Initial Application Part I

Received: **07/31/2019**

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

Revised March 23, 2017

RECEIVED: 07/31/2019	REVIEWER:	TYPE: SWD	APP NO: pMAM1921256088

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: XTO Permian Operating, LLC **OGRID Number:** 373075
Well Name: Poker Lake Unit 21 Ford Fed SWD #1 **API:** TBA
Pool: SWD: Devonian-Silurian **Pool Code:** 97869

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

SWD-2219

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.

Tracie J. Cherry, Regulatory Lead
Print or Type Name

Signature

Date 07/31/19

432-221-7379
Phone Number

tracie_cherry@xtoenergy.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: ____ Secondary Recovery ____ Pressure Maintenance XX Disposal ____ Storage
Application qualifies for administrative approval? XX Yes ____ No

II. OPERATOR: XTO Permian Operating, LLC (373075)

ADDRESS: 6401 Holiday Hill Rd. Bldg 5, Midland, TX 79707

CONTACT PARTY: Tracie J. Cherry, Regulatory Coordinator PHONE: 432-221-7379

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 XX 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: Tracie J. Cherry TITLE: Regulatory Lead

SIGNATURE: Tracie J Cherry DATE: 07/31/19

E-MAIL ADDRESS: tracie_cherry@xtoenergy.com

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

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

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

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

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

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

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

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

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

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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

III. Well Data

A. 1) Lease name: **Poker Lake Unit 21 Ford Fed SWD**
Well #: **1** **API # TBA**
Section: **21**
Township: **24S**
Range: **30E**
Footage: **1711 FNL & 2206 FWL**

2) Casing Info:

Casing size	Set depth	Sacks cmt	Hole size	TOC	Method
18-5/8", 87.5# J-55 BTC	1090'	1735 sx C	24	Surf	Circ
13-3/8" 68# HCL-80 BTC	3710'	2130 sx Poz/C 902 sx C	17-1/2"	Surf	Circ
9-5/8" 53.5# HCP-110 BTC DV @ 3,810'	11,570	Stage 1 2,185 sx Poz/H Stage 2 1,168 sx Poz/H	12-1/4"	Surf	Circ
7" 32# HCP-110 BTC	11,100'-16,160'	755 sx Poz/H	8-1/2"	11,100'	Circ

3) Tubing to be used (size, lining material, setting depth):
Tapered String
5-1/2" , 17#, P-110 IPC to 10,600'
4-1/2", 13.65#, P-110 IPC tubing @ 10,600'-16,060'

4) Name, model, and depth of packer to be used:
Baker Series F nickle plated permanent packer @ 16,060'

B. 1) Name of the injection formation and, if applicable, the field or pool name:
SWD; Devonian-Silurian

2) The injection interval and whether it is perforated or open hole:
Open hole, 16,160'-17,389' (or to the base of the Fusselman as determined by mud logs)

3) State if the well was drilled for injection or, if not, the original purpose of the well:
This well is being drilled for the purpose of injection

4) Give the depths of any other perforated intervals and detail on the sacks of cement or BPs used to seal off such perforations:
N/A

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:
Higher: Cherry Canyon (+/-4,684') Brushy Canyon (+/-6,332'),
Bone Spring (+/-8,559'), Wolfcamp (+/-10,932'), Atoka (+/-13,239'), Morrow (+/-13,902')
Lower: None

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-		

[4] Property Code	[5] Property Name	[6] Well Number
	PLU FORD 21 FED SWD	1

[7] OGRID No.	[8] Operator Name	[9] Elevation
260737	XTO PERMIAN OPERATING, LLC.	3,342'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	21	24 S	30 E		1,711	NORTH	2,206	WEST	EDDY

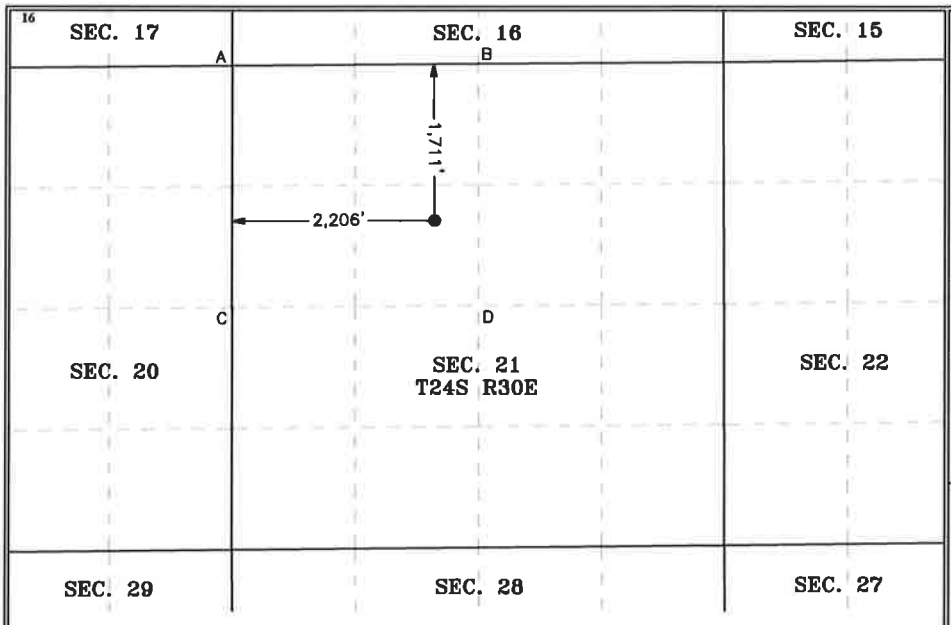
[11] Bottom Hole Location If Different From Surface

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

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16]



GEODETIC COORDINATES
NAD 83 NME
SURFACE LOCATION
Y= 438,878.7
X= 679,150.4
LAT.= 32.205769°N
LONG.= 103.887763°W

GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y= 438,819.9
X= 637,966.5
LAT.= 32.205646°N
LONG.= 103.887276°W

CORNER COORDINATES TABLE
NAD 83 NME
A - Y= 440,574.0 N, X= 676,941.2 E
B - Y= 440,592.6 N, X= 679,615.4 E
C - Y= 437,930.7 N, X= 676,946.1 E
D - Y= 437,951.0 N, X= 679,621.2 E

CORNER COORDINATES TABLE
NAD 27 NME
A - Y= 440,515.1 N, X= 635,757.4 E
B - Y= 440,533.8 N, X= 638,431.6 E
C - Y= 437,871.9 N, X= 635,762.2 E
D - Y= 437,892.2 N, X= 638,437.3 E

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[18] SURVEYOR CERTIFICATION

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

06-03-2019
Date of Survey

Signatue and Seal of Professional Surveyor:

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT

MARK DILLON HARP 23786
Certificate Number AW 2019051205

PLU Ford 21 Fed SWD 1

Proposed SWD Schematic (July 2, 2019)

County: Eddy
SHL: 1711' FNL, 2206' FWL
Sec 21, T 24S, R 30E

BHL: 1711' FNL, 2206' FWL
Sec 21, T 24S, R 30E

XTO ENERGY

API # N/A
Elevation GL 3342', KB 3374' (32' AGL)
Rig: TBD (RKB 32')

Geology	Casing & Cement	Wellhead	Hole Size	General Notes
TVD Formation		(Tech Data Sheet)		
	Lead (100% OH excess) 1075 sx 12.8ppg Class C Top of Tail @ 0'		24"	
974' Rustler	*Tail (100% OH excess)* 660 sx 14.8ppg Class C Top of Tail @ 800'			
	18-5/8" 87.5# J-55 BTC	**1090' MD**		
1,204' Top Salt	*Lead (150% OH excess)* 2130 sx 12.8ppg Poz/C Top of Lead @ 0		17-1/2"	
	Tail (100% OH excess) 902 sx 14.8ppg Class C Top of Tail @ 2900'			
3,594' Base Salt	**13-3/8" 68# HCL-80 BTC**	**3710' MD**		
3,811' Delaware	*Stg 2 Lead (100% OH excess)* 740 sx 11.5ppg Poz/H Top of Lead @ 0'		12-1/4"	
	Stg 2 Tail (100% OH excess) 428 sx 14.8ppg Poz/H Top of Tail @ 2900'			5-1/2" 17# P-110 IPC tbg 0 - 10,600'
	DV tool at 3810'			Crossover @ 10,600'
7,656' Bone Spring	*Stg 1 Lead (100% OH excess)* 1630 sx 11.5ppg Poz/H Top of Lead @ 3810'	**11100' MD**		
	Stg 1 Tail (100% OH excess) 555 sx 14.8ppg Poz/H Top of Tail @ 10570'			4-1/2" 13.65# P-110 IPC tbg 10,000' - 16,060'
10,899' Wolfcamp 11,418' Wolfcamp B	**9-5/8" 53.5# HCP-110 BTC**	**11570' MD**		
			8-1/2"	
	Tail (40% OH excess) 745 sx 14.5ppg Poz/H Top of Tail @ 11100'			
13,054' Strawn 13,239' Atoka 13,902' Morrow				
15,624' Mississippian Lm 16,024' Woodford 16,139' Devonian				Baker Series F Nickle Plated Permanent pkr @ 16,060'
	7" 32# HCP-110 BTC	**16160' MD**		
17,158' Base of Fusselman			6"	
17,389' TVD at BHL	**Open hole completion**	**17,389' MD** **17,389' TVD**		

Approvals

Prepared by: _____ **Peer Reviewed by:** _____ Date

Reviewed by: _____ **Approved by:** _____

C-108 DATA

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.
Maps attached (Exhibit A & Exhibit B).

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 wells type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
(Exhibit C)
Six (6) horizontal wells terminiate within the one-mile Area of Review. None of the wells penetrates the proposed dispsal zone.

No plugged and abandoned wells are within the one-mile Area of Review

VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected:
20,000 average, 40,000 maximum BWPD
2. Whether the system is open or closed: **closed**
3. Proposed average and maximum injection pressure: **2,000 psi average, 3232 psi maximum**
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water: **Well will be part of a multi-well SWD system taking Permian waters. The majority of the produced water will come from Delaware, Bone Spring and Wolfcamp formations with minor amouts from Atoka and Morrow.**
An analysis of water to be disposed is attached (Exhibit D)

5. If injection is for disposal purposes into a zone not productive of oil & gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water:

No disposal wells are within one mile of the proposed well.

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 TDS 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*:

Lithologic Detail:	**Carbonates (Dolomite and Limestone)**
Geological Name:	**Devonian (Silurian-Devonian)**
Thickness:	**Est. 1,250'**
Depth:	**Est. 16,139' to 17,389' (includes 100' buffer)**

The Dewey Lake Red Beds consisting of alluvial sandstones, siltstones, and shales are present from the surface to the top of the Rustler Anhydrite. The top of the Rustler Anhydrite is estimated to be at approximately 974 feet below the surface in this PLU 21 Ford Fed SWD 1 well. These Dewey Lake Red Beds may contain fresh water throughout this geographic area, but it is not likely of drinking water quality (TDS of 10,000 mg/L or less).

Based on published maps, the Capitan Reef Aquifer is not present in this area

No sources of fresh water are known to exist below the proposed disposal zone.

IX. Describe the proposed stimulation program, if any:
Acid stimulate with approximately 5000 gallons of 15% NEFE HCL acid.

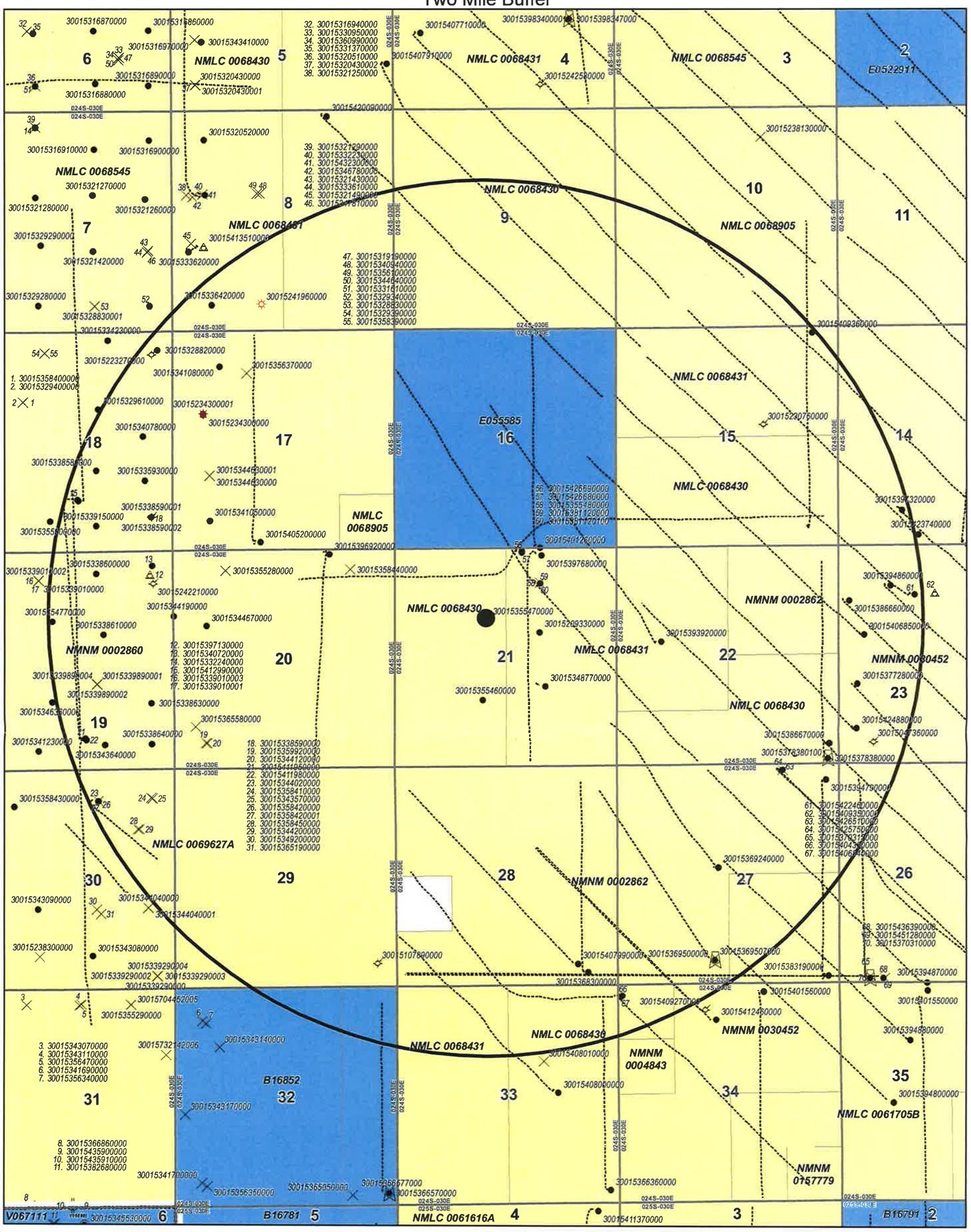
X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted.)
Logs will be submitted with completion papers when well is drilled.

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.
According to the New Mexico Office of State Engineer database, there are three (3) points of diversion within a one-mile radius of the proposed well. Only one (1) is an active water well approx. 245' to the NE, drilled to 475'. The well is classified as a livestock watering well. Arrangements will be made with surface owner to obtain a water sample.
(Exhibit E)

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

XIV. Proof of Notice
(Exhibit G)

PLU Ford 21 FED SWD 1
Eddy County, New Mexico
Two Mile Buffer



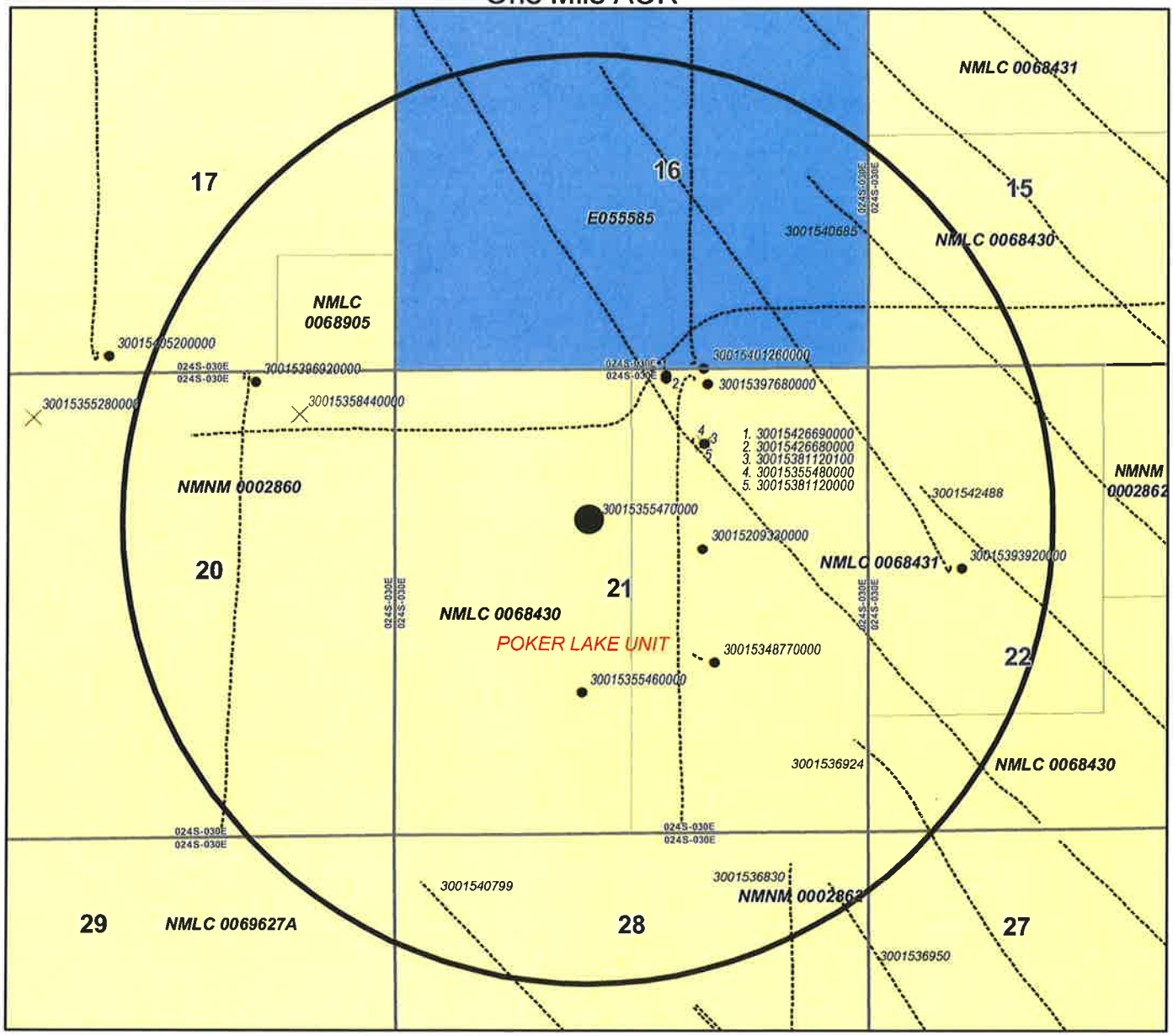
wellbore
State Lease
Federal Lease
two mile buffer
BLM Active Unit - Poker Lake

Well Status Name
GAS
INJECTION
MULTI OIL AND GAS PRODUCER
OIL
OIL AND GAS PRODUCER
MULTIPLE GAS PRODUCER
MULTIPLE OIL PRODUCER
ABANDONED
DRILLING
NON-PRODUCING OTHER
CO2
DRY
STORAGE
CBM
OTHER PRODUCING
WATER SUPPLY WELL
WELL PERMIT
WELL START

known well operators in buffer
BASS ENTRPRS PROD CO
BASS PERRY R
BEPCO LP
BOPCO LP
CHAPMAN FORD
XTO PERMIAN OPER LLC

Exhibit A

PLU Ford 21 FED SWD 1
Eddy County, New Mexico
One Mile AOR



wellbore
State Lease
Federal Lease
one mile buffer

Well Status Name

- GAS
- INJECTION
- MULTI OIL AND GAS PRODUCER
- OIL
- OIL AND GAS PRODUCER
- MULTIPLE GAS PRODUCER
- MULTIPLE OIL PRODUCER
- ABANDONED
- DRILLING
- NON-PRODUCING OTHER
- CO2
- DRY
- STORAGE
- CBM
- OTHER PRODUCING
- WATER SUPPLY WELL
- WELL PERMIT
- WELL START

known operators in buffer
BOPCO LP
XTO PERMIAN OPER LLC

Exhibit B

XTO Permian Operating, LLC
Poker Lake Unit 21 Ford Fed SWD #1

WELLS WITHIN ONE MILE RADIUS

API	wellname	section	township	range	unit_ltr	ogrid_name	spud_year	directional_status	pool_id_list	status2	Well Type	Well Status
30-025-44559	MESA VERDE BONE SPRING UNIT #022H	16	24S	32E	M	OXY USA INC	2018	H	[96229] MESA VERDE, BONE SPRING	A	Oil	Active
30-015-40126	POKER LAKE CVX JV PC #012H	16	24S	30E	O	XTO PERMIAN OPERATING LLC.	2012	H	[97798] WILDCAT G-06 S243026M, BONE SPRING	A	Oil	Active
30-015-39692	POKER LAKE CVX JV PC #010H	20	24S	30E	B	XTO PERMIAN OPERATING LLC.	2012	H	[96403] WILDCAT, BONE SPRING; [96473] PIERCE CROSSING, BONE SPRING, EAST	A	Oil	Active
30-015-35844*	POKER LAKE UNIT #246D	20	24S	30E	A	BOPCO, L.P.	9999	0	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	C	Oil	Cancelled APD
30-015-35548	POKER LAKE UNIT #293C	21	24S	30E	B	BOPCO, L.P.	9999	0	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	C	Oil	Cancelled APD
30-015-38112	POKER LAKE UNIT #293H	21	24S	30E	B	XTO PERMIAN OPERATING LLC.	2010	H	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active
30-015-39768	POKER LAKE CVX JV PC #011H	21	24S	30E	B	XTO PERMIAN OPERATING LLC.	2012	H	[97798] WILDCAT G-06 S243026M, BONE SPRING	A	Oil	Active
30-015-42668	POKER LAKE UNIT CVX JV PC #020H	21	24S	30E	B	XTO PERMIAN OPERATING LLC.	2014	H	[96473] PIERCE CROSSING, BONE SPRING, EAST	A	Oil	Active
30-015-42669	POKER LAKE UNIT CVX JV PC #019H	21	24S	30E	B	XTO PERMIAN OPERATING LLC.	2014	H	[96473] PIERCE CROSSING, BONE SPRING, EAST	A	Oil	Active
30-015-35547	POKER LAKE UNIT #292C	21	24S	30E	F	BOPCO, L.P.	9999	0	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	C	Oil	Cancelled APD
30-015-20933	POKER LAKE UNIT #041	21	24S	30E	G	XTO PERMIAN OPERATING LLC.	2007	V	[17975] DOG TOWN DRAW, DELAWARE	A	Oil	Active
30-015-34877	POKER LAKE UNIT #261	21	24S	30E	J	XTO PERMIAN OPERATING LLC.	2006	V	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active
30-015-35546	POKER LAKE UNIT #291	21	24S	30E	K	XTO PERMIAN OPERATING LLC.	2007	V	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active
30-015-39392	POKER LAKE UNIT #325H	22	24S	30E	E	XTO PERMIAN OPERATING LLC.	2011	0	[96046] POKER LAKE, DELAWARE, NORTHWEST	A	Oil	Active
Wells that terminate withing the one-mile radius												
30-015-40685	POKER LAKE UNIT #324H	23	24S	30E	E	XTO PERMIAN OPERATING LLC.	2013	H	[96047] POKER LAKE, DELAWARE, SOUTHWEST	A	Oil	Active
30-015-42488	POKER LAKE UNIT #432H	23	24S	30E	M	XTO PERMIAN OPERATING LLC.	2014	H	[96047] POKER LAKE, DELAWARE, SOUTHWEST	A	Oil	Active
30-015-36924	POKER LAKE UNIT #301H	27	24S	30E	F	XTO PERMIAN OPERATING LLC.	2009	H	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active
30-015-36830	POKER LAKE UNIT CVX JV PC #003H	28	24S	30E	P	XTO PERMIAN OPERATING LLC.	2009	H	[96473] PIERCE CROSSING, BONE SPRING, EAST	A	Oil	Active
30-015-40799	POKER LAKE UNIT #362H	28	24s	30E	P	XTO PERMIAN OPERATING LLC.	2013	H	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active
30-015-36950	POKER LAKE UNIT #300H	27	24S	30E	N	XTO PERMIAN OPERATING LLC.	2009	H	[47545] NASH DRAW, DELAWARE/BS (AVALON SAND)	A	Oil	Active

* XTO's internal data base shows this well spotted in this location. NMOCD's GIS system shows the location to the West, outside the one-mile buffer, in the same location as 3001535528

Exhibit C

NALCO Champion
An Ecolab Company

Complete Water Analysis Report

Customer: **XTO ENERGY INC**
Region: **Carlsbad, NM**
Location: **Nash Draw 19**
System: **Production System**

Equipment: **Nash Draw 19 Federal 001 SWD**
Sample Point: **Transfer Pump**
Sample ID: **AL07043**
Acct Rep Email: **Anthony.Baeza@ecolab.com**

Collection Date: **06/08/2018**
Receive Date: **06/21/2018**
Report Date: **06/25/2018**
Location Code: **375624**

Field Analysis

Bicarbonate	60 mg/L	Dissolved CO2	1100 mg/L	Dissolved H2S	9 mg/L
Pressure Surface	20 psi	Temperature	96 ° F	pH of Water	6.3
Oil per Day	0 B/D	Gas per Day	0 Mcf/D	Water per Day	3500 B/D

Sample Analysis

Calculated Gaseous CO2	1.11 %	Calculated pH	6.30	Conductivity (Calculated)	392527 µS - cm3
Ionic Strength	5.25	Resistivity	0.025 ohms - m	Specific Gravity	1.196
Total Dissolved Solids	251270.3 mg/L				

Cations

Iron	46 mg/L	Manganese	7.14 mg/L	Barium	7.61 mg/L
Strontium	2000 mg/L	Calcium	28400 mg/L	Magnesium	4050 mg/L
Sodium	51200.00 mg/L	Potassium	1530 mg/L	Boron	28.9 mg/L
Lithium	15.1 mg/L	Copper	0.414 mg/L	Nickel	0.122 mg/L
Zinc	1.88 mg/L	Lead	0.25 mg/L	Cobalt	0.043 mg/L
Chromium	0.02 mg/L	Silicon	4.79 mg/L	Aluminum	Not Detected mg/L
Molybdenum	0.026 mg/L	Phosphorus	6.44 mg/L		

Anions

Bromide	1744.463 mg/L	Chloride	165315 mg/L	Sulfate	184.003 mg/L

PTB Value

	Barite PTB	Calcite PTB	Celestite PTB	Gypsum PTB	Halite PTB	Iron Carbonate PTB	Iron Sulfide PTB
50°	4.29	11.73	93.75	25.67	0.00	0.00	7.10
75°	3.93	10.87	78.70	0.00	0.00	0.00	6.56
100°	3.30	10.04	66.11	0.00	0.00	0.00	6.05
125°	2.32	9.28	56.94	0.00	0.00	0.00	5.62
150°	0.96	8.63	51.03	0.00	0.00	0.00	5.29
175°	0.00	8.11	47.56	0.00	0.00	0.00	5.06
200°	0.00	7.71	45.63	0.00	0.00	0.00	4.90
225°	0.00	7.43	44.51	0.00	0.00	0.00	4.82
250°	0.00	7.26	43.71	0.00	0.00	0.00	4.79
275°	0.00	7.17	42.91	0.00	0.00	0.00	4.79
300°	0.00	7.14	42.00	0.00	0.00	0.00	4.82
325°	0.00	7.16	40.97	0.00	0.00	0.00	4.86
350°	0.00	7.22	39.85	0.00	0.00	0.00	4.90
375°	0.00	7.27	38.56	0.00	0.00	0.00	4.94
400°	0.00	9.14	36.83	0.00	0.00	0.00	6.24

Saturation Index

	Barite SI	Calcite SI	Celestite SI	Gypsum SI	Halite SI	Iron Carbonate SI	Iron Sulfide SI
50°	1.28	1.32	0.65	0.11	-0.52	-0.16	2.19
75°	0.88	1.18	0.47	-0.06	-0.54	-0.19	1.87
100°	0.57	1.06	0.35	-0.16	-0.56	-0.21	1.62
125°	0.32	0.96	0.29	-0.23	-0.58	-0.23	1.43
150°	0.11	0.88	0.25	-0.29	-0.60	-0.25	1.30
175°	-0.07	0.81	0.23	-0.35	-0.61	-0.27	1.21
200°	-0.23	0.76	0.23	-0.41	-0.63	-0.30	1.15
225°	-0.36	0.73	0.21	-0.49	-0.65	-0.32	1.12
250°	-0.48	0.70	0.20	-0.57	-0.66	-0.36	1.11
275°	-0.59	0.68	0.20	-0.64	-0.68	-0.40	1.12
300°	-0.70	0.67	0.19	-0.71	-0.69	-0.45	1.12
325°	-0.81	0.66	0.19	-0.74	-0.71	-0.52	1.14
350°	-0.92	0.65	0.18	-0.73	-0.72	-0.60	1.15
375°	-1.04	0.63	0.17	-0.66	-0.73	-0.71	1.15
400°	-1.17	0.81	0.17	-0.49	-0.74	-0.63	1.56

Scaling predictions calculated using Scale Soft Pitzer 2017
Scaling predictions dependent on provided field data. Incomplete/partial field data may impact results generated by scaling software.

06/27/2018

Exhibit D

NALCO Champion
An Ecolab Company

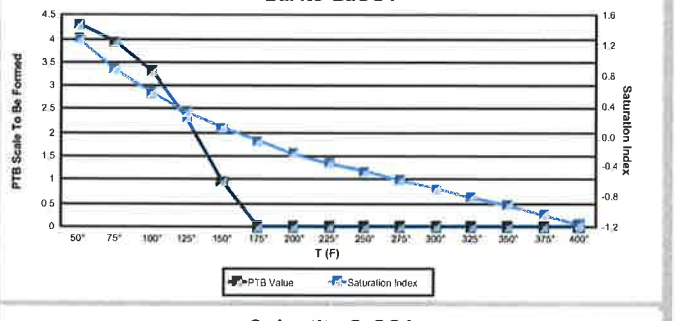
Complete Water Analysis Report

Customer: **XTO ENERGY INC**
Region: **Carlsbad, NM**
Location: **Nash Draw 19**
System: **Production System**

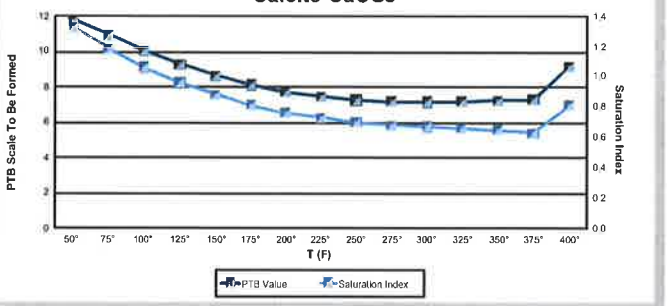
Equipment: **Nash Draw 19 Federal 001 SWD**
Sample Point: **Transfer Pump**
Sample ID: **AL07043**
Acct Rep Email: **Anthony.Baeza@ecolab.com**

Collection Date: **06/08/2018**
Receive Date: **06/21/2018**
Report Date: **06/25/2018**
Location Code: **375624**

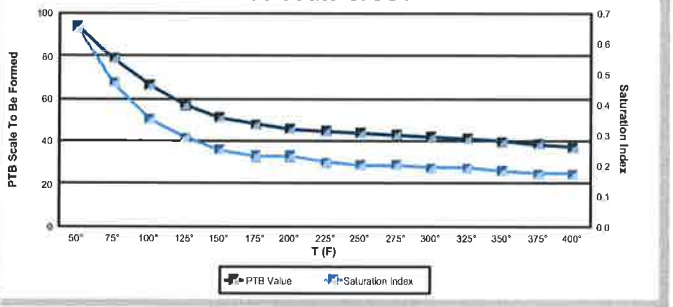
Barite BaSO4



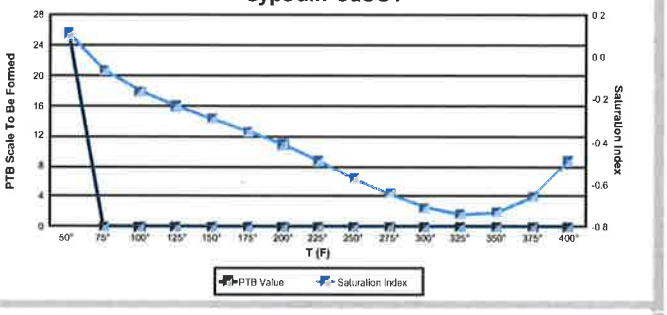
Calcite CaCO3



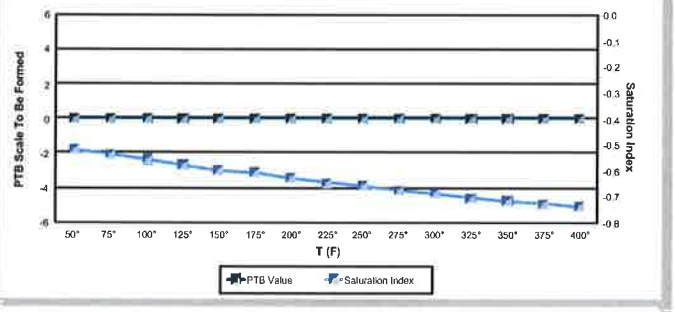
Celestite SrSO4



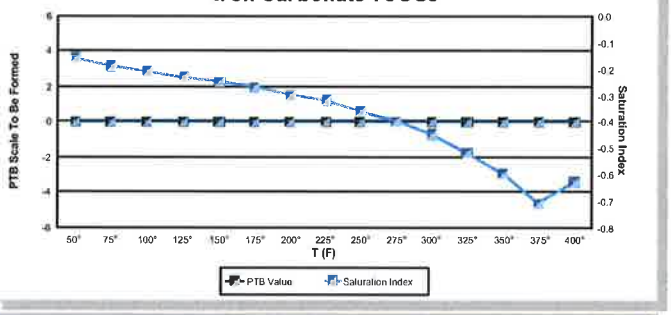
Gypsum CaSO4



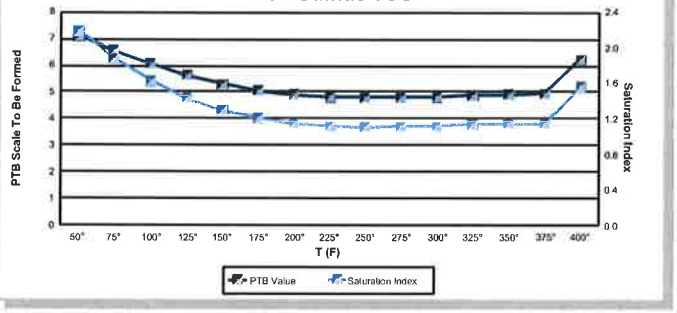
Halite NaCl



Iron Carbonate FeCO3



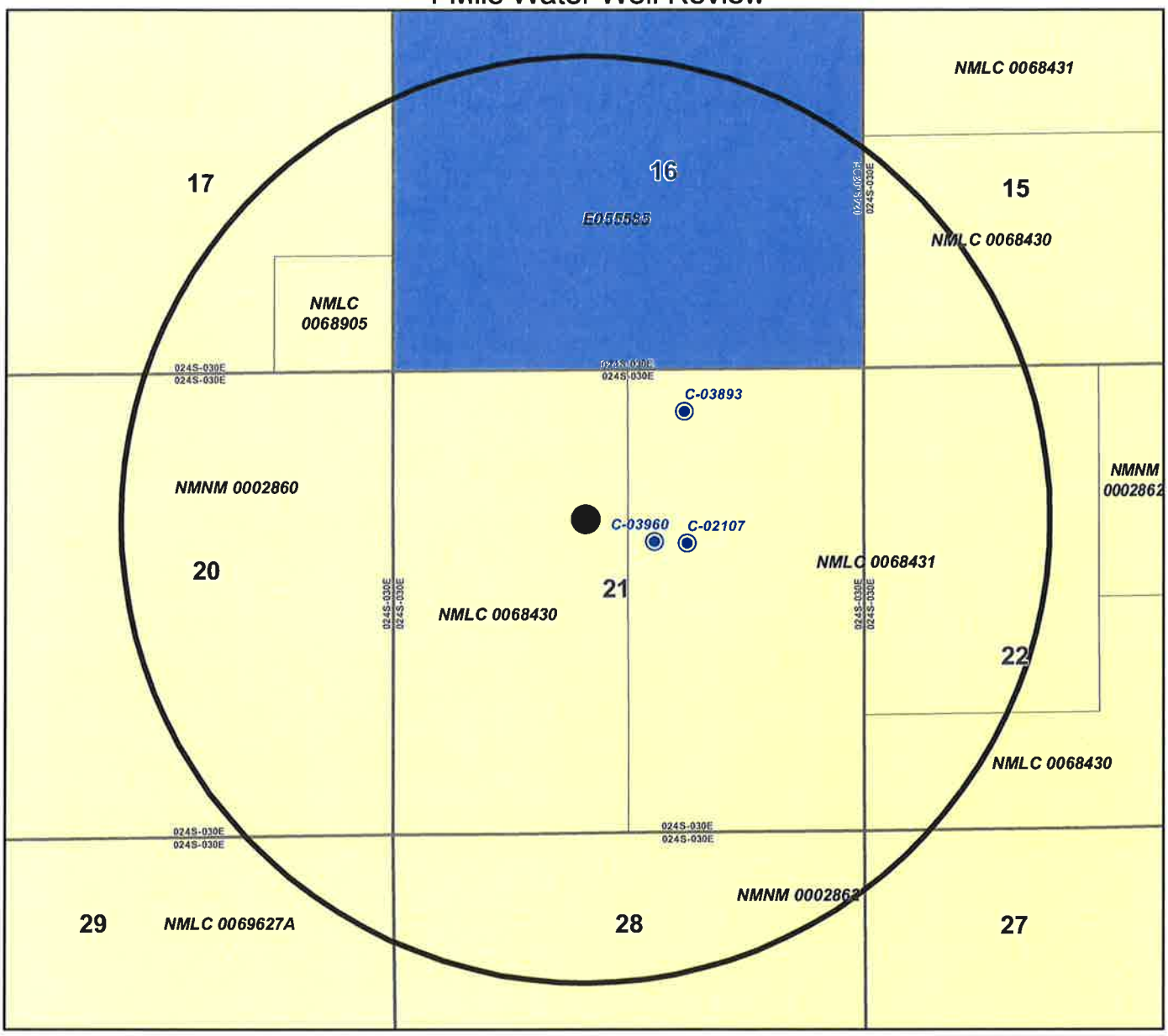
Iron Sulfide FeS



Comments

Scaling predictions calculated using Scale Soft Pitzer 2017
Scaling predictions dependent on provided field data. Incomplete/partial field data may impact results generated by scaling software.

PLU Ford 21 FED SWD 1
Eddy County, New Mexico
1 Mile Water Well Review



0 ¼ ½ Mile

0 ¼ ½ 1 Kilometer

water well
-location
-surface declaration
-surface permit

State Lease

Federal Lease

one mile buffer

Exhibit E

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 02107 **Subbasin:** C **Cross Reference:** -

Primary Purpose: DOL 72-12-1 DOMESTIC AND LIVESTOCK WATERING

Primary Status: EXP EXPIRED

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Owner: M & M CATTLE CO.

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	468597	72121	1984-06-25	EXP	EXP	C 02107	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 02107				3	2	21	24S	30E	605174	3563706*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

7/1/19 10:45 AM WATER RIGHT SUMMARY

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 03893 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: CPS CATHODIC PROTECTION WELL

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Agent: DARRELL CRASS DRILLING COMPANY

Contact: MORGAN SELLMAN

Owner: BOPCO LP

Contact: GUY GAGE

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	571438	EXPL	2015-07-29	PMT	APR	C 03893	T	0	0	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 03893 POD1			1	1	2	21	24S	30E	605162	3564162	PLU LEASE CP BED

7/1/19 10:46 AM WATER RIGHT SUMMARY

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 03960 **Subbasin:** C **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 3 **Cause/Case:** -

Owner: BUREAU OF LAND MANAGEMENT

Contact: STEVE DALY

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	588952	72121	2016-06-15	PMT	LOG	C 03960 POD1	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 03960 POD1		Shallow	1	3	2	21	24S	30E	605062	3563712	

7/1/19 10:48 AM

WATER RIGHT SUMMARY

July 9, 2019

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

Re: **Geology Statement per Question XII on the Application for Authorization to Inject Form C-108 for**
XTO Energy Inc., an ExxonMobil subsidiary
PLU Ford 21 Fed SWD 1,
Section 21, Township 24 South, Range 30 East,
Eddy County, New Mexico

To whom it may concern:

XTO Energy, Inc., an ExxonMobil subsidiary, has examined available geological data at the above-mentioned well located at 1,711 feet from north line and 2,206 feet from west line of Section 21, Township 24 South, Range 30 East, Eddy County, New Mexico; and finds no evidence of open faults or other hydrologic connection between the disposal zone and the underground sources of drinking water.

Respectively Submitted,

Matthew W. Kearney, P.G.

Geoscientist
XTO Energy Inc., an ExxonMobil subsidiary
22777 Springwoods Village Parkway
Spring, Texas 77389

Exhibit F

CARLSBAD
CURRENT-ARGUS

AFFIDAVIT OF PUBLICATION

Ad No.
0001290597

REC'D/MIDLAND
JUL 0 6 2019

Tracie J Cherry
XTO ENERGY
6401 HOLIDAY HILL RD. BLDG 5

MIDLAND TX 79707

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:

07/05/19

Legal Clerk

Subscribed and sworn before me this
5th of July 2019.

State of WI, County of Brown
NOTARY PUBLIC

11/9/22
My Commission Expires

KAZOUA YANG
NOTARY PUBLIC
STATE OF WISCONSIN

NOTICE OF APPLICATION FOR WATER DISPOSAL WELL PERMIT

XTO Permian Operating, Inc. has applied to the New Mexico Oil Conservation Division for a permit to dispose of produced water into a porous formation not productive of oil or gas.

The applicant proposes to dispose of produced water into the **Poker Lake Unit 21 Ford Fed SWD #1** (Siluro-Devonian and Fusselman Formations). The maximum injection pressure will be 3,232 psi and the maximum rate will be 40,000 bbls. produced water per day. The proposed disposal well is located approximately 11 miles EastSoutheast of Malaga, New Mexico in Section 21, T24S, R30E; 1,711' FNL & 2,206' FWL, Eddy County, New Mexico. The produced water will be disposed at a subsurface depth of 16,160'-17,389'.

Any questions concerning this application should be directed to Tracie J Cherry, Regulatory Coordinator, XTO Energy, Inc, 6401 Holiday Hill Rd, Bldg 5, Midland, Texas 79707, (432) 221-7379.

Interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87505 within 15 days.

July 5, 2019

Ad#:0001290597
P O : Poker Lake Unit 21
# of Affidavits :0.00

Exhibit G

CERTIFIED MAILING LIST
XTO PERMIAN OPERATING, LLC
POKER LAKE UNIT 21 FORD FED SWD #1

Surface/Mineral Owner:

Cert #7018 1130 0001 5531 4514
Bureau of Land Management
620 E. Greene Street
Carlsbad, NM 88220-6292

Grazing Lessee:

Cert #7018 1130 0001 5531 4316
Henry McDonald
PO Box 597
Loving, NM 88256

Offset Notice:

Cert #7018 1130 0001 5531 4750
New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe, NM 87501

Cert #7018 1130 0001 5531 4323
Chevron USA Inc
630 Deauville
Midland, TX 79706-2964

Cert #7018 1130 0001 5531 4743 Sections 22 & 28
ConocoPhillips Company
PO Box 2197
EC3-10-W285
Houston, TX 77252

I, Tracie J Cherry, do hereby certify the surface owner and offset parties for the well shown were furnished a copy of XTO Permian Operating, LLC's application for salt water disposal, via certified mail on this date.

Signed: _____
Tracie J. Cherry
Title: Regulatory Lead
Date: 07/31/19

XTO ENERGY

Statements Regarding Seismicity

XTO has performed a seismicity risk assessment associated with the proposed Poker Lake Unit 21 Ford 1 SWD Well by investigating historic seismicity, the presence of deep faulting, orientation of faults relative to the current stress regime and the potential for pore pressure build up that might cause a fault to slip. The analysis was done utilizing Stanford's Fault Slip Potential Tool version 2.0 (FSP; Walsh et al. 2017). To accommodate the tool's analytics, a simplified spatial relationship between the proposed well and possible faulting was established.

As part of our risk assessment we also consider mitigation options to address inherent uncertainties associated with the evaluation of possible seismicity. XTO has developed and will implement, as a precautionary measure, a seismicity monitoring plan to address the inherent uncertainty in the subsurface characterization, future rates of disposal and reservoir response.

A summary of the evaluation and seismicity monitoring plan follows:

Historic Seismicity

There is one seismic event reported by the USGS within ~6 miles of the proposed well. The New Mexico Tech Seismological Observatory determined that the March 18, 2012 event was linked to the collapse of a potash mine. Additionally, the Texas Bureau of Economic Geology's TexNet website shows no recent earthquakes in Texas within ~25 miles of the New Mexico border in the Delaware Basin (Figure 1).

Deep Faulting

Utilizing licensed 3D seismic data in the area of the proposed SWD well, XTO has evaluated three faults and/or linear features. Additionally, there are several seismic discontinuities that are interpreted as karst features in the Devonian section that do not appear to have significant lateral continuity.

Stress Regime

Utilizing data and analysis from Snee and Zoback, 'State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity' (Feb 2018, The Leading Edge) the region of the proposed well is primarily a normal faulting regime (Figure 1).

Geomechanical Modeling

A simple screening level geometric / geomechanical assessment of the faults was performed utilizing the FSP tool. The models were run using the Aphi option which makes a simplifying and conservative assumption that faults are critically stressed and thus close to failure. Additionally, given the uncertainties in the geophysical interpretation and stress information, probabilistic scenarios were run varying fault and stress characteristics. FSP model deterministic and uncertainty inputs and results of the modeling are shown in Figure 2

Pore Pressure Modeling

A screening level investigation of possible pore pressure increases due to the proposed SWD well was performed utilizing the FSP tool and a range of reservoir parameters. For this screening level analysis a 'high-side', flat rate model was run assuming disposal of 40,000 BWPD beginning in

2019 and continuing at that rate until 2040. Sensitivities were performed by varying several reservoir parameters. Deterministic models, snap shots of the calculated pore pressure increases in 2025 and 2040 and cross-plots of pore pressure uncertainty analysis and fault slip probabilities are shown in Figure 3.

Integration of Geomechanical and Pore Pressure Modeling

Integration of the geomechanical and hydrological elements of the assessment was performed using the FSP Integrated module. The results are shown in Figure 4. Note the y-axis in the lower right hand colored graphs in Figure 4 are labeled 'Fault Slip Potential'. This is a labeling convention within the tool but overstates the efficacy of the analysis. The FSP output should not be taken as calculating a reliable probability of a fault slipping but rather a screening method for assessing the relative potential of faults to slip.

Uncertainty

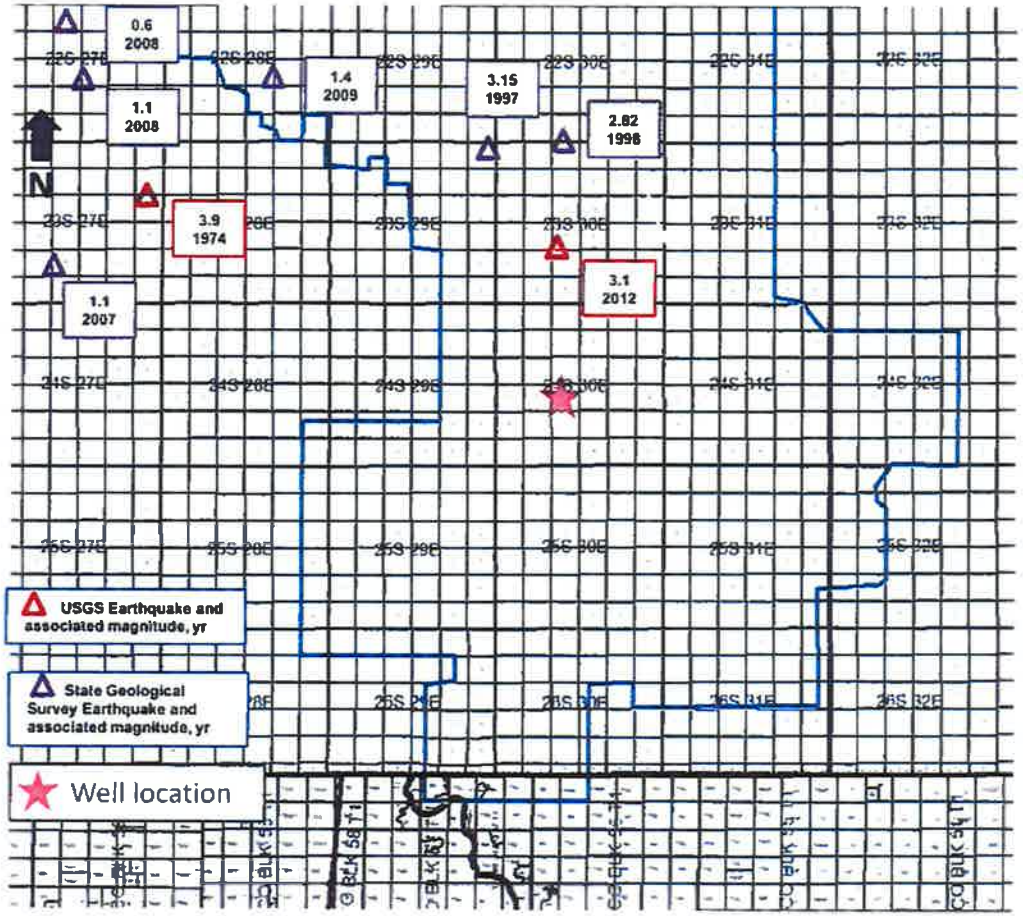
The analysis presented is a screening level approach that encompasses a range of uncertainties in several components that are difficult to individually constrain due to the limited static and dynamic data available for deep disposal wells. Accordingly, the analysis was done by varying key inputs to understand the relative importance of each and guide the focus of future data collection efforts.

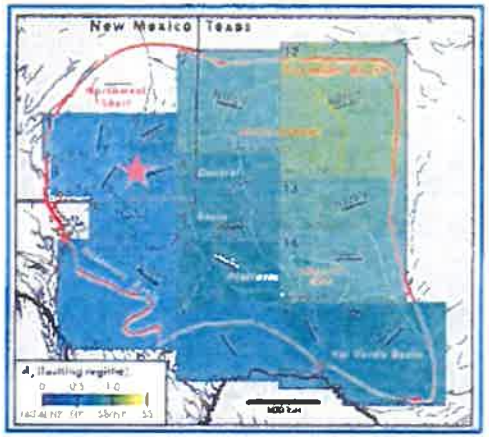
Monitoring Plan

To manage the inherent uncertainty, XTO has contracted with a third party to provide seismicity monitoring using public seismometers augmented by a private array in the area of the proposed well. This will allow for a better determination of baseline seismicity as well as early detection should there be anomalous events. Additionally, XTO will determine the original pore pressure of the disposal interval prior to initiating operations. Upon request, XTO will share the results of this work with the EMNRD's UIC staff.

Tim Tyrrell
XTO Geoscience Technical Manager

PLU 21 Ford SWD 1 Well - Historic Seismicity and Stress Information





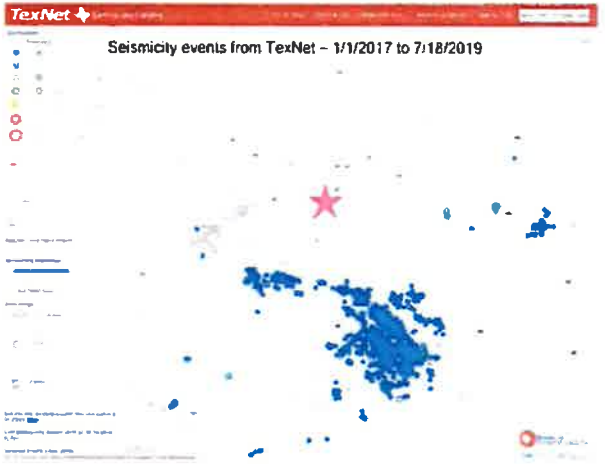


Figure 1

PLU 21 Ford SWD 1 Well - Geomechanics

Stress Regime Inputs

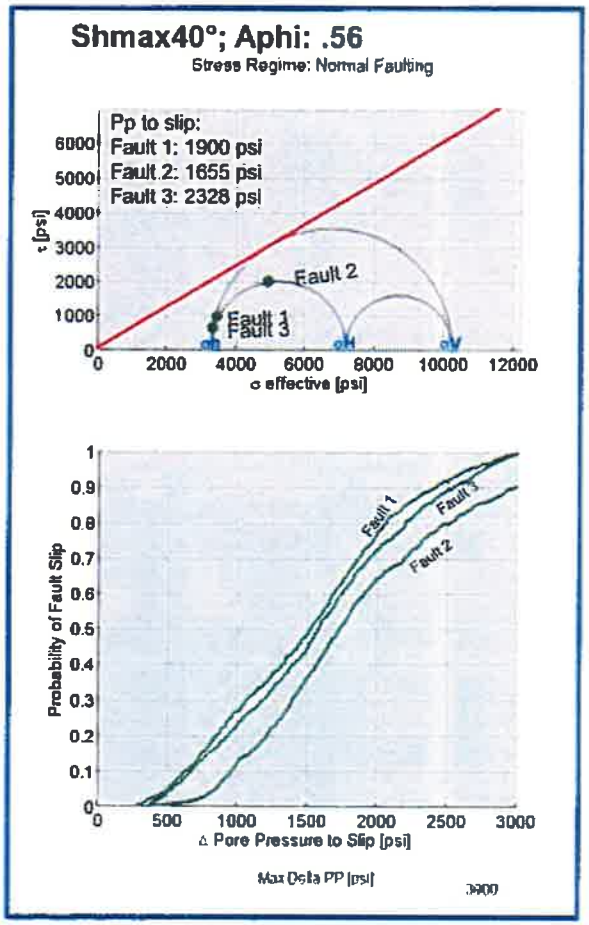
- Use A-Phi Mode

Vertical Stress Gradient	1.1 psi/ft
Initial Res. Pressure Gradient	0.47 psi/ft
Reference Depth for Calculations	16,250 ft MD

Maximum Injection Rate: 40,000 bbl/day

Uncertainty Ranges

Strike Angles:	+/- 15°
Dip Angles:	+/- 15°
Max Horiz Stress:	+/- 15°
Friction Coeff Mu:	0.6
A Phi Parameter:	+/- 0.2



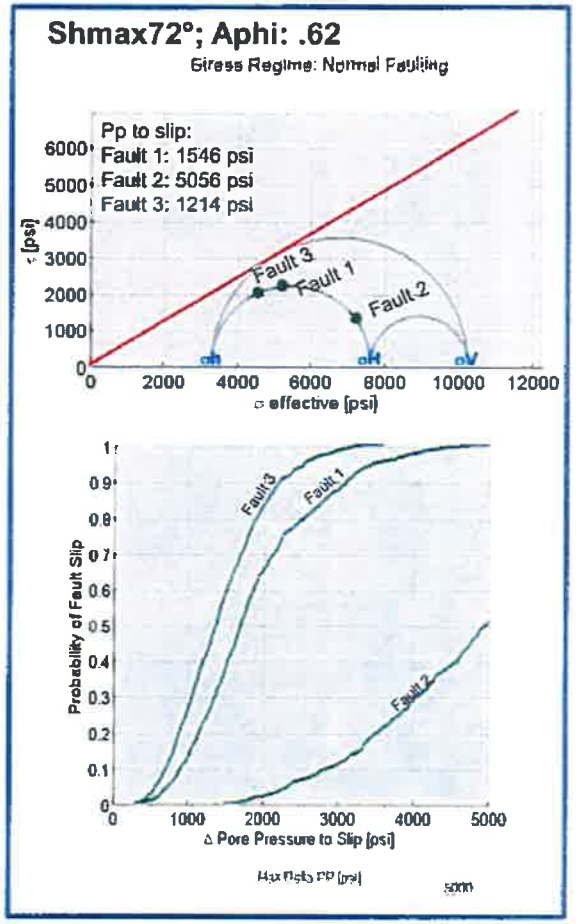


Figure 2

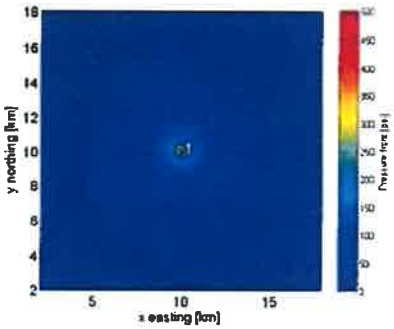
PLU 21 Ford SWD 1 Well - Pore Pressure Analysis

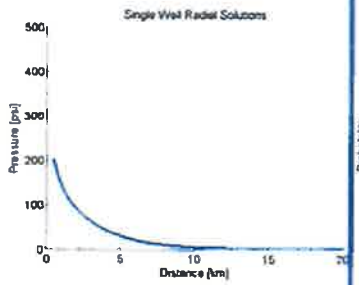
2025 Snapshot

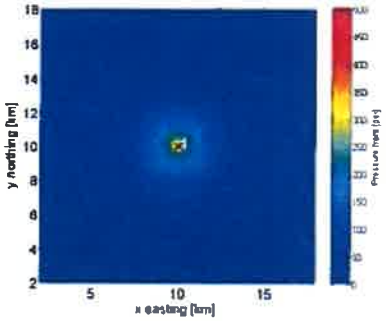
2040 Snapshot

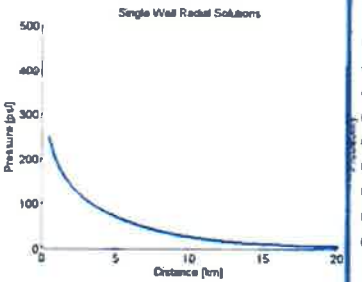
Uncertainty Ranges

Aquifer Thickness	750ft +/- 250ft
Porosity	6% +/- 3%
Perm	75 mD +/- 15 mD









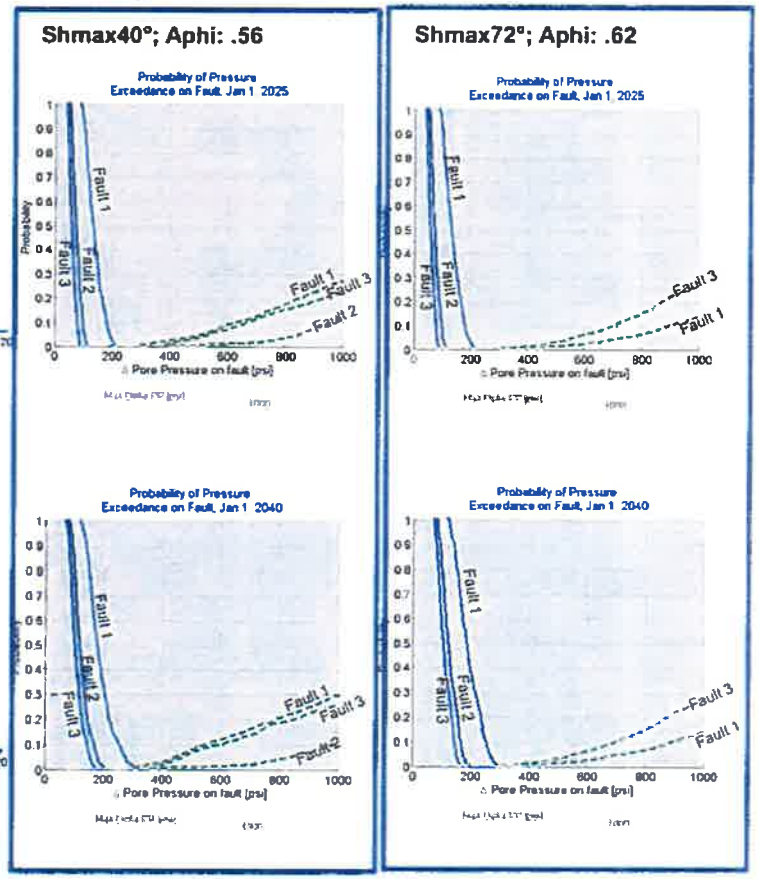
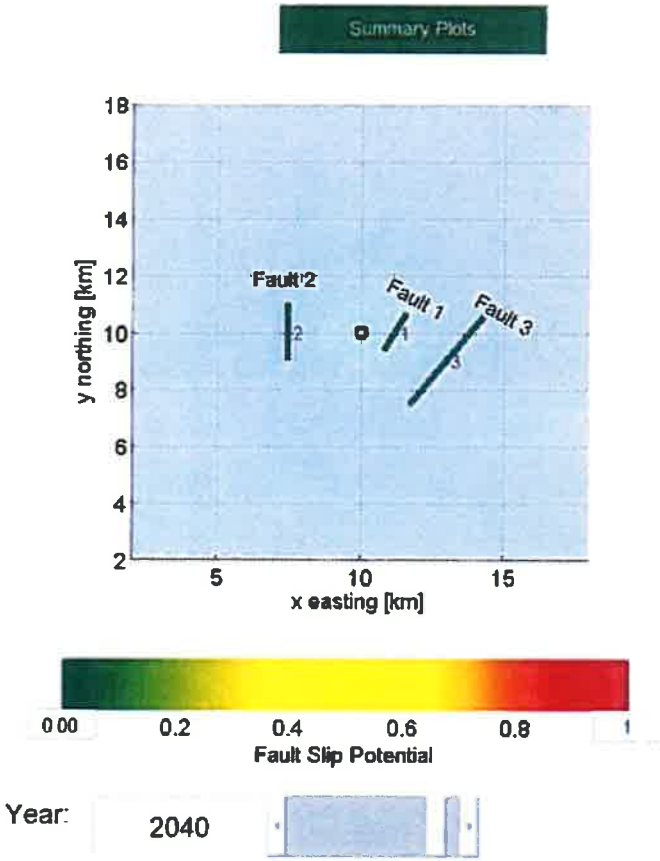
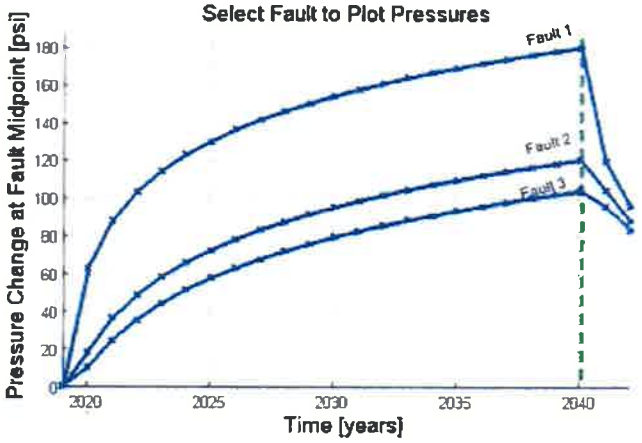


Figure 3

PLU 21 Ford SWD 1 Well - Geomechanical / Pore Pressure Integration





Pressure change at fault midpoint

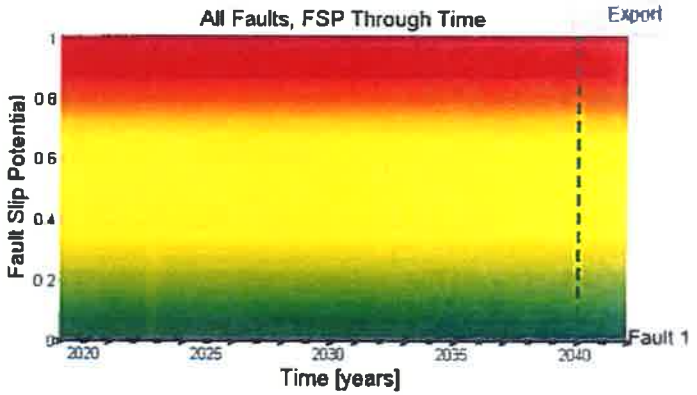


Figure 4