Initial

Application

Part I

Received 6/10/21

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

RECEIVED: 6/10/21 | REVIEWER: | TYPE: SWD | APP NO: pBL2116243702

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



	ARBERVATION OF THE
ADMINISTRATIVE APPLIC	
THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE AF REGULATIONS WHICH REQUIRE PROCESSING /	
Annalis anak	OCDID Namels and 220040
Applicant: Anthem Water Solutions, LLC Vell Name: Screetch Owl 242128 Federal SWD 1	OGRID Number: <u>330069</u> API: <u>30-015-XXXXX</u>
Pool: SWD; Devonian-Silurian	Pool Code: 97869
SUBMIT ACCURATE AND COMPLETE INFORMATION RE INDICATED I	
[II] Injection – Disposal – Pressure Increase – I	□ OLS □ OLM Enhanced Oil Recovery □ EOR □ PPR FOR OCD ONLY
 2) NOTIFICATION REQUIRED TO: Check those which appears of lease holders B. Royalty, overriding royalty owners, revenue C. Application requires published notice D. Notification and/or concurrent approval be E. Notification and/or concurrent approval be F. Surface owner G. For all of the above, proof of notification of the notice required 	Application Content Complete Oy SLO Oy BLM
3) CERTIFICATION: I hereby certify that the information administrative approval is accurate and complete understand that no action will be taken on this approval in the description of the description.	to the best of my knowledge. I also
Note: Statement must be completed by an individua	l with managerial and/or supervisory capacity.
	6/9/2021
Marshall Tippen	Date
Print or Type Name	(972) 795-4201
00 (Phone Number
Manuellan	
Signature	mtippen@anthemwsllc.com
Signature	e-mail Address



6/9/2021

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

Re: Application of Anthem Water Solutions, LLC to drill and permit the saltwater disposal well Screetch Owl 242128 Federal SWD 1 located in Unit D, Section 24, Township 21 South, Range 28 East, NMPM, Eddy County, New Mexico.

To Whom it May Concern:

Please find the enclosed C-108 Application for Authority to Inject, supporting the above-referenced request for saltwater disposal. The well will be operated as a commercial endeavor offering operations in the area additional options for produced water disposal. Please find the enclosed C-108 Application for Authority to Inject along with supporting documents.

I would like to point out that this application for a proposed Devonian-Silurian SWD interval includes the following: Published legal notice ran 5/25/2021 in Carlsbad Current-Argus and all offset operators and other interested parties have been notified individually. The legal notice affidavit is included herein. This application also all information required for a completed Form C-108, as well as a wellbore schematic, area of review maps, affected party plat and other required and pertinent information. This well is located on federal land and federal minerals; a copy of the application has been sent to the appropriate regulatory bodies.

I respectfully request that the approval of this saltwater disposal well proceed swiftly and if your staff requires additional information or has any questions, please do not hesitate to call or email me.

Sincerely,

Marshall Tippen

Anthem Water Solutions

mtippen@anthemwsllc.com | (972) 795-4201

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: Anthem Water Solutions, LLC
	ADDRESS: 5914 W. Courtyard Drive, Suite 320, Austin TX 78730
	CONTACT PARTY: Marshall Tippen PHONE: (979) 795-4201
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 Yo Yo Yes Yo Yo
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:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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: Marshall Tippen TITLE: Director of Engineering
	SIGNATURE:DATE:DATE:
*	E-MAIL ADDRESS: mtippen@anthemwsllc.com If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

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

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

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

Item III – Subject Well Data (Attachment 1)

A. Well Data

1) General Well Data

Operator: Anthem Water Solutions, LLC

Lease Name and Well Number: Screetch Owl 242128 Federal SWD 1

Location Footage Calls: 86' from FNL, 67' from FWL

Legal Location: Unit D, Section 24, Township 21 South, Range 28 East, NMPM

Ground Elevation: 3314 feet

Proposed Injection Interval: 13709 - 14591 (open hole)

County: Eddy

2) - 3) Casing , Tubing & Cement Information

- 5) Casing , Tubin						
	1	Casi	ng Informatio	n		
Туре	Conductor (1)	Surface (2)	Intermediate (3)	Production (4)	Liner (5)	Open Hole (6)
OD	30"	16"	13 3/8"	9 5/8"	7 5/8"	N/A
Weight	N/A	84 lb / ft	68 lb / ft	53.5 lb / ft	39 lb / ft	N/A
Grade	N/A	J-55 BTC	L-80 EZ-GO FJ3	HCP-110 BTC	HCP-110 EZ- GO FJ3	N/A
Hole Size	N/A	18 1/8"	14 3/4"	12 1/4"	8 1/2"	6 1/2"
Depth Set Top	-	-	-	-	10,385	13,709
Depth Set Bottom	120	701	3,145	10,585	13,709	14,591
тос	Surf	Surf	Surf	Surface	-	-
TOC Method	Circ	Circ	Circ	Circ	CBL	-
Volume (Sacks)	250	352	561	3,119	551	N/A
DV Tool 1	N/A	N/A	N/A	3,195	N/A	N/A
DV Tool 2	N/A	N/A	N/A	8,224	N/A	N/A

Tub	ing Information	on
Туре	Upper String (7)	Lower String (8)
OD	5 1/2"	4 1/2"
Weight	20 lb / ft	18 lb / ft
Grade	HCL-80 BTC	HCL-80 LTC
Hole Size	N/A	N/A
Depth Set Top		10,285
Depth Set Bottom	10,285	13,659

^{*}Wellbore Diagram Attached

4) Packer Information:

Arrowset AS1-X or equivalent packer set at approximately 13659 feet *Packer Schematic Attached

B. Completion Information

1) Injection Formation Name: Devonian-Silurian

Pool Name: SWD; Devonian-Silurian

Pool Code: 97869

2) Injection Interval: 13709 - 14591 (open hole)

3) **Drilling Purpose:** Drilled for injection

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

Delaware: 3095'
Bone Spring: 7456'
Wolfcamp: 9718'
Strawn: 10991'
Atoka: 11304'
Morrow: 11930'

5) **Underlying Oil and Gas Zones:** No underlying oil and gas zones exist.

Item V – Well and Lease Maps (Attachment 2)

- 1) 2-mile oil & Gas Well Map
- 2) 1-mile Well Detail List
- 3) 2-Mile Lease Map
- 4) 2-Mile Mineral Ownership Map
- 5) 2-Mile Surface Ownership map
- 6) 1.5-Mile Deep SWD Map (Devonian-Silurian)
- 7) Potash Lease Map

Item VI – AOR Well List (Attachment 2)

There have been 8 wells drilled within the 1-mile AOR. None of these wells nor any new or permitted wells penetrate the injection zone.

Item VII – Proposed Operation (Attachment 3)

- 1) Proposed Maximum Injection Rate: 30,000 bwpd Proposed Average Injection Rate: 15,000 bwpd
- 2) A closed system will be used.
- 3) **Proposed Maximum Injection Pressure:** 2741 psi (surface)
- 4) **Proposed Average Injection Pressure:** 1644 psi (surface)
- 5) **Source Water Analysis:** It is expected that the injected fluid will consist of water produced from the Wolfcamp and Bone Springs formations. Water samples from these formations are included in Attachment 3.
- 6) **Injection Formation Water Analysis:** The proposed SWD will be injecting water into the Devonian-Silurian formation which is a non-productive zone known to be compatible with formation water from the Wolfcamp and Bone Springs formations. Water analyses from the Devonian-Silurian formation in the area are included in attachment 3.

Item VIII - Geologic Description

The proposed injection interval includes the Devonian–Silurian formation from 13709 feet to 14591 feet. This formation consists of interbedded carbonate rocks consisting of dolomites and limestones with some interbedded siltstones and shales. Several thick sections of porous and permeable intervals capable of taking water are present within the subject formations in the area.

The base of the lowermost Underground Source of Drinking Water (USDW) is at a depth of approximately 150 feet. The USDW is covered by 16-inch casing set at 701 feet and cemented to surface, additionally the USDW is covered by intermediate casing set at 3145 feet and cemented to surface. Geophysical log assessment was conducted to accurately determine the top of the Rustler formation, as well as the top and base of the Salado formation in the area.

Item IX – Proposed Stimulation

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

Item X - Logging and Test Data

Log data will be submitted to the OCD upon completion of this well.

Item XI – Fresh Groundwater Samples (Attachment 4)

Based on a review of the data from the New Mexico Office of State Engineer there are no fresh water wells within a 1-mile radius of the proposed location. As a result, no groundwater samples were obtained.

XII - No Hydrologic Connection Statement (Attachment 5)

Anthem has examined available geologic and engineering data, and has found no evidence of faulting present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing and cementing progam has been designed to further insure there will be no hydrologic connection between the injection interval and overlying USDWs. A letter from a knowledgeable and qualified expert stating that there is a low risk of seismic activity from the proposed injection activities is included in Attachment 5.

XIII - Proof of Notice (Attachment 6)

A Public Notice was filed with Carlsbad Current-Argus and an affidavit is included in Attachment 6.

A copy of the application was mailed to the OCD District Office, landowners, appropriate regulatory bodies, and leasehold operators within a 1-mile radius of the proposed SWD location. A list of recipients, as well as delivery confirmations, is included in Attachment 6.

Attachments Table of Content:

Attachment 1:

C-102

Proposed Wellbore Diagram

Packer Schematic

Attachment 2:

2-mile Oil & Gas Well Map

1-mile Well Detail List

2-Mile Lease Map

2-Mile Mineral Ownership Map

2-Mile Surface Ownership map

1.5-Mile Deep SWD Map (Devonian-Silurian)

Potash Lease Map

Attachment 3:

Source Water Analysis

Formation Water Analysis

Attachment 4:

1-Mile Fresh Ground Water Map

Fresh Ground Water Samples

Attachment 5:

Letter of Seimic Activity

Attachment 6:

Public Notice Affidavit

List of Notification Applicants & Delivery Confirmations

Attachment 1: Form C-102

<u>District I</u>
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
<u>District II</u>

811 S. First St., Artesia, NM 88210 Phone: (575) 748-1283 Fax: (575) 748-9720

<u>District III</u> 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

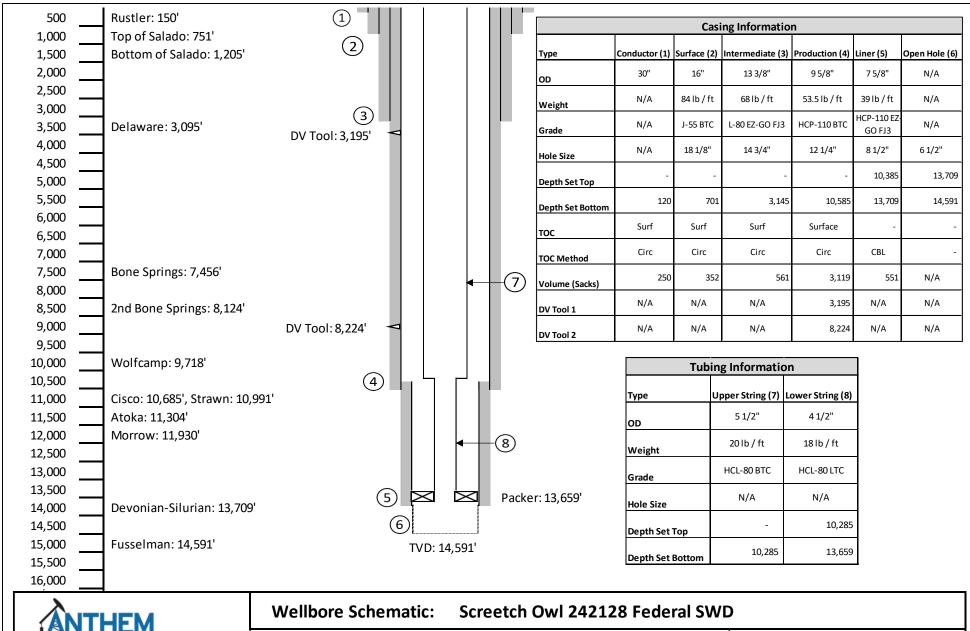
WELL LOCATION AND ACREAGE DEDICATION PLAT

			" LLL L	, , , , , ,		En IOL DEDIC	TITOT I DI						
1 A	API Number			² Pool Co	de		³ Pool Na	me			,		
30-01	5-XXXX	X		97869		SWD; Devonian-S							
⁴ Property C	Code	ode ⁵ Property Name								⁶ Well Number			
		Scre	etch Owl 242		1								
⁷ OGRID N	lo.				⁸ Operator !	Name				⁹ Elevation			
330069		Ant	hem Water So	olutions, L	LC				3314				
¹⁰ Surface Location													
UL or lot no.	Section	Township	Range	Lot Id	n Feet from the	North/South line	Feet from the	East	East/West line		County		
D	24	21S	28E		86	North	67	W	est	Eddy			
			п Во	ttom Ho	ole Location If	Different From	n Surface						
UL or lot no.	Section	Township	Range	Lot Id	n Feet from the	North/South line	Feet from the	East/West line			County		
12 Dedicated Acres	13 Joint or	Infill	¹⁴ Consolidation	Code 15 C	Order No.				'				
ı													

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.

\$86' ← ○ O D	C	B 4727560 N	А	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.
E		4.048380 W G	Н	Signature Date Printed Name E-mail Address
L		J 1 <u>2128 Federal SWD</u> 727560 N	l	18SURVEYOR 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.
М	LONG = -104 N	1.048380 w	Р	Date of Survey Signature and Seal of Professional Surveyor: PRELIMINARY Certified survey to be conducted and submitted upon C-108 approval Certificate Number

Attachment 1: Proposed Wellbore Diagram



	NTHEM	Wellbore Schematic:	Screetch Owl 242128 Federal SWD)	
	WATER SOLUTIONS	API: 30-015-XXXXX		Section:	24
L	WATER SOLUTIONS	NMOCD District: 2		Township:	: 215
		Prepared By: PMT		Range:	28E
	5914 W. Courtyard Dr. Suite 320, Austin,			County:	Eddy
	Texas, 78730	Notes:			
Į					

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:

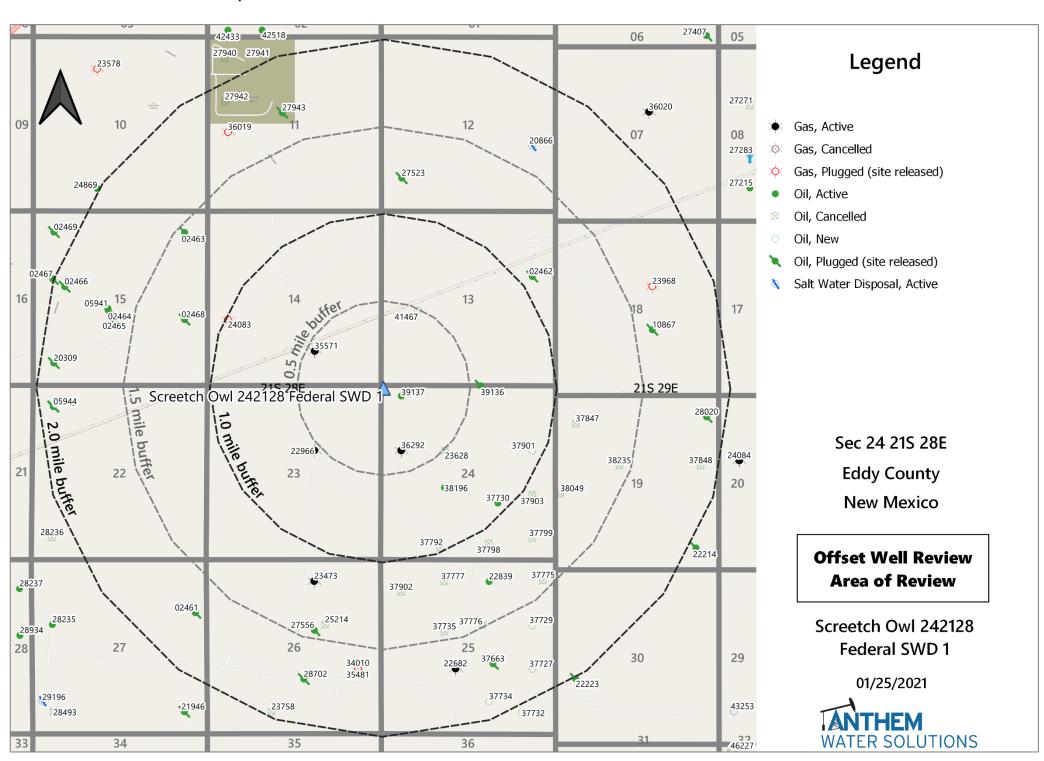
- The design holds high differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs
- The packer can be set with compression, tension, or wire line, enabling deployment in shallow and deep applications
- . The packer can be set and released 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

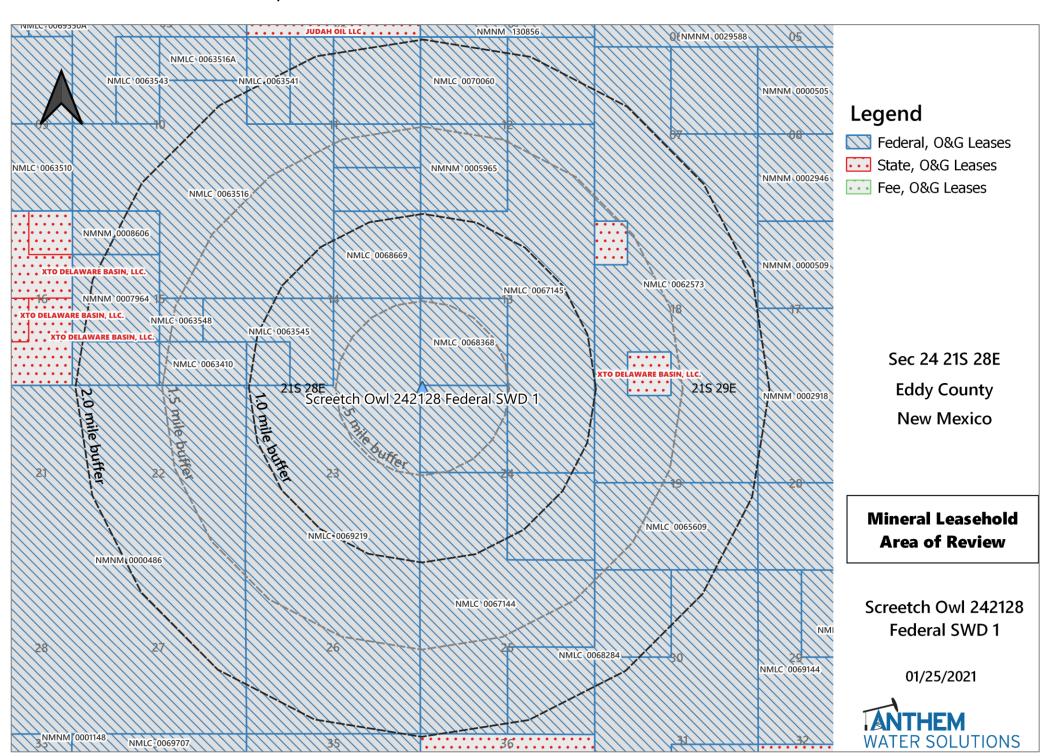
Attachment 2: 2-Mile Oil & Gas Map



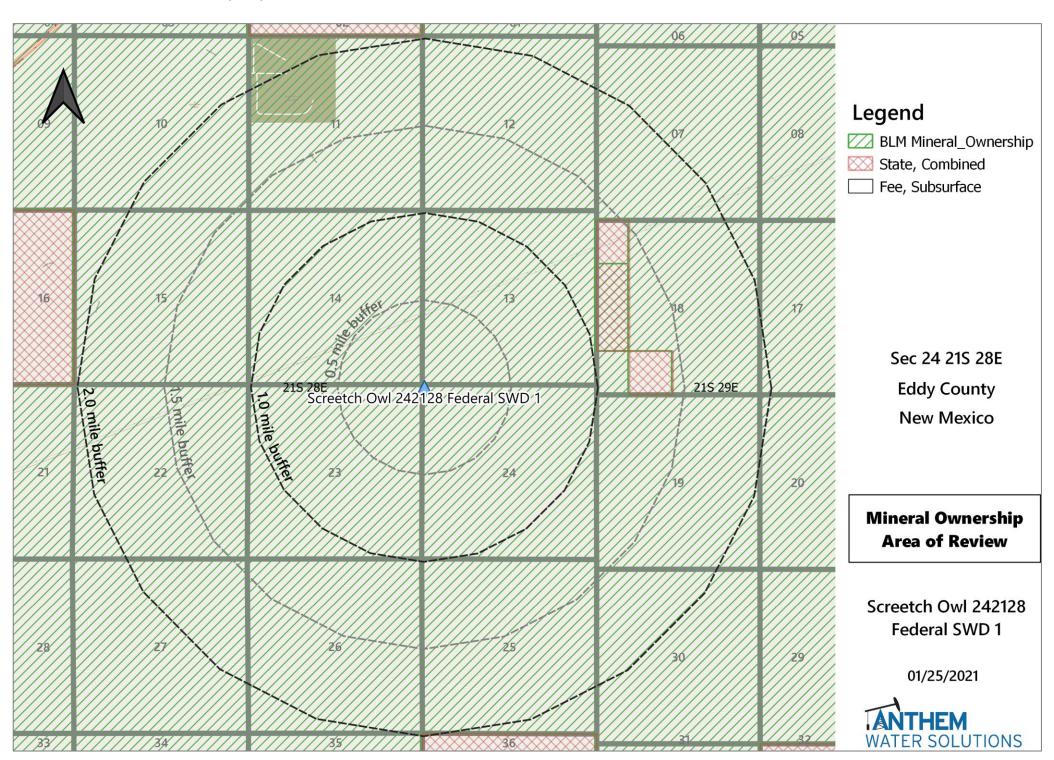
Attachment 2: 1-mile Well Detail List

Well Name	API#	Well Type	Well Status	Operator	Spud Date	Location (Sec, Tn, Rg)	Total Vertical Depth	Penetrate Inj Zone
BIG EDDY UNIT #092	30-015-24083	Gas	Plugged (site released)	BEPCO, LP	5/3/1982	L-14-21S-28E	12,519	no
BIG EDDY UNIT #076	30-015-22966	Gas	Active	XTO PERMIAN OPERATING LLC.	8/21/1979	G-23-21S-28E	12,323	no
BIG EDDY #167	30-015-35571	Gas	Active			O-14-21S-28E	12,600	no
NORTH INDIAN FLATS 24 FEDERAL #015	30-015-39137	Oil	Active	XTO PERMIAN OPERATING LLC.		D-24-21S-28E	3,200	no
NORTH INDIAN FLATS 13 FEDERAL #001	30-015-41467	Oil	New	XTO PERMIAN OPERATING LLC.	N/A	L-13-21S-28E	-	no
BIG EDDY UNIT #202	30-015-36292	Gas	Active	XTO PERMIAN OPERATING LLC.	6/20/2008	E-24-21S-28E	12,486	no
NORTH INDIAN FLATS 24 FEDERAL #014	30-015-39136	IOII	Plugged (site released)	BOPCO, L.P.	7/5/2011	B-24-21S-28E	3,200	no
NORTH INDIAN FLATS 24 FEDERAL #010	30-015-38196	Oil	Active	XTO PERMIAN OPERATING LLC.	10/14/2010	K-24-21S-28E	3,200	no
NORTH INDIAN FLATS 24 FEDERAL #001	30-015-37730	Oil	Active	XTO PERMIAN OPERATING LLC.	4/20/2010	J-24-21S-28E	3,200	no
NORTH INDIAN FLATS 24 FEDERAL #003H	30-015-37901	Oil	New	XTO PERMIAN OPERATING LLC.		H-24-21S-28E	-	no

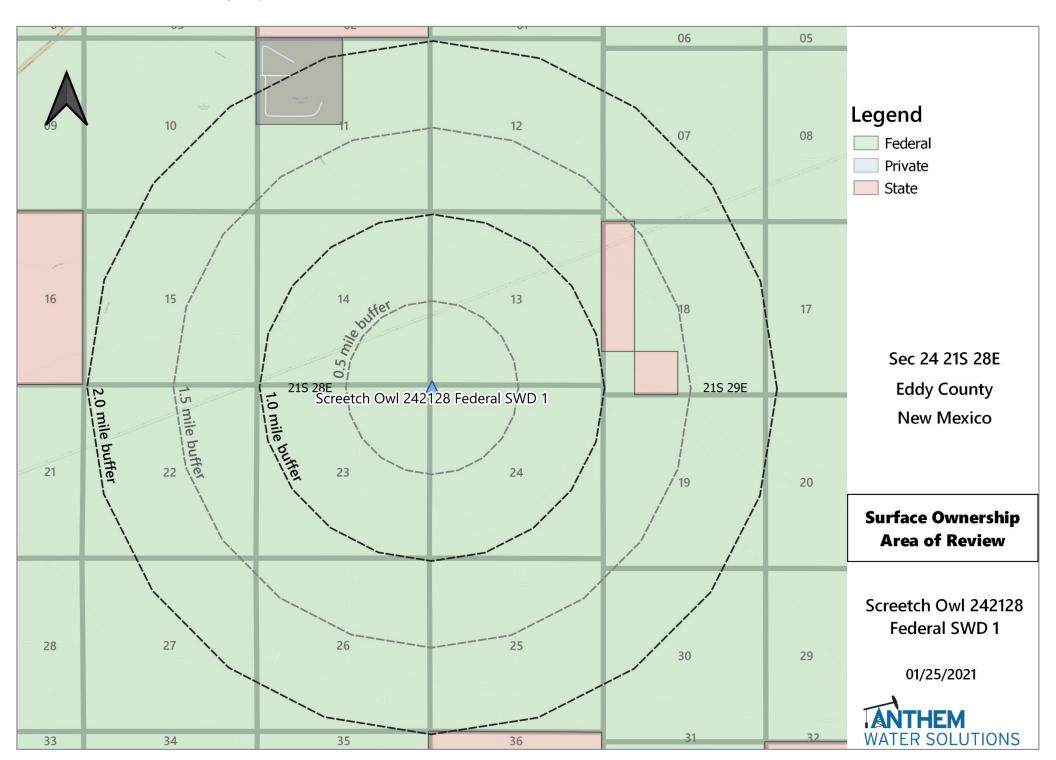
Attachment 2: 2-Mile Oil & Gas Lease Map



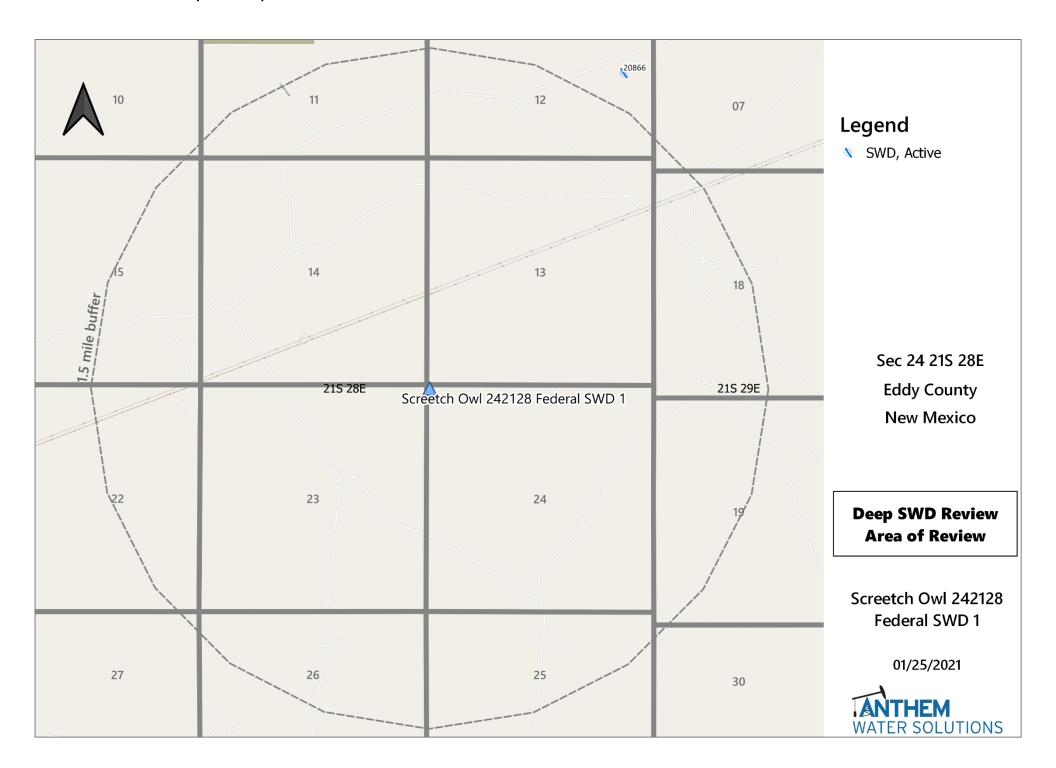
Attachment 2: Mineral Ownership Map



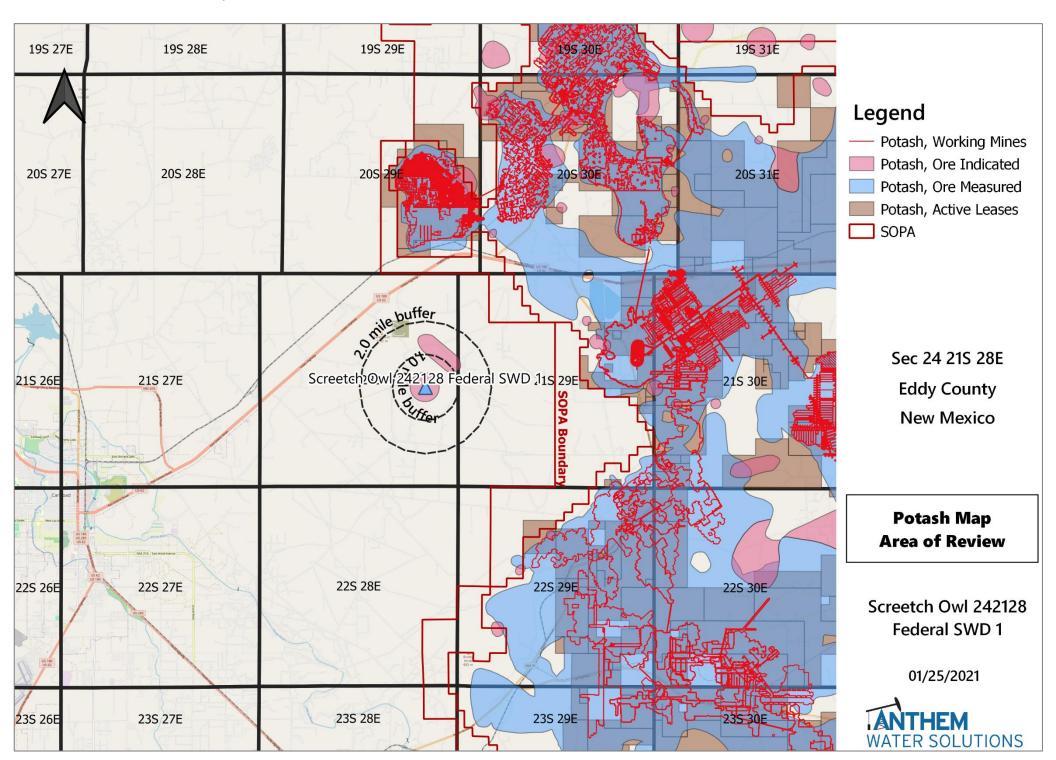
Attachment 2: Surface Ownership Map



Attachment 2: 1.5 Mile Deep SWD Map



Attachment 2: Potash Lease Map

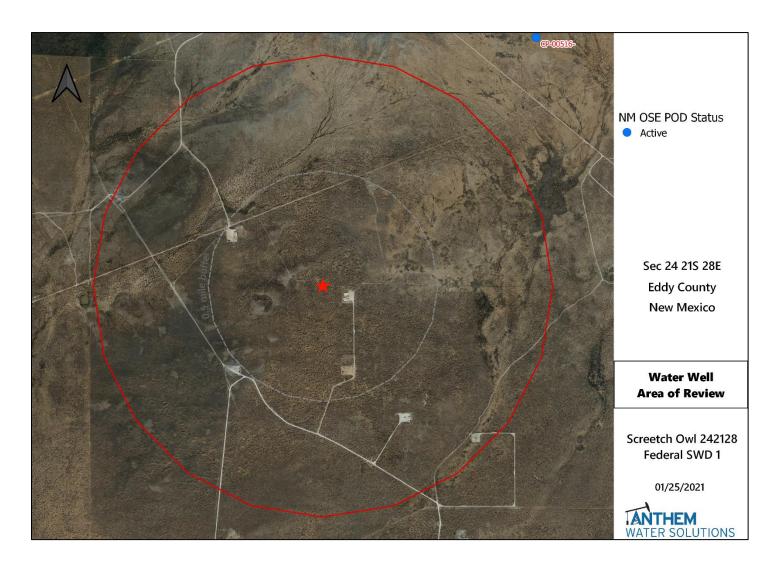


Attachment 3: Formation & Source Water Analysis

										_			
	Injection Formation Water Analysis												
Anthem Water Solutions, LLC													
Well Name	API	Latitude	Longitude	Section	Township	Range	County	State	Field	Formation	TDS (Mg/L)	Bicarbonate (MG/L)	Sulfate (Mg/L)
PRE-ONGARD WELL #001	30-015-02416	32.5527229	-104.1623917	22	20S	28E	Eddy	NM		DEVONIAN	39,605	810	1,618
PRE-ONGARD WELL #001	30-015-02475	32.4421539	-104.042305	36	21S	28E	Eddy	NM		DEVONIAN	50,026	762	1,150
PRE-ONGARD WELL #001	30-015-03537	32.6839676	-104.0347595	1	195	29E	Eddy	NM		DEVONIAN	29,011	520	1,500
WHITE CITY PENN GAS COM UNIT 1 #001	30-015-00408	32.1937523	-104.3088455	29	24S	26E	Eddy	NM	WHITE CITY	DEVONIAN	#N/A	653	1,336
REMUDA BASIN UNIT #001	30-015-03691	32.2886238	-103.9360428	24	23S	29E	Eddy	NM	REMUDA	DEVONIAN	271,010	130	100
BIG EDDY SWD #001	30-015-05819	32.5968154	-103.8504983	3	20S	31E	Eddy	NM	SWD	DEVONIAN	137,989	1,420	1,751
COTTON DRAW UNIT #084	30-015-29728	32.1592751	-103.7438736	2	25S	31E	Eddy	NM	PADUCA	DEVONIAN	85,799	59	389
COTTON DRAW UNIT #076	30-015-29252	32.1565857	-103.737999	1	25S	31E	Eddy	NM	PADUCA	DEVONIAN	128,947	317	481
COTTON DRAW UNIT #086	30-015-29850	32.1446877	-103.7278824	12	25S	31E	Eddy	NM	PADUCA	DEVONIAN	131,450	353	542

					ς	ource V	Vator A	nalycic					
					Ant	hem Wa	ter Solu	tions, LL	C				
Well Name	API	Latitude	Longitude	Section	Township	Range	County	State	Field	Formation	TDS (Mg/L)	Bicarbonate (MG/L)	Sulfate (Mg/L)
PRE-ONGARD WELL #001	30-015-02416	32.5527229	-104.1623917	22	20S	28E	Eddy	NM		WOLFCAMP	55,965	252	2,260
PRE-ONGARD WELL #004	30-015-02280	32.6479454	-104.1791229	21	195	28E	Eddy	NM	MILLMAN EAST	WOLFCAMP	118,720	2,700	1,080
SERRANO 29 FEDERAL #001H	30-015-37763	32.1901523	-104.2192003	29	24S	27E	Eddy	NM	SULPHATE DRAW	WOLFCAMP	102,136	183	#N/A
HABANERO 17 FEDERAL COM #001H	30-015-36108	32.2218759	-104.2189611	17	24S	27E	Eddy	NM	BLACK RIVER	WOLFCAMP	108,205	146	#N/A
WHITE CITY PENN GAS COM UNIT 1 #001	30-015-00408	32.1937523	-104.3088455	29	24S	26E	Eddy	NM	WHITE CITY	WOLFCAMP	#N/A	653	1,336
STATE AC COM #001	30-015-22299	32.5572166	-104.1806107	21	20S	28E	Eddy	NM	BURTON FLAT	WOLFCAMP	144,926	37	1,350
PURE GOLD C-17 FEDERAL #002	30-015-26021	32.3057258	-103.7987356	17	23S	31E	Eddy	NM	SAND DUNES WEST	WOLFCAMP	11,361	1,708	#N/A
PARKWAY WEST UNIT #015	30-015-32363	32.6353531	-104.0734329	28	195	29E	Eddy	NM	PARKWAY WEST UNIT #015	BONE SPRING	215,934	98	702
APACHE 25 FEDERAL #009	30-015-32797	32.361248	-103.8309479	25	22S	30E	Eddy	NM	APACHE 25 FEDERAL #009	BONE SPRING	160,590	146	856
TODD 22 G FEDERAL #007	30-015-32881	32.2917137	-103.7635422	22	23S	31E	Eddy	NM	TODD 22 G FEDERAL #007	BONE SPRING	269,658	37	10
PARKWAY #021	30-015-32686	32.6253433	-104.0725937	28	195	29E	Eddy	NM	PARKWAY #021	BONE SPRING	214,972	85	715
TODD 15 M FEDERAL #013	30-015-33118	32.2989769	-103.7720947	15	23S	31E	Eddy	NM	TODD 15 M FEDERAL #013	BONE SPRING	292,473	85	490
APACHE 25 FEDERAL #005	30-015-32720	32.3612404	-103.8266678	25	22S	30E	Eddy	NM	APACHE 25 FEDERAL #005	BONE SPRING	300,667	61	17
STRAWBERRY 7 FEDERAL #003	30-015-37171	32.6812553	-103.9148483	7	195	31E	Eddy	NM	STRAWBERRY 7 FEDERAL #003	BONE SPRING	185,540	183	600
STRAWBERRY 7 FEDERAL #007	30-015-38485	32.6812526	-103.9012376	7	195	31E	Eddy	NM	STRAWBERRY 7 FEDERAL #007	BONE SPRING	187,930	98	940
REMUDA BASIN UNIT #001	30-015-03691	32.2886238	-103.9360428	24	23S	29E	Eddy	NM	REMUDA BASIN UNIT #001	BONE SPRING	271,010	130	100
JONES FEDERAL B #003	30-015-10394	32.6405487	-103.8334885	23	195	31E	Eddy	NM	JONES FEDERAL B #003	BONE SPRING	178,015	305	721
LONETREE STATE #001	30-015-21920	32.478508	-104.1454086	13	21S	27E	Eddy	NM	LONETREE STATE #001	BONE SPRING	244,966	122	1,013
FEDERAL HJ-27 #001	30-015-25780	32.6335258	-103.863533	27	195	31E	Eddy	NM	FEDERAL HJ-27 #001	BONE SPRING	176,639	305	530
HANLEY FEDERAL #001	30-015-26068	32.7674713	-103.9105911	7	18S	31E	Eddy	NM	HANLEY FEDERAL #001	BONE SPRING	204,076	293	1,515
ALLIED 7 FEDERAL #001	30-015-25900	32.7638435	-103.9067764	7	18S	31E	Eddy	NM	ALLIED 7 FEDERAL #001	BONE SPRING	225,562	122	740
APACHE 25 FEDERAL #002	30-015-27478	32.3576164	-103.8298492	25	22S	30E	Eddy	NM	APACHE 25 FEDERAL #002	BONE SPRING	9,546	183	51
ORE IDA 14 FEDERAL #009	30-015-29278	32.2118607	-103.9491348	14	24S	29E	Eddy	NM	ORE IDA 14 FEDERAL #009	BONE SPRING	190,367	244	539
H B 11 FEDERAL #003	30-015-29249	32.2272186	-103.9569855	11	24S	29E	Eddy	NM	H B 11 FEDERAL #003	BONE SPRING	195,306	256	650
HACKBERRY 18 FEDERAL #001	30-015-29780	32.654953	-103.9065323	18	195	31E	Eddy	NM	HACKBERRY 18 FEDERAL #001	BONE SPRING	180,325	85	850
WEST SHUGART 19 FEDERAL #002	30-015-30780	32.7271385	-103.9094238	19	18S	31E	Eddy	NM	WEST SHUGART 19 FEDERAL #002	BONE SPRING	144,906	390	850
WEST SHUGART 30 FEDERAL #003	30-015-30776	32.7247467	-103.9067154	30	18S	31E	Eddy	NM	WEST SHUGART 30 FEDERAL #003	BONE SPRING	136,715	244	675
ROOKIE STATE #001	30-015-10060	32.4134165	-104.3325848	7	22S	26E	Eddy	NM	ROOKIE STATE #001	BONE SPRING	67,985	61	1,148

Attachment 4: 1-mile Fresh Water Map and Tabular List



	Water Well Sampling Rational										
	Screetch Owl 242128 Federal SWD 1										
Water Wells	Water Wells Owner Available Contact Information Use Sampling Required Notes										
There are no f	resh water wells within a 1-mile	radius									



NM Oil Conservation Division 1220 S. St. Francis Dr. Santa Fe, NM 87505

Re: Geology Statement
Anthem Water Solutions, LLC
Screetch Owl 242128 Federal SWD No. 1
Section 24, T. 21S, R. 28E
Eddy County, New Mexico

To whom it may concern:

Publicly available geologic and engineering data related to the proposed well have been thoroughly reviewed, and no evidence for open faults or any other hydrologic connection between the proposed Devonian-Silurian injection zone and any underground sources of drinking water has been found. Please see the attached seismic risk assessment for additional information.

Sincerely,

Cory Walk Geologist

Seismic Risk Assessment

Anthem Water Solutions, LLC

Screetch Owl 242128 Federal SWD No. 1

Section 24, Township 21 South, Range 28 East

Eddy County, New Mexico

Cory Walk, M.S.

Geologist

Cory Walk

Permits West Inc.

May 19, 2021

GENERAL INFORMATION

Screetch Owl 242128 Federal SWD No. 1 is located in the NW 1/4, section 24, T21S, R28E, about 10 miles northeast of Carlsbad, NM in the Permian Basin. Anthem Water Solutions proposes the injection zone to be within the Devonian-Silurian formation through an open hole from 13,709'-14,591' below ground surface. This report assesses concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

SEISMIC RISK ASSESSMENT

Historical Seismicity

Searching the USGS earthquake catalog resulted in no (0) earthquakes above a magnitude 2.5 within 6 miles (9.7 km) of the proposed deep disposal site since 1970 (Fig. 1). The nearest earthquake occurred on November 28, 1974 about 12.4 miles (~20.0 km) southwest of the proposed SWD site and had a magnitude of 3.9.

Basement Faults and Subsurface Conditions

A structure contour map (Fig. 1) of the Precambrian basement shows the Screetch Owl 242128 Federal SWD #1 is approximately 19.3 miles from the nearest basement-penetrating fault inferred by Ewing et al (1990). **Information about nearby faults is listed in Table 1**.

Snee and Zoback (2018) state, "In the western part of Eddy County, New Mexico, S_{Hmax} is ~north-south (consistent with the state of stress in the Rio Grande Rift; Zoback and Zoback, 1980) but rotates to ~east-northeast-west-southwest in southern Lea County, New Mexico and the northernmost parts of Culberson and Reeves counties, Texas." Around the Screetch Owl 242128 Federal SWD site, Snee and Zoback indicate a S_{Hmax} direction of N010°E and an A_{ϕ} of 0.57, indicating an extensional (normal) stress regime.

Induced seismicity is a growing concern of deep SWD wells. Software developed by the Stanford Center for Induced and Triggered Seismicity allows for the probabilistic screening of deeply penetrating faults near the proposed injection zone (Walsh et al., 2016; Walsh et al., 2017). This software uses parameters such as stress orientations, fault strike/dip, injection rates, fault friction coefficients, etc. to estimate the potential for fault slip. Using this software, Snee and Zoback (2018) indicate that the nearest fault (19 miles to the northeast) has a 0% probability of fault slip (Fig. 2). Other faults about 20 miles away have higher FSP probabilities but due to their distance, the proposed SWD is unlikely to have any major effect on them.

GROUNDWATER SOURCES

Quaternary Alluvium acts as the principal aquifer used for potable ground water near the Screetch Owl 242128 Federal SWD #1 location (Hendrickson and Jones, 1952). Nicholson and Clebsch (1961) state, "Potable ground water is not available below the Permian and Triassic unconformity but, because this boundary is not easily defined, the top of the Rustler anhydrite formation is regarded as the effective lower

limit of 'potable' ground water." Around the Screetch Owl 242128 Federal SWD #1, the top of the Rustler Formation lies at a depth of approximately 150' bgs.

VERTICAL MIGRATION OF FLUIDS

Permeability barriers exist above (Woodford shale; 100 ft thick) and below (Simpson Group; 170 ft thick) the targeted Devonian-Silurian injection zone (Plate 2, Comer et al., 1991; Fig. 8, Frenzel et al., 1988). Precambrian structure contours (Ruppel, 2009) show the basement to be at a depth of approximately 15,590' in this area. Therefore, the injection zone lies approximately 1,000' above the Precambrian basement and approximately 13,560' below the previously stated lower limit of potable water at the top of the Rustler anhydrite formation. The stratigraphy suggests that the Woodford Shale and Simpson Group are adequate confining barriers that would prevent the vertical migration of injected fluids.

CONCLUSION

After examination of publicly available geologic and engineering data, there is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

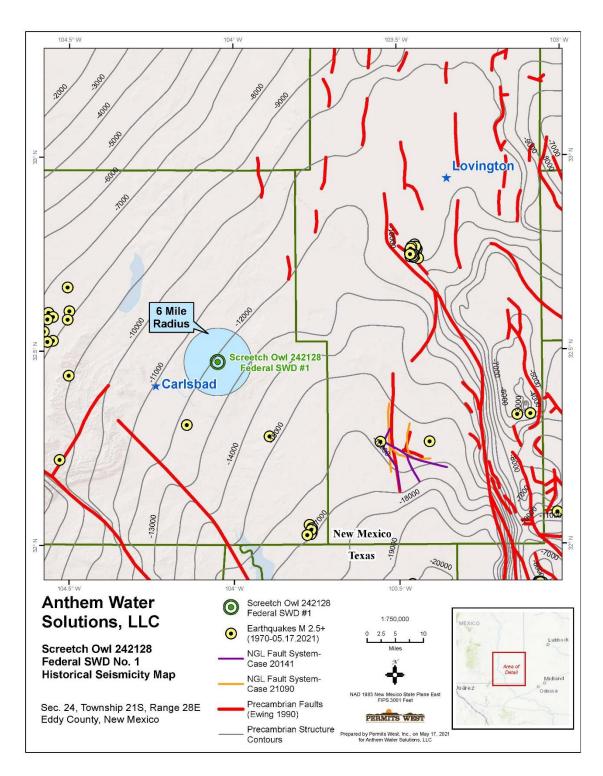


Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). Purple and orange lines represent the locations of basement-penetrating faults inferred by Todd Reynolds representing NGL in NMOCD Case Nos. 20141 and 21090. The Screetch Owl 242128 Federal SWD #1 well lies ~19.3 miles southwest of the closest deeply penetrating fault and ~12.4 miles northeast of the closest historic earthquake.

Table 1: Nearby Fault Information

Fault	Distance to			
Number	proposed SWD (mi)	Strike (°)	Dip (°)	FSP (%)
1	19.3	168	50-90	0
2	19.8	315	50-90	0
3	19.8	220	50-90	20-30

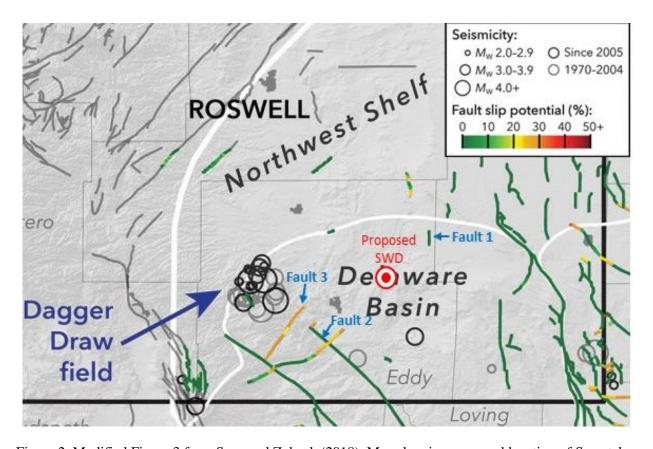


Figure 2. Modified Figure 3 from Snee and Zoback (2018). Map showing proposed location of Screetch Owl 242128 Federal SWD #1 in relation to Snee and Zoback's results of their FSP analysis.

References Cited

- Comer, J. B., 1991, Stratigraphic Analysis of the Upper Devonian Woodford Formation, Permian Basin, West Texas and Southeastern New Mexico: The University of Texas at Austin, Bureau of Economic Geology, Report of Investigations No. 201, 63 p.
- Ewing, T. E., 1990, The tectonic map of Texas: Austin, Bureau of Economic Geology, The University of Texas at Austin.
- Frenzel, H. N., Bloomer, R. R., Cline, R. B., Cys, J. M., Galley, J. E., Gibson, W. R., Hills, J. M., King, W. E., Seager, W. R., Kottlowski, F. E., Thompson, S., III, Luff, G. C., Pearson, B. T., and Van Siclen, D. C., 1988, The Permian Basin region, in Sloss, L. L., ed., Sedimentary cover—North American Craton, U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. D-2, p. 261–306.
- Hendrickson, G. E., and Jones, R. S., 1952, Geology and Ground-Water Resources of Eddy County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3, 179 pp., 6 plates.
- Hurd, O; Zoback, MD, 2012, Intraplate earthquakes, regional stress and fault mechanics in the Central and Eastern U.S. and Southeastern Canada. Tectonophysics, 581:182-92.
- Nicholson, A., Jr., and Clebsch, A., Jr., 1961, Geology and ground-water conditions in southern Lea County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 6, 123 pp., 2 plates.
- Ruppel, S.C., 2009, Integrated synthesis of the Permian basin: data and models for recovering existing and undiscovered oil resources from the largest oil-bearing basin: U.S. Oil & Natural Gas Technology, Bureau Economic Geology, The University of Texas at Austin, p. 1-959.
- Snee, J.-E.L., Zoback, M.D., 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: Leading Edge, v. 37, p. 127–134.
- Walsh, F. R., and Zoback, M. D., (2016) Probabilistic assessment of potential fault slip related to injection induced earthquakes: Application to north central Oklahoma, USA, Geology, Data Repository item 2016334, doi:10.1130/G38275.1
- Walsh, F. R., Zoback, M. D., Pais, D., Weingarten, M., and Tyrrell, T. (2017) FSP 1.0: A Program for Probabilistic Estimation of Fault Slip Potential Resulting From Fluid Injection, User Guide from the Stanford Center for Induced and Triggered Seismicity, available at SCITS.Stanford.edu/software
- Zoback, M. L., and M. D. Zoback, 1980, State of stress in the conterminous United States: Journal of Geophysical Research, 85, no. B11, 6113–6156, https://doi.org/10.1029/JB085iB11p06113.

Carlsbad Current Argus.

Affidavit of Publication Ad # 0004750834 This is not an invoice

ANTHEM WATER SOLUTIONS, LLC 5914 W. COURTYARD DR, STE 320

AUSTIN, TX 78730

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

05/25/2021

Legal Clerk

Subscribed and sworn before me this May 25, 2021;

State of WI, County of Brown NOTARY PUBLIC

My commission expires

NOTICE IS HEREBY GIVEN : That Anthem Water Solu-tions, LLC, 5914 W. Court-yard Dr., Suite 320, Austin Texas, 78730, is requesting that the New Mexico Oil Conservation Division adconservation bivision ad-ministratively approve the APPLICATION FOR AUTHOR-ITY TO INJECT as follow: PURPOSE: The intended purpose of the injection well is to dispose of salt water pro-duced from permitted oil and gas wells. WELL NAME AND LOCA-TION: Screetch Owl 242128 Federal SWD 1 Located 11 miles northeast of Carlsbad. NW1/4 of the NW1/4 Section 24, Township 215, Range 28E, 86' from North Line & 67' from West Line, Eddy County, New Mexico.
NAME AND DEPTH OF DISPOSAL ZONE: DevonianSilurian (13709' - 14591')
EXPECTED MAXIMUM INJECTION RATE: 30,000 barrels/day EXPECTED MAXIMUM IN-JECTION PRESSURE: 2741 psi (surface) Objections or requests for hearing must be filed with the New Mexico Oil Conser-vation Division within fif-teen (15) days. Any objections or requests 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 Marshall Tippen (972) 795-

May 25,2021

Notary Public
State of Wisconsin

Ad # 0004750834 PO #: Screetch Owl # of Affidavits1

This is not an invoice

Attachment 6: List of Notification Applicants & Delivery Confirmations

Screetch Owl 242128 Federal SWD 1 - Notice of Application Receipts								
Entity	Address	City	State	Zip Code				
Landowner and Mineral Owner								
New Mexico BLM	620 E Greene St.	Carlsbad	NM	88220				
OCD District								
NMOCD District 2	811 S. First St	Artesia	NM	88210				
Leasehold Operators (1-mile)								
XTO DELAWARE BASIN LLC	6401 HOLIDAY HILL RD	MIDLAND	TX	79707				
Notes: The table above shows the Entities who were identified as parties of interest requiring notification on either the 1-mile well detail list (Attachment 2) or on the 2-mile								

Notes: The table above shows the Entities who were idenfified as parties of interest requiring notification on either the 1-mile well detail list (Attachment 2) or on the 2-mile Mineral Lease Map (Attachment 2).



Marshall Tippen
Anthem Water Solutions, LLC
3300 North A Street, Building 2, Suite 222
Midland, Texas 79705

New Mexico BLM 620 E Greene St. Carlsbad, NM 88220

APPLICATION FOR AUTHORITY TO INJECT

To Whom it May Concern,

NOTICE IS HEREBY GIVEN; That Anthem Water Solutions, LLC, 5914 W. Courtyard Dr., Suite 320, Austin Texas, 78730, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORITY TO INJECT as follow:

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: Screetch Owl 242128 Federal SWD 1 Located 11 miles northeast of Carlsbad. NW1/4 of the NW1/4 Section 24, Township 21S, Range 28E, 86' from North Line & 67' from West Line, Eddy County, New Mexico.

NAME AND DEPTH OF DISPOSAL ZONE: Devonian-Silurian (13709' – 14591')

EXPECTED MAXIMUM INJECTION RATE: 30,000 barrels/day

EXPECTED MAXIMUM INJECTION PRESSURE: 2741 psi (surface)

Objections or requests for hearing must be filed with the New Mexico Oil Conservation Division within fifteen (15) days. Any objections or requests 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 Marshall Tippen (972) 795-4201.

Regards,

Marshall Tippen

Marmalin



Marshall Tippen
Anthem Water Solutions, LLC
3300 North A Street, Building 2, Suite 222
Midland, Texas 79705

NMOCD District 2 811 S. First St Artesia, NM 88210

APPLICATION FOR AUTHORITY TO INJECT

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Regards,

Marshall Tippen

Marmalin



Marshall Tippen
Anthem Water Solutions, LLC
3300 North A Street, Building 2, Suite 222
Midland, Texas 79705

XTO DELAWARE BASIN LLC 6401 HOLIDAY HILL RD MIDLAND, TX 79707

APPLICATION FOR AUTHORITY TO INJECT

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Additional information may be obtained by contacting Marshall Tippen (972) 795-4201.

Regards,

Marshall Tippen

Manuella

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