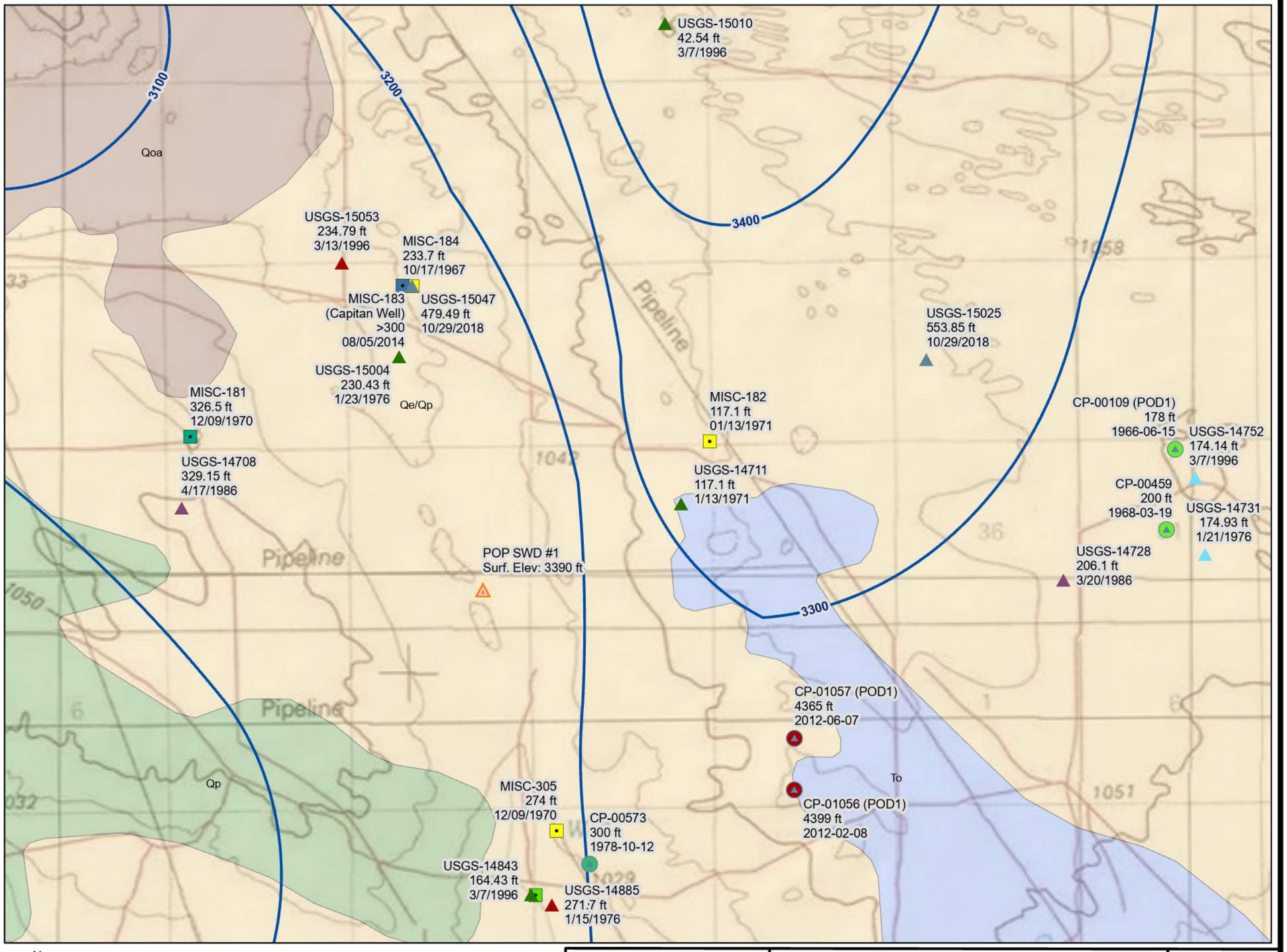
Map Unit,Description

Qe/Qp, Quaternary-Eolian Piedmont Deposits

Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits

Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits

To, Tertiary-Ogallala Formation,To, Tertiary-Ogallala Formation



N W E S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Depth to Water Relative to Potentiometric Surface

AWR Disposal, LLC
POP SWD #1

Plate 3a

09/01/2019

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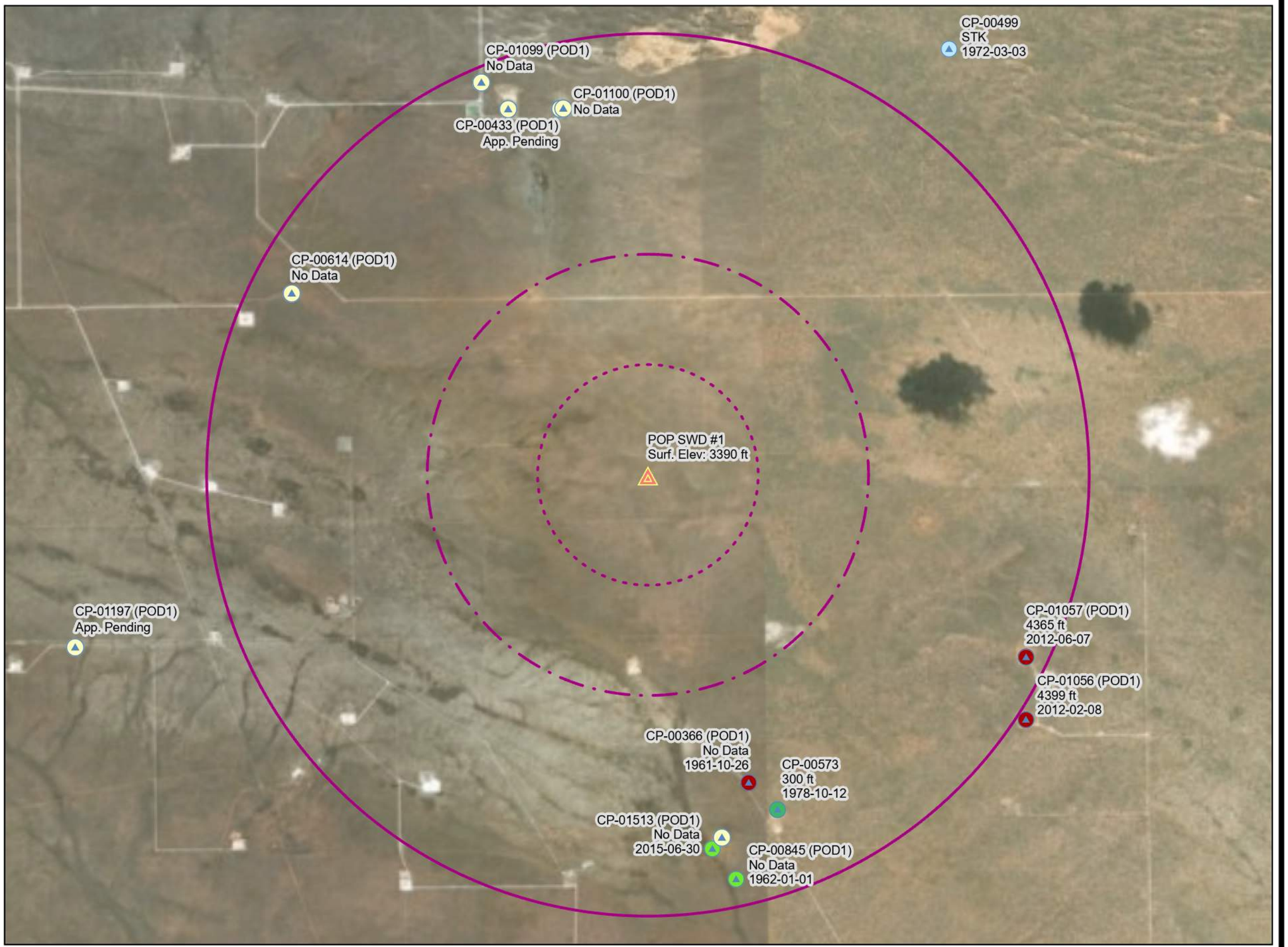

SWD

Distance (miles)

0.5

1

2

OSE Water Wells (DTW/Date)

Well Depth (ft)

<=150

151-350

351-500

<1000

Other

N W E S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby OSE Water Wells	Plate 3b
	AWR Disposal, LLC POP SWD #1	09/01/2019

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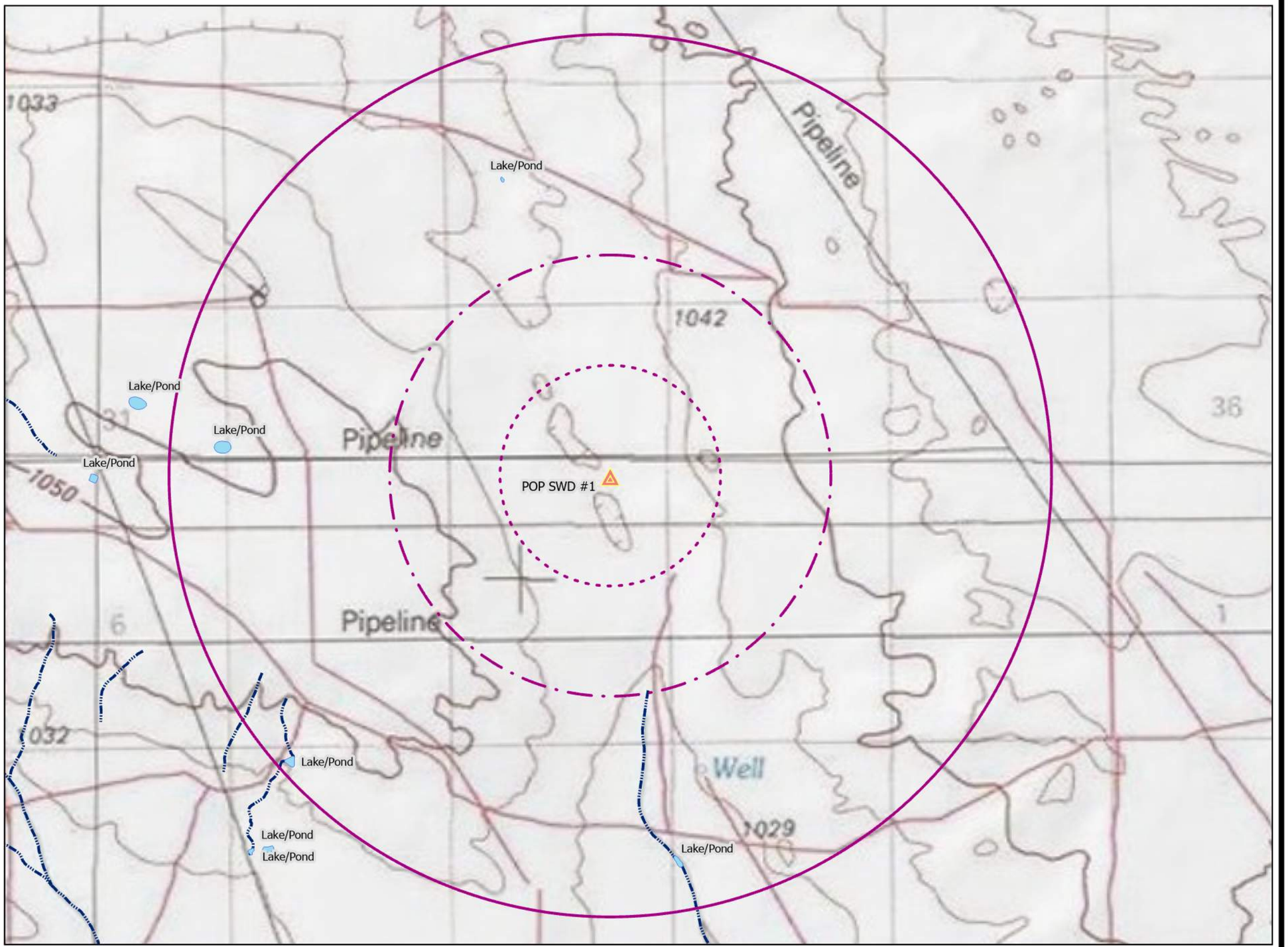

SWD
Distance (miles)
0.5
1
2
Water Bodies (1307)
Lake/Pond
River and Drainages (1307)
Stream/River Artificial Path
Intermittent Stream

N
W E
S

0 0.25 0.5 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Surface Water AWR Disposal, LLC POP SWD #1	Plate 4 09/01/2019

Tables

Table 1
Oil & Gas Operators (Affected Persons) within 1-Mile AOR

API	OGRID	OGRID Name	Well Type	Status	Well Name	District	UL-S-T-R	Total Depth	Pool ID
30-025-08679	214263	PRE-ONGARD WELL OPERATOR	O	P	PRE-ONGARD WELL #001	1	M-27-23S-35E	4130	
30-025-26180	373908	Franklin Mountain Energy 2 LLC	G	A	WOOLWORTH RANCH UNIT #001	1	J-04-24S-35E	14340	[75000] CINTA ROJA, MORROW (GAS)
30-025-42603	25575	EOG Y RESOURCES, INC.	O	C	VIKING BRU FEDERAL #001C	1	M-27-23S-35E		[98075] WC-025 G-68 S233527M, UPR BONE SPRIN
30-025-43531	7377	EOG RESOURCES INC	O	A	BEOWULF 33 STATE COM #601H	1	N-33-23S-35E	11632	[97958] WC-025 G-08 S233528D, LWR BONE SPRIN
30-025-43936	7377	EOG RESOURCES INC	O	A	BEOWULF 33 STATE COM #301H	1	M-33-23S-35E	9962	[97958] WC-025 G-08 S233528D, LWR BONE SPRIN
30-025-45429	228937	MATADOR PRODUCTION COMPANY	O	N	IRVIN WALL STATE COM #113H	1	P-32-23S-35E		[97958] WC-025 G-08 S233528D, LWR BONE SPRIN
30-025-45432	228937	MATADOR PRODUCTION COMPANY	O	N	IRVIN WALL STATE COM #134H	1	P-32-23S-35E		[97958] WC-025 G-08 S233528D, LWR BONE SPRIN
30-025-45749	7377	EOG RESOURCES INC	O	N	GLADIATOR 34 STATE COM #301H	1	M-34-23S-35E		[97958] WC-025 G-08 S233528D, LWR BONE SPRIN
30-025-45750	7377	EOG RESOURCES INC	O	N	GLADIATOR 34 STATE COM #302H	1	M-34-23S-35E		[97958] WC-025 G-08 S233528D, LWR BONE SPRIN

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
23S	35E	27	M		Not Leased	BLM	DEEP WELLS RANCH INC	4207137253346
23S	35E	27	N		Not Leased	BLM	DEEP WELLS RANCH INC	4207137253346
23S	35E	28	M	VB10500000	DEVON ENERGY PRODUCTION COMPANY, LP	State	LIMESTONE BASIN PROP RANCH LLC	4206137266266
23S	35E	28	N	VB10500000	DEVON ENERGY PRODUCTION COMPANY, LP	State	LIMESTONE BASIN PROP RANCH LLC	4206137266266
23S	35E	28	O	VB10500000	DEVON ENERGY PRODUCTION COMPANY, LP	State	LIMESTONE BASIN PROP RANCH LLC	4206137266266
23S	35E	28	P	VB10500000	DEVON ENERGY PRODUCTION COMPANY, LP	State	LIMESTONE BASIN PROP RANCH LLC	4206137266266
23S	35E	32	A	V081000002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	32	H	V081000002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	32	I	V081100002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	32	J	V081100002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	32	O	V081100002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	32	P	V081100002	MRC PERMIAN COMPANY	State	LIMESTONE BASIN PROP RANCH LLC	4205138266265
23S	35E	33	A	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	B	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	C	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	D	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	E	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	F	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	G	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	H	VB21400001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	I	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	J	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	K	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	L	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	M	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	N	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	O	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	33	P	VB21320001	EOG Y RESOURCES, INC.	State	LIMESTONE BASIN PROP RANCH LLC	4206138266265
23S	35E	34	B	VB25120001	EOG RESOURCES INC	State	New Mexico State Land Office	4207138266266
23S	35E	34	C	VB25120001	EOG RESOURCES INC	State	New Mexico State Land Office	4207138266266
23S	35E	34	D	VB23990001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	E	VB25120001	EOG RESOURCES INC	State	New Mexico State Land Office	4207138266266
23S	35E	34	F	VB25120001	EOG RESOURCES INC	State	New Mexico State Land Office	4207138266266
23S	35E	34	G	VB25120001	EOG RESOURCES INC	State	New Mexico State Land Office	4207138266266
23S	35E	34	J	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	K	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	L	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	M	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	N	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
23S	35E	34	O	VB25170001	EOG Y RESOURCES, INC.	State	New Mexico State Land Office	4207138266266
24S	35E	03	B	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	C	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	D	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
24S	35E	03	E	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	F	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	G	NMNM 134885	BLACKBEARD OPERATING LLC	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	K	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	L	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	03	M	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4207139267266
24S	35E	04	A	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	B	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	C	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	D	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	E	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	F	NMNM 036001	MCKAY PETROLEUM CORP. 50% CHEVRON USA INC 25%. MOBIL PROD TX & NM 25% (a)	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	G	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	H	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	I	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	J	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	K	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	L	NMNM 019628	BTA OIL PRODUCERS	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	N	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	O	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	04	P	NMNM 008447	MAGNUM HUNTER PRODUCTION INC	BLM	JAL PUBLIC LIBRARY TRUST	4206139267266
24S	35E	05	A	NMNM 019628	BTA OIL PRODUCERS	BLM	New Mexico State Land Office	4205139267266
24S	35E	05	H	NMNM 014164	COG OPERATING LLC. LANDRETH ROBERT E. OXY USA INC (b)	BLM	New Mexico State Land Office	4205139267266
Notes	(a)	Per https://reports.blm.gov/report/LR2000/33/Pub-CR-Serial-Register-Page XTO Holdings is listed as lessee instead of Mobil						
	(b)	No information available regarding breakdown of lessee ownership						

wellname	api	latitude	longitude	section	township	range	unit	ftgns	ftgew	county	state	sampledate	ph	tds_mgL	resistivity_ohm_cm	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
RED BULL 31 STATE #002	3002537069	322.565.650.997	-1.034.023.438	31	23S	35E	P	983S	1298E	LEA	NM	10/15/2015 12:00:00 AM	6.9	258268.6	0.025	73826.2	19030	31.6	4042	3.31	159864	73.2	490	300
SWEETNESS 30 STATE FED COM #001H	3002541864	322.783.470.003	-1.034.042.511	30	23S	35E	G	1650N	1887E	LEA	NM	10/15/2015 12:00:00 AM	8.5	67516.1	0.095	23558.7	2923.2	0.1	401	0.03	39091.2	732	740	200
NORTH CUSTER MOUNTAI #001	3002521601	322.810.210.996	-103.374.641.401	28	23S	35E	C	660N	1980W	LEA	NM			39074							23980	488	465	
SWEETNESS 30 STATE FED COM #001H	3002541864	322.783.470.003	-1.034.042.511	30	23S	35E	G	1650N	1887E	LEA	NM	41709	5.5			57782	18114	29	2755	3.3	130601	122	920	300
RED BULL 31 STATE #001	3002536798	322.574.463.004	-1.034.067.612	31	23S	35E	N	1300S	2610W	LEA	NM	2/13/2006 12:00:00 AM	5.69	280094		78620	21967	62	4035		173149	87	385	
RED BULL 31 STATE #002	3002537069	322.565.650.997	-1.034.023.438	31	23S	35E	P	983S	1298E	LEA	NM	06/12/2006 0:00	5.52	271366.2		85907.7	14750	39	2346	4	166106	24	778	280
KELLER 4 STATE #001	3002536643	323.318.176.002	-1.033.762.283	4	23S	35E	K	1980S	1475W	LEA	NM	8/27/2007 12:00:00 AM	6.9	182379.5		68450.6	846	54	104	1	100659	292.8	10609	
SWEETNESS 30 STATE FED COM #001H	3002541864	322.783.470.003	-1.034.042.511	30	23S	35E	G	1650N	1887E	LEA	NM	11/21/2014 12:00:00 AM	5.5			53792	19065	78	2983	4.34	126850	122	690	220
RED BULL 29 FEDERAL #001H	3002540628	322.818.451.002	-1.033.969.345	29	23S	35E	D	375N	375W	LEA	NM	42217	6.3			71207	35626	28	5417	6.2	190774	61	90	120
SWEETNESS 30 STATE FED COM #001H	3002541864	322.783.470.003	-1.034.042.511	30	23S	35E	G	1650N	1887E	LEA	NM	42217	6			75025	29081	22	4416	4.9	178278	37	380	520
SWEETNESS 30 STATE FED COM #001H	3002541864	322.783.470.003	-1.034.042.511	30	23S	35E	G	1650N	1887E	LEA	NM	5/13/2015 12:00:00 AM	5.8			65779	26380	23	5455	5.6	164000	49	269	269

Table 4 - Chemistry of Produced Water from Formations

wellname	api	section	township	range	unit	county	state	field	formation	depth	samplesource	sampledate	ph	specificgravity	specificgravity_temp_F	tds_mgL	resistivity_ohm_cm	resistivity_ohm_cm_temp_F	conductivity	conductivity_temp_F	sodium_mgL	calcium_mgL	magnesium_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					16200								8762	290	1175
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					17510								9389	664	982
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					14601								7236	515	1487
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15780								8126	336	1467
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15580								7853	487	1488
BANDANA POINT UT #001	3001500044	13	23S	23E	O	EDDY	NM	BANDANA POINT	DEVONIAN		DST					15500								8020	500	1190
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					17861								7760	490	3100
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					15601								7780	476	1600
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					64582								37500	610	1700
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					56922								29000	1740	4980
BELL LAKE UNIT #006	3002508483	6	23S	34E	O	LEA	NM	BELL LAKE NORTH	DEVONIAN		HEATER TREATER		7			71078								42200	500	1000
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187								47900	476	900
CLINE FEDERAL #001	3002510717	14	23S	37E	K	LEA	NM	CLINE	DEVONIAN		PRODUCTION TEST					118979								71280	462	2593
E C HILL B FEDERAL #001	3002510945	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					112959								67390	288	2765
E C HILL D FEDERAL #001	3002510947	34	23S	37E	H	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					35639										
E C HILL D FEDERAL #004	3002510950	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					236252								147000	129	781
HUAPACHE #003	3001500020	22	24S	22E	F	EDDY	NM		DEVONIAN		DST					3110								48	246	2020
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			229706								136964	198	2511
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			203100								121100	175	2220
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	29	24S	26E	A	EDDY	NM		DEVONIAN		DST	01/03/1960 0:00	7	1,012	60		0,36	75	25596	64	6072	1002	132	10120	653	1336
STATE B COM #001	3002509716	36	24S	36E	C	LEA	NM	CUSTER	DEVONIAN		UNKNOWN					176234								107400	128	1004
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					58687										
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					57018										
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32	24S	38E	I	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					50858								30200	183	980
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST	17/06/1961 0:00	6			80880								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					84900								48600	840	2650
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					72200								41000	370	2960
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					80900								46200	340	3050
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					77600								44000	550	3240
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	650	5810
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					114000								65000	280	5110
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000								77000	500	5320
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					91058								51020	376	4783
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					86847								50450	363	2544
STATE NJ A #001	3002511398	2	25S	37E	A	LEA	NM	JUSTIS NORTH	DEVONIAN		DST					105350								59300	660	4950
NEW MEXICO BM STATE #002	3002511407	2	25S	37E	I	LEA	NM	JUSTIS NORTH	MONTOYA		UNKNOWN					77770								45500	1800	2400
HALE STATE #003	3002512581	2	25S	37E	H	LEA	NM	JUSTIS NORTH	MONTOYA		WELLHEAD					64916								37000	813	2500
SOUTH JUSTIS UNIT #016F	3002511556	13	25S	37E	F	LEA	NM	JUSTIS	FUSSELMAN		UNKNOWN					57675								34030	595	1211
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	203MNTY, 259FSLM	FUSSELMAN	7052		02/01/1900 0:00	7,6	1,037	78	67909			81429	67		2603	684	38887	742	2489
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					67898								38880	742	2489
A B COATES C FEDERAL #014	3002511736	24	25S	37E	G	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					39261								22840	871	1030
SOUTH JUSTIS UNIT #023C	3002511760	25	25S	37E	C	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					63817								35870	360	3442
CARLSON A #002	3002511764	25	25S	37E	I	LEA	NM	JUSTIS	FUSSELMAN		DST					208280								124000	510	3400
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	17/03/1961 0:00	7,3			219570								129000	960	4630
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	18/03/1961 0:00	6,8			163430								96000	290	3780
CARLSON B 25 #004	3002511784	25	25S	37E	P	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					184030								112900	68	1806
COPPER #001	3002511818	28	25S	37E	J	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					27506								15270	1089	1079
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN	8797		02/01/1900 0:00		1,142	70							17244	5345	100382	476	
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					158761										
WEST DOLLARHIDE DEVONIAN UNIT #110	3002512386	5	25S	38E	B	LEA	NM	DOLLARHIDE	DEVONIAN		UNKNOWN					56776										
FARNSWORTH FEDERAL #006	3002511950	4	26S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					31931								20450	302	591

OSE Well Logs – NO WATER SUPPLY WELLS

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

August 30, 2019

Hobbs News Sun
201 N. Thorp
P.O. Box 850
Hobbs, N.M. 88240

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Pop SWD #1 will be located 1,099 feet from the South line and 1,333 feet from the East line, Section 33, Township 23 South, Range 35 East, Lea County, New Mexico.
Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 15,888 feet to 18,044 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 29 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
August 30, 2019
and ending with the issue dated
August 30, 2019.

Publisher

Sworn and subscribed to before me this
30th day of August 2019.

Business Manager

My commission expires
January 29, 2023
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-23

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

LEGAL NOTICE
AUGUST 30, 2019

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Pop SWD #1 will be located 1,099 feet from the South line and 1,333 feet from the East line, Section 33, Township 23 South, Range 35 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 15,888 feet to 18,044 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 29 miles southwest of Eunice, New Mexico.

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Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants
Randall Hicks
Principal
#34650

67115764

00232748

RANDALL HICKS
R.T. HICKS CONSULTANTS, LTD
901 RIO GRANDE BLVD NM
SUITE F-142
ALBUQUERQUE, NM 87104

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

September 03, 2019

NOTIFICATION TO INTERESTED PARTIES
Via U.S. Certified Mail – Return Receipt Requested

To Whom It May Concern:

AWR Disposal, LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete, for salt water disposal, the **Pop SWD #1.** The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is in Section 33, Township 23 South, Range 35 East in Lea County, New Mexico.

The published notice states that the interval will be from 15,888 feet to 18,044 feet into the Devonian, Fusselman and Montoya Formations.

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Pop SWD #1 will be located 1,099 feet from the South line and 1,333 feet from the East line, Section 33, Township 23 South, Range 35 East, Lea County, New Mexico.
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Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

You have been identified as a party who may be interested as an offset lessee or operator. **IF YOU WOULD LIKE AN ELECTRONIC COPY OF THE ENTIRE PERMIT PACKAGE, PLEASE SEND YOUR REQUEST TO** r@rthicksconsult.com (request a read receipt to avoid your email becoming stuck in spam).

Thank you for your attention in this matter.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

OPERATORS, LEASEHOLDERS AND SURFACE OWNERS WITHIN 1 MILE -RADIUS

BLACKBEARD OPERATING, LLC POP SWD #1 1751 River Run Suite 405 Fort Worth, TX 76107	BTA OIL PRODUCERS POP SWD #1 104 S PECOS MIDLAND, TX 79701	Bureau of Land Management POP SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292
CHEVRON U S A INC POP SWD #1 6301 DEAUVILLE BLVD MIDLAND, TX 79706	COG OPERATING LLC POP SWD #1 600 W Illinois Ave Midland, TX 79701	DEEP WELLS RANCH INC POP SWD #1 327 DEEP WELLS RD JAL, NM 88252
DEVON ENERGY PRODUCTION CO. POP SWD #1 333 West Sheridan Ave. Oklahoma City, OK 73102	EOG RESOURCES INC POP SWD #1 P.O. Box 2267 Midland, TX 79702	EOG Y RESOURCES, INC. POP SWD #1 104 S 4TH ST ARTESIA, NM 88210
Franklin Mountain Energy 2 LLC POP SWD #1 2401 E 2nd Avenue Suite 300 Denver, CO 80206	JAL PUBLIC LIBRARY TRUST POP SWD #1 BOX 178 JAL, NM 88252	LIMESTONE BASIN PROP RANCH LLC POP SWD #1 18 DESTA DRIVE MIDLAND, TX 79705
Magnum Hunter Production Inc POP SWD #1 202 S. CHEYENNE AVE. SUITE 1000 TULSA, OK 74103	MATADOR PRODUCTION COMPANY POP SWD #1 One Lincoln Centre 5400 LBJ Freeway Dallas, TX 75240	MCKAY PETROLEUM CORPORTATION POP SWD #1 P. O. BOX 2014 ROSWELL, NM 88202
MOBIL PRODUCING TX & NM POP SWD #1 PO BOX 1760 DENVER CITY, TX 79323	MRC PERMIAN COMPANY POP SWD #1 5400 LBJ FREEWAY SUITE 1500 DALLAS, TX 75240	New Mexico State Land Office POP SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501
OXY USA INC POP SWD #1 PO BOX 4294 HOUSTON, TX 77210	ROBERT E. LANDRETH POP SWD #1 110 W. LOUISIANA SUITE 404 MIDLAND, TX 79701	XTO Holdings, LLC POP SWD #1 6401 Holiday Hill Road #200 Midland, TX 79707

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☐ Adult Signature Restricted Delivery	$
Postage	$0.55
Total Postage and Fees	$6.85

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09/03/2019

Sent To: BLACKBEARD OPERATING, LLC
POP SWD #1
Street and Apt. No., or PO Box No.: 1751 River Run
Suite 405
City, State, ZIP+4®: Fort Worth, TX 76107

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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September 04, 2019

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

RE: AWR Disposal, LLC; Pop SWD #1
Unit Letter O, Section 33, T23S R35E, Lea County

Dear Mr. Goetze:

On behalf of AWR Disposal LLC, R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018[1]
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
    - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
    - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
    - Green, G. N., and G. E. Jones, 1997, e digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
    - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
    - NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology[2]

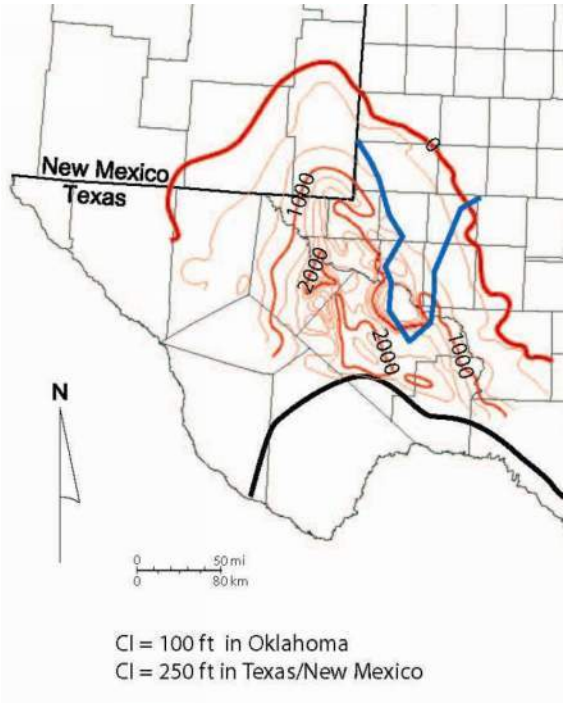
[1] https://scits.stanford.edu/sites/default/files/3702_tss_lundsnee_v2.pdf
[2] http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, and a magnitude 3.0-3.9 earthquake that occurred between 1970-2004 about 11.5 miles to the east of the proposed Pop SWD #1. A similar magnitude and more recent seismic event was reported about 28 miles east of the Pop SWD #1 well location.
3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the closest mapped basement fault that was re-activated during Woodford time is about 4.5 miles southwest, exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
4. Other mapped faults in southern Lea County shown on Plate 5 also show a low FSP, except for part of southwest-northeast trending fault about 18 miles north of the Pop SWD #1 well that has a FSP of about 25 – 33% in the central portion of this fault trace.

Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within an 6-mile radius around the proposed Pop SWD #1, the OCD database shows about 2 active and no new Devonian SWDs, which translates into an average density of about one SWD for every 37 square miles.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, And Reservoir Development) is attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.



Data from the Amoco Federal CW Com 1 (3002528119) show that the thickness of the Simpson in the Antelope Ridge area of Lea County (Section 3 24S 34E) is about 450 feet thick with. This is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).

We contend that the data permit conclusion that unmapped faults (which may be located by confidential seismic data that AWR Disposal does not possess) near the Pop SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate 6 permit a

conclusion that faults near the Pop SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Pop SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Pop SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenberger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenberger and, over time, increase the fluid pressure. After fluid pressure in the Ellenberger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events. In my opinion, the probability that injection into the Pop SWD #1 will measurably contribute to the events described above and will cause a seismic event resulting in damage is so low as to be nil.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks
Principal

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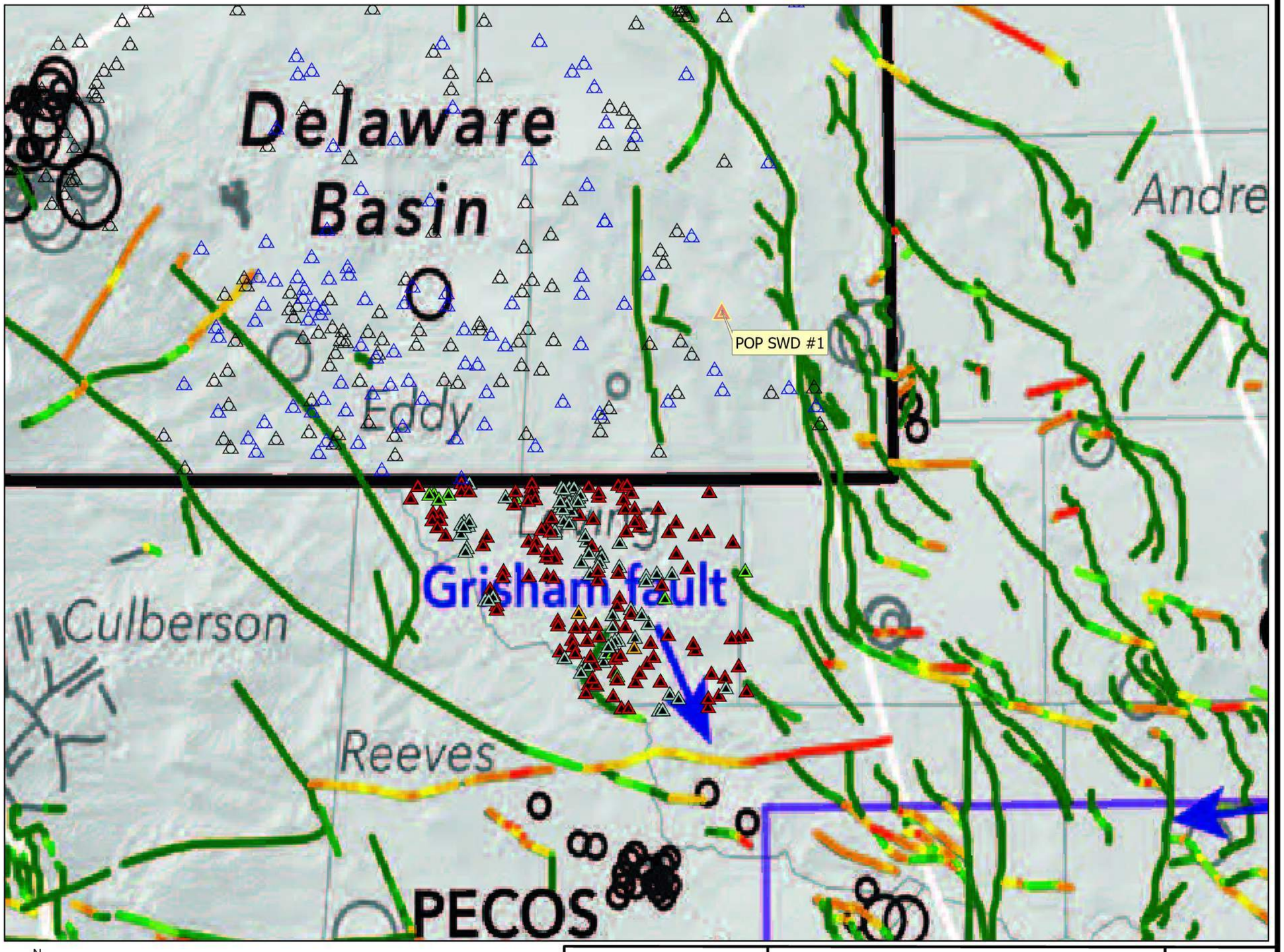

SWD

Oil and Gas (NMOCD)

Salt Water Injection, Active

Salt Water Injection, New

Loving, Tx Oil and Gas Wells

Injection/Disposal From Gas

Injection/Disposal From Oil

Injection/Disposal From Oil/Gas

Injection/Disposal Well

Seismicity:

M_W 2.0-2.9 — Since 2005

M_W 3.0-3.9 — 1970-2004

M_W 4.0+

Fault slip potential (%):

0 10 20 30 40 50+

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N W E S

0 5 10 Miles

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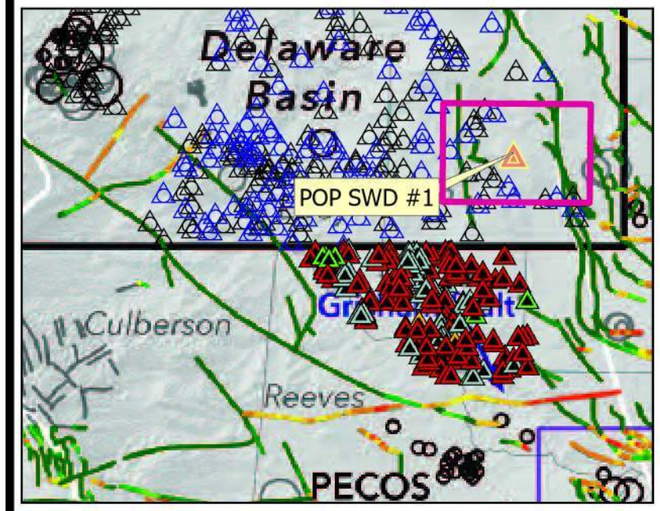
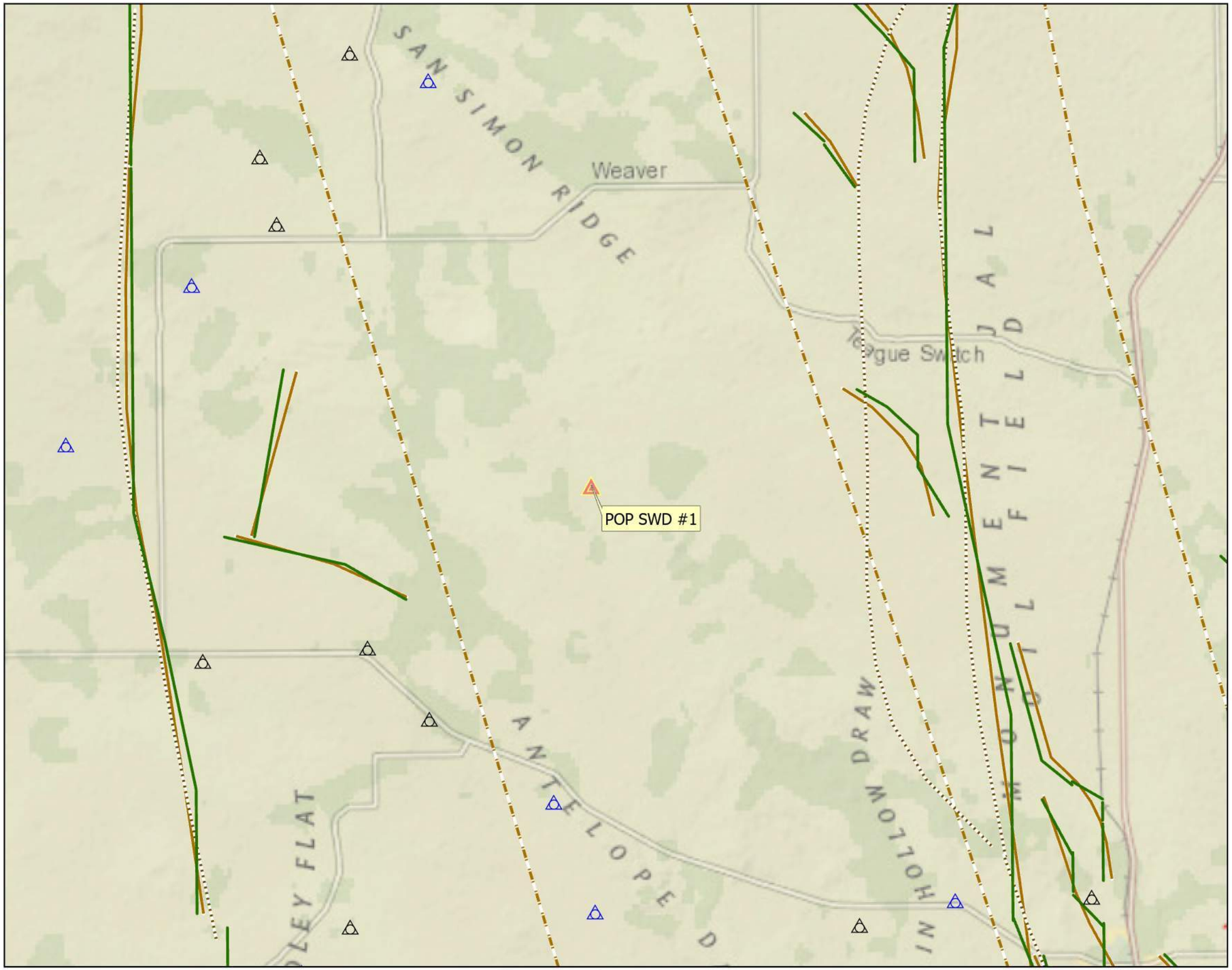
Albuquerque, NM 87104
Ph: 505.266.5004

Seismicity and Fault Slip Potential	Plate 5
AWR Disposal, LLC POP SWD #1	09/01/2019

M:\Accelerated Water\SWDs\Pop SWD\arcGISproPop\arcGISproPop.aprx





SWD

Oil and Gas (NMOCD)

Salt Water Injection, Active

Salt Water Injection, New

Faults

Fault - Woodford

Fault - Precambrian

Fault - Basement

Fault Slip Potential (%)

<5

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).

N W E S

0 1 2 Miles

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Fault Slip Potential	Plate 6
AWR Disposal, LLC POP SWD #1	09/01/2019