

Initial Application Part I

Received: 08/21/2019

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

RECEIVED: 08/21/2019	REVIEWER:	TYPE: SWD	APP NO: pMAM1923338640
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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: 97869

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

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

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

Randall H

Signature

Date

Phone Number

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 ELBOW ROOM SWD			⁶ Well Number #1
⁷ OGRID No. 328805		⁸ Operator Name AWR DISPOSAL, LLC			⁹ Elevation 3405'

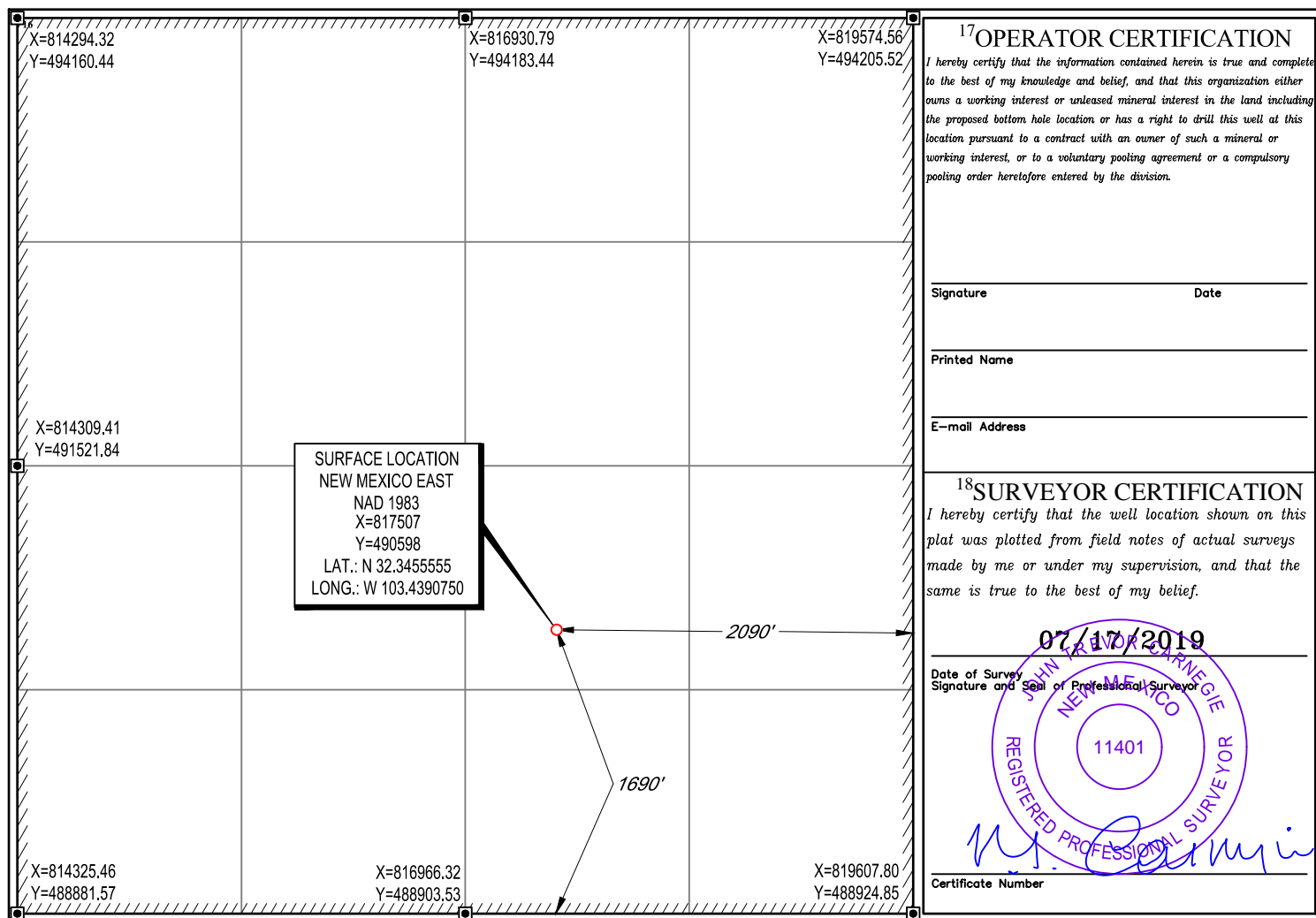
¹⁰ Surface Location									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	35	22-S	34-E	-	1690'	SOUTH	2090'	EAST	LEA

¹¹Bottom Hole Location If Different From Surface

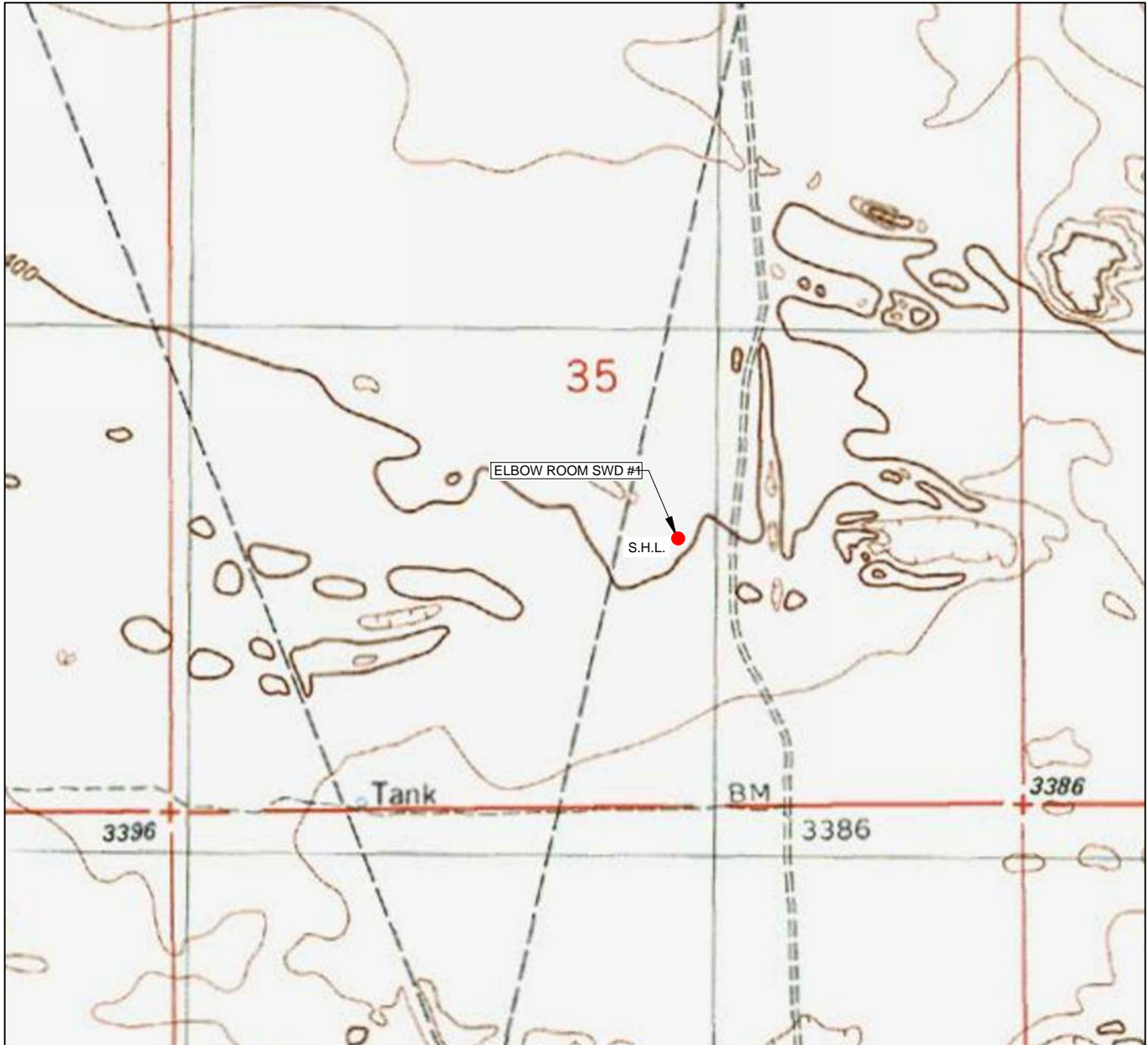
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

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.



LOCATION & ELEVATION VERIFICATION MAP



AWR DISPOSAL, LLC

LEASE NAME & WELL NO.: ELBOW ROOM SWD #1

SECTION 35 TWP 22-S RGE 34-E SURVEY N.M.P.M.
COUNTY LEA STATE NM ELEVATION 3405'
DESCRIPTION 1690' FSL & 2090' FEL

LATITUDE N 32.345555 LONGITUDE W 103.4390750



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

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 ACCELERATED WATER RESOURCES, LP. 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.

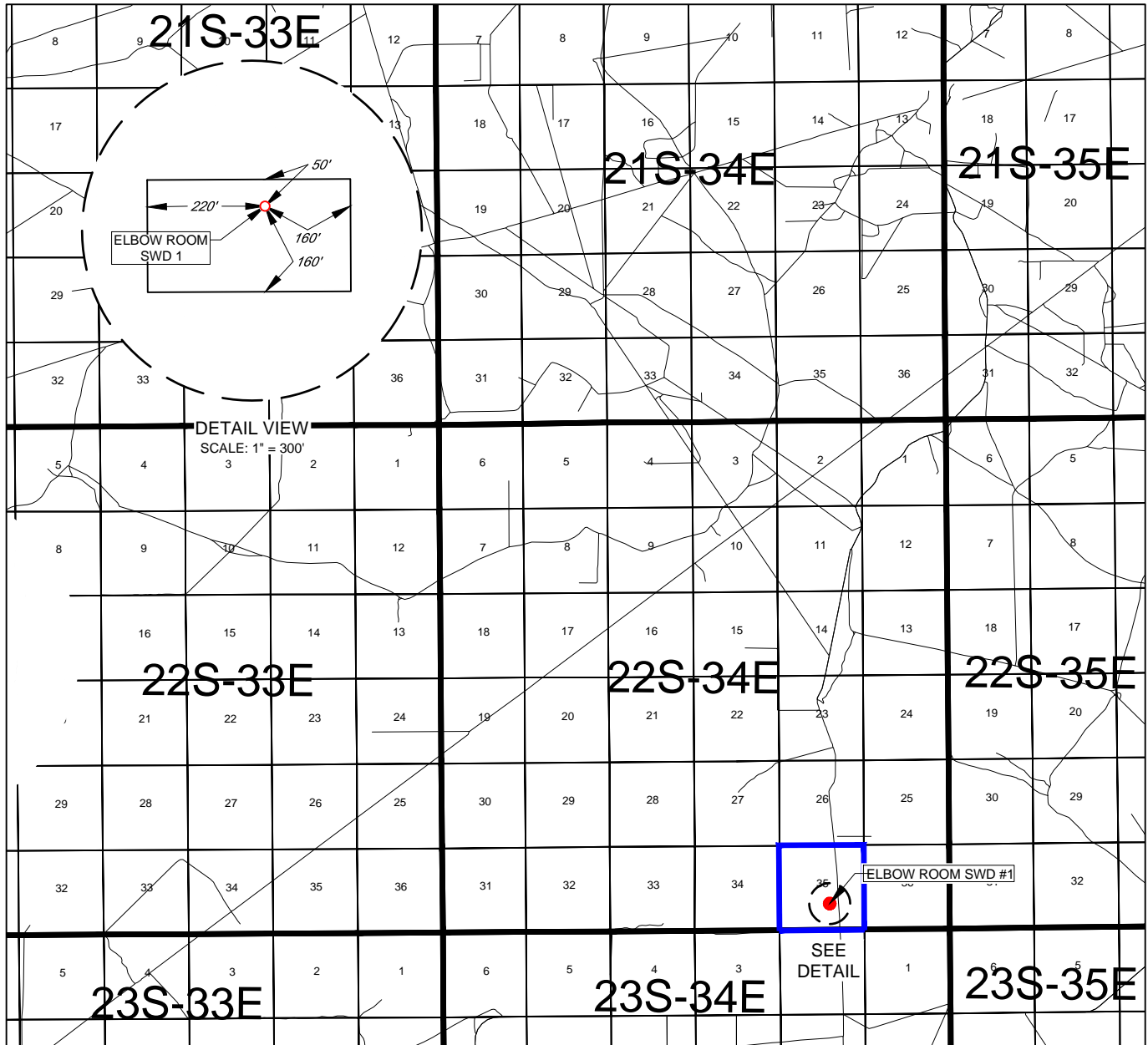
ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET.



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.: ELBOW ROOM SWD #1

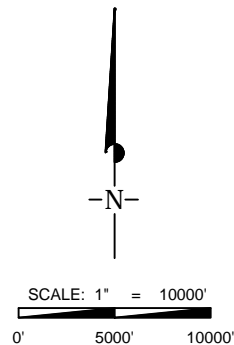
SECTION 35 TWP 22-S RGE 34-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 1690' FSL & 2090' FEL

DISTANCE & DIRECTION

FROM INT. OF NM-128 & DELAWARE BASIN RD., GO NORTH ON DELAWARE
BASIN RD. ± 8.0 MILES, THENCE BEAR EAST AROUND A CURVE ON DELAWARE
BASIN RD. ROAD AND GO ± 4.2 MILES, THENCE GO NORTH (LEFT) ON
COUNTY RD. 32 ± 1.3 MILES TO A POINT ± 311 FEET EAST OF THE LOCATION.

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, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET.



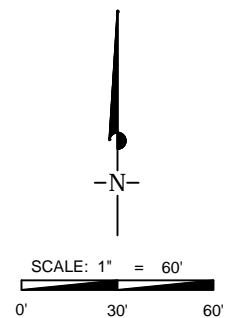
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LOYALTY INNOVATION LEGACY

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EXHIBIT 2A
AWR DISPOSAL, LLC




SECTION 35, TOWNSHIP 22-S, RANGE 34-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



S:\SURVEY\ACCELERATED_WATER_RESOURCES_LP\LIMESTONE\FINAL_PRODUCTS\LO_ELBOWROOM_SWD_1_PAD.DWG 8/1/2019 3:30:44 PM hperezgomez

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: _____ **08/21/2019** _____
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: _____

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: ELBOW ROOM SWD #1WELL LOCATION: 1690' FSL & 2090' FEL J 35 22S 34E
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: See attachments Casing Size: _____Cemented with: _____ sx. **or** _____ ft³

Top of Cement: _____ Method Determined: _____

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. **or** _____ ft³

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. **or** _____ ft³

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 to the **Elbow Room SWD #1**

Date Spudded: TBD

AWR Disposal LLC

Lease Name: Elbow Room SWD #1

Unit Letter J, Sec. 35, T22S R34E

1690' FSL, 2090' FEL

Lea County, NM

Latitude N 32° 20' 44", Longitude W 103° 26' 20.67"

From Carlsbad:

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 @ 11,750'.

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.

12.25" Hole

5.5" Tubing

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 @ 14,898'.

Cmt w/ 230 sks 11.9 ppg Class C

Packer set @ 14,798

Injection Interval:

8.5" Hole

14,898 - 15,877

15,877 - 16,464

16,464 - 17,079

DVNN

FSLM

MNTY

TD : 17,079

6.5" Openhole

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: Elbow Room SWD #1

Unit Letter J, Section 35, T22S R34E, 1,690' FSL, 2,090' FEL

The State of New Mexico 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 all of the design specifics required and a tabulation of these data are shown on the diagram.

The formation tops for the Elbow Room SWD #1 were established by Geologist Herb Wacker TBPB license #4517. For the deepest formations, we used the log from the Amerada Hess Bell Lake North Fed #3 (30-325-33077) that has a total depth of 17,540' in the Ellenburger Formation. The distance from Elbow Room to this well is 3.7 miles to the west.

For picking tops of more shallow formations, we used the log from the BTA Oil Producers MADDOX FEDERAL 8016 JV-P No. 001 (30-025-27824) that has a total depth of 13,650' in the Morrow Formation. The distance from Elbow Room SWD location is 0.4 mile to the northwest.

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 14,798.

AWR 203 Elbow Room Sec 35 Twp 22S Rge 34E		
	GL	3400
Geologist	KB	3430
H. Wacker	MD	SS
Dockum	364	3066
Santa Rosa	932	2498
Dewey Lake	1359	2071
Rustler	1768	1662
Salt	2138	1292
Capitan Reef	4157	-727
Delaware	5518	-2088
Bell Canyon	5550	-2120
Cherry Canyon	5955	-2525
Brushy Canyon	7245	-3815
Bone Spring	8568	-5138
Avalon	9091	-5661
1st Bone Spring	9686	-6256
2nd Bone Spring	10191	-6761
3rd Bone Spring	10995	-7565
Wolfcamp	11382	-7952
Strawn	11914	-8484
Atoka	12195	-8765
Morrow	12845	-9415
Barnett	13611	-10181
Miss Limestone	14068	-10638
Woodford	14686	-11256
Devonian	14868	-11438
Fusselman	15877	-12447
Montoya	16464	-13034
Simpson	17109	-13679
Top of Interval	14898'	Devonian +30
Bottom of Interval	17079'	Simpson -30'
TD	17079'	
Thickness of Injection Interval = 2181'		

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 14,798.

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 14,898 - 17,079 (2,181 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 3400'):

Bone Spring	8568
Avalon	9091
1st Bone Spring	9686
2nd Bone Spring	10191
3rd Bone Spring	10995
Wolfcamp	11382
Strawn	11914
Atoka	12195
Morrow	12845

Underlying Oil & Gas Zones:

Devonian	17124
----------	-------

Table 1 shows that within the 1-mile AOR, there are no other active wells producing from the Devonian.

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, lessors/mineral interests and surface owners (affected persons) within the 1-mile AOR presented on Plate 2a that are available through data bases.

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

There are no other wells that penetrate the proposed injection zone in 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 14,868 and 17,109 respectively. The depth interval of the injection interval is 14,898 - 17,079 (2,181 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 Elbow Room SWD #1, the closest water well (CP-1705) a relatively new well (2018) and is located about 1-mile northwest of the proposed SWD (Plate 3a).

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 Elbow Room SWD #1, the depth interval of this potential source of fresh water is about 1700-1900 feet. The OSE database contains information (e.g. driller's log) for CP-1705 and this log indicates the water-bearing formation is in sandstone and sand within the depth interval 270-700 feet. The total depth of the well is 700 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.

The locations of all water supply wells listed in public databases are shown in Plate 3b. As stated above, there is one presumably active water supply well within about 1 mile of the proposed location. The location of nearby mapped surface water bodies is shown in Plate 4. No mapped surface water exists within the Area of Review.

IX. Describe the proposed stimulation program, if any

A clean-up 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

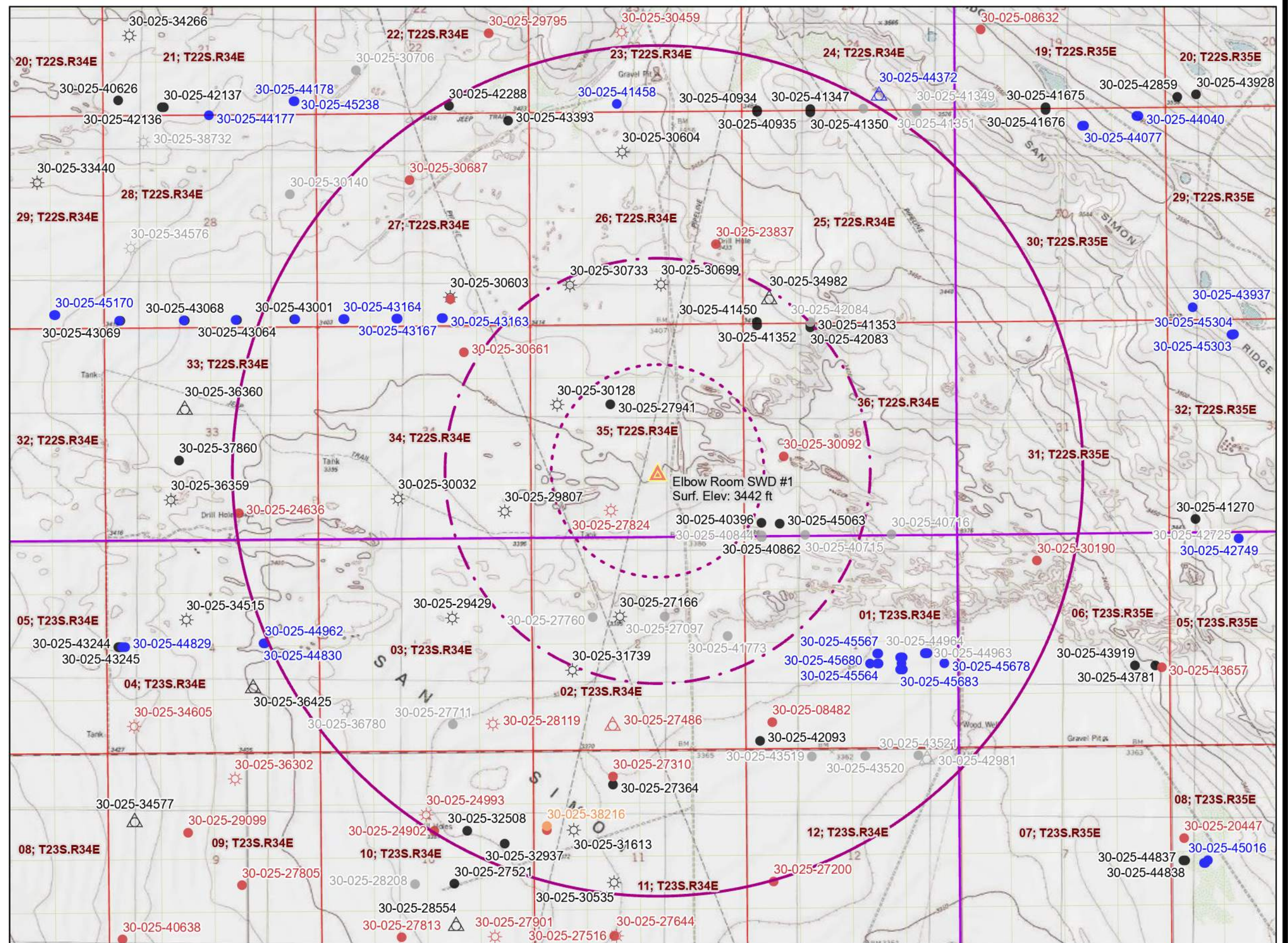
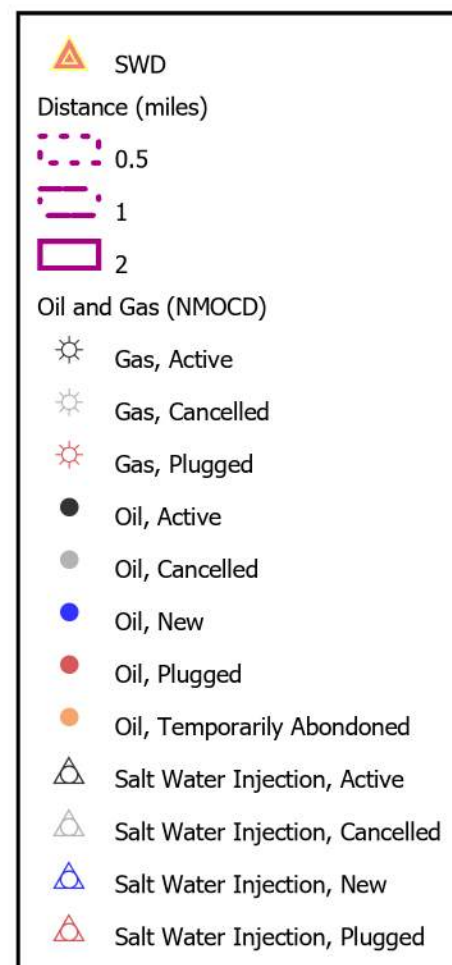
- The USGS has mapped quaternary faults in New Mexico and no such faults are mapped in the area of the proposed Elbow Room SWD #1¹
- The Texas Bureau of Economic Geology has mapped older faults (e.g. basement and Woodford) in New Mexico and the closest mapped fault is about 3 miles to the west²
- With 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

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



0 0.25 0.5 Miles


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Oil and Gas Wells within 2 Miles

AWR Disposal, LLC
Elbow Room SWD #1


Plate 1a

August 2019




SWD


Distance (miles)



0.5




1




2


Oil and Gas (NMOCD)




Gas, Active



Oil, Active



Oil, New



Salt Water Injection, Active

Elbow Room SWD #1
Surf. Elev: 3442 ft

Wells and SWDs shown on map:

- 27; T22S.R34E (SWD)
- 26; T22S.R34E (SWD)
- 25; T22S.R34E (SWD)
- 30; T22S.R35E (SWD)
- 34; T22S.R34E (SWD)
- 35; T22S.R34E (SWD)
- 36; T22S.R34E (SWD)
- 31; T22S.R35E (SWD)
- 03; T23S.R34E (SWD)
- 02; T23S.R34E (SWD)
- 01; T23S.R34E (SWD)
- 06; T23S.R35E (SWD)

Well IDs and names shown on map:

- 30-025-30603
- 30-025-30733
- 30-025-30699
- 30-025-34982
- 30-025-41450
- 30-025-41353
- 30-025-41352
- 30-025-42083
- 30-025-30128
- 30-025-27941
- 30-025-30032
- 30-025-29807
- 30-025-40396
- 30-025-45063
- 30-025-40862
- 30-025-29429
- 30-025-27166
- 30-025-31739
- 30-025-45567
- 30-025-45265
- 30-025-45680
- 30-025-45564
- 30-025-45683
- 30-025-45678
- 30-025-43167
- 30-025-43163
- 30-025-43166
- 30-025-43165

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	AWR Disposal, LLC Elbow Room SWD #1	August 2019

SWD

Distance (miles)

0.5

1

2

Oil and Gas Leases

SLO Leases

BLM Leases

Mineral Ownership (BLM Dataset)

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

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

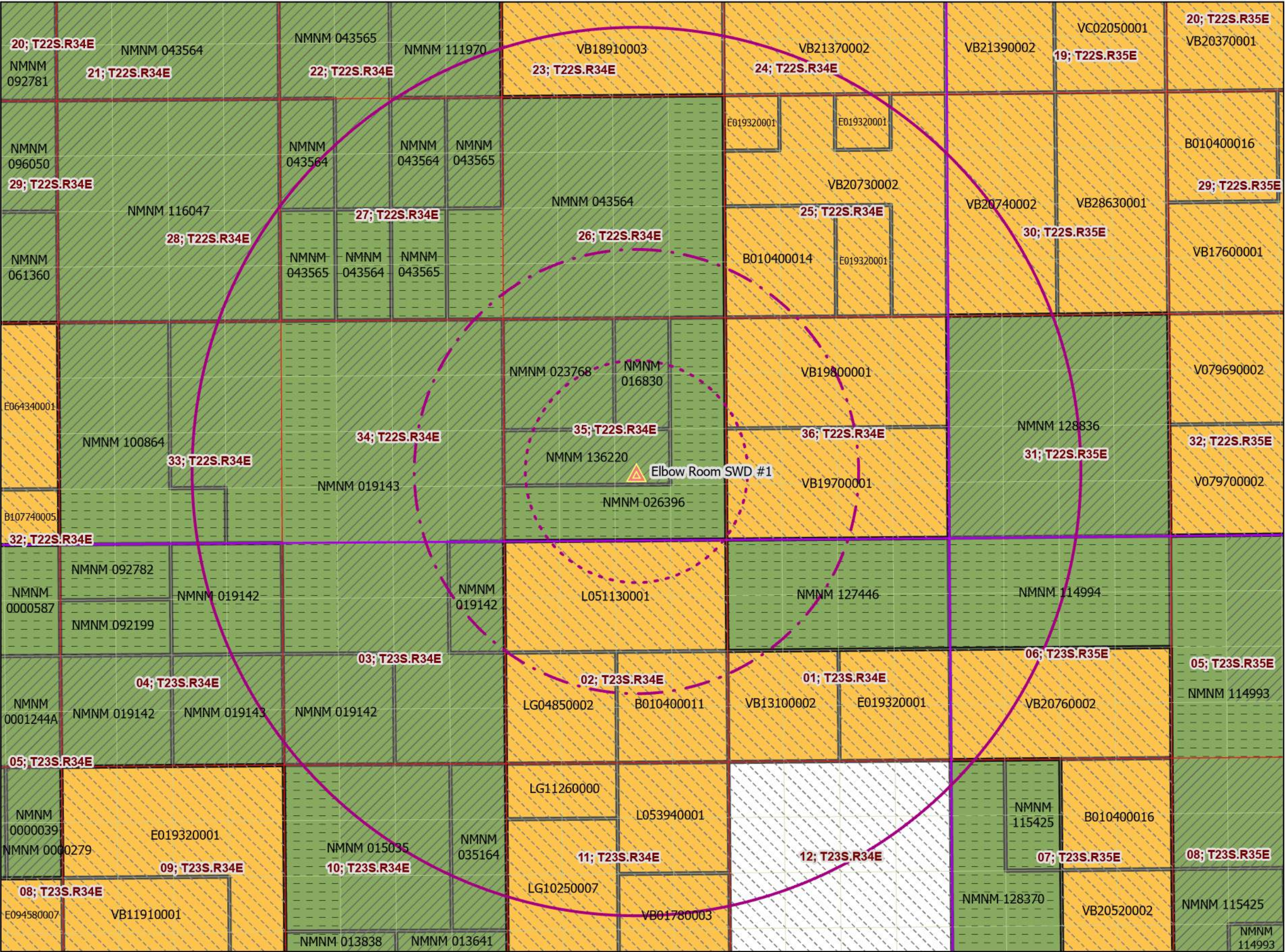
Other minerals are owned by the U.S. (BLM)


Township Range Section

Township Range


Section


UL (qq)




 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)

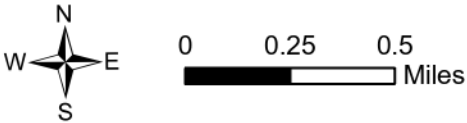
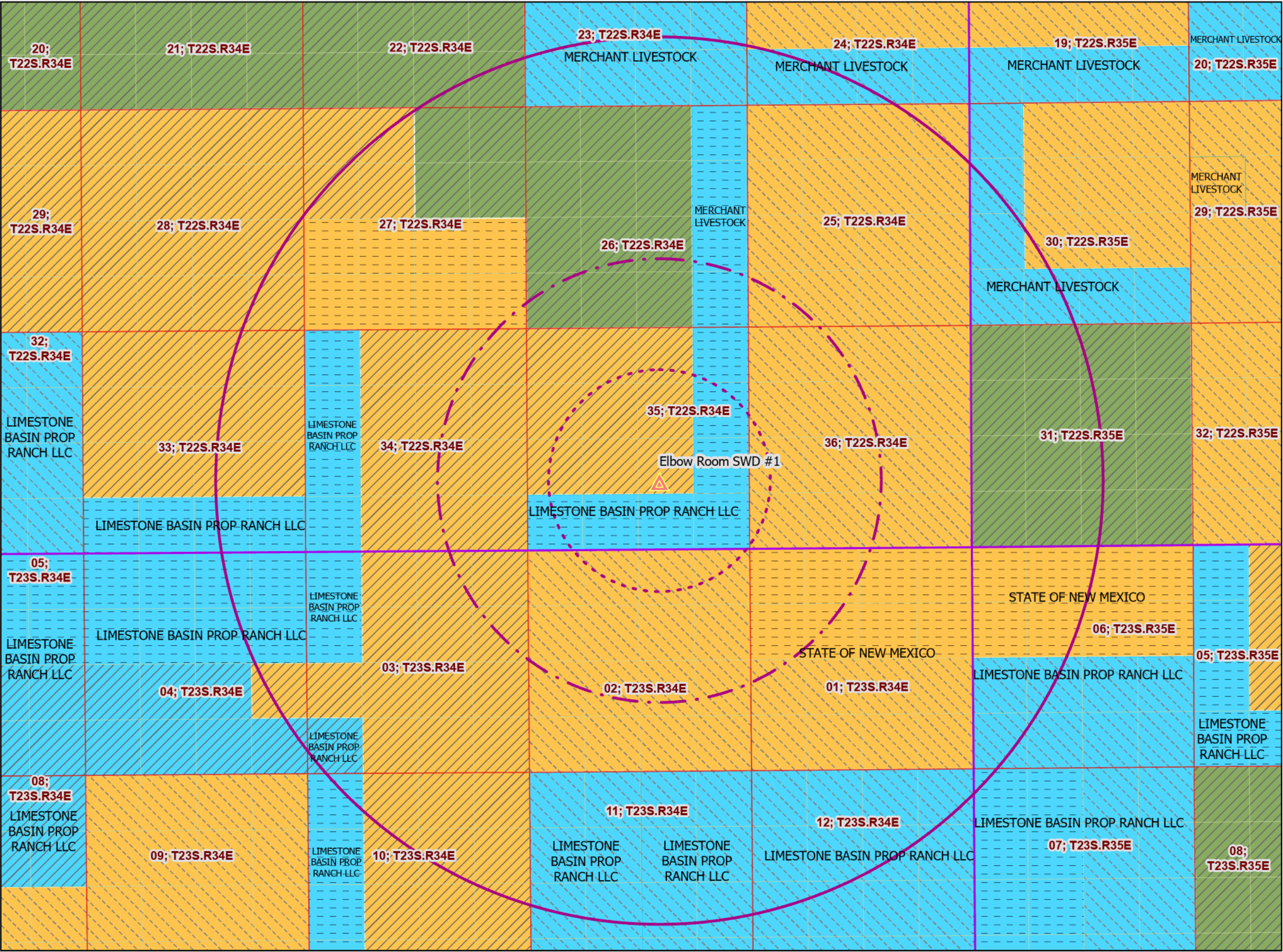
 Other minerals are owned by the U.S. (BLM)

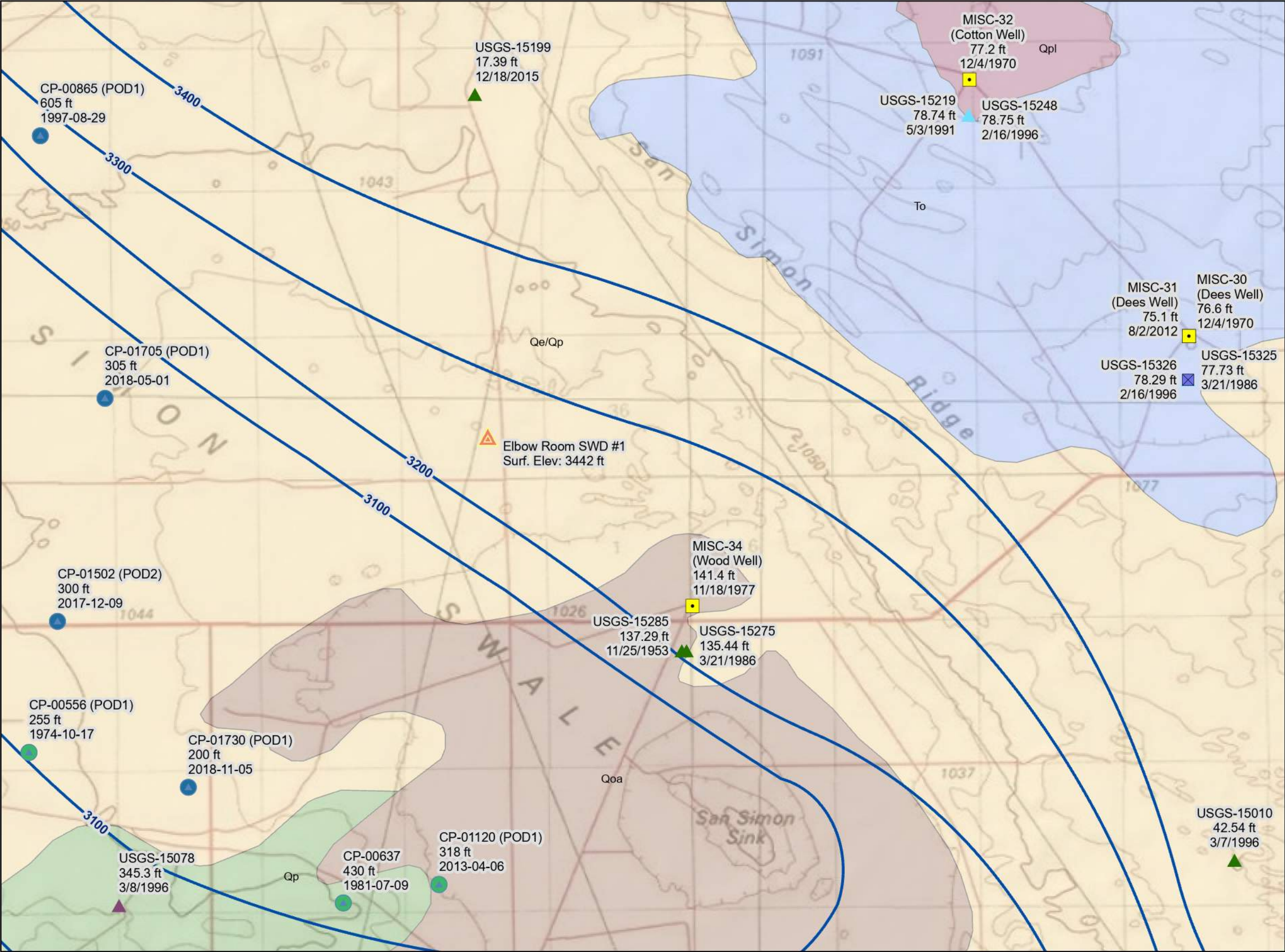
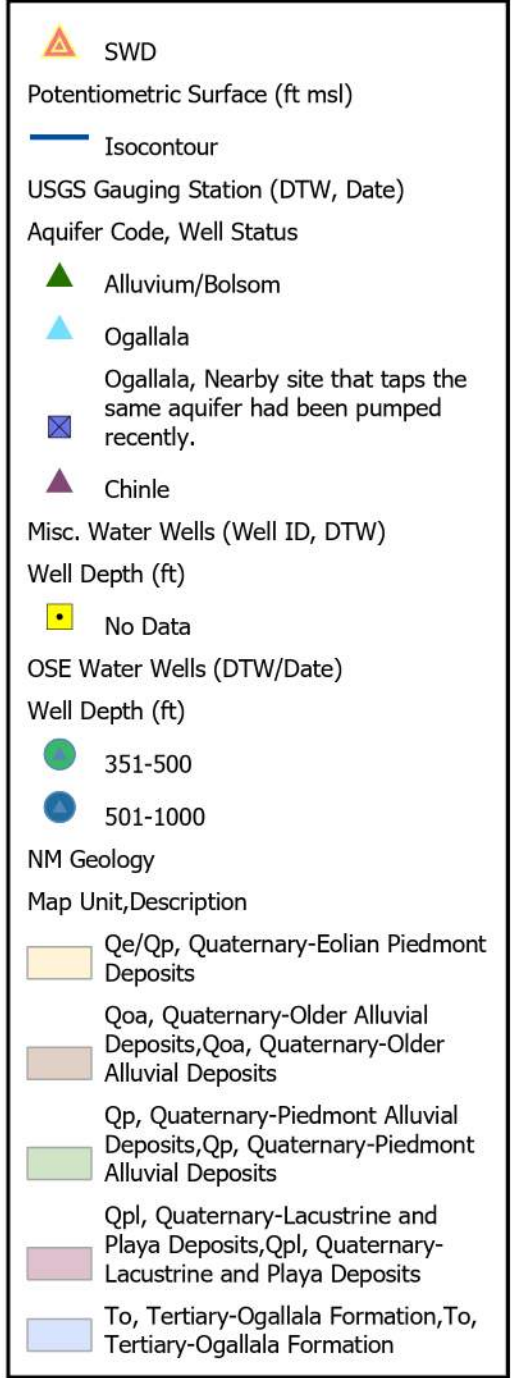
Township Range Section

 Township Range

 Section

 UL (qq)






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Depth to Water, Potentiometric Surface, and Geology

AWR Disposal, LLC
Elbow Room SWD #1


Plate 3a


August 2019


 SWD


OSE Water Wells (DTW/Date)

Well Depth (ft)

 <=150


 351-500


 501-1000


 Other


NM Geology


Map Unit,Description

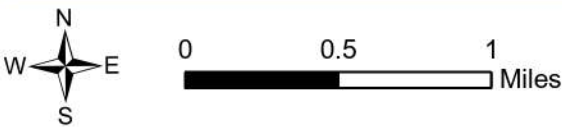
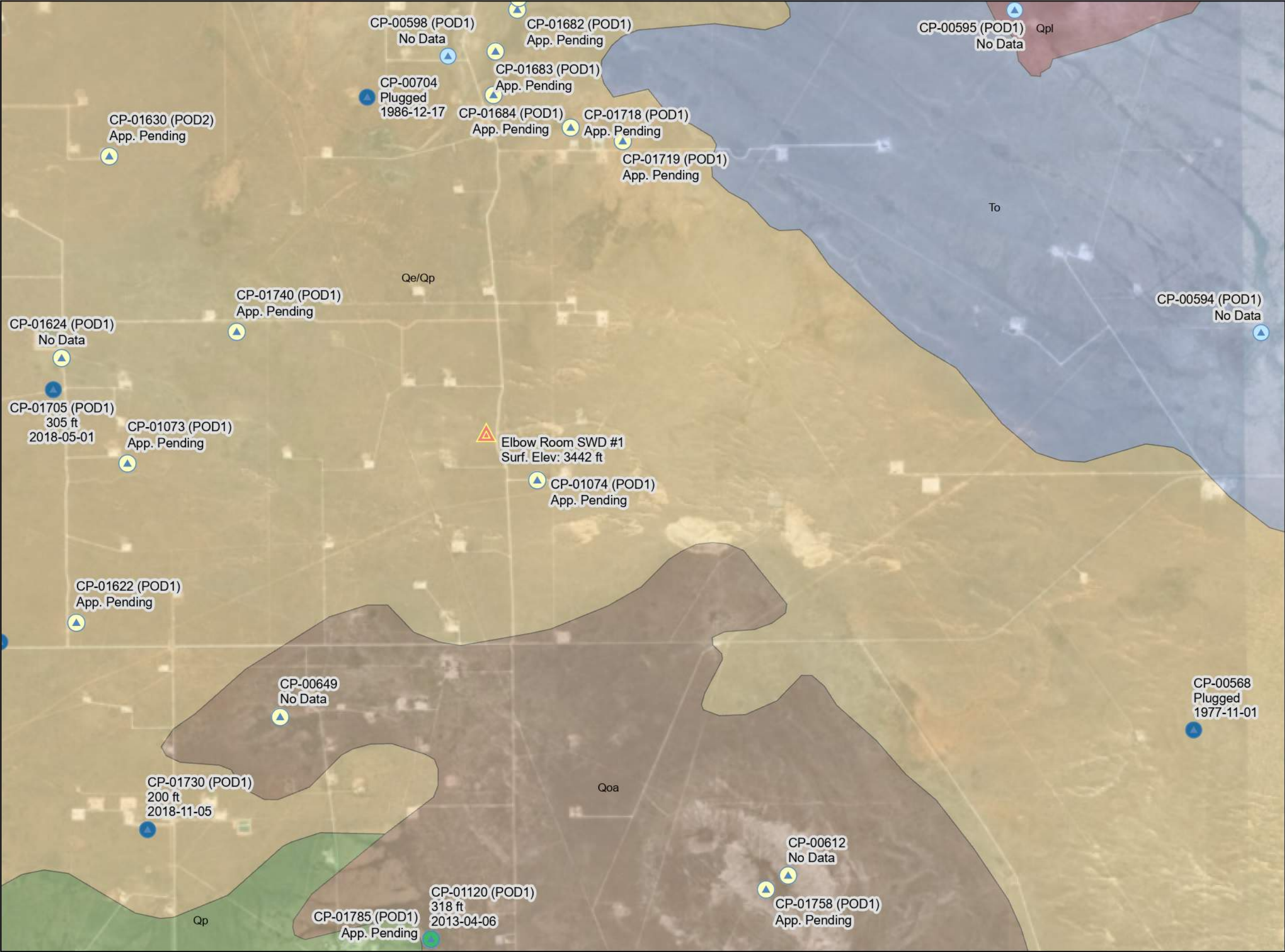
 Qe/Qp, Quaternary-Eolian Piedmont Deposits

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

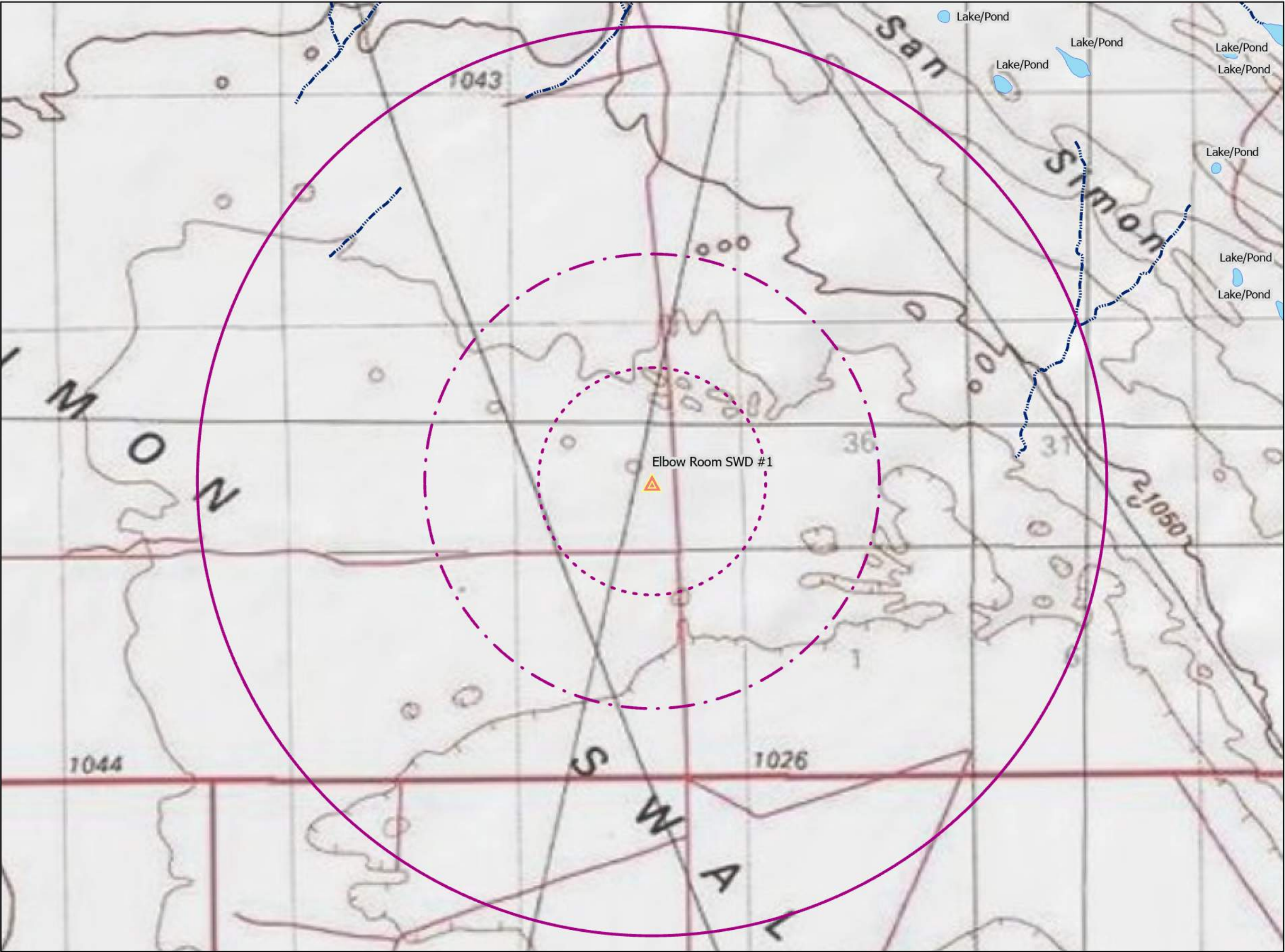
 Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits


 Qpl, Quaternary-Lacustrine and Playa Deposits,Qpl, Quaternary-Lacustrine and Playa Deposits

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





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	AWR Disposal, LLC Elbow Room SWD #1	August 2019




 SWD


Distance (miles)

 0.5


 1


 2

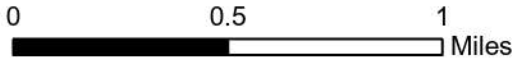
Water Bodies (1307)

 Lake/Pond

River and Drainages (1307)

 Stream/River Artificial Path

 Intermittent Stream



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Surface Water
AWR Disposal, LLC Elbow Room SWD #1

Plate 4
August 2019