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

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO

Case No. 16508

NGL Water Solutions Permian, LLC

Exhibits

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APPLICATION

NGL Water Solutions Permian, LLC ("NGL"), OGRID No. 372338, through its undersigned attorneys, hereby makes this application to the Oil Conservation Division pursuant to the provisions of N.M. Stat. Ann. § 70-2-12, for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, NGL states as follows:

(1) NGL proposes to drill the Patriot SWD #1 well at a surface location 682 feet from the North line and 655 feet from the West line of Section 31, Township 24 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well.

(2) NGL seeks authority to inject salt water into the Siluro-Devonian formation at a depth of 16,500' – 18,170'.

(3) NGL further seeks approval of the use of 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day.

(4) NGL anticipates using an average pressure of 2,475 psi for this well, and it requests that a maximum pressure of 3,300 psi be approved for the well.

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

EXHIBIT 1
NGL Water / Patriot Well
Case No. 16508 January 10, 2018 Hearing

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

WHEREFORE, NGL requests that this application be set for hearing before an Examiner of the Oil Conservation Division on November 1, 2018; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

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

By: _____

Jennifer Bradfute
Deana Bennett
Post Office Box 2168
Bank of America Centre
500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
Attorneys for Applicant

CASE NO. 16508: Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving disposal into the Siluro-Devonian formation through the Patriot SWD #1 well at a surface location 682 feet from the North line and 655 feet from the West line of Section 31, Township 24 South, Range 34 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. The target injection interval is the Siluro-Devonian formation at a depth of 16,500' – 18,170'. NGL further seeks approval of the use of 7 inch tubing inside the surface and intermediate casings and 5 ½ inch tubing inside the liner and requests that the Division approve a maximum daily injection rate for the well of 50,000 bbls per day. Said area is located approximately 20 miles west of Jal, New Mexico.

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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

ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: NGL WATER SOLUTIONS PERMIAN LLC **OGRID Number:** 372338
Well Name: PATRIOT SWD #1 **API:** TBD
Pool: SWD; SILURIAN-DEVONIAN **Pool Code:** 96101

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

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

B. Check one only for [I] or [II]
[I] Commingling – Storage – Measurement
☐DHC ☐CTB ☐PLC ☐PC ☐OLS ☐OLM
[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐WFX ☐PMX ☒SWD ☐IPI ☐EOR ☐PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
A. ☒ Offset operators or lease holders
B. ☐ Royalty, overriding royalty owners, revenue owners
C. ☒ Application requires published notice
D. ☒ Notification and/or concurrent approval by SLO
E. ☒ Notification and/or concurrent approval by BLM
F. ☒ Surface owner
G. ☐ For all of the above, proof of notification or publication is attached, and/or,
H. ☐ No notice required

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

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

CHRIS WEYAND
Print or Type Name

Signature

09/25/2018
Date

512-600-1764
Phone Number

CHRIS@LONQUIST.COM
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___X___Disposal _____Storage
Application qualifies for administrative approval? ___X___Yes _____No

II. OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC

ADDRESS: 1509 W WALL ST // STE 306 // MIDLAND, TX 79701

CONTACT PARTY: SARAH JORDAN PHONE: (432) 685-0005 x1989

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

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

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

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

VII. Attach data on the proposed operation, including:

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

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

IX. Describe the proposed stimulation program, if any.

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

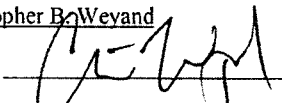
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

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

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

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

NAME: Christopher B. Weyand TITLE: Consulting Engineer

SIGNATURE:  DATE: 9/24/2018

E-MAIL ADDRESS: chris@lonquist.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

Side 2

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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC

WELL NAME & NUMBER: PATRIOT SWD #1

WELL LOCATION: 682 FNL & 655' FWL (FOOTAGE LOCATION) D (UNIT LETTER) 31 (SECTION) 24S (TOWNSHIP) 34E (RANGE)

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 24.000" Casing Size: 20.000"

Cemented with: 1,602 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulation

1st Intermediate Casing

Hole Size: 17.500" Casing Size: 13.375"

Cemented with: 3,113 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulation

2nd Intermediate Casing

Hole Size: 12.250" Casing Size: 9.625"

Cemented with: 3,268 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Circulation

Production Liner

Hole Size: 8.500"

Casing Size: 7.625"

Cemented with: 318 sx.

or _____ ft^3

Top of Cement: 11,900'

Method Determined: Calculation

Total Depth: 18,170'

Injection Interval

16,500 feet to 18,170 feet

(Open Hole)

INJECTION WELL DATA SHEET

Tubing Size: 7", 26 lb/ft, P-110, TCPC from 0'- 11,800' and 5.500", 17 lb/ft, P-110 TCPC from 11,800' – 16,480'
Lining Material: Duoline

Type of Packer: 7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel

Packer Setting Depth: 16,480'

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? N/A

2. Name of the Injection Formation: Devonian, Silurian, Fusselman and Montoya (Top 100')

3. Name of Field or Pool (if applicable): SWD; Silurian-Devonian

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. No, new drill.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:
   Bone Spring: 9,248'
   Wolfcamp: 12,194
   Atoka: 13,942'
   Morrow: 14,338'

Patriot SWD
Lea County NM
Vertical Injection - Devonian, Silurian, Fusselman

Location - Sec 31, Twp 24S, R 34E
Drilling Cost - $10.68MM **AFE #**

TD 18,004
GL/KB 3,570

Directions to Site - Travel 24.7 miles from Jal NM along NM 128W. Turn South at Resource Lane onto locations. Lat/Long - 32.18050, -103.51632

Geologic Tops (MD ft)	Section	Problems	Bit/BHA	Mud	Casing	Logging	Cement (HOLD)	Injection String
Rustler 1190 **Surface TD - 1200**	**Surface** Drill 24" 0' - 1200 Set and Cement 20" Casing	Loss Circulation Hole Cleaning Wellbore stability in the Red Beds Anhydrite in the Rustler	24" Tricone 9-5/8" x 8" MM 9 jts: 8" DC 21 jts: 5" HWDP 5 " DP to surface	Spud Mud MW< 9.0	1200' of 20" 94# J55 BTC Centralizers - bottom 2 joints and every 3rd jt thereafter, Cement basket 5th jt from surface	No Logs	Lead - 685sx of HES Extenda Cem, 13.7ppg, 4.5hrs TT Tail - 917sx of Halcem 3hr TT 25% Excess 1000psi CSD after 10hrs	
Salado 1,726' Delaware 5251 **1st Int TD - 5200**	**1st Intermediate** Drill 4000' of 17-1/2" Hole 1200' - 5200' Set and Cement 13-3/8" Casing	Seepage Losses Possible H2S Anhydrite Salt Sections	17-1/2" PDC 9-5/8" x 8" MM 9 jts: 8" DC 21 jts: 5" HWDP 5 " DP to surface		5M A Section Casing Bowl 5200' of 13-3/8" 68# L80 BTC Centralizers - bottom jt, every 3rd joint in open hole and 2 jt inside the surface casing	Mudlogger on site by 1250'	Lead - 1659 sx of Neocem 12.9ppg, 5hr TT Tail - 1454sx of Halcem, 14.8ppg 15% Excess 1000psi CSD after 10 hrs Cement to Surface	11800' of 7" P110 26# TCPC
ECP DV Tool - 5180 Cherry Canyon - 6280 Brushy Canyon - 7951 **DV Tool - 9000** Bone Spring - 9248 **3rd Int Liner Top - 11,900** Wolfcamp - 12194 **2nd Int TD - 12,400**	**2nd Intermediate** Drill 7200' of 12-1/4" Hole 5180' - 12400' Set 9-5/8" Intermediate Casing and Cement in 3 Stages	Hard Drilling in the Brushy Canyon Seepage to Complete Loss Water Flows Some Anhydrite H2S possible Production in the Bone Spring and Wolfcamp Ballooning is possible in Cherry Canyon and Brushy if Broken Down	12-1/4" PDC 8" MM 9jts: 8" DC 8" Drilling Jars 21 jts: 5" HWDP 5" DP to Surface	8.5 ppg OBM High Vis Sweeps UBD/MPD usig ADA	12400' of 9-5/8" 53.5# HCL80 BTC **Special Drift to 8.535"** Externally Coat 4820' Between DV Tools DV tool at at 9000' ECP DV Tool 15' Inside Previous Casing Centralizers - bottom jt, 100' aside of DV tool, every 3rd joint in open hole and 5	MWD GR Triple combo + CBL of 13-3/8" Casing	**Stage 3: 0% Excess** Lead 773sx Neocem 12.9 ppg Tail 397sx Halcem 14.8ppg 1000psi CSD after 10 hrs Cement to Surface **Stage 2: 25% Excess** Lead 779sx Neocem 12.9 ppg Tail 295sx Halcem 14.8ppg 1000psi CSD after 10 hrs **Stage 1: 25% Excess** Lead 553sx Neocem 12.9 ppg Tail 471sx Halcem 14.8ppg. 1000psi CSD after 10hrs	4680' of 5-1/2" P110 17# TCPC Duoline Internally Coated Injection Tubing
Strawn - 13681 Atoka - 13942 Morrow - 14338 Miss Lst - 15998 Woodford - 16368 Perm Packer - 16480 **3rd Int TD - 16500**	**3rd Intermediate** Drill 4100' of 8-1/2" Hole 12400' - 16500' Set 7-5/8" Liner and Cement in Single Stage	High Pressure (up to 15ppg) and wellbore instability (fracturing) expected in the Atoka 150 target radius Hard Drilling in the Morrow Clastic	8-1/2" PDC 6-3/4" MM 9 jts: 6" DC 21 jts: 5" HWDP 5" DP to Surface	12.5 ppg OBM UBD/MPD using ADA	4600' of 7-5/8" 39# Q125 - DTL (FJ4) FJ (Gas Tight) VersaFlex Packer Hanger Centralizers on and 1 jt above shoe jt and then every 2nd jt.	MWD GR Triple combo, CBL of 9-5/8" Casing	Lead 81sx Neocem 12.9 ppg Tail 237sx Halcem 14.8ppg. 1000psi CSD after 10hrs 8hr TT 10% Excess 1000psi CSD after 10hrs	7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim
Devonian - 16,480 Fusselman - 17483 Montoya - 18,070' TD - 18170	**Injection Interval** Drill 1504' of 6-1/2" hole 16500' - 18170'	Chert is possible Loss of Circulation is expected H2S encountered on the Striker 3 well BHT estimated at 280F	6-1/2" PDC 4-3/4"MM 9 jts: 4-3/4" DC 4-3/4" Drilling Jars 18 jts: 4" FH HWDP 4" FH DP to Surface	Fresh Water - possible flows	Openhole completion	MWD GR Triple Combo with FMI, CBL of 7-5/8"	Displace with 3% KCl (or heavier brine if necessary)	

NGL Water Solutions Permian, LLC

Patriot SWD No. 1

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well information	
Lease Name	Patriot SWD
Well No.	1
Location	S-31 T-24S R-34E
Footage Location	682' FNL & 655' FWL

2.

a. Wellbore Description

Casing Information				
Type	Surface	Intermediate	Production	Liner
OD	20"	13.375"	9.625"	7.625"
WT	0.438"	0.480"	0.545"	0.500"
ID	19.124"	12.415"	8.535"	6.625"
Drift ID	18.937"	12.259"	8.535"	6.500"
COD	21.00"	14.375"	10.625"	7.625"
Weight	94 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade	J-55	L80	HCL-80	Q-125
Hole Size	24"	17.5"	12.25"	8.5"
Depth Set	1,200'	5,200'	12,400'	16,500'

b. Cementing Program

Cement Information				
Casing String	Surface	Intermediate	Production	Liner
Lead Cement	C	C	H,H,C	H
Lead Cement Volume	685	1,659	Stage 1: 553 sks Stage 2: 779 sks Stage 3: 773 sks	81
Tail Cement	C	C	H,H,C	H
Tail Cement Volume	917	1,454	Stage 1: 471 sks Stage 2: 295 sks Stage 3: 397 sks	237
Cement Excess	25%	15%	25%, 25%, 0%	10%
TOC	Surface	Surface	Surface	11,900'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

Tubing Information		
OD	7"	5.5"
WT	0.362"	0.304"
ID	6.276"	4.892"
Drift ID	7.875"	6.050"
COD	6.151"	4.767"
Weight	26 lb/ft	17 lb/ft
Grade	P-110 TCPC	P-110 TCPC
Depth Set	0'-11,800'	11,800'-16,480'

Tubing will be lined with Duoline.

4. Packer Description

7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')
2. Gross Injection Interval: 16,500' – 18,170'

   Completion Type: Open Hole
3. Drilled for injection.
4. See the attached wellbore schematic.
5. Oil and Gas Bearing Zones within area of well:

Formation	Depth
Bone Spring	8,208'
Wolfcamp	11,618'
Atoka	13,942'
Morrow	14,238'

VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

   Average Volume: 40,000 BPD
   Maximum Volume: 50,000 BPD

2. Closed System

3. Anticipated Injection Pressure:

   Average Injection Pressure: 2,475 PSI (surface pressure)
   Maximum Injection Pressure: 3,300 PSI (surface pressure)

4. The injection fluid is to be locally produced water. Attached are produced water sample analyses taken from the closest wells that feature samples from the Atoka, Delaware, Bone Spring, and Wolfcamp formations. It is expected that source water will come primarily from Bone Spring and Wolfcamp formations.

5. The disposal interval is non-productive. No water samples are available from the surrounding area.

VIII. Geological Data

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities. The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

A. Injection Zone: Siluro-Devonian Formation

Formation	Depth
Rustler	1,190'
Salado	1,726'
Delaware	5,251'
Bone Spring	9,248'
Wolfcamp	12,194'
Strawn	13,681'
Atoka	13,942'
Morrow	14,338'
Mississippian Lime	15,998'
Woodford	16,368'
Devonian	16,480'

B. Underground Sources of Drinking Water

Within 1-mile of the proposed Patriot SWD #1 location, there are two water wells, but the depths of those wells were not recorded. Water wells in the greater surrounding area had a depth average of 358 ft and a water depth average of 235 ft. These wells are generally producing from the Santa Rosa. The upper Rustler may also be another USDW and will be protected.

IX. Proposed Stimulation Program

Stimulate with up to 50,000 gallons of acid.

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

There are two water wells that exist within one mile of the well location, but neither well is active, so samples could not be obtained. A map and Water Right Summaries from the New Mexico Office of the State Engineer are attached for wells C-03602 POD2 and C-03600 POD2.

XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed Patriot SWD #1) and any underground sources of drinking water.

NAME: John C. Webb

TITLE: Sr. Geologist

SIGNATURE: John C. Webb

DATE: 9/24/2018

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 and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised July 18, 2013

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

[1] Operator Name and Address	[2] OGRID Number
NGL WATER SOLUTIONS PERMIAN, LLC 1509 W WALL ST, STE 306 MIDLAND, TX 79701	372338
	[3] API Number TBD

[4] Property Code	[5] Property Name	[6] Well No.
	PATRIOT SWD	1

[7] Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
D	31	24S	34E	N/A	682'	NORTH	655'	WEST	LEA

[8] Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
	-	-	-		-	-	-	-	-

[9] Pool Information

Pool Name	Pool Code
SWD; Silurian-Devonian	96101

Additional Well Information

[11] Work Type	[12] Well Type	[13] Cable/Rotary	[14] Lease Type	[15] Ground Level Elevation
N	SWD	R	Private	3,495'
[16] Multiple	**[17] Proposed Depth**	**[18] Formation**	**[19] Contractor**	**[20] Spud Date**
N	18,170'	Siluro-Devonian	TBD	ASAP

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
235'	5,126'	> 1 mile

☐ **We will be using a closed-loop system in lieu of lined pits**

[21] Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	24"	20"	94 lb/ft	1,200'	1,602	Surface
Intermediate	17.5"	13.375"	68 lb/ft	5,200'	3,113	Surface
Production	12.25"	9.625"	53.5 lb/ft	12,400'	3,268	Surface
Prod. Liner	8.5"	7.625"	39 lb/ft	16,500'	318	11,900'
Tubing	N/A	7"	26 lb/ft	0' – 11,800'	N/A	N/A
Tubing	N/A	5.5"	17 lb/ft	11,800' – 16,480'	N/A	N/A

Casing/Cement Program: Additional Comments

See attached schematic.

[22] Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydraulic/Blinds, Pipe	10,000 psi	8,000 psi	TBD – Schaffer/Cameron

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.** Signature:	OIL CONSERVATION DIVISION	
	Approved By	
Printed name: Christopher B. Weyand	Title	
Title: Consulting Engineer	Approved Date	Expiration Date
E-mail Address: chris@lonquist.com		
Date: 9/20/2018 Phone: (512) 600-1764	Conditions of Approval Attached	

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-10
Revised August 1
201
Submit one copy to appropriat
District Offic

☐ AMENDED REPOR

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	96101	SWD; Silurian-Devonian

[4] Property Code	[5] Property Name	[6] Well Number
	PATRIOT SWD	1

[7] OGRID No.	[8] Operator Name	[9] Elevation
372338	NGL WATER SOLUTIONS Permian LLC	3495.00'±

[10] Surface Location

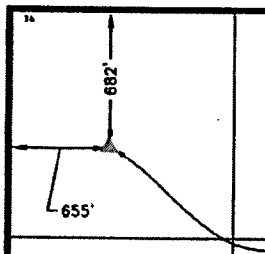
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	31	24 S	34 E	N/A	682'	NORTH	655'	WEST	LEA

[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.



PROPOSED
PATRIOT SWD 1

NMSP-E (NAD27)
N: 429,990.75'
E: 753,359.27'

NMSP-E (NAD83)
N: 430,049.09'
E: 794,544.38'
Lat: N32°10'46.69"
Long: W103°30'53.70"

SECTION
31

[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 locatic 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: 9/24/2018

Chris Weyand
Printed Name

chris@lonquist.com
E-mail Address

[18] SURVEYOR CERTIFICATION

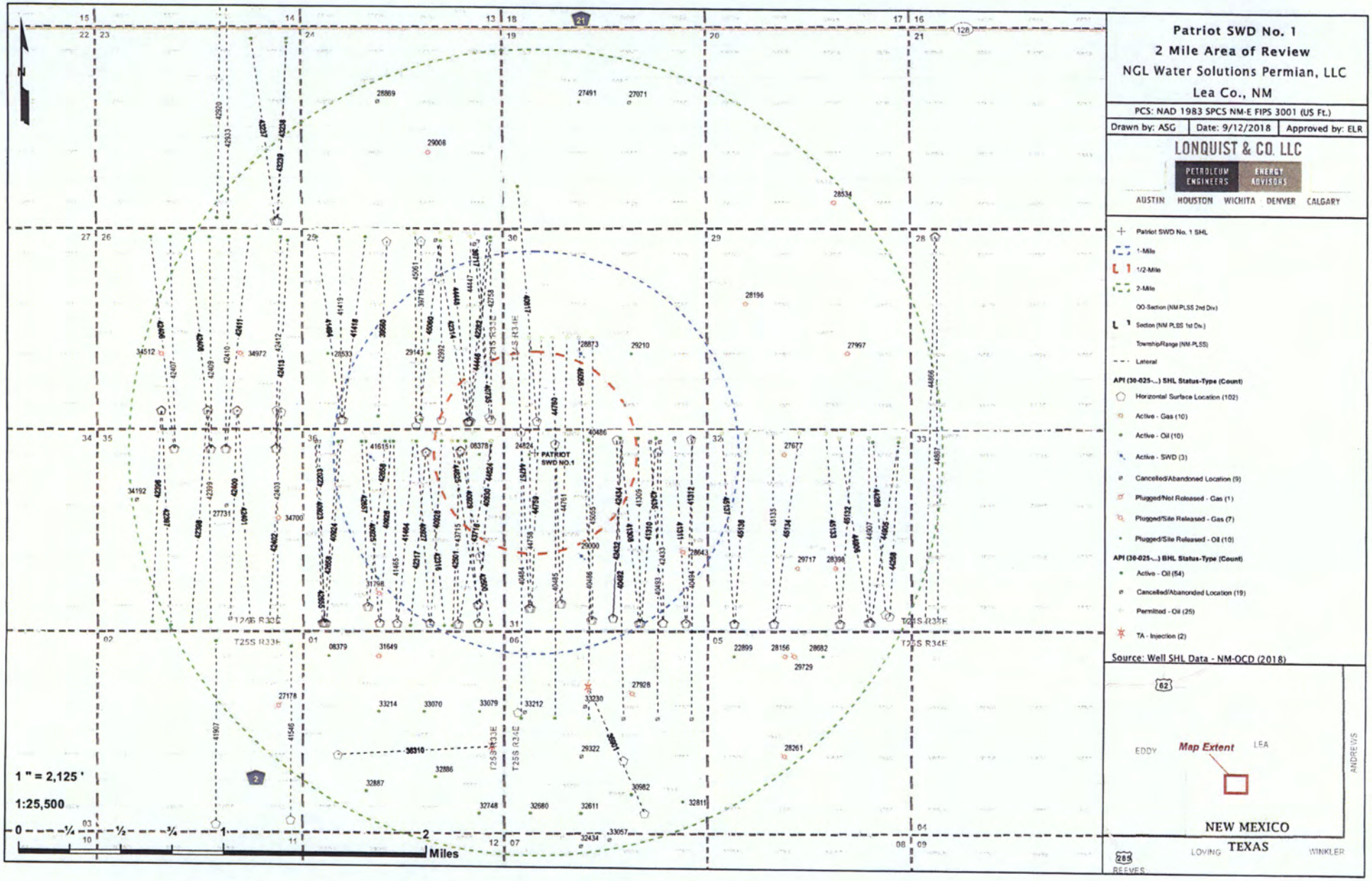
I hereby certify that the well location shown on this plat wa plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

8/17/18
Date of Survey

Signature and Seal of Professional Surveyor

CODY A. CLARK
NEW MEXICO
23001
PROFESSIONAL SURVEYOR

23001
Certificate Number

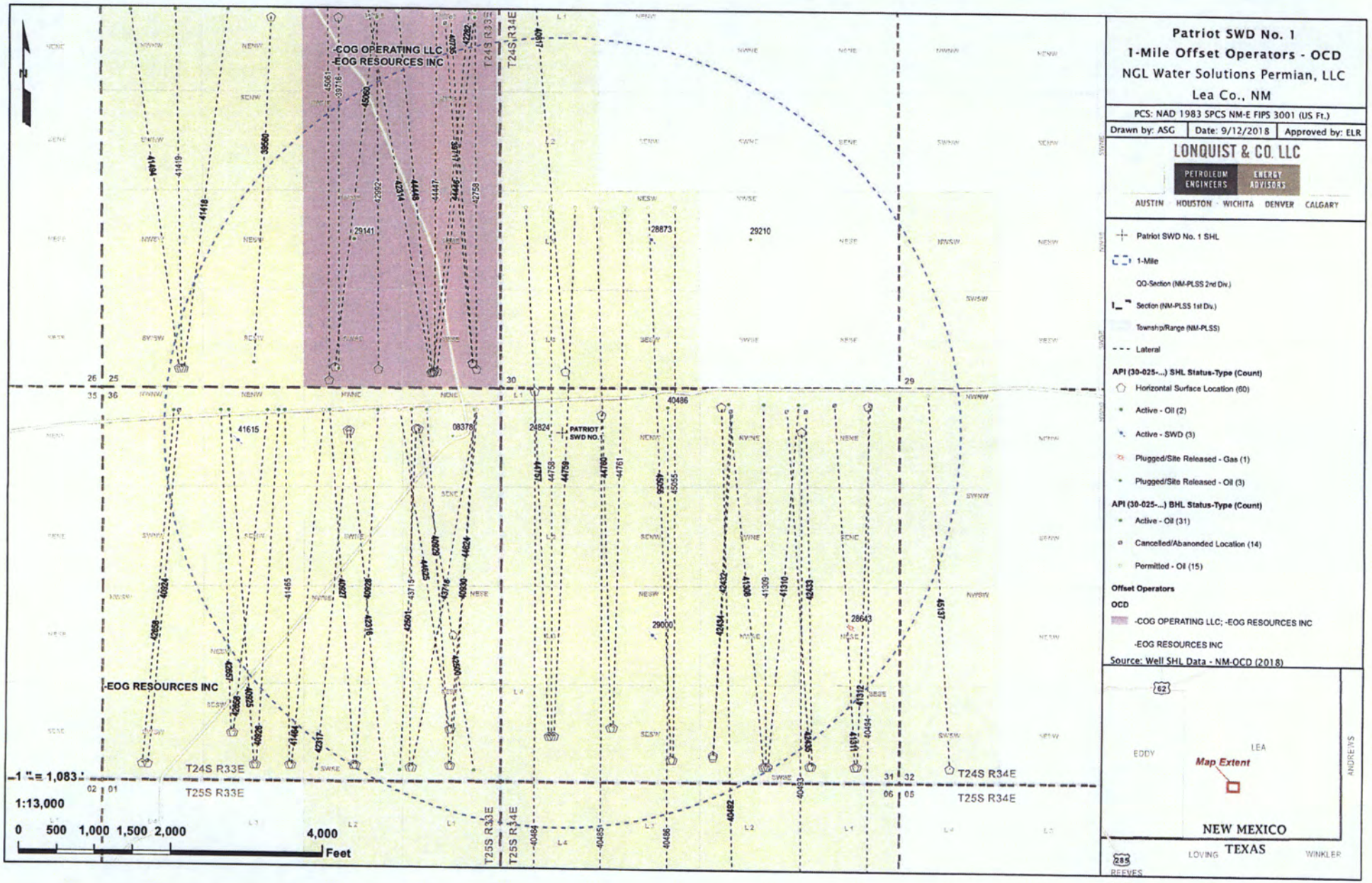

Patriot SWD No. 1
2 Mile Area of Review
NGL Water Solutions Permian, LLC
Lea Co., NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 9/12/2018
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY
Patriot SWD No. 1 SHL
1-Mile
1/2-Mile
2-Mile
QQ-Section (NM PLSS 2nd Div)
Section (NM PLSS 1st Div.)
Township/Range (NM PLSS)
Lateral
API (30-025-...) SHL Status-Type (Count)
Horizontal Surface Location (102)
Active - Gas (10)
Active - Oil (10)
Active - SWD (3)
Cancelled/Abandoned Location (9)
Plugged/Not Released - Gas (1)
Plugged/Site Released - Gas (7)
Plugged/Site Released - Oil (10)
API (30-025-...) BHL Status-Type (Count)
Active - Oil (54)
Cancelled/Abanonded Location (19)
Permitted - Oil (25)
TA - Injection (2)
Source: Well SHL Data - NM-OCD (2018)
PATRIOT SWD NO.1
T24S R33E
T24S R34E
T25S R33E
T25S R34E
1 " = 2,125 '
1:25,500
0 ¼ ½ ¾ 1 2 Miles
Map Extent
EDDY
LEA
NEW MEXICO
TEXAS
LOVING
WINKLER
ANDREWS
BEEVES

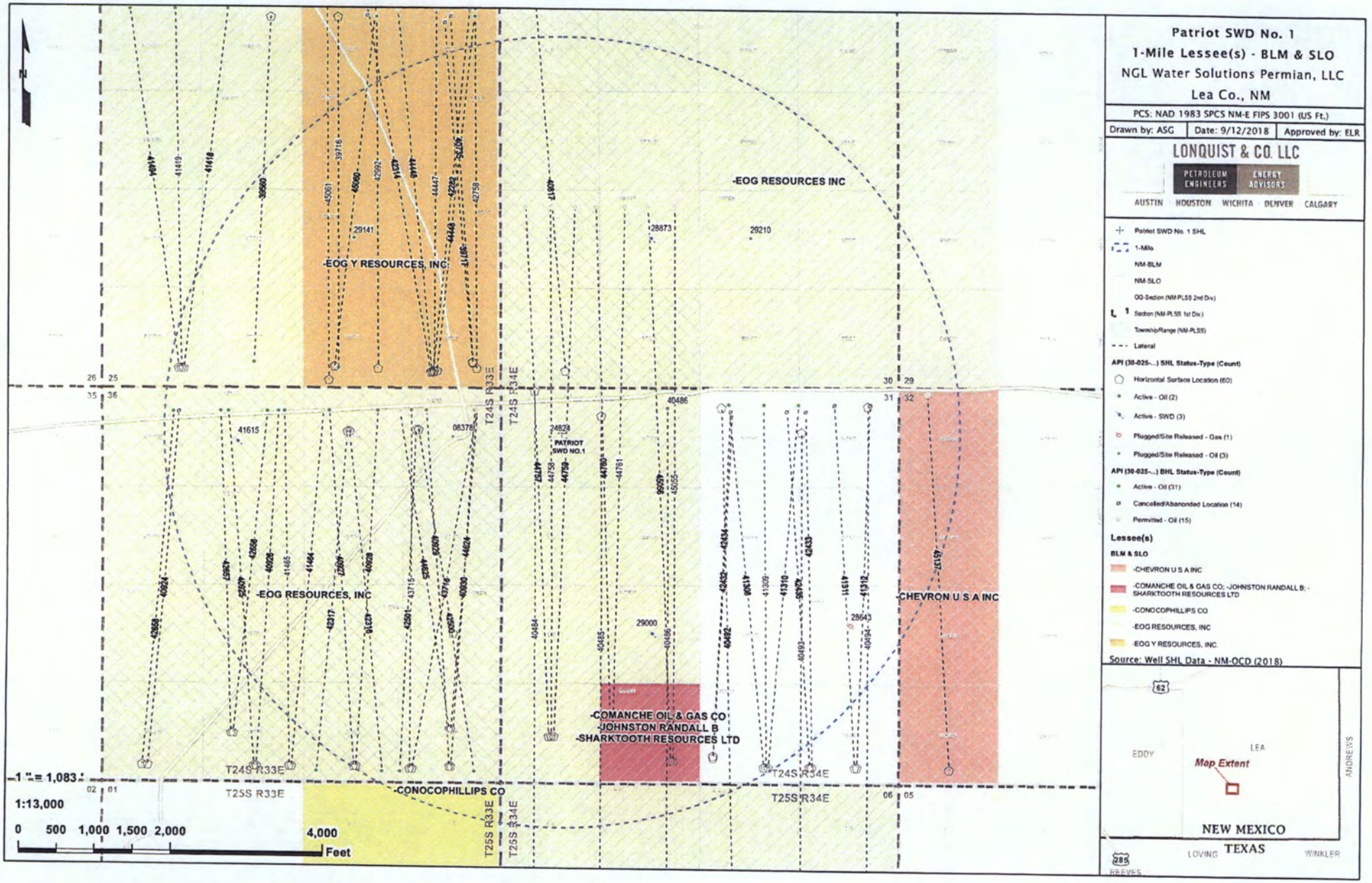
Patriot SWD No. 1
1 Mile Area of Review List

API (30-025-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	DATE DRILLED
41418	FALCON 25 FEDERAL #002H	O	A	EOG RESOURCES INC	9730	32.18201070000	-103.53115840000	2/18/2014
40492	DILLON 31 FEDERAL COM #002C	O	C	EOG RESOURCES INC	0	32.18058780000	-103.50807190000	12/31/9999
40486	DIAMOND 31 FEDERAL COM #004H	O	A	EOG RESOURCES INC	9744	32.18053440000	-103.51039120000	12/8/2012
39560	FALCON 25 FEDERAL #001	O	A	EOG RESOURCES INC	9444	32.19492720000	-103.52741240000	11/30/2009
40817	VANGUARD 30 STATE COM #001H	O	A	EOG RESOURCES INC	9296	32.18190770000	-103.51476290000	11/29/2012
42433	DILLON 31 #502H	O	C	EOG RESOURCES INC	0	32.16740911300	-103.50420220000	12/31/9999
42500	DRAGON 36 STATE #501H	O	A	EOG RESOURCES INC	11168	32.17978200000	-103.52110920000	4/23/2015
42317	DRAGON 36 STATE #702H	O	A	EOG RESOURCES INC	12562	32.17972038020	-103.52417780400	2/8/2015
41465	DRAGON 36 STATE #009H	O	A	EOG RESOURCES INC	9460	32.16740420000	-103.52670290000	12/11/2014
41494	HAWK 25 FEDERAL #001H	O	A	EOG RESOURCES INC	9453	32.18201070000	-103.53135680000	1/8/2014
42434	DILLON 31 #701C	O	C	EOG RESOURCES INC	0	32.16780059300	-103.50843415000	12/31/9999
42501	DRAGON 36 STATE #502H	O	A	EOG RESOURCES INC	11189	32.17978220000	-103.52120620000	5/11/2015
29086	DIAMOND SM-36 STATE #001H	O	A	EOG RESOURCES INC	12467	32.17223740000	-103.51959230000	1/2/1985
28873	VACA RIDGE 30 FEDERAL #001	S	A	EOG RESOURCES INC	15505	32.18674850000	-103.51106260000	9/12/1984
28643	DILLION 31 #001	G	P	EOG RESOURCES INC	15275	32.17250440000	-103.50254060000	12/31/9999
29000	DIAMOND 31 FEDERAL SWD #001	S	A	EOG RESOURCES INC	15360	32.17223360000	-103.51106260000	10/15/1984
42657	DRAGON 36 STATE #704H	O	A	EOG RESOURCES INC	12500	32.16860019800	-103.52917319000	8/19/2015
40485	DIAMOND 31 FEDERAL COM #003H	O	A	EOG RESOURCES INC	9505	32.18028640000	-103.51322940000	12/22/2012
42432	DILLON 31 #501C	O	C	EOG RESOURCES INC	0	32.16771812600	-103.50843409000	12/31/9999
42435	DILLON 31 #702C	O	C	EOG RESOURCES INC	0	32.16740920600	-103.50429962000	12/31/9999
42658	DRAGON 36 STATE #705H	O	A	EOG RESOURCES INC	12495	32.16741996000	-103.53292130000	8/7/2015
40925	DRAGON 36 STATE #003H	O	A	EOG RESOURCES INC	9464	32.16740420000	-103.52819820000	12/24/2014
40928	DRAGON 36 STATE #006H	O	A	EOG RESOURCES INC	9422	32.16740040000	-103.52381130000	4/3/2014
40926	DRAGON 36 STATE #004H	O	A	EOG RESOURCES INC	9460	32.16740420000	-103.52809910000	1/8/2015
40929	DRAGON 36 STATE #007H	O	A	EOG RESOURCES INC	9417	32.16739650000	-103.51976780000	3/28/2014
40927	DRAGON 36 STATE #005H	O	A	EOG RESOURCES INC	9426	32.16740040000	-103.52391050000	3/16/2014
40930	DRAGON 36 STATE #008H	O	A	EOG RESOURCES INC	9425	32.16739650000	-103.51967620000	4/15/2014
44760	DIAMOND 31 FEDERAL COM #704H	O	N	EOG RESOURCES INC	0	32.16880600000	-103.51284250000	6/19/2018
40493	DILLON 31 FEDERAL COM #003C	O	C	EOG RESOURCES INC	0	32.17967990000	-103.50464630000	12/31/9999
41419	HAWK 25 FEDERAL #002H	O	A	EOG RESOURCES INC	9453	32.18201070000	-103.53125760000	1/30/2014
44759	DIAMOND 31 FEDERAL COM #703H	O	N	EOG RESOURCES INC	0	32.16849660000	-103.51525810000	12/31/9999
42656	DRAGON 36 STATE #703H	O	A	EOG RESOURCES INC	12475	32.16860013200	-103.52907576100	7/26/2015
40484	DIAMOND 31 FEDERAL COM #002	O	A	EOG RESOURCES INC	9504	32.18116760000	-103.51607510000	1/3/2013
45056	DIAMOND 31 FEDERAL COM #706H	O	N	EOG RESOURCES INC	0	32.16762020000	-103.51025910000	12/31/9999
45060	RED RAIDER 25 STATE #704H	O	N	EOG RESOURCES INC	0	32.18208400000	-103.52471840000	12/31/9999
45055	DIAMOND 31 FEDERAL COM #707H	O	N	EOG RESOURCES INC	0	32.16762020000	-103.51015250000	12/31/9999
45061	RED RAIDER 25 STATE #705H	O	N	EOG RESOURCES INC	0	32.18158930000	-103.52498210000	12/31/9999
40494	DILLON 31 FEDERAL COM #004C	O	C	EOG RESOURCES INC	0	32.18061450000	-103.50180050000	12/31/9999
41464	DRAGON 36 STATE #010H	O	N	EOG RESOURCES INC	0	32.16740420000	-103.52660370000	12/26/2014
41615	DRAGON 36 STATE SWD #011	S	A	EOG RESOURCES INC	7850	32.17934040000	-103.52886960000	6/10/2014
41309	DILLON 31 #002H	O	A	EOG RESOURCES INC	9441	32.16739270000	-103.50617220000	11/12/2013
41312	DILLON 31 #005C	O	C	EOG RESOURCES INC	0	32.16738890000	-103.50227360000	12/31/9999
44448	RED RAIDER 25 STATE COM #703H	O	N	EOG RESOURCES INC	0	32.18189600000	-103.52051500000	12/31/9999
40492	DRAGON 36 STATE #302H	O	N	EOG RESOURCES INC	0	32.16875180000	-103.51978430000	8/6/2018
40492	DIAMOND 31 FEDERAL COM #705H	O	N	EOG RESOURCES INC	0	32.16880600000	-103.51272940000	6/21/2018
40492	DIAMOND 31 FEDERAL COM #702H	O	N	EOG RESOURCES INC	0	32.16849660	-103.51537120	6/12/2018

Patriot SWD No. 1
1 Mile Area of Review List

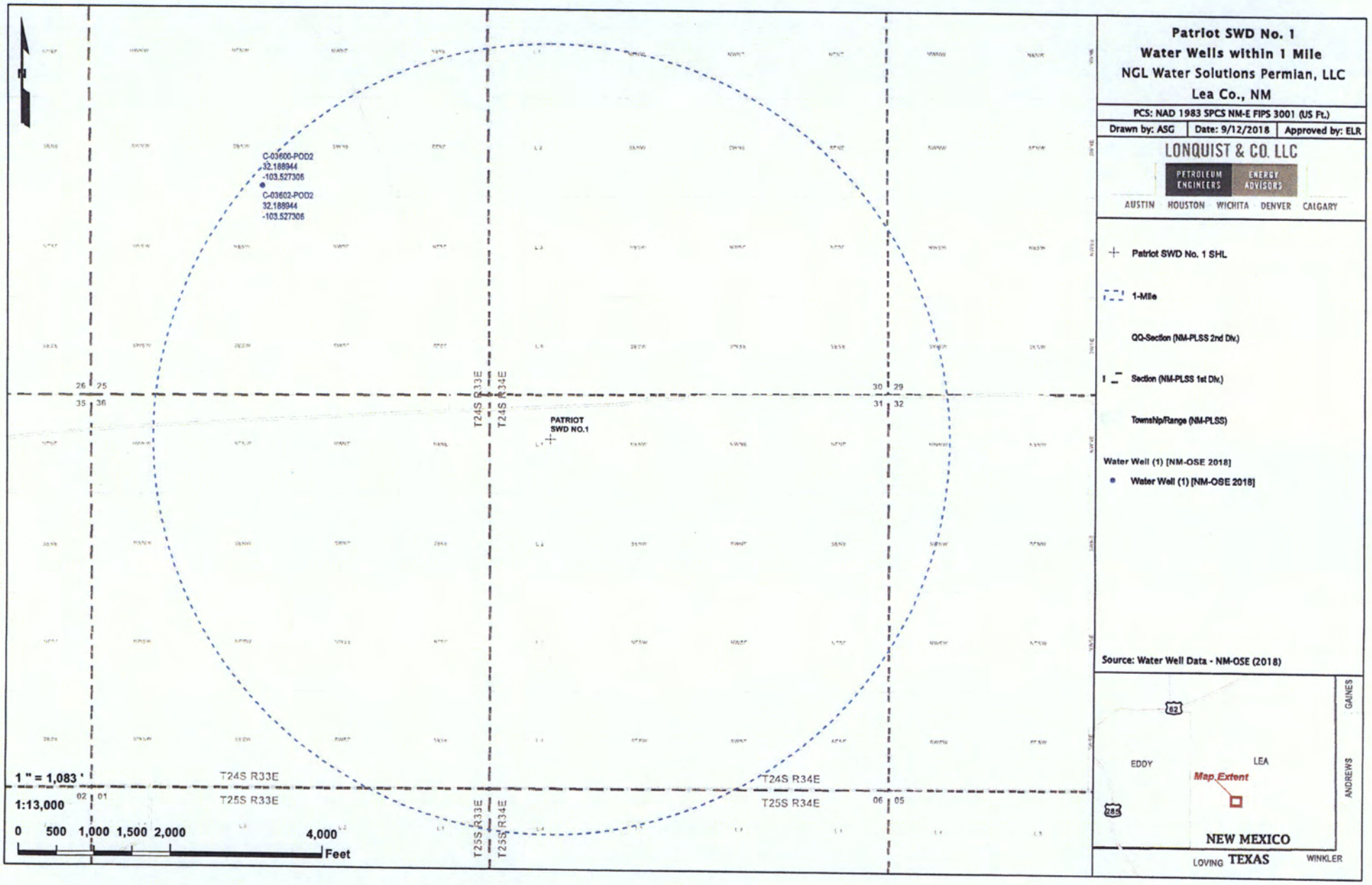
40492	DRAGON 36 STATE #002C	O	C	EOG RESOURCES INC	0	32.16740800	-103.53267670	12/31/9999
40492	RED RAIDER 25 STATE #701H	O	A	EOG RESOURCES INC	12,316	32.18191450	-103.52030290	3/14/2018
40492	DILLON 31 #004C	O	C	EOG RESOURCES INC	0	32.16738890	-103.50237270	12/31/9999
40492	DRAGON 36 STATE #701H	O	A	EOG RESOURCES INC	12,557	32.17972025	-103.52408038	1/14/2015
40492	RED RAIDER 25 STATE #702H	O	N	EOG RESOURCES INC	0	32.18190530	-103.52040910	3/11/2018
45137	COBALT 32 STATE #708H	O	N	EOG RESOURCES INC	0	32.16734000	-103.49832630	12/31/9999
41310	DILLON 31 #003H	O	A	EOG RESOURCES INC	9,451	32.16739270	-103.50607300	12/7/2013
44757	DIAMOND 31 FEDERAL COM #701H	O	N	EOG RESOURCES INC	0	32.16849660	-103.51548430	6/11/2018
41308	DILLON 31 #001H	O	A	EOG RESOURCES INC	9,468	32.16739270	-103.50627140	10/23/2013
44624	DRAGON 36 STATE #301H	O	N	EOG RESOURCES INC	0	32.16875170	-103.51967830	8/4/2018
42758	RED RAIDER BKS STATE #005H	O	A	COG OPERATING LLC	9,331	32.18198970	-103.51857200	9/21/2015
42282	RED RAIDER BKS STATE #003C	O	C	COG OPERATING LLC	0	32.18185402	-103.52046662	12/31/9999
42314	RED RAIDER BKS STATE #004C	O	C	EOG Y RESOURCES, INC.	0	32.18185416	-103.52056406	12/31/9999
39717	RED RAIDER BKS STATE #003C	O	C	EOG Y RESOURCES, INC.	0	32.18221724	-103.51873867	12/31/9999
40735	RED RAIDER BKS STATE #003C	O	C	EOG Y RESOURCES, INC.	0	32.18220898	-103.51872893	12/31/9999
08378	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	5,348	32.17949300	-103.51959230	10/8/1959
29141	RED RAIDER BKS STATE #001	O	A	COG OPERATING LLC	15,360	32.18675610	-103.52386470	3/29/1985
24824	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	5,340	32.17948910	-103.51542660	1/1/1900
42992	RED RAIDER BKS STATE #004H	O	A	COG OPERATING LLC	9,342	32.18199740	-103.52283770	1/21/2017
39716	RED RAIDER BKS STATE #002H	O	A	COG OPERATING LLC	9,455	32.19492340	-103.52451320	4/1/2010
29210	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	15,480	32.18674850	-103.50682070	1/1/1900
43715	DRAGON 36 STATE #707H	O	A	EOG RESOURCES INC	12,309	32.16732330	-103.52149010	7/19/2017
43716	DRAGON 36 STATE #708H	O	A	EOG RESOURCES INC	12,329	32.16732330	-103.52137700	8/12/2017


-COG OPERATING LLC
-EOG RESOURCES INC
-EOG RESOURCES INC
PATRIOT SWD NO. 1
T24S R33E
T25S R33E
T24S R34E
T25S R34E
1" = 1,083'
1:13,000
0 500 1,000 1,500 2,000 4,000 Feet
Patriot SWD No. 1
1-Mile Offset Operators - OCD
NGL Water Solutions Permian, LLC
Lea Co., NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 9/12/2018
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY
Patriot SWD No. 1 SHL
1-Mile
QQ-Section (NM-PLSS 2nd Div.)
Section (NM-PLSS 1st Div.)
Township/Range (NM-PLSS)
Lateral
API (30-025-...) SHL Status-Type (Count)
Horizontal Surface Location (60)
Active - Oil (2)
Active - SWD (3)
Plugged/Site Released - Gas (1)
Plugged/Site Released - Oil (3)
API (30-025-...) BHL Status-Type (Count)
Active - Oil (31)
Cancelled/Abanonded Location (14)
Permitted - Oil (15)
Offset Operators
OCD
-COG OPERATING LLC; -EOG RESOURCES INC
-EOG RESOURCES INC
Source: Well SHL Data - NM-OCD (2018)
EDDY
LEA
Map Extent
NEW MEXICO
TEXAS
LOVING
WINKLER
REEVES
ANDREWS


Patriot SWD No. 1
1-Mile Lessee(s) - BLM & SLO
NGL Water Solutions Permian, LLC
Lea Co., NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 9/12/2018
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY
Patriot SWD No. 1 SHL
1-Mile
NM-BLM
NM-SLO
QQ-Section (NM-PLSS 2nd Div.)
Section (NM-PLSS 1st Div.)
Township/Range (NM-PLSS)
Lateral
API (30-025-...) SHL Status-Type (Count)
Horizontal Surface Location (60)
Active - Oil (2)
Active - SWD (3)
Plugged/Site Released - Gas (1)
Plugged/Site Released - Oil (3)
API (30-025-...) BHL Status-Type (Count)
Active - Oil (31)
Cancelled/Abanonded Location (14)
Permitted - Oil (15)
Lessee(s)
BLM & SLO
-CHEVRON U S A INC
-COMANCHE OIL & GAS CO; -JOHNSTON RANDALL B; -SHARKTOOTH RESOURCES LTD
-CONOCOPHILLIPS CO
-EOG RESOURCES, INC
-EOG Y RESOURCES, INC
Source: Well SHL Data - NM-OCD (2018)
-EOG RESOURCES INC
-EOG Y RESOURCES, INC
-EOG RESOURCES, INC
-COMANCHE OIL & GAS CO
-JOHNSTON RANDALL B
-SHARKTOOTH RESOURCES LTD
-CONOCOPHILLIPS CO
-CHEVRON U S A INC
PATRIOT SWD NO.1
T24S R33E
T24S R34E
T25S R33E
T25S R34E
1 " = 1,083 '
1:13,000
0 500 1,000 1,500 2,000 4,000
Feet
EDDY
LEA
Map Extent
NEW MEXICO
TEXAS
LOVING
WINKLER
REEVES
ANDREWS

Patriot SWD #1: Offsetting Produced Water Analysis

wellname	api	section	township	range	unit	county	state	formation	ph	tds_mgL	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
ANTELOPE RIDGE UNIT #002	3002520444	4	24S	34E	B	LEA	NM	ATOKA	6.7	51475					31000	317	340	
BELL LAKE 19 STATE #001H	3002541024	19	24S	33E	M	Lea	NM	BONE SPRING 2ND SAND	6.77	134649.2	44572.9	6215	37.9	759.3	81681.6	244	765	200
BELL LAKE 19 STATE #002H	3002541515	19	24S	33E	O	Lea	NM	BONE SPRING 2ND SAND	7.01	128413.3	44427.6	4207	41.9	705.9	77482.5	366	910	300
BELL LAKE 19 STATE #003H	3002541516	19	24S	33E	O	Lea	NM	BONE SPRING 2ND SAND	6.67	138617.2	46648.4	5778	41.1	731.5	84081	244	710	300
BELL LAKE 19 STATE #004H	3002541517	19	24S	33E	O	Lea	NM	BONE SPRING 2ND SAND	6.68	133460.5	44483.1	5917	30.5	718.2	80981.7	244	675	300
BELL LAKE UNIT A #007	3002508367	1	24S	33E	A	LEA	NM	DELAWARE		87686					53920	391	749	
SERRANO 29 FEDERAL #001H	3001537763	29	24S	27E	H	EDDY	NM	WOLFCAMP	6.9	102136.2	30415.1	5311.5	40.2	643.7	62812.7	183	0	350



Patriot SWD No. 1
Water Wells within 1 Mile
NGL Water Solutions Permian, LLC
Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 9/12/2018	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY

- Patriot SWD No. 1 SHL
- 1-Mile
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)

Water Well (1) [NM-OSE 2018]
- Water Well (1) [NM-OSE 2018]

Source: Water Well Data - NM-OSE (2018)

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Twn	Rng	(NAD83 UTM in meters) X	Y
	C 03600 POD2	4	4	1	25	24S	33E	638824	3562329

Driller License: 1186 **Driller Company:** ENVIRO-DRILL, INC.

Driller Name: RODNEY HAMMER

Drill Start Date:	01/07/2013	**Drill Finish Date:**	01/08/2013	**Plug Date:**	
Log File Date:	01/30/2013	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**		**Depth Water:**	

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	C 03602 POD2	4	4	1	25	24S	33E	638824	3562329

Driller License: 1186 **Driller Company:** ENVIRO-DRILL, INC.

Driller Name: RODNEY HAMMER

Drill Start Date:	01/15/2013	**Drill Finish Date:**	01/15/2013	**Plug Date:**	
Log File Date:	01/30/2013	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**		**Depth Water:**	

December 4, 2018

New Mexico Energy, Minerals, and Natural Resources Department
Oil Conservation Division District IV
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
(505) 476-3440

RE: PATRIOT SWD NO. 1 AUTHORIZATION TO INJECT
UPDATED 1-MILE AOR and NOTICE PARTY DETERMINATION
NGL WATER SOLUTIONS PERMIAN, LLC

Dear Mr. Goetze:

The proposed Patriot SWD No. 1 well location has been relocated from Unit D (L1) to Unit E (L2) within Section 31-T24S-R34E to accommodate the operations of an offset oil and gas operator. The new location is shown in the attached C-102.

The 1-Mile AOR evaluated for offset wellbores penetrating the injection formation and to determine notice parties as part of the C-108 Application has been updated for the new location. The revised maps and list are attached. Relocation of the proposed wellbore did not result in any material changes in the AOR.

Any questions can be directed towards NGL Water Solutions Permian, LLC's agent Lonquist & Co., LLC.

Regards,

Christopher B. Weyand
Staff Engineer
Lonquist & Co., LLC

(512) 600-1764
chris@lonquist.com

EXHIBIT 2
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

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
moved location

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	96101	SWD; Silurian-Devonian

[4] Property Code	[5] Property Name	[6] Well Number
	PATRIOT SWD	1

[7] OGRID No.	[8] Operator Name	[9] Elevation
	NGL Water Solutions Permian, LLC	3495.00'±

[10] Surface Location

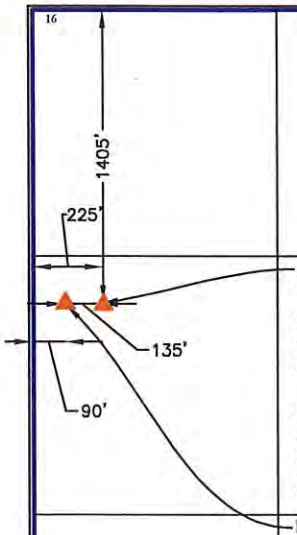
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	31	24 S	34 E	N/A	1405'	NORTH	225'	WEST	LEA

[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
E	31	24 S	34 E	N/A	1405'	NORTH	90'	WEST	LEA

[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.



PROPOSED
PATRIOT SWD 1

NMSP–E (NAD27)
N: 429,186.32'
E: 752,789.84'

NMSP–E (NAD83)
N: 429,244.64'
E: 793,974.99'
Lat: N32°10'38.77"
Long: W103°31'00.40"

PROPOSED
PATRIOT BHL

NMSP–E (NAD27)
N: 429,186.32'
E: 752,654.84'

NMSP–E (NAD83)
N: 429,244.64'
E: 793,839.99'
Lat: N32°10'38.78"
Long: W103°31'01.97"

SECTION
31

[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 — 11/5/2018 Date

Chris Weyand
Printed Name

chris@longuist.com
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.

11/14/2018
Date of Survey

Signature and Seal of Professional Surveyor

BILLY W. BARR JR. NEW MEXICO 25114 LICENSED PROFESSIONAL SURVEYOR

25114
Certificate Number

Patriot SWD No. 1

2 Mile Area of Review

NGL Water Solutions Permian, LLC

Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 11/16/2018	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Patriot SWD No. 1 SHL
- Patriot SWD No. 1 BHL
- 1/2-Mile
- 1-Mile
- 2-Mile
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)
- Lateral

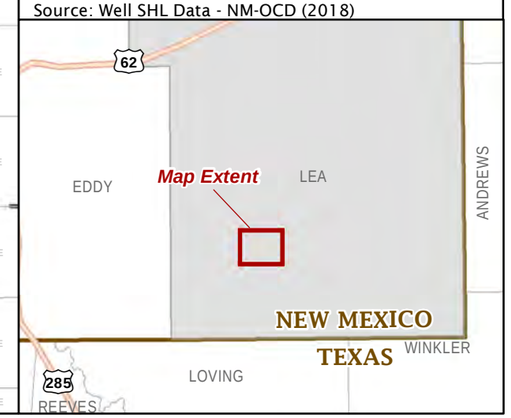
API (30-025-...) SHL Status-Type (Count)

- Horizontal Surface Location (104)
- Active - Gas (19)
- Active - Oil (10)
- Active - SWD (3)
- Cancelled/Abandoned Location (9)
- Plugged/Not Released - Gas (1)
- Plugged/Site Released - Gas (8)
- Plugged/Site Released - Oil (10)

API (30-025-...) BHL Status-Type (Count)

- Active - Oil (60)
- Cancelled/Abanonded Location (19)
- Permitted - Oil (23)
- TA - Injection (2)

Source: Well SHL Data - NM-OCD (2018)



1 " = 2,208 '

1:26,500

0 ¼ ½ ¾ 1 2 Miles

Patriot SWD No. 1
1 Mile Area of Review List

API (30-025-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	DATE DRILLED
08378	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	5,348	32.17949300	-103.51959230	10/8/1959
24824	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	5,340	32.17948910	-103.51542660	1/1/1900
28643	DILLION 31 #001	G	P	EOG RESOURCES INC	15,275	32.17250440	-103.50254060	12/31/9999
28873	VACA RIDGE 30 FEDERAL #001	S	A	EOG RESOURCES INC	15,505	32.18674850	-103.51106260	9/12/1984
29000	DIAMOND 31 FEDERAL SWD #001	S	A	EOG RESOURCES INC	15,360	32.17223360	-103.51106260	10/15/1984
29086	DIAMOND SM-36 STATE #001H	O	A	EOG RESOURCES INC	12,467	32.17223740	-103.51959230	1/2/1985
29141	RED RAIDER BKS STATE #001	O	A	COG OPERATING LLC	15,360	32.18675610	-103.52386470	3/29/1985
29210	PRE-ONGARD WELL #001	O	P	PRE-ONGARD WELL OPERATOR	15,480	32.18674850	-103.50682070	1/1/1900
31798	DIAMOND SM-36 STATE #002	G	P	EOG RESOURCES INC	14,032	32.16952130	-103.52815250	12/29/1992
39560	FALCON 25 FEDERAL #001	O	A	EOG RESOURCES INC	9,444	32.19492720	-103.52741240	11/30/2009
39716	RED RAIDER BKS STATE #002H	O	A	COG OPERATING LLC	9,455	32.19492340	-103.52451320	4/1/2010
39717	RED RAIDER BKS STATE #003C	O	C	EOG Y RESOURCES, INC.	0	32.18221724	-103.51873867	12/31/9999
40484	DIAMOND 31 FEDERAL COM #002	O	A	EOG RESOURCES INC	9,504	32.18116760	-103.51607510	1/3/2013
40485	DIAMOND 31 FEDERAL COM #003H	O	A	EOG RESOURCES INC	9,505	32.18028640	-103.51322940	12/22/2012
40486	DIAMOND 31 FEDERAL COM #004H	O	A	EOG RESOURCES INC	9,744	32.18053440	-103.51039120	12/8/2012
40492	DILLON 31 FEDERAL COM #002C	O	C	EOG RESOURCES INC	0	32.18058780	-103.50807190	12/31/9999
40493	DILLON 31 FEDERAL COM #003C	O	C	EOG RESOURCES INC	0	32.17967990	-103.50464630	12/31/9999
40494	DILLON 31 FEDERAL COM #004C	O	C	EOG RESOURCES INC	0	32.18061450	-103.50180050	12/31/9999
40735	RED RAIDER BKS STATE #003C	O	C	EOG Y RESOURCES, INC.	0	32.18220898	-103.51872893	12/31/9999
40817	VANGUARD 30 STATE COM #001H	O	A	EOG RESOURCES INC	9,296	32.18190770	-103.51476290	11/29/2012
40923	DRAGON 36 STATE #001C	O	C	EOG RESOURCES INC	0	32.16740800	-103.53277590	12/31/9999
40924	DRAGON 36 STATE #002C	O	C	EOG RESOURCES INC	0	32.16740800	-103.53267670	12/31/9999
40925	DRAGON 36 STATE #003H	O	A	EOG RESOURCES INC	9,464	32.16740420	-103.52819820	12/24/2014
40926	DRAGON 36 STATE #004H	O	A	EOG RESOURCES INC	9,460	32.16740420	-103.52809910	1/8/2015
40927	DRAGON 36 STATE #005H	O	A	EOG RESOURCES INC	9,426	32.16740040	-103.52391050	3/16/2014
40928	DRAGON 36 STATE #006H	O	A	EOG RESOURCES INC	9,422	32.16740040	-103.52381130	4/3/2014
40929	DRAGON 36 STATE #007H	O	A	EOG RESOURCES INC	9,417	32.16739650	-103.51976780	3/28/2014
40930	DRAGON 36 STATE #008H	O	A	EOG RESOURCES INC	9,425	32.16739650	-103.51967620	4/15/2014
41308	DILLON 31 #001H	O	A	EOG RESOURCES INC	9,468	32.16739270	-103.50627140	10/23/2013
41309	DILLON 31 #002H	O	A	EOG RESOURCES INC	9,441	32.16739270	-103.50617220	11/12/2013
41310	DILLON 31 #003H	O	A	EOG RESOURCES INC	9,451	32.16739270	-103.50607300	12/7/2013
41311	DILLON 31 #004C	O	C	EOG RESOURCES INC	0	32.16738890	-103.50237270	12/31/9999
41312	DILLON 31 #005C	O	C	EOG RESOURCES INC	0	32.16738890	-103.50227360	12/31/9999
41418	FALCON 25 FEDERAL #002H	O	A	EOG RESOURCES INC	9,730	32.18201070	-103.53115840	2/18/2014
41419	HAWK 25 FEDERAL #002H	O	A	EOG RESOURCES INC	9,453	32.18201070	-103.53125760	1/30/2014
41464	DRAGON 36 STATE #010H	O	N	EOG RESOURCES INC	0	32.16740420	-103.52660370	12/26/2014
41465	DRAGON 36 STATE #009H	O	A	EOG RESOURCES INC	9,460	32.16740420	-103.52670290	12/11/2014
41494	HAWK 25 FEDERAL #001H	O	A	EOG RESOURCES INC	9,453	32.18201070	-103.53135680	1/8/2014
41615	DRAGON 36 STATE SWD #011	S	A	EOG RESOURCES INC	7,850	32.17934040	-103.52886960	6/10/2014
42203	DRAGON 36 STATE #012C	O	C	EOG RESOURCES INC	0	32.16740411	-103.53286202	12/31/9999
42282	RED RAIDER BKS STATE #003C	O	C	COG OPERATING LLC	0	32.18185402	-103.52046662	12/31/9999
42314	RED RAIDER BKS STATE #004C	O	C	EOG Y RESOURCES, INC.	0	32.18185416	-103.52056406	12/31/9999
42316	DRAGON 36 STATE #701H	O	A	EOG RESOURCES INC	12,557	32.17972025	-103.52408038	1/14/2015
42317	DRAGON 36 STATE #702H	O	A	EOG RESOURCES INC	12,562	32.17972038	-103.52417780	2/8/2015
42432	DILLON 31 #501C	O	C	EOG RESOURCES INC	0	32.16771813	-103.50843409	12/31/9999
42433	DILLON 31 #502H	O	C	EOG RESOURCES INC	0	32.16740911	-103.50420220	12/31/9999

Patriot SWD No. 1
1 Mile Area of Review List

42434	DILLON 31 #701C	O	C	EOG RESOURCES INC	0	32.16780059	-103.50843415	12/31/9999
42435	DILLON 31 #702C	O	C	EOG RESOURCES INC	0	32.16740921	-103.50429962	12/31/9999
42500	DRAGON 36 STATE #501H	O	A	EOG RESOURCES INC	11,168	32.17978200	-103.52110920	4/23/2015
42501	DRAGON 36 STATE #502H	O	A	EOG RESOURCES INC	11,189	32.17978220	-103.52120620	5/11/2015
42655	DRAGON 36 STATE #706H	O	A	EOG RESOURCES INC	15,200	32.16742036	-103.53301740	7/12/2015
42656	DRAGON 36 STATE #703H	O	A	EOG RESOURCES INC	12,475	32.16860013	-103.52907576	7/26/2015
42657	DRAGON 36 STATE #704H	O	A	EOG RESOURCES INC	12,500	32.16860020	-103.52917319	8/19/2015
42658	DRAGON 36 STATE #705H	O	A	EOG RESOURCES INC	12,495	32.16741996	-103.53292130	8/7/2015
42758	RED RAIDER BKS STATE #005H	O	A	COG OPERATING LLC	9,331	32.18198970	-103.51857200	9/21/2015
42992	RED RAIDER BKS STATE #004H	O	A	COG OPERATING LLC	9,342	32.18199740	-103.52283770	1/21/2017
43715	DRAGON 36 STATE #707H	O	A	EOG RESOURCES INC	12,309	32.16732330	-103.52149010	7/19/2017
43716	DRAGON 36 STATE #708H	O	A	EOG RESOURCES INC	12,329	32.16732330	-103.52137700	8/12/2017
44446	RED RAIDER 25 STATE #701H	O	A	EOG RESOURCES INC	12,316	32.18191450	-103.52030290	3/14/2018
44447	RED RAIDER 25 STATE #702H	O	N	EOG RESOURCES INC	0	32.18190530	-103.52040910	3/11/2018
44448	RED RAIDER 25 STATE COM #703H	O	N	EOG RESOURCES INC	0	32.18189600	-103.52051500	12/31/9999
44624	DRAGON 36 STATE #301H	O	N	EOG RESOURCES INC	0	32.16875170	-103.51967830	8/4/2018
44625	DRAGON 36 STATE #302H	O	N	EOG RESOURCES INC	0	32.16875180	-103.51978430	8/6/2018
44757	DIAMOND 31 FEDERAL COM #701H	O	N	EOG RESOURCES INC	0	32.16849660	-103.51548430	6/11/2018
44758	DIAMOND 31 FEDERAL COM #702H	O	N	EOG RESOURCES INC	0	32.16849660	-103.51537120	6/12/2018
44759	DIAMOND 31 FEDERAL COM #703H	O	N	EOG RESOURCES INC	0	32.16849660	-103.51525810	12/31/9999
44760	DIAMOND 31 FEDERAL COM #704H	O	N	EOG RESOURCES INC	0	32.16880600	-103.51284250	6/19/2018
44761	DIAMOND 31 FEDERAL COM #705H	O	N	EOG RESOURCES INC	0	32.16880600	-103.51272940	6/21/2018
45055	DIAMOND 31 FEDERAL COM #707H	O	N	EOG RESOURCES INC	0	32.16762020	-103.51015250	12/31/9999
45056	DIAMOND 31 FEDERAL COM #706H	O	N	EOG RESOURCES INC	0	32.16762020	-103.51025910	12/31/9999
45060	RED RAIDER 25 STATE #704H	O	N	EOG RESOURCES INC	0	32.18208400	-103.52471840	12/31/9999
45061	RED RAIDER 25 STATE #705H	O	N	EOG RESOURCES INC	0	32.18158930	-103.52498210	12/31/9999

Patriot SWD No. 1
1-Mile Offset Operators - OCD
NGL Water Solutions Permian, LLC
Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG | Date: 11/19/2018 | Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

-COG OPERATING LLC
-EOG RESOURCES INC

-NO ACTIVE WELLS

-EOG RESOURCES INC

PATRIOT SWD NO.1 BHL

PATRIOT SWD NO.1 SHL

T24S R33E | T24S R34E | T25S R33E | T25S R34E

1 " = 1,083 '

1:13,000

0 500 1,000 1,500 2,000 4,000 Feet

- Patriot SWD No. 1 SHL
- Patriot SWD No. 1 BHL
- 1-Mile
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div.)
- Township/Range (NM-PLSS)
- Lateral

API (30-025-...) SHL Status-Type (Count)

- Horizontal Surface Location (62)
- Active - Oil (2)
- Active - SWD (3)
- Plugged/Site Released - Gas (2)
- Plugged/Site Released - Oil (3)

API (30-025-...) BHL Status-Type (Count)

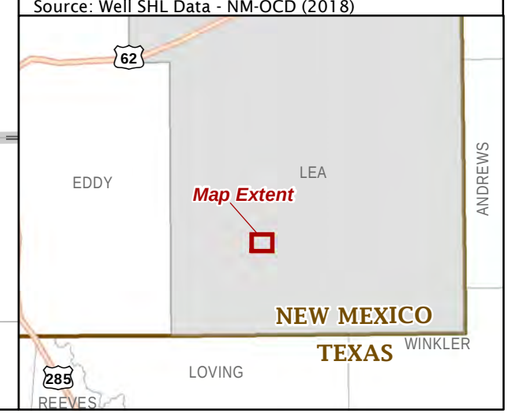
- Active - Oil (32)
- Cancelled/Abanonded Location (16)
- Permitted - Oil (14)

Offset Operators

OCD

- -COG OPERATING LLC; -EOG RESOURCES INC
- -EOG RESOURCES INC
- -NO ACTIVE WELLS

Source: Well SHL Data - NM-OCD (2018)



Patriot SWD No. 1

1-Mile Lessee(s) - BLM & SLO

NGL Water Solutions Permian, LLC

Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 11/16/2018	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

-EOG RESOURCES INC
-NMNM 019858

-EOG RESOURCES INC
-NMNM 103610

-EOG Y RESOURCES, INC.
-VB-0651-0001

-EOG RESOURCES INC
-NMNM 028881

-EOG RESOURCES, INC
-V0-8171-0001

-NON BLM/SLO LAND

-CHEVRON U S A INC
-LG-0359-0005

-EOG RESOURCES, INC
-LG-4235-0000

-COMANCHE OIL & GAS CO
-GILMORE RESOURCES INC
-THE GILMORE REVOCABLE TRUST
-HURT JAMES R
-HURT PROPERTIES LP
-MARTIN E CECILE
-WHEELER FREDDIE JEAN
-JOHNSTON RANDALL B
-SHARKTOOTH RESOURCES LTD
-NMNM 023306

-EOG RESOURCES INC
-NMNM 030400

-CONOCOPHILLIPS CO
-NMNM 108502

-CONOCOPHILLIPS CO
-NMNM 019859

-EOG RESOURCES INC
-NMNM 014497A

PATRIOT SWD NO.1 BHL

PATRIOT SWD NO.1 SHL

T24S R33E | T24S R34E | T25S R33E | T25S R34E

1 " = 1,083 '

1:13,000

0 500 1,000 1,500 2,000 4,000 Feet

Patriot SWD No. 1 SHL

Patriot SWD No. 1 BHL

1-Mile

NM-BLM

NM-SLO

QQ-Section (NM-PLSS 2nd Div.)

Section (NM-PLSS 1st Div.)

Township/Range (NM-PLSS)

Lateral OLD

API (30-025-...) SHL Status-Type (Count) OLD

Horizontal Surface Location (60)

Active - Oil (2)

Active - SWD (3)

Plugged/Site Released - Gas (1)

Plugged/Site Released - Oil (3)

API (30-025-...) BHL Status-Type (Count) OLD

Active - Oil (31)

Cancelled/Abanonded Location (14)

Permitted - Oil (15)

Lessee(s)

-CHEVRON U S A INC

-COMANCHE OIL & GAS CO; -GILMORE RESOURCES INC; -THE GILMORE REVOCABLE TRUST; -HURT JAMES R; -HURT PROPERTIES LP; -MARTIN E CECILE; -WHEELER FREDDIE JEAN; -JOHNSTON RANDALL B; -SHARKTOOTH RESOURCES LTD

-CONOCOPHILLIPS CO

-EOG RESOURCES, INC

-EOG Y RESOURCES, INC.

-NON BLM/SLO LAND

Source: Well SHL Data - NM-OCD (2018)

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

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO

Case No. 16508

AFFIDAVIT OF SCOTT J. WILSON

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

I, Scott J. Wilson, make the following affidavit based upon my own personal knowledge:

1. I am over the age of eighteen (18) years of age and am otherwise competent to make the statements contained herein.

2. I am the Senior Vice President for Ryder Scott Company in Denver, Colorado. My responsibilities at Ryder Scott Company include the performance of reserve appraisals, technical evaluations, and reservoir analysis.

3. I have obtained a bachelor's degree in petroleum engineering from the Colorado School of Mines, and a master's degree in business from the University of Colorado. I have worked as a petroleum engineer since 1983.

4. I am familiar with the application that NGL Water Solutions Permian, LLC ("NGL") has filed in this matter, and I have conducted a nodal analysis and reservoir study related to the area which is the subject matter of the applications. Copies of my study are attached hereto as **Exhibit A**.

5. NGL seeks an order approving the Patriot SWD #1 well ("Patriot well"), a salt water disposal well.

EXHIBIT 3
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

6. The Patriot well is not located closer than approximately 1½ mile from other disposal wells, approved for injection into the Devonian, Silurian, Fusselman and Montoya formations.

7. The approved injection zone for the Patriot well is located below the base of the Woodford Shale formation and above the Ordovician formation, which consists of significant shale deposits.

8. The Patriot well will primarily be injecting fluids into the Wristen Group and Fusselman formation, with some fluids potentially being injected into the Upper Montoya Group. Each of these sub-formations or zones is located within what is commonly referred to by operators and the Division as the "Devonian Silurian" formations. These zones consist of a very thick sequence of limestone and dolostone which has a significant primary and secondary porosity and permeability that is collectively between 800 to 1,800 feet thick.

9. I have reviewed step rate tests for similar disposal wells drilled within the area and conducted a nodal analysis. It is my opinion that a large percentage of surface pressure it was encountering using smaller diameter tubing was a result of friction pressure. In Case No. 15720, evidence was presented to the Division showing that up to 85% of this surface pressure was due to friction. Increasing the tubing size would reduce friction and would conserve pump horsepower, fuel, and reduce emissions

10. My nodal analysis indicates that increasing the tubing size to 7" by 5 ½" would not significantly increase reservoir pressures over a twenty-year time period. The injection zone is located within a reservoir with significant thickness which consists of high permeability rocks, which results in only very small pressure increases even when injection is increased to a rate of 40,000 barrels per day over a 20 year period.

11. It is my opinion that increasing the tubing size will not cause fractures in the formation. Wellhead pressures are set at a maximum that is below the formation fracture pressure and, as a result, it is impossible to get above the formation fracture pressure while honoring wellhead pressure constraints. Consequently, it is highly unlikely that increasing the tubing size in the Patriot well would result in fractures to the formation.

12. I have also studied the potential impact on pore pressures and put together a simulation of the radial influence that the Patriot well would have if larger tubing is used for a period of time. A copy of this study is included within **Exhibit A** to this affidavit. This study shows that it is anticipated that there will be a minimal impact on reservoir pressures and that the majority of fluids will not travel greater than 1 mile in 20 years.

13. My studies further indicate that additional injection wells located one mile away from the Patriot well, will not create any materially adverse pressures in the formation.

14. Exhibit A to this Affidavit was prepared by me, or compiled from NGL's company business records.

15. The granting of this Application is in the interests of conservation, the prevention of waste, and the protection of correlative rights.

16. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

FURTHER AFFIANT SAYETH NAUGHT

[signature page follows]

Scott J. Wilson

Subscribed to and sworn before me this 7 day of January, 2019.

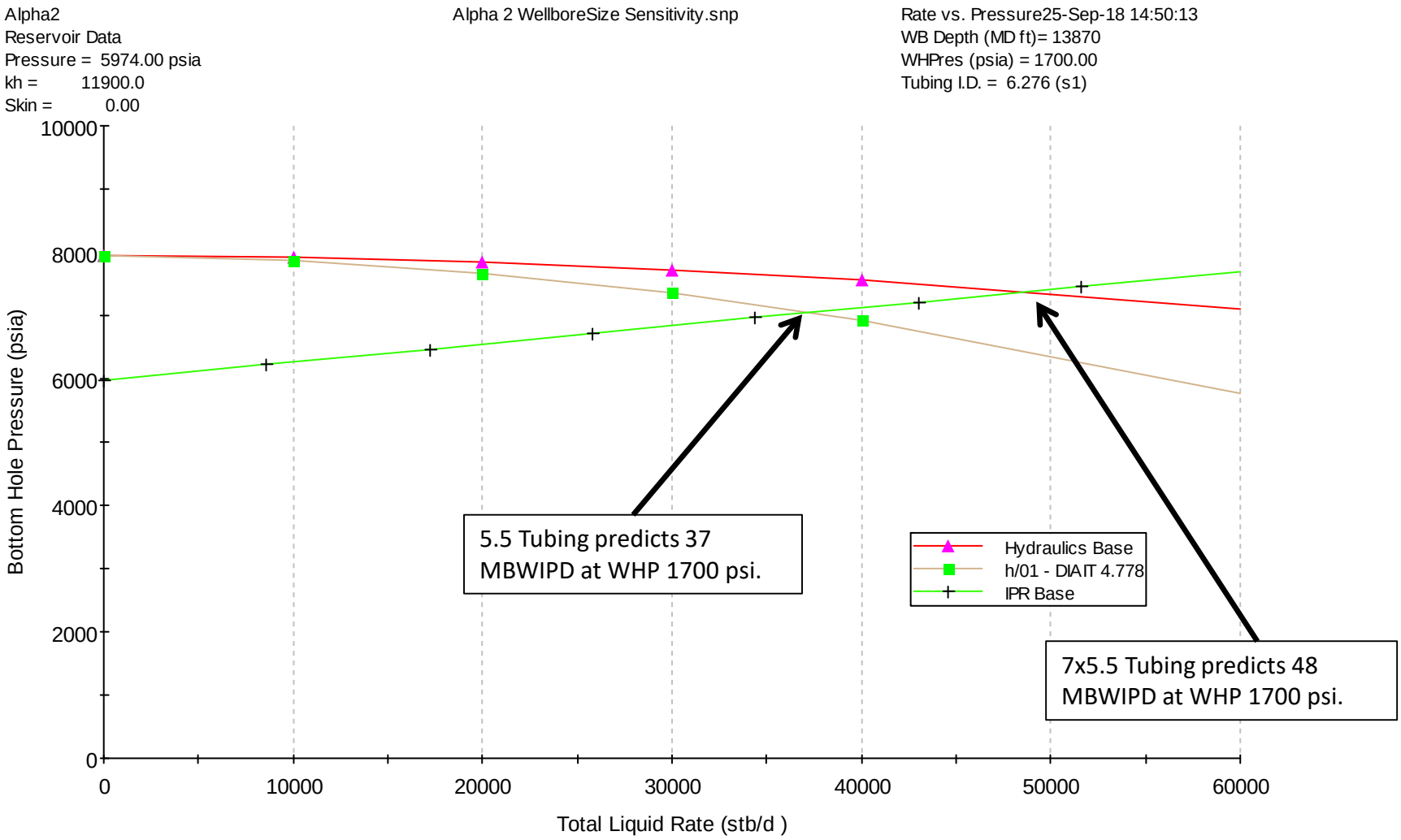
Notary Public

My commission expires: 8/23/21

DARSHAE E RODRIGUEZ
Notary Public - State of Colorado
Notary ID 20134006986
My Commission Expires Aug 23, 2021

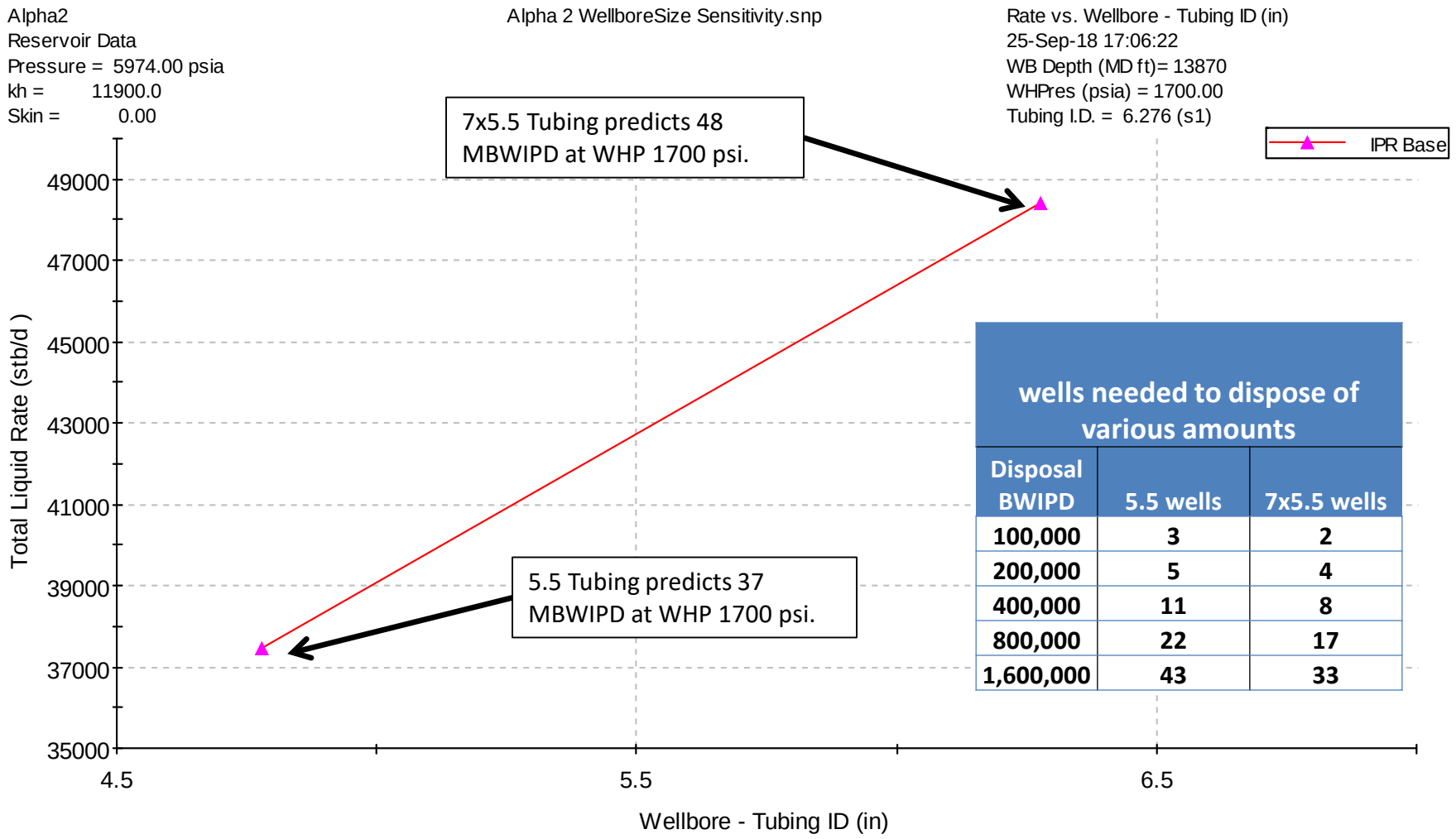
NGL Water Solutions, LLC

Typical Wellbore Hydraulics Models predict a 30% increase in maximum injection rate between 5.5 tubing and 7x5.5 tubing.



NGL Water Solutions, LLC

Increased injection rate per well equates to fewer injectors.

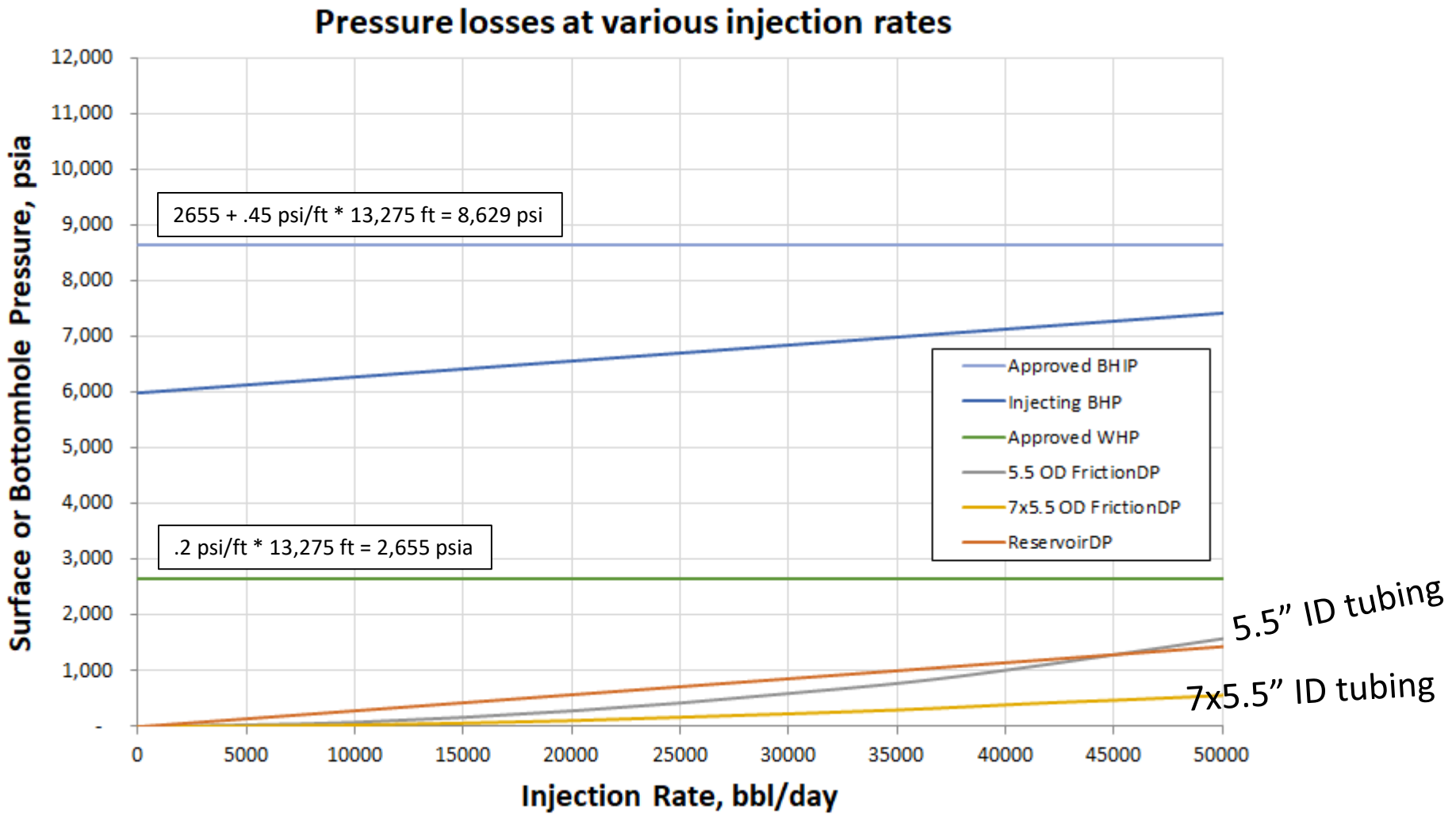


wells needed to dispose of various amounts		
Disposal BWIPD	5.5 wells	7x5.5 wells
100,000	3	2
200,000	5	4
400,000	11	8
800,000	22	17
1,600,000	43	33

NGL Water Solutions, LLC

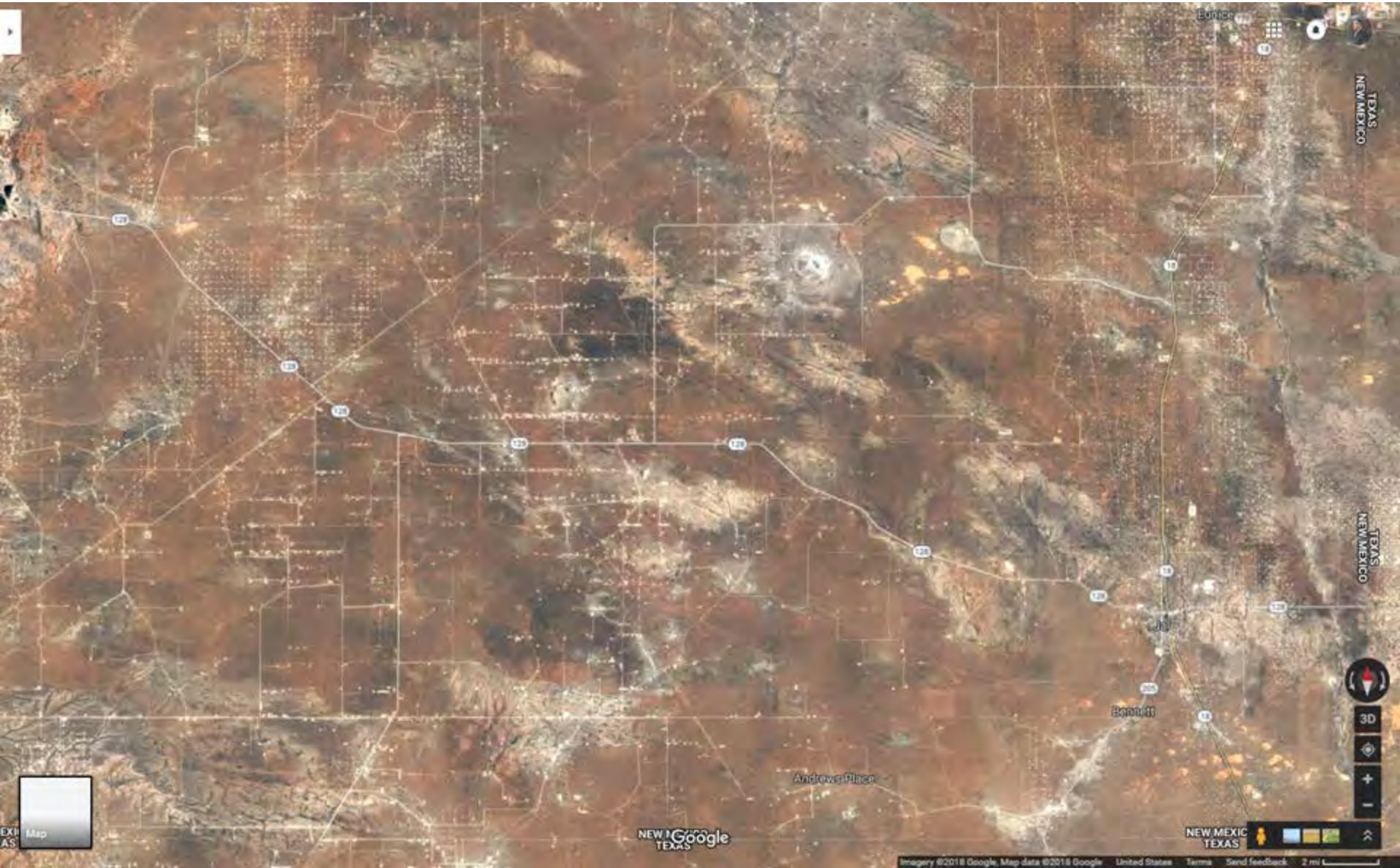
Increasing tubing size will decrease friction losses and conserve horsepower

2 example tubing sizes and their impact on friction losses



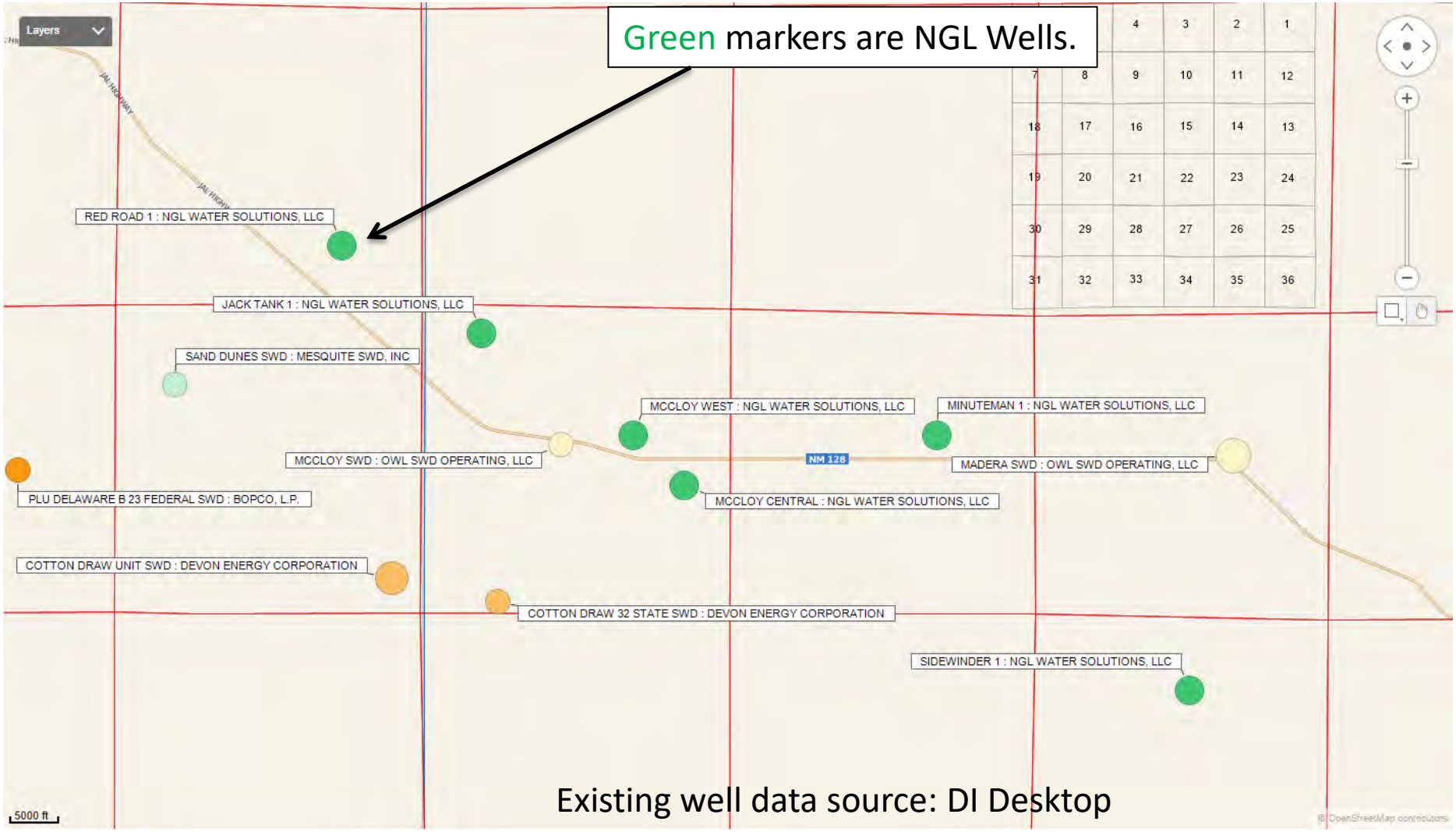
NGL Water Solutions, LLC

Terrain is level and infrastructure is plentiful.



NGL Water Solutions, LLC

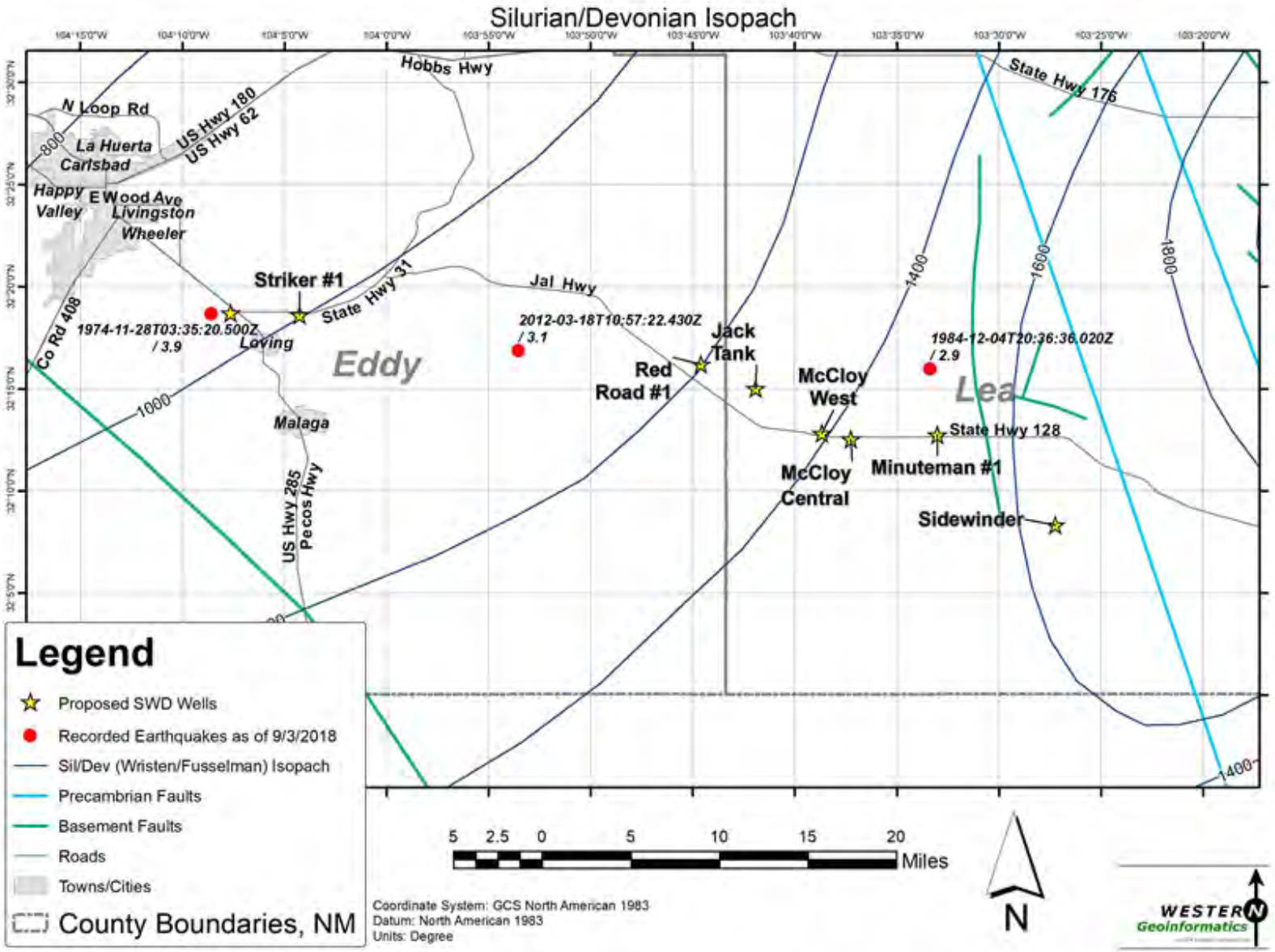
Wells injecting water into the Devonian formation in the area.
Area is roughly 30 miles (E-W) by 20 miles (N-S)



Existing well data source: DI Desktop

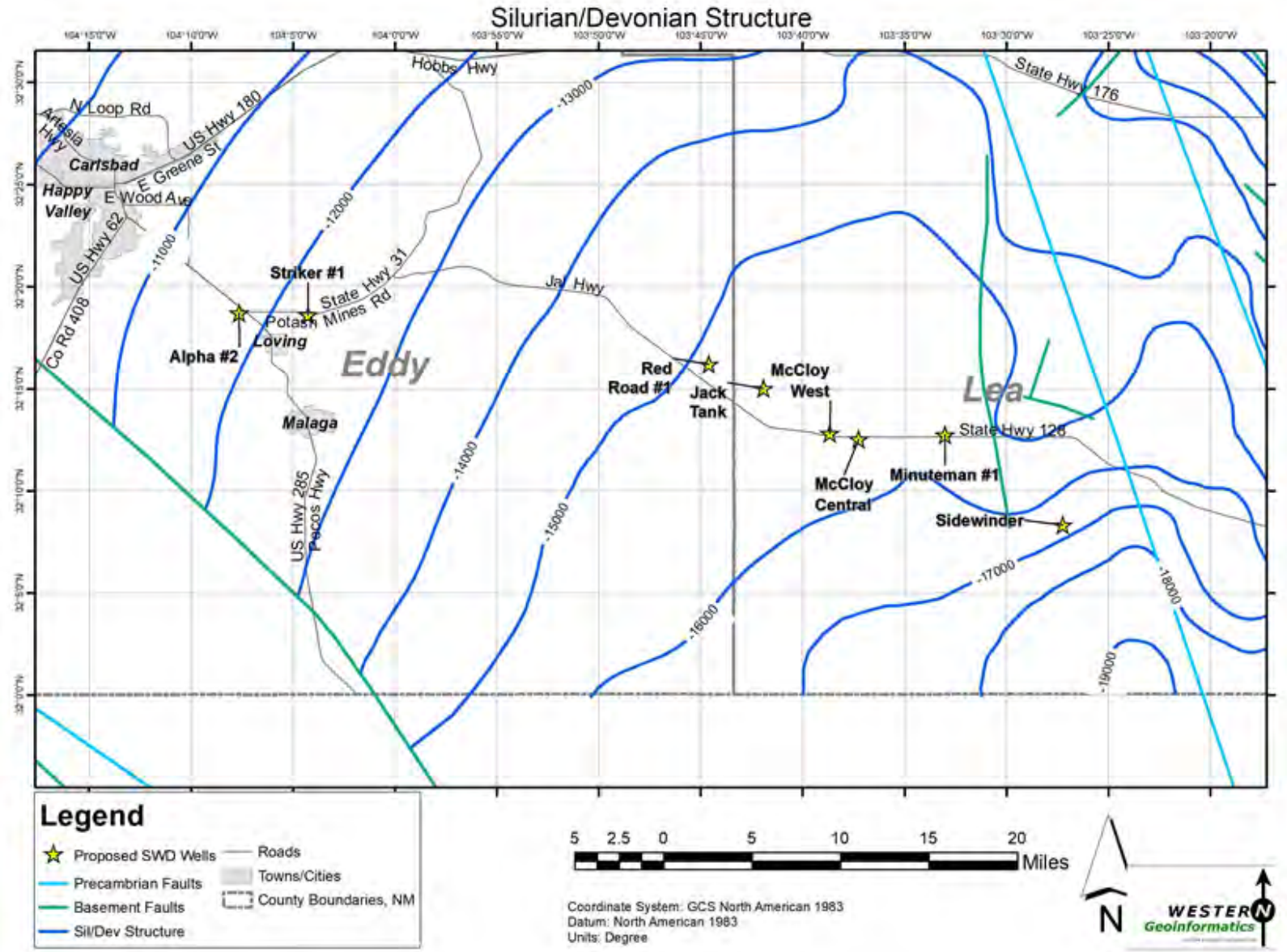
NGL Water Solutions, LLC

Sil/Dev Thickness increases from NW to E-SE



NGL Water Solutions, LLC

Sil/Dev structure dips from NW to SE

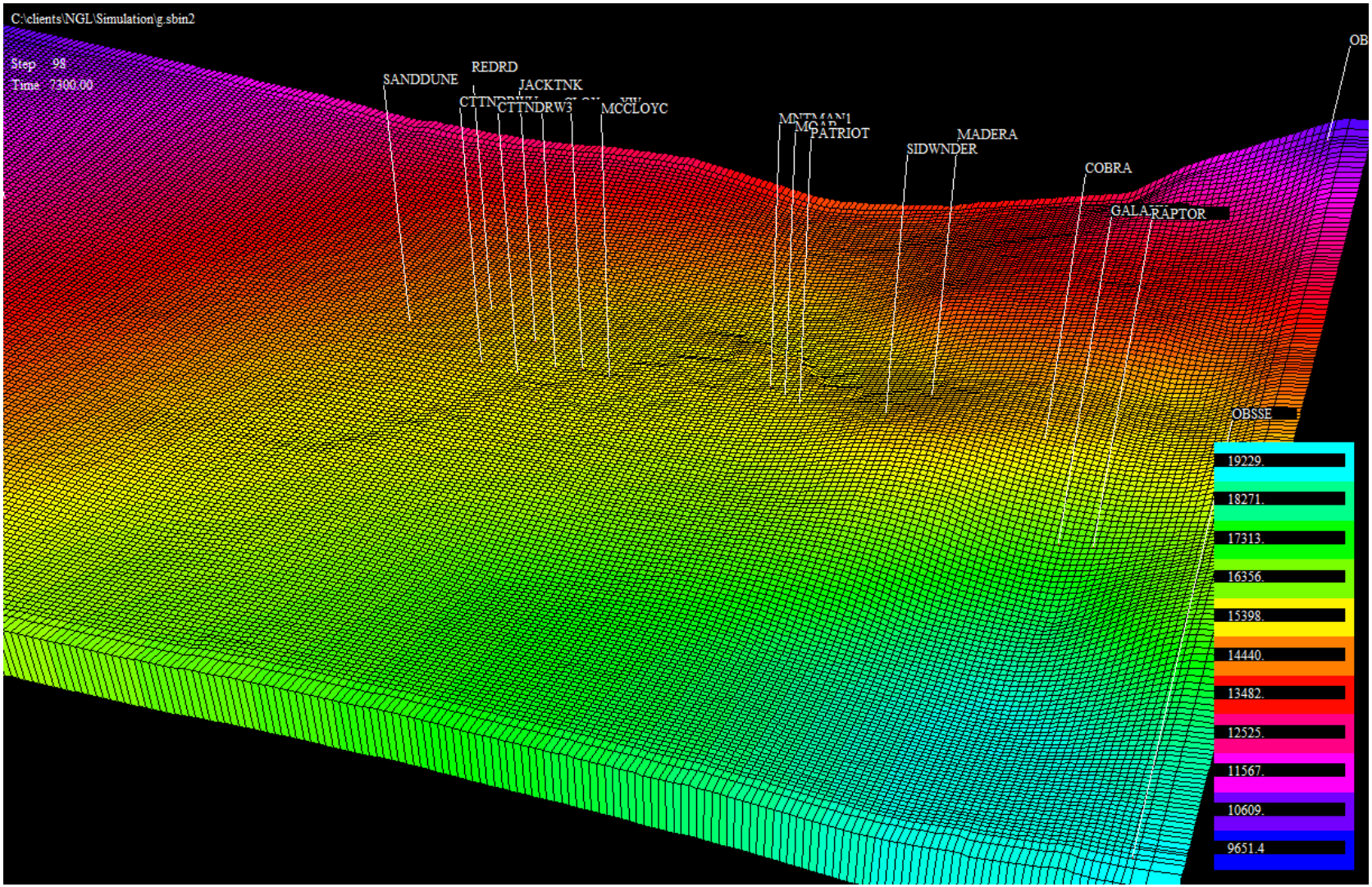


NGL Water Solutions, LLC

Simulation Grid matches Structure and Thickness

Reservoir Simulation grid incorporates the NGL proposed wells and the close offsets.

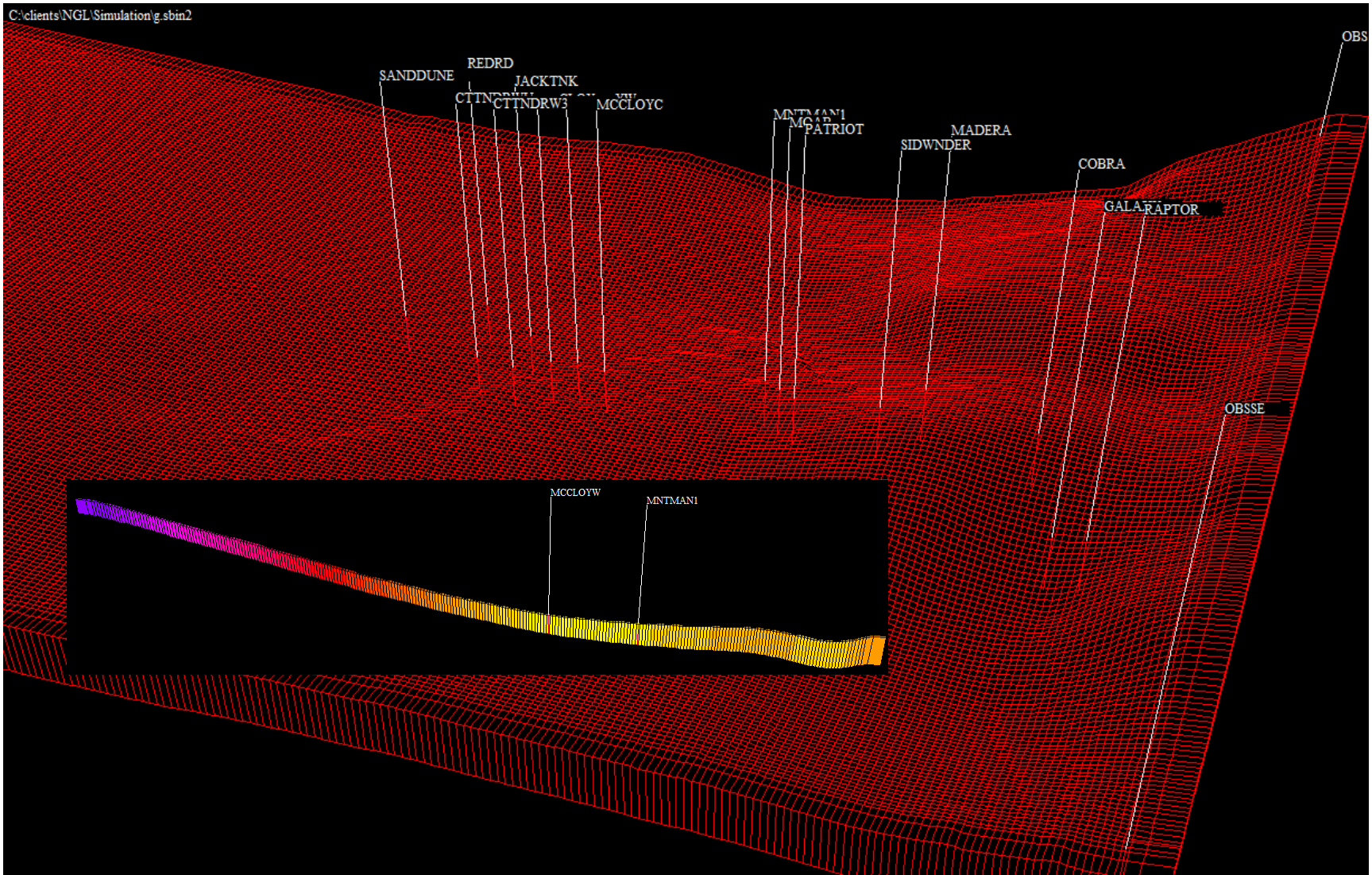
Observation wells are placed in grid corners to monitor the large scale pressure distribution.



NGL Water Solutions, LLC

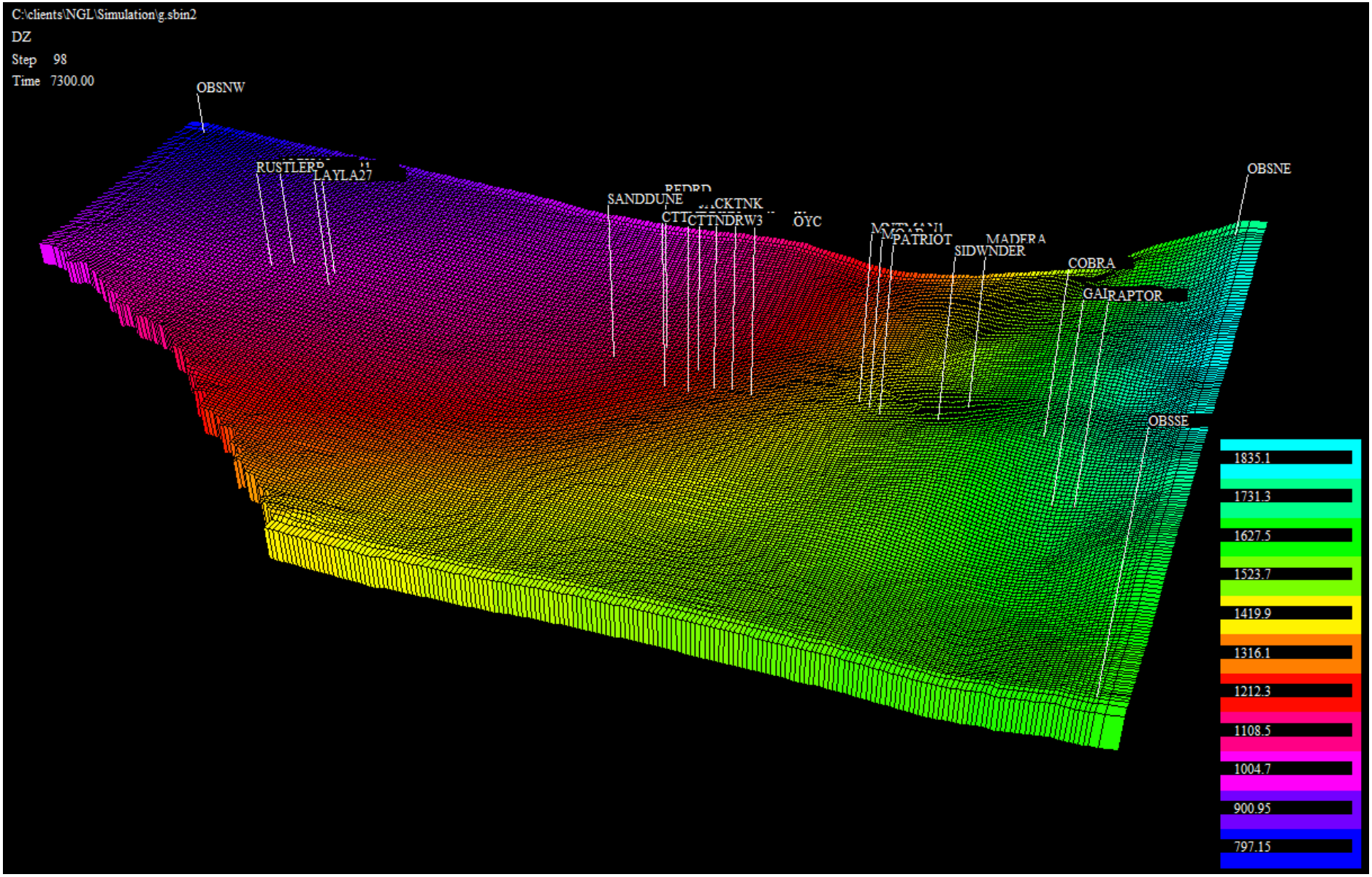
3D view of grid shows Structural Relief.

Thickness is accurate but not easy to see at this aspect ratio.



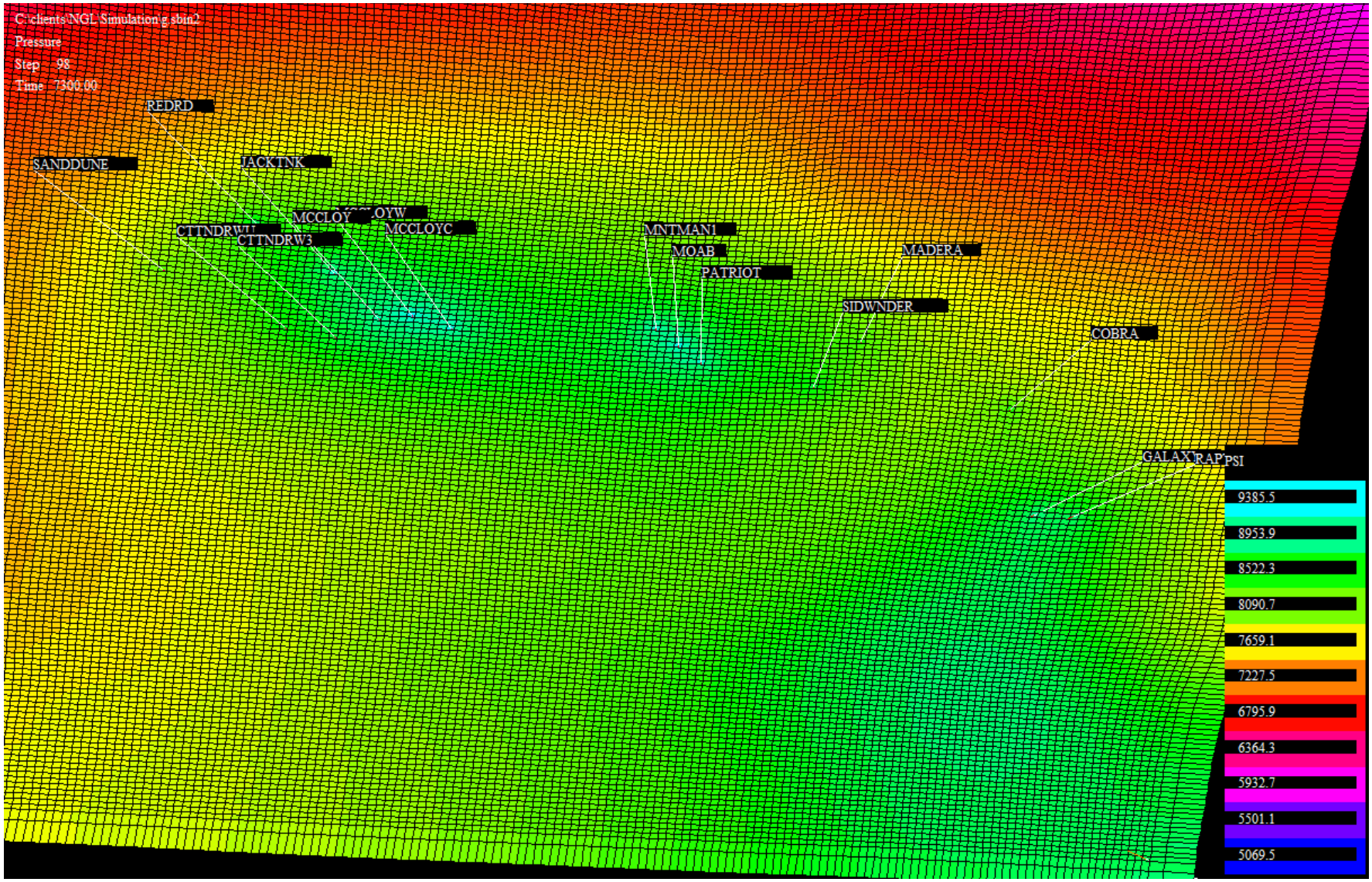
NGL Water Solutions, LLC

Light Blue color to the North East represents the thickest Sil/Dev.



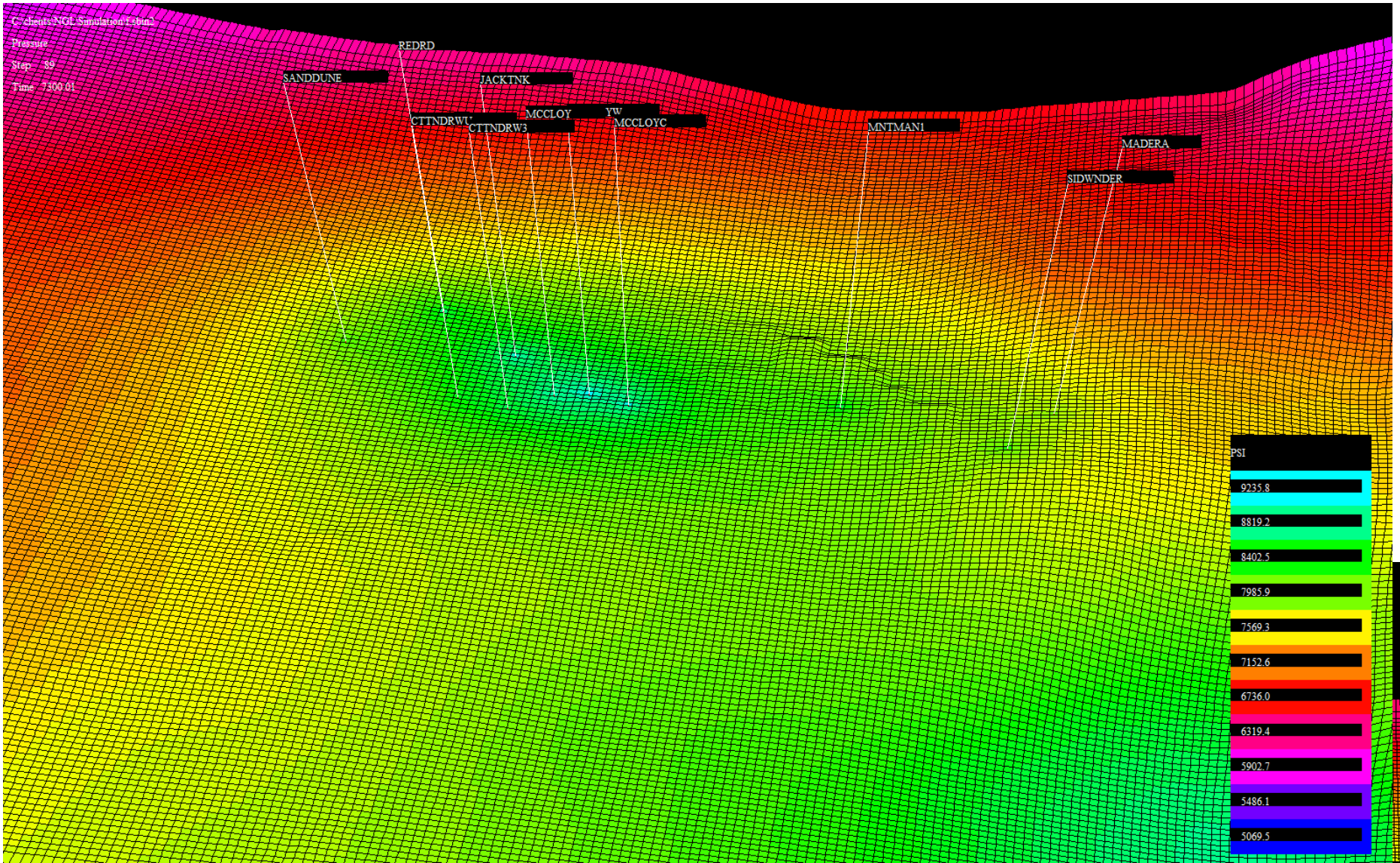
NGL Water Solutions, LLC

Initial pressure is equilibrated by the model based on grid cell depth, fluids(water) and capillary pressure.



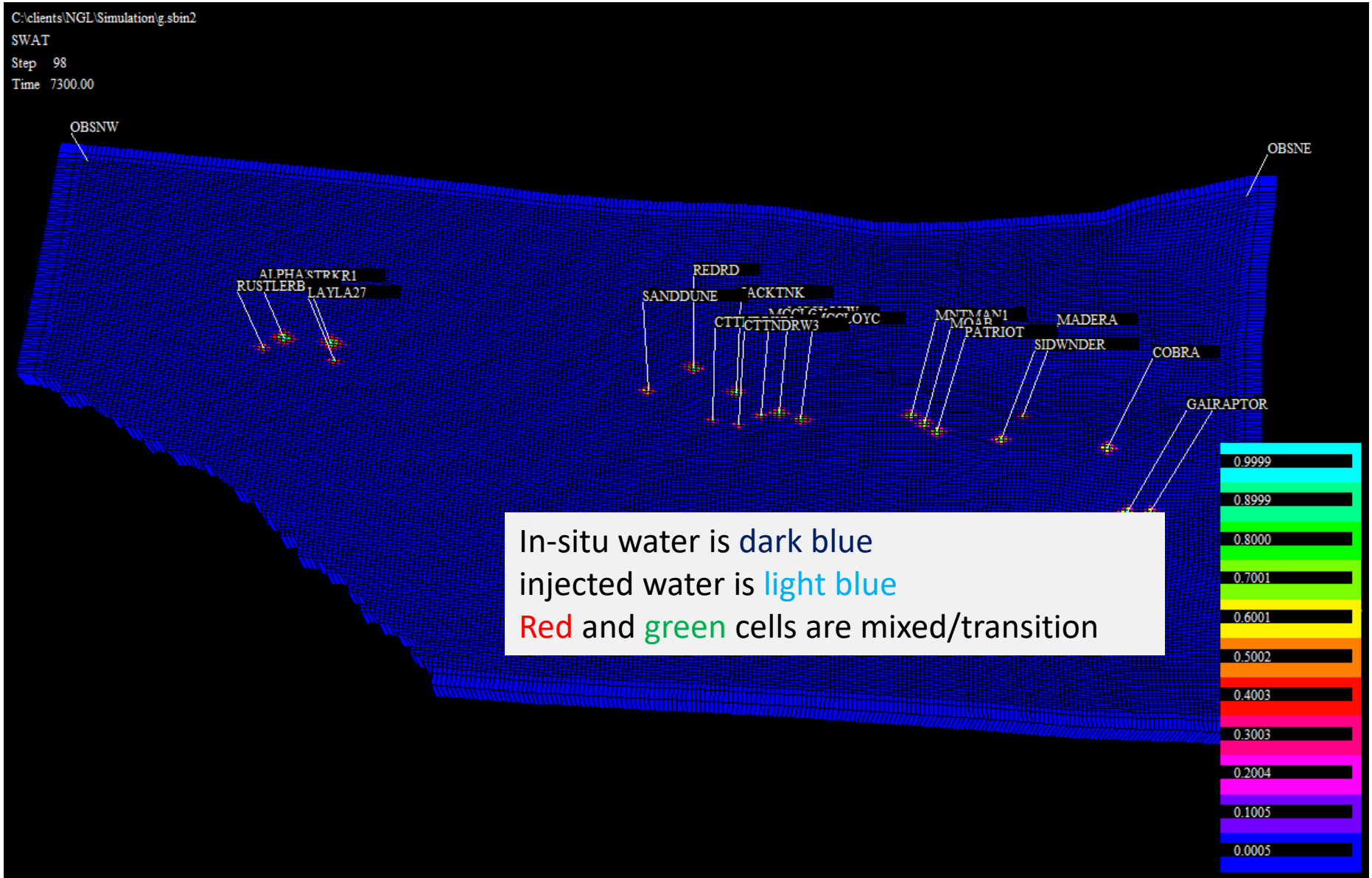
NGL Water Solutions, LLC

Pressure at 20 years is affected by original pressure, injected volumes, and the ability of the reservoir to dissipate pressure.



NGL Water Solutions, LLC

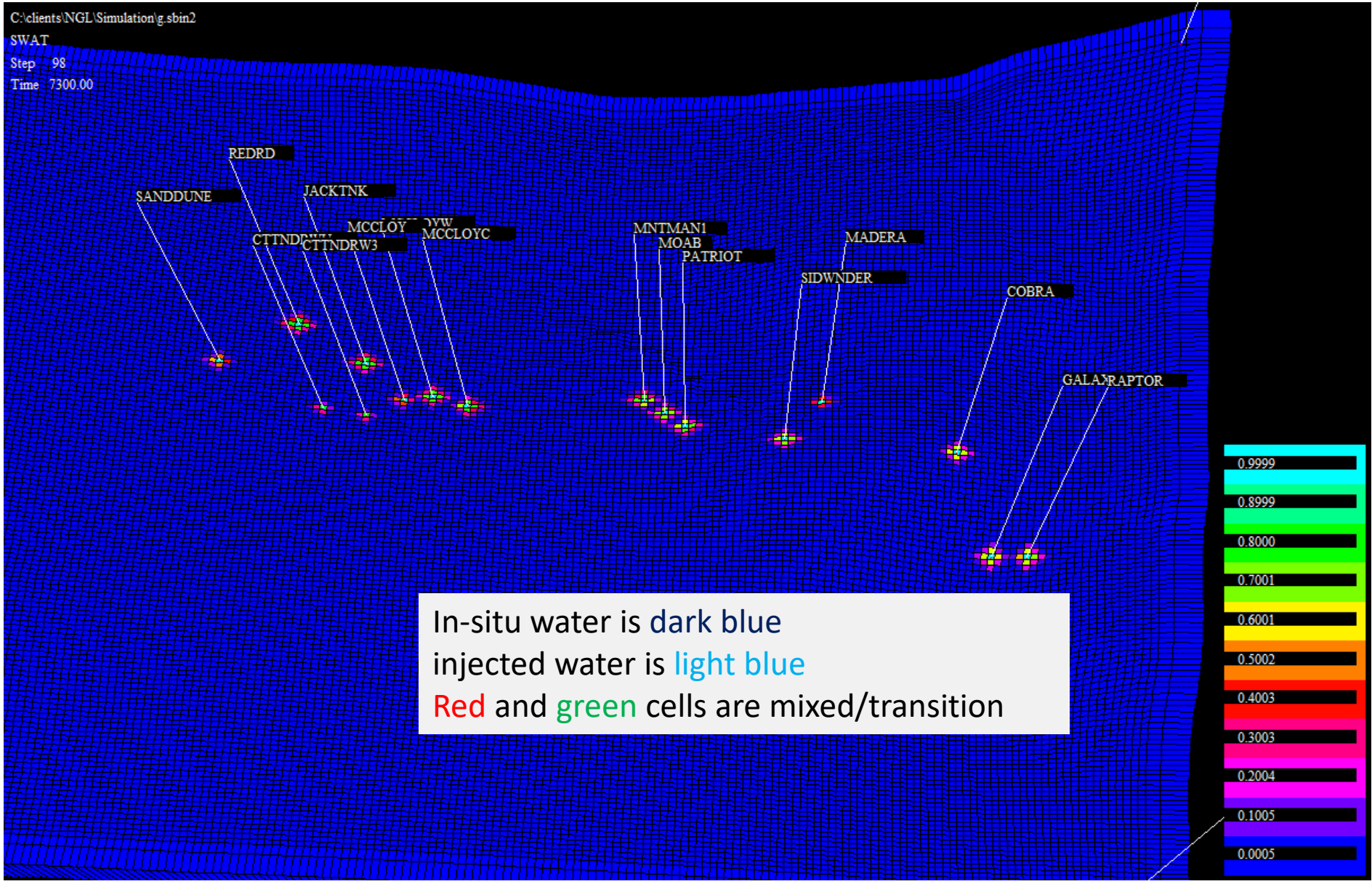
Large scale saturation profiles after 20 years of injection.



In-situ water is dark blue
injected water is light blue
Red and green cells are mixed/transition

NGL Water Solutions, LLC

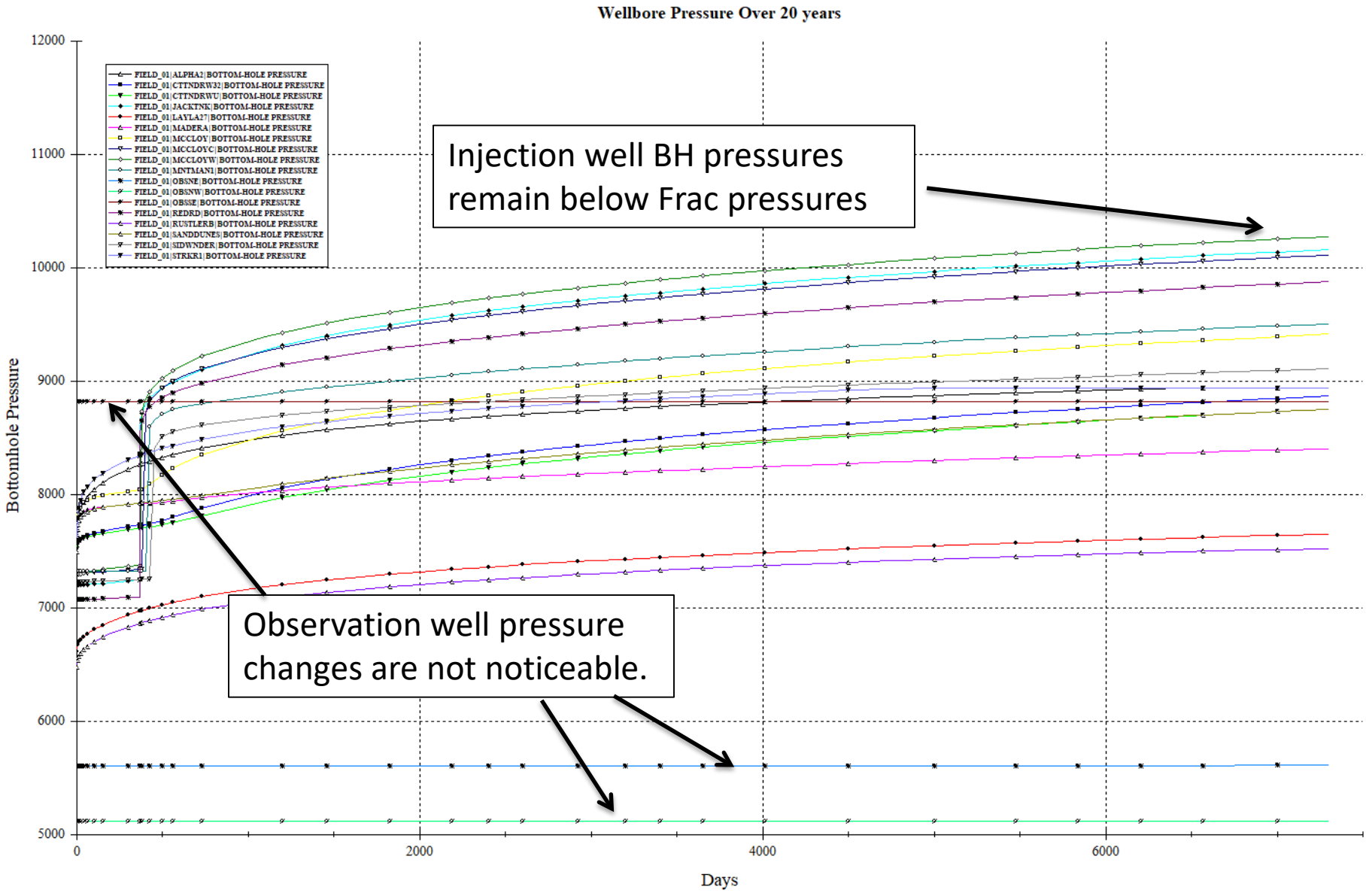
Detailed saturation profiles after 20 years of injection.



In-situ water is dark blue
injected water is light blue
Red and green cells are mixed/transition

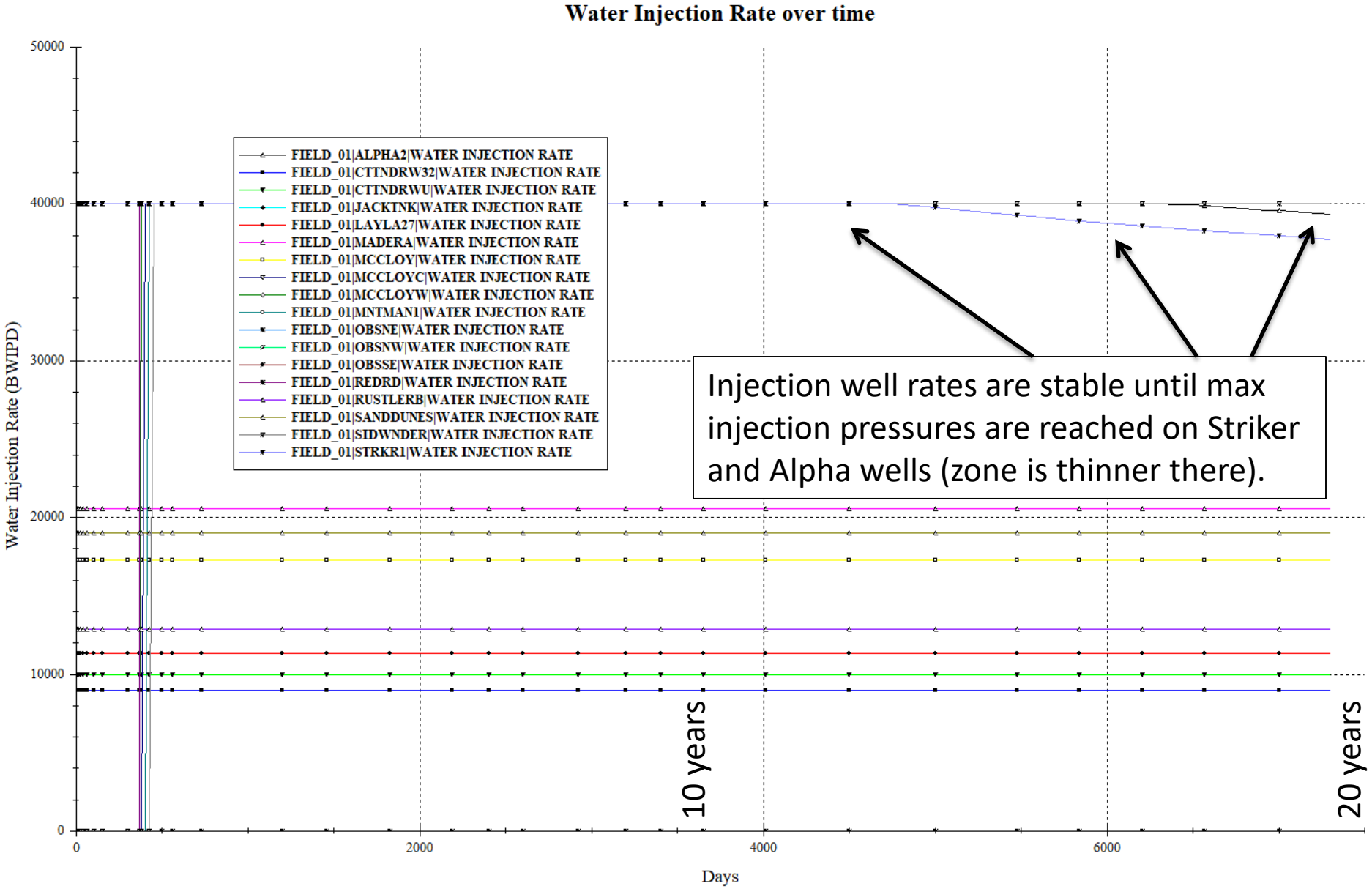
NGL Water Solutions, LLC

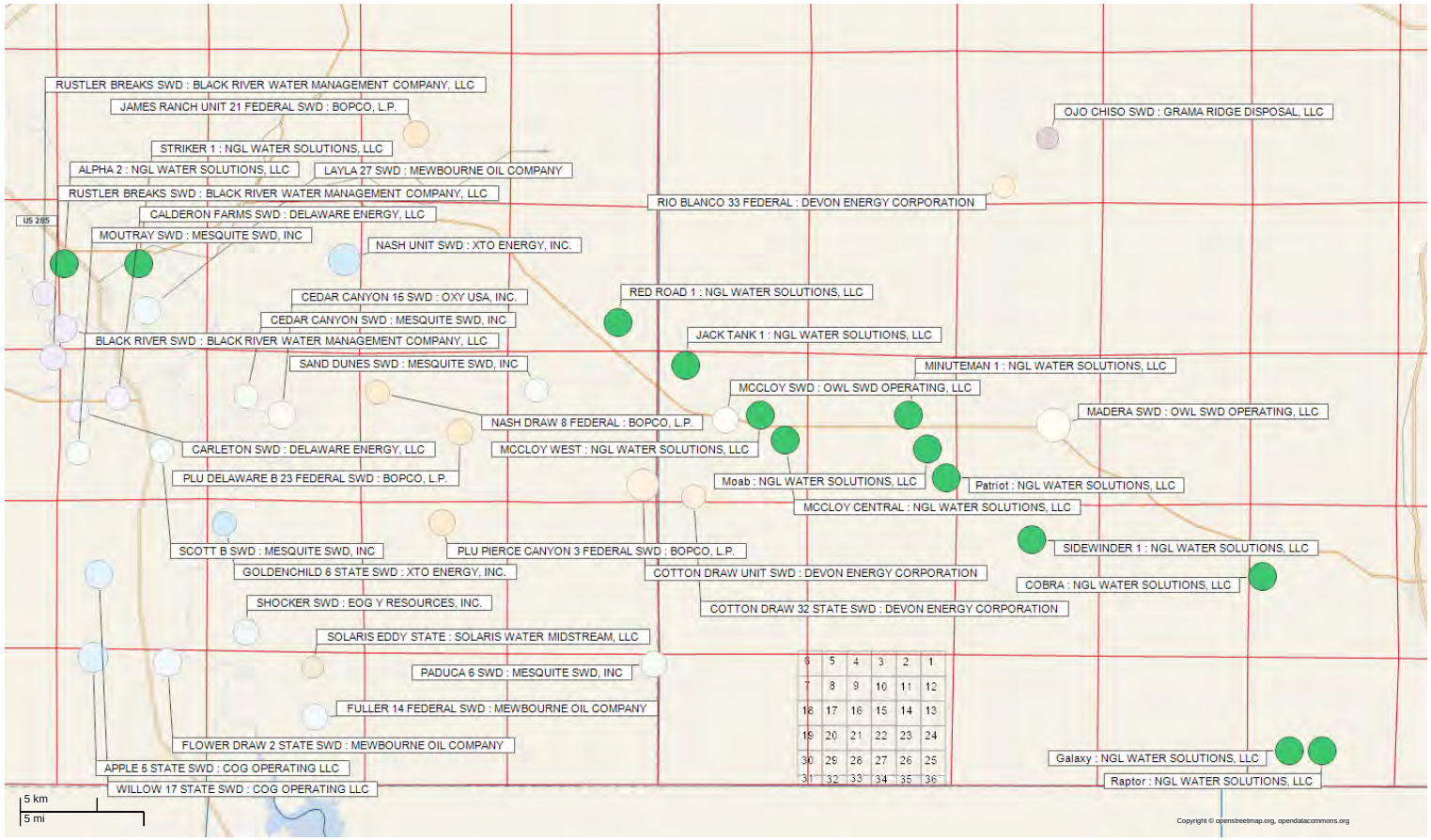
Simulation predictions for individual wells over time



NGL Water Solutions, LLC

Simulation predictions for individual wells over time





NMInjectionDataHPDIWellInj - HPDIHeader

Data table:
NMInjectionDataHPDIWellInj - HPDIHeader

Marker by
ENTITY_ID

Color by
CURR_OPER_NAME

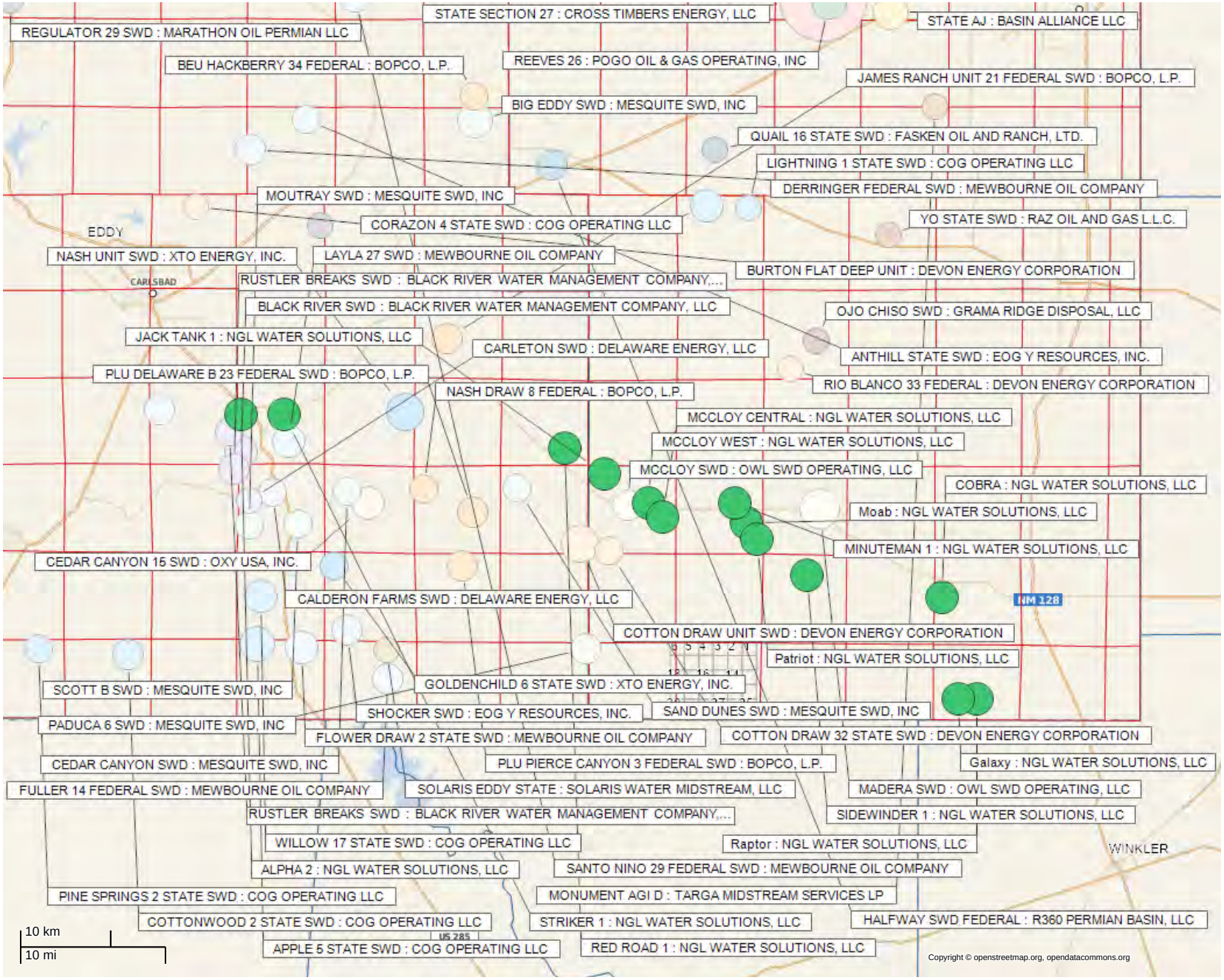
- AGAVE ENERGY, INC
- APACHE CORPORATION
- ASPEN OPERATING LLC
- BASIN ALLIANCE LLC
- BLACK RIVER WATER MANAGEMENT COMPANY
- BOPCO, L.P.
- BURNS XPRESS, LLC
- CHEVRON, U.S.A., INC.
- COG OPERATING LLC
- CROSS TIMBERS ENERGY, LLC
- DCP OPERATING COMPANY, LP
- DELAWARE ENERGY, LLC
- DEVON ENERGY CORPORATION
- EOG Y RESOURCES, INC.
- EVERQUEST ENERGY CORPORATION
- FASKEN OIL AND RANCH, LTD.
- GRAMA RIDGE DISPOSAL, LLC
- H & M DISPOSAL
- JUDAH OIL LLC
- LEGACY RESERVES OPERATING, LP
- MARATHON OIL PERMIAN LLC
- MESQUITE SWD, INC
- MEWBOURNE OIL COMPANY
- NEMO FUND I, LLC
- NGL WATER SOLUTIONS, LLC
- OWL SWD OPERATING, LLC
- OXY USA WTP LP
- OXY USA, INC.
- PERCUSSION PETROLEUM OPERATING, LLC

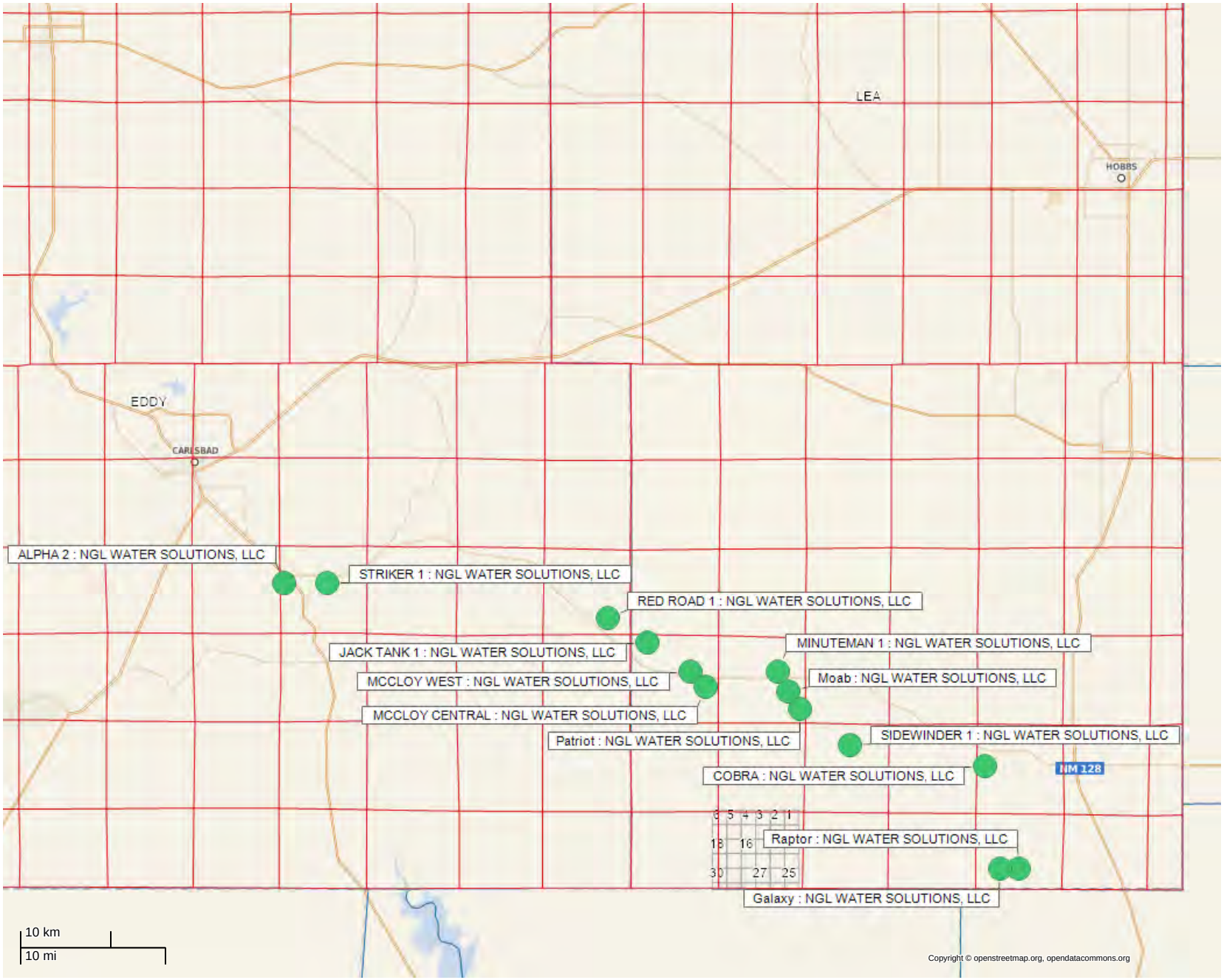
...

Size by
Max(WTR_INJ_CUM)

≥ 101073683

≤ 0


STATE SECTION 27 : CROSS TIMBERS ENERGY, LLC
STATE AJ : BASIN ALLIANCE LLC
REGULATOR 29 SWD : MARATHON OIL PERMIAN LLC
BEU HACKBERRY 34 FEDERAL : BOPCO, L.P.
REEVES 26 : POGO OIL & GAS OPERATING, INC
JAMES RANCH UNIT 21 FEDERAL SWD : BOPCO, L.P.
BIG EDDY SWD : MESQUITE SWD, INC
QUAIL 16 STATE SWD : FASKEN OIL AND RANCH, LTD.
LIGHTNING 1 STATE SWD : COG OPERATING LLC
DERRINGER FEDERAL SWD : MEWBOURNE OIL COMPANY
MOUTRAY SWD : MESQUITE SWD, INC
YO STATE SWD : RAZ OIL AND GAS L.L.C.
CORAZON 4 STATE SWD : COG OPERATING LLC
EDDY
NASH UNIT SWD : XTO ENERGY, INC.
LAYLA 27 SWD : MEWBOURNE OIL COMPANY
BURTON FLAT DEEP UNIT : DEVON ENERGY CORPORATION
CARLSBAD
RUSTLER BREAKS SWD : BLACK RIVER WATER MANAGEMENT COMPANY,...
BLACK RIVER SWD : BLACK RIVER WATER MANAGEMENT COMPANY, LLC
OJO CHISO SWD : GRAMA RIDGE DISPOSAL, LLC
JACK TANK 1 : NGL WATER SOLUTIONS, LLC
CARLETON SWD : DELAWARE ENERGY, LLC
ANTHILL STATE SWD : EOG Y RESOURCES, INC.
PLU DELAWARE B 23 FEDERAL SWD : BOPCO, L.P.
RIO BLANCO 33 FEDERAL : DEVON ENERGY CORPORATION
NASH DRAW 8 FEDERAL : BOPCO, L.P.
MCCLOY CENTRAL : NGL WATER SOLUTIONS, LLC
MCCLOY WEST : NGL WATER SOLUTIONS, LLC
MCCLOY SWD : OWL SWD OPERATING, LLC
COBRA : NGL WATER SOLUTIONS, LLC
Moab : NGL WATER SOLUTIONS, LLC
CEDAR CANYON 15 SWD : OXY USA, INC.
MINUTEMAN 1 : NGL WATER SOLUTIONS, LLC
CALDERON FARMS SWD : DELAWARE ENERGY, LLC
NM 128
COTTON DRAW UNIT SWD : DEVON ENERGY CORPORATION
Patriot : NGL WATER SOLUTIONS, LLC
SCOTT B SWD : MESQUITE SWD, INC
GOLDENCHILD 6 STATE SWD : XTO ENERGY, INC.
SHOCKER SWD : EOG Y RESOURCES, INC.
SAND DUNES SWD : MESQUITE SWD, INC
PADUCA 6 SWD : MESQUITE SWD, INC
FLOWER DRAW 2 STATE SWD : MEWBOURNE OIL COMPANY
COTTON DRAW 32 STATE SWD : DEVON ENERGY CORPORATION
CEDAR CANYON SWD : MESQUITE SWD, INC
PLU PIERCE CANYON 3 FEDERAL SWD : BOPCO, L.P.
Galaxy : NGL WATER SOLUTIONS, LLC
FULLER 14 FEDERAL SWD : MEWBOURNE OIL COMPANY
SOLARIS EDDY STATE : SOLARIS WATER MIDSTREAM, LLC
MADERA SWD : OWL SWD OPERATING, LLC
RUSTLER BREAKS SWD : BLACK RIVER WATER MANAGEMENT COMPANY,...
SIDEWINDER 1 : NGL WATER SOLUTIONS, LLC
WILLOW 17 STATE SWD : COG OPERATING LLC
Raptor : NGL WATER SOLUTIONS, LLC
WINKLER
ALPHA 2 : NGL WATER SOLUTIONS, LLC
SANTO NINO 29 FEDERAL SWD : MEWBOURNE OIL COMPANY
PINE SPRINGS 2 STATE SWD : COG OPERATING LLC
MONUMENT AGI D : TARGA MIDSTREAM SERVICES LP
COTTONWOOD 2 STATE SWD : COG OPERATING LLC
STRIKER 1 : NGL WATER SOLUTIONS, LLC
HALFWAY SWD FEDERAL : R360 PERMIAN BASIN, LLC
US 285
APPLE 5 STATE SWD : COG OPERATING LLC
RED ROAD 1 : NGL WATER SOLUTIONS, LLC
10 km
10 mi
Copyright © openstreetmap.org, opendatacommons.org


LEA
HOBBS
EDDY
CARLSBAD
ALPHA 2 : NGL WATER SOLUTIONS, LLC
STRIKER 1 : NGL WATER SOLUTIONS, LLC
RED ROAD 1 : NGL WATER SOLUTIONS, LLC
JACK TANK 1 : NGL WATER SOLUTIONS, LLC
MINUTEMAN 1 : NGL WATER SOLUTIONS, LLC
MCCLOY WEST : NGL WATER SOLUTIONS, LLC
Moab : NGL WATER SOLUTIONS, LLC
MCCLOY CENTRAL : NGL WATER SOLUTIONS, LLC
Patriot : NGL WATER SOLUTIONS, LLC
SIDEWINDER 1 : NGL WATER SOLUTIONS, LLC
COBRA : NGL WATER SOLUTIONS, LLC
NM 128
Raptor : NGL WATER SOLUTIONS, LLC
Galaxy : NGL WATER SOLUTIONS, LLC
10 km
10 mi
Copyright © openstreetmap.org, opendatacommons.org

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

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO

Case No. 16508

AFFIDAVIT OF KATE ZEIGLER

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, Kate Zeigler, make the following affidavit based upon my own personal knowledge.

1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.

2. I am the senior geologist at Zeigler Geologic Consulting, and I provide a wide range of geoscience related services to companies and other entities in southeastern New Mexico.

3. I have obtained a bachelor's degree in geology from Rice University, a master's degree in paleontology from the University of New Mexico, and a Ph.D. in stratigraphy and paleomagnetism from the University of New Mexico. Additionally, I have completed several surface geologic maps for the New Mexico Bureau of Geology and Mineral Resource's Geologic Mapping Program as well as for independent operators who are exploring prospects within the western Permian Basin. I have also conducted a prior geologic study concerning what is commonly referred to as the Devonian and Silurian formations in Southeastern New Mexico to help determine whether the approval of 7" by 5½" tubing is appropriate in Devonian and Silurian salt water disposal wells approved by the New Mexico Oil Conservation Division.

EXHIBIT 4
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

4. I am familiar with the application that NGL Water Solutions Permian, LLC ("NGL") has filed in this matter, and I have conducted a geologic study of the lands which are the subject matter of the application. A copy of my geologic study, including cross sections, structure maps and isopachs is attached as **Exhibit A** to this Affidavit.

5. NGL seeks an order approving the Patriot SWD #1 well ("Patriot well"), a salt water disposal well.

6. I have been informed that the injection interval for the Patriot well will be isolated to the Devonian and Silurian formations (also referred to as the Wristen Group and Fusselman Formation) and that the Patriot well will have four strings of casing protecting the fresh water aquifer, the salt-bearing interval, and the Permian aged rocks through the Wolfcamp Formation. The deepest casing is 7 5/8", which is cemented and cement is circulated on the 7 5/8" casing.

7. The well will not be located closer than approximately 1.5 miles from other disposal wells that have been approved for injection into the Devonian and Silurian formations.

8. The injection zone for the well is located below the Woodford Shale. The Woodford Shale is an Upper Devonian unit which has low porosity and permeability and consists predominantly of shale and mudstone with some carbonate beds. The Woodford Shale acts as a permeability boundary to prevent fluids from moving upward out of the underlying formations. The Woodford Shale formation in the areas where the Patriot well is located is between 180 feet to 200 feet thick.

9. Below the injection zone for the Patriot well is the Ordovician formation, also referred to as the Simpson Group, which contains sequences of shale that make up approximately 55% of the total thickness of the formation in any given place and can likewise act as a permeability boundary which prevents fluids from migrating downwards into deeper formations and the

basement rock. In the area where the Patriot well is located, the Ordovician formation is between 850' and 950' feet thick and, as a result, there is a significant thickness in this lower shale. Below the Ordovician is the Ellenburger Formation, which is up to 650 feet thick.

10. Based on my geologic study of the area, it is my opinion that the approved injection zone for the Patriot well is located below the base of the Woodford Shale formation and above the Simpson Group formation, both of which consist of significant shale deposits. Evidence indicates that shale formations located above and below the approved injection zones will likely restrict fluids from migrating beyond the approved injection zone for the Patriot well.

11. The Patriot well will primarily be injecting fluids into the Wristen Group and Fusselman Formation, with some fluids potentially being injected into the Upper Montoya Group. Each of these rock units is located within what is commonly referred to by operators and the Division as the "Devonian-Silurian" formation. These zones consist of a very thick sequence of limestone and dolostone which has significant primary and secondary porosity and permeability that is collectively between 1,500 to 2,000 feet thick.

12. It is my opinion that there is no risk to freshwater resources for injection within the Wristen Group, Fusselman Formation, and Upper Montoya Group because of the depth of these sub-formations and the upper shale permeability boundary created by the Woodford Shale.

13. I have also studied the location of known fault lines within the area where the Patriot well is proposed to be drilled and the closest known fault line to the well is located approximately 1 mile away from where the well is proposed to be drilled.

14. There are no currently recognized production shales within the Wristen Group, Fusselman Formation, and Upper Montoya Group in this part of the western Permian Basin. While

there may be some isolated traps located within these sub-formations, it takes significant ability with imaging to be able to locate these deposits in order to properly target them.

15. Exhibit A to this Affidavit was prepared by me, or compiled from NGL's company business records.

16. The granting of this Application is in the interests of conservation, the prevention of waste, and the protection of correlative rights.

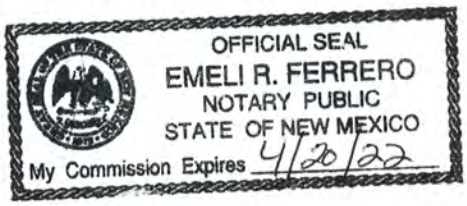
17. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

FURTHER AFFIANT SAYETH NAUGHT

[signature page follows]

Kate Zeigler

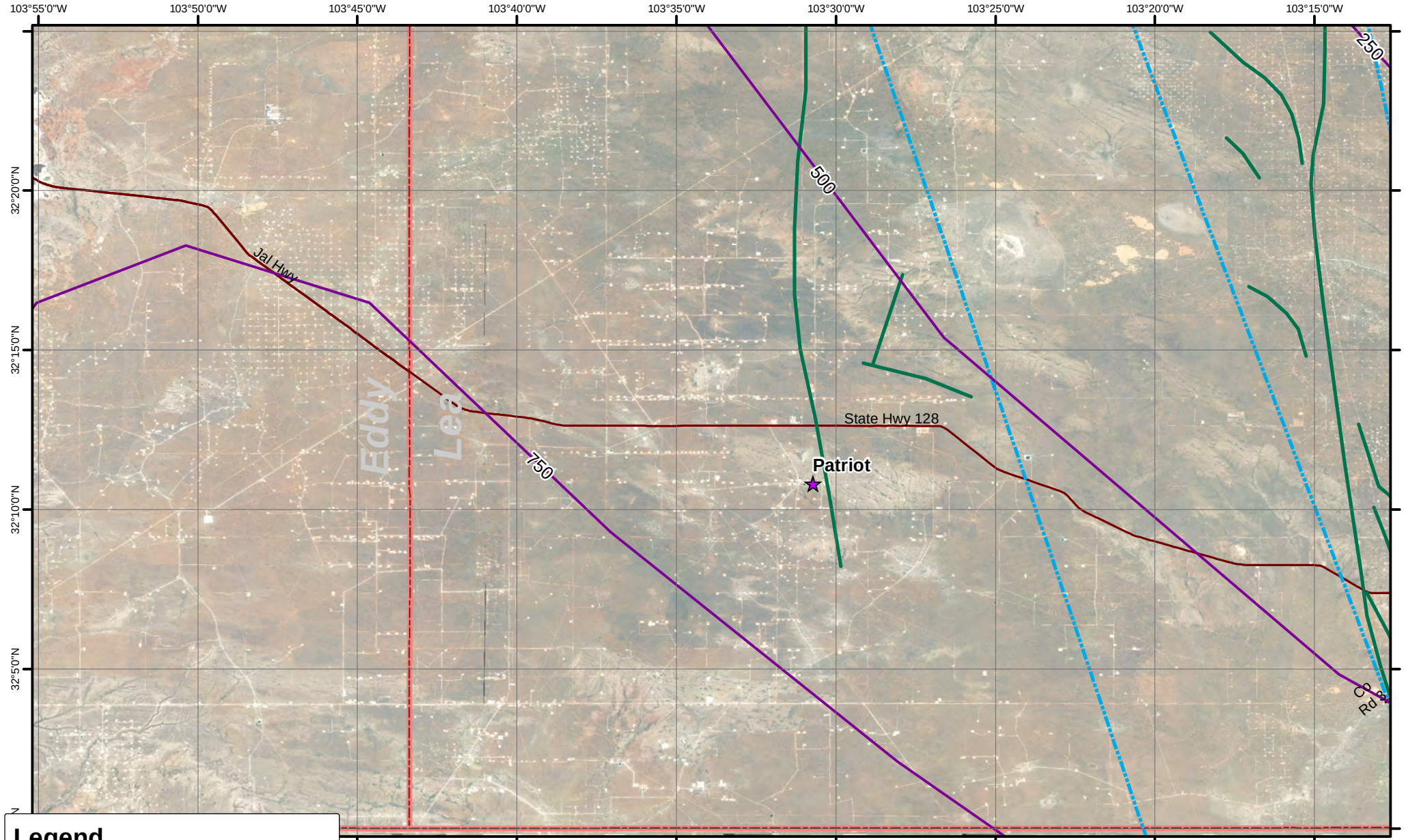
Subscribed to and sworn before me this 5 day of January, 2019.



Notary Public

My commission expires: _____

Lower Ordovician Isopach, Faults, Well Location



Legend

- Proposed Well
- Lower Ordovician (Ellenburger) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, NM

5 2.5 0 5 10 15 20 Miles

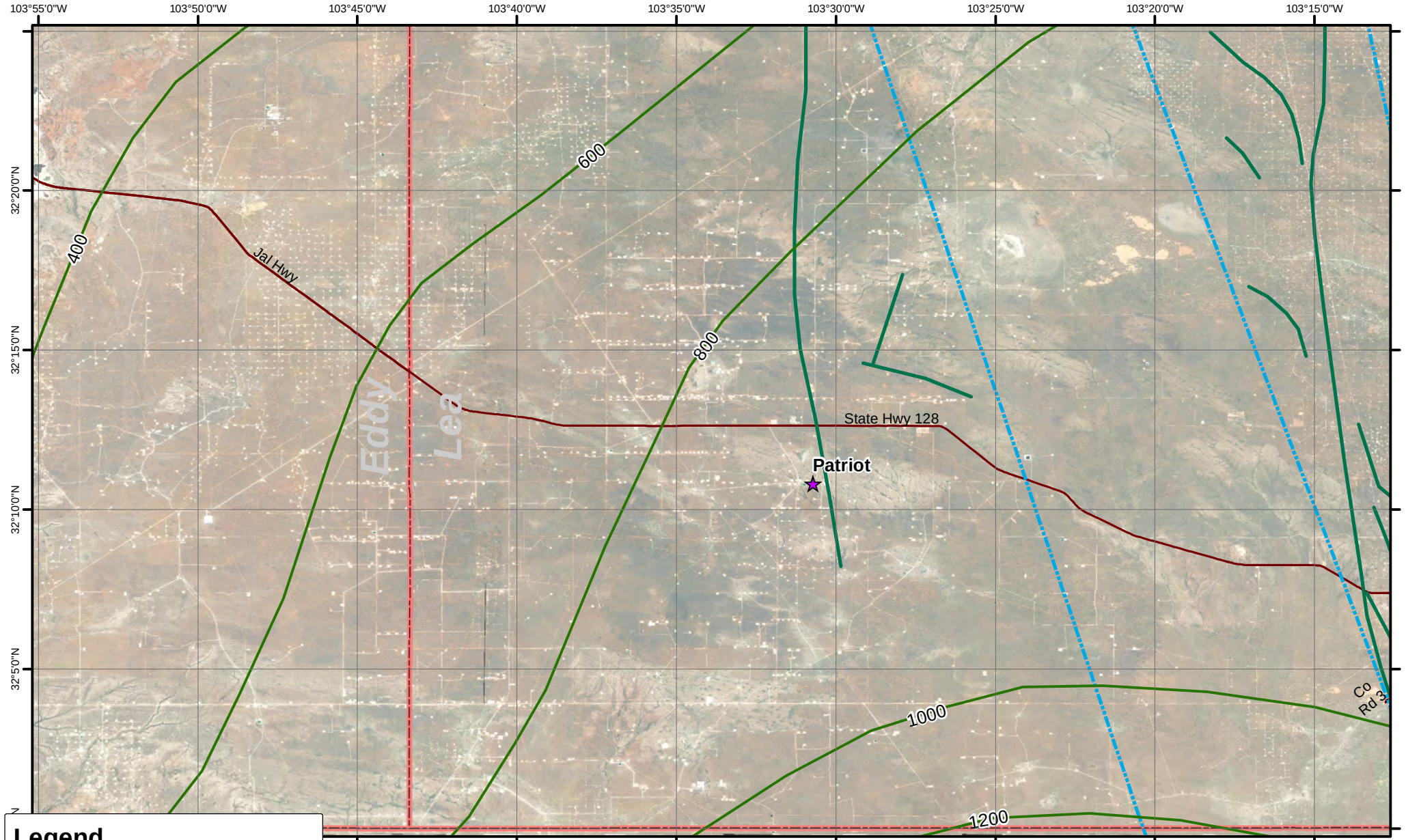
Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.
Silurian/Early Devonian Isopach contours adapted from Frenzel et al (1992)

EXHIBIT A

N

WESTERN Geoinformatics

Middle Ordovician Isopach, Faults, Well Location



Legend

- Proposed Well
- Middle Ordovician (Simpson) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, NM

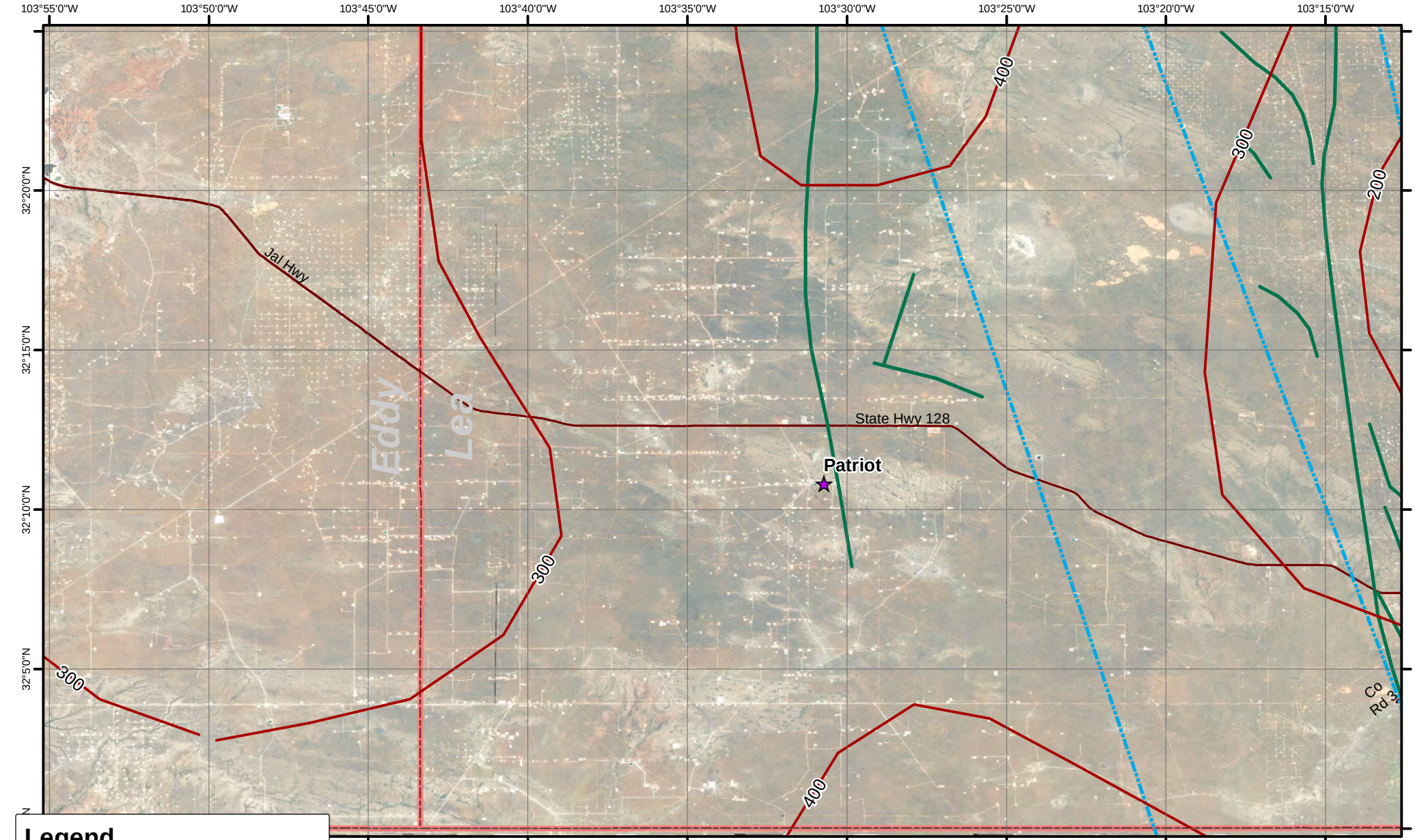
5 2.5 0 5 10 15 20 Miles

N

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.
Silurian/Early Devonian Isopach contours adapted from Frenzel et al (1992)

WESTERN Geoinformatics

Upper Ordovician Isopach, Faults, Well Location



Legend

- Proposed Well
- Upper Ordovician (Montoya) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, NM

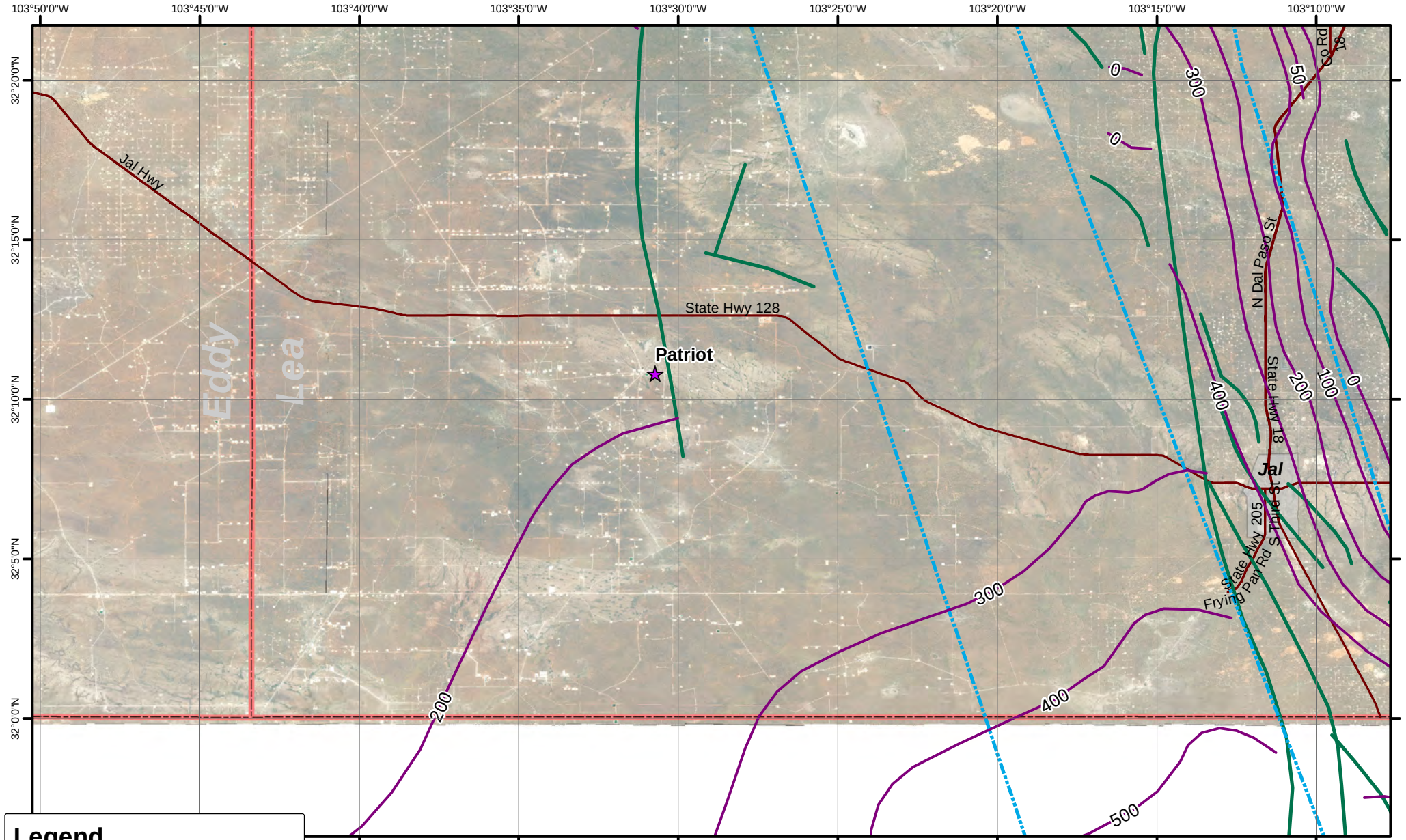
5 2.5 0 5 10 15 20 Miles

N

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.
Silurian/Early Devonian Isopach contours adapted from Frenzel et al (1992)

WESTERN Geoinformatics

Late Devonian Isopach, Faults, Well Location



Legend

- Proposed Well
- Late Devonian (Woodford) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, NM

5 2.5 0 5 10 15 20 Miles

N

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.
Silurian/Early Devonian Isopach contours adapted from Frenzel et al (1992)

WESTERN Geoinformatics

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

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO

Case No. 16508

AFFIDAVIT OF DR. STEVEN TAYLOR

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, Dr. Steven Taylor, make the following affidavit based upon my own personal knowledge.

1. I am over eighteen (18) years of age and am otherwise competent to make the statements contained herein.

2. I have worked at the Los Alamos National Labs from 1991 to 2006. I currently am the secretary of GeoEnergy Monitoring Systems, Inc., a company that builds and conducts seismic monitoring.

3. I have obtained a Bachelor of Science degree in geology at Ohio University (1975) and a Ph.D. in Geophysics at the Massachusetts Institute of Technology (1980).

4. I am familiar with the application that NGL Water Solutions Permian, LLC ("NGL") has filed in this matter and I have conducted a study related to the area which is the subject matter of the application.

5. NGL seeks an order approving the Patriot SWD #1 well ("Patriot well"), a salt water disposal well.

EXHIBIT 5
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

6. In its applications, NGL requests approval to use larger diameter tubing in the Patriot well, which is 7" by 5½".

7. The Patriot well will not be located closer than approximately 1 mile from other disposal wells approved for injection into the Devonian and Silurian formations.

8. The approved injection zone for the Patriot well is located below the base of the Woodford Shale formation and above the Ordovician formation, which consists of significant shale deposits.

9. The Patriot well will primarily be injecting fluids into the Wristen Group and Fusselman Formation, with some fluids potentially being injected into the Upper Montoya Group. Each of these sub-formations or zones are located within what is commonly referred to by operators and the Division as the "Devonian and Silurian" formation. These zones consist of a very thick sequence of limestone and dolostone which has significant primary and secondary porosity and permeability that is collectively between 1,500 to 3,000 feet thick.

10. The closest known fault line is located approximately 2 to 20 miles away from where the Patriot well is located.

11. I have studied seismic catalogs, unpublished catalogs and USGS catalogs for the time period of 2010–2017. Attached as **Exhibit A** is a copy of my study. My study concludes that there is very little seismic activity in the areas where the Patriot well is located.

12. I have also reviewed information provided by FTI Platt Sparks involving several different fault slip probability analysis conducted, using a tool created by Stanford University. These fault slip potential models showed low probability of slip or earthquakes to known mapped faults located closest to the Patriot well. A copy of the studies are attached hereto as **Exhibit B**.

13. The Exhibits to this Affidavit was prepared by me, or were compiled from NGL's company business records.

14. The granting of this Application is in the interests of conservation, the prevention of waste, and the protection of correlative rights.

15. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

FURTHER AFFIANT SAYETH NAUGHT

[signature page follows]

Steven R. Taylor

Dr. Steven Taylor

Subscribed to and sworn before me this 7th day of January, 2019.

Notary Public

TRISHA BACKUS
COMMISSION #70072
NOTARY PUBLIC
STATE OF IDAHO
MY COMMISSION EXPIRES 05/31/2023

My commission expires: 05/31/2023

Seismic Catalog Analysis Within 50 km of Patriot SWD Well

Prepared for NGL-Permian
by
GeoEnergy Monitoring Systems
January 5, 2019

Analysis is based on NMT seismic catalogs, unpublished catalogs and USGS catalogs for the time period 2010-2017 selecting events within 50 km of the Striker 2 SWD well. Additionally, seismic monitoring through December 29, 2018 from the three NGL seismic stations installed at Striker 2, Striker 3 and Striker 6 SWD wells on September 6, 2018.

Striker Two, Sand Dunes well, Lat/Long: 32.2072820/-103.7557370
Striker Three, Gossett well, Lat/Long: 32.2551110/-104.0868610
Striker Six, Madera well, Lat/Long: 32.2091150/-103.5359570

Figure 1 shows seismic station locations for three wells (blue pushpins) with estimated detection levels for M 1.0 (green circles) and M 1.5 (red circles) along with NGL-Permian stations (yellow pushpins). **Figure 2** shows seismicity listed in Table 1 shown as red circles and additional regional stations from TexNet and NMT (green pushpins). These regional stations are used along with the 3 Striker SWD seismic stations for regional monitoring.

The USGS reports only two events in the vicinity since 2010. New Mexico Tech runs a seismic network (SC) north of the wells for the DOE Waste Isolation Plant (only short-period vertical components). There are a total of seven seismic events in this time period ranging in magnitude from 1.0 to 3.1. Since the seismic deployment, there have been six event detections and having preliminary locations using available regional data (**Figure 3**). Due to the small magnitudes, the signal-to-noise levels are low so the locations have large uncertainty and there is little constraint on depth.

Table 1: Seismicity Within 50 km of Striker SWD Wells 2010-2017

Date	Origin Time GMT	Latitude	Longitude	Depth (km)	Magnitude
20111227	23:10:37	32.37	-103.95	NaN	1.6
20120318	10:57:22	32.281	-103.892	5.0	3.1
20170211	14:34:27	32.29	-103.92	NaN	1.5
20170302	11:38:53	32.37	-103.88	NaN	1.7
20170325	22:46:01	32.13	-103.77	NaN	1
20170503	17:47:21	32.082	-103.023	5.0	2.6
20170814	01:09:56	32.39	-103.56	NaN	1.2

Table 2. New Mexico Area Reporting Period Seismicity (km units)

Date	Origin Time (GMT)	Lat	Long	Depth	Loc Error	M	(+/-)
09/10/18	23:35:43.942	32.1793	-103.5283	1	5.58	1.25	0.23
09/14/18	06:57:47.614	32.1540	-103.5030	1	5.58	1.11	0.41
09/15/18	16:48:21.041	32.1630	-103.5211	1	5.37	1.50	0.00
10/13/18	22:07:22.259	32.0998	-103.4560	6	5.64	1.60	0.12
11/18/18	09:04:52.707	32.2526	-103.7853	5	3.77	1.75	0.20
12/09/18	18:51:00.805	32.3634	-103.8510	1	2.09	1.44	0.08

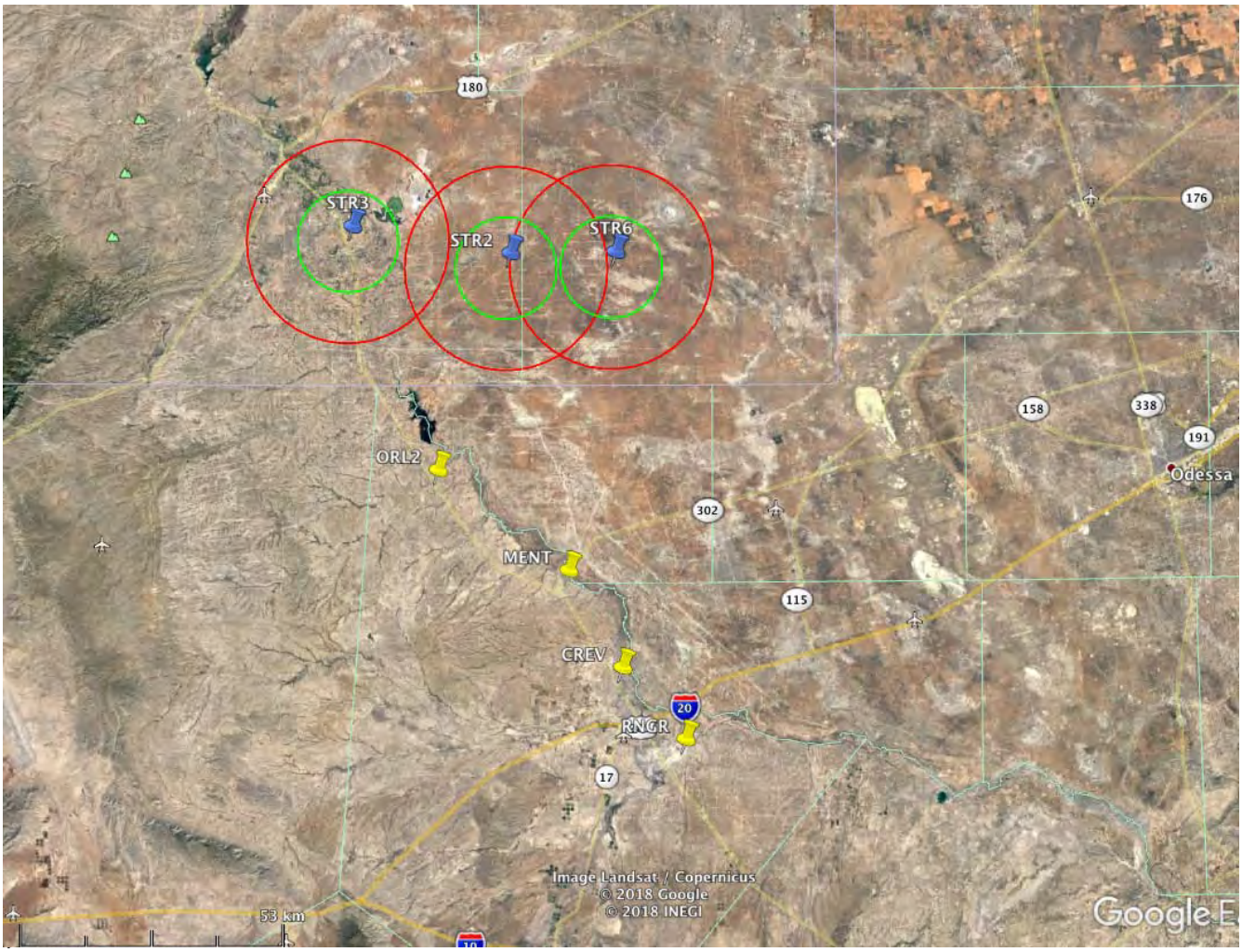


Figure 1. Striker SWD wells seismic station locations (blue push pins) and existing NGL-Permian seismic stations (yellow pushpins). Green and red circles around stations show approximate detection levels for ML 1.0 and 1.5, respectively.

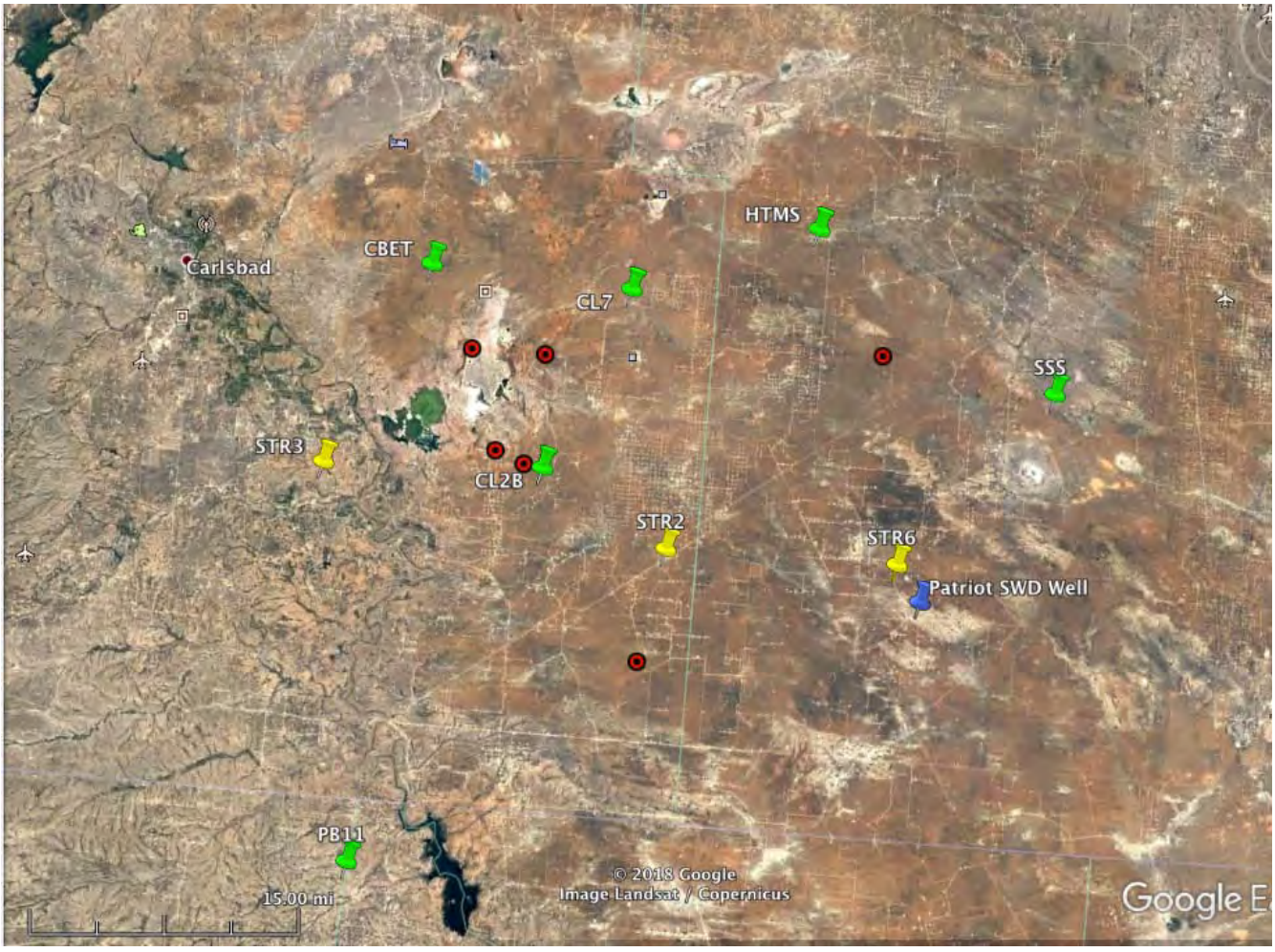


Figure 2. Striker SWD wells seismic station locations (yellow push pins) and existing NGL-Permian seismic stations (yellow pushpins). Other regional seismic stations run by TexNet and New Mexico Tech are shown as green pushpins. Historic seismicity listed in Table 1 shown as red circles. Patriot SWD well is shown as blue pushpin.

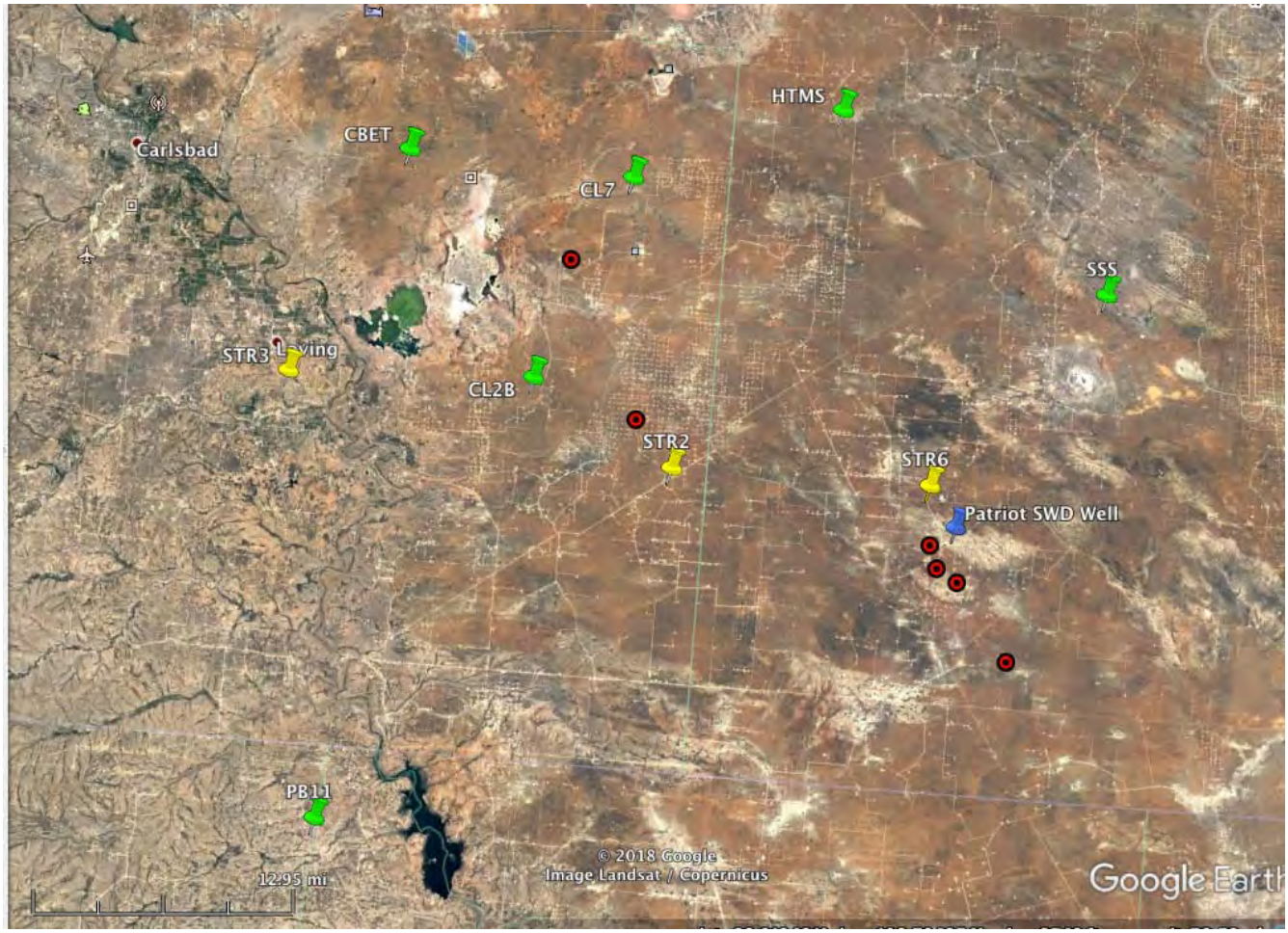


Figure 3. Seismic events in between September 6 and December 30, 2018 as red circles (Table 2). Patriot SWD well shown as blue pushpin. Seismic stations as yellow (NGL) or green (NMT and TexNet) pushpins.

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Texas Registered Engineering Firm No F – 16381

January 9, 2019

RE: FSP Analysis Multiple NGL SWD well locations
Lea Counties, New Mexico

FSP Analysis

The FSP software used for this analysis was jointly developed by Stanford University, Exxon Mobil and XTO Energy as a tool for estimating fault slip potential resulting from fluid injection.

I have reviewed the geology, seismic activity, injection history and future proposed injection in the Subject Area and I would conclude that the Proposed SWD wells do not pose a risk of increasing seismicity in the area. The primary risk reduction factor is that the faults are not optimally oriented to slip, and significant pressure increases would be necessary to initiate slip on the faults analyzed.

Fault slip potential (FSP) was analyzed in the area of review shown on **Exhibit No. 1.** The analysis integrates all of the proposed well locations as well as any existing injection wells in order to fully assess the pressure implications of injection in the area and the potential for slip along existing faults. Historical USGS earthquake events are denoted by the "blue" bulls-eye symbols.

Exhibit No. 2 shows the FSP input parameters for the local stress, average reservoir depth, pressure gradients and reservoir characteristics. Depths and reservoir characteristics were derived from nearby well logs and stress values were derived from the Lund Snee and Zoback (2018) paper related to Stress in the Permian Basin.

Exhibit No. 3 shows the location of existing wells and locations of the Proposed SWD wells relative to the faults documented in this area. The faults are sourced from the Texas Bureau of Economic Geology and these are also the fault traces shown in the referenced Snee/Zoback paper (Figure 3 in the paper) and shown as **Exhibit No. 4** in my report. The Snee/Zoback paper only considers fault

orientation relative to the stress orientation in determination of fault slip potential. Based on their limited analysis of the area they concluded the faults have low slip potential based on orientation/azimuth. My analysis further incorporates the injection history and future injection projections and the injection reservoir characteristics to fully assess the potential for slip along these faults. Existing wells were incorporated into the analysis using their injection volume histories and holding them constant into the future at their last reported monthly injection volume. The proposed wells were all modelled at 30,000 bbls/day and held constant for the life of the analysis (+25 years).

The proposed wells are denoted in the model as follows: (**Exhibit No. 3)**

AR – Asroc SWD

HP – Harpoon SWD

MC – McCloy Central SWD

MM – Minuteman SWD

MV – Maverick SWD

MW – McCloy West SWD

Mo – Moab SWD

PT - Patriot SWD

SR - Sparrow SWD

SW - Sidewinder SWD

TD -Trident SWD

TH - Tomahawk SWD

VP - Viper SWD

Also included in the model are existing SWD injection wells as follows: (**Exhibit No. 3)**

MD - Madera SWD
S6 – Striker Six SWD
VD – Vaca Draw SWD

Exhibit No. 5 illustrates the geomechanical properties of the fault segments in the area of review. It should be noted that the FSP software only calculates a single pressure change along a fault (at the fault mid-point) so it is critical that faults are broken into multiple segments to get a true evaluation of the

pressure increases associated with injection. **Exhibit No. 5 also** shows the **direction** of max hor. stress as denoted by the grey arrows outside the circle on the stereonet in the lower right portion of this exhibit. Faults that align parallel or closer to this orientation will have the highest potential for slip or lowest Delta PP to slip. Faults 15-17 have the highest potential for slip and Faults 1-14 have very low potential for slip.

Exhibit No. 6 shows that the input stress and fault values were varied by +/-10% to allow for uncertainty in the input parameters. Even considering the variability of the inputs the model results show low probability for slip on the faults in the area of review. An increase of 750 psi at Fault 15 still only results in a 10% probability of fault slip.

Exhibit No. 7 takes a closer look at fault 15. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is 1,150 psi along this fault. A 10% decrease in the friction coefficient of the fault could lower ΔP needed to slip to 750 psi.

Exhibit No. 8 takes a closer look at fault 16. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is 1,530 psi along this fault. A 10% decrease in the friction coefficient of the fault could lower ΔP needed to slip to 1,100 psi. Fault 17 shows similar FSP values as fault 16.

Exhibit No. 9 takes a closer look at fault 14. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is +3,500 psi along this fault. A 10% change in the fault strike or SHmax azimuth could lower ΔP needed to slip to 1,850 psi.

Exhibit No. 10 takes a closer look at fault 1. The sensitivity analysis is highlighted in the lower right portion of this exhibit and shows that without any variability of inputs the ΔP needed to slip is +5,600 psi along this fault. A 10% change in the fault strike or SHmax azimuth could lower ΔP needed to slip to 3,050 psi. Faults 2-13 all exhibit similar high ΔP pressure values needed to initiate slip and thus fault slip potential is very low along all of the N-S trending faults.

In general, only Fault segment 15 shows any concern for fault slip potential. The following exhibits will track the pressure changes at the faults moving forward in time based upon the anticipated injection in the future from these proposed wells and the existing wells in the Subject Area.

Exhibit No. 11 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2020. This map indicates ΔP pressure increases of 7 psi at F15 and 53 psi at F17.

Exhibit No. 12 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2025. This map indicates ΔP pressure increases of 51 psi at F15 and 109 psi at F17.

Exhibit No. 13 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2030. This map indicates ΔP pressure increases of 138 psi at F15 and 174 psi at F17. Note that these pressures are still well below the pressures that could initiate fault slip. F7 shows a ΔP pressure increase of 909 psi however this fault requires extremely high pressures (+4,400 psi) to initiate fault slip.

Exhibit No. 14 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2035. This map indicates ΔP pressure increases of 246 psi at F15 and 254 psi at F17. Note that these pressures are still well below the pressures that could initiate fault slip. F7 shows a ΔP pressure increase of 1,190 psi however this fault requires extremely high pressures (+4,400 psi) to initiate fault slip.

Exhibit No. 15 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2040. This map indicates ΔP pressure increases of 358 psi at F15 and 339 psi at F17. Note that these pressures are still well below the pressures that could initiate fault slip. F7 shows a ΔP pressure increase of 1,421 psi however this fault requires extremely high pressures (+4,400 psi) to initiate fault slip.

Exhibit No. 16 illustrates the ΔP pressure in a "heat map" and shows ΔP pressure increases at the faults as of 1/1/2045. This map indicates ΔP pressure increases of 466 psi at F15 and 425 psi at F17. Note

that these pressures are still well below the pressures that could initiate fault slip. F3 shows a ΔP pressure increase of 1,618 psi however this fault requires extremely high pressures (+4,400 psi) to initiate fault slip.

The pressure analysis over time shows that pressure is expected to increase along the faults however pressures remain below critical levels. The table below shows the ΔP pressure increases needed to imitate fault slip along each fault segment and the corresponding ΔP pressure increases as of 2045:

Fault Segment	ΔP to slip (fixed inputs)	ΔP to slip (10% varied inputs)	ΔP at 2045
F1	5,600	3,050	43
F2	6,300	3,850	320
F3	7,000	4,750	835
F4	7,000	4,750	1,204
F5	6,850	4,400	1,369
F6	6,850	4,400	1,477
F7	6,850	4,400	1,618
F8	6,850	4,400	1,516
F9	6,850	4,400	1,457
F10	6,850	4,400	1,261
F11	6,850	4,400	1,169
F12	6,850	4,400	450
F13	6,990	4,750	101
F14	3,500	1,800	209
F15	1,150	750	466
F16	1,530	1,100	439
F17	1,530	1,100	425

This analysis demonstrates that there is a low likelihood of injection induced seismicity in the Subject Area.

Conclusion

The faults and fault trends in this area of review are not optimally oriented to slip. The orientation of the faults requires significant pressure changes (ΔP +1,000 psi) based on the fixed input parameters and the ΔP increase at the most vulnerable fault only reaches 466 psi by 2045. This model assumes

constant injection rates over the next +25 years which is not a typical scenario as SWD wells tend to decrease injection volumes over time as the well ages and disposal demand decreases in the area. If injection volumes are lower over time than the model represents, then the risk for fault slip is lowered also.

In the event seismicity should occur in the future, the wells closest to the faults (proposed and existing) should be the wells considered for modification or reduction of injection rates. At this time there is no evidence to support rate reduction for any of the existing or proposed wells.

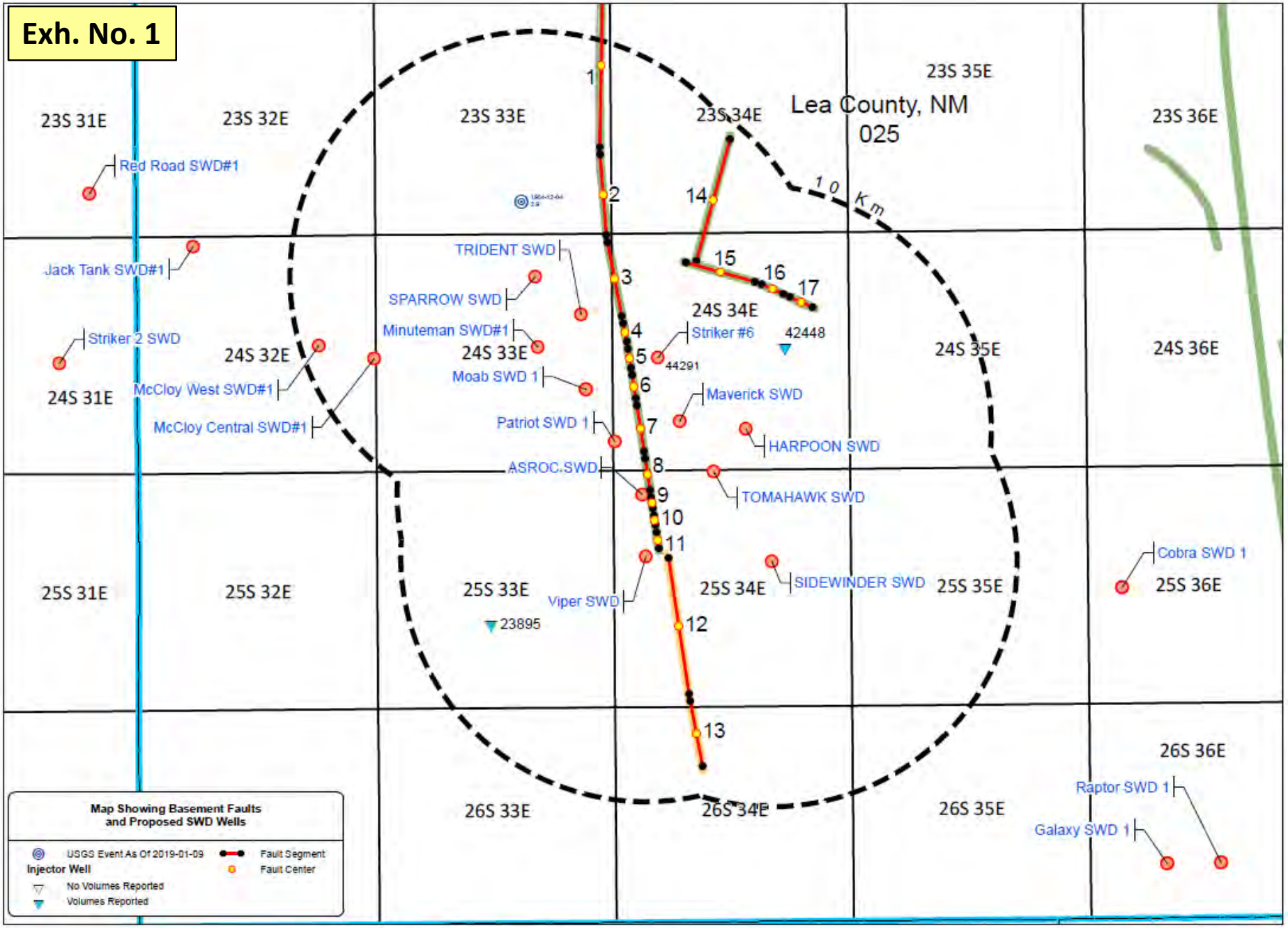
Should you have any questions, please do not hesitate to call me at (512) 327-6930 or email me at todd.reynolds@ftiplattsparks.com.

Regards,

Todd W. Reynolds – Geologist/Geophysicist
Managing Director, Economics/FTI Platt Sparks

FTI Platt Sparks
512.327.6930 office

Exh. No. 1



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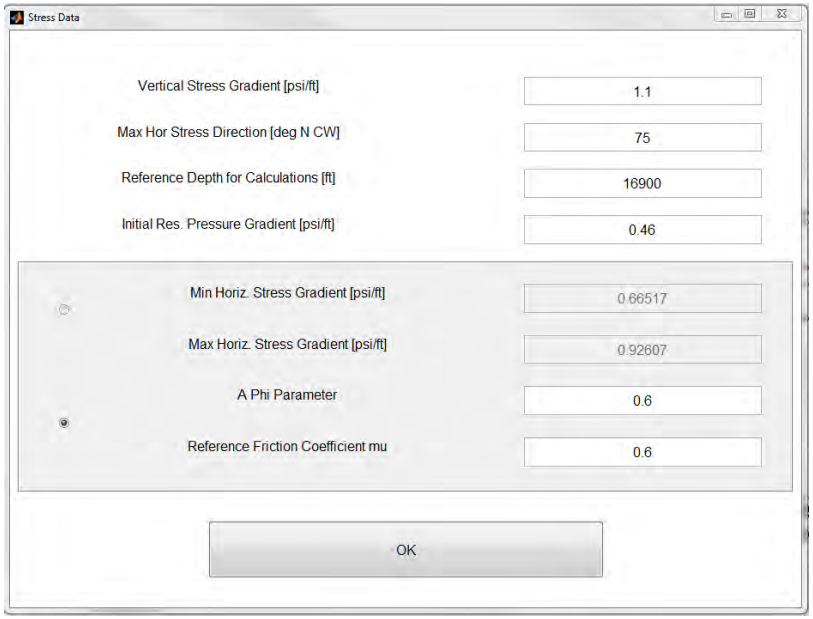
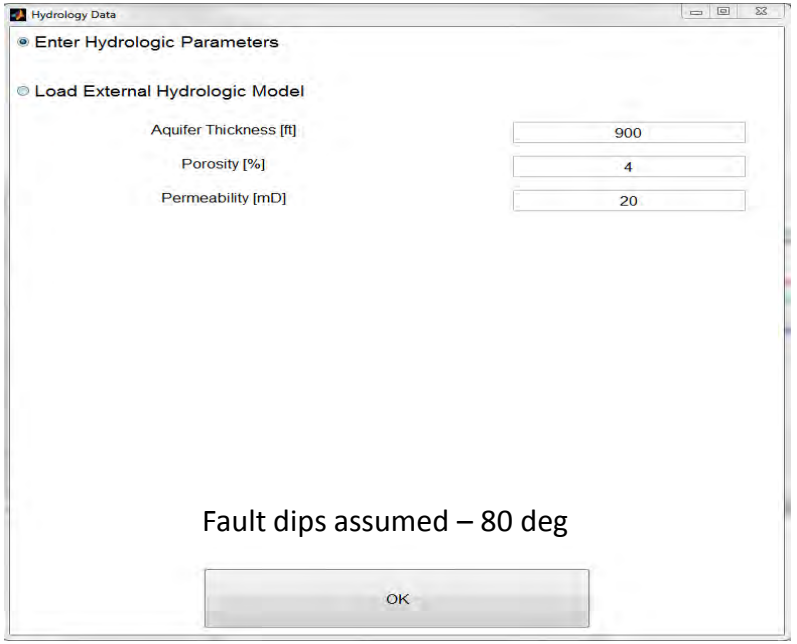
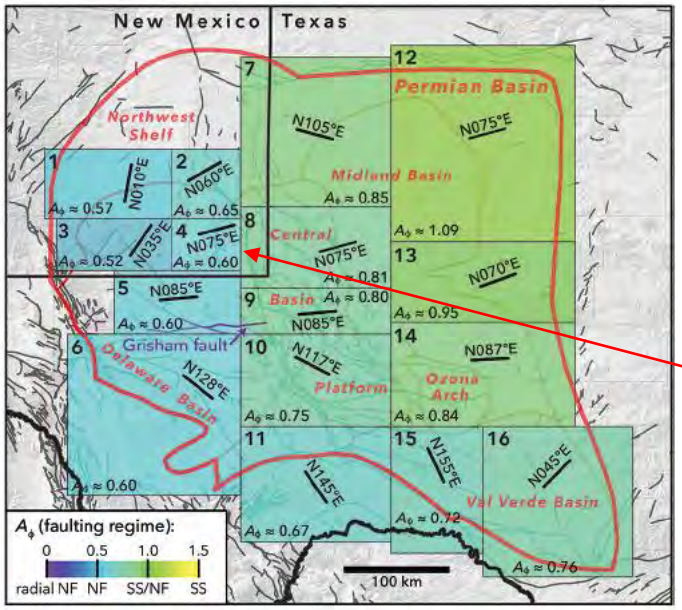
Exh. No. 2

FSP INPUT PARAMETERS







Input Parameter Comments

Hydrologic Parameters – Derived from Striker 6 SWD #2 logs

Stress Gradients – Derived from A Phi parameter from Snee/Zoback paper (.60)

Max Hor. Stress Direction - Derived from Snee/Zoback paper (N75E)

Exh. No. 3

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

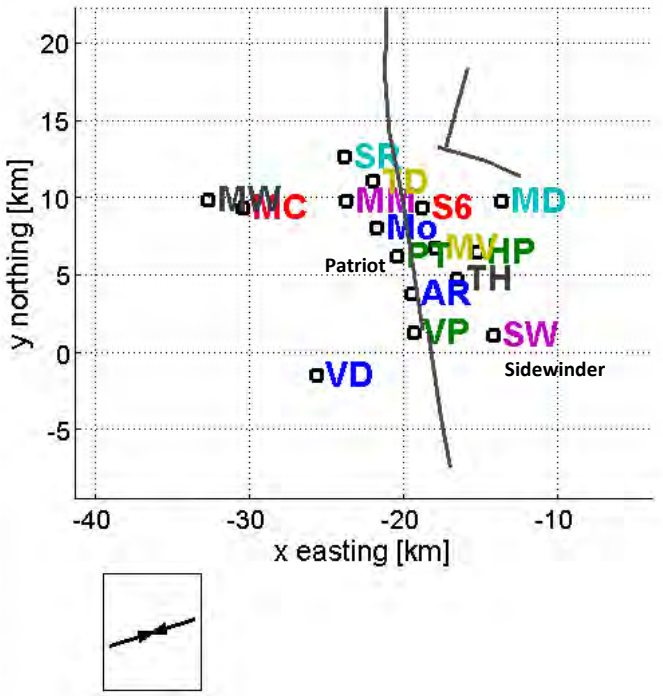
- All Faults
- Fault #1
- Fault #2
- Fault #3
- Fault #4
- Fault #5
- Fault #6
- Fault #7
- Fault #8
- Fault #9
- Fault #10
- Fault #11
- Fault #12
- Fault #13
- Fault #14
- Fault #15
- Fault #16
- Fault #17

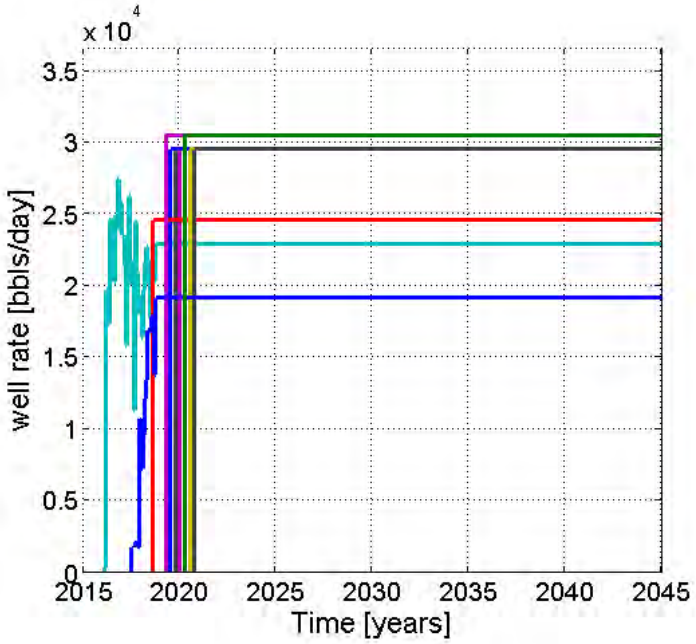
Calculate

Stress Regime: Normal Faulting

Select Well: All

FSP INPUT Fault and well locations





FSP INPUT Injection history and projected future injection

Exh. No. 4

Area of Review

Low slip potential based on fault orientation (green faults)

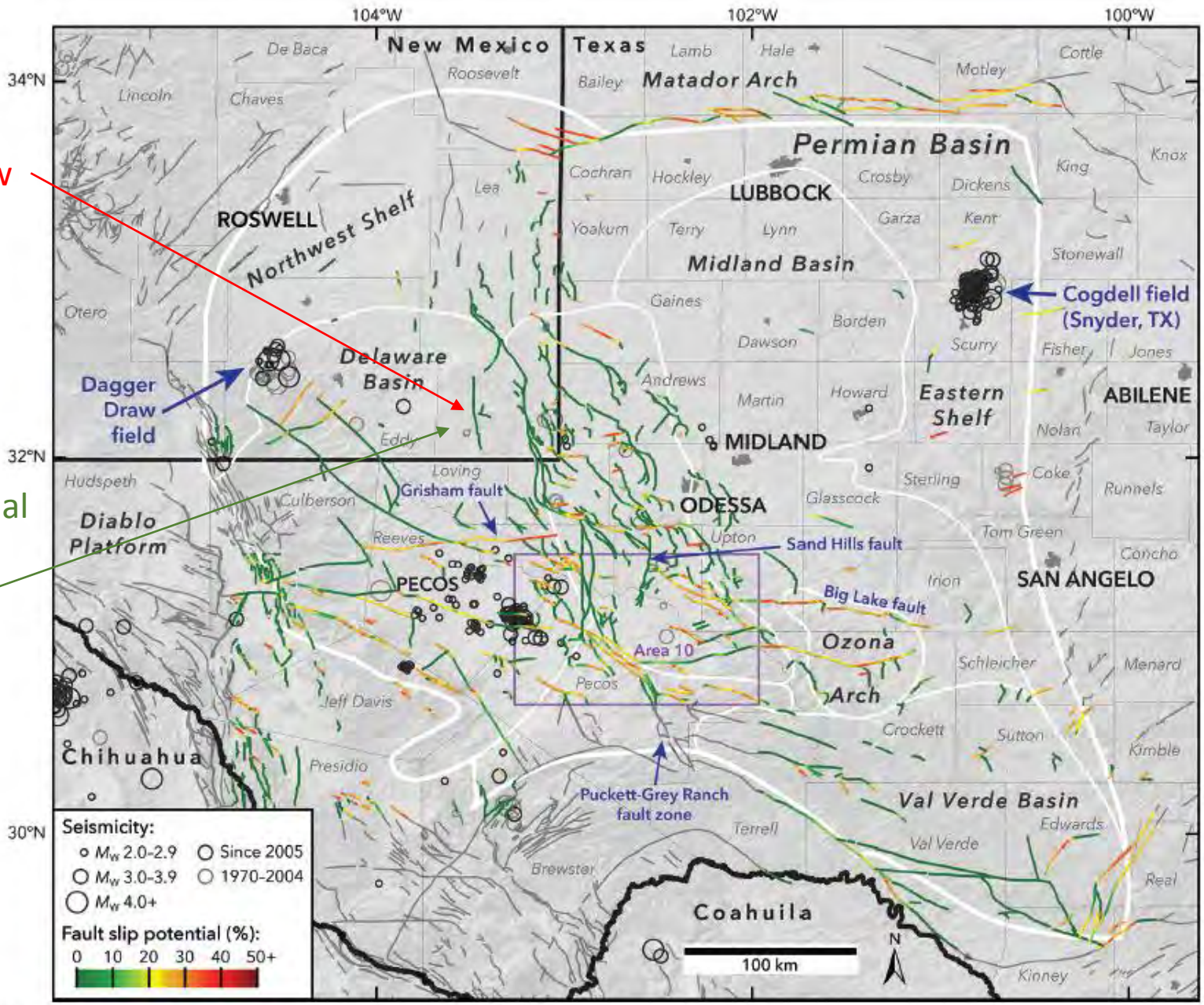


Figure 3. Results of our probabilistic FSP analysis across the Permian Basin. Data sources are as in Figures 1 and 2.

From Lund Snee and Zoback (2018)

Exh. No. 5

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANI... | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

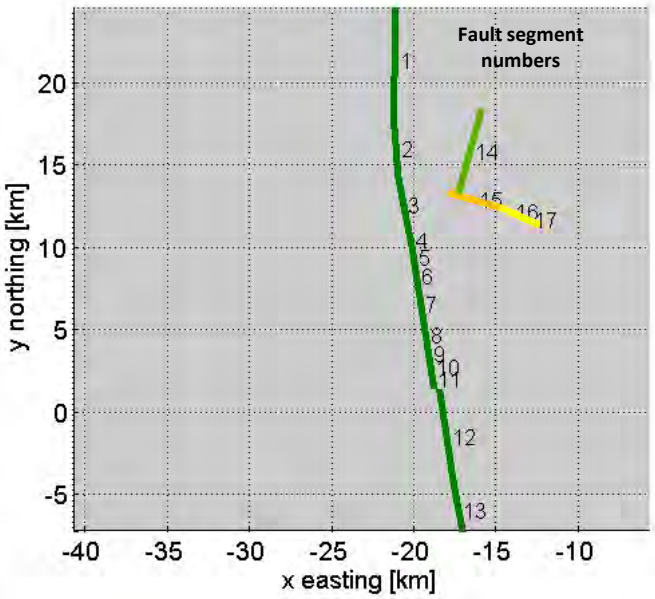
Fault Selector:

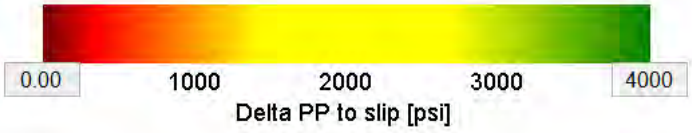
- All Faults
- Fault #1
- Fault #2
- Fault #3
- Fault #4
- Fault #5
- Fault #6
- Fault #7
- Fault #8
- Fault #9
- Fault #10
- Fault #11
- Fault #12
- Fault #13
- Fault #14
- Fault #15
- Fault #16
- Fault #17

Calculate

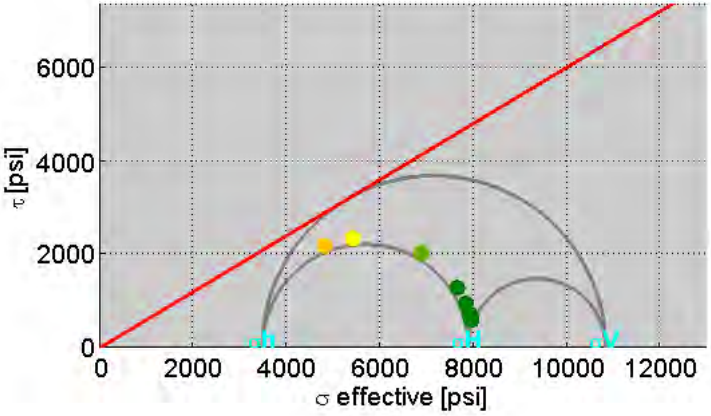
a) Fault Number

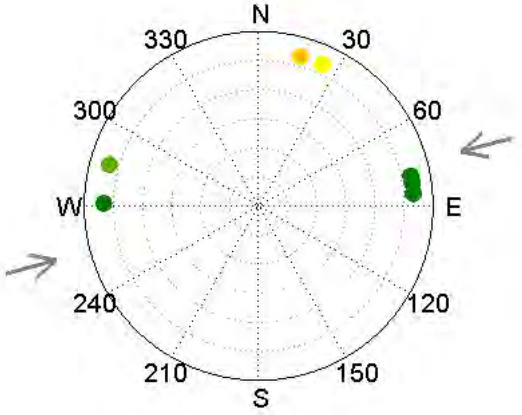
Help





Stress Regime: Normal Faulting





Stereonet Show: Fault Normals

Exh. No. 6

File Data Inputs Export Image Zoom

Fault Slip Potential

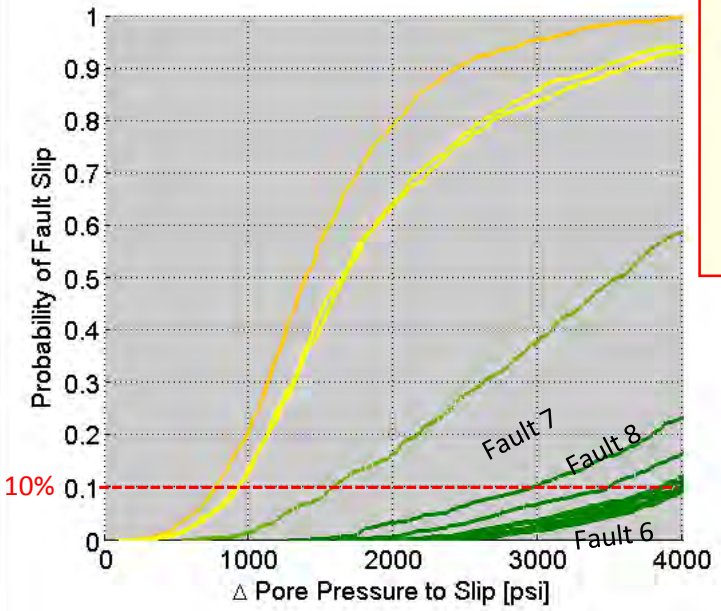
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

- All Faults
- Fault #1
- Fault #2
- Fault #3
- Fault #4
- Fault #5
- Fault #6
- Fault #7
- Fault #8
- Fault #9
- Fault #10
- Fault #11
- Fault #12
- Fault #13
- Fault #14
- Fault #15
- Fault #16
- Fault #17

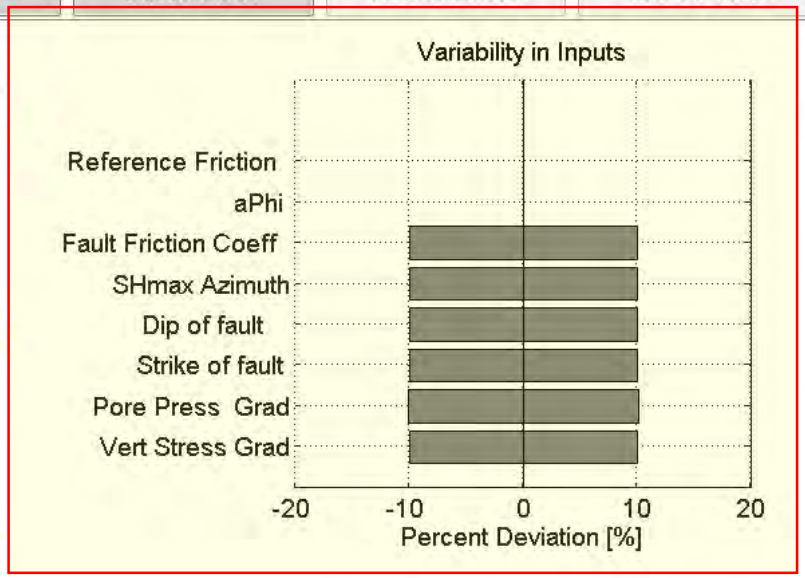
Calculate

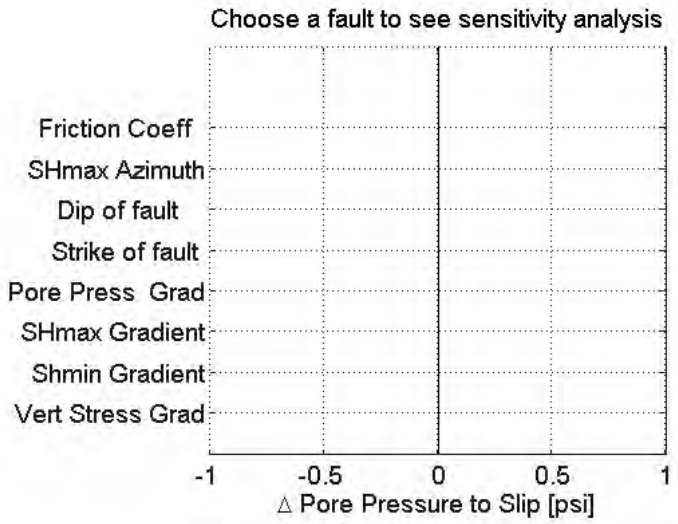
Load Distributions | Run Analysis



Max Delta PP [psi]: 4000

Export CDF data | Show Input Distributions





Exh. No. 7

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9
Fault #10
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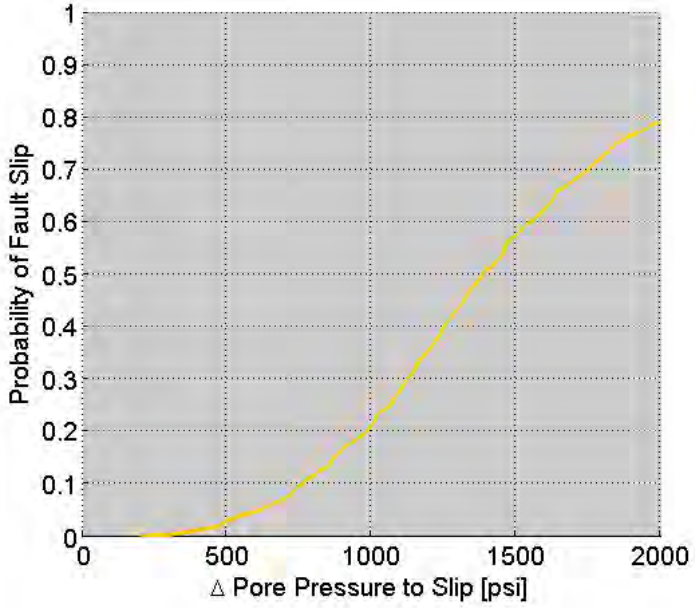
Fault #14
Fault #15
Fault #16
Fault #17

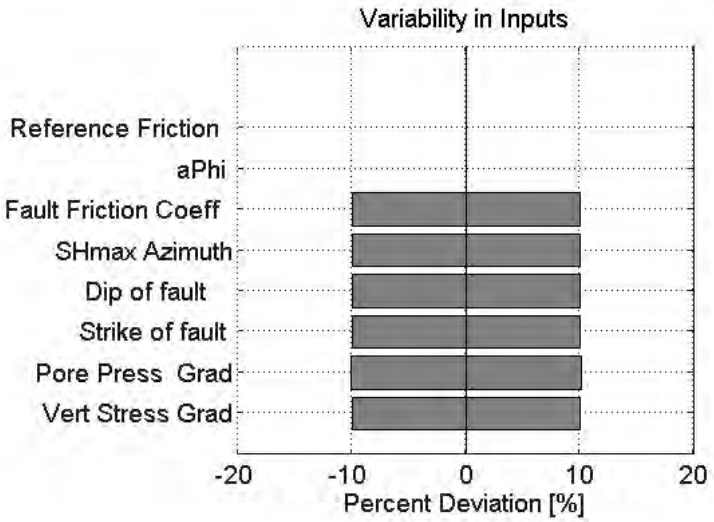
Calculate

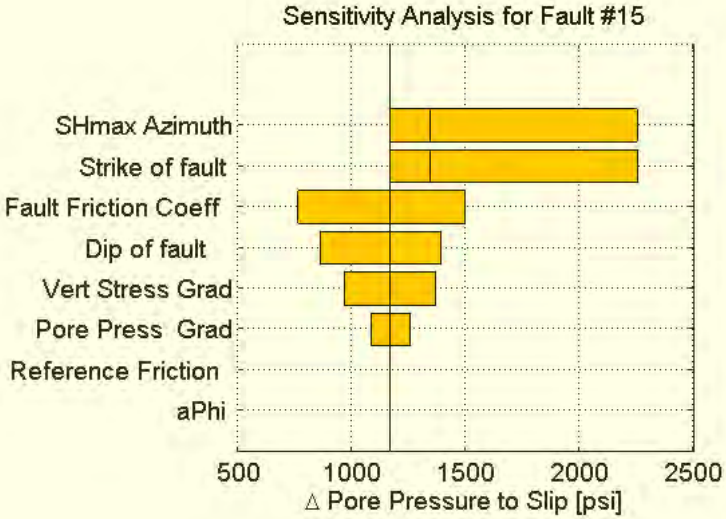
Load Distributions | Run Analysis



Max Delta PP [psi]: 2000

Export CDF data | Show Input Distributions





Exh. No. 8

File Data Inputs Export Image Zoom

Fault Slip Potential

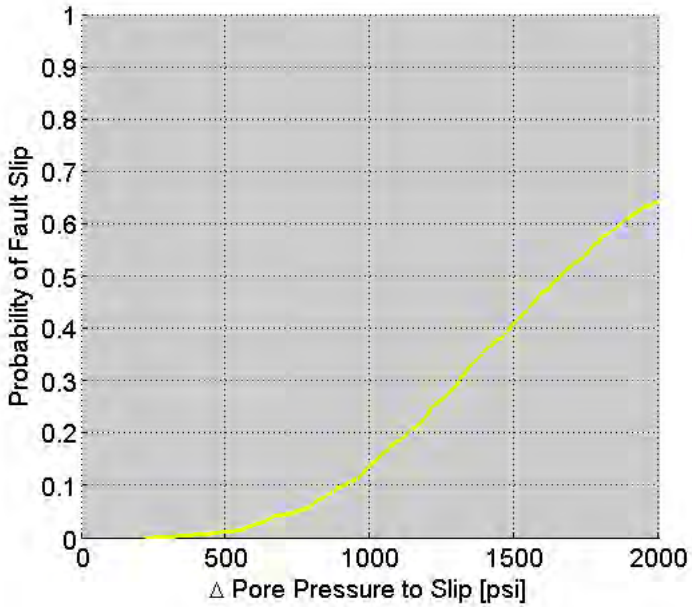
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9
Fault #10
Fault #11
Fault #12
Fault #13
Fault #14
Fault #15
Fault #16
Fault #17

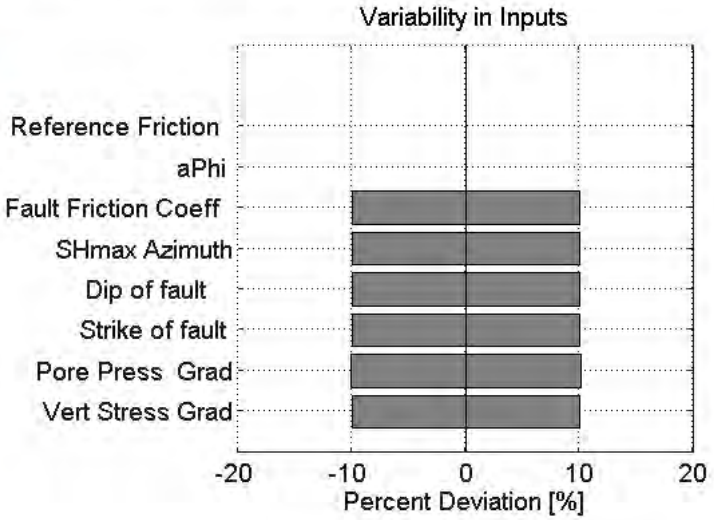
Calculate

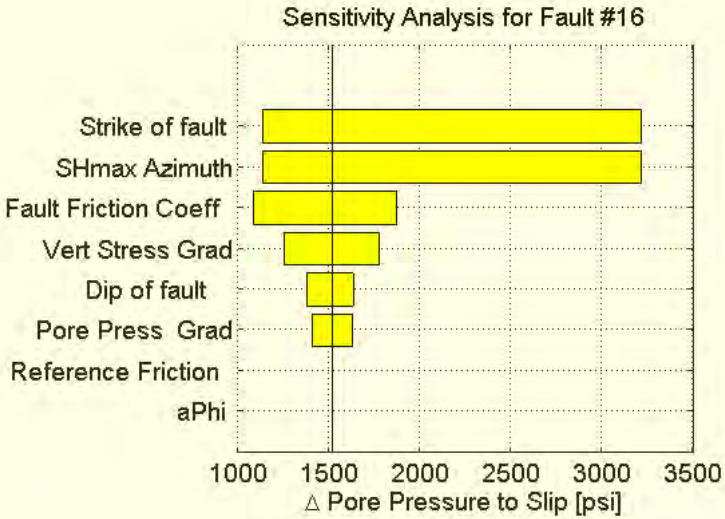
Load Distributions | Run Analysis



Max Delta PP [psi]: 2000

Export CDF data | Show Input Distributions





Exh. No. 9

File Data Inputs Export Image Zoom

Fault Slip Potential

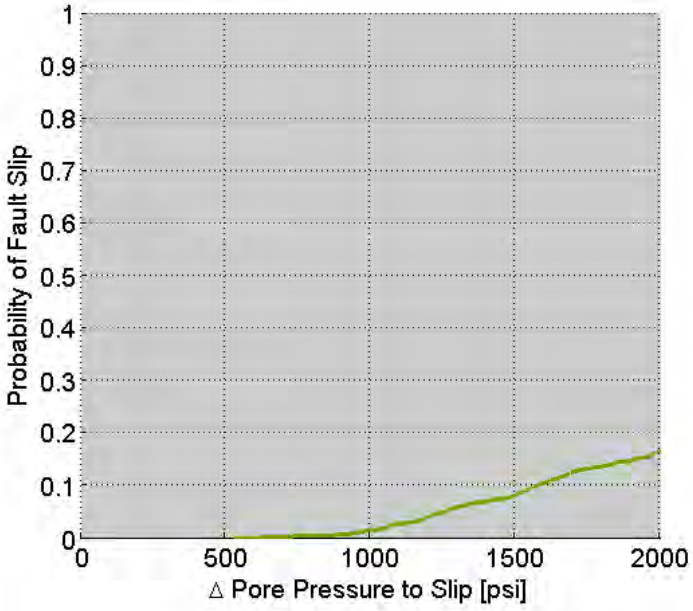
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9
Fault #10
Fault #11
Fault #12
Fault #13
Fault #14
Fault #15
Fault #16
Fault #17

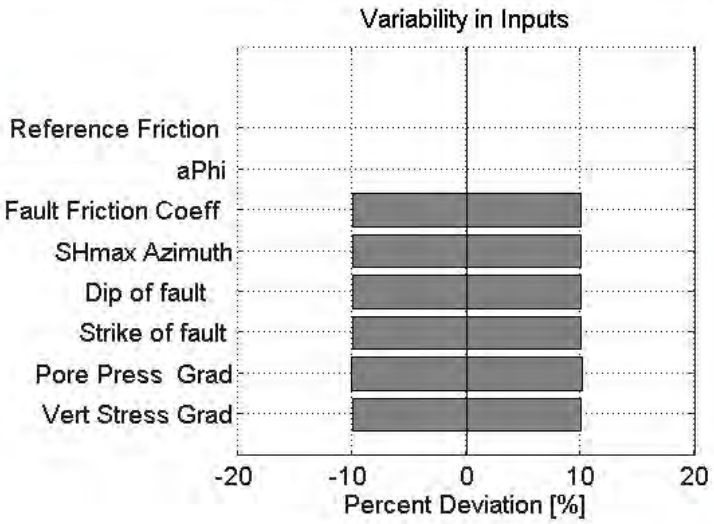
Calculate

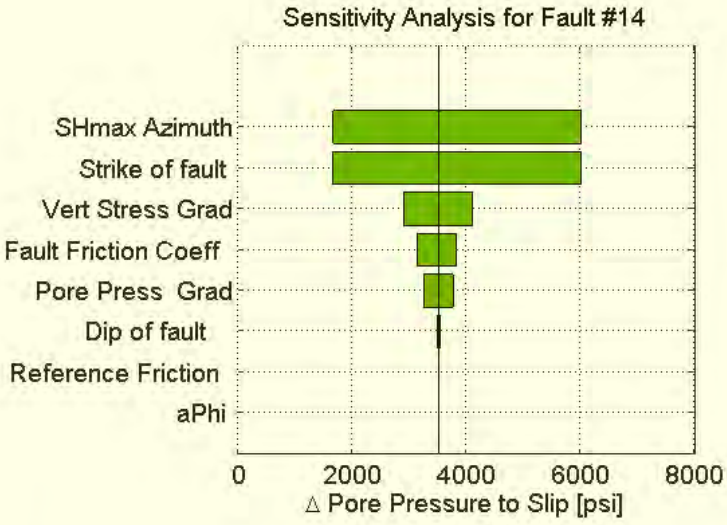
Load Distributions | Run Analysis



Max Delta PP [psi]: 2000

Export CDF data | Show Input Distributions





Exh. No. 10

File Data Inputs Export Image Zoom

Fault Slip Potential

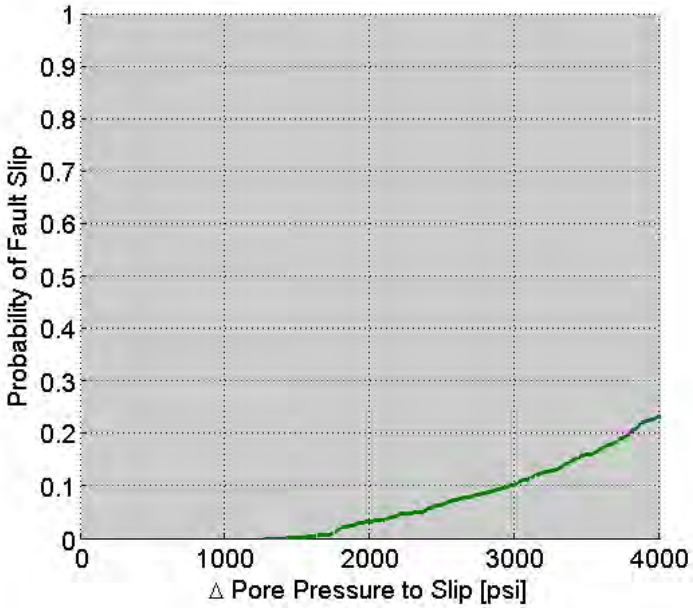
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9
Fault #10
Fault #11
Fault #12
Fault #13
Fault #14
Fault #15
Fault #16
Fault #17

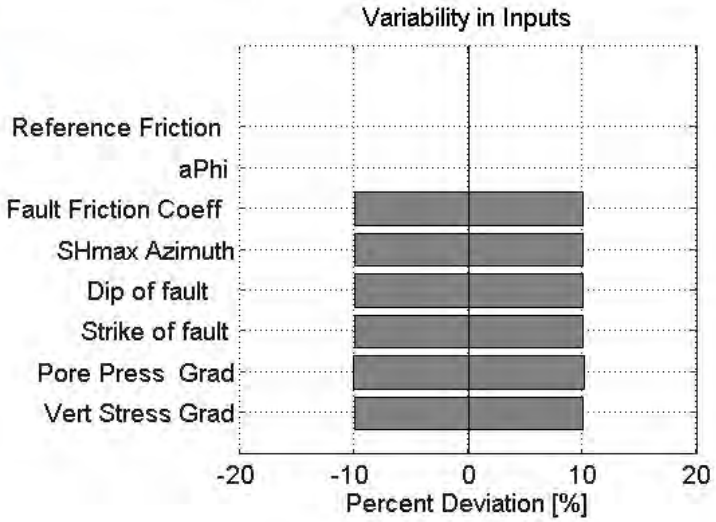
Calculate

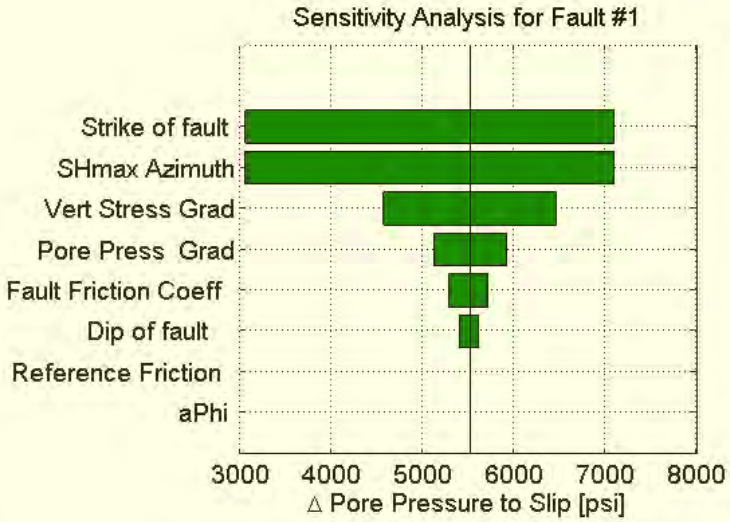
Load Distributions | Run Analysis



Max Delta PP [psi]: 4000

Export CDF data | Show Input Distributions





Exh. No. 11

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

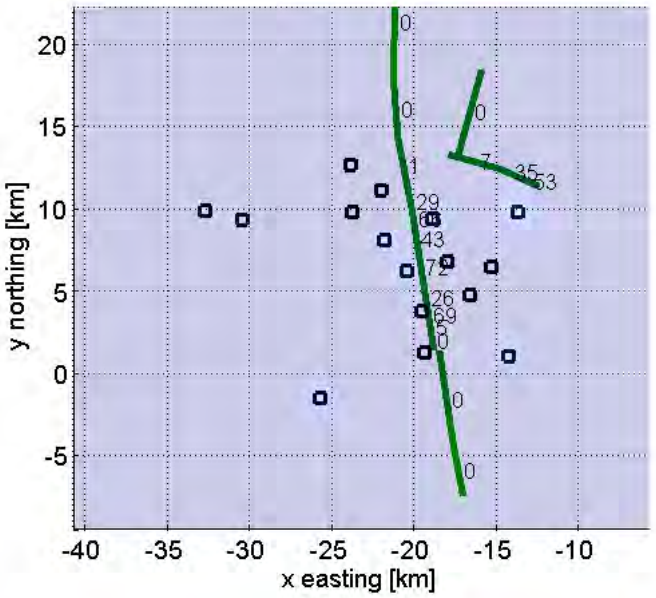
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.00 FSP
Fault #16, 0.00 FSP
Fault #17, 0.00 FSP

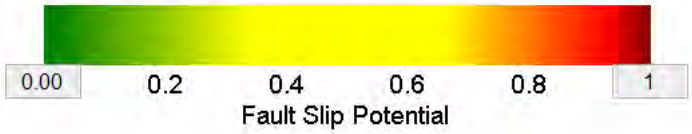
Calculate

Export

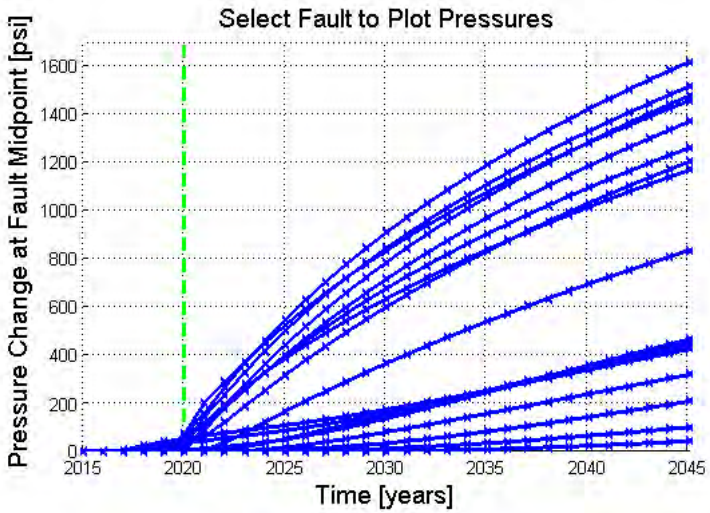
b) PP Change at fault [psi]

Summary Plots

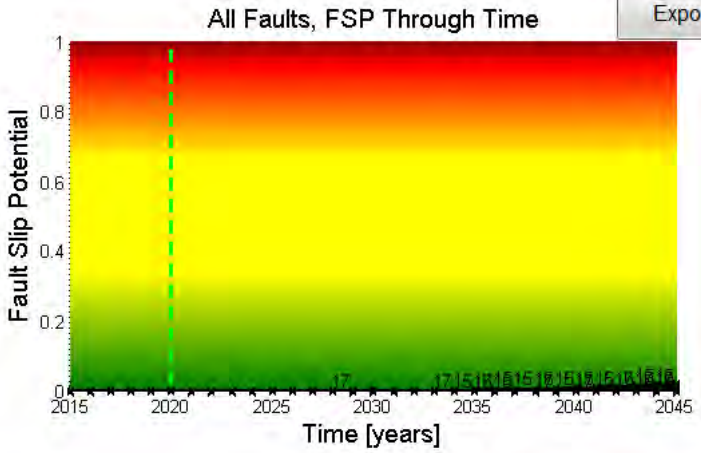




Year: 2020



Export



Exh. No. 12

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

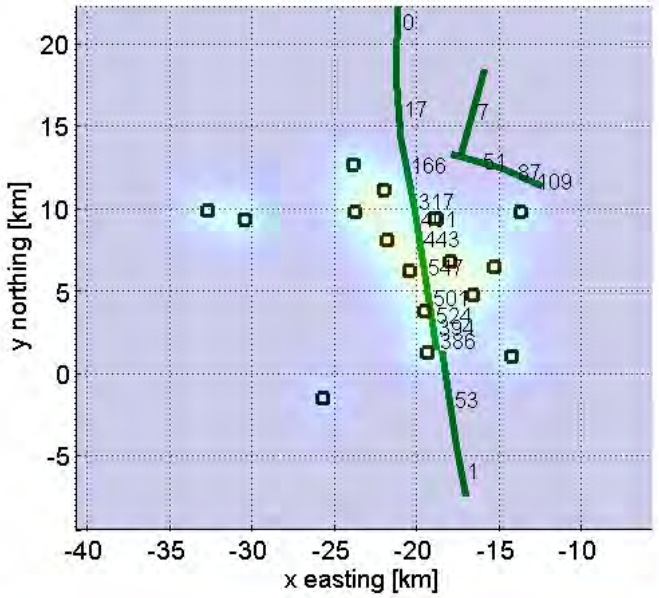
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.00 FSP
Fault #16, 0.00 FSP
Fault #17, 0.00 FSP

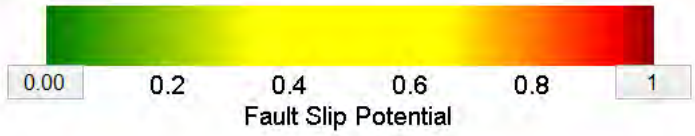
Calculate

Export

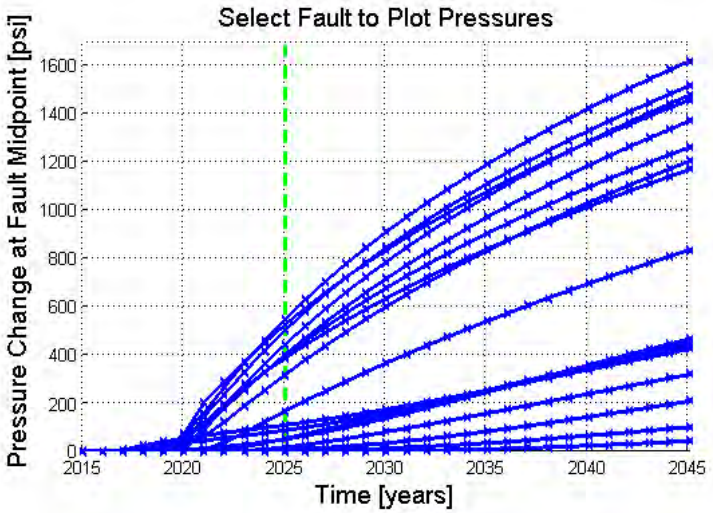
b) PP Change at fault [psi]

Summary Plots

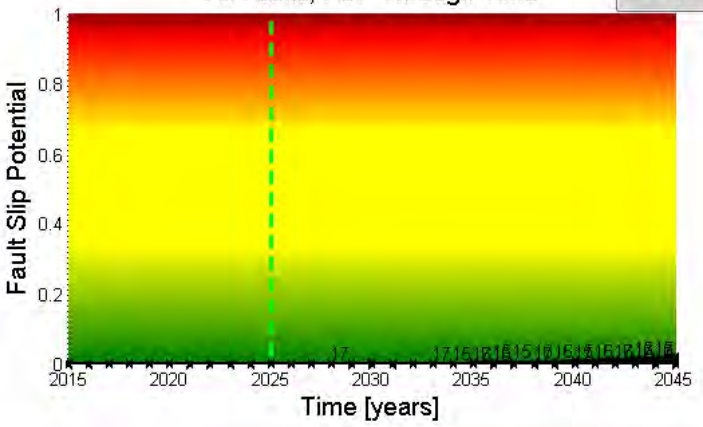




Year: 2025



Export



Exh. No. 13

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

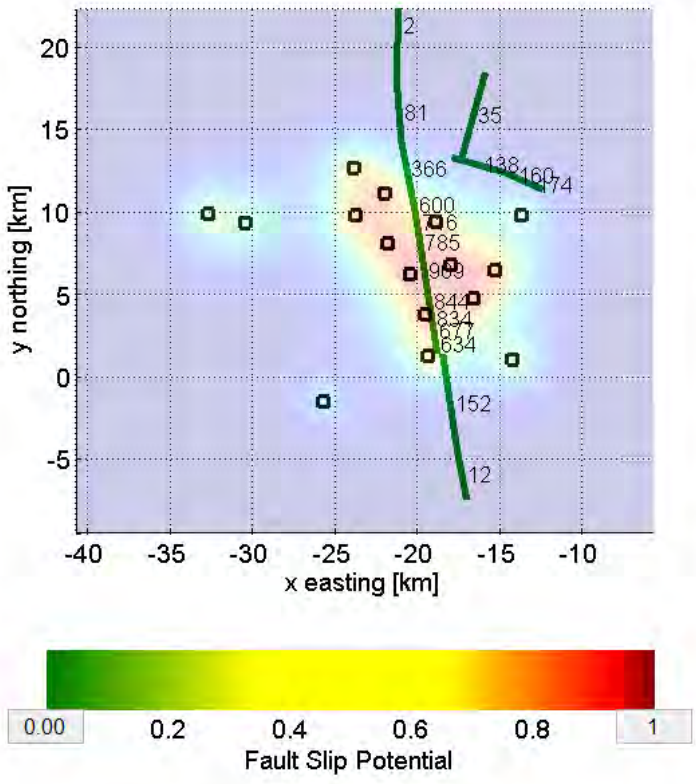
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.00 FSP
Fault #16, 0.00 FSP
Fault #17, 0.00 FSP

Calculate

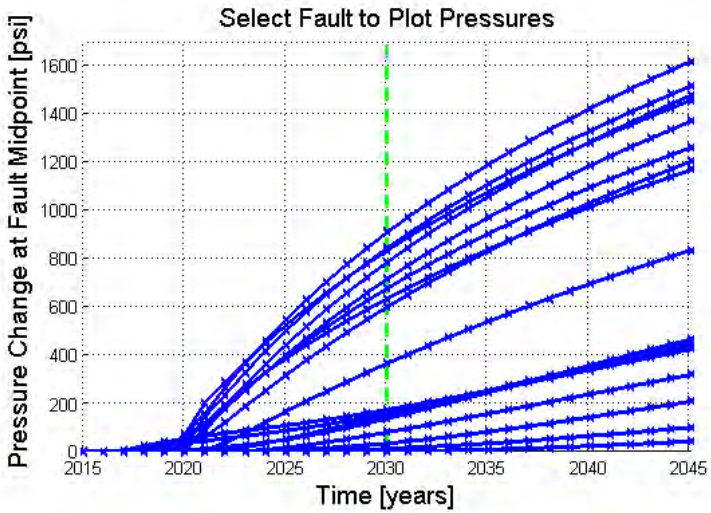
Export

b) PP Change at fault [psi]

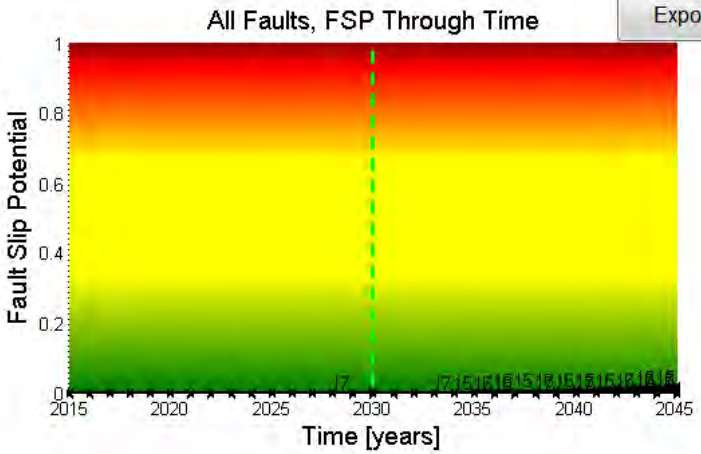
Summary Plots



Year: 2030



Export



Exh. No. 14

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

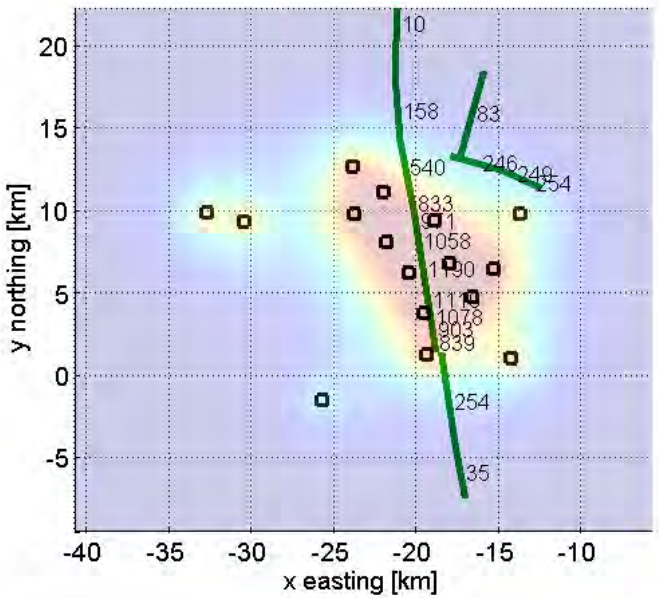
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.00 FSP
Fault #16, 0.00 FSP
Fault #17, 0.00 FSP

Calculate

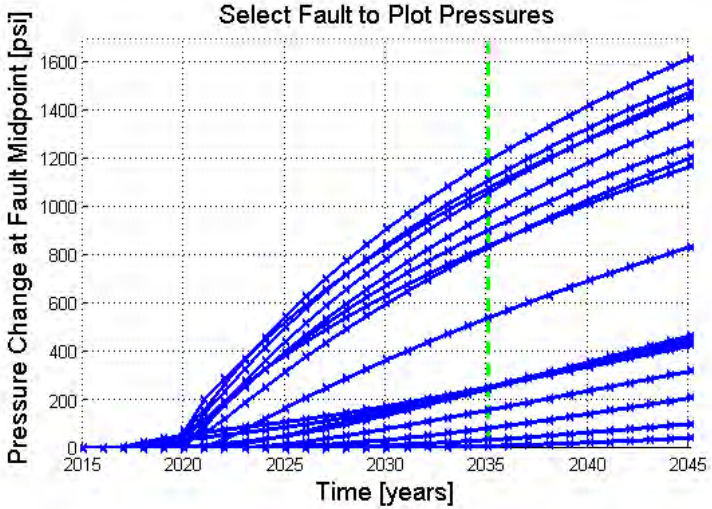
Export

b) PP Change at fault [psi]

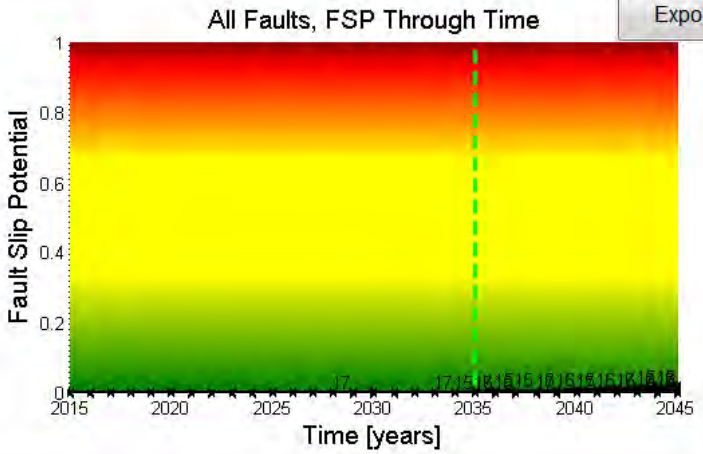
Summary Plots



Year: 2035



Export



Exh. No. 15

File Data Inputs Export Image Zoom

Fault Slip Potential

MODEL INPUTS | GEOMECHANICS | PROB. GEOMECH | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

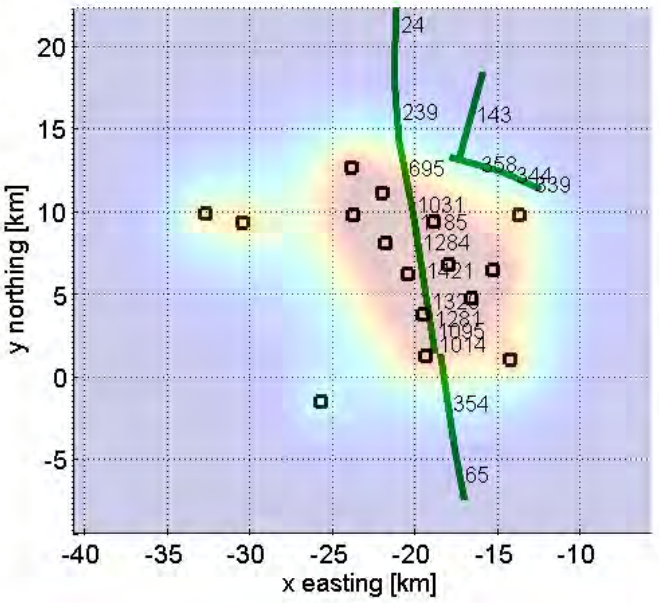
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.01 FSP
Fault #16, 0.01 FSP
Fault #17, 0.00 FSP

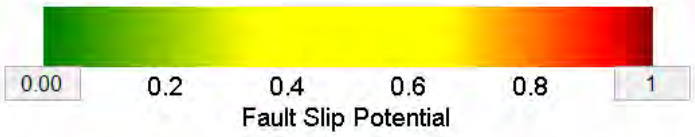
Calculate

Export

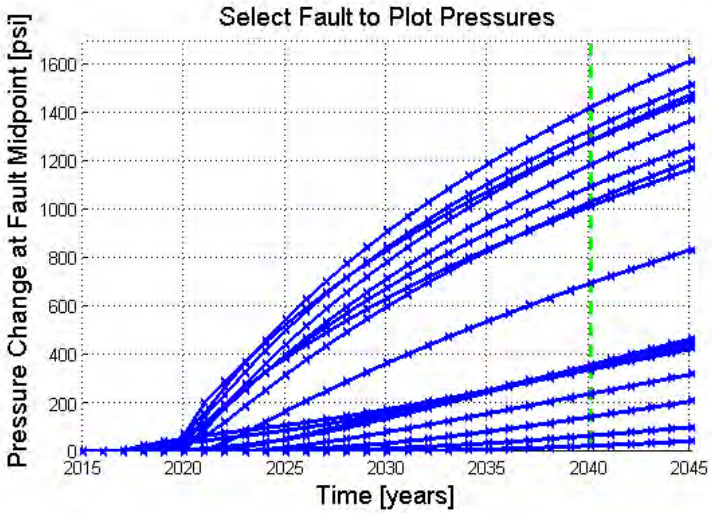
b) PP Change at fault [psi]

Summary Plots

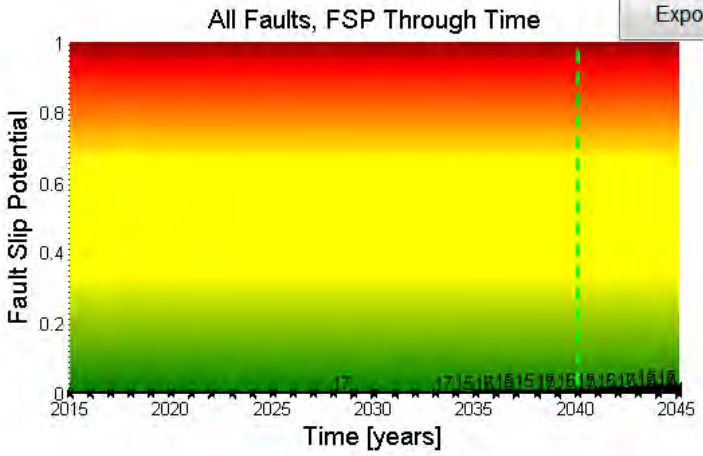




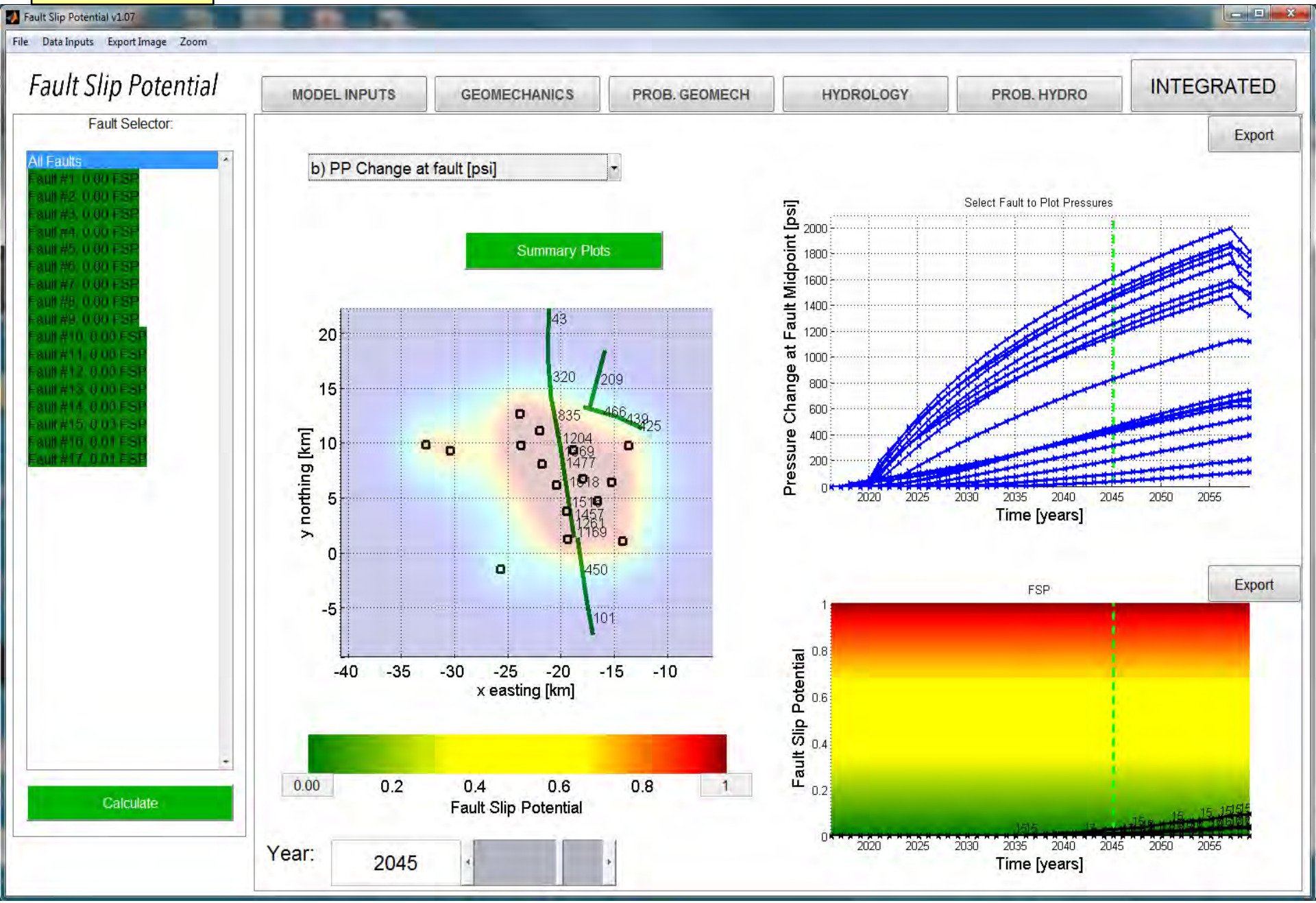
Year: 2040



Export



Exh. No. 16


Fault Slip Potential v1.07
File
Data Inputs
Export Image
Zoom
Fault Slip Potential
MODEL INPUTS
GEOMECHANICS
PROB. GEOMECH
HYDROLOGY
PROB. HYDRO
INTEGRATED
Fault Selector:
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP
Fault #10, 0.00 FSP
Fault #11, 0.00 FSP
Fault #12, 0.00 FSP
Fault #13, 0.00 FSP
Fault #14, 0.00 FSP
Fault #15, 0.03 FSP
Fault #16, 0.01 FSP
Fault #17, 0.01 FSP
Calculate
Export
b) PP Change at fault [psi]
Summary Plots
Select Fault to Plot Pressures
Pressure Change at Fault Midpoint [psi]
Time [years]
y northing [km]
x easting [km]
Fault Slip Potential
Year:
2045
Export
FSP
Fault Slip Potential
Time [years]

DECLARATION OF STEVEN NAVE

I, Steven Nave, declare under penalty of perjury under the law of New Mexico that the following is true and correct to the best of my knowledge and belief.

1. I am over eighteen (18) years of age and am otherwise competent to make this declaration.

2. I am the president of Nave Oil and Gas, which is a fishing tool company that performs fishing operations in several areas, including the area of Southeastern, New Mexico.

3. I worked as a fisherman for Star Tool Company, a fishing tool company, from 1980 until 2001. I later became a partner in Star Tool Company until that company was sold. I then later started my own company, Nave Oil and Gas, which also performs fishing operations. Over the years, I have developed expertise in fishing operations and I have performed fishing operations on Devonian salt water disposal wells located within Southeastern, New Mexico.

4. I am familiar with tubing and casing design requested by NGL Water Solutions Permian, LLC which consists of using tapered string tubing that is 7" x 5 1/2".

5. I have been informed that NGL's wells will be isolated to the Devonian and Silurian formations and will have four strings of casing protecting the fresh water, the salt interval, the Permian aged rocks through the Wolfcamp formation, and the depths to the top of the Devonian. There is a liner, and the deepest casing is 7 5/8", which will be cemented and cement will be circulated.

6. Based on my experience as a fisherman, it is my opinion that there is sufficient clearance between the 7 5/8" 39 pounds per foot or less casing and the proposed 5 ½" tubing to

EXHIBIT 6
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

perform fishing operations. My company regularly performs fishing operations in situations involving similar dimensions and clearances.

7. Fishing can be performed through different methods when 7 5/8" 39 pounds per foot or less casing and the proposed 5 ½" tubing is utilized; such as through the use of overshot tools, spear fishing tools, and (if needed) cutting tools.

8. The use of 7 5/8" 39 pounds per foot or less casing and the proposed 5 ½" tubing will actually allow for the use of a wider variety of fishing tools that cannot typically be used within salt water disposal wells equipped with smaller tubing and casing sizes. This is because there is more room to run tools through the inside of the tubing. Additionally, it is my opinion that it is easier to perform fishing operations when 5 ½" tubing is used.

9. Recently, I supervised a fishing job which involved a horizontal Wolfcamp well which was equipped with casing with a diameter of 7 5/8" 39 pounds per foot or less and casing with a diameter of 5 ½". In that situation, my company was able to mill off the collar and use overshot tools to latch on to the piping that needed to be fished out of the well.

10. In my opinion, fishing operations could be successfully performed even at deeper depths for Devonian disposal wells provided that a sufficient rig is obtained for the operation.

[Signature Page Follows.]

Steven Nave

Stephan Nave

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

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO

Case No. 16508

AFFIDAVIT OF NOTICE

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Seth C. McMillan, attorney in fact and authorized representative of NGL Water Solutions Permian, LLC ("NGL"), the Applicant in the above-captioned matter, being first duly sworn, upon oath state the following:

1. I have reviewed Exhibit A attached hereto, which is comprised of shipping materials generated by NGL's prior counsel in the above-captioned matter. Exhibit A demonstrates to my satisfaction that prior counsel's office timely mailed hearing notice letters on October 12, 2018;

2. Exhibit A also demonstrates to my satisfaction that notice letters were delivered by the USPS to all required parties, with the exception of the Bureau of Land Management. Exhibit A reflects that this letter was lost in the mail.

3. I have reviewed Exhibit B attached hereto, which is an Affidavit of Publication generated by the Hobbs Daily Sun News. Exhibit B reflects that the Bureau of Land Management was timely given notice by publication.

4. In my opinion, service of notice of the hearing in this matter was properly completed by prior counsel.

EXHIBIT 7
NGL Water / Patriot Well
Case No. 16508
January 10, 2018 Hearing

SETH C. McMILLAN

SUBSCRIBED AND SWORN to before me this 9th day of January, 2019.

Notary Public

My Commission Expires:

6/13/2022

Patriot

Zina Crum
Modrall Sperling
500 4th Street NW
Suite 1000
Albuquerque NM 87102

PS Form 3877

Type of Mailing: CERTIFIED
10/12/2018

Firm Mailing Book ID: 153333

Line	Article Number	Name, Street & P.O. Address	Postage	Fee	R.R.Fee	Reference	Rest.Del.Fee Contents
1	9314 8699 0430 0051 6885 58	NEW MEXICO STATE LAND OFFICE P.O. Box 1148 Santa Fe NM 87504	$1.63	$3.45	$1.50	87806-0003	$0.00 Notice
2	9314 8699 0430 0051 6885 65	BUREAU OF LAND MGMT 301 Dinosaur Trail Santa Fe NM 87508	$1.63	$3.45	$1.50	87806-0003	$0.00 Notice
3	9314 8699 0430 0051 6885 72	EOG Resources Inc. P.O. Box 2267 Midland TX 79702	$1.63	$3.45	$1.50	87806-0003	$0.00 Notice
4	9314 8699 0430 0051 6885 89	COG Resources LLC 550 W. Texas Midland TX 79701	$1.63	$3.45	$1.50	87806-0003	$0.00 Notice
5	9314 8699 0430 0051 6885 96	EOG Resources Inc. 333 Clay Street #4200 Houston TX 77002	$1.63	$3.45	$1.50	87806-0003	$0.00 Notice
		Totals:	**$8.15**	**$17.25**	**$7.50**		**$0.00**
						Grand Total:	**$32.90**

List Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster: Name of receiving employee	Dated:
5	5		

EXHIBIT A

Transaction Report Details - CertifiedPro.net
Firm Mail Book ID= 153333
Generated: 12/14/2018 9:45:02 AM

Certified Mail Article Number	Date Created	Name 1	Address	City	State	Zip	Certified Mailing Status	Service Options	Mail Delivery Date
93148699043000516885596	2018-10-12 8:58 AM	EOG Resources Inc.	333 Clay Street #4200	Houston	TX	77002	Delivered	Return Receipt - Electronic	10-16-2018
93148699043000516885589	2018-10-12 8:58 AM	COG Resources LLC	550 W. Texas	Midland	TX	79701	Delivered	Return Receipt - Electronic	10-16-2018
93148699043000516885572	2018-10-12 8:58 AM	EOG Resources Inc.	P.O. Box 2267	Midland	TX	79702	Delivered	Return Receipt - Electronic	10-18-2018
93148699043000516885565	2018-10-12 8:58 AM	BUREAU OF LAND MGMT	301 Dinosaur Trail	Santa Fe	NM	87508	Lost	Return Receipt - Electronic	
93148699043000516885558	2018-10-12 8:58 AM	NEW MEXICO STATE LAND OF	P.O. Box 1148	Santa Fe	NM	87504	Delivered	Return Receipt - Electronic	10-15-2018

Transaction Details

Recipient:
BUREAU OF LAND MGMT
301 Dinosaur Trail
Santa Fe, NM 87508

Sender:
Zina Crum
Modrall Sperling
500 4th Street NW
Suite 1000
Albuquerque, NM 87102

Transaction created by: zinacrum
User ID: 20112
Firm Mailing Book ID: 153333
Batch ID: 147463

Certified Mail Article Number:	9314869904300051688565
Return Receipt Article Number:	
Service Options:	Return Receipt - Electronic
Mail Service:	Certified
Reference #:	87806-0003
Postage:	$1.63
Fees:	$4.95
Status:	Lost
Custom Field 1:	87806-0003
Custom Field 2:	87806-0003
Custom Field 3:	Patriot

Transaction History

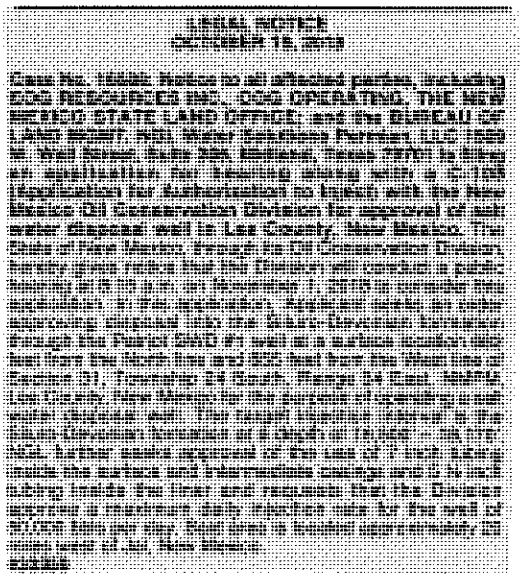
Event Description	Event Date	Details
Mailbook Generated	10-12-2018 08:59 AM	[WALZ] - Firm Mailing Book 153333 generated by zinacrum
USPS® Certified Mail	10-12-2018 01:13 PM	[USPS] - PRESHIPMENT INFO SENT USPS AWAITS ITEM at TEMECULA,CA
USPS® Certified Mail	10-12-2018 11:41 PM	[USPS] - PROCESSED THROUGH USPS FACILITY at ALBUQUERQUE,NM
USPS® Certified Mail	10-13-2018 03:06 AM	[USPS] - DEPART USPS FACILITY at ALBUQUERQUE,NM
USPS® Certified Mail	10-13-2018 06:49 PM	[USPS] - PROCESSED THROUGH USPS FACILITY at ALBUQUERQUE,NM

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Todd Bailey, Editor of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
October 19, 2018
and ending with the issue dated
October 19, 2018.



Editor

Sworn and subscribed to before me this
19th day of October 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

01104570 00219572

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

EXHIBIT B

628140

Modrall, Sperling, Roehl, Harris & Sisk, P.A.
500 FOURTH ST. NW, SUITE 1000
POST OFFICE BOX 2168
ALBUQUERQUE, NEW MEXICO 87103-2168
(505) 848-1800

BANK OF ALBUQUERQUE
095

10/17/2018

PAY TO THE ORDER OF **Hobbs Daily News-Sun**

$ **$53.37**

FIFTY-THREE AND 37/100 DOLLARS

Hobbs Daily News-Sun
PO Box 850
Hobbs, NM 88241

TWO SIGNATURES REQUIRED IF OVER $25,000.00

AUTHORIZED SIGNATURE

MEMO

Security features. Details on back.

⑈628140⑈ ⑆107006606⑆ 8093247618⑈

MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A. 628140

REF. #	INVOICE #	INV. DATE	MATTER #	G/L #	DESCRIPTION	NET
207149	219572	10-16-18	87806-0003		Legal publication - Patriot No. 16508 - JLB	53.37

2010000001

$53.37

Check No.:628140 Check Date:10-17-2018 Payee:Hobbs Daily News-Sun