

Initial Application Part I

Received: 02/07/2020

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

QPKS5-200207-C-1080

RECEIVED: 2/7/20	REVIEWER: BLL	TYPE: SWD	APP NO: pBL2004139377
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: CHEVRON USA INC. OGRID Number: 4323
 Well Name: VERITAS 12 STATE SWD 1 API: PENDING
 Pool: SWD;SILURIAN Pool Code: 98249

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

SWD-2370

B. Check one only for [I] or [II]

[I] Commingling - Storage - Measurement

☐ DHC☐ CTB☐ PLC☐ PC☐ OLS☐ OLM

[II] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX☐ PMX☒ SWD☐ IPI☐ EOR☐ PPR

2) NOTIFICATION REQUIRED TO: Check those which apply.

A. ☒ Offset operators or lease holdersB. ☐ Royalty, overriding royalty owners, revenue ownersC. ☒ Application requires published noticeD. ☐ Notification and/or concurrent approval by SLOE. ☐ Notification and/or concurrent approval by BLMF. ☒ Surface ownerG. ☒ For all of the above, proof of notification or publication is attached, and/or,H. ☐ No notice required

FOR OCD ONLY

☐

Notice Complete

☐Application
Content
Complete

3) CERTIFICATION: I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

LAURA BECERRA

Print or Type Name

Date

(432) 687-7665

Phone Number

LBECERRA@CHEVRON.COM

e-mail Address

Signature



Mid-Continent Business Unit
Chevron North America Exploration
and Production Company
6301 Deauville Blvd.
Midland, TX 79706

Laura Becerra
Well Permitting & Compliance
Tel: (432) 687-7665
LBecerra@chevron.com

January 14, 2020

**New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87504**

**Re: Application for Authorization to Inject
VERITAS 12 STATE SWD 1
1,983' FSL, 1,000' FWL
Sec. 12 T26S-R27E, UL: L
Eddy County, NM**

Chevron U.S.A. Inc. hereby seeks administration approval for Authorization to Inject into the Veritas 12 State SWD 1 (API# pending), which is located 1,983' FSL & 1,000' FWL, Section 12, T26S-R27E, Eddy County, New Mexico.

The proposed open hole injection interval will be in the Silurian - Fusselman formations, from 13,978' to 15,300', with a maximum anticipated injection rate to 90,000 BWPD and a maximum injection pressure of 2795 psi.

Attached is OCD form C-108 with information relative to the SWD injection of the referenced well. A copy of the application has been sent to applicable surface land owner and offset operators. Legal Notice was published in the Carlsbad Current Argus, the Affidavit of Publication is attached.

Your consideration and approval of this application will be greatly appreciated. If additional information is required, please contact me at (432) 687-7665, or by email at LBecerra@chevron.com

Respectfully,

A handwritten signature in black ink, appearing to read "Laura Becerra", with a stylized flourish at the end.

Laura Becerra
Chevron U.S.A. Inc.
Permitting Specialist

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 Disposal X Storage
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: CHEVRON USA INC
ADDRESS: 6301 DEAUVILLE BLVD., MIDLAND, TX 79706
CONTACT PARTY: LAURA BECERRA PHONE: (432) 687-7665
- 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. **ATTACHED**
- 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.
- **No wells penetrate injection interval within 2 mi radius. The Gravitass SWD (see 3mi radius offset well tab for details) is within 3mi radius of proposed Dignitas and is a SWD that is an active SWD in the proposed injection interval.**
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected; **MAX: 90,000 BWPD, AVG: 50,000 BWPD**
 2. Whether the system is open or closed; **CLOSED**
 3. Proposed average and maximum injection pressure: **ANTICIPATED AVG PRESSURE: 1000 PSI, MAX PRESSURE: 2795 PSI**
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, **ATTACHED**
 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.). **ATTACHED**
- *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. **ATTACHED**
- IX. Describe the proposed stimulation program, if any. - **~1500 bbls of 20% HCL with gel diverter**
- *X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- **No current logs or test data exist, this is a new drill.**
- *XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken. **NO KNOWN FW WELLS EXIST**
- 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. **ATTACHED**
- 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: LAURA BECERRA TITLE: PERMITTING SPECIALIST

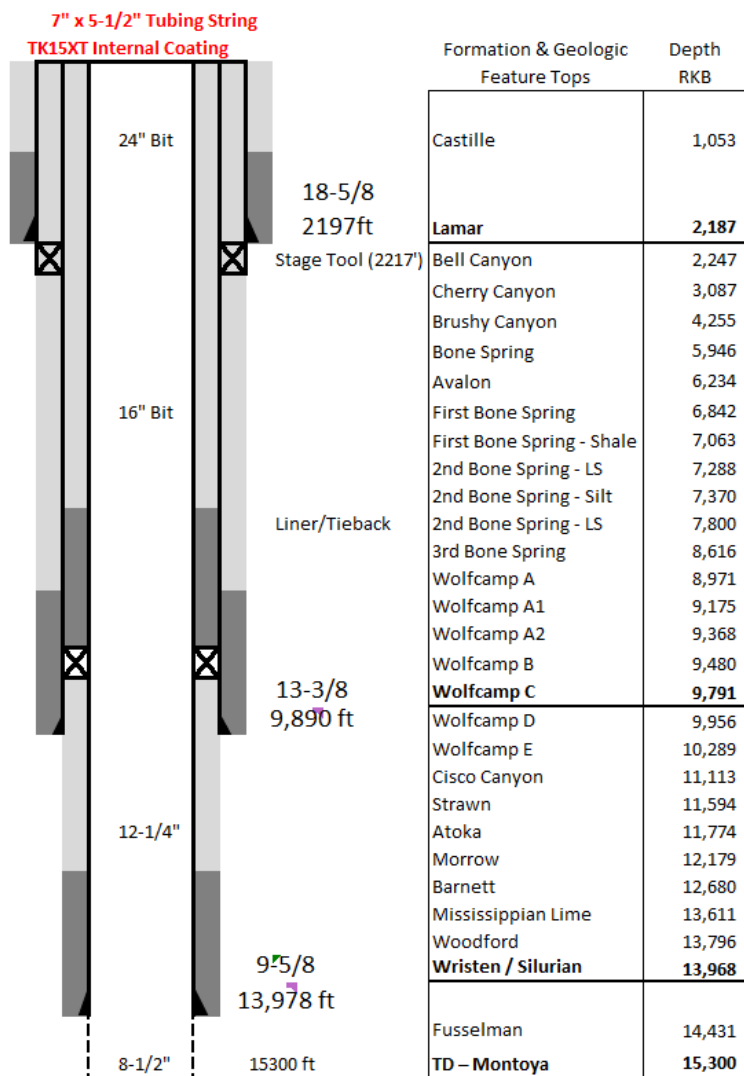
SIGNATURE:  DATE 2/3/2020

E-MAIL ADDRESS: LBECERRA@CHEYRON.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

INJECTION WELL DATA SHEET

OPERATOR: CHEVRON USA INC.WELL NAME & NUMBER: VERITAS 12 STATE SWD 1WELL LOCATION: 1,983' FSL & 1,000' FWL L 12 26S 27E
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGEWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: 24" Casing Size: 18-5/8"Cemented with: 3,189 sx. **or** ft³Top of Cement: 0' Method Determined: CirculationIntermediate CasingHole Size: 16" Casing Size: 13-3/8"Cemented with: 2,074 sx. **or** ft³Top of Cement: 200' Method Determined: CalculationProduction LinerHole Size: 12-1/4" Casing Size: 9-5/8"Cemented with: 1,305 or ft³
sx.Top of Cement: 9,590 Method Determined: Circulation

Production Tieback

Hole Size: N/A Casing Size: 9-5/8"
Cemented with: 2,596 sx. **or** _____ ft³
Top of Cement: 500' Method Determined: Calculation

Liner

Hole Size: _____ Casing Size: _____
Cemented with: _____ sx. **or** _____ ft³
Top of Cement: _____ Method Determined: _____
Total Depth: _____

Injection Interval

13,978' feet to 15,300'
___ Perforated or **X** Open Hole

INJECTION WELL DATA SHEETTubing Size: 7" x 5.5" Lining Material: TK15 XT IPC (NOV)Type of Packer: Baker Premier PackerPacker Setting Depth: 13,953'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? **X** Yes No

If no, for what purpose was the well originally drilled? Utilize as a salt water disposal well

2. Name of the Injection Formation: Silurian-Ordovician

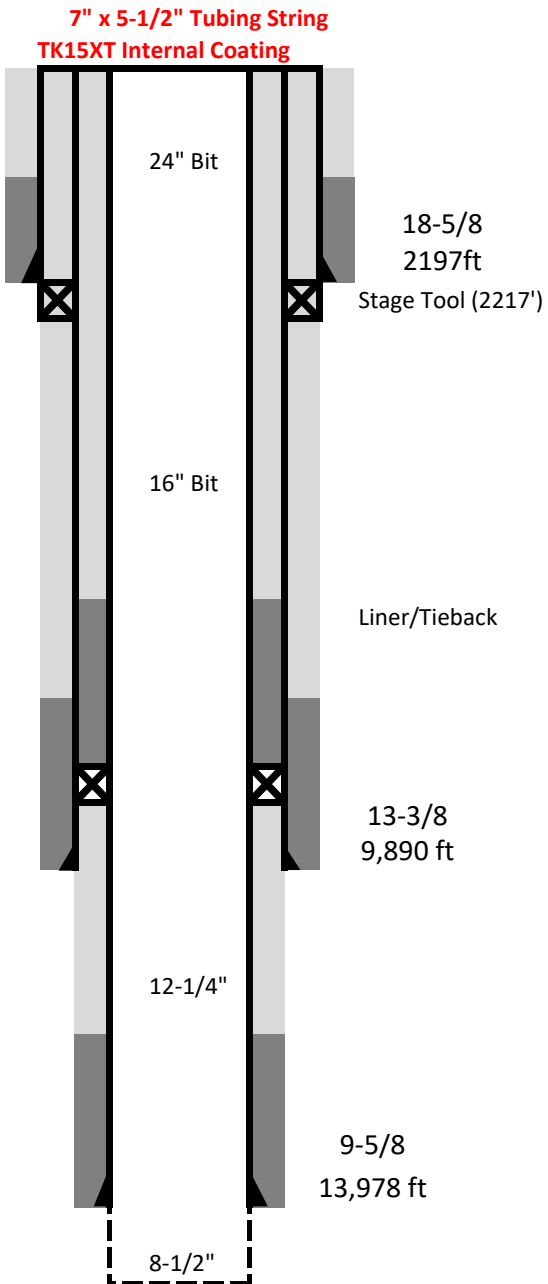
3. Name of Field or Pool (if applicable): _____

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

None

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: _____

Wolfcamp formation begins @ 8,971'



Hole Size	Casing	Mud Program	Casing Point
24"	18-5/8" 117.5# K55 BTC	FW 8.3 - 8.6 ppg Brine 10 - 10.5 ppg	Lamar Limestone for competent shoe. Isolate water table and salt section. FIT = 13.5ppg
16"	13-3/8" 72# C110 563 Alt Drift 12.25"	OBM 8.7 - 10.5 ppg	Carbonate stringer in top of the Wolfcamp C. Need to isolate the Delaware Mountain Group and Bonespring Sands. FIT = 14.1ppg
12-1/4"	9-5/8" 53.5# TN-80HS Blue Alt Drift 8.5" Liner/Tieback	OBM 9.5 - 14.0ppg Manage Pressure Drilling	Top of the Silurian. Isolate the permitted injection interval/formations below, for high pressure FIT = 9.4ppg
8-1/2"	N/A	WBM/Cut Brine 8.3 - 9.2 ppg	Base of Fusselman

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 98249	³ Pool Name SWD; SILURIAN
⁴ Property Code	⁵ Property Name VERITAS 12 STATE SWD	⁶ Well Number 1
⁷ OGRID No. 4323	⁸ Operator Name CHEVRON U.S.A. INC.	⁹ Elevation 3194'

¹⁰ Surface Location

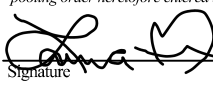
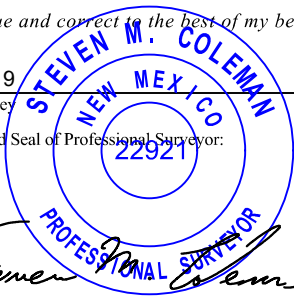
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	12	26 SOUTH	27 EAST, N.M.P.M.		1983'	SOUTH	1000'	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

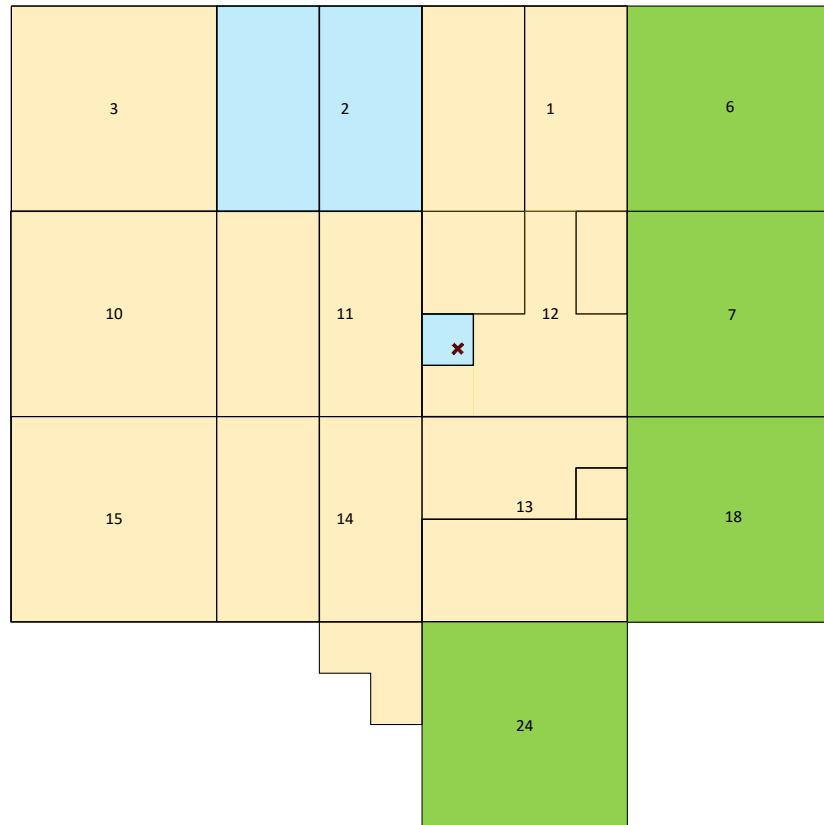
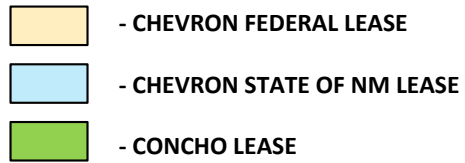
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	12	26 SOUTH	27 EAST, N.M.P.M.		1983'	SOUTH	1000'	WEST	EDDY

¹² Dedicated Acres 80	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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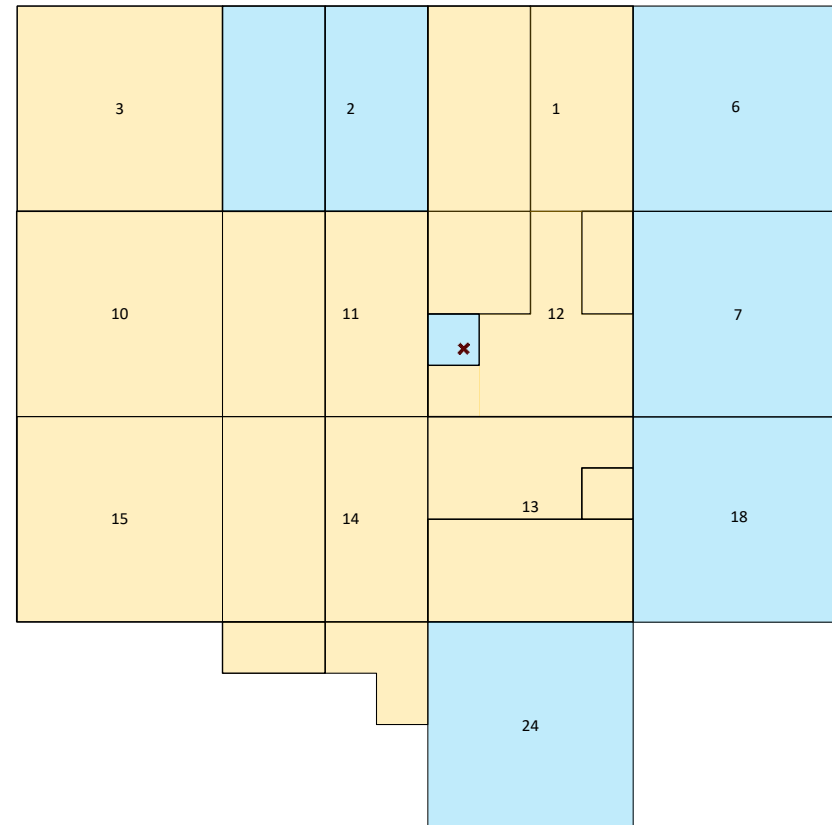
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

A			B	<p>¹⁷ OPERATOR CERTIFICATION</p> <p><i>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.</i></p> <p> 8/27/2019 Signature Date</p> <p>Laura Becerra Printed Name</p> <p>LBecerra@Chevron.com E-mail Address</p>
				<p>CORNER COORDINATES TABLE (NAD 27)</p> <p>A - Y=387127.27, X=556148.39 B - Y=387129.82, X=561523.33 C - Y=384468.90, X=556196.94 D - Y=381810.53, X=556245.48 E - Y=381813.38, X=561539.20</p>
C	12			<p>¹⁸ SURVEYOR CERTIFICATION</p> <p><i>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.</i></p> <p>07/12/2019 Date of Survey</p> <p>Signature and Seal of Professional Surveyor: </p> <p>Certificate Number 07/22/2019</p>
D			E	

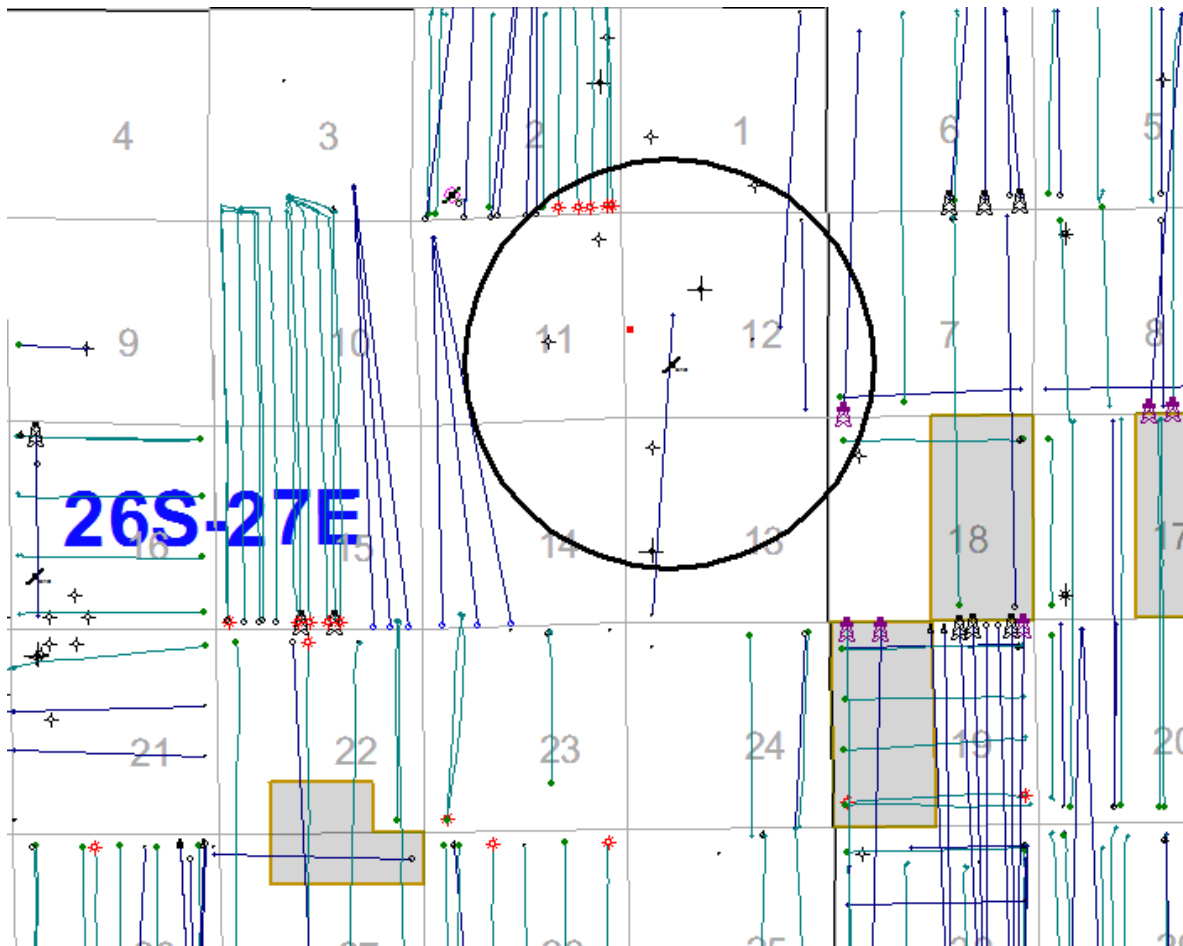
HAYHURST NEW MEXICO – LEASE MAP LEGEND



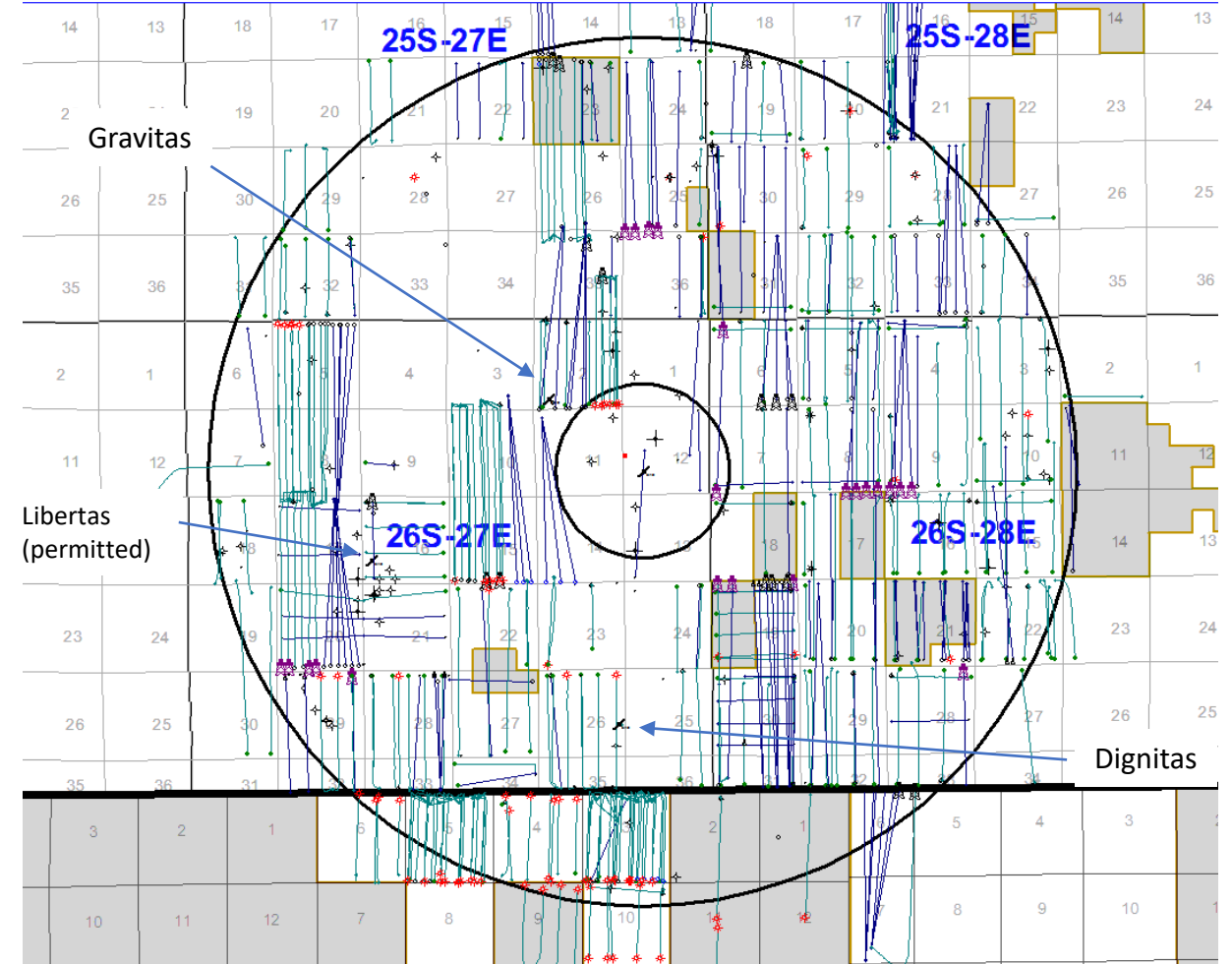
HAYHURST NEW MEXICO – SURFACE MAP LEGEND



Offsets

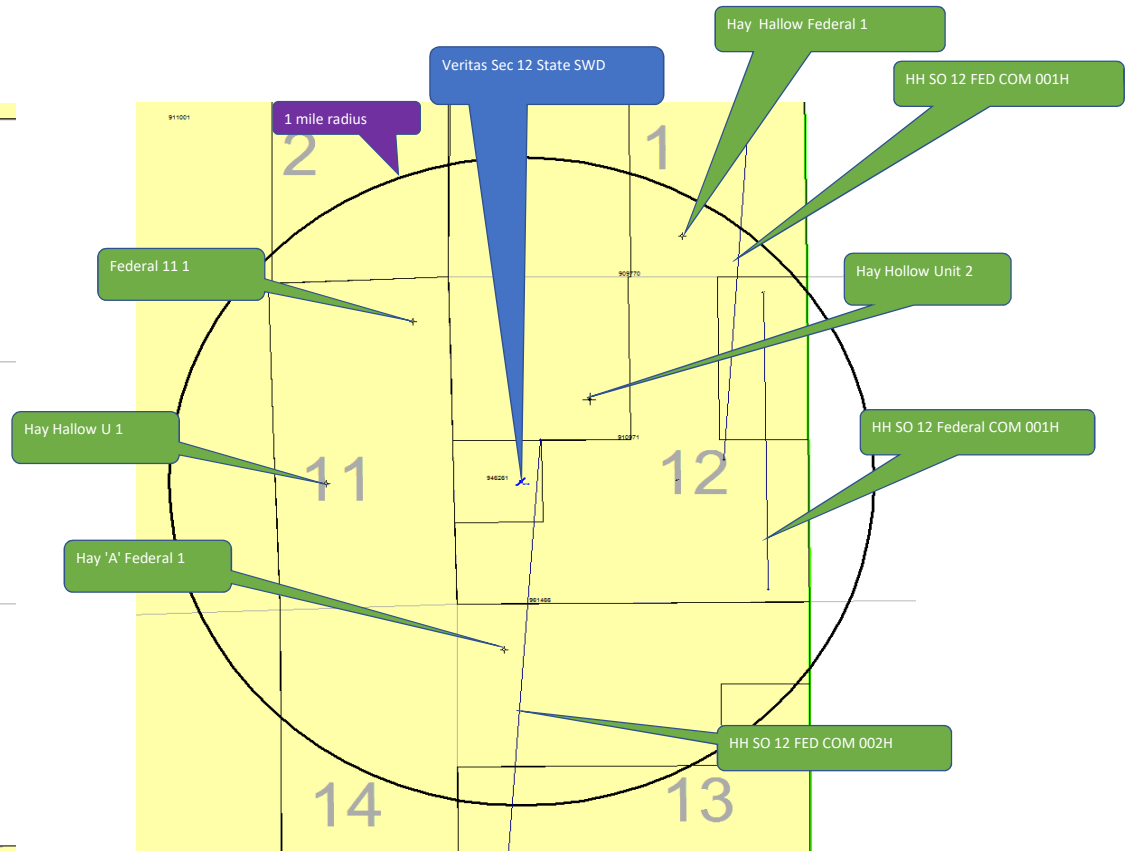
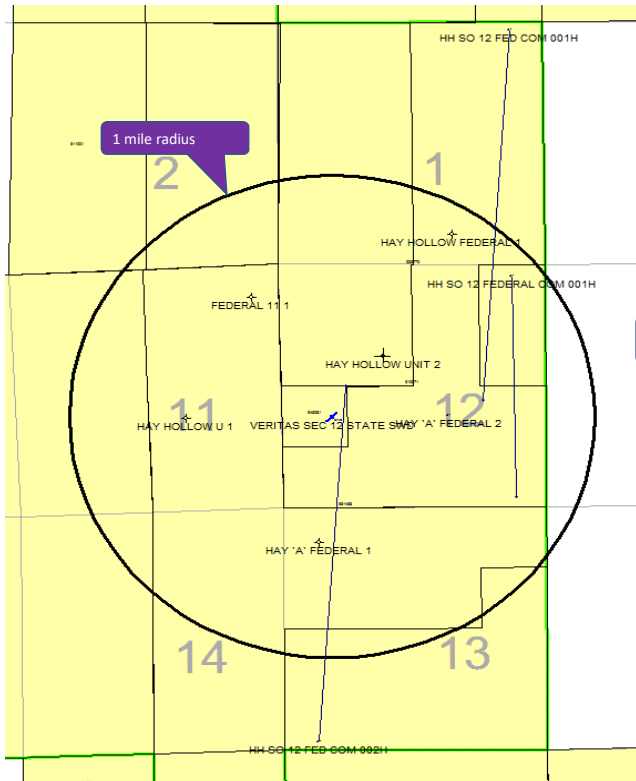


One mile offset- no other injectors



Five mile offset- Only other injectors are CVX operated

All offset wells 1 mile radius



API	Lease Name	Well Num	Spud Date	Comp Date	Current Operator	Final Status	Driller TD	IP Perf Upper	IP Perf Lower	Current Production Status	Formation Producing Name
30015214560000	HAY HOLLOW U	1	1975-01-09	1975-04-02	GREAT WESTERN DRILLING CO	ABD-GW	12966	11611	11642	P	STRAWN LM
30015240700000	HAY HOLLOW FEDERAL	1	1982-02-04	1982-04-02	JUBILEE ENERGY CORP	ABD-GW	6925	6178	6844	P	BONE SPRING
30015239830000	HAY 'A' FEDERAL	2			QUANAH PETROLEUM INCORPORATED	ABANDON LOCATION					
30015215490000	HAY HOLLOW UNIT	2	1975-06-03	1975-08-21	GREAT WESTERN DRILLING CO	D&A-OG	13021				
30015442050000	HH SO 12 FED COM	002H			CHEVRON U S A INC	ABANDON LOCATION					
30015434570000	HH SO 12 FEDERAL COM	001H			CHEVRON U S A INC	ABANDON LOCATION					
30015011480000	FEDERAL 11	1	1962-09-01	1962-10-01	RITCHIE & REAVES	DRY & ABANDONED	2404				
30015442030000	HH SO 12 FED COM	001H			CHEVRON U S A INC	ABANDON LOCATION					
30015239560000	HAY 'A' FEDERAL	1	1981-12-07	1982-03-19	MARLINE PETROLEUM CORP	ABD-GW	7665	6871	7558	P	BONE SPRING



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

UTMNAD83 Radius Search (in meters):

Easting (X): 580319.851 **Northing (Y):** 3546865.96 **Radius:** 1610



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

Basin/County Search:

Basin: Carlsbad

UTMNAD83 Radius Search (in meters):

Easting (X): 580318.97

Northing (Y): 3546865.48

Radius: 1609

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/28/20 9:34 AM

WATER COLUMN/ AVERAGE
DEPTH TO WATER

VII. 5 Chemical Analysis of the Disposal Zone Formation Water

Well Name	API	Lat	Long	Sect	Tw	Range	County	ST	Field	Formation	samplesource	tds_mgL	chloride_mgL
ANTELOPE RIDGE UNIT	3002521082	32.259	-103.461	34	23 S	34 E	Lea	NM	ANTELOPE RIDGE	DEVONIAN	UNKNOWN	80187	47900
FARNSWORTH FEDERAL	3002511950	32.078	-103.162	4	26 S	37 E	Lea	NM	CROSBY	DEVONIAN	UNKNOWN	31931	20450
ARNOTT RAMSAY NCT B	3002511863	32.092	-103.178	32	25 S	37 E	Lea	NM	CROSBY	DEVONIAN			100382
COPPER	3002511818	32.099	-103.165	28	25 S	37 E	Lea	NM	CROSBY	DEVONIAN	UNKNOWN	27506	15270
STATE NJ A	3002511398	32.165	-103.127	2	25 S	37 E	Lea	NM	JUSTIS NORTH	DEVONIAN	DST	105350	59300
WEST DOLLARHIDE DEVONIAN	3002512297	32.172	-103.076	32	24 S	38 E	Lea	NM	DOLLARHIDE	DEVONIAN	WELLHEAD	50858	30200
STATE B COM	3002509716	32.179	-103.221	36	24 S	36 E	Lea	NM	CUSTER	DEVONIAN	UNKNOWN	176234	107400
E C HILL D FEDERAL	3002510950	32.265	-103.144	34	23 S	37 E	Lea	NM	TEAGUE	DEVONIAN	UNKNOWN	236252	147000
E C HILL B FEDERAL	3002510945	32.266	-103.144	34	23 S	37 E	Lea	NM	TEAGUE	DEVONIAN	UNKNOWN	112959	67390
CLINE FEDERAL	3002510717	32.302	-103.136	14	23 S	37 E	Lea	NM	CLINE	DEVONIAN	PRODUCTION TEST	118979	71280
BELL LAKE UNIT	3002508483	32.328	-103.507	6	23 S	34 E	Lea	NM	BELL LAKE NORTH	DEVONIAN	HEATER/TREATER	71078	42200
Average												101133	64434

The data table above represents all water analysis of wells within 30 miles of proposed SWD well in Lea County, New Mexico. The data was supplied by Martha Cather from the PRRC (Petroleum Recovery Resource Center) at New Mexico Tech in Socorro, New Mexico. The water analysis was performed on water samples from the 'Devonian', which covers both Silurian and Devonian aged rocks.

For most wells the chloride count and total dissolved solids count (tds in milligrams) was available. The sodium count, which was not available for these wells, is always about half the chloride count, and is included in the total dissolved solids count. With this assumption, the dissolved sodium and chloride count comprises ~90% of the total dissolved solids. The average value for the chloride count in the 11 wells below is 64,000 mg, which equates to ~100,000 mg sodium and chloride. Some of the Devonian-Silurian wells have total dissolved solid counts as high as 236,000 mg.

As previously seen in the water analysis from the Wolfcamp, the dissolved sodium and chloride content is ~104,000 mg which is similar to the salinity of the Silurian formation that will receive the injected water.



Permian Basin Area Laboratory
2101 Market Street,
Midland, Texas 79703

Upstream Chemicals

REPORT DATE: 11/15/2019

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	CHEVRON
DISTRICT:	WATER MANAGEMENT - PERMIAN-SELECT
AREA/LEASE:	HAYHURST
SAMPLE POINT NAME	HAYHURST SO 10 15 FED 002 1H (PAD 2)
SITE TYPE:	FACILITY
SAMPLE POINT DESCRIPTION:	WELL HEAD

ACCOUNT REP:	ALEXANDER ROSS
SAMPLE ID:	201901084331
SAMPLE DATE:	10/31/2019
ANALYSIS DATE:	11/6/2019
ANALYST:	SVP

CHEVRON, HAYHURST, HAYHURST SO 10 15 FED 002 1H (PAD 2)

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250		Chloride (Cl ⁻):	73104.9	2062.2	Sodium (Na ⁺):	32609.5	1419.0
Final Temperature (°F):	80		Sulfate (SO ₄ ²⁻):	367.8	7.7	Potassium (K ⁺):	484.3	12.4
Initial Pressure (psi):	100		Borate (H ₃ BO ₃):	294.6	4.8	Magnesium (Mg ²⁺):	633.8	52.2
Final Pressure (psi):	15		Fluoride (F ⁻):	ND		Calcium (Ca ²⁺):	4177.9	208.5
pH:			Bromide (Br ⁻):	ND		Strontium (Sr ²⁺):	834.3	19.0
			Nitrite (NO ₂ ⁻):	ND		Barium (Ba ²⁺):	3.4	0.0
pH at time of sampling:	6.9		Nitrate (NO ₃ ⁻):	ND		Iron (Fe ²⁺):	8.2	0.3
			Phosphate (PO ₄ ³⁻):	ND		Manganese (Mn ²⁺):	0.6	0.0
			Silica (SiO ₂):	ND		Lead (Pb ²⁺):	ND	
ALKALINITY BY TITRATION:						Zinc (Zn ²⁺):	0.0	0.0
	mg/L	meq/L						
Bicarbonate (HCO ₃ ⁻):	134.0	2.2				Aluminum (Al ³⁺):	9.5	1.1
Carbonate (CO ₃ ²⁻):	ND					Chromium (Cr ³⁺):	ND	
Hydroxide (OH ⁻):	ND					Cobalt (Co ²⁺):	ND	
			ORGANIC ACIDS:	mg/L	meq/L	Copper (Cu ²⁺):	0.0	0.0
aqueous CO ₂ (ppm):	80.0		Formic Acid:	ND		Molybdenum (Mo ²⁺):	ND	
aqueous H ₂ S (ppm):	0.0		Acetic Acid:	ND		Nickel (Ni ²⁺):	ND	
aqueous O ₂ (ppb):	ND		Propionic Acid:	ND		Tin (Sn ²⁺):	ND	
			Butyric Acid:	ND		Titanium (Ti ²⁺):	ND	
Calculated TDS (mg/L):	112359		Valeric Acid:	ND		Vanadium (V ²⁺):	ND	
Density/Specific Gravity (g/cm ³):	1.0701					Zirconium (Zr ²⁺):	ND	
Measured Specific Gravity	1.0775					Lithium (Li):	19.4	
Conductivity (mmhos):	ND							
Resistivity:	ND					Total Hardness:	14010	N/A
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data		Anion/Cation Ratio:		1.21	ND = Not Determined		

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO ₄)		Calcite (CaCO ₃)		Gypsum (CaSO ₄ ·2H ₂ O)		Anhydrite (CaSO ₄)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.73	1.650	0.85	20.895	-0.75	0.000	-0.94	0.000
99°F	24 psi	0.59	1.509	0.91	21.921	-0.74	0.000	-0.85	0.000
118°F	34 psi	0.47	1.342	0.98	23.273	-0.73	0.000	-0.76	0.000
137°F	43 psi	0.37	1.153	1.06	24.640	-0.72	0.000	-0.66	0.000
156°F	53 psi	0.27	0.948	1.14	25.936	-0.71	0.000	-0.56	0.000
174°F	62 psi	0.19	0.731	1.22	27.134	-0.70	0.000	-0.45	0.000
193°F	72 psi	0.13	0.509	1.30	28.230	-0.69	0.000	-0.34	0.000
212°F	81 psi	0.07	0.288	1.39	29.296	-0.68	0.000	-0.23	0.000
231°F	91 psi	0.02	0.070	1.47	30.281	-0.67	0.000	-0.11	0.000
250°F	100 psi	-0.03	0.000	1.56	31.161	-0.66	0.000	0.00	0.938

Conditions		Celestite (SrSO ₄)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO ₃)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.28	94.122	-1.42	0.000	-8.74	0.000	-0.21	0.000
99°F	24 psi	0.28	94.944	-1.44	0.000	-8.84	0.000	-0.10	0.000
118°F	34 psi	0.29	96.068	-1.45	0.000	-8.89	0.000	0.02	0.194
137°F	43 psi	0.30	97.909	-1.46	0.000	-8.92	0.000	0.13	1.183
156°F	53 psi	0.31	100.719	-1.46	0.000	-8.93	0.000	0.22	1.952
174°F	62 psi	0.32	104.601	-1.47	0.000	-8.94	0.000	0.31	2.538
193°F	72 psi	0.34	109.526	-1.47	0.000	-8.93	0.000	0.38	2.978
212°F	81 psi	0.37	115.356	-1.47	0.000	-8.91	0.000	0.44	3.331
231°F	91 psi	0.39	121.875	-1.47	0.000	-8.88	0.000	0.49	3.596
250°F	100 psi	0.42	128.816	-1.46	0.000	-8.85	0.000	0.53	3.783

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

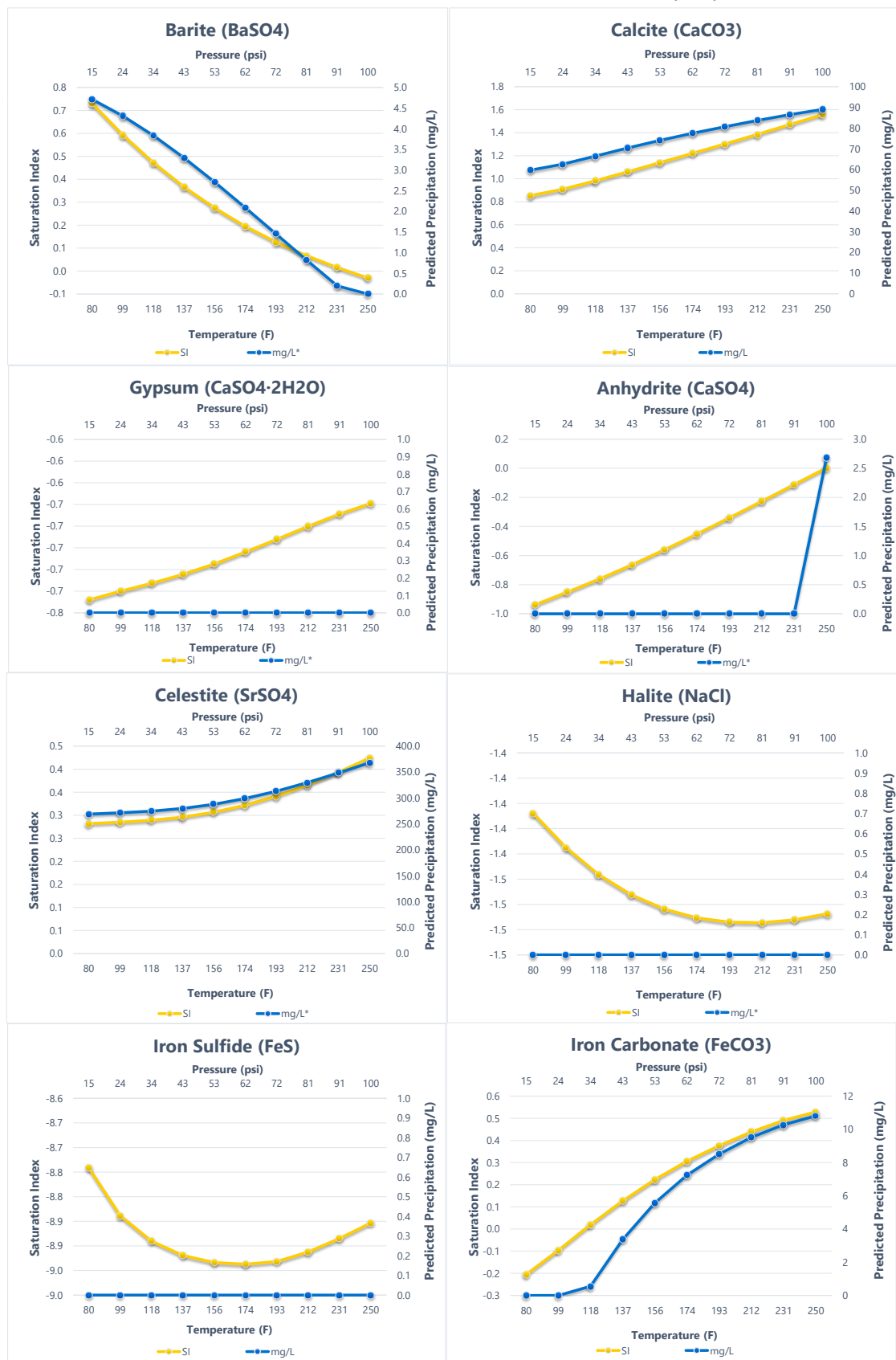
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; %CO₂ is not included in the calculations.

 ESI
ScaleSoftPitzer™
SSP2010

Comments:

SAMPLE ID: 43769 CHEVRON, HAYHURST, HAYHURST SO 10 15 FED 002 1H (PAD 2)



SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.



James Ward
Water Management and Planning Team Lead, Operations

Chevron has completed technical work using the Stanford Fault Slip Potential modeling software to more fully understand the potential risk of initiating an induced seismic event as a result of disposal operations through the predicted service life of the Veritas SWD. Based upon the information provided by the Fault Slip Potential modeling software and other information as provided herein, it is Chevron's position that this well can be drilled, completed, and operated at the requested disposal rates with a low probability of inducing slip on a fault.

There are no reported USGS earthquake events within 15 miles of the proposed well location, as shown in the attached documentation.

Stress and hydrology inputs for the FSP modeling were derived in part from logs and derivative products collected from logged wells in the vicinity. These inputs are summarized in the subsequent pages. A simulated disposal volume of 85,000 barrels of water per day for 30 years at the proposed Veritas SWD, and a radial flow assumption, yield a projected pore pressure increase of 360psi at a distance of 1 mile from the proposed well.

Fault inputs for FSP modeling were derived from interpretation of 3D seismic data. When considered jointly with the regional stress field, these faults do not appear to be susceptible to slip with modeled pore pressure increases in the disposal interval. Variations in the stress, hydrology, and fault inputs were also considered as part of a probabilistic analysis, and resultant model runs result in low probabilities of inducing slip on interpreted faults.

While Chevron is utilizing available tools, such as FSP modeling software, to more fully understand the risks of induced seismicity, there are assumptions and uncertainties carried in the analysis and software.

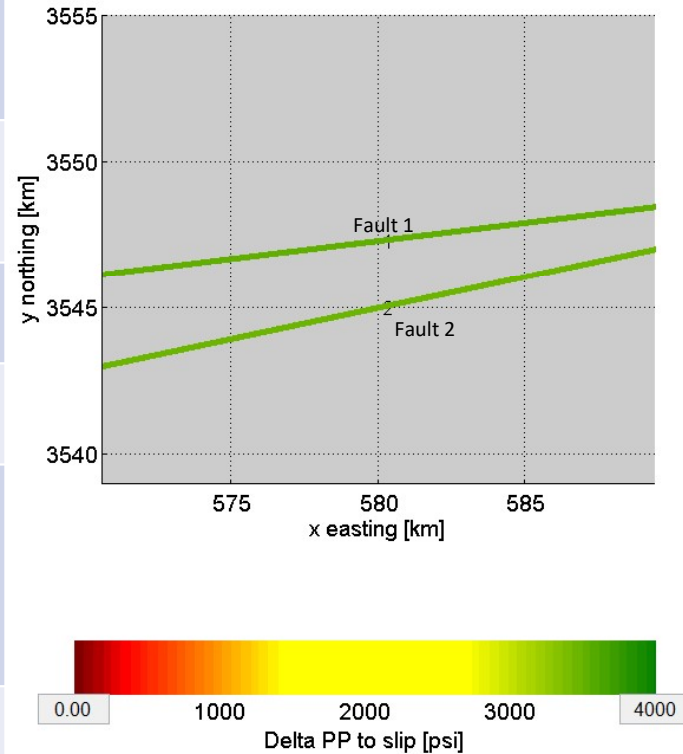
From an operational standpoint, Chevron continuously measures surface pressure in all Chevron-operated Silurian disposal facilities and cannot exceed 3000 psig per facility constraints. Material changes in reservoir pressure will be indicated and, if warranted, fault slip potential assessments can be reevaluated and injection volumes could be adjusted in the future.

A handwritten signature in black ink, appearing to read "James Ward", with a large, stylized loop at the end.

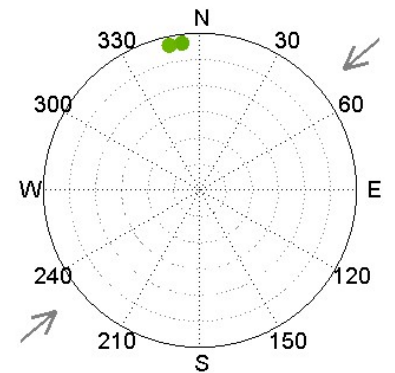
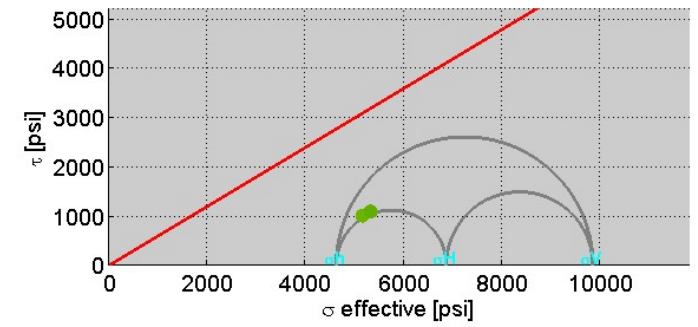
James Ward

Water Management and Planning Team Lead,

Geomechanical Analysis

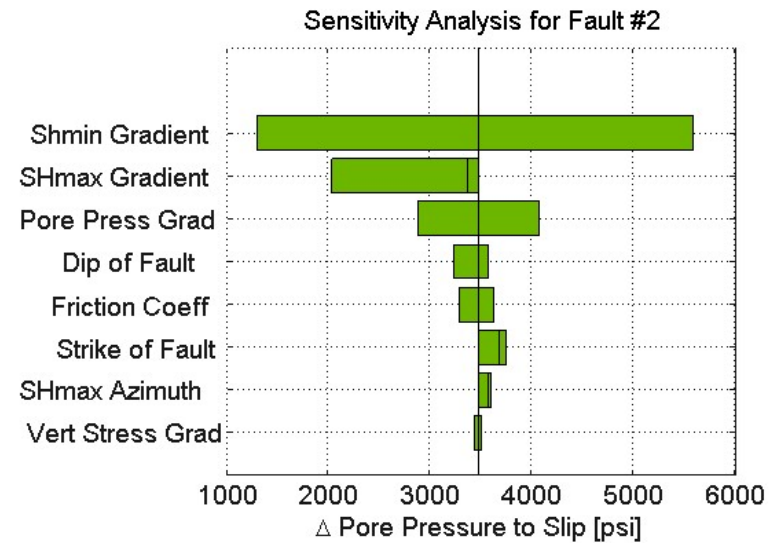
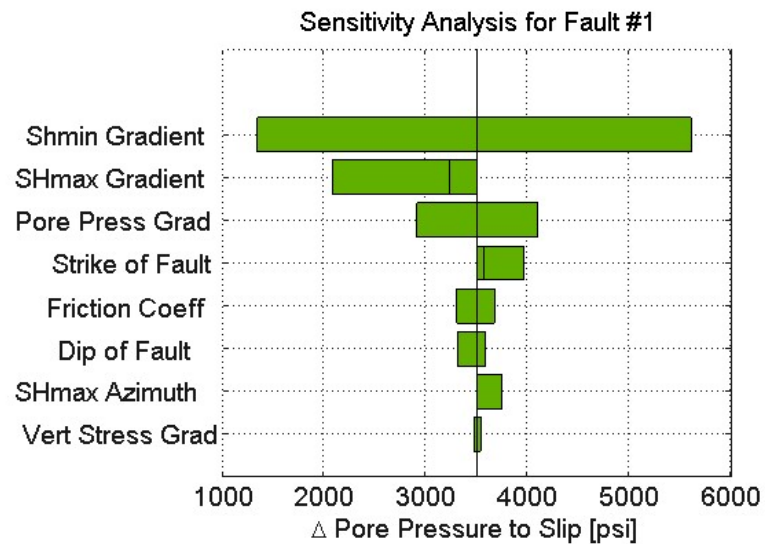
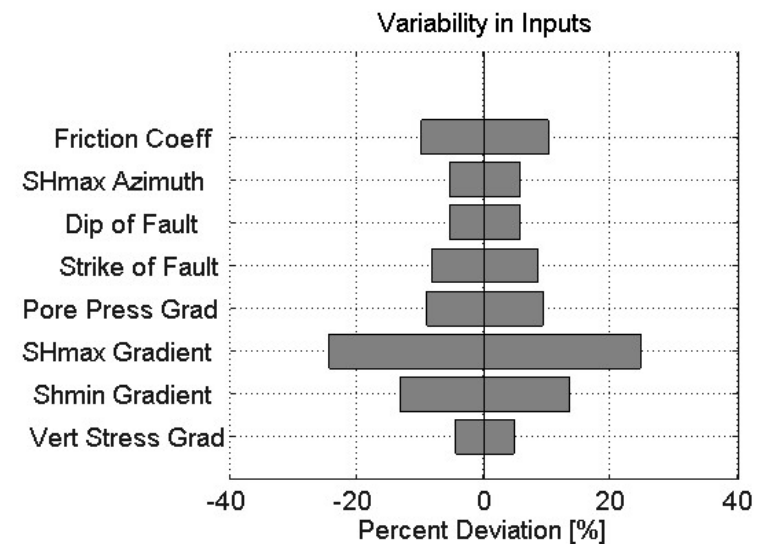
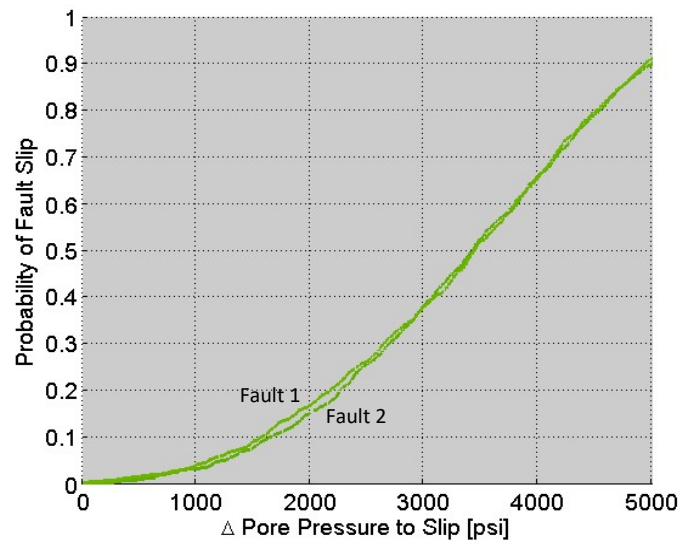


Stress Regime: Normal Faulting



Stereonet Show:

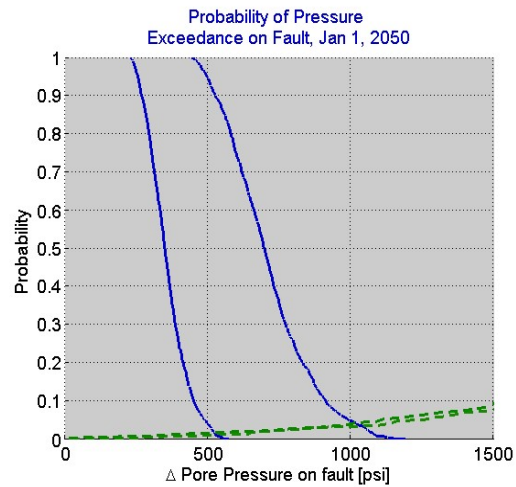
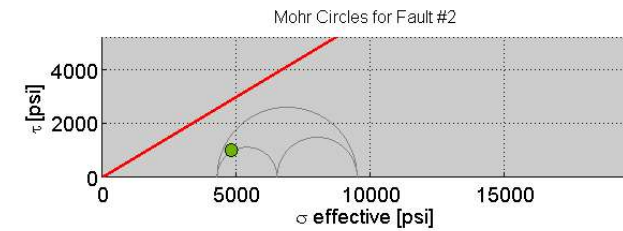
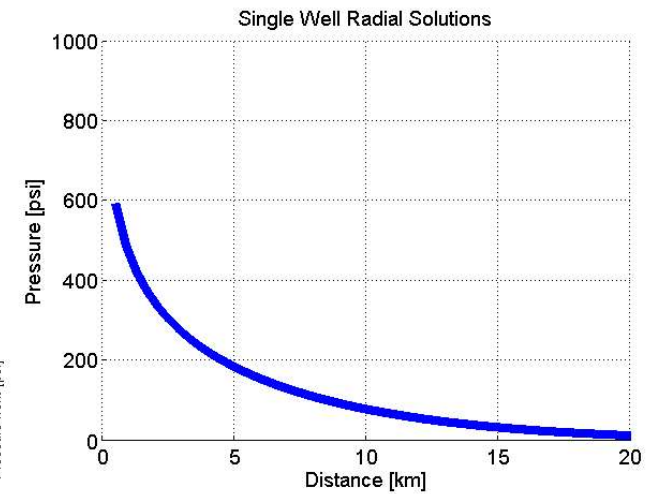
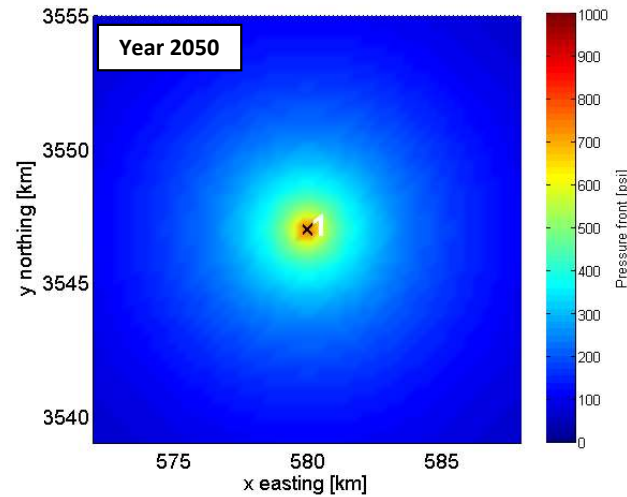
Sensitivity Analysis - Geomechanics



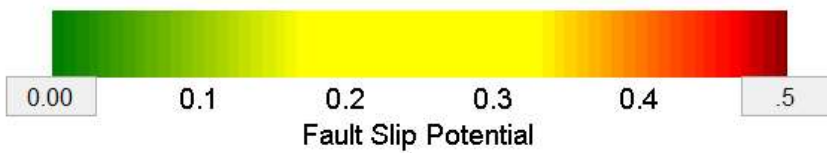
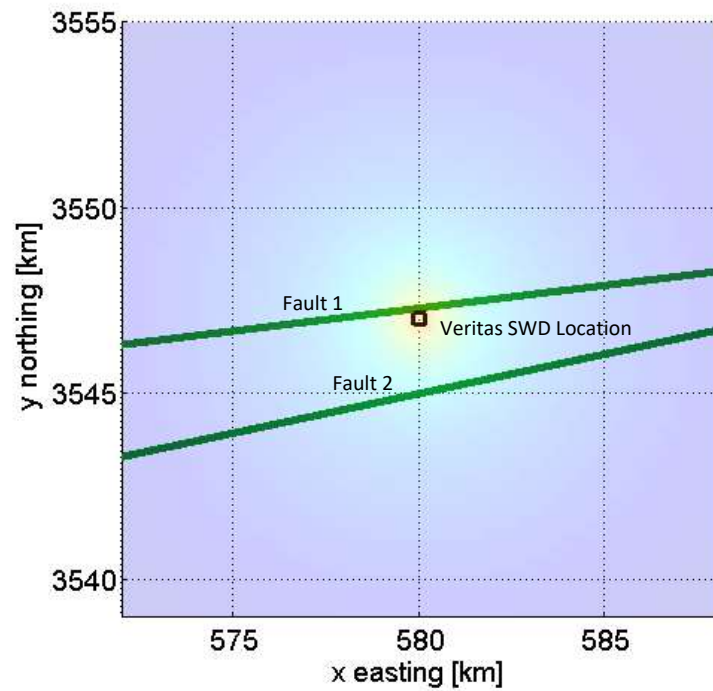
Hydrology Analysis

Modeled Reservoir Pressure Change

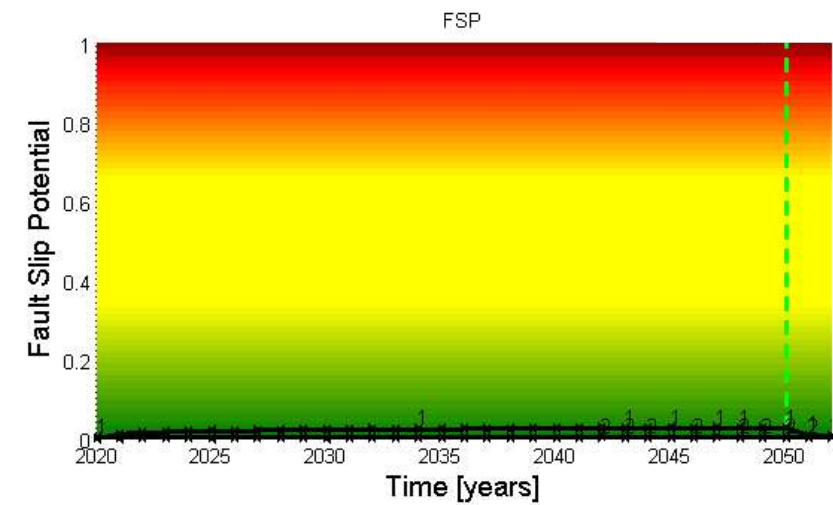
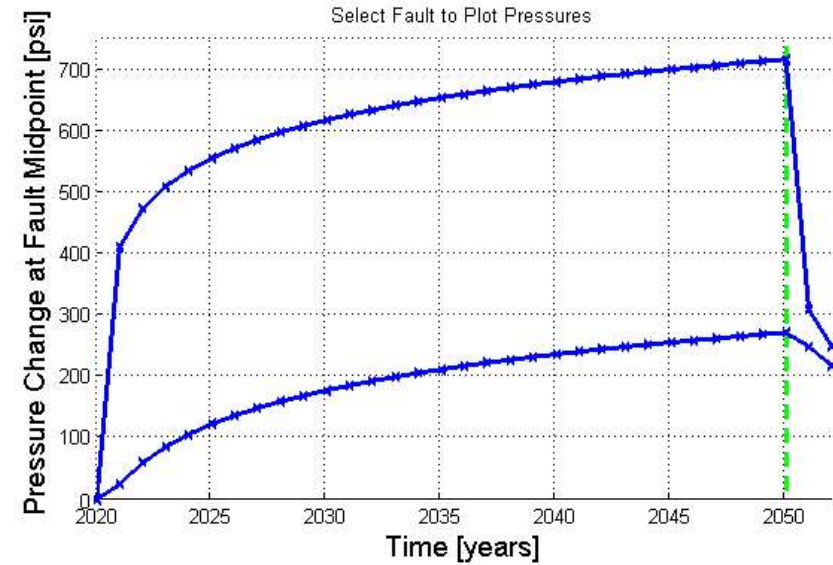
Parameter	Input	Uncertainty
Aquifer Thickness (feet)	750	±200
Aquifer Porosity (%)	5	±3
Aquifer Permeability (mD)	75	±20



Combined FSP Output



Year: 2050



Carlsbad Current Argus.

PART OF THE USA TODAY NETWORK

Affidavit of Publication

Ad # 0004002437

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CHEVRON

6301 DEAUVILLE BLVD. S3004

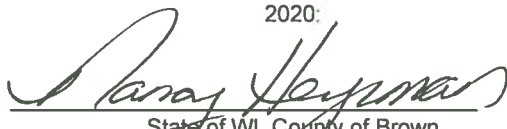
MIDLAND, TX 79706

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:

January 15, 2020


 Kathleen Allen
 Legal Clerk

Subscribed and sworn before me this January 15,
 2020:


 Nancy Heyrman
 State of WI, County of Brown
 NOTARY PUBLIC
 5.15.23
 My commission expires

Notice is hereby given of the application of CHEVRON U.S.A. INC, 6301 Deauville Blvd, Midland, TX 79706, to the Oil Conservation Division of the state of New Mexico, and the Commissioner of Public Lands, State of New Mexico for administrative approval of a salt water disposal well. The proposed well, Veritas 12 State SWD 1 is located 1,983' FSL& 1,000' FWL, Unit Letter L, Section 12, T26S-R27E, Eddy County, New Mexico. The formations will be Silurian/Ordovician and the interval 13,978' - 15,300' open hole. The maximum anticipated injection rate will be 90,000 BWPD at a maximum injection pressure of 2795 psi. Interested parties should file objections or requests for hearing with the Oil Conservation Division, 1220 South St Francis Dr, Santa Fe, New Mexico 87505, within 15 days. Inquiries regarding this application should be directed to Chevron North America, Attn: Stephen Tainter, 1400 Smith St, Rm 40008, Houston, TX 77002.
 #, Current Argus,
 Jan. 15, 2020



Ad # 0004002437
 PO #: Veritas 12 State SWD 1
 # of Affidavits 1

This is not an invoice

NANCY HEYRMAN
 Notary Public
 State of Wisconsin



Mid-Continent Business Unit
Chevron North America Exploration
and Production Company
6301 Deauville Blvd.
Midland, TX 79706

Laura Becerra
Well Permitting & Compliance
(432)-687-7665
LBecerra@Chevron.com

February 3, 2020

Re: Offset Operator Notification
Application for Authorization to Inject
VERITAS 12 STATE SWD 1
1983' FSL 1000' FWL
Sec. 12 T26S-R27E
Eddy County, NM

INTERESTED PARTIES

As required by NMOCD rules, as an offset operator you are receiving notice of Application for Authorization to Inject for the referenced well. Chevron U.S.A. Inc., operator of the proposed SWD has filed an application with the New Mexico Oil Conservation Division for authorization to drill and inject. Chevron proposes to dispose into the Silurian-Ordovician formations that are estimated to occur between 13,978' to 15,300'. The Veritas 12 State SWD 1 will be drilled at a location of 1,983' FSL, & 1,000' FWL, Section 12, T26S-R27E, Eddy County, New Mexico.

Attached you will find a copy of the submitted OCD form C-108 with corresponding data.

Any objections to this application must be sent to the New Mexico Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505 within 15 days of receipt of this notification. If additional information is required, please contact Laura Becerra at (432) 687-7665, or the Performance Team Lead, Megan Fung at (432) 687-7555.

Best regards,

A handwritten signature in black ink, appearing to read 'Laura Becerra', with a stylized flourish at the end.

Laura Becerra
Chevron U.S.A. Inc.
Well Permitting & Compliance

VERITAS 12 STATE SWD 1

**1,983' FSL 1000' FWL
Sec. 12 T26S-R27E
Eddy County, NM**

SURFACE OWNER & OFFSET OPERATORS**SURFACE OWNER:**

NAME	ADDRESS	CITY, STATE, & ZIP	CERTIFIED #
NM State Land Office	310 Old Santa Fe Trail	Santa Fe, NM 87504	7016 0600 0000 4111 8478
BLM	301 Dinosaur Trail	Santa Fe, NM 87508	7016 2140 0000 8828 5031

OFFSET OPERATORS:

NAME	ADDRESS	CITY, STATE, & ZIP	CERTIFIED #
COG Operating, LLC	600 W. Illinois Ave	Midland, TX 79701	7016 2140 0000 8828 5024