AE Order Number Banner

Application Number: pMSG2325248626

SWD-2568

WaterBridge Stateline LLC [330129]

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

August 25, 2023

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

Subject: WaterBridge Stateline LLC – Glass Fed SWD #1
Application for Authorization to Inject

To Whom It May Concern,

On behalf of WaterBridge Stateline LLC (WaterBridge), ALL Consulting, LLC (ALL) is submitting the enclosed Application for Authorization to Inject for the Glass Fed SWD #1, a proposed saltwater disposal well, in Eddy County, NM.

Should you have any questions regarding the enclosed application, please contact Oliver Seekins at (918) 382-7581 or oseekins@all-llc.com.

Sincerely,
ALL Consulting

Oliver Seekins

Oliver Seekins
Consultant

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

Oliver Seekins
_____ 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: Oliver Seekins PHONE: 918.382.7581

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes __X__No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

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

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

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

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

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Oliver Seekins TITLE: Consultant

SIGNATURE: Oliver Seekins DATE: 8/24/2023

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: Glass Fed SWD #1

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: Glass Fed SWD #1
Location Footage Calls: 1,243 FNL & 2,042 FEL
Legal Location: Lot 2, S4 T20S R27E
Ground Elevation: 3,398'
Proposed Injection Interval: 8,270'- 9,200'
County: Eddy

(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	550'	585	Surface	Circulation
Intermediate	17-1/2"	13-3/8"	54.5 lb/ft	2,500'	1,645	Surface	Circulation
Production Casing	12-1/4"	9-5/8"	53.5 lb/ft	9,300'	2,225	2,300'	CBL
Tubing	N/A	5-1/2"	26.0 lb/ft	8,235'	N/A	N/A	N/A

DV Tool set at: 5,800'

(3) Tubing Information:

5-1/2" (26.0 lb/ft) ceramic-coated tubing with setting depth of 8,235'

(4) Packer Information: Baker Hughes Hornet or equivalent packer set at 8,235'

B.

(1) Injection Formation Name: Cisco
Pool Name: SWD; Cisco
Pool Code: 96099
(2) Injection Interval: Perforated injection between 8,270'- 9,200'
(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.

- Queen (1,000')
- Bone Spring (5,530')
- Wolfcamp (7,895')

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

- Strawn (9,215')

V – Well and Lease Maps

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

- 2-mile Oil & Gas Well Map
- 1/2-Mile Well Detail List
- Penetrating Wellbore Diagram (Plugged Wells)
- 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 wells within the 1/2-mile AOR is included in ***Attachment 2***.

There is one well in the 1/2-mile AOR, and it penetrates the injection zone. This well has been properly plugged to isolate the injection zone. The wellbore diagram, casing information, and plugging details for this well are included in ***Attachment 2.***

VII – Proposed Operation

(1) Proposed Maximum Injection Rate: 30,000 bpd
Proposed Average Injection Rate: 17,500 bpd

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

(3) Proposed Maximum Injection Pressure: 1,654 psi (surface)
Proposed Average Injection Pressure: approximately 1,048 psi (surface)

(4) Source Water Analysis: It is expected that the injectate will consist of produced water from production wells completed in the Wolfcamp, Delaware and Bone Spring 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 Cisco formation which is a non-productive zone known to be compatible with formation water from the Wolfcamp, Delaware and Bone Spring formations. Water analyses from the Cisco formation in the area are included as ***Attachment 4*.**

VIII – Geologic Description

The proposed injection interval includes the Cisco formation from 8,270'- 9,200' feet. This formation consists of interbedded carbonate rocks including dolomites and limestones. Several thick intervals of porous and permeable carbonate rock capable of taking water are present within the subject formation in the area.

The base of the USDW is the Yates formation at a depth of approximately 525 feet. Water well depths in the area range from approximately 130-300 feet below ground surface.

Additional geologic information can be found in karst analysis included as ***Attachment 6.***

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, one (1) groundwater well is located within 1-mile of the proposed SWD location. Water samples were collected on July 13th, 2023.

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

XII – No Hydrologic Connection Statement

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

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

XIII – Proof of Notice

A Public Notice was filed with the Carlsbad Current-Argus newspaper and an affidavit is included in ***Attachment 8***.

A copy of the application was mailed to the OCD district office, landowner, and all identified affected parties within 1/2-mile of the proposed SWD location. A list of the recipients, as well as delivery confirmations, are included in ***Attachment 8***.

Karst Analysis

In addition to the information formally requested as part of the C-108 application, ALL Consulting has included a Karst analysis as ***Attachment 6*** to address the identified concerns of permitting an SWD in a high-risk Karst area.

Attachments

Attachment 1:

- C-102
- Wellbore Diagram

Attachment 2: Area of Review Information:

- 2-Mile Oil & Gas Well Map
- 1/2-Mile Well Detail List
- Penetrating Wellbore Diagram (Plugged Wells)
- 2-Mile Lease Map
- 2-Mile Mineral Ownership Map
- 2-Mile Surface Ownership Map
- Potash Lease Map

Attachment 3: Source Water Analyses

Attachment 4: Injection Formation Water Analyses

Attachment 5: Water Well Map and Well Data

- Water Well Map
- Well Data
- Water Sampling results

Attachment 6: Karst Analysis

Attachment 7: No Hydrologic Connection Statement

Attachment 8: Public Notice Affidavit and Notice of Application Confirmations

Attachment 1

- C-102
- Wellbore Diagram

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
	96099	SWD; CISCO

Property Code	Property Name	Well Number
	GLASS FED SWD	#1

OGRID No.	Operator Name	Elevation
330192	WATERBRIDGE STATELINE LLC	3398'

Surface Location

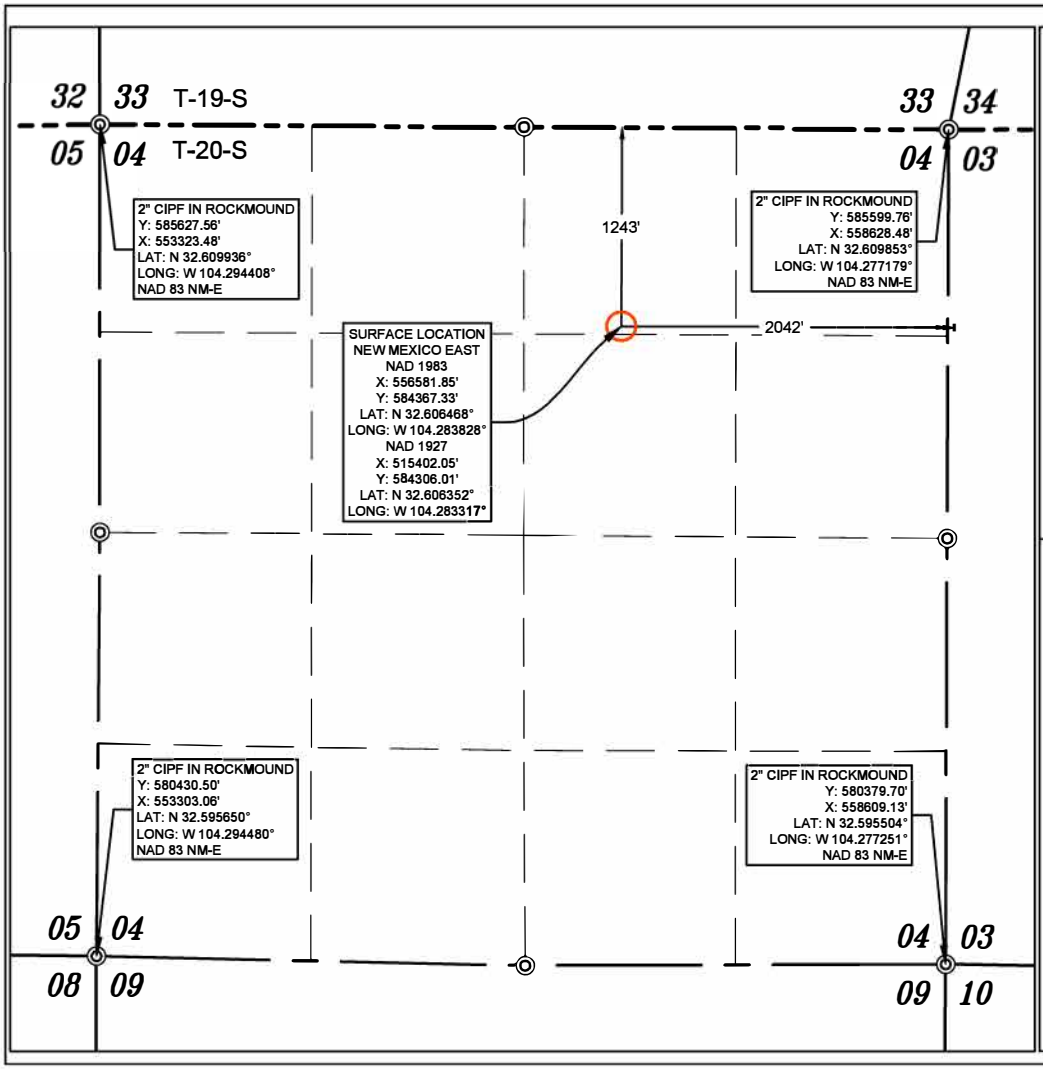
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
LOT 2	4	20 S	27 E		1243	NORTH	2042	EAST	EDDY

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.

Oliver Seekins — 8/24/2023
Signature — Date

Oliver Seekins
Printed Name

oseekins@all-llc.com
E-mail Address

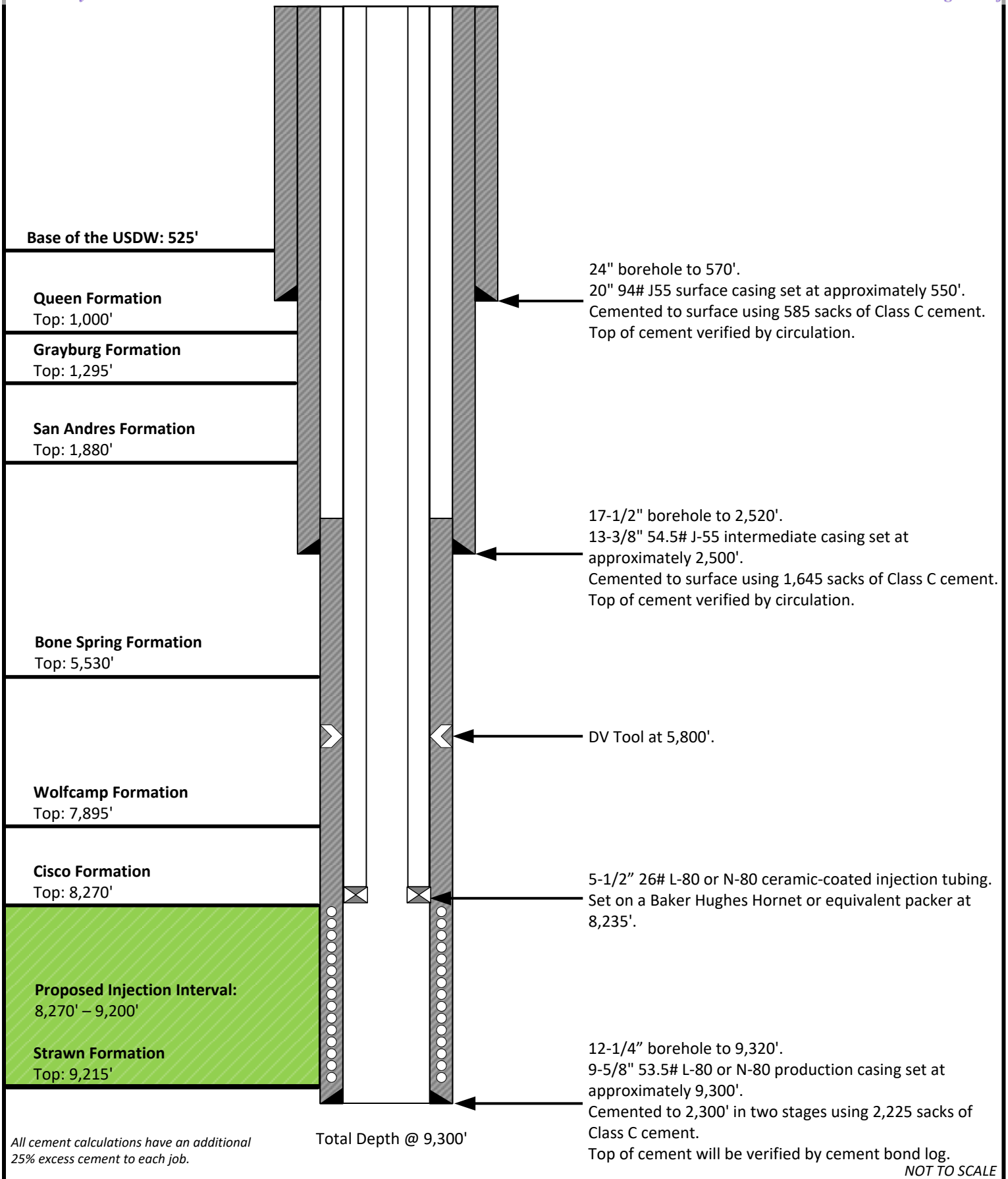
SURVEYOR CERTIFICATION

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.

JULY 17, 2023
Date of Survey

Signature and Seal of Professional Surveyor:

Job No.: 23-06-3276
TYLER J. WILLIS, N.M.P.L.S.
Certificate Number 25344



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

NOT TO SCALE

Prepared by:
ALL CONSULTING
Prepared for:
WATERBRIDGE

Drawn by: Daniel Arthur

Project Manager: Oliver Seekins

Date: 07/30/2023

Glass FED SWD #1
WaterBridge Stateline LLC
Sec. 4 Town. 20S Rng. 27E
Lat: 32.606468° Long: -104.283828° (NAD 83)

HORNET Packer

Product Family No. H64682

HORNET EL Packer

Product Family No. H64683

APPLICATION

The mechanically set HORNET™ packer offers ease of operation with quarter-turn right to set and release. Converting it for wireline-setting applications is simple and inexpensive. The HORNET packer provides for landing in compression, tension, or neutral positions. Every component from the jay track, to the internal bypass, to the packing-element system and the upper slip assembly has been developed to ensure the HORNET's setting and releasing reliability.

The HORNET EL packer is run and set on electric line using an E-4™ (Product Family No. H43702) with a slow-set power charge or a J™ setting tool (Product Family No. H41371) and a special wireline adapter kit. An L-10™ type on/off seal nipple is run on top of the packer to connect the tubing to the packer and to house a blanking plug when the packer is used as a temporary bridge plug.

Advantages

Upper Slip Assembly:

- Thoroughly tested across API minimum to maximum casing ID tolerances for each specified casing weight, for setting and releasing reliability
- Slip-wicker configuration providing bidirectional-load support with solid upper cone to support highest tensile loads
- Staged-release action eliminates high-overpull requirement
- Minimal set-down weight required to anchor slips

Internal Bypass Seal:

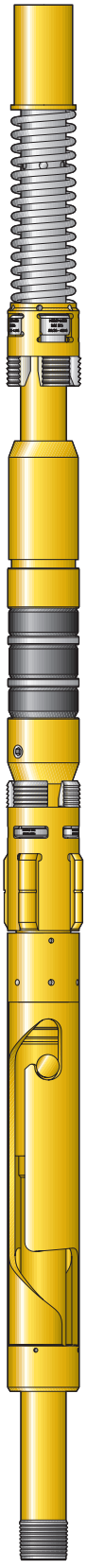
- Durable bypass seal design provides sealing after unloading, under differential pressures
- No O-ring sealing system

Packing Element System:

- Fully tested to combined ratings at the API's maximum ID tolerance
- Patented enhancements to control overboost
- High-performance, three-piece element system

Lower Slip and Jay Assembly:

- Slips and drag blocks tested to maximum API tolerance ID for positive set and ease of release
- One-quarter-turn right setting and releasing action
- Packoff of packing elements with applied tension or compression
- Spacing in jay ensures opening of internal bypass, before slip releasing action begins–important to both ease of release and safety
- Automatically returns to running position



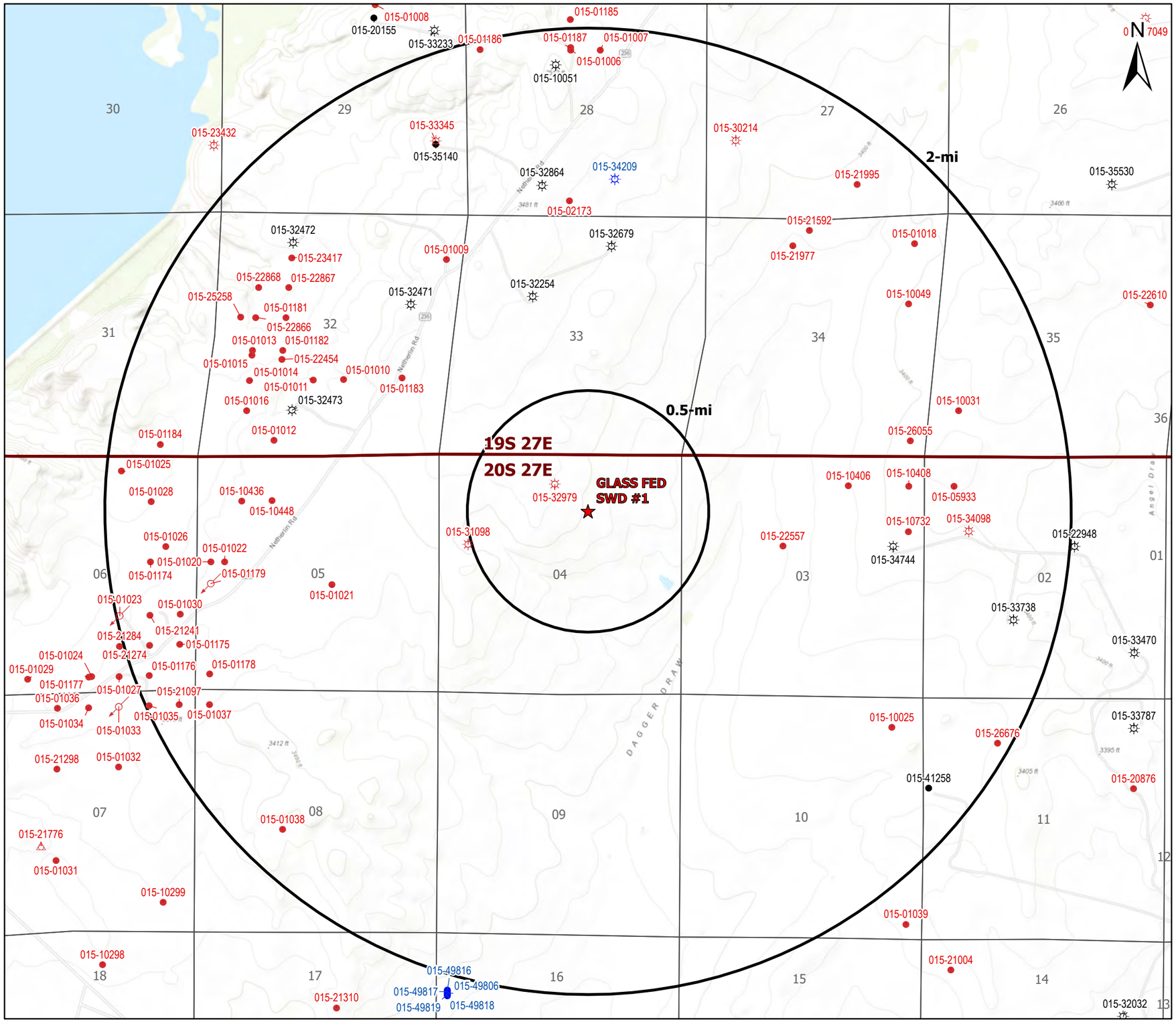
HORNET Packer
Product Family No. H64682

HORNET EL Packer
Product Family No. H64683

Attachment 2

Area of Review Information:

- 2-mile Oil & Gas Well Map
- 1/2-Mile Well Detail List
- Penetrating Wellbore Diagram (Plugged Wells)
- 2-mile Lease Map
- 2-mile Mineral Ownership Map
- 2-mile Surface Ownership Map
- Potash Lease Map



Legend

- Proposed SWD
- Gas, Active (15)
- Gas, New (1)
- Gas, Plugged (7)
- Injection, Plugged (3)
- Oil, Active (3)
- Oil, New (5)
- Oil, Plugged (75)
- Salt Water Disposal, Plugged (1)

0 0.5 1 2 Miles

Service Layer Credits: Topographic: Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

Source Info: NMOCD O&G Wells updated 3/15/2022 (https://www.emnrd.nm.gov/ocd/ocd-data/ftp-server/l)

O&G Wells Area of Review

GLASS FED SWD #1

Eddy County, New Mexico

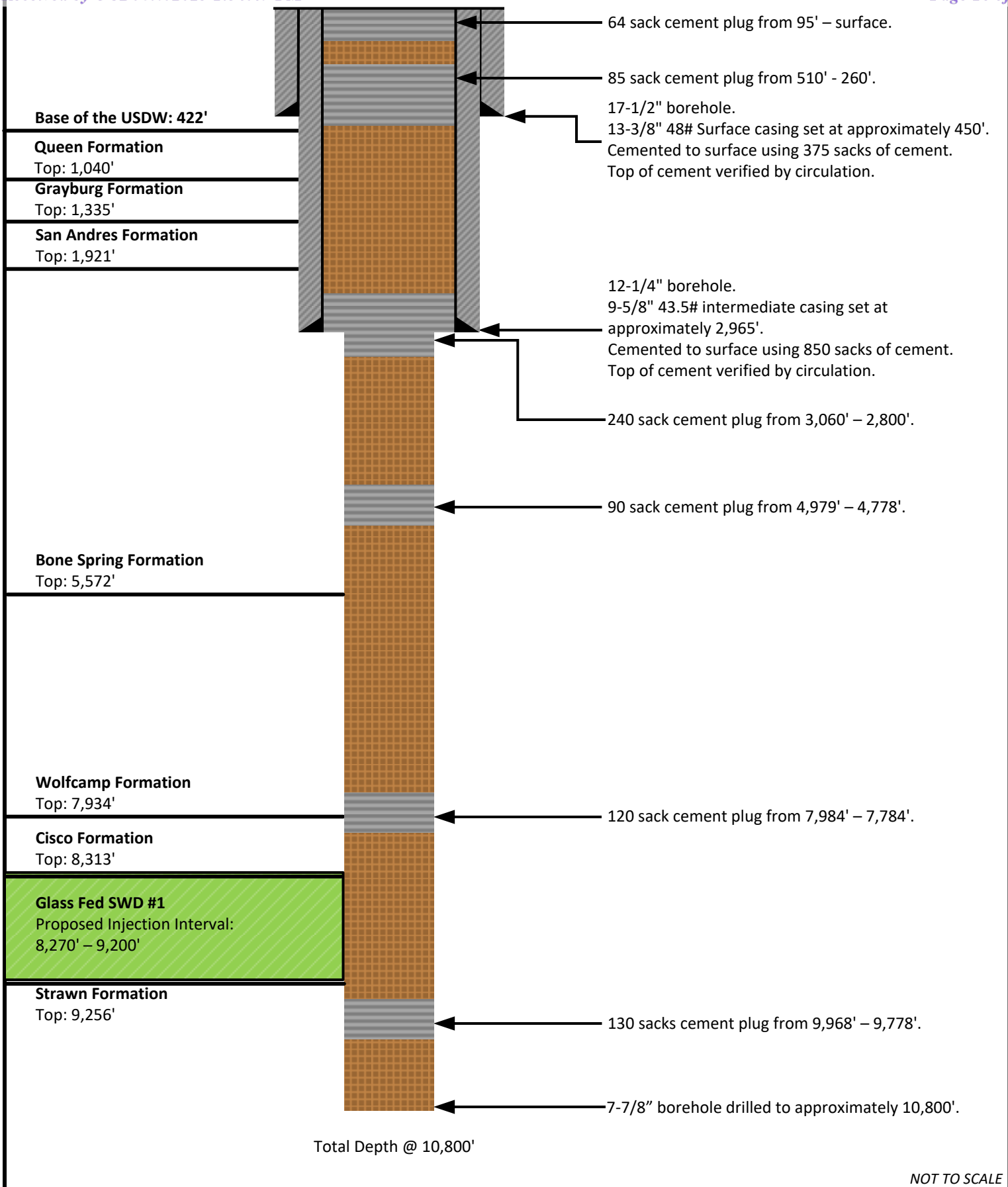
Proj Mgr: Oliver Seekins	July 21, 2023	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

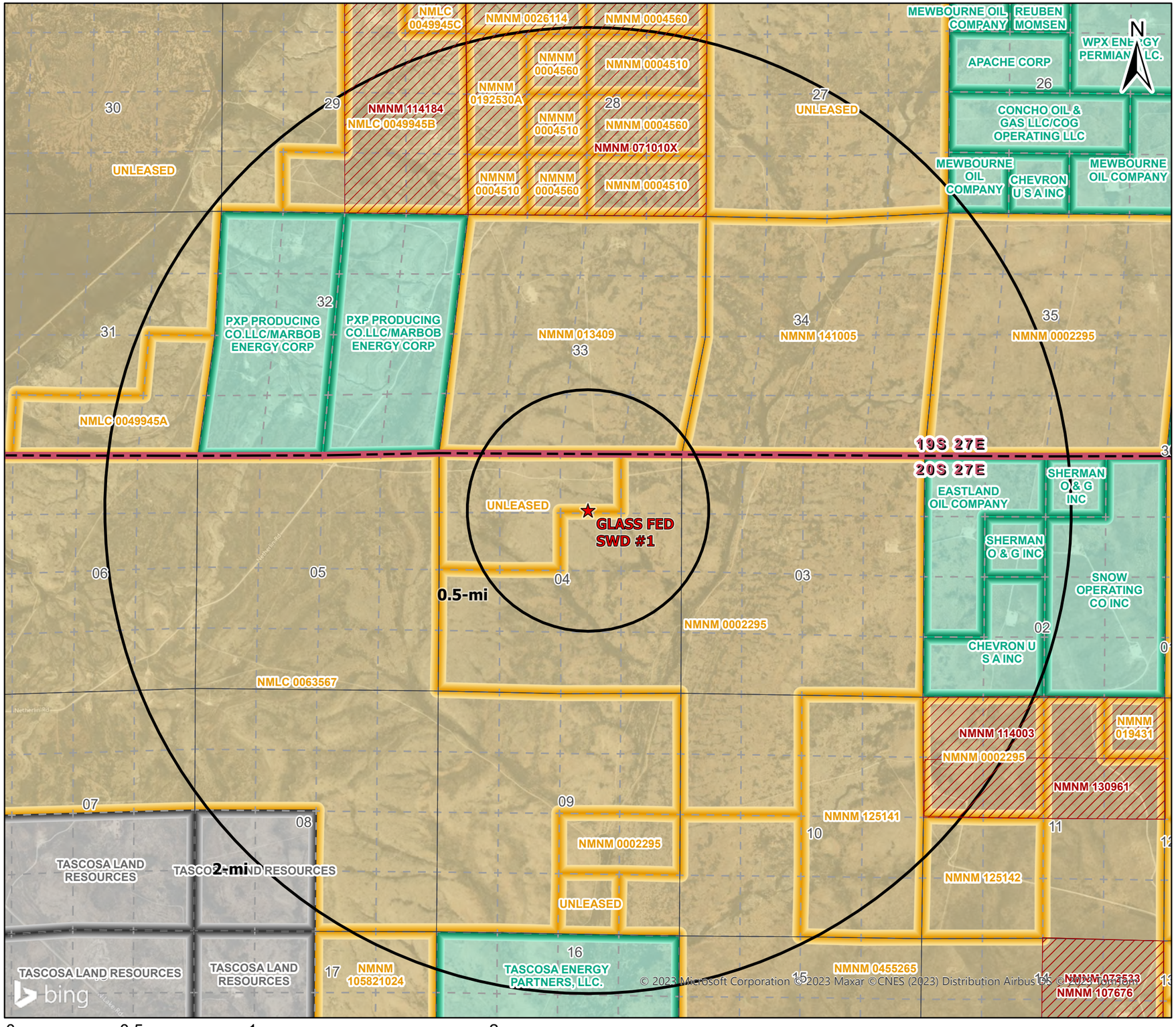
AOR Tabulation for Glass Fed SWD #1 (Top of Injection Interval: 8,270' - 9,200')							
Well Name	**API#**	**Well Type**	**Operator**	**Spud Date**	**Location (Sec., Tn., Rng.)**	**Total Vertical Depth (feet)**	**Penetrate Inj. Zone?**
McMillan 4 Federal COM #1	30-015-32979	Plugged	POGO PRODUCING CO	2/20/2004	04-20S-27E	Plugged (10,800)	Yes

Casing / Plugging Information for Wells Penetrating the Glass Fed SWD #1 Injection Zone							
Well Name	**Type**	**Set Depth**	**Casing Size**	**TOC**	**TOC Method Determined**	**Sks of Cement**	**Hole Size**
McMillan 4 Federal COM #1	Surface	450'	13.375"	Surface	Circulation	375	17.5"
	Intermediate	2965'	9.625"	Surface	Circulation	850	12.25"
	Plugging Details: Plugs set @9968' - 9778' with 130 sx, @7984' - 7784' with 120 sx, @4979' - 4778' with 90 sx, @3060' - 2800 with 240 sx, @510' - 260' with 85 sx, and @95' - 0' with 64 sx.						



NOT TO SCALE

Prepared by: ALL CONSULTING *Prepared for:* WATERBRIDGE	Drawn by: Daniel Arthur	**McMillan 4 Federal Com #001**
	Project Manager: Oliver Seekins	**POGO Producing Company**
	Date: 08/15/2023	**API#: 30-015-32979**
		Sec. 04 Town. 20S Rng. 27E
		Lat: 32.6081° Long: -104.2862° (NAD 83)



Legend

- Proposed SWD
- BLM Communitization Units
- NMSLO Mineral Leases
- Private Mineral Leases
- BLM Mineral Leases

1/2-mile AOR Lessees/Unit Operators:

- Chevron USA Inc (BLM Lessee)
- Trigg Oil & Gas LP (BLM Lessee)
- Unleased (BLM)
- V-F Petroleum Inc (BLM Lessee)

Source Info: BLM Mineral Leases (https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership). NMSLO Mineral Leases (http://www.nmstatelands.org/maps-gis/gis-data-download/). Where applicable, Private Mineral Leases were identified utilizing Enverus, Midland Maps, or operator identified lease data.

Mineral Leases AOR

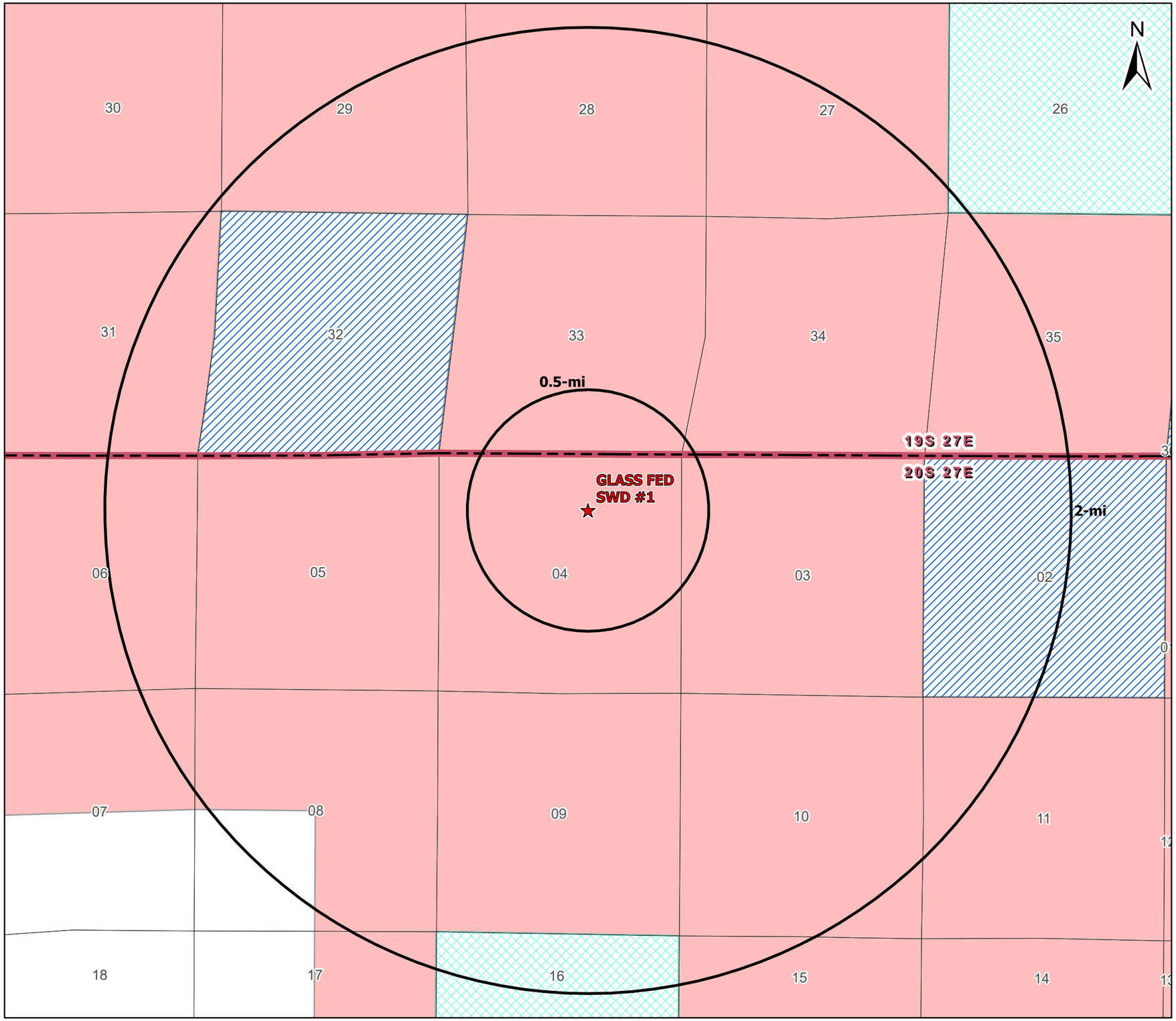
GLASS FED SWD #1

Eddy County, New Mexico

Proj Mgr: Oliver Seekins	August 15, 2023	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 Mineral Ownership (https://catalog.data.gov/dataset/blm-new-mexico-mineral-ownership)
& NMSLO Ownership (http://www.nmstatelands.org/maps-gis/gis-data-download/)

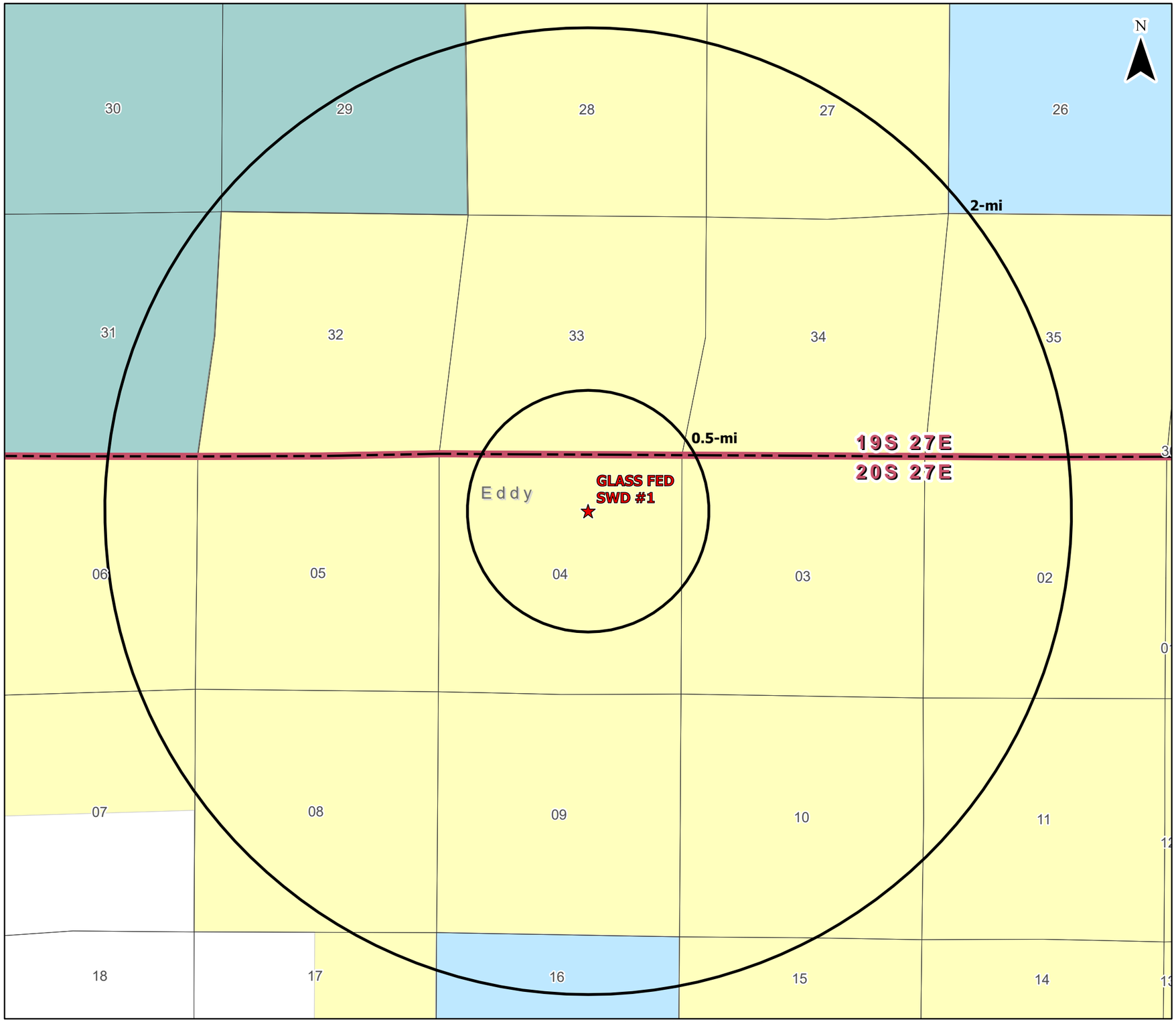
Mineral Ownership
Area of Review

GLASS FED SWD #1

Eddy County, New Mexico

Proj Mgr:		Mapped by:
Oliver Seekins	July 21, 2023	Ben Bockelmann

Prepared for:	*Prepared by:*
WATERBRIDGE	ALL CONSULTING



Legend

★ Proposed SWD

Surface Ownership

- Bureau of Land Management
- Bureau of Reclamation
- Private
- State

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

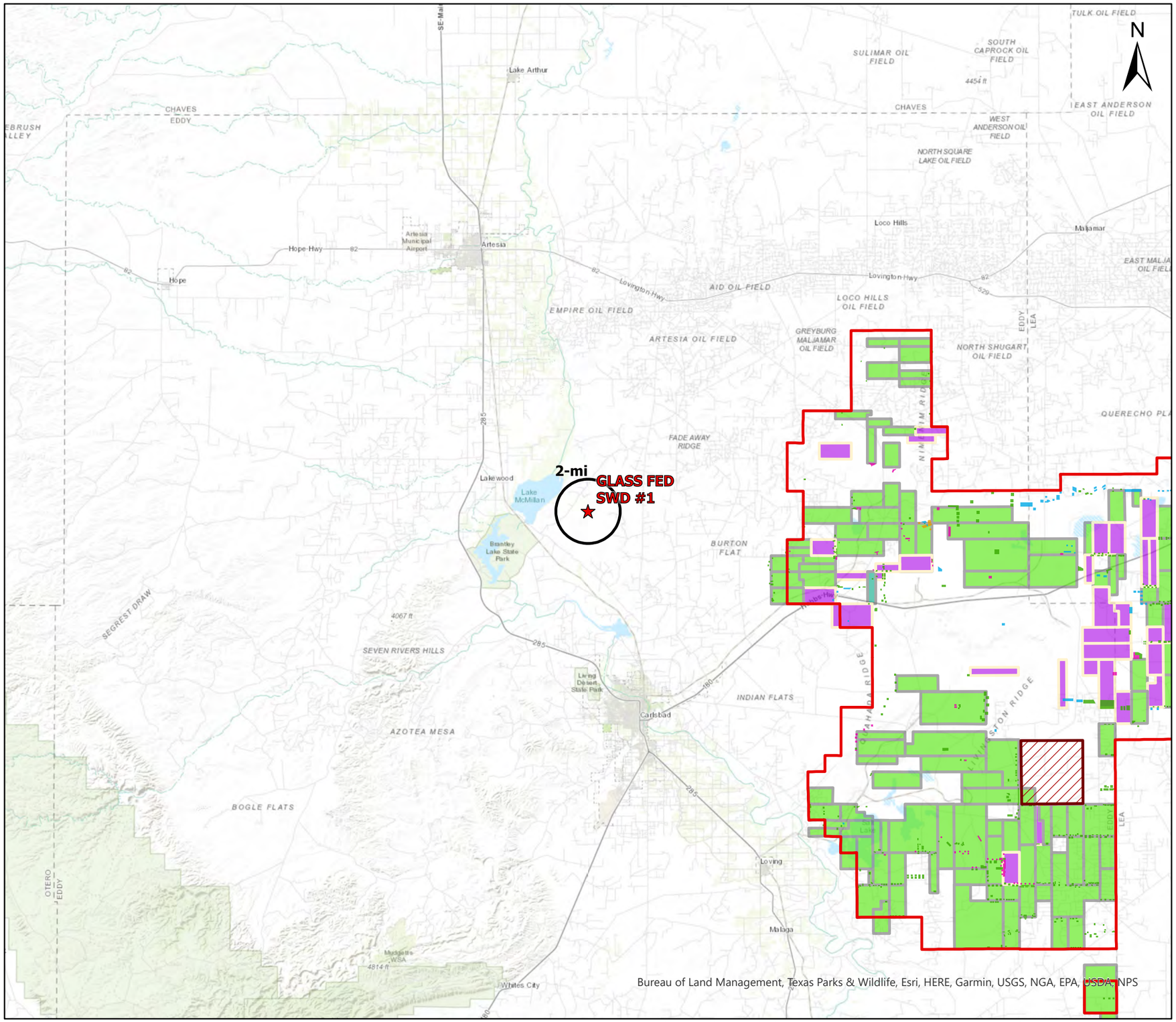
Surface Ownership
Area of Review

GLASS FED SWD #1

Eddy County, New Mexico

Proj Mgr:		Mapped by:
Oliver Seekins	July 21, 2023	Ben Bockelmann

Prepared for:	Prepared by:
WATERBRIDGE	ALL CONSULTING



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

Legend

- Proposed SWD
- SOPA 1986
- WIPP Facility

Drill Islands

Status, Depth Buffer

- Approved, Half Mile
- Approved, Quarter Mile
- Nominated, Half Mile
- Nominated, Quarter Mile

Development Areas

Status

- Approved
- Pending
- Pending NMOCD Order

Potash Leases
Area of Review

GLASS FED SWD #1

Eddy County, New Mexico

Proj Mgr: Oliver Seekins	July 21, 2023	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

Attachment 3

Source Water Analysis

Source Water Analysis

WaterBridge Stateline LLC

Well Name	API	Latitude	Longitude	Section	Township	Range	Unit	Ftgns	Ftgew	County	State	Field	Formation	Tds (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
CHAPARRAL ST #002	3001503612	32.6227493	-104.1034851	32	19S	29E	D	660N	660W	EDDY	NM	BURTON NORTH	BONE SPRING	33,760	15,600	290	5,500
STONEWALL DS FEDERAL COM #002	3001521640	32.5426216	-104.1979904	29	20S	28E	J	1980S	1980E	EDDY	NM	AVALON	BONE SPRING	131,898	85,954	635	2,419
AGATE PWU 21 #008H	3001540512	32.63937	-104.088295	21	19S	29E	M	130S	50W	EDDY	NM		BONE SPRING 1ST SAND	-	162,925	549	290
JASPER 32 STATE COM #007H	3001540584	32.6235924	-104.0945587	32	19S	29E	B	340N	1875E	EDDY	NM		BONE SPRING 1ST SAND	213,293	134,925	-	603
DIAMOND PWU 22 #005H	3001540822	32.6514969	-104.0702057	22	19S	29E	D	725N	330W	EDDY	NM		BONE SPRING 1ST SAND	208,209	129,492	-	622
BURTON FLAT DEEP STATE FEDERAL COM #048H	3001540518	32.5435829	-104.1755981	28	20S	28E	I	2310S	400E	EDDY	NM		BONE SPRING 1ST SAND	187,017	109,200	695	-
CERF 10 FEDERAL #003H	3001541058	32.498394	-104.1872559	9	21S	27E	A	1275N	300E	EDDY	NM		BONE SPRING 1ST SAND	195,011	115,854	2,318	-
LONE TREE DRAW 13 STATE #011H	3001542084	32.4871941	-104.1449509	13	21S	27E	C	150N	2130W	EDDY	NM		BONE SPRING 1ST SAND	195,134	113,705	2,403	-
EMERALD PWU 20 #001H	3001538338	32.6525154	-104.1045456	20	19S	29E	D	400N	330W	EDDY	NM		BONE SPRING 2ND SAND	214,079	129,500	110	-
ONYX PWU 29 #003H	3001539373	32.6304665	-104.1045609	29	19S	29E	L	2145S	330W	EDDY	NM		BONE SPRING 2ND SAND	204,175	122,800	98	-
LONE TREE DRAW 13 STATE #007H	3001541650	32.4871902	-104.1454391	13	21S	27E	C	150N	1980W	EDDY	NM		BONE SPRING 2ND SAND	210,720	125,168	183	-
BURTON FLAT DEEP UNIT #054H	3001540503	32.5063286	-104.1687851	2	21S	27E	L	1570S	50W	EDDY	NM		BONE SPRING 2ND SAND	209,153	125,000	769	-
LONGBOARD PWU 20 #001H	3001540025	32.6494904	-104.1044693	20	19S	29E	E	1500N	355W	EDDY	NM		BONE SPRING 3RD SAND	76,582	45,756	-	930
TURQUOISE PWU 27 #010H	3001543321	32.63249412	-104.0721759	28	19S	29E	H	2382N	274E	EDDY	NM		BONE SPRING 3RD SAND	105,001	62,695	-	685
DIAMOND PWU 22 #011H	3001542809	32.64525903	-104.0718382	21	19S	29E	I	2295S	170E	EDDY	NM		BONE SPRING 3RD SAND	117,585	71,782	-	550
CONNIE C STATE #002	3001502301	32.6337662	-104.1241302	25	19S	28E	H	1980N	660E	EDDY	NM	OUTPOST	DELAWARE	55,498	32,420	601	984
SPIKE FEDERAL #001	3001527070	32.561882	-104.1288605	24	20S	28E	G	1650N	1980E	EDDY	NM	RUSSELL	DELAWARE	7,792	4,767	93	31
AVALON DELAWARE UNIT #262	3001524414	32.5386696	-104.2152328	30	20S	28E	O	560S	1980E	EDDY	NM	AVALON	DELAWARE	110,018	105,500	1,320	1,368
INDIAN FLATS BASS FEDERAL #005	3001522671	32.4303894	-104.0584564	35	21S	28E	N	330S	2310W	EDDY	NM	INDIAN FLATS	DELAWARE	144,959	95,968	200	1,883
INDIAN FLATS BASS FEDERAL #006	3001522673	32.4303932	-104.0561905	35	21S	28E	O	330S	2310E	EDDY	NM	INDIAN FLATS	DELAWARE	163,756	110,195	135	1,662
GOLDEN D FEDERAL #002	3001527060	32.488533	-104.004631	8	21S	29E	O	660S	1980E	EDDY	NM	GOLDEN LANE SOUTH	DELAWARE	242,051	173,806	282	782
ZINNIA BKC FEDERAL #001	3001527939	32.5462379	-104.0686035	27	20S	29E	E	1980N	910W	EDDY	NM	BURTON FLAT	DELAWARE/WOLFCAMP	189,739	116,724	427	750
LONE TREE DRAW 13 STATE COM #002H	3001540372	32.4871712	-104.1494293	13	21S	27E	D	150N	750W	EDDY	NM		DELAWARE-BRUSHY CANYON	207,014	127,509	183	1,724
BH MATLOCK #001	3001500109	32.6845169	-104.440567	1	19S	25E	N	660S	1980W	EDDY	NM		WOLFCAMP	20,306	10,360	1,829	940
ANGELL ST #004	3001502280	32.6479454	-104.1791229	21	19S	28E	G	1980N	1980E	EDDY	NM	MILLMAN EAST	WOLFCAMP	118,720	70,200	2,700	1,080
STATE AC COM #001	3001522299	32.5572166	-104.1806107	21	20S	28E	J	1980S	1980E	EDDY	NM	BURTON FLAT NORTH	WOLFCAMP	43,441	26,100	446	100
FED UNION #001	3001502416	32.5527229	-104.1623917	22	20S	28E	O	330S	1650E	EDDY	NM		WOLFCAMP	55,965	32,400	252	2,260

Attachment 4

Injection Formation Water Analysis

Injection Formation Water Analysis

WaterBridge Stateline LLC - Cisco 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)
JENNY COM #001	3001526469	32.6635513	-104.5134354	17	19S	25E	E	1750N	660W	EDDY	NM	DAGGER DRAW	CISCO	-	46,850	183	13
DAGGER DRAW #002	3001500116	32.6299515	-104.5175476	30	19S	25E	I	1969S	629E	EDDY	NM	DAGGER DRAW	CISCO	7,858	-	-	-
JOHN AGU #002	3001526468	32.5792274	-104.5523987	14	20S	24E	A	660N	660E	EDDY	NM	DAGGER DRAW	CISCO	216,236	53,321	72,619	952
SPRING SWD #001	3001500129	32.5206604	-104.3944092	4	21S	25E	A	660N	830E	EDDY	NM	SEVEN RIVERS HILLS	CISCO	31,485	17,000	635	2,500
INDIAN BASIN #001	3001510093	32.4758987	-104.5762329	14	21S	23E	K	1650S	1650W	EDDY	NM	INDIAN BASIN	CISCO	8,531	3,238	846	1,700
MARATHON FEDERAL #001	3001510373	32.4613838	-104.5590591	24	21S	23E	K	1650S	1650W	EDDY	NM	INDIAN BASIN	CISCO	162,225	99,300	32	750

Attachment 5

- Water Well Map
- Well Data
- Water Sampling results

SourceInfo: https://geospatialdata-ose.opendata.arcgis.com/

Legend

- ★ Proposed SWD

NMOSE PODs

Status

- Active (0)
- Pending (0)
- Change Location of Well (0)
- Capped (0)
- Plugged (0)
- Incomplete (0)
- Unknown (1)

Water Wells Area of Review

GLASS FED SWD #1

Eddy County, New Mexico

Proj Mgr: Oliver Seekins	July 21, 2023	Mapped by: Ben Bockelmann

Prepared for: WATERBRIDGE

Prepared by: ALL CONSULTING

Water Well Sampling Rationale						
Waterbridge Stateline LLC - Glass Fed SWD #1						
Water Wells	**Owner**	**Available Contact Information**	**Use**	**Location**	**Sampling Required**	**Notes**
RA 08645	DBR Land, LLC	Sam Sheffield (432) 244-9703	PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE	34-20S-27E 32.606521, -104.28299	Yes	Sampled on 7/13/23.

CARDINAL Laboratories

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

July 27, 2023

OLIVER SEEKINS

ALL CONSULTING, LLC

1718 S. CHEYENNE AVE.

TULSA, OK 74119

RE: WATER BRIDGE WELL SAMPLING

Enclosed are the results of analyses for samples received by the laboratory on 07/13/23 16:37.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RA - 08645	H233634-01	Water	13-Jul-23 14:30	13-Jul-23 16:37

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

RA - 08645

H233634-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Alkalinity, Bicarbonate	**102**		5.00	mg/L	1	3053105	AC	14-Jul-23	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	3053105	AC	14-Jul-23	310.1	
Chloride*	**750**		4.00	mg/L	1	3071022	AC	14-Jul-23	4500-Cl-B	
Conductivity*	**6040**		1.00	umhos/cm @ 25°C	1	3071433	AC	14-Jul-23	120.1	
pH*	**7.90**		0.100	pH Units	1	3071433	AC	14-Jul-23	150.1	
Temperature °C	**19.9**			pH Units	1	3071433	AC	14-Jul-23	150.1	
Resistivity	**1.66**			Ohms/m	1	3071433	AC	14-Jul-23	120.1	
Sulfate*	**3920**		500	mg/L	50	3071719	AC	17-Jul-23	375.4	QM-07
TDS*	**5250**		5.00	mg/L	1	3071001	AC	20-Jul-23	160.1	
Alkalinity, Total*	**84.0**		4.00	mg/L	1	3053105	AC	14-Jul-23	310.1	
TSS*	**3.00**		2.00	mg/L	1	3071401	AC	17-Jul-23	160.2	
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Barium*	<0.250		0.250	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Calcium*	**798**		1.00	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Hardness as CaCO3	**3050**		4.56	mg/L	5	[CALC]	AES	25-Jul-23	2340 B	
Iron*	**0.587**		0.250	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Magnesium*	**256**		0.500	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Potassium*	**10.0**		5.00	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Sodium*	**423**		5.00	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	
Strontium*	**13.3**		0.500	mg/L	5	B232110	AES	25-Jul-23	EPA200.7	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3053105 - General Prep - Wet Chem										
Blank (3053105-BLK1)				Prepared & Analyzed: 31-May-23						
Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	5.00	5.00	mg/L							
Alkalinity, Total	4.00	4.00	mg/L							
LCS (3053105-BS1)				Prepared & Analyzed: 31-May-23						
Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	330	12.5	mg/L				80-120			
Alkalinity, Total	270	10.0	mg/L	250		108	80-120			
LCS Dup (3053105-BSD1)				Prepared & Analyzed: 31-May-23						
Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	330	12.5	mg/L				80-120	0.00	20	
Alkalinity, Total	270	10.0	mg/L	250		108	80-120	0.00	20	
Batch 3071001 - Filtration										
Blank (3071001-BLK1)				Prepared: 10-Jul-23 Analyzed: 14-Jul-23						
TDS	ND	5.00	mg/L							
LCS (3071001-BS1)				Prepared: 10-Jul-23 Analyzed: 14-Jul-23						
TDS	241		mg/L	300		80.3	80-120			
Duplicate (3071001-DUP1)		**Source: H233444-04**		Prepared: 10-Jul-23 Analyzed: 14-Jul-23						
TDS	3140	5.00	mg/L		3130			0.287	20	
Batch 3071022 - General Prep - Wet Chem										
Blank (3071022-BLK1)				Prepared & Analyzed: 10-Jul-23						
Chloride	ND	4.00	mg/L							

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CARDINAL Laboratories

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Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3071022 - General Prep - Wet Chem										
LCS (3071022-BS1)				Prepared & Analyzed: 10-Jul-23						
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (3071022-BSD1)				Prepared & Analyzed: 10-Jul-23						
Chloride	100	4.00	mg/L	100		100	80-120	3.92	20	
Batch 3071401 - Filtration										
Blank (3071401-BLK1)				Prepared: 14-Jul-23 Analyzed: 17-Jul-23						
TSS	ND	2.00	mg/L							
Duplicate (3071401-DUP1)		**Source: H233515-01**		Prepared: 14-Jul-23 Analyzed: 19-Jul-23						
TSS	18.0	2.00	mg/L		14.0			25.0	52.7	
Batch 3071433 - General Prep - Wet Chem										
LCS (3071433-BS1)				Prepared & Analyzed: 14-Jul-23						
pH	7.02		pH Units	7.00		100	90-110			
Conductivity	506		uS/cm	500		101	80-120			
Duplicate (3071433-DUP1)		**Source: H233634-01**		Prepared & Analyzed: 14-Jul-23						
pH	7.90	0.100	pH Units		7.90			0.00	20	
Conductivity	6140	1.00	umhos/cm @ 25°C		6040			1.64	20	
Resistivity	1.63		Ohms/m		1.66			1.64	20	
Temperature °C	20.0		pH Units		19.9			0.501	200	

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CARDINAL Laboratories

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

Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3071719 - General Prep - Wet Chem										
Blank (3071719-BLK1)				Prepared & Analyzed: 17-Jul-23						
Sulfate	ND	10.0	mg/L							
LCS (3071719-BS1)				Prepared & Analyzed: 17-Jul-23						
Sulfate	22.6	10.0	mg/L	20.0		113	80-120			
LCS Dup (3071719-BSD1)				Prepared & Analyzed: 17-Jul-23						
Sulfate	22.4	10.0	mg/L	20.0		112	80-120	0.890	20	

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Analytical Results For:

ALL CONSULTING, LLC 1718 S. CHEYENNE AVE. TULSA OK, 74119	Project: WATER BRIDGE WELL SAMPLING Project Number: NONE GIVEN Project Manager: OLIVER SEEKINS Fax To: NA	Reported: 27-Jul-23 08:53

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B232110 - Total Recoverable by ICP										
Blank (B232110-BLK1)				Prepared: 24-Jul-23 Analyzed: 25-Jul-23						
Magnesium	ND	0.100	mg/L							
Barium	ND	0.050	mg/L							
Strontium	ND	0.100	mg/L							
Calcium	ND	0.200	mg/L							
Sodium	ND	1.00	mg/L							
Iron	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							
LCS (B232110-BS1)				Prepared: 24-Jul-23 Analyzed: 25-Jul-23						
Strontium	2.01	0.100	mg/L	2.00		101	85-115			
Sodium	1.59	1.00	mg/L	1.62		98.3	85-115			
Potassium	4.16	1.00	mg/L	4.00		104	85-115			
Magnesium	10.2	0.100	mg/L	10.0		102	85-115			
Iron	2.00	0.050	mg/L	2.00		100	85-115			
Calcium	1.99	0.200	mg/L	2.00		99.4	85-115			
Barium	0.986	0.050	mg/L	1.00		98.6	85-115			
LCS Dup (B232110-BSD1)				Prepared: 24-Jul-23 Analyzed: 25-Jul-23						
Magnesium	10.1	0.100	mg/L	10.0		101	85-115	0.974	20	
Calcium	2.00	0.200	mg/L	2.00		99.8	85-115	0.407	20	
Potassium	4.07	1.00	mg/L	4.00		102	85-115	2.17	20	
Barium	0.973	0.050	mg/L	1.00		97.3	85-115	1.28	20	
Sodium	1.57	1.00	mg/L	1.62		97.2	85-115	1.13	20	
Strontium	2.01	0.100	mg/L	2.00		100	85-115	0.190	20	
Iron	1.99	0.050	mg/L	2.00		99.3	85-115	0.757	20	

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Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: All Consulting
Project Manager: Oliver Seekins
Address: 1718 S. Cheyenne ave
City: Tulsa State: OK Zip: 74119
Phone #: 918-382-7581 Fax #:
Project #: Project Owner:
Project Name: Water Bridge well sampling
Project Location: Eddy Co. NM
Sampler Name: Oliver Seekins

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING DATE	TIME	Cation / Anion	Ba, Fe, Sr	Resistivity	Total Hardness	TDS
H233634-1	RA-08645			X						X	X		7/13	1430	X	X	X	X	X

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

Relinquished By: Date: 7/13 Time: 1637 Received By:
Relinquished By: Date: Time: Received By:

Verbal Result: ☐ Yes ☐ No Add'l Phone #:
All Results are emailed. Please provide Email address:

REMARKS:

Delivered By: (Circle One) Sampler - UPS - Bus - Other:
Observed Temp. °C 39 Corrected Temp. °C
Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No
CHECKED BY: (Initials) T.O.

Turnaround Time: Standard ☑ Rush ☐
Thermometer ID #113 #140 Correction Factor -0.6°C T.O. 7/13/23
Bacteria (only) Sample Condition Cool: ☐ Yes ☐ Nc Intact: ☐ Yes ☐ No Observed Temp. °C Corrected Temp. °C

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

FORM-006 R 3.3 07/18/22

Attachment 6

Karst Analysis

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

WATERBRIDGE STATELINE LLC – GLASS FED SWD #1 RESPONSES TO HIGH-RISK KARST AREAS

Introduction

ALL Consulting (ALL) has been informed by the New Mexico Oil Conservation Division (OCD) that the proposed locations of Waterbridge Stateline LLC's (Waterbridge) Glass Fed SWD #1 Class II saltwater disposal (SWD) well application are within the area OCD has designated as high-risk karst. **Figure 1** is the location of the proposed SWD. OCD has requested that ALL include additional information within these applications to address OCD's concerns with the high-risk karst area. This additional information needs to include:

1. An explanation on how ALL determined the deepest underground sources of drinking water (USDW);
2. An evaluation of the geology to determine that there was no direct evidence of karst features in the immediate area;
3. Provide an affirmative statement that the proposed well designs and confining zones will protect the USDW; and
4. Provide a detailed description of both the upper and lower confining zones above and below the proposed injection interval in the Cisco Formation.

Karst in Southeastern New Mexico

ALL has reviewed more recently published geologic publications on the Capitan Reef Complex and karst areas in southeastern New Mexico and then also examined the well completion records and the closest open hole geophysical logs to the proposed Glass Fed SWD #1 well location. Anthropogenic sinkholes in the Permian salt beds of southeastern New Mexico are often associated with historic oilfield development due to improperly cased oil and water supply wells and salt-solution mining activity (Land 2013). Manmade sinkholes are caused by the dissolution of the salt beds in the Upper Permian Salado Formation by introduction of freshwater or groundwater into the salt beds. **Figure 2** shows the location of these sinkholes in southeastern New Mexico. Naturally occurring sinkholes are often associated with upward migration of groundwater flow from karstic aquifers of regional extent that underlie the Permian evaporite deposits (Land 2013). In the area of Dagger Draw, naturally occurring sinkholes in the Seven Rivers Formation are exposed along the eastern shore of Lake McMillan and are probably confined to a narrow band along the base of the McMillan Escarpment (Cox 1967).

Figure 1. Map Showing the Proposed Location of the Glass Fed SWD #1

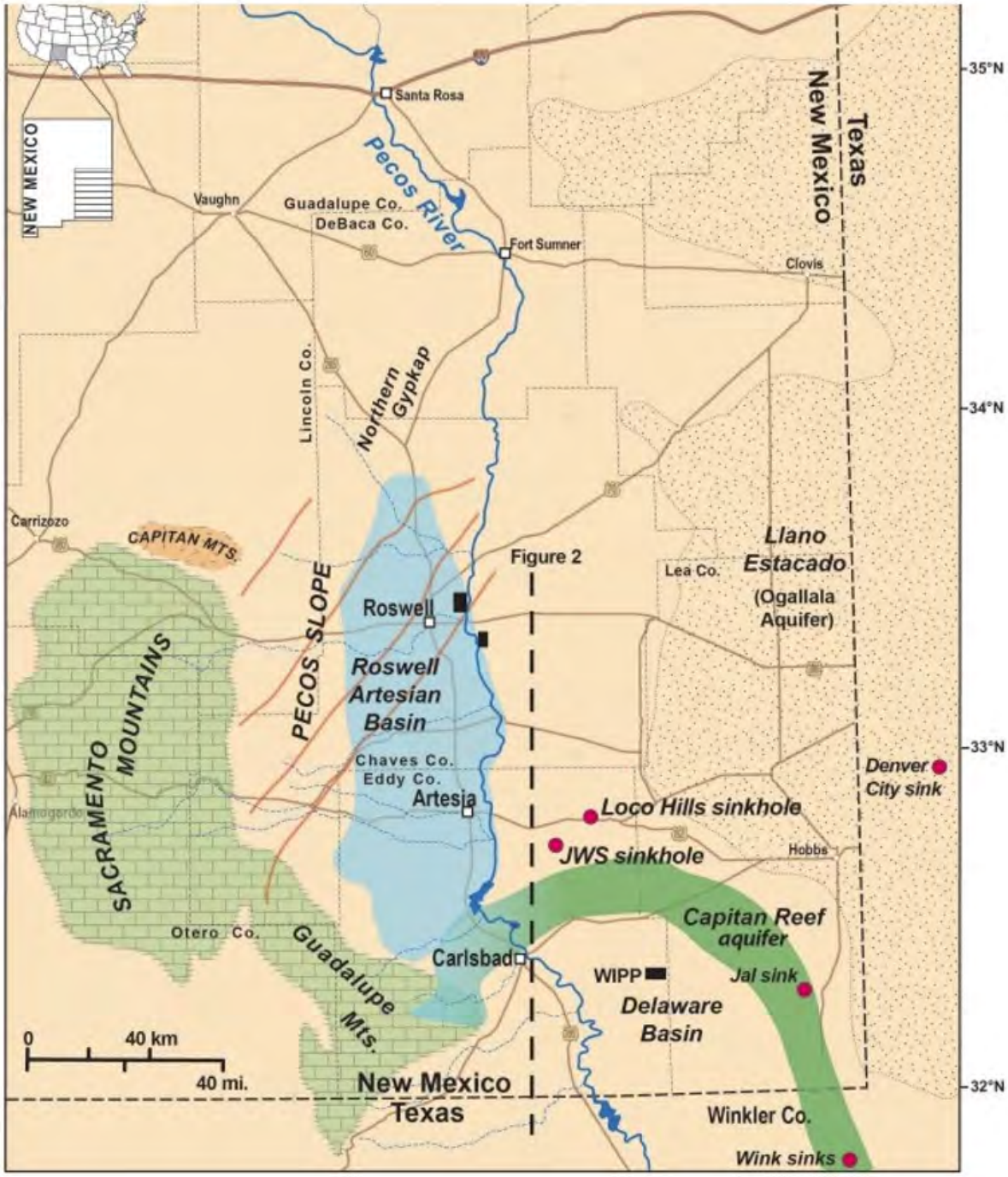

Figure 2. Regional Map of the Lower Pecos Region of Southeastern New Mexico Showing Location of Sinkholes (Land 2013)

Geology of the Dagger Draw Area

The surficial and shallow geology in the Dagger Draw area consists of the Tansill Formation, Yates Formation, Seven Rivers Formation, and Queen Formation of the Upper Permian Artesia Group. According to the snip of the surficial geologic map of Cox (1967), the surface geology of the area of the proposed Glass Fed SWD #1 well location is the Tansill Formation. **Figure 3** is a snip of this surficial geologic map showing the proposed SWD location in relation to the Tansill Formation surface geology.

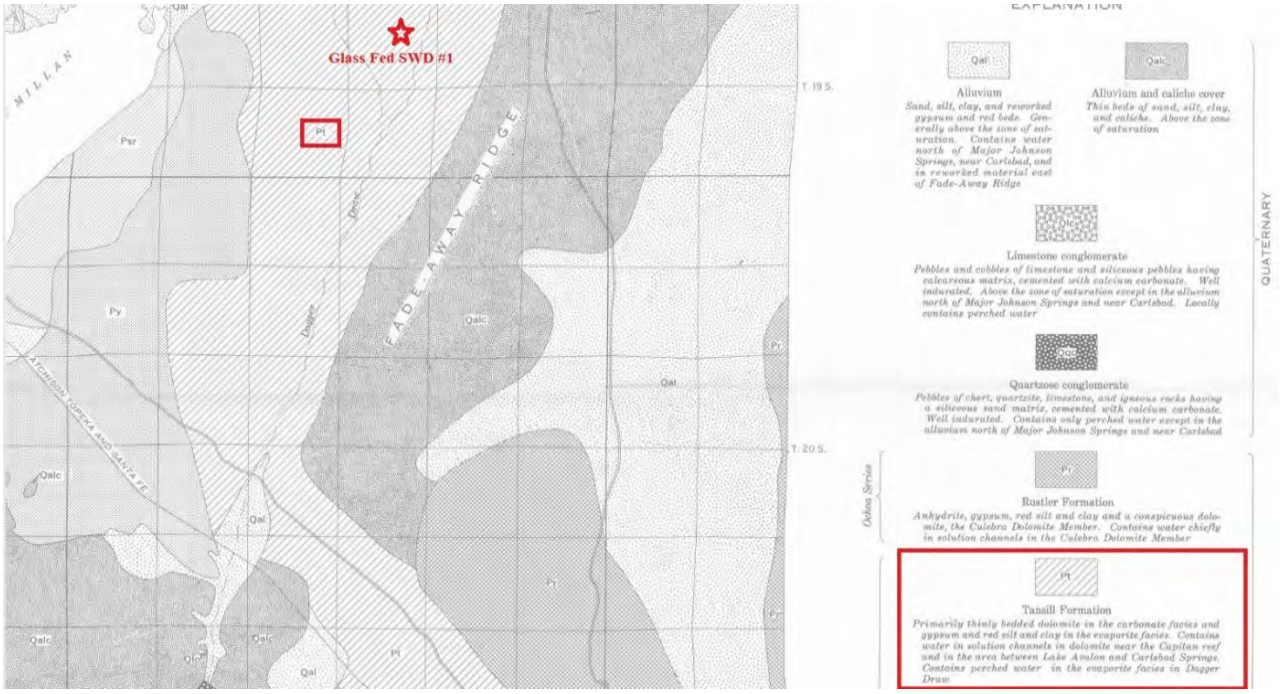

Figure 3. Map Showing the Surficial Geology of the Proposed SWD Location (Cox 1967)

Additionally, ALL evaluated and assessed the shallow geology in the area by reviewing open hole geophysical logs. Well API No. 015-10298, which is located southwest of the Glass Fed SWD #1 location, has a shallow gamma ray log section and ALL has identified the shallow geologic formations on this log snip in **Figure 4**.

The Tansill Formation, which overlies the Yates Formation, is primarily thinly bedded dolomite in the carbonate facies and gypsum, red silt, and clay from the evaporite facies (Cox 1967). The Tansill Formation in the Dagger Draw area contains perched water in the evaporite facies (Cox 1967). The Yates Formation consists of about 300 feet of alternating beds of sandstone and dolomite in the carbonate facies and about the same thickness of gypsum, red clay, silt, and sandstone in the evaporite facies (Cox 1967). The Yates Formation yields water to stock wells near the Pecos River between Lake McMillan and Lake Avalon (Cox 1967). Most of these stock wells are in the evaporite facies of the Yates Formation near Rocky Arroyo west of the river and near Dagger Draw east of the Pecos River (Cox 1967). Underlying the Yates Formation is the Seven Rivers Formation. The Seven Rivers Formation consists of about 300 feet of dolomite with a few sandy beds in the carbonate facies and anhydrite, gypsum, red silt, and clay in the

evaporite facies between the uppermost sandstone in the Queen Formation and the basal sandstone of the Yates Formation (Cox 1967). Groundwater moves through solution channels in the Yates Formation east of the Pecos River between Major Johnson Springs and Lake Avalon (Cox 1967).

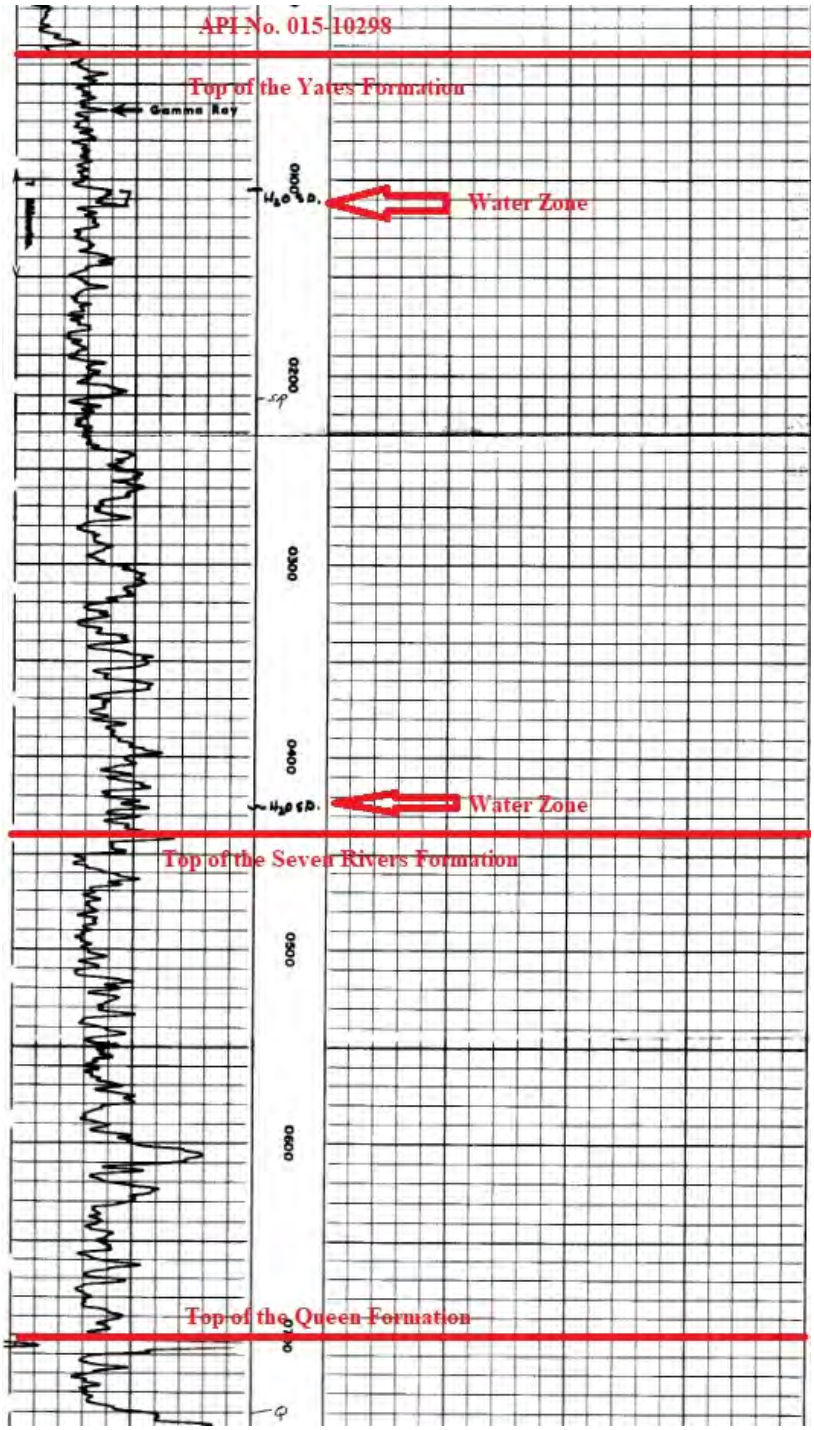

Figure 4. Gamma Ray Geophysical Log from Well API No. 015-10298 Showing the Tops of the Shallow Formations and Occurrence of Water Zones in the Well

Addressing OCD's High-Risk Karst Area Concerns

Based on ALL's extensive geologic and hydrogeologic evaluation of the Dagger Draw area and Glass Fed SWD #1 proposed well location, below are ALL's responses to these OCD concerns.

1. An explanation on how ALL determined the deepest underground sources of drinking water (USDW).
    a. **ALL determined the base of the USDW after geological and hydrogeological analysis and evaluation of several open hole geophysical logs and publications within the vicinity of the proposed SWD. Figure 4 shows locations of water zones within the Yates Formation. Figure 5 is a map showing the different groundwater zones and the location of the proposed SWD. Based on ALL's analysis, the base of the USDW will be the bottom of the Yates Formation and using the ground elevations of the proposed SWD the base of the USDW will be approximately 500 to 525 feet below the surface. ALL is proposing that Waterbridge set 20" surface casing to a depth of 550 feet and cement back to the surface to ensure isolation of the base of the USDW.**
2. An evaluation of the geology to determine that there was no direct evidence of karst features in the immediate area.
    a. **ALL performed an extensive geologic and hydrogeologic assessment of potential high-risk karst in the immediate area of the proposed SWDs in the Dagger Draw. Based on the evaluation of published geologic and hydrogeologic reports and maps, the immediate area of the proposed SWDs does not look to be an area of risk for karst development. Additionally, ALL assessed Google Earth and scanned the immediate area for any evidence of active or inactive surface sinkholes and none were detected. Based on ALL's research on the published reports on the karst, the naturally occurring sinkholes were located farther to the west in the area of Lake McMillan. If during the drilling into the Seven River Formation, circulation is lost due to dissolution of evaporites or solution channels, a drilling mud program may be implemented along with the utilization of lost circulation material (LCM) as needed.**
3. Provide an affirmative statement that the proposed well designs and confining zones will protect the USDW.
    a. **ALL's proposed well construction and cementing plans will provide multiple layers of protection of the USDW. The surface casing will be set 25 feet below the base of the USDW and cemented back to the surface. An intermediate casing string set into the top of the San Andres Formation and cemented back to the surface and then the production casing will be set through the proposed injection interval in the Cisco Formation and cemented back in two stages up into the intermediate casing string for approximately 200 feet. The well construction and cementing plan provide for three layers of isolation and protection of the USDW from any possible migration of injection fluids**

out of the proposed injection interval. There are multiple confining zones in both shale and in low porosity and low permeable carbonate rocks which will prevent upward migration of injected fluids. Additionally, there is at least 7,745 feet of vertical separation between the top of the Cisco Formation and the base of the USDW. There is no hydrologic connection between the Cisco injection interval and the USDW.

4. Provide a detailed description of both the upper and lower confining zones above and below the proposed injection interval in the Cisco Formation.
   a. **There are multiple shale beds that will serve as upper confinement above the top of the proposed injection interval in the Cisco Formation (Figure 6). Additional confining zones can be located farther above these zones on this open hole geophysical log for API No. 015-10298. There is lower confinement with shale beds at the base of the Cisco Formation (Figure 7) and with the low porosity and low permeability carbonate rocks directly below the Cisco Formation in the upper part of the Strawn Formation, which is also labeled on Figure 7. Both upper and lower confining zones will act as barriers to fluid flow out of the permitted Cisco Formation injection zone.**

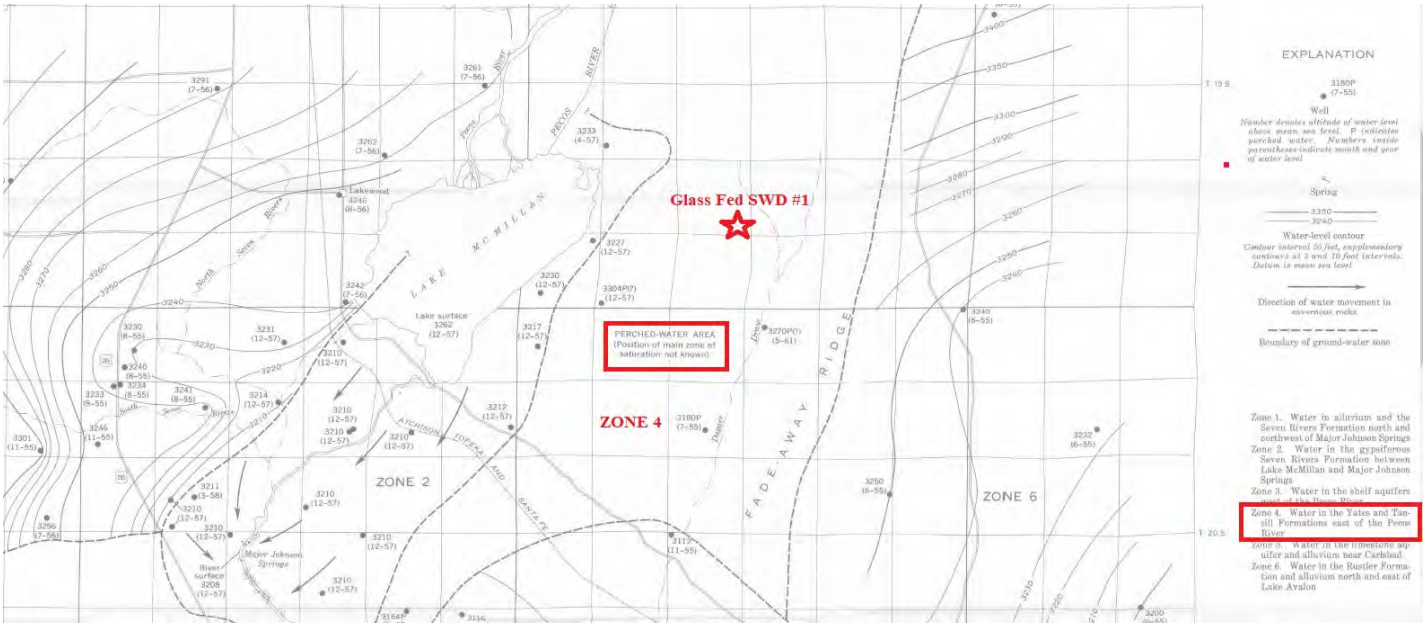

Figure 5. Map Showing the Location of the Proposed SWD in Relation to the Groundwater in the Permian Formations in the Immediate Area (Cox 1967)

References

Cox, E.R. 1967. "Geology and Hydrology Between Lake McMillan and Carlsbad Springs Eddy County, New Mexico." U.S. Geological Survey Water Supply Paper 1828, https://pubs.usgs.gov/wsp/1828/report.pdf (accessed June 9, 2022).;

Land, Lewis. 2013. "Evaporite Karst in the Permian Basin Region of West Texas and Southeastern New Mexico: The Human Impact." 13th Sinkhole Conference, NCKRI Symposium 2, www.researchgate.net/publication/313021019 (accessed June 9, 2022).

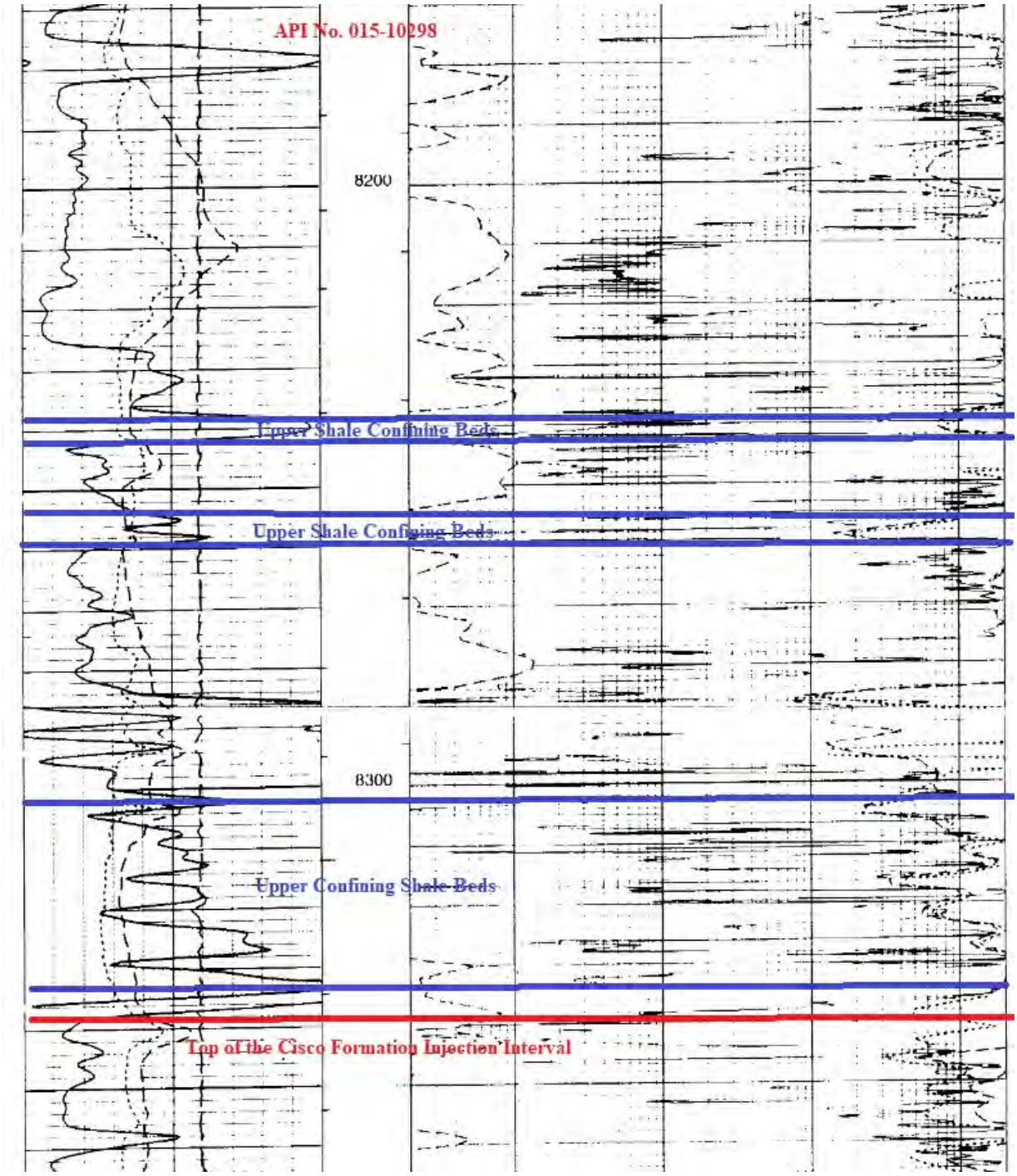

Figure 6. Open Hole Geophysical Log of API No. 015-10298 Showing the Upper Confining Zones for the Proposed Cisco Formation SWDs

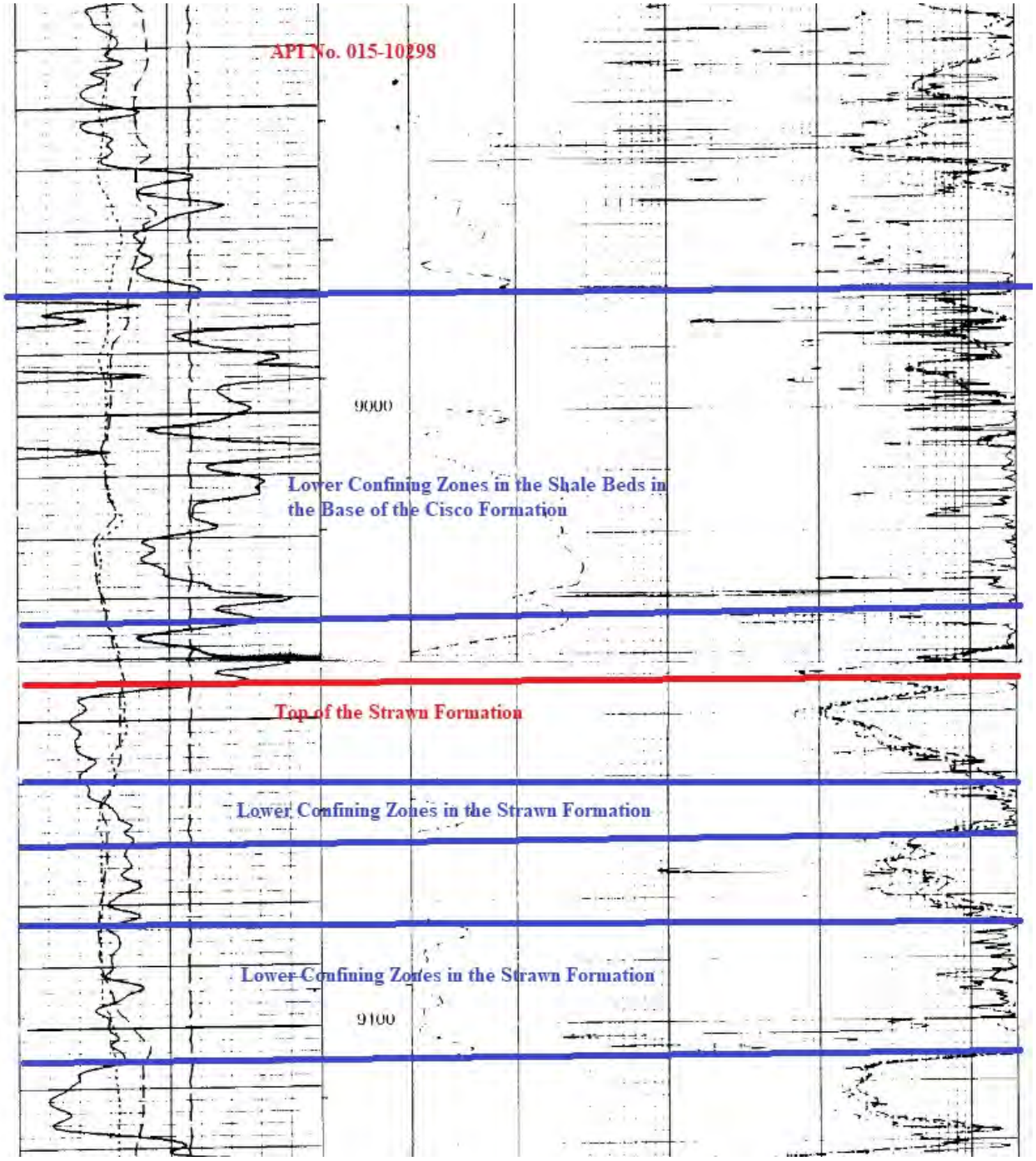

Figure 7. Lower Confining Zones at the Base of the Cisco Formation and Upper Strawn Formation in the Open Hole Geophysical Log for API No. 015-10298

August 15, 2023

Tom Tomastik

Date

Chief Geologist and Regulatory Specialist

Certified Petroleum Geologist #6354

ALL Consulting, LLC

Attachment 7

No Hydrologic Connection Statement

RE: Waterbridge Operating LLC – Glass Fed SWD #1 application, Eddy County, New Mexico

ALL Consulting LLC (ALL) has performed a thorough hydrologic investigation related to the 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 Cisco Formation 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 Eddy County, New Mexico. Based on ALL's assessment and analysis there is containment through multiple confining zones above the Cisco Formation and the USDW and over 7,745 feet of vertical separation between the base of the USDW and the top of the injection interval. Additionally, there is no evidence of extensive faulting that would allow for communication between the USDW and the Cisco Formation.

Tom Tomastik — Date

Chief Geologist and Regulatory Specialist

ALL Consulting LLC

Attachment 8

Public Notice Affidavit and Notice of Application Confirmations

APPLICATION FOR AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That WaterBridge Stateline LLC, 5555 San Felipe, Suite 1200, Houston, TX 77056, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORIZATION TO INJECT as follows:

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

WELL NAME AND LOCATION: Glass Fed SWD #1
Located 13.22 miles northwest of Carlsbad, NM
NW ¼ NE ¼ (LOT 2) Section 4, Township 20S, Range 27E
1,243 FNL & 2,042 FEL
Eddy County, NM

NAME AND DEPTH OF DISPOSAL ZONE: Cisco (8,270' – 9,200')
EXPECTED MAXIMUM INJECTION RATE: 30,000 bbls/day
EXPECTED MAXIMUM INJECTION PRESSURE: 1,654 psi (surface)

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

Additional information may be obtained by contacting Oliver Seekins at 918-382-7581.

Carlsbad Current Argus.
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Affidavit of Publication

Ad # 0005803436

This is not an invoice

ALL CONSULTING
1718 SOUTH CHEYENNE AVE

TULSA, OK 74119

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

08/22/2023

Legal Clerk

Subscribed and sworn before me this August 22, 2023:

State of WI, County of Brown
NOTARY PUBLIC

9.19.25
My commission expires

VICKY FELTY
Notary Public
State of Wisconsin

Ad # 0005803436
PO #: • PN:1703.SWD.05 – WaterBridge – Glass SWD #1
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#5803436, Current Argus, 08/22/2023

Glass Fed SWD #1 - Notice of Application Recipients

Affected Party Classification	Entity - Proof of Notice	Entity - As Mapped/Exhibited	Address	City	State	Zip Code
Surface / Mineral Owner	Bureau of Land Management New Mexico	N/A	620 E Greene St	Carlsbad	NM	88220
NMOCD District Office	New Mexico Oil Conservation Division District 2	N/A	506 W Texas	Artesia	NM	88210
BLM - Lessee	Chevron USA Incorporated	Chevron USA Inc	6301 Deauville Blvd	Midland	TX	79706
BLM - Lessee	Trigg Oil & Gas Limited Partnership	Trigg Oil & Gas LP	P.O. Box 520	Roswell	NM	88202
BLM - Lessee	V-F Petroleum Incorporated	V-F Petroleum Inc	P.O. Box 1889	Midland	TX	79702

Notes: The affected parties above received notification of this C-108 application.

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New Mexico
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District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 263490

CONDITIONS

Operator: WaterBridge Stateline LLC 5555 San Felipe Houston, TX 77056	OGRID: 330129
	Action Number: 263490
	Action Type: [IM-SD] Admin Order Support Doc (ENG) (IM-AAO)

CONDITIONS

Created By	Condition	Condition Date
mgebremichael	None	9/9/2023