STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO. **CASE NO. 24570**

NOTICE OF REVISED EXHIBIT PACKET

Waterbridge Stateline, LLC ("Waterbridge") hereby provides notice that it is submitting a revised exhibit packet for Case No. 24570. Pursuant to the Technical Examiner's instruction at the June 27, 2024 hearing in this matter, Waterbridge has made the following revisions:

- Included statement regarding lack of appropriate offsets SRTs and commitment to undertake SRT to calculate maximum and average injection rates (see page 13 with added language highlighted in yellow);
- Attachment 3: Revised to include additional analyses pertaining to source water, showing cation and anions levels and also a statement that the water analysis report shows the produced water stream is less than 0.00% H2S (see pages 28 and 29 to 31 of revised exhibit packet).
- Attachment 4: Revised to include a statement, highlighted in yellow, that Waterbridge agrees to collect one formation water sample for analysis during drilling operations given that no Glorieta data addressing H2S, cations, or anions is available within a ½ mile.
- Attachment 5: Revised to add a document entitled "Reservoir Characteristics at the FPNM SWD #1" which includes an analysis of porosity and resistivity of the upper and lower confining zones (see pages 35-36 of revised exhibit packet). This additional

document also includes a statement from Waterbridge that Waterbridge will run a mud log on the FPNM SWD #1 as there is no current mud log data available within ½-mile. Waterbridge will provide that mud log to the Division.

Respectfully submitted,

By: Deana M. Bennett

Deana M. Bennett
Earl E. DeBrine, Jr.
Yarithza Peña
Post Office Box 2168
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Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
Deana.bennett@modrall.com
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Yarithza.pena@modrall.com

Oil Conservation Division

Examiner Hearing

June 27, 2024*

Case No. 24570

WATERBRIDGE

* Revised as of August 26, 2024 Per Technical Examiner's Request

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570

TABLE OF CONTENTS

* Revised C-108 submitted per Technical Examiner's requested and changes outlined in Notice of Revised Exhibit Packet

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570
(FPNM SWD #6)

AFFIDAVIT OF OLIVER SEEKINS

Oliver Seekins, of lawful age and being duly sworn, declares as follows:

1. My name is Oliver Seekins. I work for ALL Consulting as a Project Manager/Regulatory Specialist. I have been retained by WaterBridge Stateline LLC ("WaterBridge") (OGRID No. 330129).

2. I personal knowledge of the matters stated herein.

3. I have previously testified before the Oil Conservation Division ("Division") as an expert witness in regulatory matters and permitting salt water disposal wells. My credentials as an expert in regulatory matters and permitting salt water disposal wells have been accepted by the Division and made a matter of record.

4. My area of responsibility includes the area of Lea County in New Mexico.

5. I am familiar with the application WaterBridge filed in this matter and I am familiar with the status of the lands in the subject area.

6. **Exhibit A-1** is the hearing application in Case No. 24570 that WaterBridge filed with the Division. The application includes the Form C-108, attached as Exhibit A to the Application. In preparing for this hearing, I have reviewed the C-108 and did not identify any changes that require amending the C-108 or affect the accuracy of statements in the C-108.

EXHIBIT
tabbies
A

7. In this case, WaterBridge seeks authorization to inject produced water into the Glorieta Sandstone formation through the FPNM SWD #6 well at a surface location 1964' from the North line and 2170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico.

8. WaterBridge seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet.

9. WaterBridge requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day.

10. The well will be a commercial well, and WaterBridge intends to commence drilling the Well as soon as reasonably possible after receiving the injection order and commence injection within 1-year of receiving the approved injection order or an approved NMOCD authorization to inject extension.

11. Attachment 2 in Exhibit A-1 include a map that identifies wells within 2 miles of the Well.

12. As noted in Attachment 2, there are no wells within a half-mile of the Well.

13. Attachment 2 identifies the operators, lessees, mineral and surface owners within two miles of the Well.

14. I also reviewed whether there are any fresh water wells within a mile of the Well. There is one well within one mile of the Well, however according to NMOSE records, this well in not currently active, and as such is unavailable for sampling , as noted in Attachment 6 to Exhibit A-1.

15. I provided notice information to WaterBridge's counsel based on OCD's regulations, in Rule 19.15.26.8(B), which require notice to the surface owner and to each leasehold

operator, and to any other affected person as that term is defined Rule 19.15.2.7(8). The notice party information is included in Attachment 9 to Exhibit A-1.

16. It is my opinion that WaterBridge undertook a good faith effort to locate and identify the correct parties and valid addresses required for notice.

17. In my opinion, the granting of WaterBridge's application is in the interests of conservation and the prevention of waste. The Well will provide much needed capacity for produced water, which will, in turn, support oil and gas operators' ability to produce oil and gas.

18. The attached exhibits were prepared by me, or compiled from company business records, or were prepared at my direction.

19. I attest under penalty of perjury under the laws of the State of New Mexico that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]

Oliver Seekins

State of Utah

County of Washington

This record was acknowledged before me on June 18 2024, by Oliver Seekins.

[Stamp] PARKER BRIDGES
NOTARY PUBLIC • STATE of UTAH
COMMISSION NO. 729858
COMM. EXP. 03-09-2027

Notary Public in and for the
State of Utah
Commission Number: 729858

My Commission Expires: 3/9/2027

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570

APPLICATION

WaterBridge Stateline LLC ("WaterBridge"), OGRID No. 330129, through its undersigned attorneys, hereby submits this application to the Oil Conservation Division pursuant to the provisions of NMSA 1978, § 70-2-12, Rule No. 19.15.26, and Rule 19.15.4.8 for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, WaterBridge states as follows:

(1) WaterBridge proposes to drill the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well.

(2) WaterBridge seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet.

(3) WaterBridge requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day.

(4) WaterBridge requests approval of a maximum injection pressure of 1,080 psi for the well.

(5) A proposed C-108 for the subject well is attached hereto as Attachment A.

EXHIBIT
tabbies
A-1

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, WaterBridge requests that this application be set for hearing before an Examiner of the Oil Conservation Division on June 13, 2024; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A.

By: Deana M Bennett

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Yarithza Peña
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Attorneys for Applicant

CASE NO. 24570: Application of WaterBridge Stateline LLC for approval of a salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 7.94 miles Southeast of Jal, New Mexico.

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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

ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: _____ **OGRID Number:** _____
Well Name: _____ **API:** _____
Pool: _____ **Pool Code:** _____

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

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

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.

_____ Date

_____ Print or Type Name

_____ Phone Number

_____ Signature

_____ e-mail Address

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: WaterBridge Stateline LLC

ADDRESS: 5555 San Felipe, Ste. 1200 Houston, TX 77056

CONTACT PARTY: Jessica High - Director, QHSE & Regulatory PHONE: 832-871-4064

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).

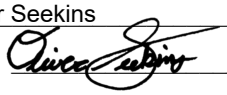
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

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: Oliver Seekins TITLE: Project Manager / Regulatory Specialist

SIGNATURE:  DATE: 5/13/2024

E-MAIL ADDRESS: oseekins@all-llc.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

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

Application for Authorization to Inject
Well Name: FPNM SWD #6

III – Well Data (*The wellbore diagram is included as **Attachment 1***)

A.

(1) General Well Information:

Operator: WaterBridge Stateline LLC (OGRID No. 330129)
Lease Name & Well Number: FPNM SWD #6
Location Footage Calls: 1,964' FNL & 2,170' FWL
Legal Location: Lot F, S17 T26S R38E
Ground Elevation: 2,983'
Proposed Injection Interval: 5,400' - 5,775'
County: Lea

(2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	24"	20"	94.0 lb/ft	1,165'	1,185	Surface	Circulation
Intermediate 1	17-1/2"	13-3/8"	54.5 lb/ft	2,635'	1,940	Surface	Circulation
Production Casing	12-1/4"	9-5/8"	40.0 lb/ft	5,775'	1,915	Surface	CBL
Tubing	N/A	5-1/2"	17.0 lb/ft	5,375'	N/A	N/A	N/A

DV Tool set at: 3,000'

(3) Tubing Information:

5-1/2" (17.0 lb/ft) ceramic-coated tubing with setting depth of 5,375'

(4) Packer Information: ACT AS1-X or equivalent packer set at 5,375'

B.

(1) Injection Formation Name: Glorieta Sandstone
Pool Name: SWD;Glorieta
Pool Code: 96106
(2) Injection Interval: Perforated injection between 5,400' - 5,775'
(3) Drilling Purpose: New drill for saltwater disposal
(4) Other Perforated Intervals: No other perforated intervals exist.
(5) Overlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.

- Yates (2,815')
- Seven Rivers (2,889')
- Queen (3,424')
- Penrose (3,730')

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

- Tubb (6,630')
- Devonian (9,098')

V – Well and Lease Details

The following maps and documents are included as ***Attachment 2***:

- 2-mile Oil & Gas Well Map
- ½-mile AOR Well Table
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

VI – AOR Well List

A list of the well(s) within the 1/2-mile AOR is included in ***Attachment 2***.

There are no wells in the ½-mile AOR.

VII – Proposed Operation

(1) **Proposed Maximum Injection Rate:** 20,000 bpd
Proposed Average Injection Rate: 15,000 bpd
Step Rate Test: At hearing NMOCD requested an analysis of an appropriate offset SRT to show that the proposed SWD should be capable of accepting a maximum of 20,000 bpd and an average of 15,000 bpd. Given that no such SRT is available, WaterBridge agrees to run a SRT on either the FPNM SWD #1, #3, or #6, and use that SRT to undertake the calculation requested by NMOCD. Based on that calculation, WaterBridge will notify the Division of the proposed injection rate (maximum and average) and whether the proposed injection rates need to be modified.

(2) A **closed-loop system** will be used.

(3) **Proposed Maximum Injection Pressure**: 1,080 psi (surface)
Proposed Average Injection Pressure: Approximately 810 psi (surface)

(4) **Source Water Analysis:** The expected injectate will consist of produced water from production wells completed in the Queen, Wolfcamp, Devonian and Ellenburger formations. Publicly available water quality analysis from the Go-Tech database, as well as sample analysis of water taken from WaterBridge's produced water pipeline system, are included for these formations as ***Attachment 3***.

(5) **Injection Formation Water Analysis:** The proposed SWD will be injecting water into the Glorieta Sandstone, which is a non-productive zone known to be compatible with formation water from the Queen, Wolfcamp, Devonian and Ellenburger formations. Water analyses from the Glorieta Sandstone in the area are included as ***Attachment 4.***

VIII – Geologic Description

The proposed injection interval includes the Glorieta Sandstone from 5,400' - 5,775'. The Permian-aged Glorieta Sandstone is a fine grained and well-to-moderately sorted quartz arenite sandstone that occurs directly below the San Andres Formation. There are multiple zones of high porosity and low resistivity that makes this sandstone a viable injection zone in this area.

Further reservoir characterization, including discussion of the injection formation, overlying and underlying confinement zones, and historic use of the field is included as ***Attachment 5***.

The base of the USDW is the Rustler Formation at a depth of approximately 1,140 feet. Depth of the nearest water well in the area is approximately 185 feet below ground surface.

IX – Proposed Stimulation Program

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

X – Logging and Test Data

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

XI – Fresh Groundwater Samples

Based on a review of data from the New Mexico Office of the State Engineer, there is one (1) groundwater well located within 1-mile of the proposed SWD location. However, the well is not eligible for sampling because of its location in an area with aquifer production restrictions.

A water well map and details of the water well within 1-mile are included as ***Attachment 6***.

XII – No Hydrologic Connection Statement

No publicly known faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs.

A signed *No Hydrologic Connection Statement* is included as ***Attachment 7.***

In addition, a *Seismic Potential Letter* detailing the minimal risk of injection-induced seismicity associated with the proposed SWD is included as ***Attachment 8***.

XIII – Proof of Notice

A public notice was filed with the Hobbs News-Sun newspaper, and an affidavit is included in ***Attachment 9***.

A copy of the application was mailed to the OCD district office, landowner, and all identified affected parties. A list of the recipients, as well as delivery confirmations, are included as ***Attachment 9***.

Attachments

Attachment 1:

- C-102
- Wellbore Diagram
- Packer Diagram

Attachment 2: Area of Review Information:

- 2-Mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

Attachment 3: Source Water Analysis

Attachment 4: Injection Formation Water Analysis

Attachment 5: Reservoir Characterization

Attachment 6: Water Well Map and Well Data

Attachment 7: No Hydrologic Connection Statement

Attachment 8: Seismic Potential Letter

Attachment 9: List of Affected Persons

Attachment 1

- C-102
- Wellbore Diagram
- Packer Diagram

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

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

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
	96106	SWD;Glorieta

Property Code	Property Name	Well Number
	FPNM SWD	#6

OGRID No.	Operator Name	Elevation
330129	WATERBRIDGE STATELINE LLC	2983'

Surface Location

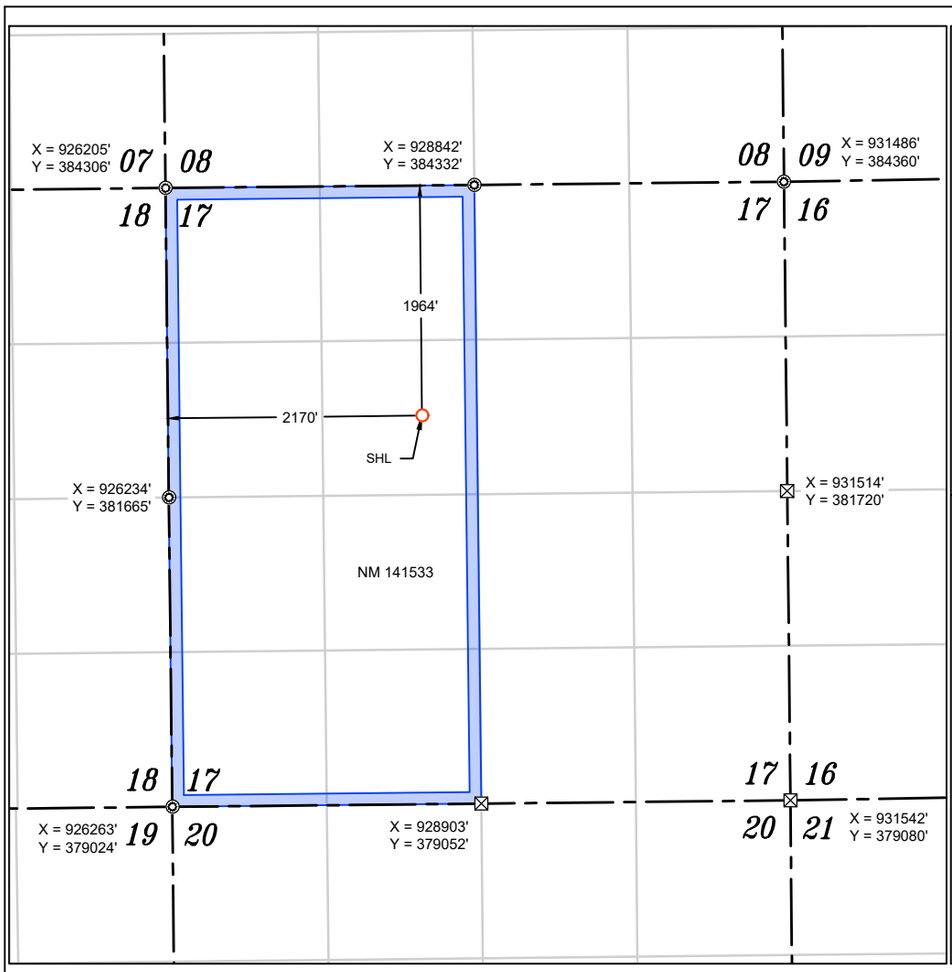
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	17	26 S	38 E		1964	NORTH	2170	WEST	LEA

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

Dedicated Acres	Joint or Infill	Consolidation Code	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.



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: 5/13/2024

Oliver Seekins
Printed Name

Oseekins@all-llc.com
E-mail Address

SURVEYOR CERTIFICATION

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

FEBRUARY 27, 2024
Date of Survey

Signature and Seal of Professional Surveyor:

TIM C. PAPPAS
NEW MEXICO
21209
PROFESSIONAL SURVEYOR

Job No.: 24-02-4069
TIM C. PAPPAS, N.M.P.L.S.
Certificate Number 21209

NAD 83 (SHL) 1964' FNL & 2170' FWL
LATITUDE = 32.045044°
LONGITUDE = -103.084142°
NAD 27 (SHL)
LATITUDE = 32.044921°
LONGITUDE = -103.083693°
STATE PLANE NAD 83 (N.M. EAST)
N: 382363.99' E: 928395.87'
STATE PLANE NAD 27 (N.M. EAST)
N: 382308.30' E: 887206.20'

- FND. U.S.G.L.O. MON. UNLESS OTHERWISE NOTED
- CALC. CORNER
- SHL/ KOP/ FTP / PPP/ LTP / BHL
- STATE OIL & GAS LEASE
- BLM OIL & GAS LEASE
- HORIZONTAL SPACING UNIT

NOTES

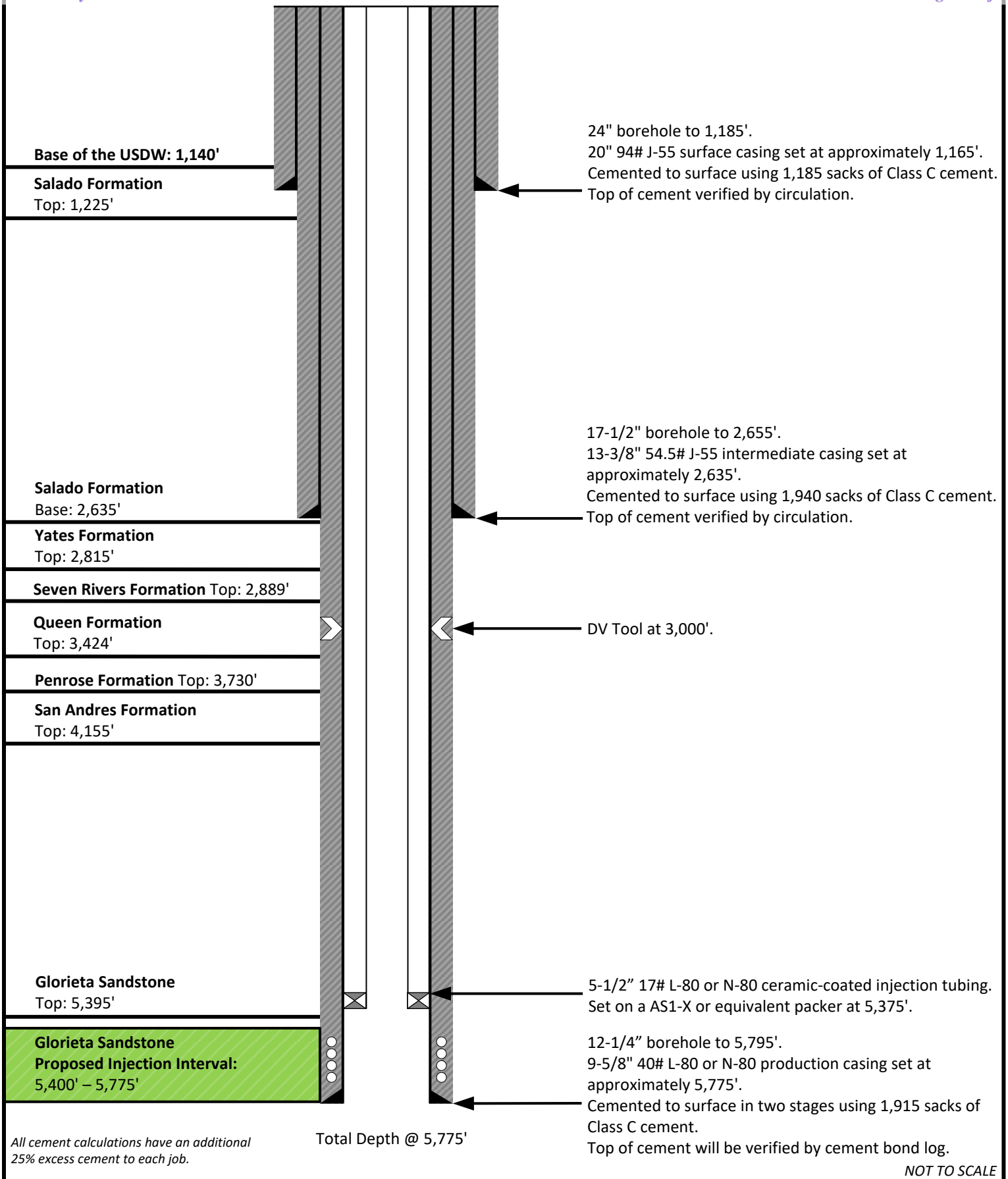
1. ALL COORDINATES, BEARINGS, AND DISTANCES CONTAINED HEREIN ARE GRID, BASED UPON THE NEW MEXICO STATE PLANE COORDINATES SYSTEM, NORTH AMERICAN DATUM 83, NEW MEXICO EAST (3001), NAVD 88.

2. THIS DOCUMENT IS BASED UPON AN ON THE GROUND SURVEY PERFORMED DURING FEBRUARY, 2024. CERTIFICATION OF THIS DOCUMENT IS ONLY TO THE LOCATION OF THIS EASEMENT IN RELATION TO RECORDED MONUMENT OF DEEDS PROVIDED BY THE CLIENT.

3. ELEVATIONS MSL, DERIVED FROM G.N.S.S. OBSERVATION AND DERIVED FROM SAID ON-THE-GROUND SURVEY.

0' 1500' 3000'
SCALE: 1" = 1500'

Case No. 24570 Revised Exhibit Packet



All cement calculations have an additional 25% excess cement to each job.

NOT TO SCALE

Prepared by: ALL CONSULTING *Prepared for:* WATERBRIDGE	Drawn by: Josh Ticknor	**FPNM SWD #6**
	Project Manager: Oliver Seekins	**WaterBridge Stateline LLC**
	Date: 3/20/2024	**Sec. 17 Town. 26S Rng. 38E**
		Lat: 32.045044° Long: -103.084142° (NAD 83)

AS1-X MECHANICAL PACKER

The ACT AS1-X Packer is the most versatile of the mechanically set retrievable packers and may be used in any production application. Treating, testing, injecting, pumping wells, flowing wells, deep or shallow, the AS1-X is suited for all. The packer can be left in tension or compression, depending on well conditions and the required application. A large internal by-pass reduces swabbing when running and retrieving. The by-pass closes when the packer is set and opens prior to releasing the upper slips when retrieving to allow pressure equalization.

The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, right-hand release. A patented upper-slip releasing system reduces the force required to release the packer. A non directional slip is released first, making it easier to release the other slips. The AS1-X packer can withstand 7,000 psi (48 MPa) of differential pressure above or below.

FEATURES, ADVANTAGES AND BENEFITS:

- The design holds high differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs
- The packer can be set with compression, tension, or wire line, enabling deployment in shallow and deep applications
- The packer can be set and released with only a one-quarter turn of the tubing
- The bypass valve is below the upper slips so that debris are washed from the slips when the valve is opened, reducing the times for circulation and total retrieval
- The full opening enables unrestricted flow and the passage of wire line tools and other packer systems
- The packer can be run with the T-2 on-off tool, which enables the tubing to be disconnected and retrieved without retrieving the packer

OPTIONS:

- Elastomer options are available for hostile environments
- Optional safety releases are available

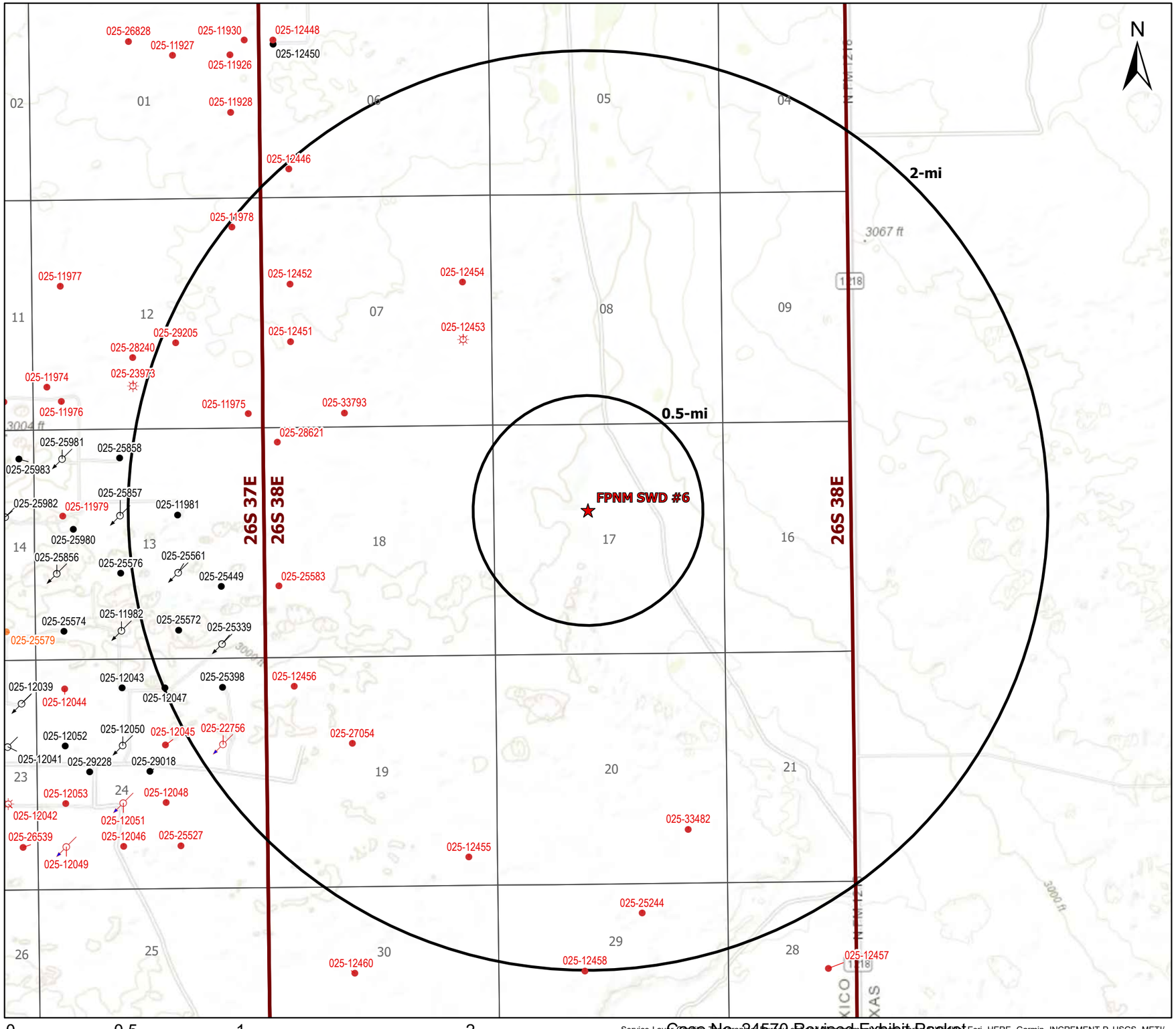
AS1-X MECHANICAL PACKER						
CASING		RECOMMENDED HOLE SIZE (inches)	TOOL OD MAX. (inches)	TOOL ID MIN. (inches)	THREAD CONNECTION BOX UP / PIN DOWN	PART NO.
SIZE (inches)	WEIGHT (lbs ft)					
4.1/2	13.5-15.1	3.826-3.920	3.650	1.938	2.3/8" EUE	261-3650-XXXX
5	11.5-15	4.408-4.560	4.125	1.938	2.3/8" EUE	261-4125-XXXX
5	18-20.8	4.154-4.276	4.000	1.938	2.3/8" EUE	261-4000-XXXX
5.1/2	14-20	4.778-5.012	4.625	2.00	2.3/8" EUE	261-4625-XXXX
5.1/2	14-20	4.778-5.012	4.625	2.38	2.7/8" EUE	261-4625-XXXX
5.1/2	20-23	4.670-4.778	4.500	2.00	2.3/8" EUE	261-4500-XXXX
5.1/2	20-23	4.670-4.778	4.500	2.38	2.7/8" EUE	261-4500-XXXX
6.5/8	20-24	5.921-6.094	5.750	3.00	3.1/2"EUE	261-5750-XXXX
7	17-26	6.276-6.538	6.000	2.50	2.7/8" EUE	261-6000-XXXX
7	17-26	6.276-6.538	6.000	3.00	3.1/2" EUE	261-6000-XXXX
7	26-32	6.094-6.276	5.875	2.50	2.7/8" EUE	261-5875-XXXX
7	26-32	6.094-6.276	5.875	3.00	3.1/2" EUE	261-5875-XXXX
7	29-35	6.004-6.184	5.812	3.00	3.1/2" EUE	261-5812-XXXX
7.5/8	24-29.7	6.875-7.025	6.672	2.50	2.7/8"EUE	261-6672-XXXX
7.5/8	24-29.7	6.875-7.025	6.672	3.00	3.1/2" EUE	261-6672-XXXX
7.5/8	33.7-39	6.625-6.765	6.453	2.50	2.7/8"EUE	261-6453-XXXX
7.5/8	33.7-39	6.625-6.765	6.453	3.00	3.1/2" EUE	261-6453-XXXX
9.5/8	32.3-43.5	8.755-9.001	8.500	3.00	3.1/2" EUE	261-8500-XXXX
9.5/8	32.3-43.5	8.755-9.001	8.500	4.00	4.1/2" EUE	261-8500-XXXX
9.5/8	43.5-53.5	8.535-8.755	8.250	3.00	3.1/2" EUE	261-8250-XXXX
9.5/8	43.5-53.5	8.535-8.755	8.250	4.00	4.1/2" EUE	261-8250-XXXX

'XXXX' is changed as per material / elastomer / end connection

Attachment 2

Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map



Legend

- Proposed SWD (1)
- Gas, Plugged (3)
- Injection, Active (10)
- Injection, Plugged (3)
- Oil, Active (15)
- Oil, Plugged (37)
- Oil, Temporarily Abandoned (1)
- Salt Water Disposal, Active (1)

Service Layer Credits: Topographic Basemap courtesy of the U.S. Geological Survey, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA

Source Info: NMOCD O&G Wells updated 2/16/2024 (https://www.emnrd.nm.gov/ocd/ocd-data/ftp-server/l)

O&G Wells Area of Review

FPNM SWD #6

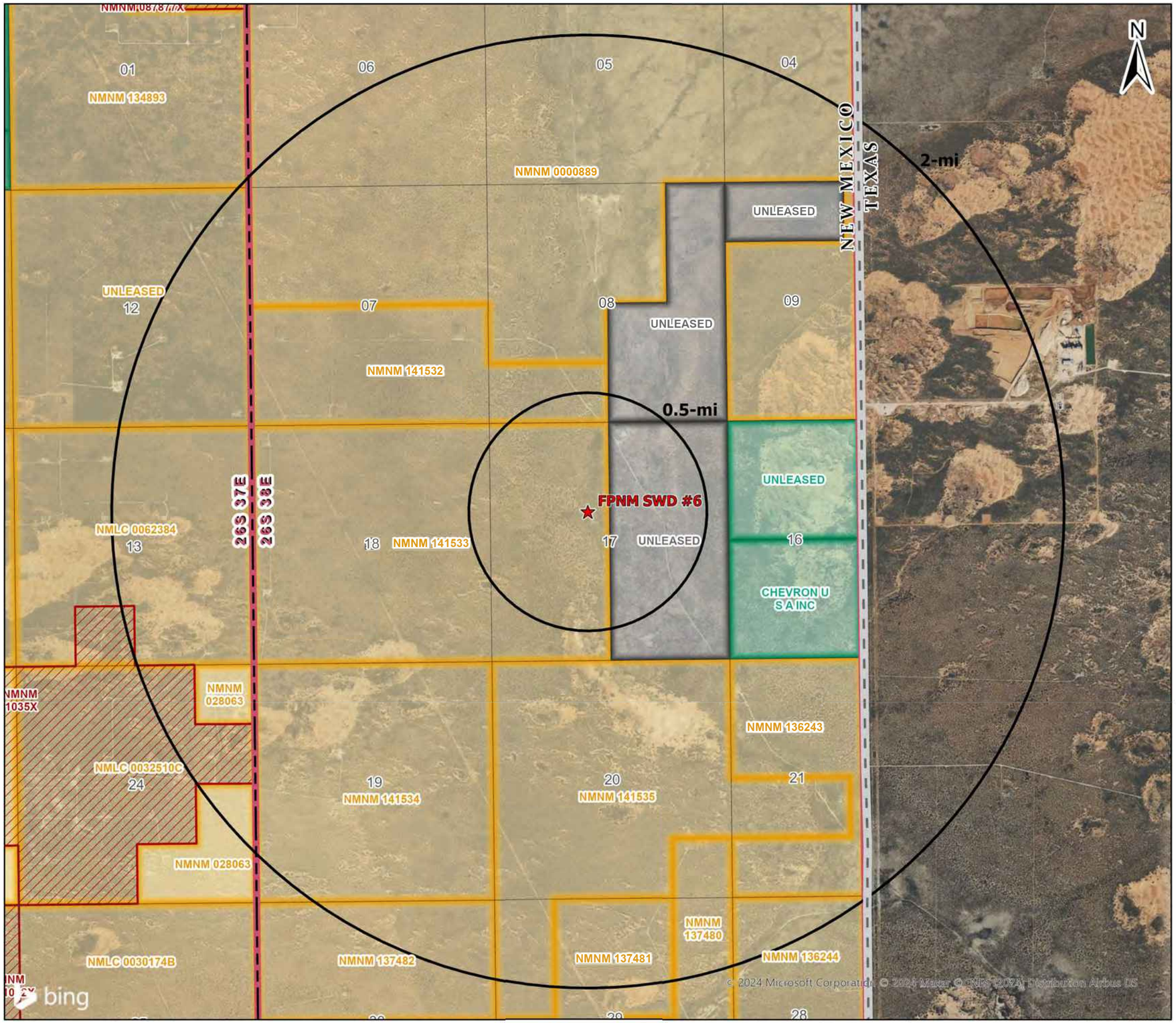
LEA COUNTY, NEW MEXICO

Proj Mgr:		Mapped by:
Oliver Seekins	May 07, 2024	Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

1/2-Mile AOR Well Table for FPNM SWD #6 (Top of Injection Interval: 5,400')							
Well Name	**API#**	**Well Type**	**Operator**	**Spud Date**	**Location (Sec., Tn., Rng.)**	**Total Vertical Depth (feet)**	**Penetrate Inj. Zone?**
Note: There are no wells located within the ½-mile AOR.							



Legend

- Proposed SWD
- BLM Communitization Units
- NMSLO Mineral Leases
- Private Mineral Leases
- BLM Authorized O&G Leases

1/2-mile AOR Lessees/Unit Operators:

- ARMSTRONG ENERGY CORPORATION (BLM LESSEE)
- R&R ROYALTY LTD (BLM LESSEE)

Source Info: NM Mineral Ownership (https://gis.data.nm.gov/dataset/blm-new-mexico-mineral-ownership) & NMSLO O&G Leases (http://www.nmstatelands.org/maps-gis/gis-data-download/)

Mineral Lease Area of Review

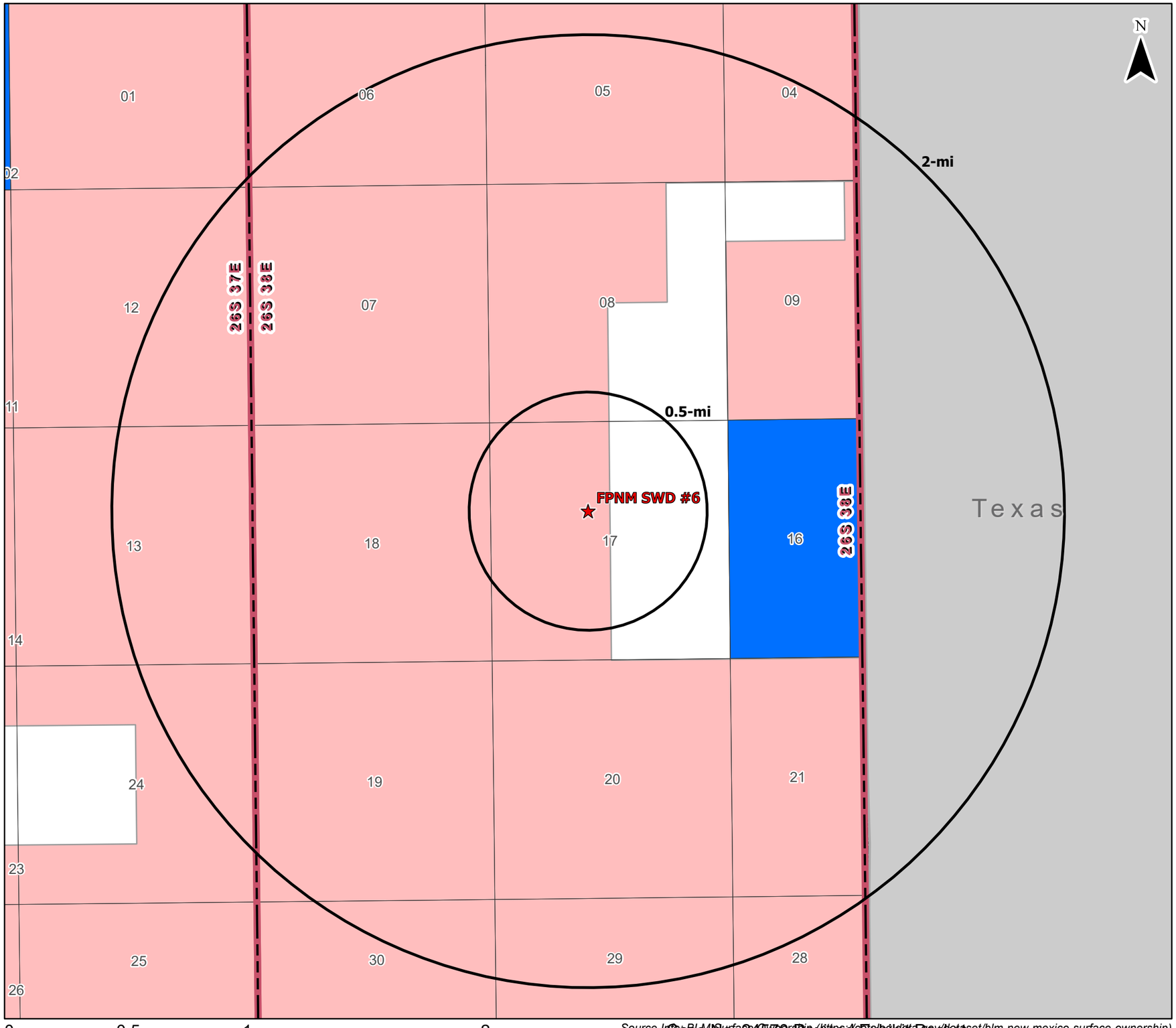
FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING



Legend

- Proposed SWD
- Private minerals
- Subsurface minerals (NMSLO)
- Surface and Subsurface minerals (NMSLO)
- All minerals are owned by U.S. (BLM)

Source Info: BLM Surface Ownership (https://gbp-blm-egis.hub.arcgis.com/datasets/blm-new-mexico-surface-ownership)

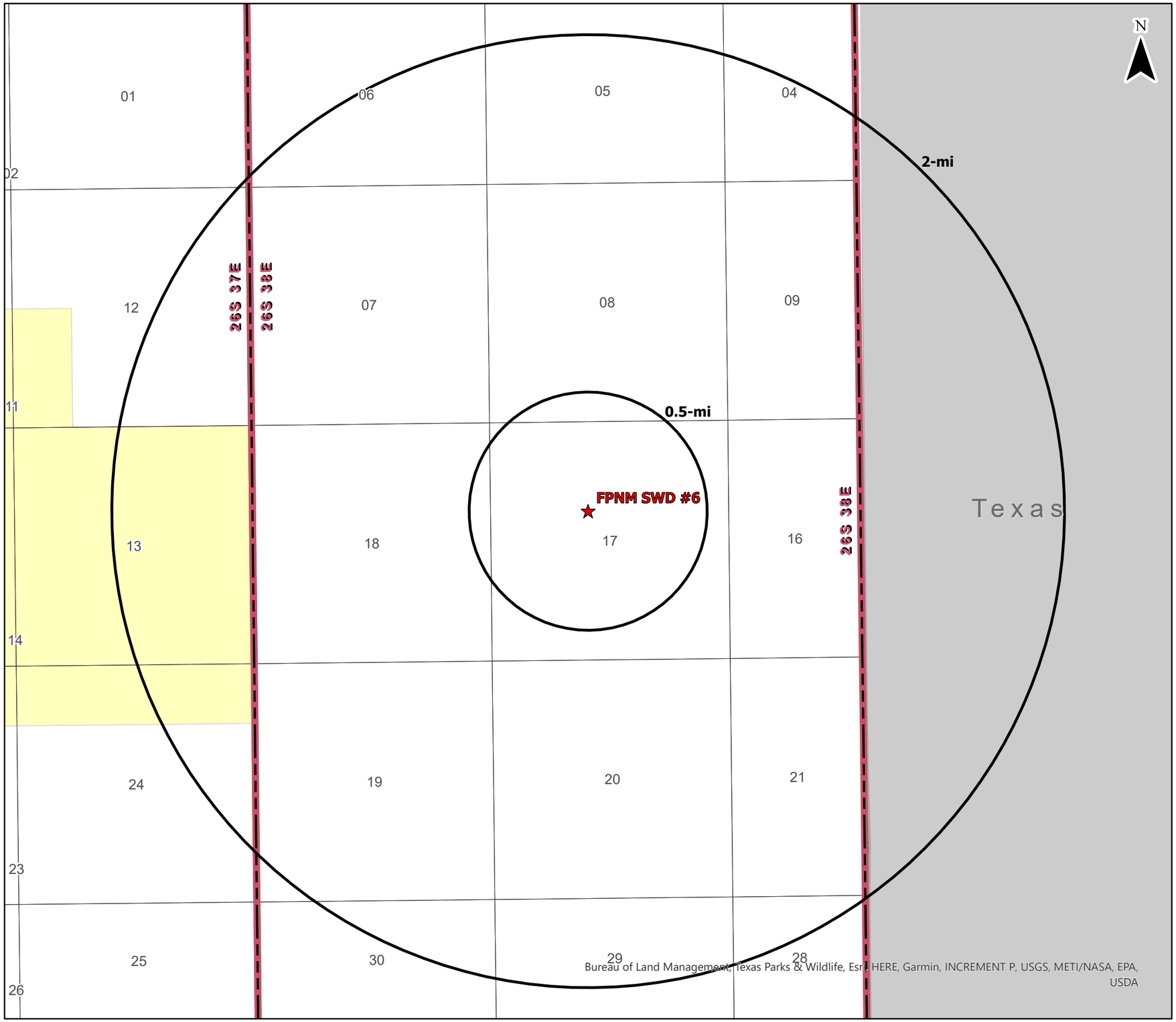
Mineral Ownership
Area of Review

FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr:		Mapped by:
Oliver Seekins	May 07, 2024	Ben Bockelmann

Prepared for:	Prepared by:
WATERBRIDGE	ALL CONSULTING



Legend

- Proposed SWD

Surface Ownership

- BLM (1)
- Private (1)

Source Info: BLM Surface Ownership (https://catalog.data.gov/dataset/blm-new-mexico-surface-ownership)

Surface Ownership
Area of Review

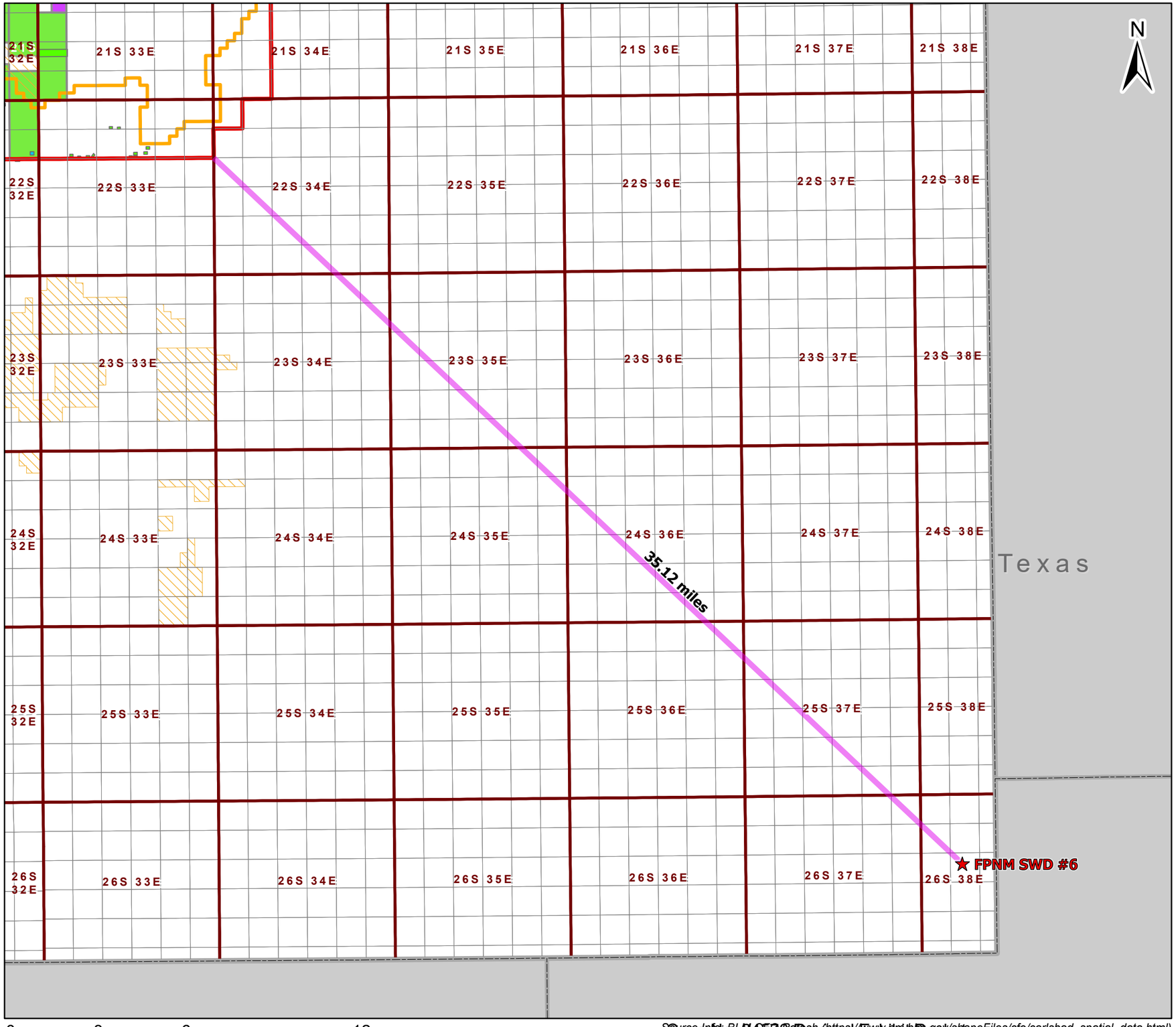
FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING



Legend

- Proposed SWD
- Potash Leases
- Known Potash Leasing Area
- SOPA 1986

Drill Islands (12/11/2023)

Status, Depth Buffer

- Approved, Half Mile
- Nominated,Half Mile

Development Areas (12/11/2023)

Status

- Approved
- Pending

Source Info: BLM GIS Portal (https://www.blm.gov/sites/blm.gov/files/uploads/GIS/shapefiles/cfo/carlsbad_spatial_data.html)

Potash Leases
Area of Review

FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr:		Mapped by:
Oliver Seekins	May 07, 2024	Ben Bockelmann

Prepared for:	Prepared by:
WATERBRIDGE	ALL CONSULTING

Attachment 3

Source Water Analysis

Source Water Analysis

WaterBridge Stateline LLC - FPNM SWD #6 - Queen, Wolfcamp, Devonian and Ellenburger Formations

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
GULF STATE #001	3002508458	32.7242317	-103.5246506	26	18S	34E	A	660N	660E	LEA	NM	QUEEN	267,000	165,000	216	881
WEST PEARL QUEEN UNIT #103	3002503247	32.6359787	-103.4816437	29	19S	35E	C	990N	1980W	Lea	NM	QUEEN		151,575	141	940
WEST PEARL QUEEN UNIT #118	3002503248	32.629612	-103.4773712	29	19S	35E	J	1980S	1980E	Lea	NM	QUEEN		149,504	35	257
WEST PEARL QUEEN UNI #141	3002503284	32.6223412	-103.4645233	33	19S	35E	C	660N	1980W	Lea	NM	QUEEN		138,040	38	418
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	32.1937523	-104.3088455	29	24S	26E	A	660N	660E	EDDY	NM	WOLFCAMP		10,000	645	1,320
HABANERO 17 FEDERAL COM #001H	3001536108	32.2218475	-104.2062683	17	24S	27E	A	990N	660E	EDDY	NM	WOLFCAMP	108,205	65,927	146	0
SERRANO 29 FEDERAL #001H	3001537763	32.1898842	-104.2062149	29	24S	27E	H	1980N	660E	EDDY	NM	WOLFCAMP	102,136	62,813	183	0
SERRANO 29 FEDERAL #001H	3001537763	32.1898842	-104.2062149	29	24S	27E	H	1980N	660E	EDDY	NM	WOLFCAMP	100,995	63,450	268	0
CLARA M ROBERTS ETAL #001	3002507265	32.9945259	-103.0748596	26	15S	38E	D	330N	330W	LEA	NM	DEVONIAN	50,630	29,593	823	1,073
OBERHOLTZER #001	3002507164	33.2986488	-103.1388397	7	12S	38E	C	660N	1980W	LEA	NM	DEVONIAN	58,738	33,600	655	1,920
LEA AV STATE #005	3002507201	33.268692	-103.1398849	19	12S	38E	C	990N	1650W	LEA	NM	DEVONIAN	57,890	33,208	458	2,082
C S STONE #001	3002507260	33.0045204	-103.0823975	22	15S	38E	G	1980N	1980E	LEA	NM	DEVONIAN	78,690	46,060	354	2,038
CLARA M ROBERTS #001	3002507264	33.0045013	-103.0748672	23	15S	38E	E	1980N	330W	LEA	NM	DEVONIAN	91,505	54,638	894	1,887
ROSA SHULTS #001	3002507191	33.272316	-103.1442108	18	12S	38E	M	330S	330W	LEA	NM	DEVONIAN	39,824	21,933	647	1,896
HOUSTON A #001	3002507202	33.2632332	-103.1442032	19	12S	38E	L	2310S	330W	LEA	NM	DEVONIAN	76,102	44,700	483	1,700
SHELL BROWNING #001	3002507113	33.3240585	-103.1301956	31	11S	38E	H	1980N	660E	LEA	NM	DEVONIAN	79,057	46,200	727	2,184
STATE A #002	3002507126	33.32407	-103.1215515	32	11S	38E	F	1980N	1980W	LEA	NM	DEVONIAN	85,233	53,250	607	2,812
NEW MEXICO A FEDERAL #001	3002507150	33.3022766	-103.1344833	6	12S	38E	O	660S	1980E	LEA	NM	DEVONIAN	61,815	35,600	580	1,750
NEW MEXICO A FEDERAL #002	3002507151	33.3059044	-103.134491	6	12S	38E	J	1980S	1980E	LEA	NM	DEVONIAN	61,795	35,600	535	2,000
TAYLOR B #001	3002507155	33.2877579	-103.1344681	7	12S	38E	O	660S	1980E	LEA	NM	DEVONIAN	54,397	30,880	572	2,288
CLARA M ROBERTS #001	3002507264	33.0045013	-103.0748672	23	15S	38E	E	1980N	330W	LEA	NM	DEVONIAN	80,811	48,610	883	1,663
ROSE EAVES #001	3002507290	32.8726234	-103.1200638	35	16S	38E	N	660S	1980W	LEA	NM	DEVONIAN	48,373	27,670	696	1,845
W W HAMILTON #001	3002507293	32.8762512	-103.1200485	35	16S	38E	K	1980S	1980W	LEA	NM	DEVONIAN	41,751	23,780	291	1,753
L COOPER #002	3002507295	32.8689995	-103.1212997	2	17S	38E	C	660N	3300E	LEA	NM	DEVONIAN	38,520	21,600	600	1,700
L COOPER A #001	3002507301	32.8438873	-103.1040649	12	17S	38E	N	660S	1980W	LEA	NM	DEVONIAN	29,115	15,640	999	2,337
FEDERAL DAVIS #002	3002507305	32.8293381	-103.0954208	13	17S	38E	P	660S	660E	LEA	NM	DEVONIAN	35,212	18,540	865	3,080
F M HOLLOWAY #001	3002507306	32.8402596	-103.0997314	13	17S	38E	B	660N	1980E	LEA	NM	DEVONIAN	49,286	28,700	645	1,558
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32.1720123	-103.0761032	32	24S	38E	I	1980S	660E	LEA	NM	DEVONIAN	50,858	30,200	183	980
F M HOLLOWAY #001	3002507306	32.8402596	-103.0997314	13	17S	38E	B	660N	1980E	LEA	NM	DEVONIAN	49,290	28,700	645	1,558
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32.1720123	-103.0761032	32	24S	38E	I	1980S	660E	Lea	NM	ELLENBURGER		30,200	183	980
A B COATES D #003	3002511748	32.1112633	-103.1177216	24	25S	37E	N	990S	2310W	LEA	NM	ELLENBURGER	91,617	57,190	832	1,387
SOUTH JUSTIS UNIT #024	3002511774	32.1040077	-103.1102829	25	25S	37E	H	1650N	660E	LEA	NM	ELLENBURGER	99,800	60,300	195	1,650
SOUTH JUSTIS UNIT #024	3002511774	32.1040077	-103.1102829	25	25S	37E	H	1650N	660E	LEA	NM	ELLENBURGER	98,300	59,400	189	1,650

Note: The water analysis report provided below shows the produced water stream is less than 0.00% H2S, as requested by NMOCD.

DownHole SAT™ Water Analysis Report

French Creek Software

SYSTEM IDENTIFICATION

CIP Permian
Water Bridge
NAM #3 IDH

Sample ID#: 0
ID 2024-06-13-90

Sample Date: 06-12-2024 at 2216
Report Date: 06-17-2024

WATER CHEMISTRY

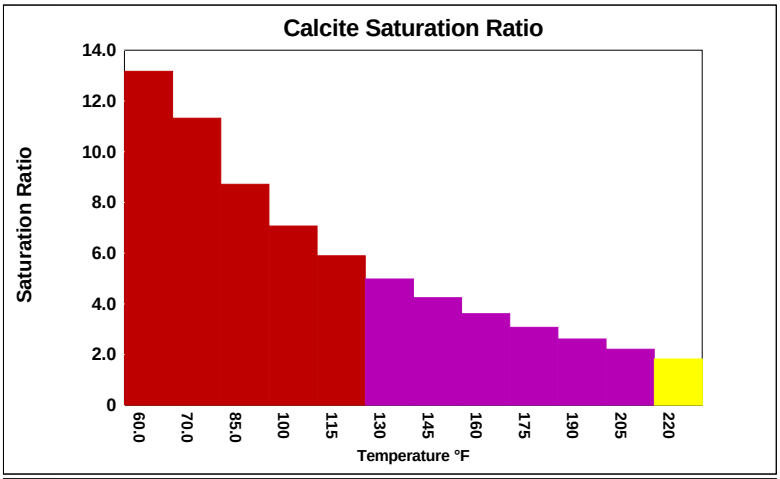
CATIONS		ANIONS	
Calcium(as Ca)	1954	Chloride(as Cl)	68617
Magnesium(as Mg)	257.00	Sulfate(as SO_4)	1247
Barium(as Ba)	1.10	Dissolved CO_2(as CO_2)	210.00
Strontium(as Sr)	268.00	Bicarbonate(as HCO_3)	280.60
Sodium(as Na)	41970	H_2S (as H_2S)	5.30
Potassium(as K)	775.00	Boron(as B)	54.00
Lithium(as Li)	13.00		
Iron(as Fe)	3.20		
Manganese(as Mn)	0.230		
Zinc(as Zn)	0.01000		

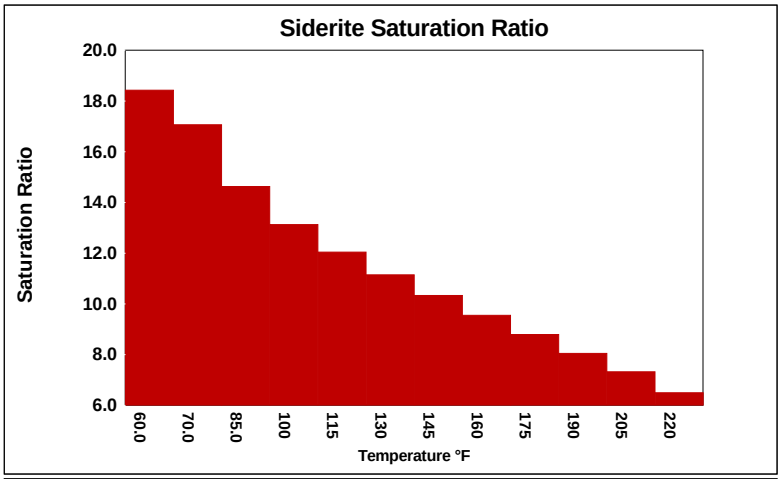
PARAMETERS			
Temperature(°F)	103.00	Sample pH	7.30
Conductivity	185602	Sp.Gr.(g/mL)	1.083
Resistivity	5.39	T.D.S.	122939

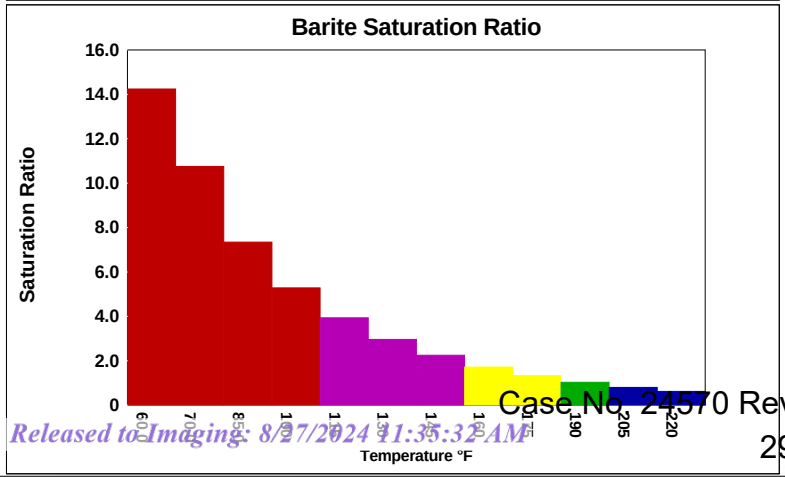
SCALE AND CORROSION POTENTIAL

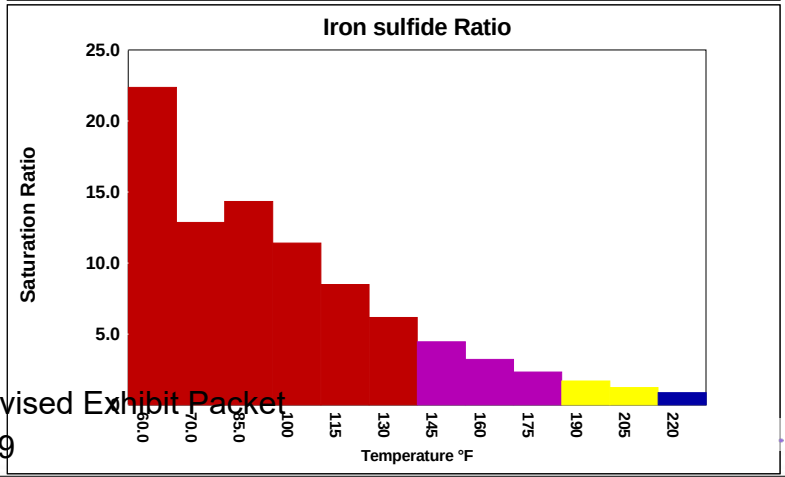
Temp. (°F)	Press. (psia)	Calcite $CaCO_3$		Anhydrite $CaSO_4$		Gypsum $CaSO_4*2H_2O$		Barite $BaSO_4$		Celestite $SrSO_4$		Siderite $FeCO_3$		Mackinawite FeS		CO_2 (mpy)	pCO_2 (atm)
60.00	14.70	13.16	0.855	0.303	-590.00	0.460	-369.78	14.24	0.656	1.77	71.22	18.42	0.975	22.36	0.302	0.0201	0.00990
70.00	15.00	11.32	0.672	0.295	-598.78	0.433	-400.08	10.75	0.640	1.69	66.19	17.06	0.780	12.85	0.286	0.0158	0.0101
85.00	38.50	8.71	0.454	0.294	-584.61	0.401	-438.41	7.34	0.609	1.64	62.07	14.63	0.542	14.33	0.286	0.0361	0.0259
100.00	62.00	7.07	0.326	0.308	-540.05	0.378	-466.16	5.28	0.572	1.63	60.80	13.12	0.400	11.40	0.275	0.0592	0.0417
115.00	85.50	5.89	0.243	0.335	-472.85	0.398	-421.46	3.93	0.526	1.63	60.50	12.04	0.306	8.49	0.260	0.0679	0.0576
130.00	109.00	4.98	0.184	0.379	-391.07	0.430	-367.50	2.96	0.467	1.62	59.65	11.14	0.240	6.17	0.240	0.0645	0.0734
145.00	132.50	4.24	0.141	0.444	-302.17	0.459	-323.14	2.24	0.391	1.61	58.29	10.33	0.191	4.45	0.216	0.0613	0.0892
160.00	156.00	3.61	0.108	0.534	-212.58	0.486	-286.81	1.71	0.294	1.59	56.42	9.55	0.153	3.21	0.186	0.0762	0.105
175.00	179.50	3.07	0.0818	0.659	-127.30	0.511	-257.19	1.32	0.171	1.56	54.09	8.79	0.124	2.33	0.149	0.0330	0.121
190.00	203.00	2.61	0.0614	0.834	-49.69	0.534	-233.16	1.02	0.0160	1.52	51.39	8.05	0.100	1.69	0.103	0.0519	0.137
205.00	226.50	2.21	0.0450	1.08	17.98	0.554	-214.16	0.798	-0.178	1.48	48.19	7.32	0.0816	1.24	0.0465	0.0754	0.153
220.00	250.00	1.83	0.0312	1.39	72.51	0.559	-210.03	0.614	-0.444	1.41	42.59	6.49	0.0670	0.875	-0.0326	0.121	0.168
		xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels		

Saturation Ratios (xSAT) are the ratio of ion activity to solubility, e.g. $\{Ca\}\{CO_3\}/K_{sp}$. pCO_2 (atm) is the partial pressure of CO_2 in the gas phase.
Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.









DownHole SAT(tm)

SURFACE WATER CHEMISTRY INPUT

CIP Permian
NAM #3 IDH

Water Bridge

Report Date: 06-17-2024
Sample #: 0

Sampled: 06-12-2024 at 2216
Sample ID: 2024-06-13-90

CATIONS	
Calcium (as Ca)	1954
Magnesium (as Mg)	257.00
Barium (as Ba)	1.10
Strontium (as Sr)	268.00
Sodium (as Na)	41970
Potassium (as K)	775.00
Lithium (as Li)	13.00
Iron (as Fe)	3.20
Manganese (as Mn)	0.230
Zinc (as Zn)	0.01000

ANIONS	
Chloride (as Cl)	68617
Sulfate (as SO_4)	1247
Dissolved CO_2 (as CO_2)	210.00
Bicarbonate (as HCO_3)	280.60
H_2S (as H_2S)	5.30
Boron (as B)	54.00

PARAMETERS	
Calculated T.D.S.	122939
Molar Conductivity	185602
Resistivity	5.39
Sp.Gr.(g/mL)	1.083
Pressure(psia)	15.00
Temperature (^{0}F)	103.00
pH	7.30

BOUND IONS	TOTAL	FREE
Calcium	2117	1977
Barium	1.19	1.19
Carbonate	71.95	0.696
Phosphate	0.00	0.00
Sulfate	1351	662.63

CORROSION RATE PREDICTION

CO_2 - H_2S Rate(mpy)	0.0293

FRENCH CREEK SOFTWARE, INC.
1220 VALLEY FORGE ROAD, SUITE 21, VALLEY FORGE, PA 19460

DownHole SAT(tm)

SURFACE WATER
DEPOSITION POTENTIAL INDICATORS

CIP Permian
NAM #3 IDH

Water Bridge

Report Date: 06-17-2024
Sample #: 0

Sampled: 06-12-2024 at 2216
Sample ID: 2024-06-13-90

SATURATION RATIO as IAP/Ksp		FREE ION MOMENTARY EXCESS (Lbs/1000 Barrels)	
Calcite ($CaCO_3$)	7.72	Calcite ($CaCO_3$)	0.352
Aragonite ($CaCO_3$)	7.10	Aragonite ($CaCO_3$)	0.348
Witherite ($BaCO_3$)	0.00	Witherite ($BaCO_3$)	-25.07
Strontianite ($SrCO_3$)	1.60	Strontianite ($SrCO_3$)	0.223
Calcium oxalate (CaC_2O_4)	15.89	Calcium oxalate (CaC_2O_4)	0.511
Magnesite ($MgCO_3$)	1.29	Magnesite ($MgCO_3$)	0.0761
Anhydrite ($CaSO_4$)	0.31	Anhydrite ($CaSO_4$)	-523.48
Gypsum ($CaSO_4*2H_2O$)	0.38	Gypsum ($CaSO_4*2H_2O$)	-466.45
Barite ($BaSO_4$)	5.01	Barite ($BaSO_4$)	0.565
Celestite ($SrSO_4$)	1.64	Celestite ($SrSO_4$)	61.63
Fluorite (CaF_2)	0.00	Fluorite (CaF_2)	-6.48
Calcium phosphate	0.00	Calcium phosphate	>-0.001
Hydroxyapatite	0.00	Hydroxyapatite	-393.86
Silica (SiO_2)	0.00	Silica (SiO_2)	-48.80
Brucite ($Mg(OH)_2$)	< 0.001	Brucite ($Mg(OH)_2$)	-0.733
Magnesium silicate	0.00	Magnesium silicate	-119.40
Iron hydroxide ($Fe(OH)_3$)	0.00	Iron hydroxide ($Fe(OH)_3$)	< 0.001
Strengite ($FePO_4*2H_2O$)	0.00	Strengite ($FePO_4*2H_2O$)	>-0.001
Siderite ($FeCO_3$)	14.55	Siderite ($FeCO_3$)	0.429
Halite (NaCl)	0.05	Halite (NaCl)	-145588
Thenardite ($Na2SO_4$)	0.00	Thenardite ($Na2SO_4$)	-80542
Iron sulfide (FeS)	2.99	Iron sulfide (FeS)	0.183

SIMPLE INDICES		CARBONATE PRECIPITATION POTENTIAL (Lbs/1000 Barrels)	
Langelier	1.29	Calcite ($CaCO_3$)	125.09
Ryznar	4.42	Aragonite ($CaCO_3$)	123.08
Puckorius	2.95	Witherite ($BaCO_3$)	-4.29
Larson-Skold Index	202.74	Strontianite ($SrCO_3$)	65.35
Stiff Davis Index	0.778	Magnesite ($MgCO_3$)	76.00
Oddo-Tomson	0.267	Siderite ($FeCO_3$)	2.08

OPERATING CONDITIONS

Temperature (^oF)	103.00
Time(mins)	3.00

FRENCH CREEK SOFTWARE, INC.
1220 VALLEY FORGE ROAD, SUITE 21, VALLEY FORGE, PA 19460

Attachment 4

Injection Formation Water Analysis

Injection Formation Water Analysis

WaterBridge Stateline LLC - FPNM SWD #6 - Glorieta Formation

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
LEARCY MCBUFFINGTON #007	3002511568	32.1248627	-103.1219788	13	25S	37E	M	660S	990W	LEA	NM	JUSTIS	GLORIETA	55,190	31,603	1,158	1,804
LEARCY MCBUFFINGTON #007	3002511568	32.1248627	-103.1219788	13	25S	37E	M	660S	990W	LEA	NM	JUSTIS	GLORIETA	55,183	31,600	1,158	1,804
CARLSON FEDERAL #001	3002511574	32.1330185	-103.1198425	13	25S	37E	F	1650N	1650W	LEA	NM	JUSTIS	GLORIETA	113,731	67,250	280	3,013
CARLSON FEDERAL #001	3002511574	32.1330185	-103.1198425	13	25S	37E	F	1650N	1650W	LEA	NM	JUSTIS	GLORIETA	101,412	60,660	963	2,996
LANGLIE FEDERAL #001	3002511592	32.1293945	-103.1273041	14	25S	37E	I	2310S	660E	LEA	NM	JUSTIS	GLORIETA	113,937	67,370	280	3,018
LANGLIE FEDERAL #001	3002511592	32.1293945	-103.1273041	14	25S	37E	I	2310S	660E	LEA	NM	JUSTIS	GLORIETA	113,817	67,250	274	3,067

Note: WaterBridge agrees to collect one formation water sample for analysis prior to commencing commercial injection operations, given that no Glorieta data addressing H2S, cations, and anions is available with 1/2-mile. Glorieta sampling results will be electronically provided to NMOCD within 30-days of analysis.

Attachment 5

Reservoir Characterization

Reservoir Characterization at the FPNM SWD #6

1. Injection Formation and Confinement

a. Injection Formation

The proposed injection interval is the Glorieta Sandstone from 5,350' - 5,725'. The Permian-aged Glorieta Sandstone is a fine grained and well-to-moderately sorted quartz arenite sandstone that occurs directly below the San Andres Formation. There are multiple zones of high porosity and low resistivity that makes this sandstone a viable injection zone in this area

b. Upper Confinement

Nearby open hole geophysical well logs indicate the proposed Glorieta injection interval is overlain by approximately 60 feet of low porosity and low permeability carbonate rocks within the lower San Andres Formation, which will prevent the upward migration of fluid and act as the upper confining layer. Below is a table of approximate resistivity and porosity measurements of the upper confining layer derived from resistivity and porosity logging of a nearby well (API# 025-33482).

c. Lower Confinement

Nearby open hole geophysical well logs indicate the proposed Glorieta injection interval is underlain by approximately 28 feet of low porosity and low permeability carbonate rocks within the lower Glorieta Sandstone and upper Tubb Formation, which will prevent the downward migration of fluid and act as the lower confining layer. Below is a table of approximate resistivity and porosity measurements of the lower confining layer derived from resistivity and porosity logging of a nearby well (API# 025-33482).

FPNM SWDS - UPPER CONFINEMENT

DEPTHS	RESISTIVITY READINGS (OHM METERS)	POROSITY MEASUREMENTS
5,332'	150	Less then 2%
5,334'	300	Less then 2%
5,336'	325	Less then 2%
5,338'	325	Less then 2%
5,340'	250	Less then 2%
5,342'	250	Less then 2%
5,344'	500	Less then 2%
5,346'	250	Less then 2%
5,348'	500	Less then 2%
5,350'	500	Less then 2%
5,352'	500	Less then 2%
5,354'	300	Less then 2%
5,356'	300	Less then 2%
5,358'	400	Less then 2%
5,360'	600	Less then 2%
5,362'	600	Less then 2%
5,364'	400	Less then 2%
5,366'	300	Less then 2%
5,368'	600	Less then 2%
5,370'	600	Less then 2%
5,372'	400	Less then 2%
5,374'	500	Less then 2%
5,376'	500	Less then 2%
5,378'	500	Less then 2%
5,380'	500	Less then 2%
5,382'	500	Less then 2%
5,384'	500	Less then 2%
5,386'	500	Less then 2%
5,388'	400	Less then 2%
5,390'	400	Less then 2%
5,392'	400	Less then 2%

FPNM SWDS - LOWER CONFINEMENT

DEPTHS	RESISTIVITY READINGS (OHM METERS)	POROSITY MEASUREMENTS
5,720'	200	Less then 2%
5,722'	300	Less then 2%
5,724'	100	Less then 2%
5,726'	70	Less then 2%
5,728'	120	Less then 2%
5,730'	200	Less then 2%
5,732'	120	Less then 2%
5,734'	300	Less then 2%
5,736'	100	Less then 2%
5,738'	180	Less then 2%
5,740'	300	Less then 2%
5,742'	420	Less then 2%
5,744'	420	Less then 2%
5,746'	300	Less then 2%
5,748'	400	Less then 2%

2. Historic Field Usage

a. Offset Production

A review of all wells in the NMOCD database within a 2-mile radius of the FPNM SWD #6 does not show any historic or current hydrocarbon production from the Glorieta Sandstone.

b. Commercial Water Sources

A review of all wells in the NMOCD and OSE databases within a 2-mile radius of the FPNM SWD #6 does not show any historic or current commercial water supply sources from the Glorieta Sandstone.

c. Enhanced Oil Recovery

A review of all wells in the NMOCD database within a 2-mile radius of the FPNM SWD #6 does not show any historic or current enhanced oil recovery operations utilizing the overlying San Andres, or the underlying Tubb Formation.

3. Additional Formation Data

a. WaterBridge with run a mud log on the FPNM #6, as there is no current mud log data available with ½-mile. The mud log will be electronically submitted to NMOCD within 30-days of its completion.

b. WaterBridge will run a step rate test at one of the FPNM #1, #3, or #6 at their drilling group's discretion, as to address NMOCD's request to provide data to support the requested maximum injection rate.

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CONFINING ZONES AND HISTORIC PORE SPACE USAGE

For WaterBridge Stateline LLC's proposed FPNM SWD #6 application in the Lower Permian Glorieta Sandstone in the Central Basin Platform area, the lower San Andres Formation will act as the upper confinement zone, and the lower Glorieta Sandstone as the lower confinement zone, given its low porosity and high resistivity. The proposed location is in T26S., R38E, an area with very limited oil and gas production. Most area wells have been plugged and abandoned, and none penetrate the proposed injection intervals in the Glorieta Sandstone.

The San Andres Formation is a shelf carbonate deposit composed predominantly of dolomite, and in the proposed development area, the lower San Andres Formation is a tight rock with low porosity and high resistivity values. **Figure 1** is a log snip of this upper confining zone of approximately 60 feet in the lower San Andres Formation. The lower confining zone is a tight sandstone unit within the Glorieta Sandstone, which also has low porosity development and high resistivity readings. The Glorieta Sandstone is a fine-grained, well-to-moderately sorted quartz arenite sandstone. **Figure 2** is a log snip of this approximately 30 feet of lower Glorieta Sandstone.

The closest oil and gas production to the FPNM SWD #6 is the active waterflood operation directly to the west. This waterflood operation is the W.H. Rhodes B Federal NCT-1 unit project and was originally operated by Texaco, Inc., with the first waterflood injection commencing in 1964 and continued expansion occurring in 1969, 1973, and 1993 by Texaco Exploration and Production, Inc. Oil production and enhanced oil recovery water injection is into the Yates and Seven Rivers formations at depths ranging from approximately 3,000 to 3,400 feet and primarily located in T26S, R37E. There is no oil or gas production from the Glorieta Sandstone within the two-mile radius of the proposed FPNM SWD #6.

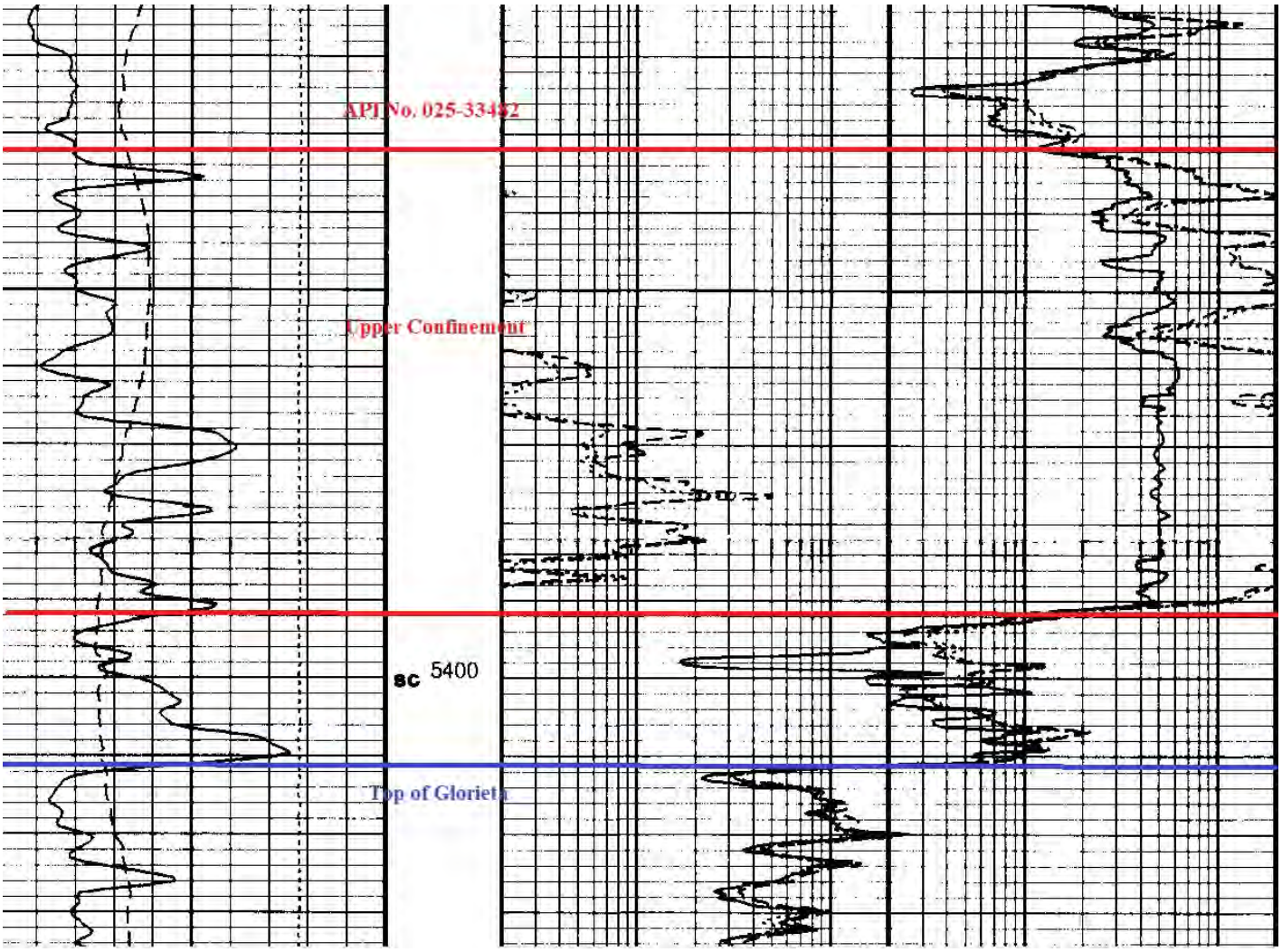


Figure 1. Open Hole Log Snip of the Upper Confining Zone in the Lower San Andres Formation

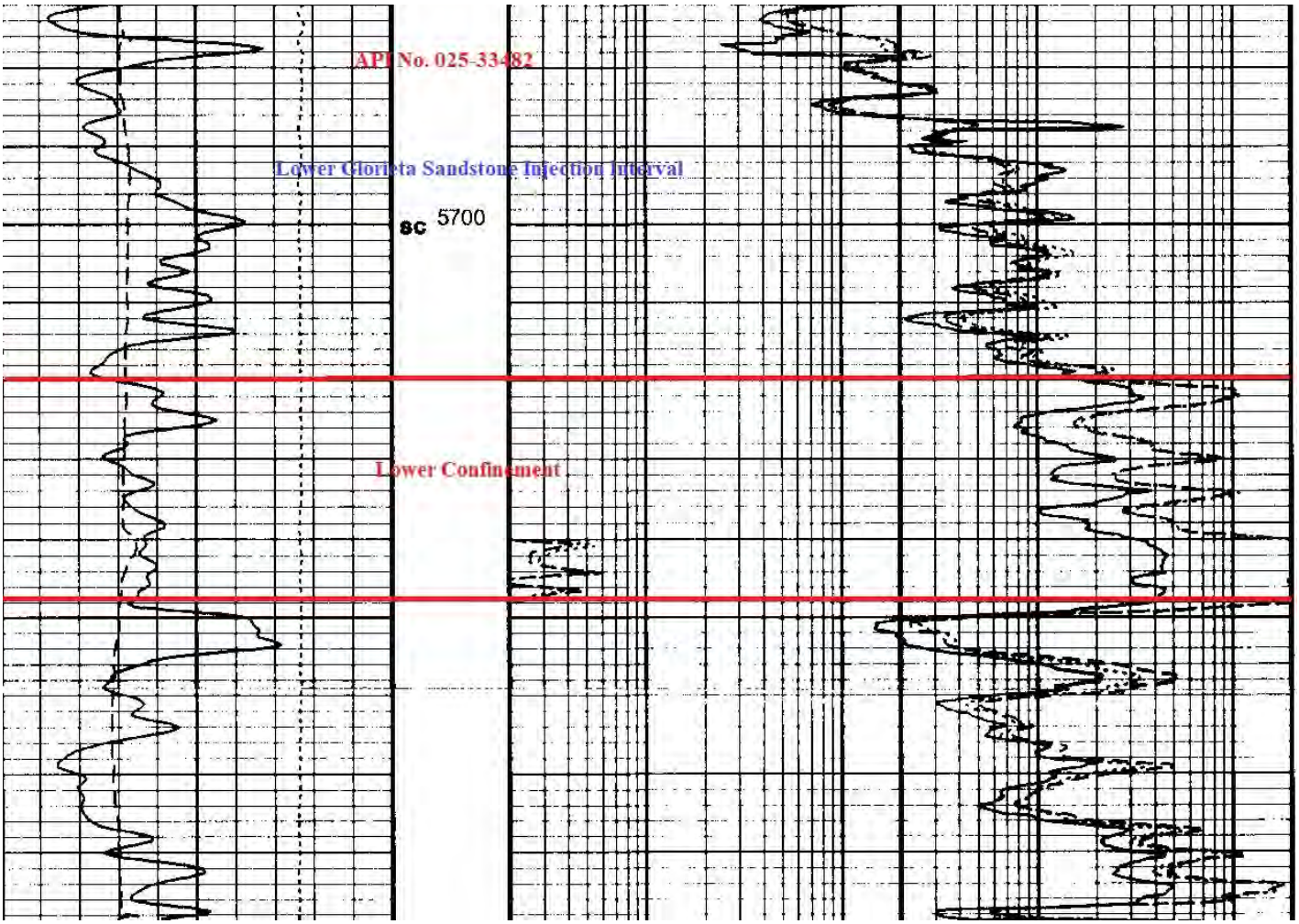
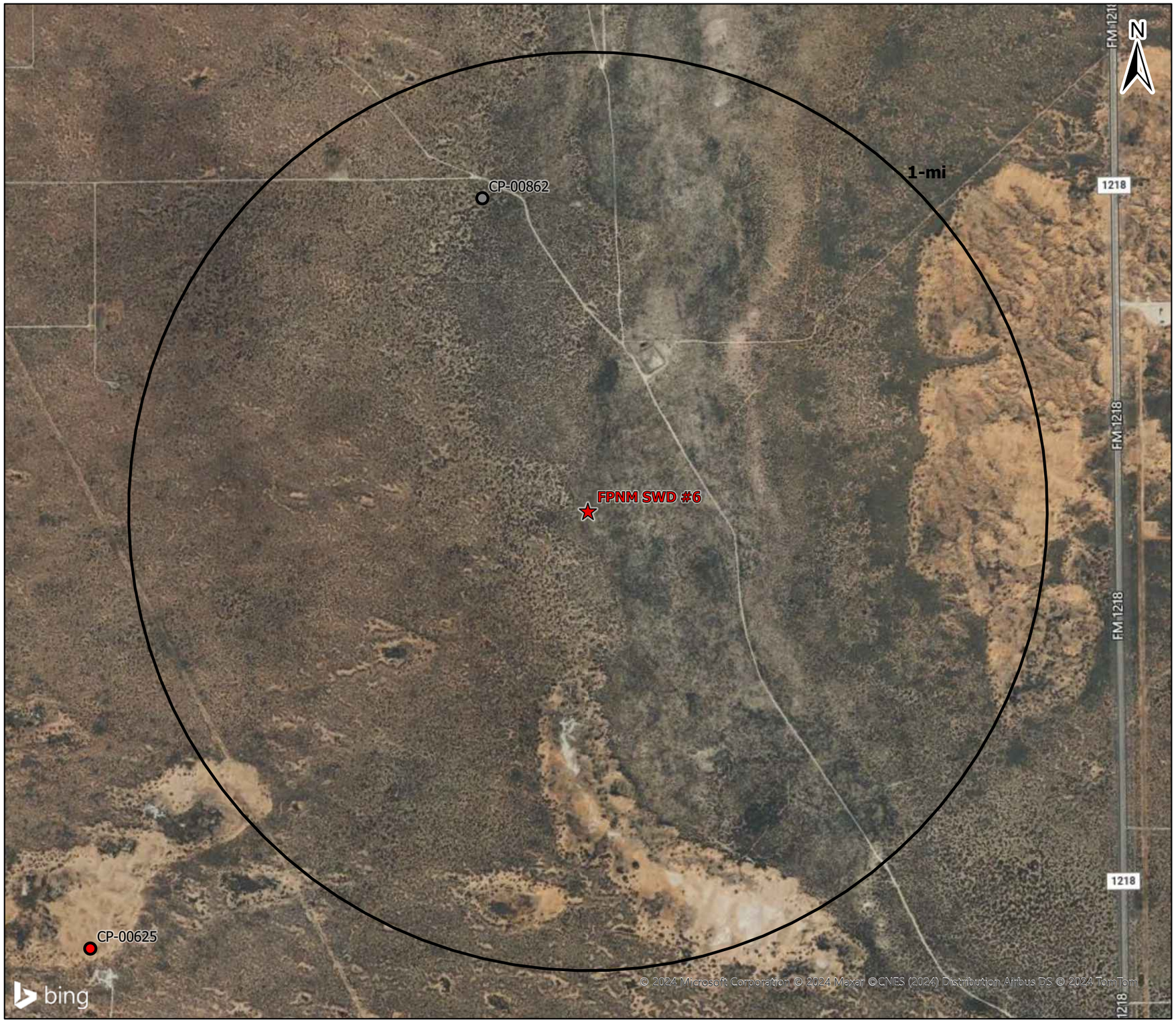


Figure 2. Open Hole Logging Snip of the Lower Confining Zone Within the Glorieta Sandstone

Attachment 6

Water Well Map and Well Data



Legend

- Proposed SWD (1)

OSE PODs

- Active (0)
- Inactive (0)
- Pending (0)
- Changed Location of Well (0)
- Capped (0)
- Plugged (1)
- Unknown (1)

Water Wells Area of Review

FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

Water Well Sampling Rationale					
WaterBridge Stateline LLC - FPNM SWD #6					
Water Wells	**Owner**	**Available Contact Information**	**Use**	**Sampling Required**	**Notes**
CP-00862	Yates Petroleum	P.O. Box 692 Tatum, NM 88267	Prospecting and development of natural resources.	No	This well is located in an area where the aquifer has been temporarily closed.

Attachment 7

No Hydrologic Connection Statement

RE: Waterbridge Stateline LLC – FPNM SWD #6 application, Lea County, New Mexico

ALL Consulting LLC (ALL) has performed a thorough hydrologic investigation related to the one saltwater disposal well (SWD) listed above. The investigation was conducted to determine if there were any existing or potential connections between the proposed injection intervals in the Glorieta Sandstone and the deepest underground source of drinking water (USDW).

ALL performed an assessment and analysis of the subsurface geophysical log data along with published documents on the groundwater in this vicinity of Lea County, New Mexico. The surficial geology is Quaternary alluvial deposits consisting predominantly of sand and caliche. This area is south of the High Plains Aquifer and depths to potable water ranges from 30 to 142 feet below the surface. The USDW is the Rustler Formation and the base of the USDW ranges from 875 to 1,130 feet below the surface.

Based on ALL's assessment and analysis there is containment through multiple confining zones in the San Andres Formation and the Salado evaporite deposits above the Glorieta Sandstone and the USDW and over 4,260 feet of vertical separation between the base of the USDW and the top of the injection interval. Additionally, there is no evidence of faults that would allow for communication between the USDW and Glorieta Sandstone.

Tom Tomastik

5/7/2024

Tom Tomastik

Date

Chief Geologist and Regulatory Specialist

ALL Consulting LLC

Attachment 8

Seismic Potential Letter

ALL CONSULTING
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ENGINEERING · ENVIRONMENTAL

March 18, 2024

PN 1703.SWD.13

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

Subject: **WaterBridge Stateline LLC**
FPNM SWD #6 - Seismic Potential Letter

Dear Mr. Goetze,

At the request of WaterBridge Stateline LLC (WaterBridge), ALL Consulting, LLC (ALL) has assessed the potential injection-induced seismicity risks in the vicinity of WaterBridge's FPNM SWD #6, a proposed saltwater disposal (SWD) facility in Lea County, New Mexico, and summarized the findings in this letter. This assessment used publicly available data to identify the proximity and characteristics of seismic events and known faults to evaluate the potential for the operation of the FPNM SWD #6 to contribute to seismic activity in the area.

Geologic Evaluation

The FPNM SWD #6 is requesting a permit to inject into the Permian Glorieta Sandstone (Glorieta) at a depth of 5,400-5,775 feet below ground surface (bgs). The Glorieta primarily consists of Permian-age sandstone and is overlain by approximately 60 feet of low porosity carbonate rocks within the lower San Andres Formation, which would prevent the upward migration of injection fluid and serve as the upper confining layer (see **Attachment 1**). Additionally, approximately 28 feet of low porosity and low permeability other carbonate rocks lie beneath the proposed injection interval and act as a lower confining zone by preventing downward migration of injected fluids into the underlying Tubb Formation (see **Attachment 1**). A stratigraphic chart depicting the geologic setting is included as **Figure 1**.[1]

Seismic Events and Fault Data

A review of United States Geological Survey (USGS) and New Mexico Tech Seismological Observatory (NMTSO) earthquake catalogs determined that four (4) seismic events have been recorded within a 100 square mile area [9.08-kilometer (km) radius] around the subject SWD.

[1] Yang, K.-M., & Dorobek, S. L. (1995). The Permian Basin of west Texas and New Mexico: Tectonic history of a "composite" Foreland Basin and its effects on stratigraphic development. *Stratigraphic Evolution of Foreland Basins*, 149–174. https://doi.org/10.2110/pec.95.52.0149

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

The closest recorded seismic event was a M1.68 that occurred on July 22, 2017, and was located approximately 0.62 miles southwest of the FPNM SWD #6 (see **Attachment 2**).

Fault data from United States Geological Survey (USGS) and the Texas Bureau of Economic Geology (BEG)[2] indicates that the closest known fault is located approximately 0.29 miles west of the FPNM SWD #6 (see **Attachment 2**). This identified fault is within the Precambrian basement, which is approximately 8,225 feet below the proposed injection interval.[3] Fault data from Sourcewater also indicates the presence of four faults in the sedimentary column, above the Precambrian basement, within the area of review.[4] These shallow faults penetrate the Canyon, Cisco, and Wolfcamp formations which begin approximately 2,940 feet below the proposed injection interval. As previously discussed, there are confining barriers beneath the proposed injection interval which will prevent the downward migration of fluids into such faults. A map of the seismic events and faults within 9.08 km of the FPNM SWD #6 is included as **Attachment 2.**

Figure 1 – Delaware Basin Stratigraphic Chart (Adapted from Yang and Dorobek 1995)

SYSTEM	SERIES/ STAGE	CENTRAL BASIN PLATFORM	DELAWARE BASIN
PERMIAN	OCHOAN	DEWEY LAKE RUSTLER SALADO	DEWEY LAKE RUSTLER SALADO CASTILE
	GUADALUPIAN	TANSILL YATES SEVEN RIVERS QUEEN GRAYBURG SAN ANDRES GLORIETA	DELAWARE MT GROUP BELL CANYON CHERRY CANYON BRUSHY CANYON
	LEONARDIAN	CLEAR FORK WICHITA	BONE SPRING
	WOLFCAMPIAN	WOLFCAMP	WOLFCAMP
PENNSYLVANIAN	VIRGILIAN	CISCO	CISCO
	MISSOURIAN	CANYON	CANYON
	DESMOINESIAN	STRAWN	STRAWN
	ATOKAN	ATOKA — BEND	ATOKA — BEND
	MORROWAN	(ABSENT)	MORROW
MISSISSIPPIAN	CHESTERIAN MERAMECIAN OSAGEAN KINDERHOOKIAN	CHESTER MERAMEC OSAGE "BARNETT"	CHESTER MERAMEC OSAGE "BARNETT"
		KINDERHOOK	KINDERHOOK
DEVONIAN		WOODFORD DEVONIAN	WOODFORD DEVONIAN
SILURIAN		SILURIAN SHALE FUSSELMAN	MIDDLE SILURIAN FUSSELMAN
ORDOVICIAN	UPPER	MONTOYA	SYLVAN MONTOYA
	MIDDLE	SIMPSON	SIMPSON
	LOWER	ELLENBURGER	ELLENBURGER
CAMBRIAN	UPPER	CAMBRIAN	CAMBRIAN
PRECAMBRIAN			

Seismic Potential Evaluation

Experience in evaluating induced seismic events indicates that most injection-induced seismicity throughout the U.S. (e.g., Oklahoma, Ohio, Texas, New Mexico, and Colorado) occurs as a result of injection into Precambrian basement rock, into overlying formations that are in hydraulic communication with the Precambrian basement rock, or as a result of injection near critically stressed and optimally oriented faults. Seismicity at basement depths occurs because critically stressed faults generally originate in crystalline basement rock and may also extend into overlying sedimentary formations.[5]

---

[2] Horne E. A. Hennings P. H., and Zahm C. K. 2021. Basement structure of the Delaware Basin, in The Geologic Basement of Texas: A Volume in Honor of Peter Flawn, Callahan O. A., and Eichubl P., The University of Texas at Austin, Bureau of Economic Geology.

[3] G. Randy Keller, J. M. Hills &; Rabah Djeddi, A regional geological and geophysical study of the Delaware Basin, New Mexico and West Texas, Trans Pecos Region (West Texas) (1980).

[4] Formation of Occurrence, Strike, Dip, and Length Interpreted by (Cortina, J. E. and Lemons, C. R. 2019. Houston, TX: Sourcewater, Inc.)

[5] Ground Water Protection Council and Interstate Oil and Gas Compact Commission. *Potential Injection-Induced Seismicity Associated with Oil & Gas Development: A Primer on Technical and Regulatory Considerations Informing Risk Management and Mitigation.* 2015. 141 pages.

Injection into either the Precambrian basement rock or its overlying formations that are hydraulically connected to the basement rock through faulting or fracture networks can increase the pore pressure and may lead to the fault slipping, resulting in a seismic event.[4] As such, the vertical distance between the injection formation and Precambrian basement rock and the presence or lack of faulting within the injection interval are major considerations when determining the risk of injection-induced seismicity.

Geophysical logs from nearby well records show at least 8,225 feet of vertical separation between the injection interval and the Precambrian basement.[3] In addition, injection-induced seismicity is not typically associated with shallow disposal wells in the Central Basin Platform and Delaware Basin areas, such as the FPNM SWD #6.

For injection into the Glorieta Sandstone to contribute to seismic activity, one of two hypothetical geologic scenarios must exist:[6]

1. Scenario #1: Earthquake hypocenters would need to be significantly shallower (several kilometers) than initially identified by the USGS and NMTSO seismic monitoring networks, and thus placing seismic activity high in the sedimentary column, rather than in the Precambrian basement.
2. Scenario #2: This scenario would require that both of the following conditions are met:
    a. Fault Transmissivity: High permeability and transmissive conduits from fault-damaged zones would need to be present below the Glorieta, allowing fluid to migrate through the underlying Tubb Formation and through significantly deeper confining intervals, and eventually into the Precambrian basement.
    b. Pore Pressure: The injection fluids and bottom hole pressures in the Glorieta would need to exceed existing hydrostatic pressures within the deeper geologic formation in order for injection fluids to migrate downward.

There are no publications or geologic data that suggest either of these scenarios to be true for the area around the FPNM SWD #6.

Formation Parting Pressure

Class II SWDs in New Mexico are administratively permitted with a maximum pressure gradient of 0.2 psi/ft. Review of New Mexico Oil Conservation Division (OCD) Order IP-476 submitted by Chevron USA Inc. in support of the Vacuum Glorieta West Unit, which is located approximately 60 miles northwest of the FPNM SWD #6, determined the fracture gradient of the Glorieta in the region ranges from 0.26-0.39 psi/ft from approved step-rate tests. Typical SWD permitting standards in New Mexico, and the requested operating parameters of the FPNM SWD #6, would indicate that formation parting pressure would not be exceeded by the FPNM SWD #6.

6 Skoumal, Robert J., et al. “Induced Seismicity in the Delaware Basin, Texas.” *Journal of Geophysical Research: Solid Earth*, vol. 125, no. 1, 2020, doi:10.1029/2019jb018558.

Conclusion

As an expert on the issue of induced seismicity, seismic monitoring, and mitigation, it is my opinion that the potential for the FPNM SWD #6 to cause injection-induced seismicity is expected to be minimal, at best. This conclusion assumes the FPNM SWD #6 will be operated below formation parting pressure and is based on (1) the presence of numerous confining layers above and below the injection interval, (2) the significant vertical distance between the injection zone and Precambrian basement rock in which the nearest fault has been identified, and (3) the vertical distance from, and lack of historic seismicity on, identified shallow faults in the area of review.

Sincerely,
ALL Consulting, LLC

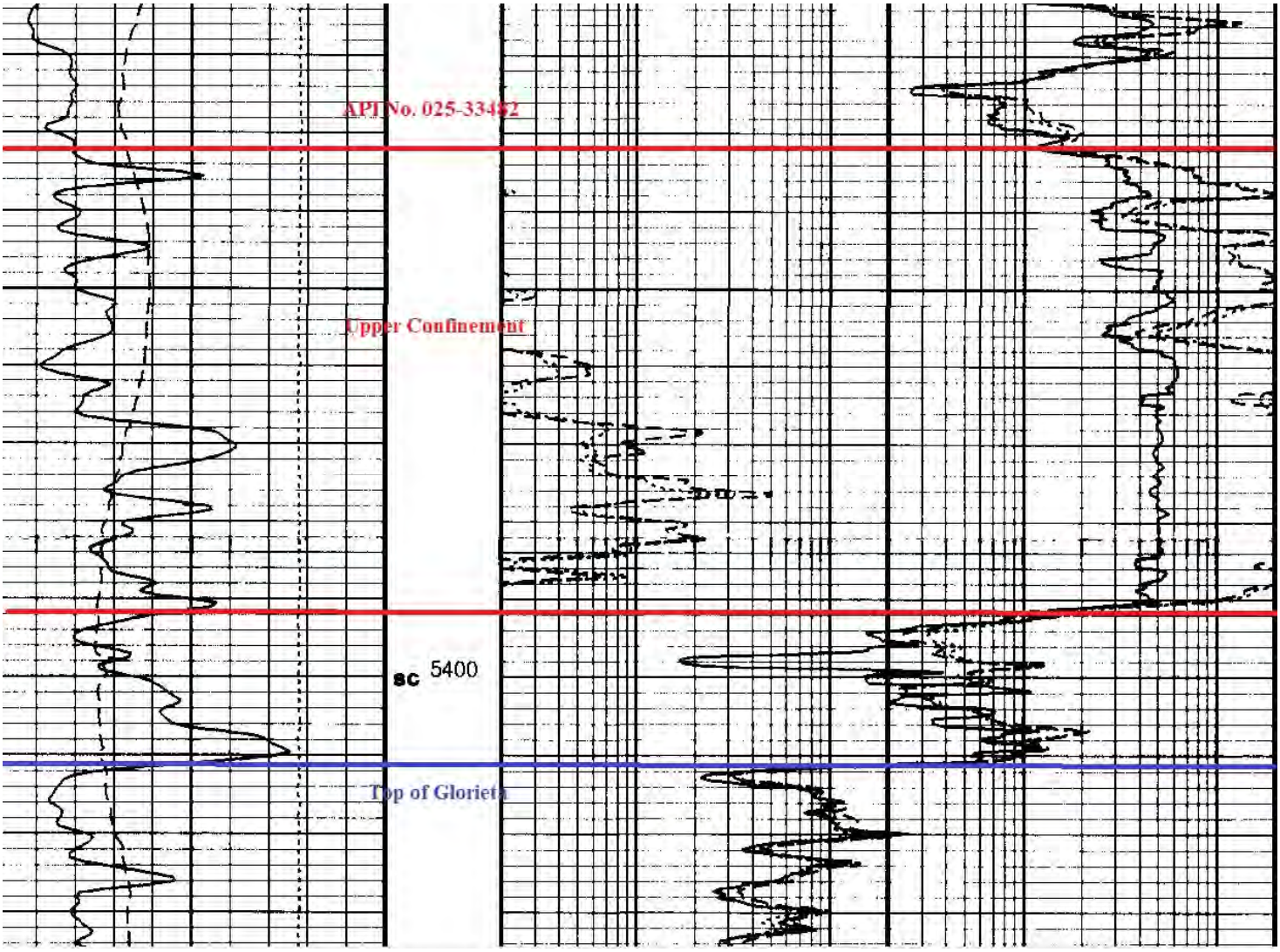
Reed Davis
Geophysicist

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

Attachment 1
Upper and Lower Confining Zones

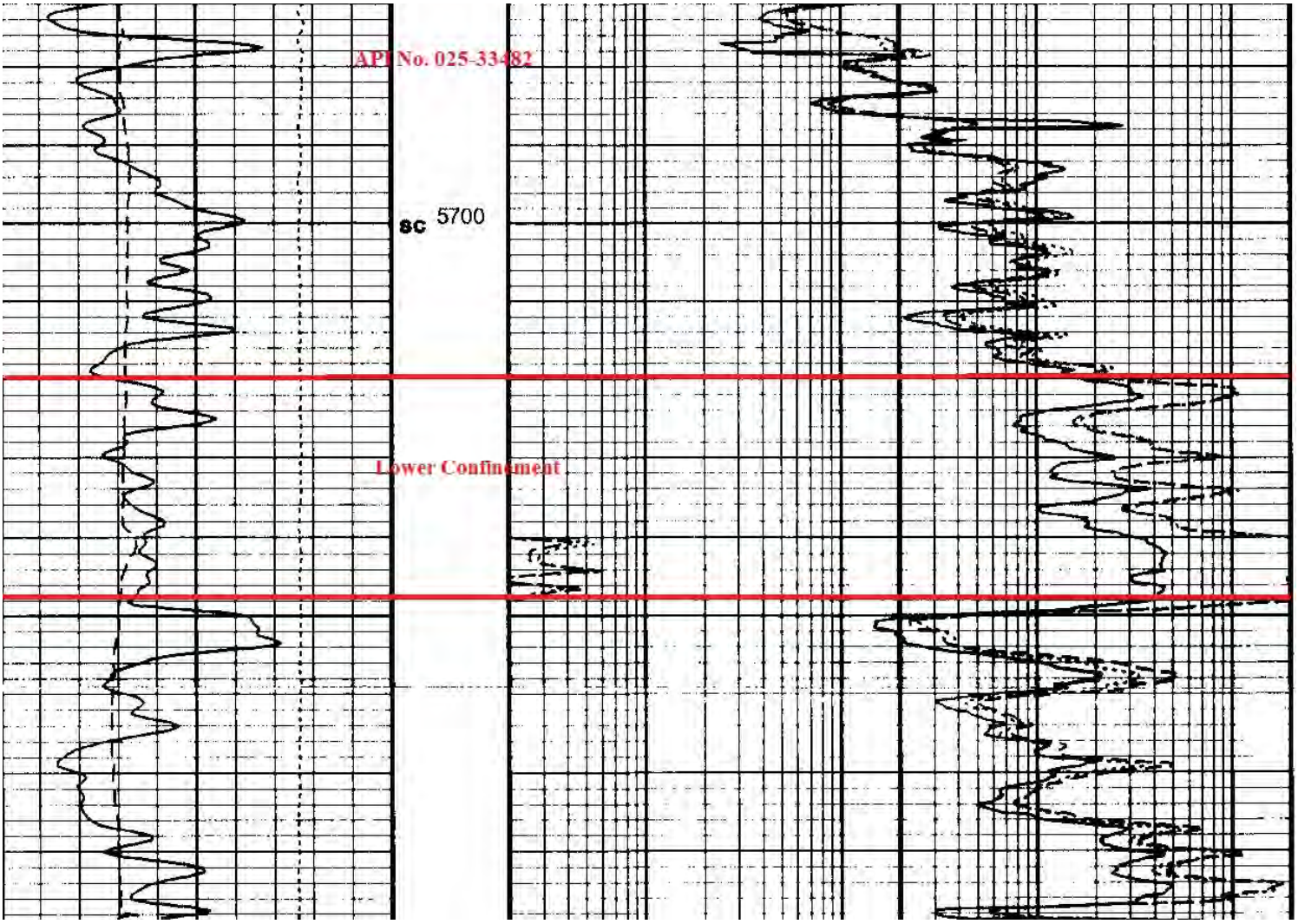
WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

Upper Confining Zone from API No. 025-33482



WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

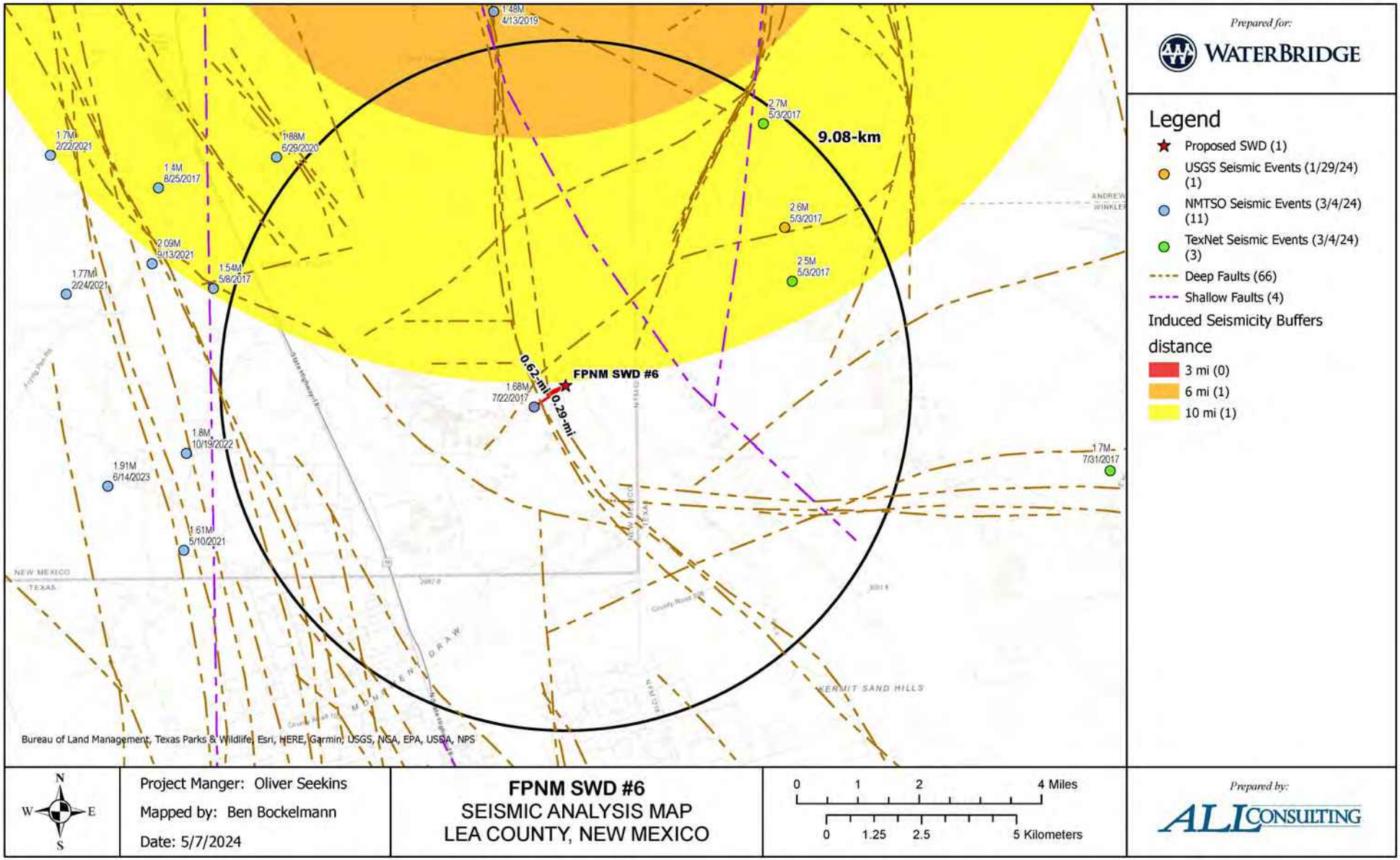
Lower Confining Zone from API No. 025-33482



Attachment 2
Seismic Event Map

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

FPNM SWD #6 Nearby Seismic Events and Faults



Attachment 9

List of Affected Persons

FPNM SWD #6 - Notice of Application Recipients						
Affected Party Classification	**Entity - Proof of Notice**	**Entity - As Mapped/Exhibited**	**Address**	**City**	**State**	**Zip Code**
Surface Owner	D.K. Boyd	N/A	3317 Andrews Hwy	Midland	TX	79703
NMOCD District Office	New Mexico Oil Conservation District 1	N/A	1625 N. French Dr	Hobbs	NM	88240
Mineral Owner	New Mexico Bureau of Land Management	N/A	301 Dinosaur Trail	Sante Fe	NM	87508
BLM - Lessee	Armstrong Energy Corporation	Armstrong Energy Corporation	P.O. Box 1973	Roswell	NM	88202
BLM - Lessee	R&R Royalty, Ltd.	R&R Royalty LTD	500 N Shoreline Blvd, Ste 322	Corpus Christi	TX	78401
Mineral Owner - Unleased	IDA KRISTINE HANSON	Unleased Private Sec. 17 T26S R36E	19018 CLOYANNA LANE	Humble	TX	77346
Mineral Owner - Unleased	Elizabeth W., Goff et al.	Unleased Private Sec. 08 T26S R36E	500 N Shoreline Blvd, Ste 322	Corpus Christi	TX	78401
Note: The affected parties above received notification of this C-108 application.						

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570
(FPNM SWD #6)

AFFIDAVIT OF THOMAS E TOMASTIK

Thomas E. Tomastik, of lawful age and being duly sworn, declares as follows:

1. My name is Thomas E. Tomastik. I work for ALL Consulting as a Chief Geologist and Regulatory Specialist. I have been retained by WaterBridge Stateline LLC ("WaterBridge") (OGRID No. 330129).

2. I personal knowledge of the matters stated herein.

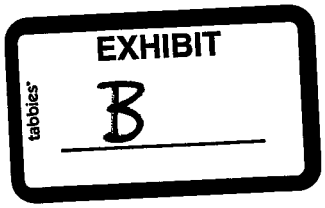
3. I have previously testified before the Oil Conservation Division ("Division") as an expert witness in petroleum engineering and petroleum geology and my credentials as have been accepted by the Division and made a matter of record.

4. My area of responsibility includes the area of Lea County in New Mexico.

5. I am familiar with the application WaterBridge filed in this matter and I am familiar with the status of the lands in the subject area.

6. I undertook a hydrologic evaluation related to the proposed FPNM SWD #6 well (the "Well"), which is included as Attachment 7 to Exhibit A-1.

7. WaterBridge seeks authorization to inject produced water into the Glorieta Sandstone at the Well into the Glorieta Sandstone at a depth of approximately 5,400 feet to 5,775 feet.



8. I examined available geologic and engineering data and found no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water ("USDW").

9. In my opinion, there is containment through multiple confining zones in the San Andres Formation and the Salado evaporite deposits above the Glorieta Sandstone and the USDW and over 4,260 feet of vertical separation between the base of the USDW and the top of the injection interval. Additionally, there is no evidence of faults that would allow for communication between the USDW and Glorieta Sandstone.

10. In addition, WaterBridge's wellbore design will isolate any known freshwater zones and is protective of USDWs.

11. All of the well data and operations information required by the C-108 is included in the C-108 attached as Exhibit A-1. The proposed well design is contained in Attachment 1 to the C-108 and described in Section III.A of the C-108.

12. In my opinion, the well design will be protective of freshwater and USDWs in the area and protective of correlative rights.

13. A water chemistry analysis is provided as Attachments 3 and 4 to Exhibit A-1. Based on this water chemistry analysis, in my opinion and based on my experience, there will not be a compatibility issue between the injection fluids and the fluids within the injection interval.

14. The estimated average surface injection pressure is expected to be approximately 810 psi. The maximum surface injection pressure will be 1,080 psi, based on the Division's guideline limiting surface injection pressures to 0.2 psi per foot of depth to the top-most injection interval. The proposed injection volumes can be achieved without exceeding the maximum surface

injection pressure. Injection pressures and volumes will be continuously monitored through an electronic SCADA system.

15. In my opinion, the granting of WaterBridge's application is in the interests of conservation and the prevention of waste.

16. The attached exhibits were prepared by me, or compiled from company business records, or were prepared at my direction.

17. I attest under penalty of perjury under the laws of the State of New Mexico that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]

Thomas E. Tomastik

State of Oklahoma

County of Wagoner

This record was acknowledged before me on June 18 2024, by Thomas E. Tomastik.

[Stamp]

RITA GIORDANO
NOTARY PUBLIC
STATE OF OKLAHOMA
Commission # 15000795 Expires 01/27/27

Rita Giordano
Notary Public in and for the
State of Oklahoma
Commission Number: 15000795

My Commission Expires: 1.27.27

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570
(FPNM SWD #6)

AFFIDAVIT OF REED DAVIS

Reed Davis, of lawful age and being duly sworn, declares as follows:

1. My name is Reed Davis. I work for ALL Consulting as a Geophysicist. I have been retained by WaterBridge Stateline LLC ("WaterBridge") (OGRID No. 330129).

2. I personal knowledge of the matters stated herein.

3. I have previously testified before the Oil Conservation Division ("Division") as an expert witness in geology and geophysics and my credentials have been accepted by the Division and made a matter of record.

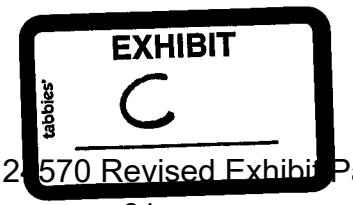
4. My area of responsibility includes the area of Lea County in New Mexico.

5. I am familiar with the application WaterBridge filed in this matter and I am familiar with the status of the lands and geology in the subject area.

6. In this case, WaterBridge seeks authorization to inject produced water into the Glorieta Sandstone formation through the FPNM SWD #6 well (the "Well") into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet.

7. Exhibit A-1, Attachment 8, contains a statement I prepared that includes an overview of the geology of this area, as well as information regarding the low potential for induced seismicity if WaterBridge's application is granted.

8. Based on my geology study, I have concluded that the Glorieta Sandston is well suited for injection because it is bounded by both an upper confining layer and a lower confining



layer, which will prevent migration of the injected fluids. The Glorieta primarily consists of Permian-age sandstone and is overlain by approximately 60 feet of low porosity carbonate rocks within the lower San Andres Formation, which would prevent the upward migration of injection fluid and serve as the upper confining layer. Additionally, approximately 28 feet of low porosity and low permeability other carbonate rocks lie beneath the proposed injection interval and act as a lower confining zone by preventing downward migration of injected fluids into the underlying Tubb Formation. Attachment 1 to my Letter are geophysical logs which depict the intervals above and below the proposed injection interval.

9. In my opinion, operating the Well will not impact the correlative rights of mineral owners because the proposed injection will remain within the target injection interval due to the upper and lower confining zones. There is no oil and gas production from the Glorieta Sandstone within the two-mile radius of the Well.

10. I also prepared a statement regarding seismicity, which was included in the C-108, also as Attachment 8.

11. Based on my study, in my opinion, the potential for the Well to cause injection-induced seismicity is expected to be minimal because (1) the presence of numerous confining layers above and below the injection interval, (2) the significant vertical distance between the injection zone and Precambrian basement rock in which the nearest fault has been identified, and (3) the vertical distance from, and lack of historic seismicity on, identified shallow faults in the area of review.

12. In my opinion, the granting of WaterBridge's application is in the interests of conservation and the prevention of waste.

13. The attached exhibits were prepared by me, or compiled from company business records, or were prepared at my direction.

14. I attest under penalty of perjury under the laws of the State of New Mexico that the information provided herein is correct and complete to the best of my knowledge and belief.

[Signature page follows]

Reed Davis

State of Oklahoma

County of Tulsa

This record was acknowledged before me on June 18 2024, by Reed Davis.

[Stamp]

Paloma Lucero

Notary Public in and for the
State of Oklahoma
Commission Number: 19011374

My Commission Expires: 11/11/2027

PALOMA LUCERO
Notary Public, State of Oklahoma
Commission # 19011374
My Commission Expires 11-11-2027

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO. **CASE NO. 24570**

SELF-AFFIRMED DECLARATION OF DEANA M. BENNETT

Deana M. Bennett, attorney in fact and authorized representative of WaterBridge Stateline, LLC, the Applicant herein, declares as follows:

1) The above-referenced Application was provided under notice letter, dated June 4, 2024, attached hereto, as Exhibit D.1.

2) Exhibit D.2 is the mailing list, which show the notice letters were delivered to the USPS for mailing on June 4, 2024.

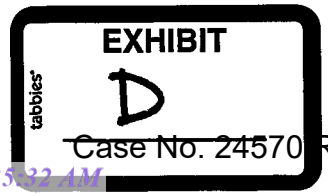
3) Exhibit D.3 is the certified mailing tracking information, which is automatically compiled by CertifiedPro, the software Modrall uses to track the mailings. This spreadsheet shows the names and addresses of the parties to whom notice was sent and the status of the mailing.

4) Exhibit D.4 is the Affidavit of Publication from the Hobbs News-Sun confirming that notice was published on June 9, 2024.

5) I attest under penalty of perjury under the laws of the State of New Mexico that the information provided herein is correct and complete to the best of my knowledge and belief.

Dated: June 19, 2024

By: Deana M Bennett
Deana M. Bennett



MODRALL SPERLING

LAWYERS

June 4, 2024

Deana M. Bennett
505.848.1834
dmb@modrall.com

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570

TO: AFFECTED PARTIES

This letter is to advise you that WaterBridge Stateline, LLC ("WaterBridge") has filed the enclosed application.

In Case No. 24570, WaterBridge Stateline LLC seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 7.94 miles Southeast of Jal, New Mexico.

The hearing is set for June 27, 2024 beginning at 8:30 a.m. The hearing will be conducted in a hybrid fashion, both in-person at the Energy, Minerals, Natural Resources Department, Wendell Chino Building, Pecos Hall, 1220 South St. Francis Drive, 1st Floor, Santa Fe, NM 87505 and via a virtual meeting platform. To participate in the electronic hearing, see the instructions posted on the docket for the hearing date: https://www.emnrd.nm.gov/ocd/hearing-info/.

As a party who may be affected by this application, we are notifying you of your right to appear at the hearing and participate in this case, including the right to present evidence either in support of or in opposition to the

Modrall Sperling
Roehl Harris & Sisk P.A.

500 Fourth Street NW
Suite 1000
Albuquerque,
New Mexico 87102

PO Box 2168
Albuquerque,
New Mexico 87103-2168

Tel: 505.848.1800
www.modrall.com

EXHIBIT
Dabbles
D.1

application. Failure to appear at the hearing may preclude you from any involvement in this case at a later date.

You are further notified that if you desire to appear in this case, then you are requested to file a Pre-Hearing Statement with the Division at least four business days in advance of a scheduled hearing before the Division or the Commission, but in no event later than 5:00 p.m. mountain time, on the Thursday preceding the scheduled hearing date, with a copy delivered to the undersigned.

Sincerely,

Deana M. Bennett

Deana M. Bennett
Attorney for Applicant

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

APPLICATION OF WATERBRIDGE STATELINE LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 24570

APPLICATION

WaterBridge Stateline LLC ("WaterBridge"), OGRID No. 330129, through its undersigned attorneys, hereby submits this application to the Oil Conservation Division pursuant to the provisions of NMSA 1978, § 70-2-12, Rule No. 19.15.26, and Rule 19.15.4.8 for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, WaterBridge states as follows:

(1) WaterBridge proposes to drill the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well.

(2) WaterBridge seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet.

(3) WaterBridge requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day.

(4) WaterBridge requests approval of a maximum injection pressure of 1,080 psi for the well.

(5) A proposed C-108 for the subject well is attached hereto as Attachment A.

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, WaterBridge requests that this application be set for hearing before an Examiner of the Oil Conservation Division on June 13, 2024; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A.

By: Deana M Bennett

Earl E. DeBrine, Jr.
Deana M. Bennett
Yarithza Peña
Post Office Box 2168
500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
edebrine@modrall.com
deana.bennett@modrall.com
yarithza.pena@modrall.com
Attorneys for Applicant

CASE NO. 24570: Application of WaterBridge Stateline LLC for approval of a salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 7.94 miles Southeast of Jal, New Mexico.

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

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: WaterBridge Stateline LLC **OGRID Number:** 330129
Well Name: FPNM SWD #6 **API:**
Pool: SWD; Glorieta **Pool Code:** 96106

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.

Oliver Seekins
Print or Type Name

Signature

5/13/2024
Date

918.382.7581
Phone Number

oseekins@all-llc.com
e-mail Address

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: WaterBridge Stateline LLC

ADDRESS: 5555 San Felipe, Ste. 1200 Houston, TX 77056

CONTACT PARTY: Jessica High - Director, QHSE & Regulatory PHONE: 832-871-4064

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).

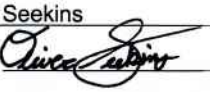
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

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: Oliver Seekins TITLE: Project Manager / Regulatory Specialist

SIGNATURE:  DATE: 5/13/2024

E-MAIL ADDRESS: oseekins@all-llc.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

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

Application for Authorization to Inject
Well Name: FPNM SWD #6

III – Well Data (*The wellbore diagram is included as **Attachment 1***)

A.

(1) General Well Information:

Operator: WaterBridge Stateline LLC (OGRID No. 330129)
Lease Name & Well Number: FPNM SWD #6
Location Footage Calls: 1,964' FNL & 2,170' FWL
Legal Location: UL F, S17 T26S R38E
Ground Elevation: 2,983'
Proposed Injection Interval: 5,400' - 5,775'
County: Lea

(2) Casing Information:

Type	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	24"	20"	94.0 lb/ft	1,165'	1,185	Surface	Circulation
Intermediate 1	17-1/2"	13-3/8"	54.5 lb/ft	2,635'	1,940	Surface	Circulation
Production Casing	12-1/4"	9-5/8"	40.0 lb/ft	5,775'	1,915	Surface	CBL
Tubing	N/A	5-1/2"	17.0 lb/ft	5,375'	N/A	N/A	N/A

DV Tool set at: 3,000'

(3) Tubing Information:

5-1/2" (17.0 lb/ft) ceramic-coated tubing with setting depth of 5,375'

(4) Packer Information: ACT AS1-X or equivalent packer set at 5,375'

B.

(1) Injection Formation Name: Glorieta Sandstone
Pool Name: SWD;Glorieta
Pool Code: 96106
(2) Injection Interval: Perforated injection between 5,400' - 5,775'
(3) Drilling Purpose: New drill for saltwater disposal
(4) Other Perforated Intervals: No other perforated intervals exist.
(5) Overlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.

- Yates (2,815')
- Seven Rivers (2,889')
- Queen (3,424')
- Penrose (3,730')

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

- Tubb (6,630')
- Devonian (9,098')

V – Well and Lease Details

The following maps and documents are included as ***Attachment 2***:

- 2-mile Oil & Gas Well Map
- ½-mile AOR Well Table
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

VI – AOR Well List

A list of the well(s) within the 1/2-mile AOR is included in ***Attachment 2.***

There are no wells in the ½-mile AOR.

VII – Proposed Operation

(1) Proposed Maximum Injection Rate: 20,000 bpd
Proposed Average Injection Rate: 15,000 bpd

(2) A **closed-loop system** will be used.

(3) Proposed Maximum Injection Pressure: 1,080 psi (surface)
Proposed Average Injection Pressure: Approximately 810 psi (surface)

(4) Source Water Analysis: The expected injectate will consist of produced water from production wells completed in the Queen, Wolfcamp, Devonian and Ellenburger formations. Analysis of water from these formations is included as ***Attachment 3***.

(5) Injection Formation Water Analysis: The proposed SWD will be injecting water into the Glorieta Sandstone, which is a non-productive zone known to be compatible with formation water from the Queen, Wolfcamp, Devonian and Ellenburger formations. Water analyses from the Glorieta Sandstone in the area are included as ***Attachment 4.***

VIII – Geologic Description

The proposed injection interval includes the Glorieta Sandstone from 5,400' - 5,775'. The Permian-aged Glorieta Sandstone is a fine grained and well-to-moderately sorted quartz arenite sandstone that occurs directly below the San Andres Formation. There are multiple zones of high porosity and low resistivity that makes this sandstone a viable injection zone in this area.

Further discussion of the injection formation, overlying and underlying confinement zones, and historic use of the field are included as ***Attachment 5***.

The base of the USDW is the Rustler Formation at a depth of approximately 1,140 feet. Depth of the nearest water well in the area is approximately 185 feet below ground surface.

IX – Proposed Stimulation Program

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

X – Logging and Test Data

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

XI – Fresh Groundwater Samples

Based on a review of data from the New Mexico Office of the State Engineer, there is one (1) groundwater well located within 1-mile of the proposed SWD location. However, the well is not eligible for sampling because of its location in an area with aquifer production restrictions.

A water well map and details of the water well within 1-mile are included as ***Attachment 6***.

XII – No Hydrologic Connection Statement

No publicly known faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs.

A signed *No Hydrologic Connection Statement* is included as ***Attachment 7.***

In addition, a *Seismic Potential Letter* detailing the minimal risk of injection-induced seismicity associated with the proposed SWD is included as ***Attachment 8***.

XIII – Proof of Notice

A public notice will be filed with the Hobbs News Sun newspaper, and an affidavit will be included as an exhibit at hearing.

A copy of the application will be mailed to the identified affected persons, with delivery confirmation being provided as an exhibit at hearing. A list of the identified affected persons is included as ***Attachment 9***.

Attachments

Attachment 1:

- C-102
- Wellbore Diagram
- Packer Diagram

Attachment 2: Area of Review Information:

- 2-Mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

Attachment 3: Source Water Analysis

Attachment 4: Injection Formation Water Analysis

Attachment 5: Confining Zones and Historic Pore Space Use

Attachment 6: Water Well Map and Well Data

Attachment 7: No Hydrologic Connection Statement

Attachment 8: Seismic Potential Letter

Attachment 9: List of Affected Persons

Attachment 1

- C-102
- Wellbore Diagram
- Packer Diagram

District I
District II
District III
District IV

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

API Number	Pool Code	Pool Name
	96106	SWD;Glorieta

Property Code	Property Name	Well Number
	FPNM SWD	#6

OGRID No.	Operator Name	Elevation
330129	WATERBRIDGE STATELINE LLC	2983'

Surface Location

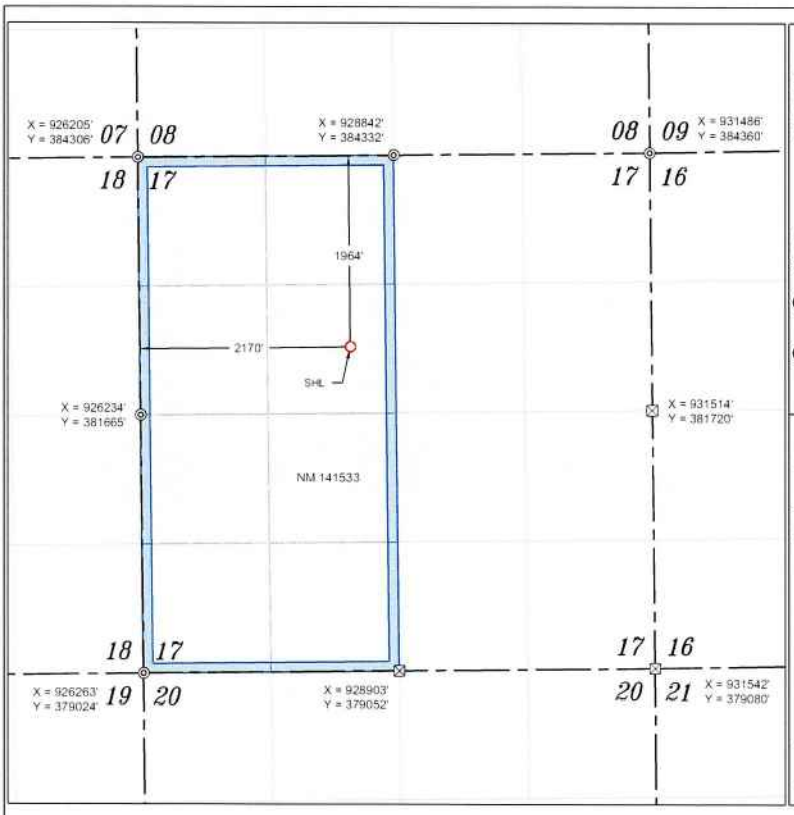
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	17	26 S	38 E		1964	NORTH	2170	WEST	LEA

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

Dedicated Acres	Joint or Infill	Consolidation Code	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.



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 — 5/13/2024 Date

Oliver Seekins
Printed Name

Oseekins@all-llc.com
E-mail Address

SURVEYOR CERTIFICATION

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

FEBRUARY 27, 2024
Date of Survey

Signature and Seal of Professional Surveyor:

TIM C. PAPPAS
NEW MEXICO
21209
PROFESSIONAL SURVEYOR

Job No.: 24-02-4069
TIM C. PAPPAS, N.M.P.L.S.
Certificate Number 21209

NAD 83 (SHL) 1964' FNL & 2170' FWL
LATITUDE = 32.045044°
LONGITUDE = -103.084142°
NAD 27 (SHL)
LATITUDE = 32.044921°
LONGITUDE = -103.083693°
STATE PLANE NAD 83 (N.M. EAST)
N: 382363.99' E: 928395.87'
STATE PLANE NAD 27 (N.M. EAST)
N: 382308.30' E: 887206.20'

◎ FND. U.S.G.L.O. MON. UNLESS OTHERWISE NOTED
☒ CALC. CORNER
○ SHL/ KOP/ FTP / PPP/ LTP / BHL
STATE OIL & GAS LEASE
BLM OIL & GAS LEASE
HORIZONTAL SPACING UNIT

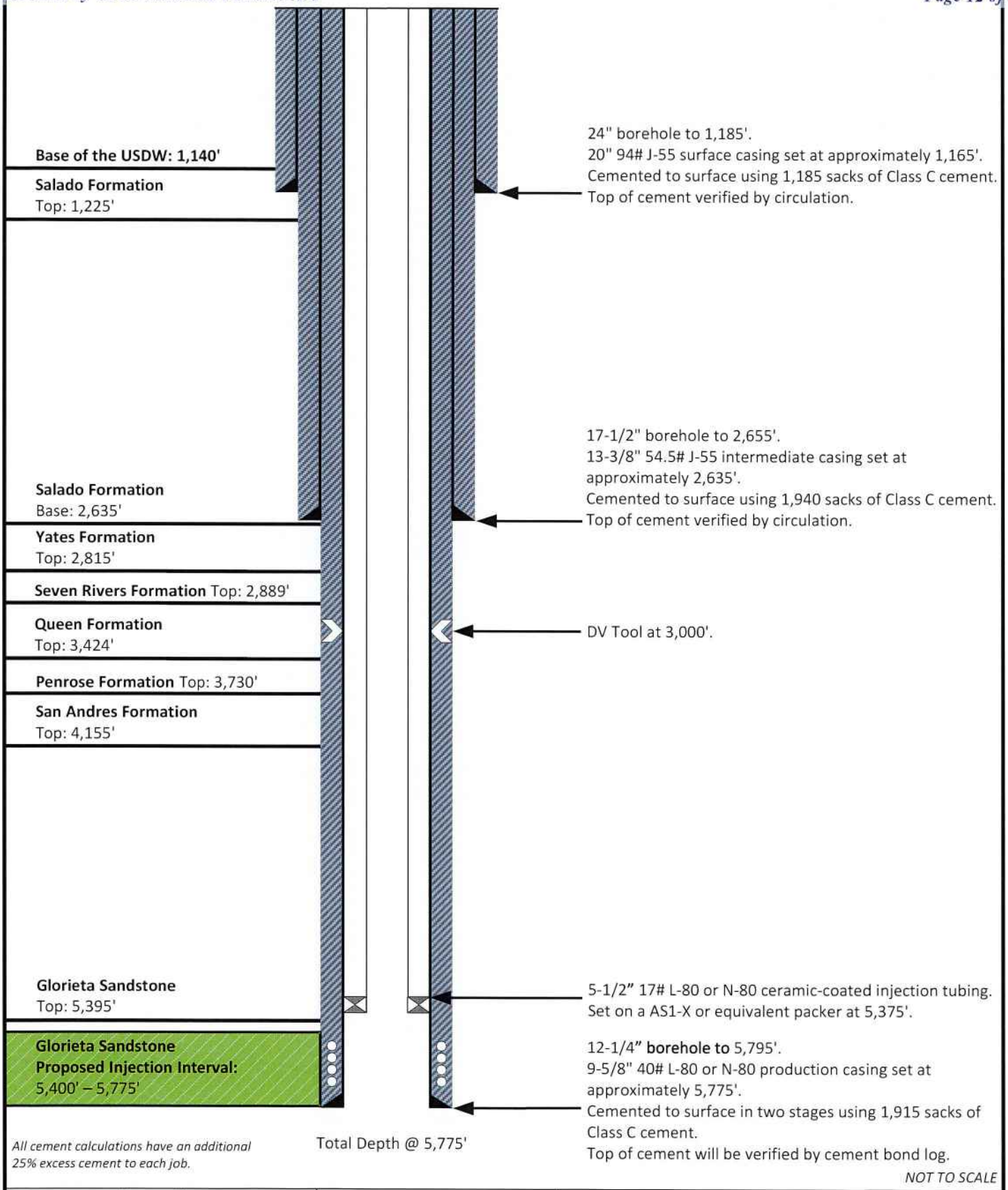
NOTES

1. ALL COORDINATES, BEARINGS, AND DISTANCES CONTAINED HEREIN ARE GRID, BASED UPON THE NEW MEXICO STATE PLANE COORDINATES SYSTEM, NORTH AMERICAN DATUM 83, NEW MEXICO EAST (3001), NAVD 88.

2. THIS DOCUMENT IS BASED UPON AN ON THE GROUND SURVEY PERFORMED DURING FEBRUARY, 2024. CERTIFICATION OF THIS DOCUMENT IS ONLY TO THE LOCATION OF THIS EASEMENT IN RELATION TO RECORDED MONUMENT OF DEEDS PROVIDED BY THE CLIENT.

3. ELEVATIONS MSL. DERIVED FROM G.N.S.S. OBSERVATION AND DERIVED FROM SAID ON-THE-GROUND SURVEY.

0' 1500' 3000'
SCALE: 1" = 1500'



Prepared by:
ALL CONSULTING
Prepared for:
WATERBRIDGE

Drawn by: Josh Ticknor

Project Manager: Oliver Seekins

Date: 3/20/2024

FPNM SWD #6
WaterBridge Stateline LLC
Sec. 17 Town. 26S Rng. 38E
Lat: 32.045044° Long: -103.084142° (NAD 83)

AS1-X MECHANICAL PACKER

The ACT AS1-X Packer is the most versatile of the mechanically set retrievable packers and may be used in any production application. Treating, testing, injecting, pumping wells, flowing wells, deep or shallow, the AS1-X is suited for all. The packer can be left in tension or compression, depending on well conditions and the required application. A large internal by-pass reduces swabbing when running and retrieving. The by-pass closes when the packer is set and opens prior to releasing the upper slips when retrieving to allow pressure equalization.

The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, right-hand release. A patented upper-slip releasing system reduces the force required to release the packer. A non directional slip is released first, making it easier to release the other slips. The AS1-X packer can withstand 7,000 psi (48 MPa) of differential pressure above or below.

FEATURES, ADVANTAGES AND BENEFITS:

- The design holds high differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs
- The packer can be set with compression, tension, or wire line, enabling deployment in shallow and deep applications
- The packer can be set and released with only a one-quarter turn of the tubing
- The bypass valve is below the upper slips so that debris are washed from the slips when the valve is opened, reducing the times for circulation and total retrieval
- The full opening enables unrestricted flow and the passage of wire line tools and other packer systems
- The packer can be run with the T-2 on-off tool, which enables the tubing to be disconnected and retrieved without retrieving the packer

OPTIONS:

- Elastomer options are available for hostile environments
- Optional safety releases are available

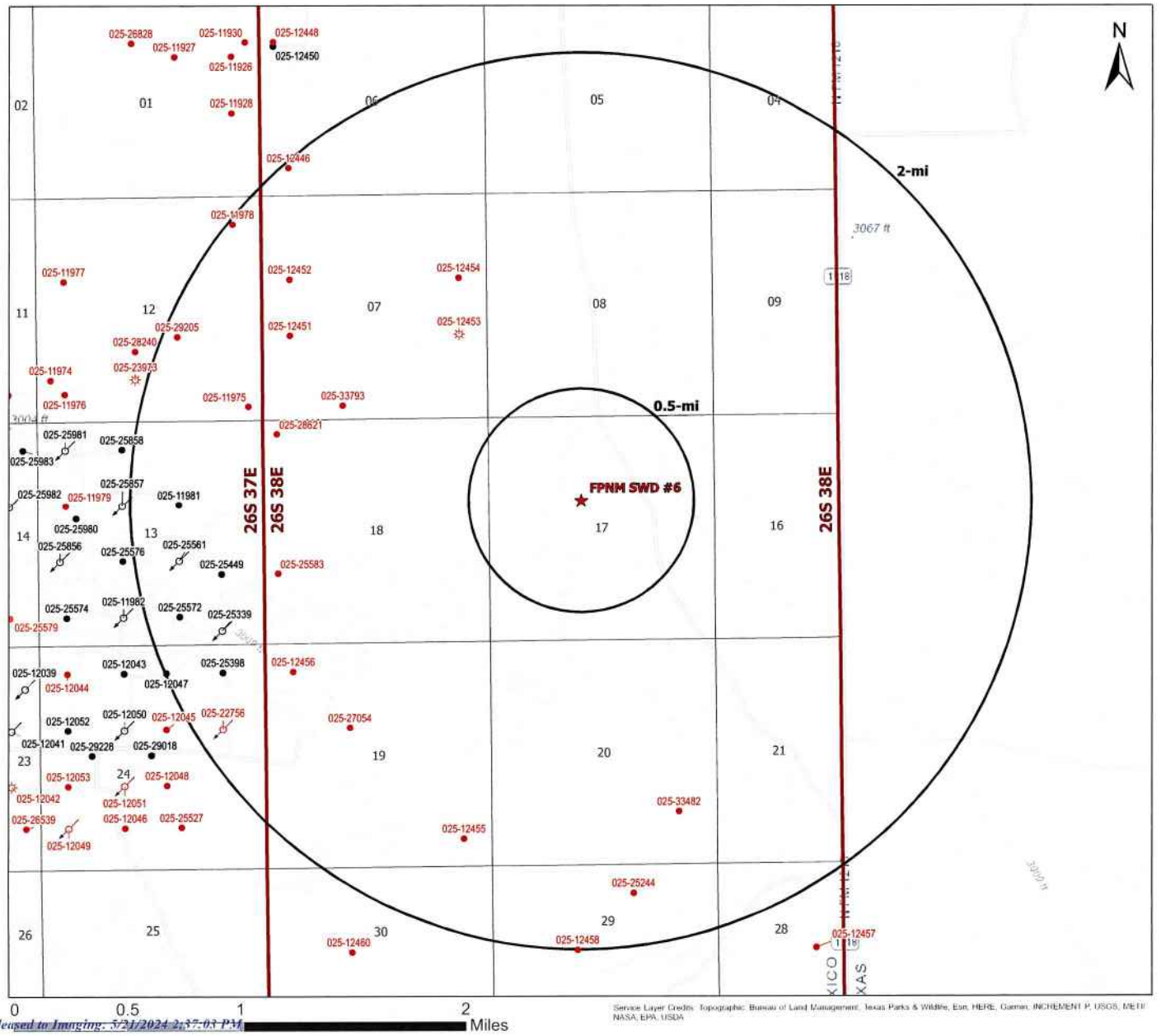
AS1-X MECHANICAL PACKER						
CASING		RECOMMENDED HOLE SIZE (inches)	TOOL OD MAX. (inches)	TOOL ID MIN. (inches)	THREAD CONNECTION BOX UP / PIN DOWN	PART NO.
SIZE (inches)	WEIGHT (lbs ft)					
4.1/2	13.5-15.1	3.826-3.920	3.650	1.938	2.3/8" EUE	261-3650-XXXX
5	11.5-15	4.408-4.560	4.125	1.938	2.3/8" EUE	261-4125-XXXX
5	18-20.8	4.154-4.276	4.000	1.938	2.3/8" EUE	261-4000-XXXX
5.1/2	14-20	4.778-5.012	4.625	2.00	2.3/8" EUE	261-4625-XXXX
5.1/2	14-20	4.778-5.012	4.625	2.38	2.7/8" EUE	261-4625-XXXX
5.1/2	20-23	4.670-4.778	4.500	2.00	2.3/8" EUE	261-4500-XXXX
5.1/2	20-23	4.670-4.778	4.500	2.38	2.7/8" EUE	261-4500-XXXX
6.5/8	20-24	5.921-6.094	5.750	3.00	3.1/2"EUE	261-5750-XXXX
7	17-26	6.276-6.538	6.000	2.50	2.7/8" EUE	261-6000-XXXX
7	17-26	6.276-6.538	6.000	3.00	3.1/2" EUE	261-6000-XXXX
7	26-32	6.094-6.276	5.875	2.50	2.7/8" EUE	261-5875-XXXX
7	26-32	6.094-6.276	5.875	3.00	3.1/2" EUE	261-5875-XXXX
7	29-35	6.004-6.184	5.812	3.00	3.1/2" EUE	261-5812-XXXX
7.5/8	24-29.7	6.875-7.025	6.672	2.50	2.7/8"EUE	261-6672-XXXX
7.5/8	24-29.7	6.875-7.025	6.672	3.00	3.1/2" EUE	261-6672-XXXX
7.5/8	33.7-39	6.625-6.765	6.453	2.50	2.7/8"EUE	261-6453-XXXX
7.5/8	33.7-39	6.625-6.765	6.453	3.00	3.1/2" EUE	261-6453-XXXX
9.5/8	32.3-43.5	8.755-9.001	8.500	3.00	3.1/2" EUE	261-8500-XXXX
9.5/8	32.3-43.5	8.755-9.001	8.500	4.00	4.1/2" EUE	261-8500-XXXX
9.5/8	43.5-53.5	8.535-8.755	8.250	3.00	3.1/2" EUE	261-8250-XXXX
9.5/8	43.5-53.5	8.535-8.755	8.250	4.00	4.1/2" EUE	261-8250-XXXX

'XXXX' is changed as per material / elastomer / end connection

Attachment 2

Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1/2-Mile AOR Well Table
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map



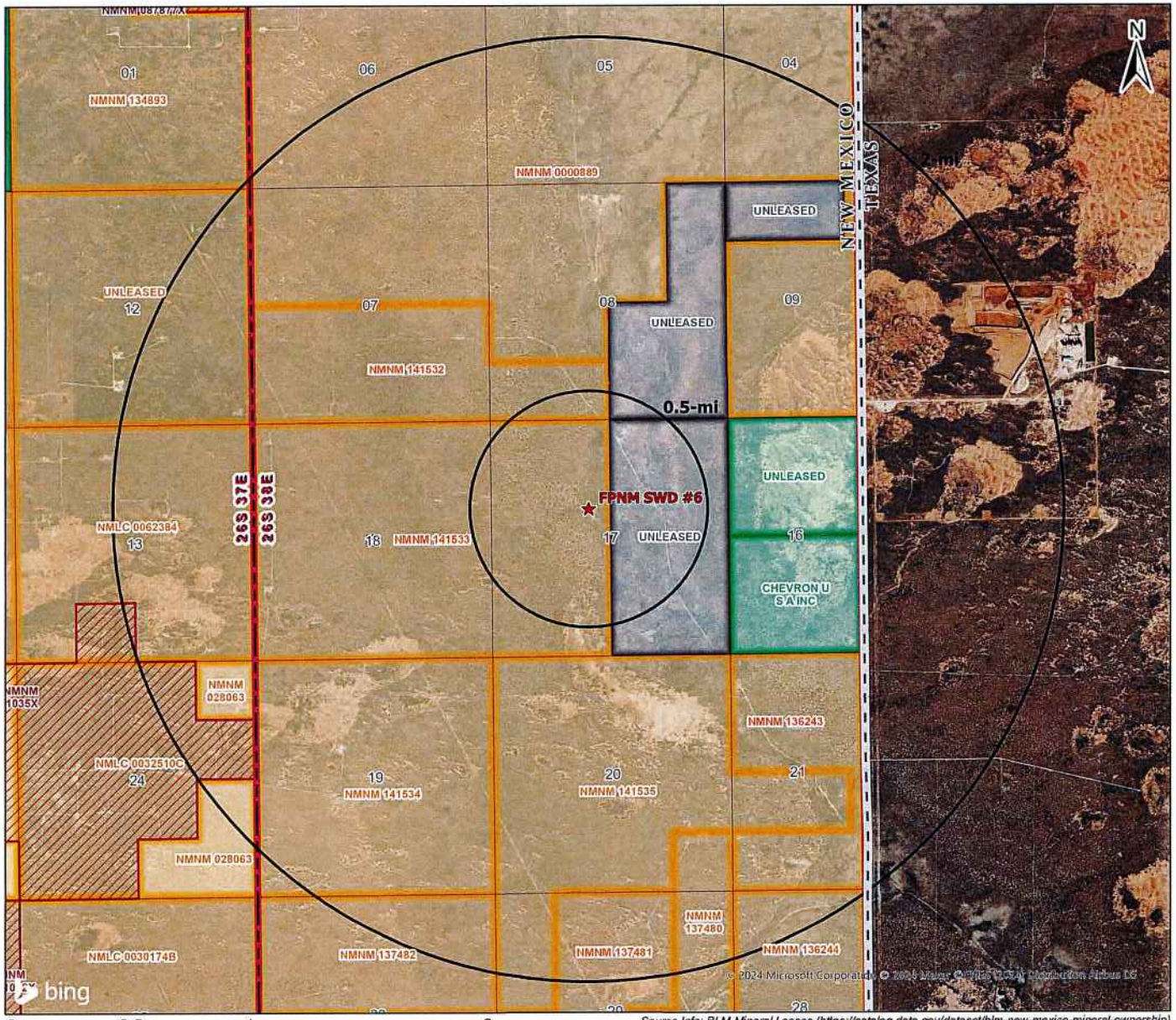
Legend

- Proposed SWD (1)
- Gas, Plugged (3)
- Injection, Active (10)
- Injection, Plugged (3)
- Oil, Active (15)
- Oil, Plugged (37)
- Oil, Temporarily Abandoned (1)
- Salt Water Disposal, Active (1)

Source Info: NMOCD O&G Wells updated 2/16/2024 (https://www.emnrd.nm.gov/ocd/ocd-data/ftp-server/)

O&G Wells Area of Review		
FPNM SWD #6 LEA COUNTY, NEW MEXICO		
Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann
Prepared for: WATERBRIDGE		Prepared by: ALL CONSULTING

1/2-Mile AOR Well Table for FPNM SWD #6 (Top of Injection Interval: 5,400')							
Well Name	**API#**	**Well Type**	**Operator**	**Spud Date**	**Location (Sec., Tn., Rng.)**	**Total Vertical Depth (feet)**	**Penetrate Inj. Zone?**
Note: There are no wells located within the ½-mile AOR.							



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

Legend

- Proposed SWD
- BLM Communitization Units
- NMSLO Mineral Leases
- Private Mineral Leases
- BLM Authorized O&G Leases

1/2-mile AOR Lessees/Unit Operators:

- ARMSTRONG ENERGY CORPORATION (BLM LESSEE)
- R&R ROYALTY LTD (BLM LESSEE)

Mineral Lease Area of Review

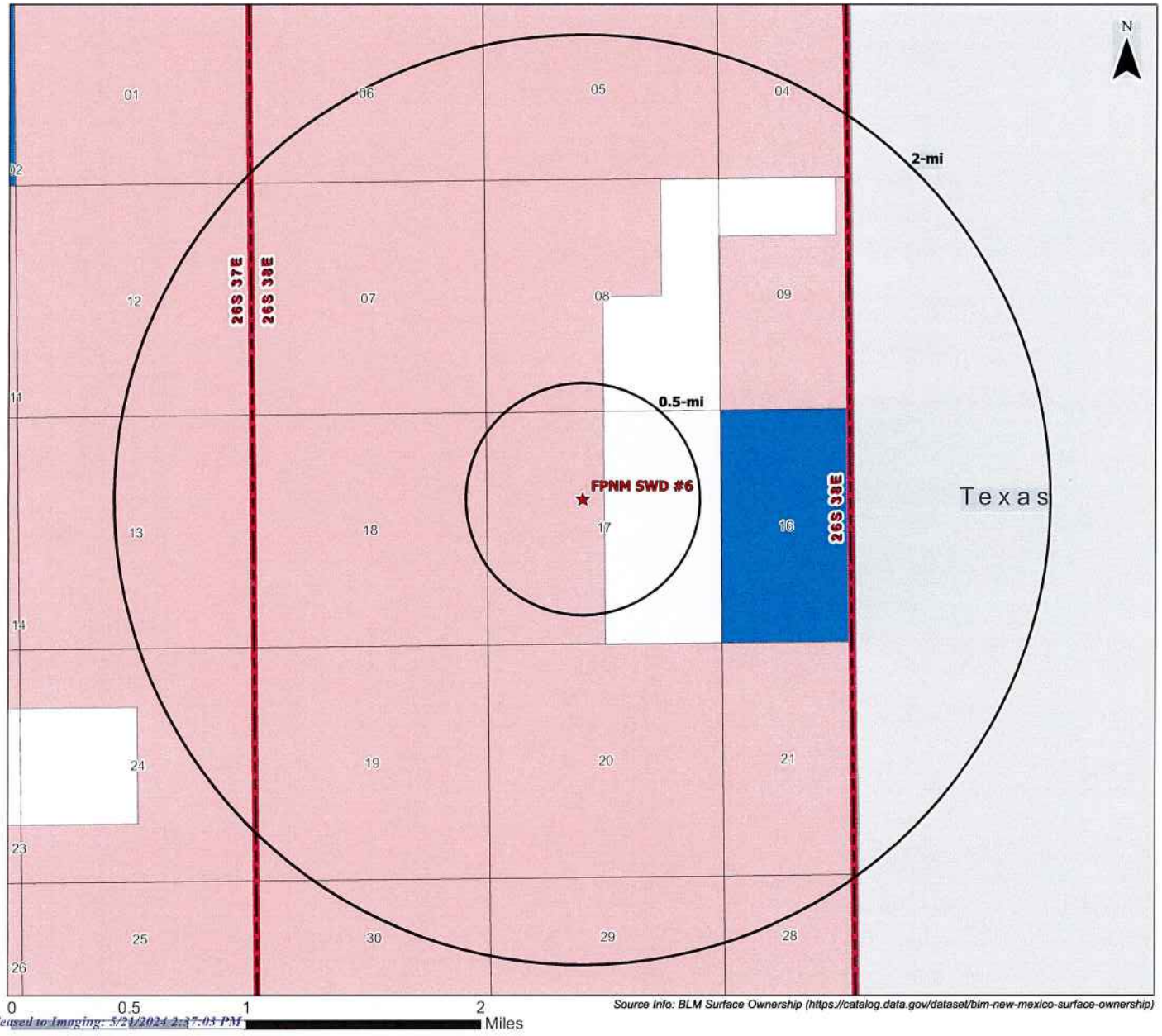
FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

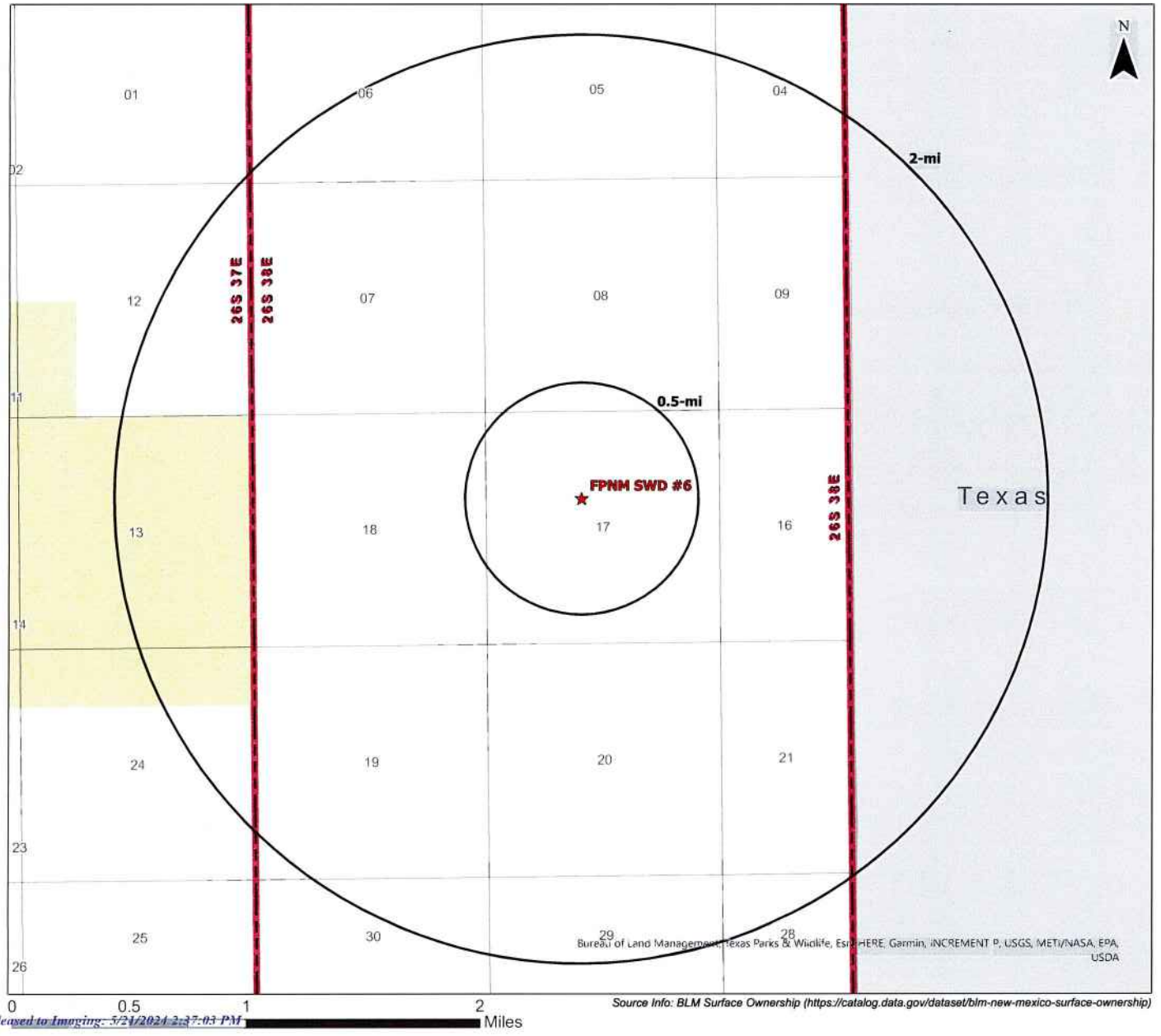


Legend

- Proposed SWD
- Private minerals
- Subsurface minerals (NMSLO)
- Surface and Subsurface minerals (NMSLO)
- All minerals are owned by U.S. (BLM)

Source Info: BLM Surface Ownership (https://catalog.data.gov/dataset/blm-new-mexico-surface-ownership)

Mineral Ownership Area of Review		
FPNM SWD #6 LEA COUNTY, NEW MEXICO		
Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann
Prepared for: WATERBRIDGE		Prepared by: ALL CONSULTING



Source Info: BLM Surface Ownership (https://catalog.data.gov/dataset/blm-new-mexico-surface-ownership)

Legend

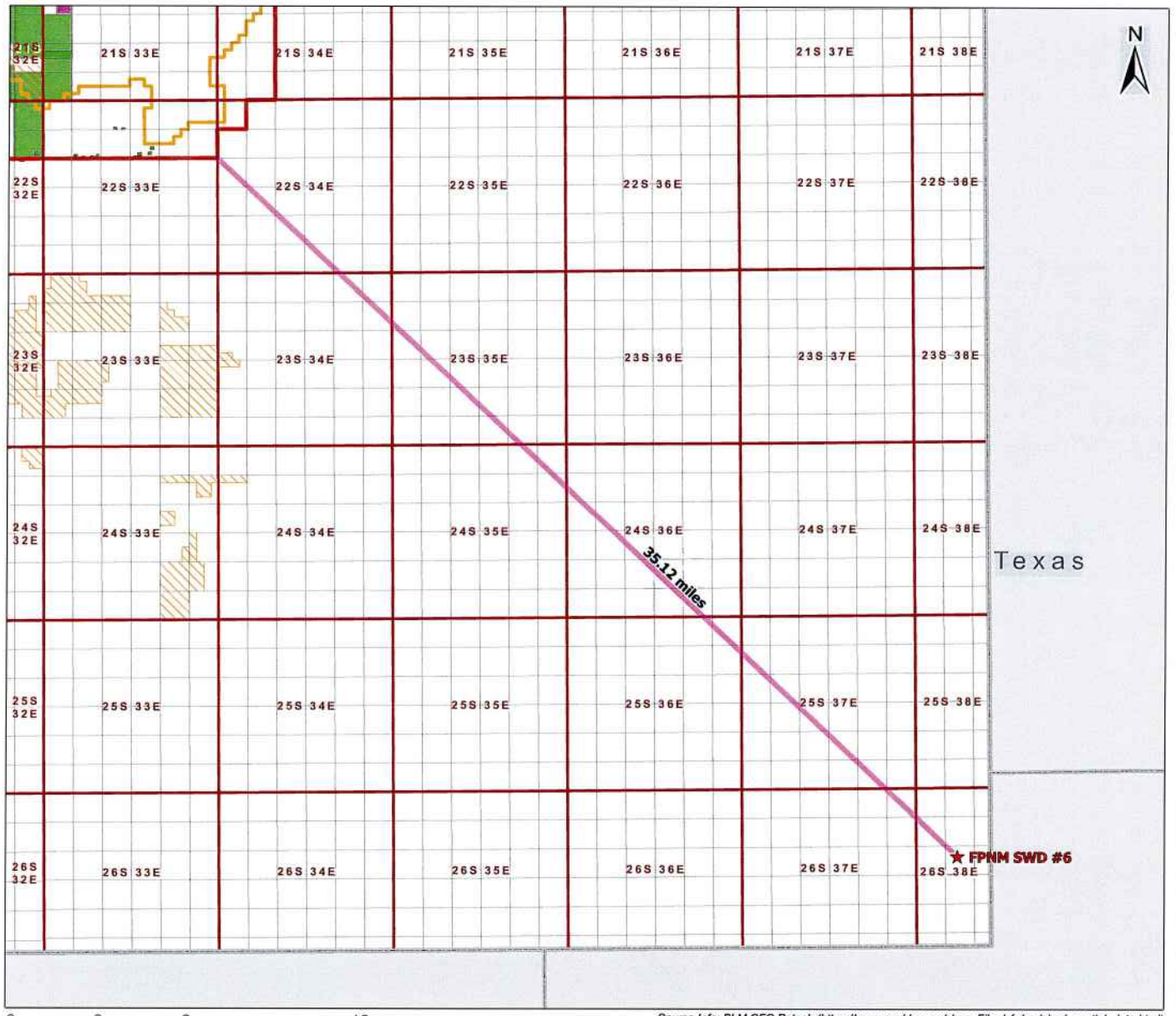
★ Proposed SWD

Surface Ownership

BLM (1)

Private (1)

Surface Ownership Area of Review		
FPNM SWD #6 LEA COUNTY, NEW MEXICO		
Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann
Prepared for WATERBRIDGE		Prepared by: ALL CONSULTING



Legend

- Proposed SWD
- Potash Leases
- Known Potash Leasing Area
- SOPA 1986

Drill Islands (12/11/2023)

Status, Depth Buffer

- Approved, Half Mile
- Nominated,Half Mile

Development Areas (12/11/2023)

Status

- Approved
- Pending

Source Info: BLM CFO Potash (https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html)

Potash Leases
Area of Review

FPNM SWD #6
LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE
Prepared by: ALL CONSULTING

Attachment 3

Source Water Analysis

Source Water Analysis

WaterBridge Stateline LLC - FPNM SWD #6 - Queen, Wolfcamp, Devonian and Ellenburger Formations

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
GULF STATE #001	3002508458	32.7242317	-103.5246506	26	18S	34E	A	660N	660E	LEA	NM	QUEEN	267,000	165,000	216	881
WEST PEARL QUEEN UNIT #103	3002503247	32.6359787	-103.4816437	29	19S	35E	C	990N	1980W	Lea	NM	QUEEN		151,575	141	940
WEST PEARL QUEEN UNIT #118	3002503248	32.629612	-103.4773712	29	19S	35E	J	1980S	1980E	Lea	NM	QUEEN		149,504	35	257
WEST PEARL QUEEN UNI #141	3002503284	32.6223412	-103.4645233	33	19S	35E	C	660N	1980W	Lea	NM	QUEEN		138,040	38	418
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	32.1937523	-104.3088455	29	24S	26E	A	660N	660E	EDDY	NM	WOLFCAMP		10,000	645	1,320
HABANERO 17 FEDERAL COM #001H	3001536108	32.2218475	-104.2062683	17	24S	27E	A	990N	660E	EDDY	NM	WOLFCAMP	108,205	65,927	146	0
SERRANO 29 FEDERAL #001H	3001537763	32.1898842	-104.2062149	29	24S	27E	H	1980N	660E	EDDY	NM	WOLFCAMP	102,136	62,813	183	0
SERRANO 29 FEDERAL #001H	3001537763	32.1898842	-104.2062149	29	24S	27E	H	1980N	660E	EDDY	NM	WOLFCAMP	100,995	63,450	268	0
CLARA M ROBERTS ETAL #001	3002507265	32.9945259	-103.0748596	26	15S	38E	D	330N	330W	LEA	NM	DEVONIAN	50,630	29,593	823	1,073
OBERHOLTZER #001	3002507164	33.2986488	-103.1388397	7	12S	38E	C	660N	1980W	LEA	NM	DEVONIAN	58,738	33,600	655	1,920
LEA AV STATE #005	3002507201	33.268692	-103.1398849	19	12S	38E	C	990N	1650W	LEA	NM	DEVONIAN	57,890	33,208	458	2,082
C S STONE #001	3002507260	33.0045204	-103.0823975	22	15S	38E	G	1980N	1980E	LEA	NM	DEVONIAN	78,690	46,060	354	2,038
CLARA M ROBERTS #001	3002507264	33.0045013	-103.0748672	23	15S	38E	E	1980N	330W	LEA	NM	DEVONIAN	91,505	54,638	894	1,887
ROSA SHULTS #001	3002507191	33.272316	-103.1442108	18	12S	38E	M	330S	330W	LEA	NM	DEVONIAN	39,824	21,933	647	1,896
HOUSTON A #001	3002507202	33.2632332	-103.1442032	19	12S	38E	L	2310S	330W	LEA	NM	DEVONIAN	76,102	44,700	483	1,700
SHELL BROWNING #001	3002507113	33.3240585	-103.1301956	31	11S	38E	H	1980N	660E	LEA	NM	DEVONIAN	79,057	46,200	727	2,184
STATE A #002	3002507126	33.32407	-103.1215515	32	11S	38E	F	1980N	1980W	LEA	NM	DEVONIAN	85,233	53,250	607	2,812
NEW MEXICO A FEDERAL #001	3002507150	33.3022766	-103.1344833	6	12S	38E	O	660S	1980E	LEA	NM	DEVONIAN	61,815	35,600	580	1,750
NEW MEXICO A FEDERAL #002	3002507151	33.3059044	-103.134491	6	12S	38E	J	1980S	1980E	LEA	NM	DEVONIAN	61,795	35,600	535	2,000
TAYLOR B #001	3002507155	33.2877579	-103.1344681	7	12S	38E	O	660S	1980E	LEA	NM	DEVONIAN	54,397	30,880	572	2,288
CLARA M ROBERTS #001	3002507264	33.0045013	-103.0748672	23	15S	38E	E	1980N	330W	LEA	NM	DEVONIAN	80,811	48,610	883	1,663
ROSE EAVES #001	3002507290	32.8726234	-103.1200638	35	16S	38E	N	660S	1980W	LEA	NM	DEVONIAN	48,373	27,670	696	1,845
W W HAMILTON #001	3002507293	32.8762512	-103.1200485	35	16S	38E	K	1980S	1980W	LEA	NM	DEVONIAN	41,751	23,780	291	1,753
L COOPER #002	3002507295	32.8689995	-103.1212997	2	17S	38E	C	660N	3300E	LEA	NM	DEVONIAN	38,520	21,600	600	1,700
L COOPER A #001	3002507301	32.8438873	-103.1040649	12	17S	38E	N	660S	1980W	LEA	NM	DEVONIAN	29,115	15,640	999	2,337
FEDERAL DAVIS #002	3002507305	32.8293381	-103.0954208	13	17S	38E	P	660S	660E	LEA	NM	DEVONIAN	35,212	18,540	865	3,080
F M HOLLOWAY #001	3002507306	32.8402596	-103.0997314	13	17S	38E	B	660N	1980E	LEA	NM	DEVONIAN	49,286	28,700	645	1,558
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32.1720123	-103.0761032	32	24S	38E	I	1980S	660E	LEA	NM	DEVONIAN	50,858	30,200	183	980
F M HOLLOWAY #001	3002507306	32.8402596	-103.0997314	13	17S	38E	B	660N	1980E	LEA	NM	DEVONIAN	49,290	28,700	645	1,558
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32.1720123	-103.0761032	32	24S	38E	I	1980S	660E	Lea	NM	ELLENBURGER		30,200	183	980
A B COATES D #003	3002511748	32.1112633	-103.1177216	24	25S	37E	N	990S	2310W	LEA	NM	ELLENBURGER	91,617	57,190	832	1,387
SOUTH JUSTIS UNIT #024	3002511774	32.1040077	-103.1102829	25	25S	37E	H	1650N	660E	LEA	NM	ELLENBURGER	99,800	60,300	195	1,650
SOUTH JUSTIS UNIT #024	3002511774	32.1040077	-103.1102829	25	25S	37E	H	1650N	660E	LEA	NM	ELLENBURGER	98,300	59,400	189	1,650

Attachment 4

Injection Formation Water Analysis

Injection Formation Water Analysis

WaterBridge Stateline LLC - FPNM SWD #6 - Glorieta Sandstone

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
EARCY MCBUFFINGTON #007	3002511568	32.1248627	-103.1219788	13	25S	37E	M	660S	990W	LEA	NM	JUSTIS	GLORIETA	55,190	31,603	1,158	1,804
EARCY MCBUFFINGTON #007	3002511568	32.1248627	-103.1219788	13	25S	37E	M	660S	990W	LEA	NM	JUSTIS	GLORIETA	55,183	31,600	1,158	1,804
ARLSON FEDERAL #001	3002511574	32.1330185	-103.1198425	13	25S	37E	F	1650N	1650W	LEA	NM	JUSTIS	GLORIETA	113,731	67,250	280	3,013
ARLSON FEDERAL #001	3002511574	32.1330185	-103.1198425	13	25S	37E	F	1650N	1650W	LEA	NM	JUSTIS	GLORIETA	101,412	60,660	963	2,996
ANGLIE FEDERAL #001	3002511592	32.1293945	-103.1273041	14	25S	37E	I	2310S	660E	LEA	NM	JUSTIS	GLORIETA	113,937	67,370	280	3,018
ANGLIE FEDERAL #001	3002511592	32.1293945	-103.1273041	14	25S	37E	I	2310S	660E	LEA	NM	JUSTIS	GLORIETA	113,817	67,250	274	3,067

Attachment 5

Confining Zones and Historic Pore Space Use

ALL CONSULTING
GOVERNMENT RELATIONS · ENERGY · PLANNING · TECHNOLOGY
ENGINEERING · ENVIRONMENTAL

CONFINING ZONES AND HISTORIC PORE SPACE USAGE

For WaterBridge Stateline LLC's proposed FPNM SWD #6 application in the Lower Permian Glorieta Sandstone in the Central Basin Platform area, the lower San Andres Formation will act as the upper confinement zone, and the lower Glorieta Sandstone as the lower confinement zone, given its low porosity and high resistivity. The proposed location is in T26S., R38E, an area with very limited oil and gas production. Most area wells have been plugged and abandoned, and none penetrate the proposed injection intervals in the Glorieta Sandstone.

The San Andres Formation is a shelf carbonate deposit composed predominantly of dolomite, and in the proposed development area, the lower San Andres Formation is a tight rock with low porosity and high resistivity values. **Figure 1** is a log snip of this upper confining zone of approximately 60 feet in the lower San Andres Formation. The lower confining zone is a tight sandstone unit within the Glorieta Sandstone, which also has low porosity development and high resistivity readings. The Glorieta Sandstone is a fine-grained, well-to-moderately sorted quartz arenite sandstone. **Figure 2** is a log snip of this approximately 30 feet of lower Glorieta Sandstone.

The closest oil and gas production to the FPNM SWD #6 is the active waterflood operation directly to the west. This waterflood operation is the W.H. Rhodes B Federal NCT-1 unit project and was originally operated by Texaco, Inc., with the first waterflood injection commencing in 1964 and continued expansion occurring in 1969, 1973, and 1993 by Texaco Exploration and Production, Inc. Oil production and enhanced oil recovery water injection is into the Yates and Seven Rivers formations at depths ranging from approximately 3,000 to 3,400 feet and primarily located in T26S, R37E. There is no oil or gas production from the Glorieta Sandstone within the two-mile radius of the proposed FPNM SWD #6.

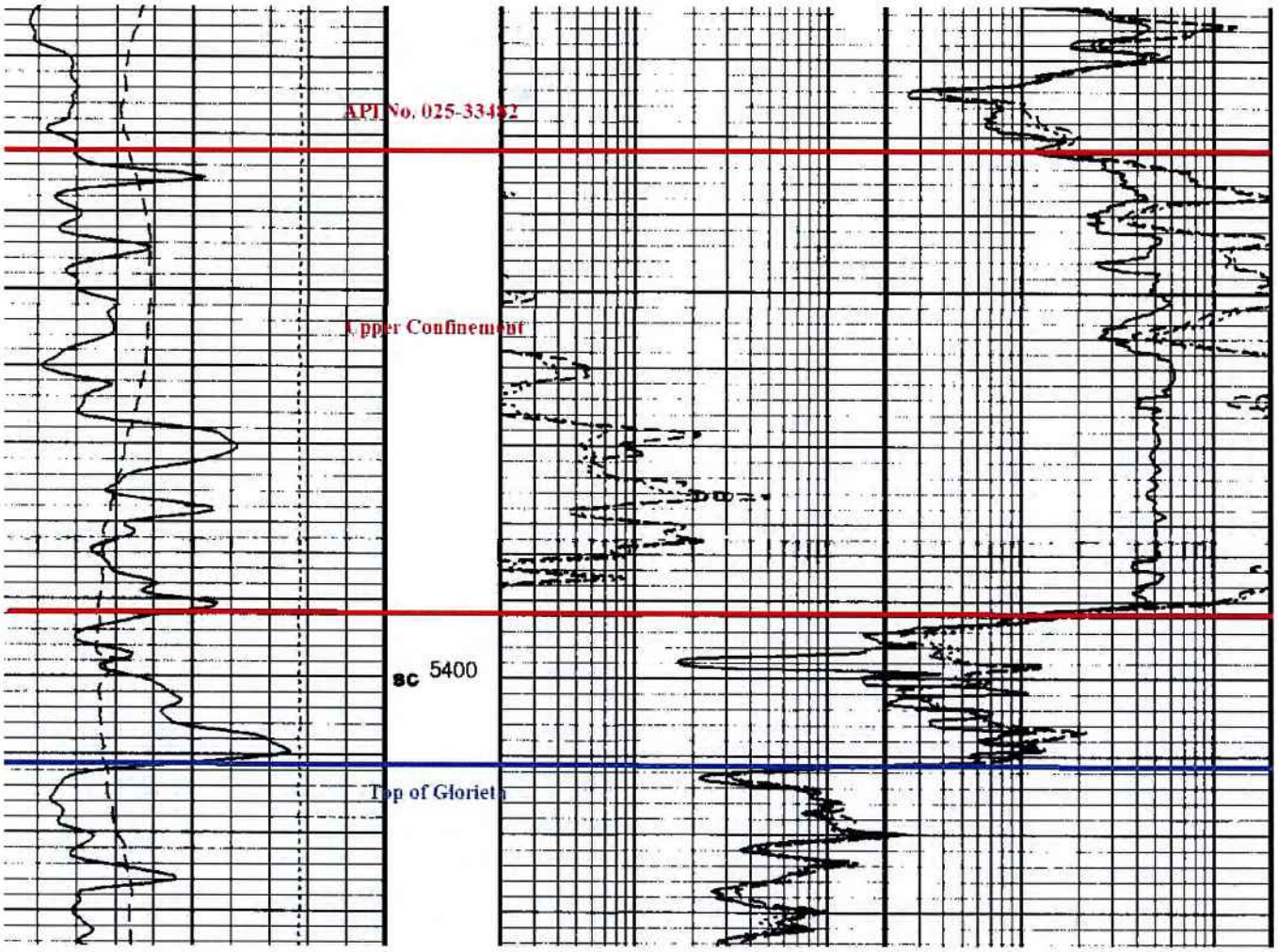


Figure 1. Open Hole Log Snip of the Upper Confining Zone in the Lower San Andres Formation

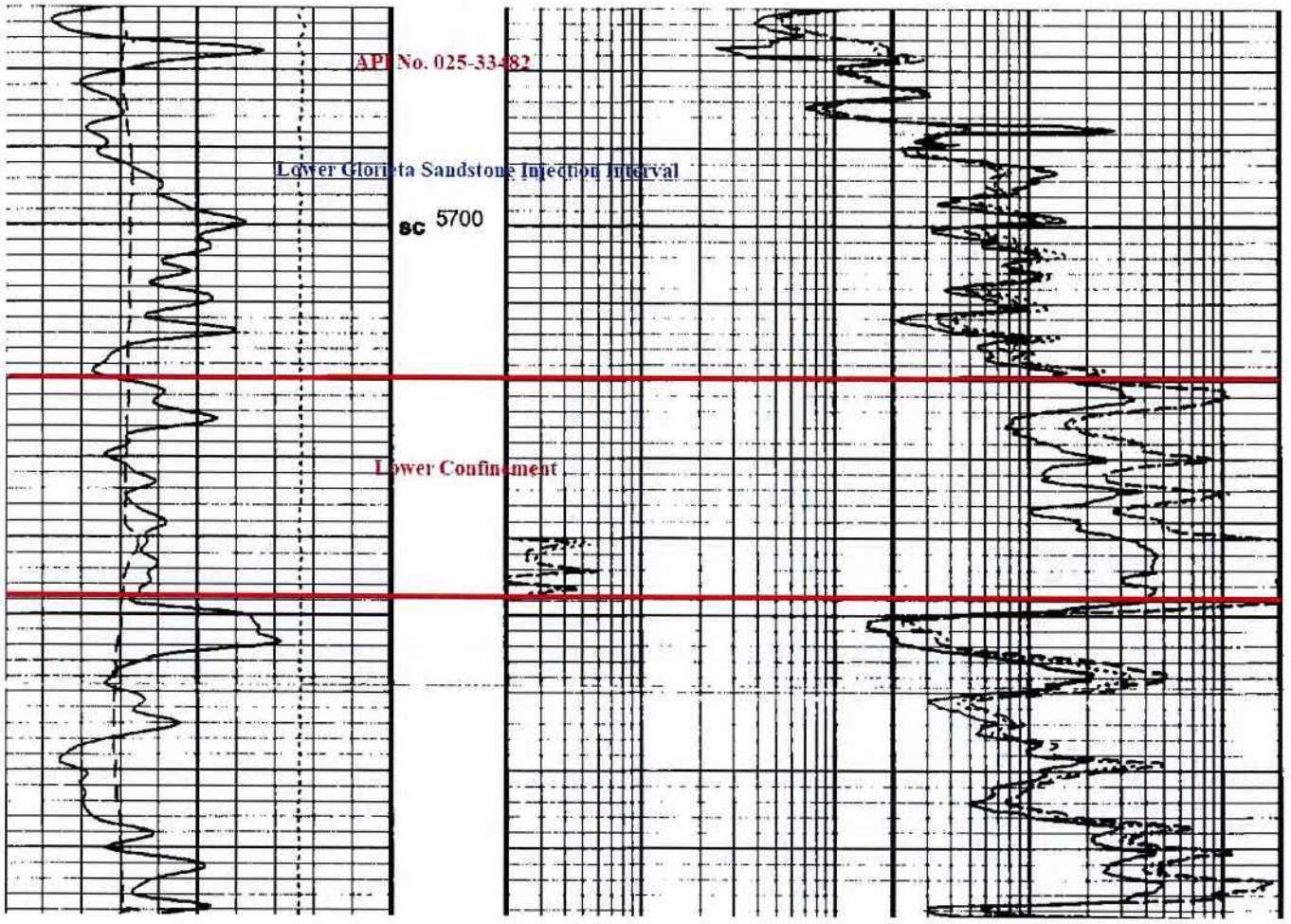
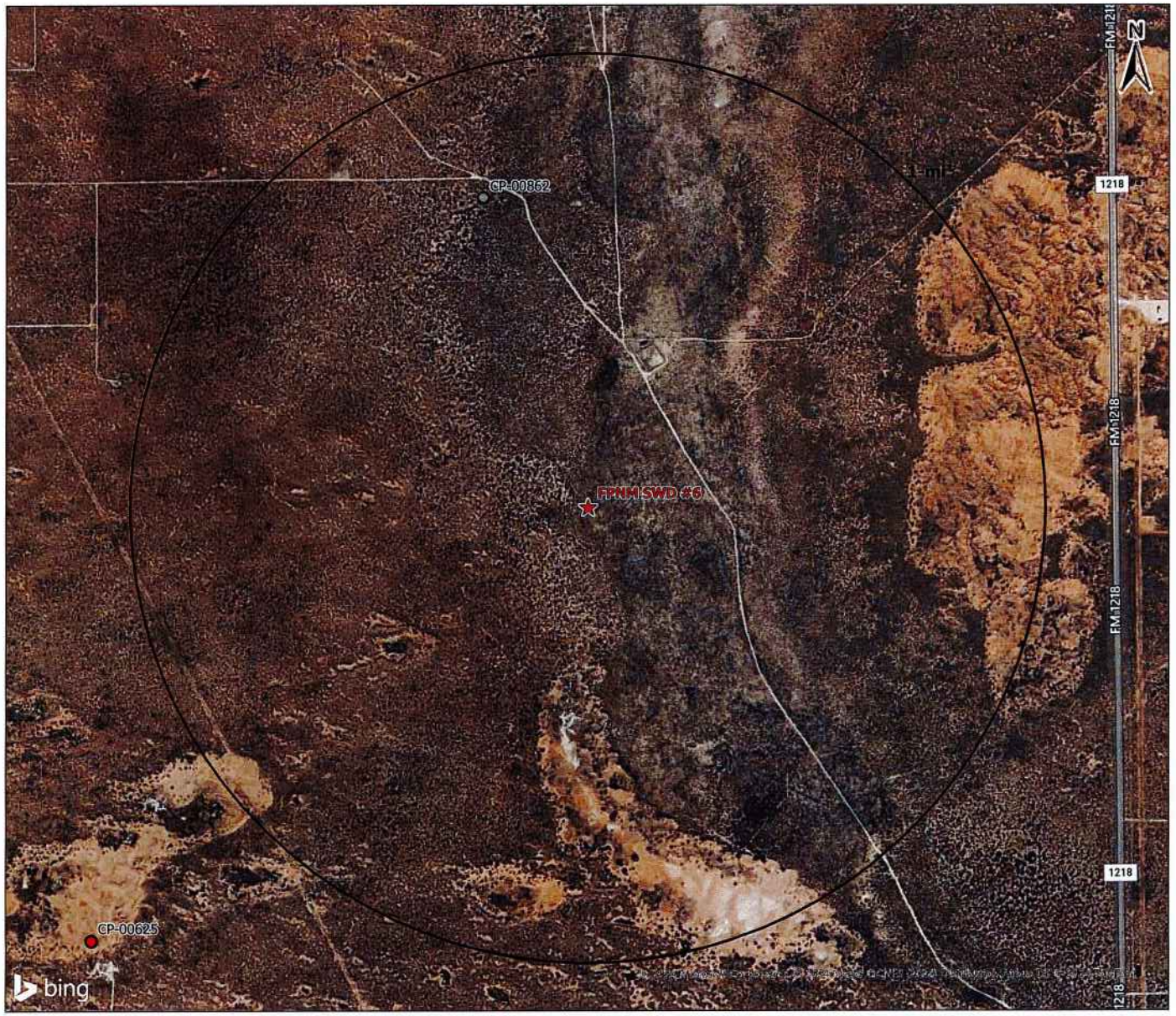


Figure 2. Open Hole Logging Snip of the Lower Confining Zone Within the Glorieta Sandstone

Attachment 6

Water Well Map and Well Data



0 0.25 0.5 1 Miles

SourceInfo: ttps://gis.ose.state.nm.us/arcgis/rest/services/WatersPod/OSE_PODs/MapServer/0

Legend

- Proposed SWD (1)

OSE PODs

- Active (0)
- Inactive (0)
- Pending (0)
- Changed Location of Well (0)
- Capped (0)
- Plugged (1)
- Unknown (1)

Water Wells Area of Review

FPNM SWD #6

LEA COUNTY, NEW MEXICO

Proj Mgr: Oliver Seekins	May 07, 2024	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

Water Well Sampling Rationale					
WaterBridge Stateline LLC - FPNM SWD #6					
Water Wells	**Owner**	**Available Contact Information**	**Use**	**Sampling Required**	**Notes**
CP-00862	Yates Petroleum	P.O. Box 692 Tatum, NM 88267	Prospecting and development of natural resources.	No	This well is located in an area where the aquifer has been temporarily closed.

Attachment 7

No Hydrologic Connection Statement

ALL CONSULTING

RE: Waterbridge Stateline LLC – FPNM SWD #6 application, Lea County, New Mexico

ALL Consulting LLC (ALL) has performed a thorough hydrologic investigation related to the one saltwater disposal well (SWD) listed above. The investigation was conducted to determine if there were any existing or potential connections between the proposed injection intervals in the Glorieta Sandstone and the deepest underground source of drinking water (USDW).

ALL performed an assessment and analysis of the subsurface geophysical log data along with published documents on the groundwater in this vicinity of Lea County, New Mexico. The surficial geology is Quaternary alluvial deposits consisting predominantly of sand and caliche. This area is south of the High Plains Aquifer and depths to potable water ranges from 30 to 142 feet below the surface. The USDW is the Rustler Formation and the base of the USDW ranges from 875 to 1,130 feet below the surface.

Based on ALL's assessment and analysis there is containment through multiple confining zones in the San Andres Formation and the Salado evaporite deposits above the Glorieta Sandstone and the USDW and over 4,260 feet of vertical separation between the base of the USDW and the top of the injection interval. Additionally, there is no evidence of faults that would allow for communication between the USDW and Glorieta Sandstone.

Tom Tomastik — 5/7/2024

Tom Tomastik — Date

Chief Geologist and Regulatory Specialist

ALL Consulting LLC

Attachment 8

Seismic Potential Letter

ALL CONSULTING
GOVERNMENT RELATIONS · ENERGY · PLANNING · TECHNOLOGY
ENGINEERING · ENVIRONMENTAL

March 18, 2024

PN 1703.SWD.13

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

Subject: **WaterBridge Stateline LLC**
FPNM SWD #6 - Seismic Potential Letter

Dear Mr. Goetze,

At the request of WaterBridge Stateline LLC (WaterBridge), ALL Consulting, LLC (ALL) has assessed the potential injection-induced seismicity risks in the vicinity of WaterBridge's FPNM SWD #6, a proposed saltwater disposal (SWD) facility in Lea County, New Mexico, and summarized the findings in this letter. This assessment used publicly available data to identify the proximity and characteristics of seismic events and known faults to evaluate the potential for the operation of the FPNM SWD #6 to contribute to seismic activity in the area.

Geologic Evaluation

The FPNM SWD #6 is requesting a permit to inject into the Permian Glorieta Sandstone (Glorieta) at a depth of 5,400-5,775 feet below ground surface (bgs). The Glorieta primarily consists of Permian-age sandstone and is overlain by approximately 60 feet of low porosity carbonate rocks within the lower San Andres Formation, which would prevent the upward migration of injection fluid and serve as the upper confining layer (see **Attachment 1**). Additionally, approximately 28 feet of low porosity and low permeability other carbonate rocks lie beneath the proposed injection interval and act as a lower confining zone by preventing downward migration of injected fluids into the underlying Tubb Formation (see **Attachment 1**). A stratigraphic chart depicting the geologic setting is included as **Figure 1**.[1]

Seismic Events and Fault Data

A review of United States Geological Survey (USGS) and New Mexico Tech Seismological Observatory (NMTSO) earthquake catalogs determined that four (4) seismic events have been recorded within a 100 square mile area [9.08-kilometer (km) radius] around the subject SWD.

[1] Yang, K.-M., & Dorobek, S. L. (1995). The Permian Basin of west Texas and New Mexico: Tectonic history of a "composite" Foreland Basin and its effects on stratigraphic development. *Stratigraphic Evolution of Foreland Basins*, 149–174. https://doi.org/10.2110/pec.95.52.0149

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
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The closest recorded seismic event was a M1.68 that occurred on July 22, 2017, and was located approximately 0.62 miles southwest of the FPNM SWD #6 (see **Attachment 2**).

Fault data from United States Geological Survey (USGS) and the Texas Bureau of Economic Geology (BEG)[2] indicates that the closest known fault is located approximately 0.29 miles west of the FPNM SWD #6 (see **Attachment 2**). This identified fault is within the Precambrian basement, which is approximately 8,225 feet below the proposed injection interval.[3] Fault data from Sourcewater also indicates the presence of four faults in the sedimentary column, above the Precambrian basement, within the area of review.[4] These shallow faults penetrate the Canyon, Cisco, and Wolfcamp formations which begin approximately 2,940 feet below the proposed injection interval. As previously discussed, there are confining barriers beneath the proposed injection interval which will prevent the downward migration of fluids into such faults. A map of the seismic events and faults within 9.08 km of the FPNM SWD #6 is included as **Attachment 2.**

Figure 1 – Delaware Basin Stratigraphic Chart (Adapted from Yang and Dorobek 1995)

SYSTEM	SERIES/ STAGE	CENTRAL BASIN PLATFORM	DELAWARE BASIN
PERMIAN	OCHOAN	DEWEY LAKE RUSTLER SALADO	DEWEY LAKE RUSTLER SALADO CASTILE
	GUADALUPIAN	TANSILL YATES SEVEN RIVERS QUEEN GRAYBURG SAN ANDRES GLORIETA	DELAWARE MT GROUP BELL CANYON CHERRY CANYON BRUSHY CANYON
	LEONARDIAN	CLEAR FORK WICHITA	BONE SPRING
	WOLFCAMPIAN	WOLFCAMP	WOLFCAMP
PENNSYLVANIAN	VIRGILIAN	CISCO	CISCO
	MISSOURIAN	CANYON	CANYON
	DESMOINESIAN	STRAWN	STRAWN
	ATOKAN	ATOKA — BEND	ATOKA — BEND
	MORROWAN	(ABSENT)	MORROW
MISSISSIPPIAN	CHESTERIAN MERAMECIAN OSAGEAN KINDERHOOKIAN	CHESTER MERAMEC OSAGE "BARNETT"	CHESTER MERAMEC OSAGE "BARNETT"
		KINDERHOOK WOODFORD	KINDERHOOK WOODFORD
DEVONIAN		DEVONIAN	DEVONIAN
SILURIAN		SILURIAN SHALE FUSSELMAN	MIDDLE SILURIAN FUSSELMAN
ORDOVICIAN	UPPER	MONTOYA	SYLVAN MONTOYA
	MIDDLE	SIMPSON	SIMPSON
	LOWER	ELLENBURGER	ELLENBURGER
CAMBRIAN	UPPER	CAMBRIAN	CAMBRIAN
PRECAMBRIAN			

Seismic Potential Evaluation

Experience in evaluating induced seismic events indicates that most injection-induced seismicity throughout the U.S. (e.g., Oklahoma, Ohio, Texas, New Mexico, and Colorado) occurs as a result of injection into Precambrian basement rock, into overlying formations that are in hydraulic communication with the Precambrian basement rock, or as a result of injection near critically stressed and optimally oriented faults. Seismicity at basement depths occurs because critically stressed faults generally originate in crystalline basement rock and may also extend into overlying sedimentary formations.[5]

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[2] Horne E. A. Hennings P. H., and Zahm C. K. 2021. Basement structure of the Delaware Basin, in The Geologic Basement of Texas: A Volume in Honor of Peter Flawn, Callahan O. A., and Eichubl P., The University of Texas at Austin, Bureau of Economic Geology.

[3] G. Randy Keller, J. M. Hills &; Rabah Djeddi, A regional geological and geophysical study of the Delaware Basin, New Mexico and West Texas, Trans Pecos Region (West Texas) (1980).

[4] Formation of Occurrence, Strike, Dip, and Length Interpreted by (Cortina, J. E. and Lemons, C. R. 2019. Houston, TX: Sourcewater, Inc.)

[5] Ground Water Protection Council and Interstate Oil and Gas Compact Commission. *Potential Injection-Induced Seismicity Associated with Oil & Gas Development: A Primer on Technical and Regulatory Considerations Informing Risk Management and Mitigation.* 2015. 141 pages.

Injection into either the Precambrian basement rock or its overlying formations that are hydraulically connected to the basement rock through faulting or fracture networks can increase the pore pressure and may lead to the fault slipping, resulting in a seismic event.[4] As such, the vertical distance between the injection formation and Precambrian basement rock and the presence or lack of faulting within the injection interval are major considerations when determining the risk of injection-induced seismicity.

Geophysical logs from nearby well records show at least 8,225 feet of vertical separation between the injection interval and the Precambrian basement.[3] In addition, injection-induced seismicity is not typically associated with shallow disposal wells in the Central Basin Platform and Delaware Basin areas, such as the FPNM SWD #6.

For injection into the Glorieta Sandstone to contribute to seismic activity, one of two hypothetical geologic scenarios must exist:[6]

1. Scenario #1: Earthquake hypocenters would need to be significantly shallower (several kilometers) than initially identified by the USGS and NMTSO seismic monitoring networks, and thus placing seismic activity high in the sedimentary column, rather than in the Precambrian basement.
2. Scenario #2: This scenario would require that both of the following conditions are met:
    a. Fault Transmissivity: High permeability and transmissive conduits from fault-damaged zones would need to be present below the Glorieta, allowing fluid to migrate through the underlying Tubb Formation and through significantly deeper confining intervals, and eventually into the Precambrian basement.
    b. Pore Pressure: The injection fluids and bottom hole pressures in the Glorieta would need to exceed existing hydrostatic pressures within the deeper geologic formation in order for injection fluids to migrate downward.

There are no publications or geologic data that suggest either of these scenarios to be true for the area around the FPNM SWD #6.

Formation Parting Pressure

Class II SWDs in New Mexico are administratively permitted with a maximum pressure gradient of 0.2 psi/ft. Review of New Mexico Oil Conservation Division (OCD) Order IP-476 submitted by Chevron USA Inc. in support of the Vacuum Glorieta West Unit, which is located approximately 60 miles northwest of the FPNM SWD #6, determined the fracture gradient of the Glorieta in the region ranges from 0.26-0.39 psi/ft from approved step-rate tests. Typical SWD permitting standards in New Mexico, and the requested operating parameters of the FPNM SWD #6, would indicate that formation parting pressure would not be exceeded by the FPNM SWD #6.

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[6] Skoumal, Robert J., et al. "Induced Seismicity in the Delaware Basin, Texas." *Journal of Geophysical Research: Solid Earth*, vol. 125, no. 1, 2020, doi:10.1029/2019jb018558.

Conclusion

As an expert on the issue of induced seismicity, seismic monitoring, and mitigation, it is my opinion that the potential for the FPNM SWD #6 to cause injection-induced seismicity is expected to be minimal, at best. This conclusion assumes the FPNM SWD #6 will be operated below formation parting pressure and is based on (1) the presence of numerous confining layers above and below the injection interval, (2) the significant vertical distance between the injection zone and Precambrian basement rock in which the nearest fault has been identified, and (3) the vertical distance from, and lack of historic seismicity on, identified shallow faults in the area of review.

Sincerely,
ALL Consulting, LLC

Reed Davis
Geophysicist

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
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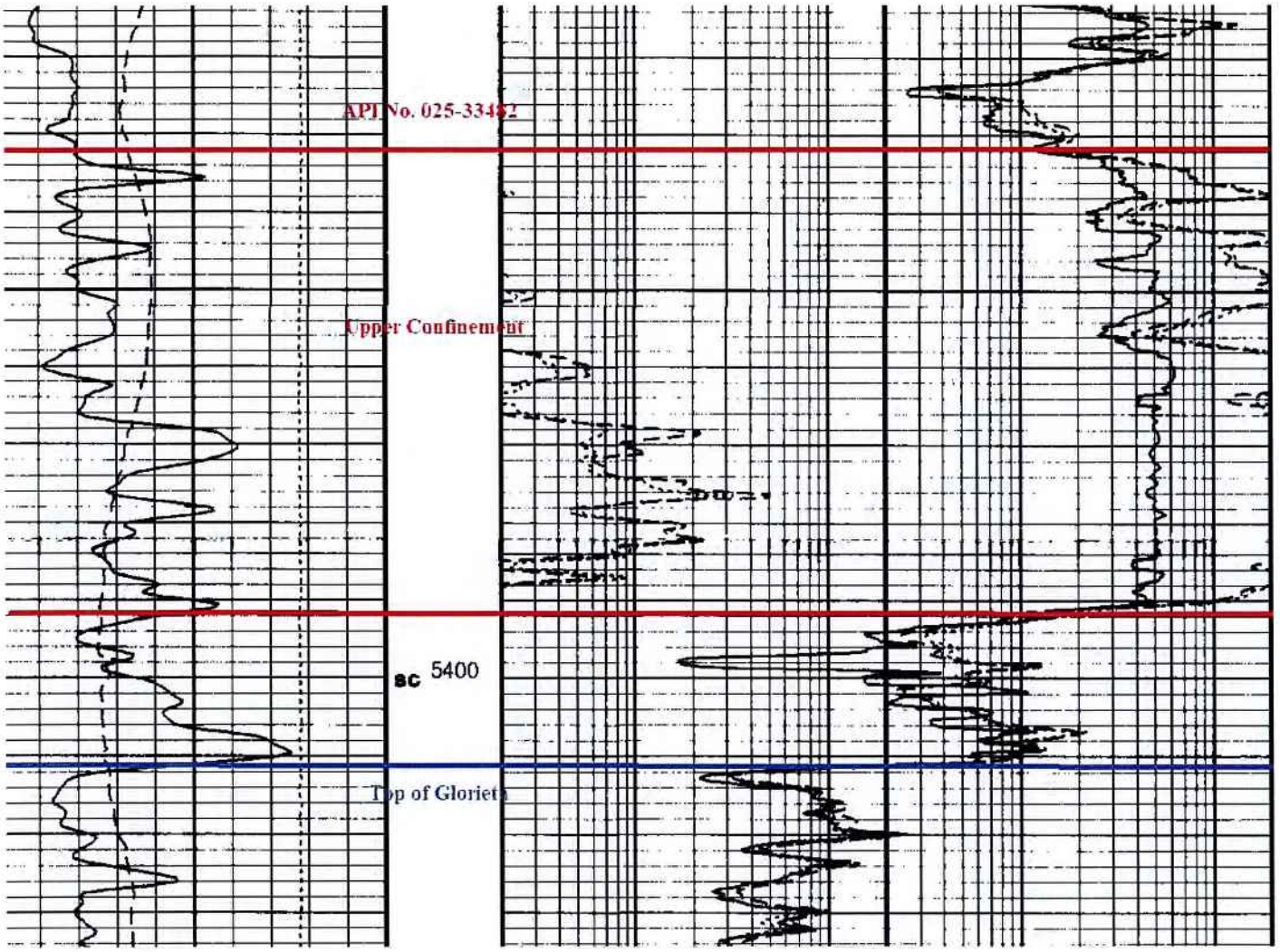
Attachment 1
Upper and Lower Confining Zones

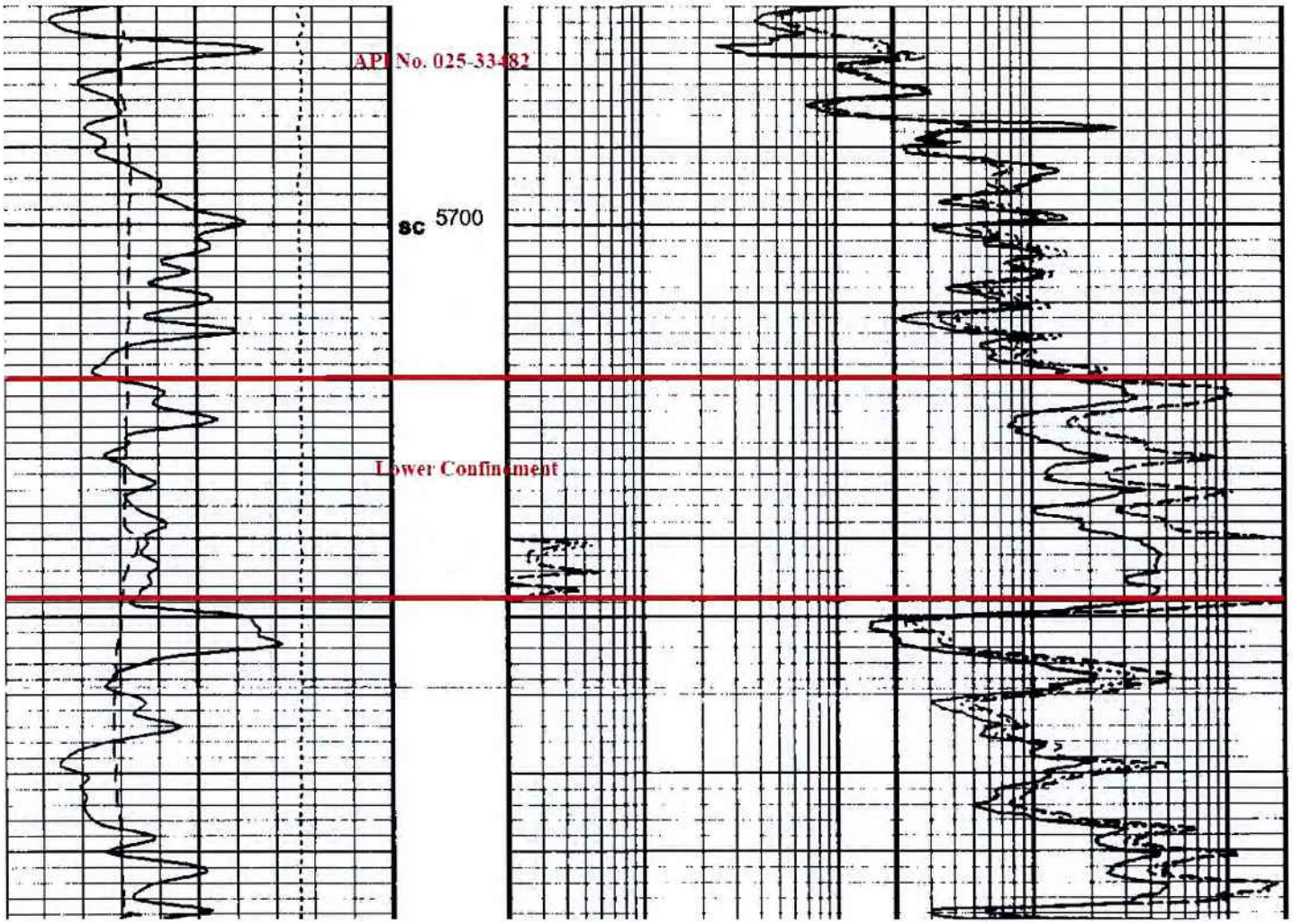
WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

Upper Confining Zone from API No. 025-33482



WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

Lower Confining Zone from API No. 025-33482



WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
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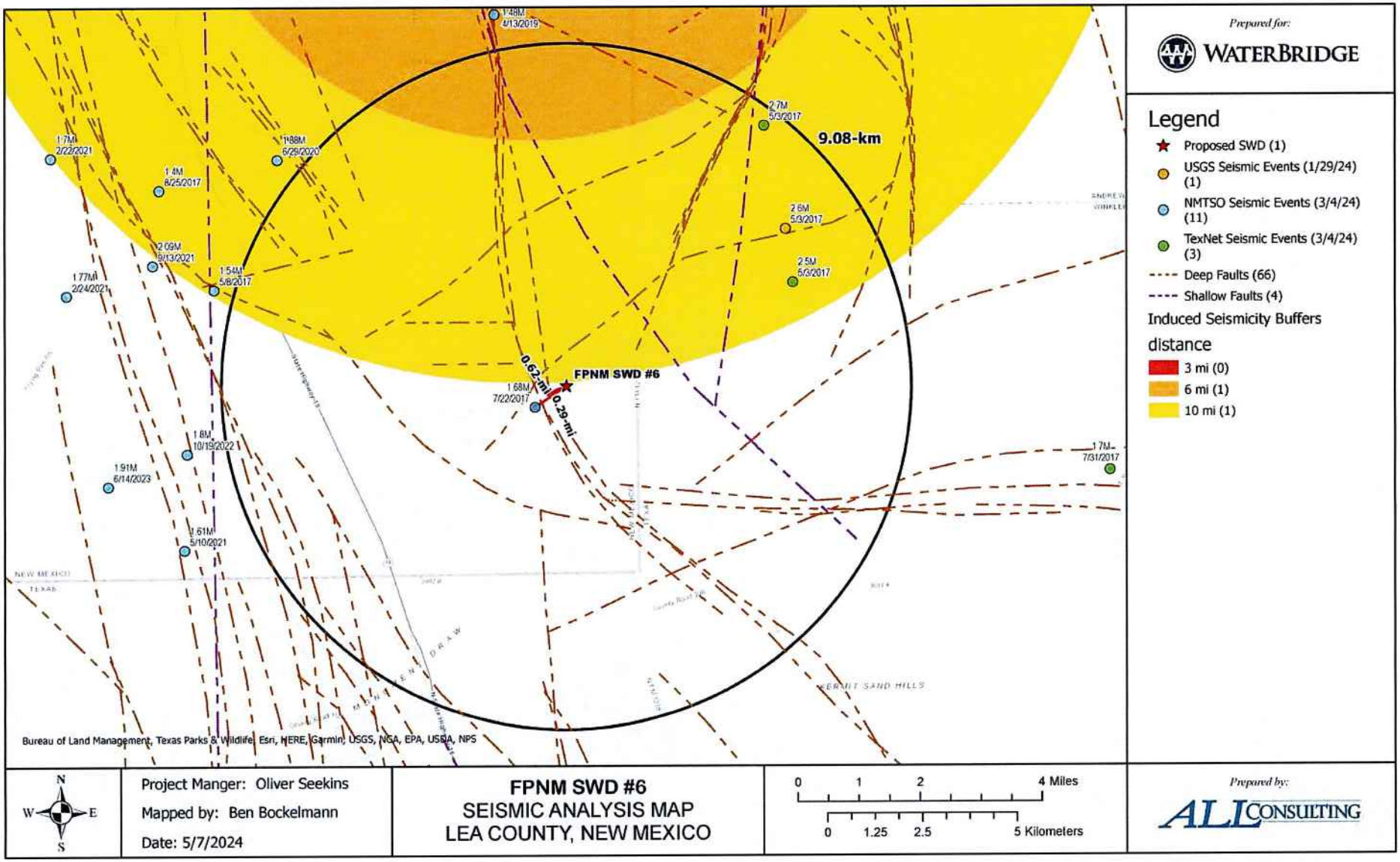
Attachment 2
Seismic Event Map

WaterBridge Stateline LLC
FPNM SWD #6 Seismic Information
March 18, 2024

FPNM SWD #6 Nearby Seismic Events and Faults



Attachment 9

List of Affected Persons

FPNM SWD #6 - Notice of Application Recipients						
Affected Party Classification	**Entity - Proof of Notice**	**Entity - As Mapped/Exhibited**	**Address**	**City**	**State**	**Zip Code**
Surface Owner	D.K. Boyd	N/A	3317 Andrews Hwy	Midland	TX	79703
NMOCD District Office	New Mexico Oil Conservation District 1	N/A	1625 N. French Dr	Hobbs	NM	88240
Mineral Owner	New Mexico Bureau of Land Management	N/A	301 Dinosaur Trail	Sante Fe	NM	87508
BLM - Lessee	Armstrong Energy Corporation	Armstrong Energy Corporation	P.O. Box 1973	Roswell	NM	88202
BLM - Lessee	R&R Royalty, Ltd.	R&R Royalty LTD	500 N Shoreline Blvd, Ste 322	Corpus Christi	TX	78401
Mineral Owner - Unleased	IDA KRISTINE HANSON	Unleased Private Sec. 17 T26S R36E	19018 CLOYANNA LANE	Humble	TX	77346
Mineral Owner - Unleased	Elizabeth W., Goff et al.	Unleased Private Sec. 08 T26S R36E	500 N Shoreline Blvd, Ste 322	Corpus Christi	TX	78401
Note: The affected parties above received notification of this C-108 application.						

Karlene Schuman
Modrall Sperling Roehl Harris & Sisk P.A.
500 Fourth Street, Suite 1000
Albuquerque NM 87102

PS Form 3877

Type of Mailing: CERTIFIED MAIL
06/04/2024

Firm Mailing Book ID: 267099

Line	USPS Article Number	Name, Street, City, State, Zip	Postage	Service Fee	RR Fee	Rest.Del.Fee	Reference Contents
1	9314 8699 0430 0121 8963 95	D.K. Boyd 3317 Andrews Hwy Midland TX 79703	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
2	9314 8699 0430 0121 8964 01	New Mexico Oil Conservation District 1 1625 N. French Dr. Hobbs NM 88240	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
3	9314 8699 0430 0121 8964 18	New Mexico Bureau of Land Management 301 Dinosaur Trail Santa Fe NM 87508	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
4	9314 8699 0430 0121 8964 25	Armstrong Energy Corporation P.O. Box 1973 Roswell NM 88202	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
5	9314 8699 0430 0121 8964 32	R&R Royalty, Ltd. 500 N. Shoreline Blvd., Ste 322 Corpus Christi TX 78401	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
6	9314 8699 0430 0121 8964 49	Ida Kristine Hanson 19018 Cloyanna Lane Humble TX 77346	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
7	9314 8699 0430 0121 8964 56	Elizabeth W., Goff et al. 500 N. Shoreline Blvd., Ste 322 Corpus Christi TX 78401	$2.59	$4.40	$2.32	$0.00	12240.0001.24570. Notice
		Totals:	**$18.13**	**$30.80**	**$16.24**	**$0.00**	
					Grand Total:	**$65.17**	

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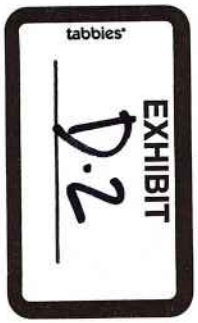

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9314869904300121896449	2024-06-04 2:41 PM	12240.0001.24570.	Ida Kristine Hanson	Humble	TX	77346	Undelivered	Return Receipt - Electronic, Certified Mail	
9314869904300121896432	2024-06-04 2:41 PM	12240.0001.24570.	R&R Royalty, Ltd.	Corpus Christi	TX	78401	Delivered	Return Receipt - Electronic, Certified Mail	2024-06-10 10:17 AM
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9314869904300121896395	2024-06-04 2:41 PM	12240.0001.24570.	D.K. Boyd	Midland	TX	79703	Delivered	Return Receipt - Electronic, Certified Mail	2024-06-07 11:42 AM

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
June 09, 2024
and ending with the issue dated
June 09, 2024.

Publisher

Sworn and subscribed to before me this 9th day of June 2024.

Business Manager

My commission expires
January 29, 2027

(Seal) STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/2027

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 publication has been made.

LEGAL NOTICE
June 9, 2024

CASE NO. 24568: Notice to all affected parties, as well as heirs and devisees of: D.K. Boyd; New Mexico Oil Conservation District 1; New Mexico Bureau of Land Management; Apache Corporation; FAE II Operating LLC; LeaCo Operating, LLC; Magnum Producing, LP; Burlington Resources Oil & Gas Company LP; BXP Energy Resources V, LLC; MNA Enterprises LTD CO of the Application of WaterBridge Stateline LLC for approval of a salt water disposal well in Lea County, New Mexico. The State of New Mexico through its Oil Conservation Division hereby gives notice that the Division will conduct a public hearing at 8:30 a.m. on **June 27, 2024** to consider this application. The hearing will be conducted in a hybrid fashion, both in-person at the Energy, Minerals, Natural Resources Department, Wendell Chino Building, Pecos Hall, 1220 South St. Francis Drive, 1st Floor, Santa Fe, NM 87505 and via a virtual meeting platform. To participate in the electronic hearing, see the instructions posted on the docket for the hearing date: https://www.emnrd.nm.gov/ocd/hearing-info/. Applicant seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #1 well at a surface location 2532' from the North line and 1545' from the East line, Unit G, Section 25, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,350 feet to 5,725 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 8.2 miles Southeast of Jal, New Mexico.

CASE NO. 24569: Notice to all affected parties, as well as heirs and devisees of: D.K. Boyd; New Mexico Oil Conservation District 1; New Mexico Bureau of Land Management; Blackbeard Operating, LLC; Magnum Producing, LP; R&R Royalty LTD of the Application of WaterBridge Stateline LLC for approval of a salt water disposal well in Lea County, New Mexico. The State of New Mexico through its Oil Conservation Division hereby gives notice that the Division will conduct a public hearing at 8:30 a.m. on **June 27, 2024** to consider this application. The hearing will be conducted in a hybrid fashion, both in-person at the Energy, Minerals, Natural Resources Department, Wendell Chino Building, Pecos Hall, 1220 South St. Francis Drive, 1st Floor, Santa Fe, NM 87505 and via a virtual meeting platform. To participate in the electronic hearing, see the instructions posted on the docket for the hearing date: https://www.emnrd.nm.gov/ocd/hearing-info/. Applicant seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #3 well at a surface location 2,512' from the North line and 1,133' from the West line, Lot 2, Section 29, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 9.20 miles Southeast of Jal, New Mexico.

CASE NO. 24570: Notice to all affected parties, as well as heirs and devisees of: D.K. Boyd; New Mexico Oil Conservation District 1; New Mexico Bureau of Land Management; Armstrong Energy Corporation; R&R Royalty, Ltd.; Ida Kristine Hanson; Elizabeth W., Goff et al. of the Application of WaterBridge Stateline LLC for approval of a salt water disposal well in Lea County, New Mexico. The State of New Mexico through its Oil Conservation Division hereby gives notice that the Division will conduct a public hearing at 8:30 a.m. on **June 27, 2024** to consider this application. The hearing will be conducted in a hybrid fashion, both in-person at the Energy, Minerals, Natural Resources Department, Wendell Chino Building, Pecos Hall, 1220 South St. Francis Drive, 1st Floor, Santa Fe, NM 87505 and via a virtual meeting platform. To participate in the electronic hearing, see the instructions posted on the docket for the hearing date: https://www.emnrd.nm.gov/ocd/hearing-info/. Applicant seeks an order approving disposal into the Glorieta Sandstone formation through the FPNM SWD #6 well at a surface location 1,964' from the North line and 2,170' from the West line, Unit F, Section 17, Township 26 South, Range 38 East, NMPM, Lea County, New Mexico for the purpose of operating a produced water disposal well. Applicant seeks authority to inject produced water into the Glorieta Sandstone formation at a depth of approximately 5,400 feet to 5,775 feet. Applicant further requests that the Division approve a maximum daily injection rate for the well of 20,000 bbls per day. Said area is located approximately 7.94 miles Southeast of Jal, New Mexico.
#00291140

01104570 00291140

DOLORES SERNA
MODRALL, SPERLING, ROEHL, HARRIS &
P. O. BOX 2168
ALBUQUERQUE, NM 87103-2168

EXHIBIT D.4 tabbies