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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475 (WHITT 32)**

# Table of Contents



*Supplemented as per Hearing Examiner Request
** Revised as per Hearing Examiner Request

# Application and Application Packet

**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 EDDY COUNTY, NEW MEXICO.**

**CASE NO. _____**

## 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 Eddy County, New Mexico. In support of this application, NGL states as follows:

(1) NGL proposes to drill the Whitt 32 SWD #1 well at a surface location 219 feet from the South line and 2,395 feet from the West line of Section 32, Township 26 South, Range 29 East, NMPM, Eddy County, New Mexico for the purpose of operating a salt water disposal well.

(2) NGL seeks authority to inject salt water into the Silurian-Devonian formation at a depth of 15,170' to 16,312'.

(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 2,276 psi for this well, and it requests that a maximum pressure of 3,034 psi be approved for the well.

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

(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 May 2, 2019; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

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

By: Deana M Bennett

Deana Bennett
Post Office Box 2168
500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
*Attorneys for Applicant*

**CASE NO. _____: Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Eddy County, New Mexico.** Applicant seeks an order approving disposal into the Silurian-Devonian formation through the Whitt 32 SWD #1 well at a surface location 219 feet from the South line and 2,395 feet from the West line of Section 32, Township 26 South, Range 29 East, NMPM, Eddy County, New Mexico for the purpose of operating a salt water disposal well. NGL seeks authority to inject salt water into the Silurian-Devonian formation at a depth of 15,170' to 16,312'. 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 location is 15.8 miles South of Malaga, 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:** WHITT 32 SWD #1 **API:** TBD
**Pool:** SWD; DEVONIAN-SILURIAN **Pool Code:** 97869

**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

03-18-2019
Date

512-600-1764
Phone Number

Signature

CHRIS@LONQUIST.COM
Email Address

EXHIBIT A

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: 3/18/2019

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.

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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: WHITT 32 SWD #1

WELL LOCATION: 219' FSL & 2395' FWL (FOOTAGE LOCATION) | L2 (UNIT LETTER) | 32 (SECTION) | 26S (TOWNSHIP) | 29E (RANGE)

***WELLBORE SCHEMATIC***

***WELL CONSTRUCTION DATA***

Surface Casing

Hole Size: 24.000" Casing Size: 20.000"

Cemented with: 757 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circulation

1st Intermediate Casing

Hole Size: 17.500" Casing Size: 13.375"

Cemented with: 1,667 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circulation

2nd Intermediate Casing

Hole Size: 12.250" Casing Size: 9.625"

Cemented with: 2,848 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circulation

4

Production Liner

Hole Size: 8.500"

Casing Size: 7.625"

Cemented with: 972 sx.

*or* _____ $ft^3$

Top of Cement: 9,200'

Method Determined: Calculation

Total Depth: 16,312'

Injection Interval

15,170 feet to 16,312 feet

(Open Hole)

Side 2

## INJECTION WELL DATA SHEET

Tubing Size: 7", 26 lb/ft, P-110, TCPC from 0'- 9,100' and 5.500", 17 lb/ft, P-110 TCPC from 9,100' – 15,135'
Lining Material: Duoline

Type of Packer: 7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

Packer Setting Depth: 15,135'

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; Devonian-Silurian

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:
   Delaware: 2,690'
   Cherry Canyon: 3,594'
   Bone Spring: 6,382'
   Wolfcamp: 9,530'

5

NGL Energy Partners LP

**Whitt 32 SWD** | **Eddy County NM** | AFE | TD | 16,312 | Directions to Site: SW of Sec 32 T26S R29E From Loving travel South on Hwy 285 19.8miles and Turn East (left) on Catfish Rd. Travel 1.4miles and location will be on the left

Vertical Injection - Devonian, Silurian, Fusselman, Montoya | Drill and Complete Cost | $9.2MM | GL/KB | 2880/ | Lat/Long - 32.00091667,-104.0075

| Geologic Tops (MD ft) | Section | Problems | Bit/BHA | Mud | Casing | Logging | Cement (HOLD) | Injection String |
|---|---|---|---|---|---|---|---|---|
| Rustler 319'<br>**Surface TD** 500' | **Surface**<br>Drill 24"<br>0' - 520'<br>Set and Cement 20" Casing | Loss Circulation<br>Hole Cleaning<br>Wellbore stability in the Red Beds | 24" Mill Tooth Bit + Bit sub w/ float 17 + 17" NBS + 1X8" DC + 17" IBS + 1X8" DC + SS + 4X8" DC's + X/O +5" HWDP | Spud Mud<br>MW< 9.0 | 500' of 20" 94# J55 BTC Centralizers - bottom 2 joints and every 3rd jt thereafter, Cement basket 5th jt from surface | Mud loggers on site by Drillout of Surf. | 757sx of Halcem 3hr TT<br>50% Excess<br>1000psi CSD after 10hrs | 9100' of 7" P110 26# TCPC |
| Castile 852'<br>Delaware 2,690'<br>**1st Int TD - 2,700'** | **1st Intermediate**<br>Drill 1900' of<br>17-1/2" Hole<br>800' - 2700'<br>Set and Cement<br>13-3/8" Casing | Seepage Losses<br>Possible H2S<br>Anhydrite<br>Salt | 17-1/2" Varel PDC Bit + 9-5/8"X 8" 7/8 4.0 Combo MM w/ 17" Steel NBS + 17" IBS + 2X8" DC's + SS + 4X8" DC's + 18X6" DC's + X/O + HWDP | Brine | SM A Section Casing Bowl 2700' of 13-3/8" 68# HCL80 BTC<br>Centralizers - bottom jt, every 3rd joint in open hole and 2 jt inside the surface casing | Gyro Survey | Halcem, 1667sx,<br>13.7ppg<br>30% Excess<br>1000psi CSD after 10 hrs<br>Cement to Surface | |
| **9-5/8" DV/ECP 2,800'**<br>Bell Canyon 2721<br>Cherry Canyon 3,594'<br>Brushy Canyon 4,589'<br>**9-5/8" DV 6,350'**<br>Bone Springs 6,382'<br>**TOC - Stage 1 Tail - 8,700'**<br>**7-5/8" Liner Top 9,200'**<br>Wolfcamp 9,530'<br>**2nd Int TD - 9,700'** | **2nd Intermediate**<br>Drill 6000' of<br>12-1/4" Hole<br>2700' - 9700'<br>Set 9-5/8" Intermediate Casing and Cement in 3 Stages | Seepage to Complete Loss Water Flows<br>Some Anhydrite H2S possible<br>Production in the Lower Wolfcamp | 12-1/4" Smith XS 716S AxeBlade PDC Bit, sub, 8" 7/8 4.0 0.16 MM w/ 12" NBS,<br>ALS Roller Reamer DeMag , UBHO sub.<br>ALS 12" RR/UBHO/NMDC, SS,<br>6 jts: 8" DC, X/O sub,<br>18 jts: 6" DC, X/O sub,<br>8" Drilling Jars<br>HWDP + 5" DP to Surface | Cut Brine | 10M B Section<br>9700' of 9-5/8" 53.5# HCL80 BTC<br>**Special Drift to 8.535"**<br>**Externally Coat 3850' Between DV Tools**<br>**-DV/ECP tool at at 2800' (DV Tool 100' Below Previous Casing shoe)**<br>**-DV Tool w/ no ECP placed nominally above the Bone Springs top**<br>Centralizers - bottom jt, 100' aside of DV tool, every 3rd joint in open hole and 5 within the surface casing, ensure centralizers are 9-3/4" to fit Coated Pipe | **12.25" Open Hole:**<br>MWD GR<br>Triple combo, Caliper , CBL of 13-3/8" Casing to surface<br>**Cased Hole:**<br>CBL/Pressure Pass to 1000 psi of 9-5/8" Casing before drillout | **Stage 3:** 10% Excess<br>596sx Halcem 13.7ppg<br>1000psi CSD after 10 hrs<br>Cement to Surface<br>**Stage 2:** 50% Excess<br>974 sx Halcem 13.7ppg<br>1000psi CSD after 10 hrs<br>**Stage 1:** 1278sx Halcem 1.37ppg, 50% XS.<br>1000psi CSD after 10hrs | 6035' of 5-1/2" P110 17# TCPC<br>Duoline Internally Coated Injection Tubing |
| Strawn 12,121'<br>Atoka 12,343'<br>Morrow 13,008'<br>Miss Lime 14,757'<br>Woodford 14,997'<br>**Injection Packer 15,135'**<br>Devonian 15,155'<br>**3rd Int TD 15,170'** | **3rd Intermediate Liner**<br>Drill 5470' of<br>8-1/2" Hole<br>9700' - 15170' | Pressure in the Atoka<br>Hard Drilling in the Atoka & Morrow | 8-1/2" Smith XS 716S AxeBlade PDC Bit, sub, 6-3/4" 7/8 5.7 MM w/ 8" NBS, UBHO sub, 8" NMIBS/UBHO/NMDC, SS, 18 jts: 6" DC<br>6" Drilling Jars<br>HWDP + 5" DP to Surface | Weighted WBM 11.0 ppg- 13.5 ppg (MAX) | 5970' of 7-5/8" 39# HCP110 EZGO FJ3 (Gas Tight)<br>VersaFlex Packer Hanger<br>Centralizers on and 1 jt above shoe jt and then every 2nd jt. | **8.5" Open Hole:**<br>MWD GR<br>Triple combo, Caliper of 8.5" Open Hole<br>**Cased Hole:**<br>SCBL/Pressure Pass to 1000 psi of 7-5/8" Casing before drillout | 972sx of Neocem 13.2 ppg<br>50% Excess<br>1000psi CSD after 12hrs | 7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim |
| **Fusselman - 15,589'**<br>**Montoya - 16,212'**<br>**TD - 16,312'** | **Injection Interval**<br>Drill 1142 of 6-1/2" hole<br>15170' - 16312' | Chert is possible<br>Loss of Circulation and or Flows are expected<br>BHT estimated at 280F | 6-1/2" Smith U611S PDC Bit, sub,<br>5" 7/8 2.6 0.26 1.5FBH MM w/ 6" NBS,<br>6" NMIBS, UBHO/NMDC, SS, X/O sub,<br>24 jts: 4-3/4" HWDP + 4" DP to Surface | Brine Water - flows possible | Openhole completion | MWD GR<br>Triple Combo with FMI and CMR Tool | Displace with clean heavy brine | |

**NGL Water Solutions Permian, LLC**

**Whitt 32 SWD No. 1**

**FORM C-108 Supplemental Information**

III. Well Data

A. Wellbore Information

1.

| Well information | |
|---|---|
| **Lease Name** | Whitt 32 SWD |
| **Well No.** | 1 |
| **Location** | S-32 T-26S R-29E |
| **Footage Location** | 219' FSL & 2395' FWL |

2.

a. Wellbore Description

| Casing Information | | | | |
|---|---|---|---|---|
| **Type** | Surface | Intermediate | Production | Liner |
| **OD** | 20" | 13.375" | 9.625" | 7.625" |
| **WT** | 0.635" | 0.480" | 0.545" | 0.500" |
| **ID** | 19.124" | 12.415" | 8.535" | 6.625" |
| **Drift ID** | 18.936" | 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 | HCL-80 | HCL-80 | HC-P110 |
| **Hole Size** | 24" | 17.5" | 12.25" | 8.5" |
| **Depth Set** | 500' | 2,700' | 9,700' | 9,200' – 15,170' |

b. Cementing Program

| Cement Information | | | | |
|---|---|---|---|---|
| **Casing String** | Surface | Intermediate | Production | Liner |
| **Lead Cement** | Extenda Cem | Halcem | Halcem | Neocem |
| **Lead Cement Volume** | 161 | 1,667 | Stage 1: 1,278 sx<br>Stage 2: 974 sx<br>Stage 3: 596 sx | 972 |
| **Tail Cement** | Halcem | | | |
| **Tail Cement Volume** | 596 | | | |
| **Cement Excess** | 50% | 30% | 10%,50%,50% | 50% |
| **TOC** | Surface | Surface | Surface | 9,200' |
| **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" | 4.653" |
| **Weight** | 26 lb/ft | 17 lb/ft |
| **Grade** | P-110 TCPC | P-110 TCPC |
| **Depth Set** | 0'-9,100' | 9,100'-15,135' |

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 925 trim

B. Completion Information

1. Injection Formation: Devonian, Fusselman, Montoya (Top 100')
2. Gross Injection Interval: 15,170' – 16,312'

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 |
|---|---|
| Delaware | 2,690' |
| Cherry Canyon | 3,594' |
| Bone Spring | 6,382' |
| Wolfcamp | 9,530' |

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: 2,276 PSI (surface pressure)
   Maximum Injection Pressure: 3,034 PSI (surface pressure)

4. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Bone Spring, Delaware, Avalon, and Wolfcamp formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the above mentioned 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: Devonian-Silurian Formation

| Formation | Depth |
|---|---|
| Rustler Anhydrite | 319 |
| Delaware | 2,690 |
| Bone Spring | 6,382 |
| Wolfcamp | 9,530 |
| Strawn | 12,121 |
| Atoka | 12,343 |
| Morrow | 13,008 |
| Mississippian | 14,757 |
| Woodford | 14,997 |
| Devonian | 15,155 |
| Fusselman | 15,589 |
| Montoya | 16,212 |

B. Underground Sources of Drinking Water

There are no water wells within 1-mile of the proposed Whitt 32 SWD #1 location. Water wells in the surrounding area have an average depth of 206 ft and an average water depth of 115 ft generally producing from tertiary and quaternary alluvium and the upper Rustler. All will be protected. Active Texas oil and gas wells that were within 2 miles of the proposed Whitt 32 SWD #1 location had an average groundwater protection requirement depth of 515 ft.

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 no water wells that exist within one mile of the well location.

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 **Whitt 32 SWD #1**) and any underground sources of drinking water.

NAME: John C. Webb

TITLE: Sr. Geologist

SIGNATURE: John Webb

DATE: 7/23/2019

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<br>1509 W WALL ST. STE 306<br>MIDLAND, TX 79701 | 372338 |
| | [3] API Number<br>TBD |

| [4] Property Code | [5] Property Name | [6] Well No. |
|---|---|---|
| | WHITT 32 SWD | 1 |

## [7] Surface Location

| UL - Lot | Section | Township | Range | Lot Idn | Feet from | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 32 | 26S | 29E | N/A | 219' | SOUTH | 2,395' | WEST | EDDY |

## [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; Devonian-Silurian | 97869 |

## Additional Well Information

| [11] Work Type | [12] Well Type | [13] Cable/Rotary | [14] Lease Type | [15] Ground Level Elevation |
|---|---|---|---|---|
| N | SWD | R | Private | 2,880' |
| **[16] Multiple** | **[17] Proposed Depth** | **[18] Formation** | **[19] Contractor** | **[20] Spud Date** |
| N | 16,312' | Siluro-Devonian | TBD | ASAP |

| Depth to Ground water | Distance from nearest fresh water well | Distance to nearest surface water |
|---|---|---|
| 115' | > 1 mile | 4,697', Pecos River |

☐ **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 | 500' | 757 | Surface |
| Intermediate | 17.5" | 13.375" | 68 lb/ft | 2,700' | 1,667 | Surface |
| Production | 12.25" | 9.625" | 53.5 lb/ft | 9,700' | 2,848 | Surface |
| Prod. Liner | 8.5" | 7.625" | 39 lb/ft | 15,170' | 972 | 9,200' |
| Tubing | N/A | 7" | 26 lb/ft | 0' – 9,100' | N/A | N/A |
| Tubing | N/A | 5.5" | 17 lb/ft | 9,100' – 15,135' | 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<br>**I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.**<br>Signature: | OIL CONSERVATION DIVISION<br>Approved By | |
|---|---|---|
| Printed name: Christopher B. Weyand | Title | |
| Title: Consulting Engineer | Approved Date | Expiration Date |
| E-mail Address: chris@longuist.com | | |
| Date: 03/08/2019 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-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| | 97869 | SWD; Devonian-Silurian |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| | Whitt 32 SWD | 1 |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 372338 | NGL Water Solutions | 2880.00± |

## [10] Surface Location

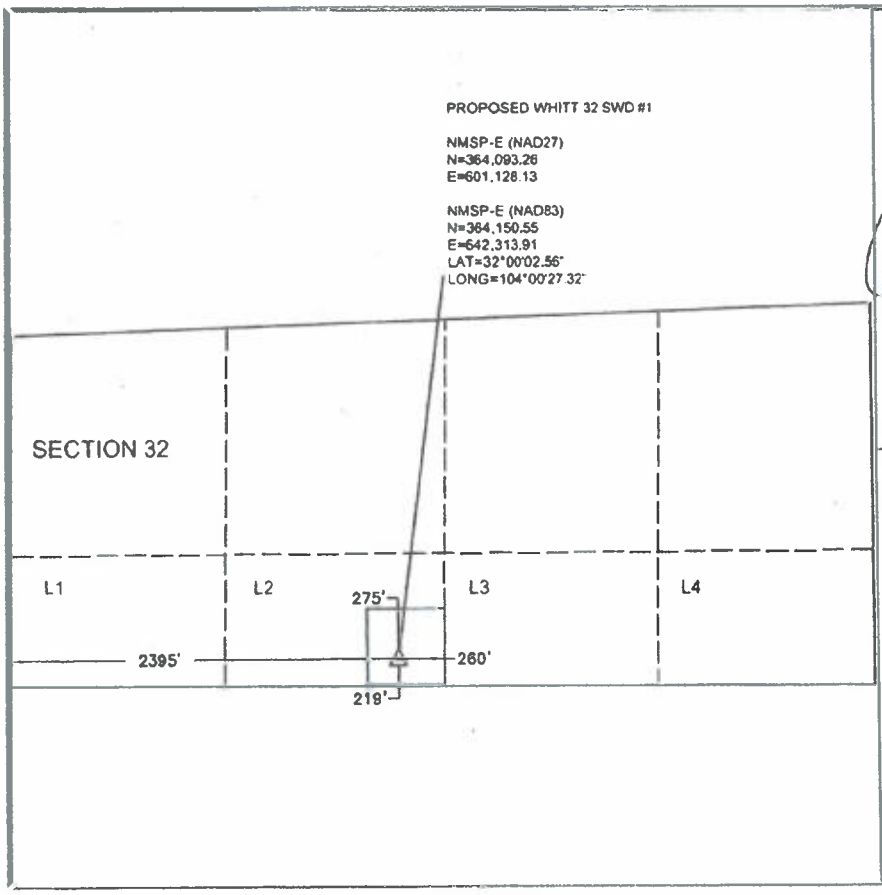
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 32 | 26S | 29E | N/A | 219' | South | 2395' | West | Eddy |

## [11] Bottom Hole Location If Different From Surface

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

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

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




## [17] OPERATOR CERTIFICATION

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

Signature — Date: 3/18/2019

Chris Weyand
Printed Name

chris@lonquist.com
E-mail Address

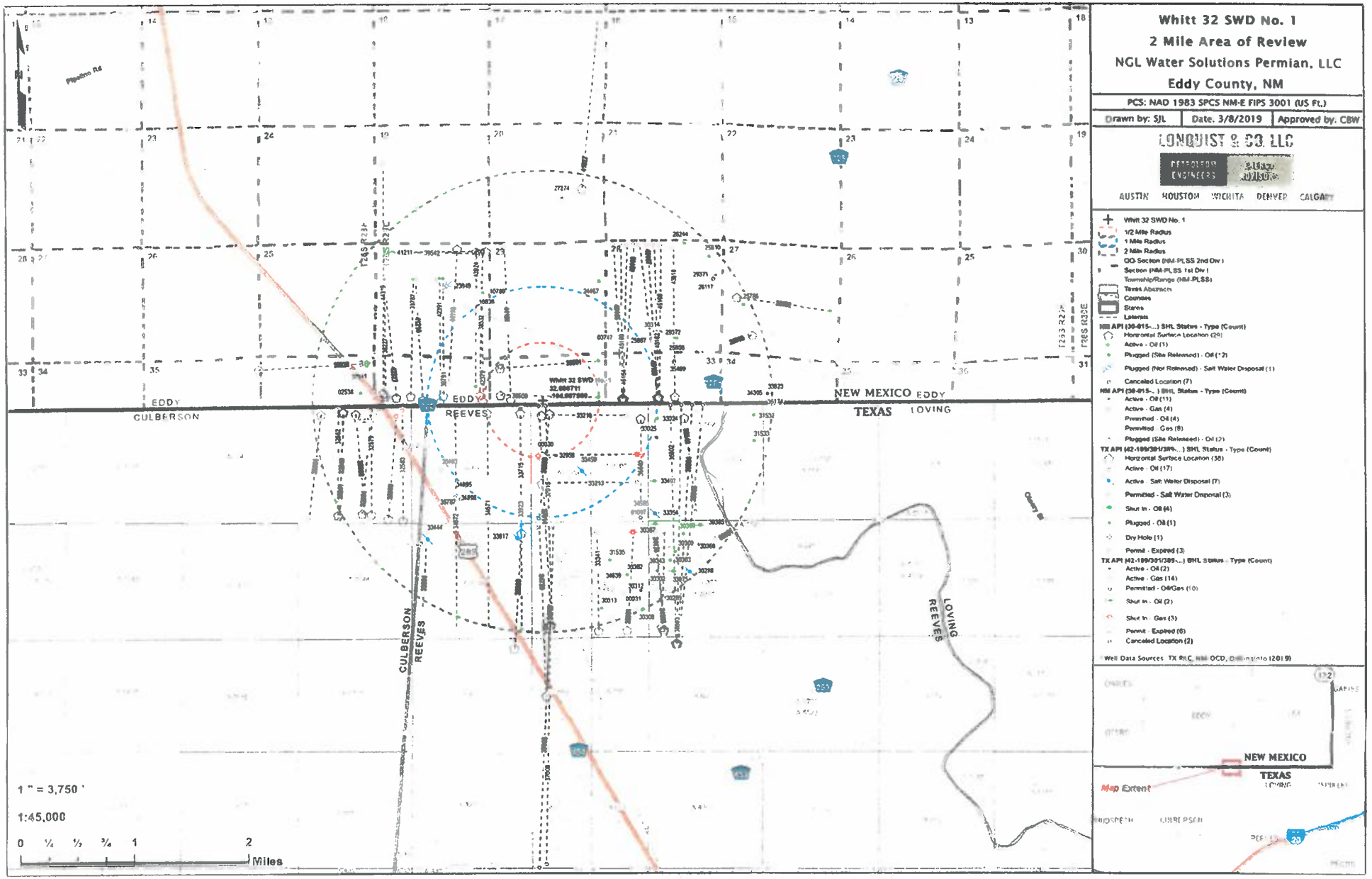
## [18] SURVEYOR CERTIFICATION

*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*

03/07/2019
Date of Survey

Signature and Seal of Professional Surveyor: Billy W. Barr Jr. NEW MEXICO 25114 PROFESSIONAL SURVEYOR

25114
Certificate Number


Whitt 32 SWD No. 1
2 Mile Area of Review
NGL Water Solutions Permian, LLC
Eddy County, NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: SJL
Date: 3/8/2019
Approved by: CBW
LONQUIST & CO. LLC
AUSTIN HOUSTON WICHITA DENVER CALGARY
Whitt 32 SWD No. 1
1/2 Mile Radius
1 Mile Radius
2 Mile Radius
Horizontal Surface Location (29)
Active - Oil (1)
Plugged (Site Released) - Oil (12)
Plugged (Not Released) - Salt Water Disposal (1)
Canceled Location (7)
Active - Oil (11)
Active - Gas (4)
Permitted - Oil (4)
Permitted - Gas (8)
Plugged (Site Released) - Oil (2)
Horizontal Surface Location (58)
Active - Oil (17)
Active - Salt Water Disposal (7)
Permitted - Salt Water Disposal (3)
Shut In - Oil (6)
Plugged - Oil (1)
Dry Hole (1)
Permit - Expired (3)
Active - Oil (2)
Active - Gas (14)
Permitted - Oil/Gas (10)
Shut In - Oil (2)
Shut In - Gas (3)
Permit - Expired (6)
Canceled Location (2)
Well Data Sources: TX RRC, NM OCD, Drillinginfo (2019)
EDDY
CULBERSON
REEVES
LOVING
NEW MEXICO
TEXAS
Map Extent
1 " = 3,750 '
1:45,000
0 ¼ ½ ¾ 1 2
Miles

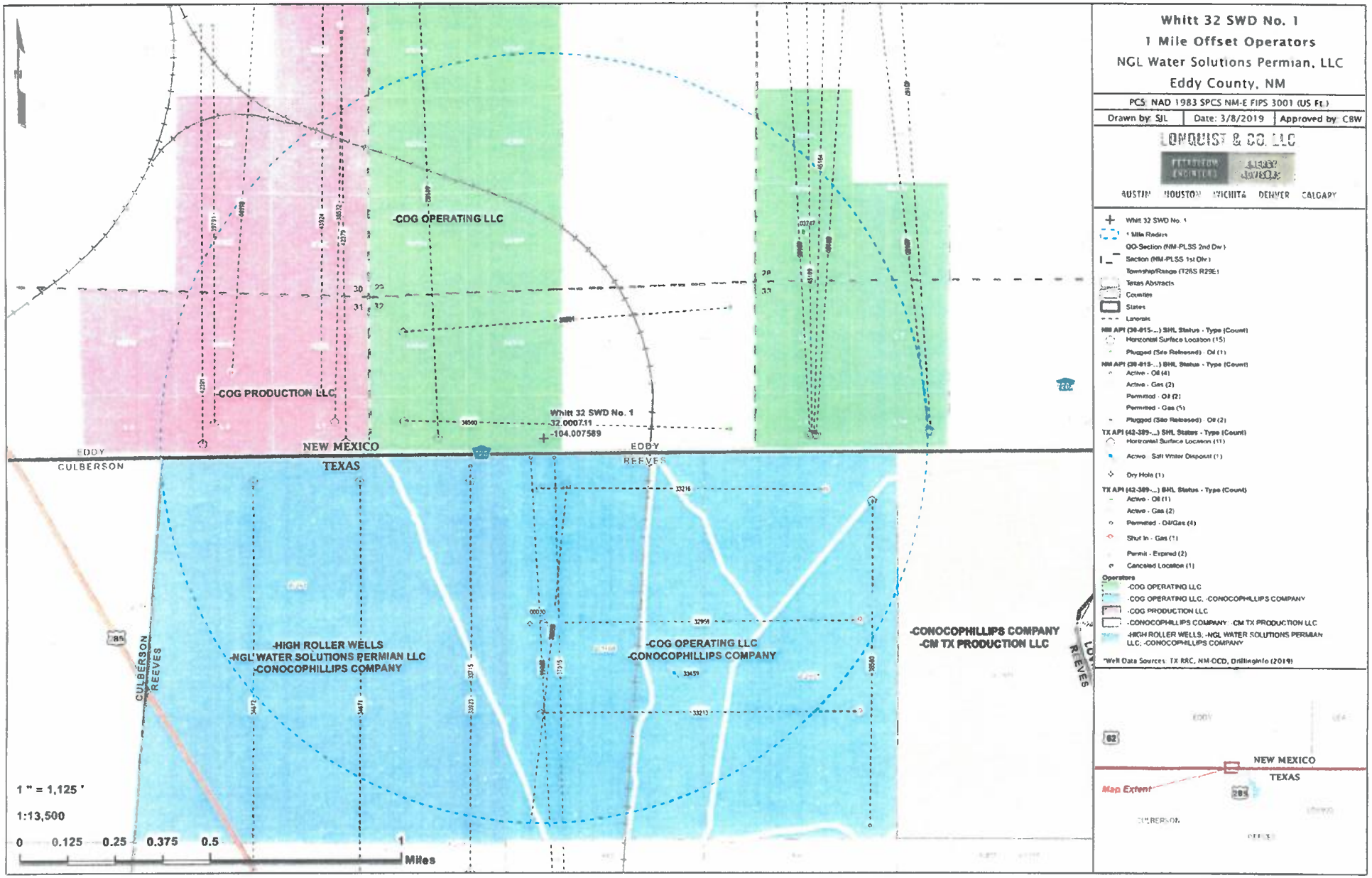
Whitt 32 SWD No. 1

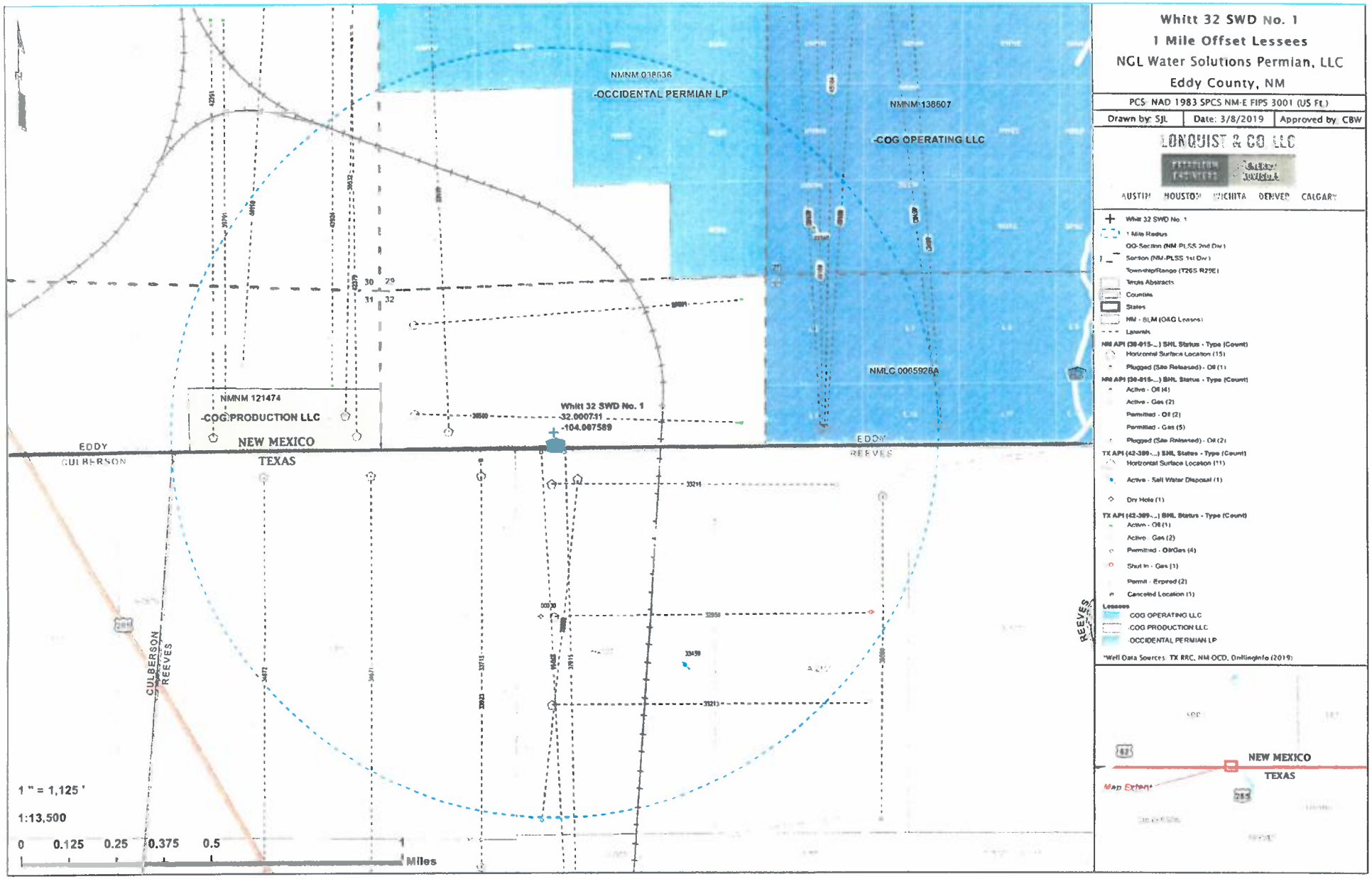
1 Mile Area of Review List

| API | WELL NAME | WELL TYPE | STATUS | OPERATOR | TVD (FT.) | LATITUDE (NAD83 DD) | LONGITUDE (NAD83 DD) | DATE DRILLED |
|---|---|---|---|---|---|---|---|---|
| 3001503747 | PRE-ONGARD WELL #001 | O | P | PRE-ONGARD WELL OPERATOR | 2960 | 32.0084267000 | -103.995971700 | 1/1/1900 |
| 3001538500 | SIDEWINDER #001H | O | P | COG PRODUCTION, LLC | 9 | 32.0014343000 | -104.013748200 | 6/18/2011 |
| 3001538501 | SIDEWINDER #002H | O | P | COG PRODUCTION, LLC | 7028 | 32.0052414000 | -103.999687200 | 11/6/2011 |
| 3001538532 | COPPERHEAD 31 FEDERAL COM #001H | O | A | COG PRODUCTION, LLC | 6781 | 32.0014305000 | -104.016845700 | 5/2/2011 |
| 3001539791 | COPPERHEAD 31 FEDERAL COM #002H | O | A | COG PRODUCTION, LLC | 8302 | 32.0014229000 | -104.022201500 | 3/6/2012 |
| 3001542379 | COPPERHEAD 31 FEDERAL COM #003H | O | N | COG PRODUCTION, LLC | 13701 | 32.0006599000 | 104.016357400 | - |
| 3001542391 | RIDGE NOSE FEDERAL COM #001H | O | A | COG PRODUCTION, LLC | 6377 | 32.0006523000 | -104.022750900 | 2/10/2015 |
| 3001543924 | COPPERHEAD 31 FEDERAL COM #003H | O | A | COG PRODUCTION, LLC | 10736 | 32.0197870000 | -104.017210000 | 11/3/2016 |
| 3001544118 | COPPERHEAD 31 FEDERAL COM #021H | G | A | COG PRODUCTION, LLC | 10759 | 32.0201850000 | -104.020036000 | 5/5/2017 |
| 3001544192 | SIDEWINDER FEDERAL COM #004H | G | A | COG OPERATING LLC | 10757 | 32.0007825000 | -104.012251500 | 6/7/2017 |
| 3001545163 | LITTLEFIELD 33 FEDERAL COM #706H | G | N | COG OPERATING LLC | 16944 | 32.0009380000 | -103.990531000 | - |
| 3001545164 | LITTLEFIELD 33 FEDERAL COM #707H | G | N | COG OPERATING LLC | 17216 | 32.0008030000 | -103.995580000 | - |
| 3001545165 | LITTLEFIELD 33 FEDERAL COM #708H | G | N | COG OPERATING LLC | 17252 | 32.0008030000 | -103.995774000 | - |
| 3001545167 | LITTLEFIELD 33 FEDERAL COM #806H | G | N | COG OPERATING LLC | 16944 | 32.0009264000 | -103.990433800 | - |
| 3001545168 | LITTLEFIELD 33 FEDERAL COM #807H | G | N | COG OPERATING LLC | 18053 | 32.0008030000 | -103.995483000 | - |
| 3001545169 | LITTLEFIELD 33 FEDERAL COM #808H | O | N | COG OPERATING LLC | 18036 | 32.0007979000 | -103.995677000 | - |
| 4238900030 | RAMSEY, G. E. JR. "6" #1 | O | D | CONTINENTAL OIL COMPANY | 2825 | 31.9938138808 | 104.008225707 | NR |
| 4238932958 | JOHNNIE WALKER STATE #601H | G | S | COG OPERATING LLC | 7012 | 31.9938081672 | 104.007615325 | 9/3/2011 |
| 4238933213 | JOHNNIE WALKER STATE #602H | G | A | CONOCOPHILLIPS COMPANY | 7516 | 31.9904226274 | 104.007722043 | 3/24/2012 |
| 4238933216 | SCHMITT STATE #603H | G | A | CONOCOPHILLIPS COMPANY | 10726 | 31.9988149490 | 104.007699397 | 6/14/2012 |
| 4238933459 | SCHMITT STATE #1SW | S | A | COG OPERATING LLC | 4600 | 31.9918913637 | 104.001816636 | 8/12/2013 |
| 4238933715 | RAMSEY AA 1 #1H | O | C | CONOCOPHILLIPS COMPANY | 7200 | 31.9843553178 | 104.010865335 | - |
| 4238933923 | ALL IN BS #102H | O | A | CONOCOPHILLIPS COMPANY | 8333 | 31.9991372474 | 104.010835248 | 11/18/2013 |
| 4238934671 | ALL IN BS #103H | O | X | CONOCOPHILLIPS COMPANY | 9900 | 31.9991619757 | 104.015741200 | - |
| 4238934672 | ALL IN BS #104H | O | X | CONOCOPHILLIPS COMPANY | 9900 | 31.9991752611 | 104.020502186 | - |
| 4238936558 | SCHMITT STATE #628H | G | N | COG OPERATING LLC | 10900 | 31.9989828118 | 104.006539675 | - |
| 4238936560 | SCHMITT STATE #621H | G | N | COG OPERATING LLC | 11000 | 31.9982752720 | 103.993027382 | - |
| 4238937014 | HEAD HONCHO STATE #1H | G | N | CONOCOPHILLIPS COMPANY | 9900 | 31.9726480860 | 104.006523652 | - |
| 4238937015 | HEAD HONCHO STATE #2H | G | N | CONOCOPHILLIPS COMPANY | 10000 | 31.9726480874 | 104.006416836 | - |



20


Whitt 32 SWD No. 1
1 Mile Offset Operators
NGL Water Solutions Permian, LLC
Eddy County, NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: SJL
Date: 3/8/2019
Approved by: CBW
LONQUIST & CO. LLC
AUSTIN HOUSTON WICHITA DENVER CALGARY
-COG OPERATING LLC
-COG PRODUCTION LLC
Whitt 32 SWD No. 1
32.0007.11
-104.007589
NEW MEXICO
TEXAS
EDDY
CULBERSON
EDDY
REEVES
-HIGH ROLLER WELLS
-NGL WATER SOLUTIONS PERMIAN LLC
-CONOCOPHILLIPS COMPANY
-COG OPERATING LLC
-CONOCOPHILLIPS COMPANY
-CONOCOPHILLIPS COMPANY
-CM TX PRODUCTION LLC
1 " = 1,125 '
1:13,500
0 0.125 0.25 0.375 0.5 1
Miles
Operators
-COG OPERATING LLC
-COG OPERATING LLC, -CONOCOPHILLIPS COMPANY
-COG PRODUCTION LLC
-CONOCOPHILLIPS COMPANY, -CM TX PRODUCTION LLC
-HIGH ROLLER WELLS, -NGL WATER SOLUTIONS PERMIAN LLC, -CONOCOPHILLIPS COMPANY
*Well Data Sources: TX RRC, NM-OCD, DrillingInfo (2019)
Map Extent
NEW MEXICO
TEXAS


Whitt 32 SWD No. 1
1 Mile Offset Lessees
NGL Water Solutions Permian, LLC
Eddy County, NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: SJL
Date: 3/8/2019
Approved by: CBW
LONQUIST & CO LLC
AUSTIN HOUSTON WICHITA DENVER CALGARY
NMNM 038636
-OCCIDENTAL PERMIAN LP
NMNM 138607
-COG OPERATING LLC
NMLC 0065928A
NMNM 121474
-COG PRODUCTION LLC
Whitt 32 SWD No. 1
-32.0007-11
-104.007589
EDDY
CULBERSON
NEW MEXICO
TEXAS
REEVES
Whitt 32 SWD No. 1
1 Mile Radius
Texas Abstracts
Counties
States
Leases
COG OPERATING LLC
COG PRODUCTION LLC
OCCIDENTAL PERMIAN LP
*Well Data Sources: TX RRC, NM-OCD, DrillingInfo (2019)
1 " = 1,125 '
1:13,500
0 0.125 0.25 0.375 0.5 1
Miles
Map Extent
NEW MEXICO
TEXAS

22

| Whitt 32 SWD #1: Offsetting Produced Water Analysis | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| wellname | api | county | formation | ph | tds_mgL | sodium_m | calcium_m | iron_mgL | magnesium | manganese | chloride_m | bicarbonat | sulfate_mg | co2_mgL |
| SNAPPING 2 STATE #013H | 3001542113 | EDDY | BONE SPRING 3RD SAND | 6.5 | 94965.6 | 31352.7 | 3678.6 | 31.7 | 483.6 | 0.83 | 57489.5 | 244 | 0 | 200 |
| SNAPPING 2 STATE #013H | 3001542113 | EDDY | BONE SPRING 3RD SAND | 7 | 94518.2 | 30031.5 | 3402.8 | 19.9 | 438.9 | | 58782.2 | | 355.2 | 200 |
| SNAPPING 2 STATE #013H | 3001542113 | EDDY | BONE SPRING 3RD SAND | 7.2 | 94863.9 | 30224.8 | 3424 | 14.8 | 444 | | 59015.2 | | 365 | 200 |
| SNAPPING 2 STATE #014H | 3001542688 | EDDY | WOLFCAMP | 7.3 | 81366.4 | 26319.4 | 2687.4 | 26.1 | 326.7 | | 50281.2 | | 399.7 | 100 |
| SNAPPING 2 STATE #013H | 3001542113 | EDDY | BONE SPRING 3RD SAND | 6.8 | 91289.1 | 28721.3 | 3440.7 | 16.3 | 437.4 | | 56957.4 | | 327.9 | 150 |
| FED J #001 | 3001522471 | EDDY | DELAWARE | 5.7 | 255599 | | | | | | 160000 | 24 | 330 | |
| USA #001 | 3001504776 | EDDY | DELAWARE | | 176882 | | | | | | 108700 | 139 | 1332 | |
| SNAPPING 10 FEDERAL #005H | 3001540994 | EDDY | BONE SPRING 2ND SAND | 6.6 | 138161.9 | 44458.5 | 6280.8 | 29.7 | 781.3 | 0 | 84470 | 122 | 0 | 20 |
| SNAPPING 10 FEDERAL #005H | 3001540994 | EDDY | BONE SPRING 2ND SAND | 6.6 | 138376 | 44458.5 | 6280.8 | 29.7 | 781.3 | 0 | 84470 | 122 | 618 | 20 |
| SNAPPING 10 FEDERAL #001H | 3001537899 | EDDY | AVALON UPPER | 6.5 | 199638.8 | 68948.2 | 7560.4 | 111.2 | 1522.8 | 2.19 | 118195 | 732 | 0 | 500 |
| SNAPPING 11 FEDERAL #001H | 3001538193 | EDDY | AVALON UPPER | 6.1 | 225189.8 | 77010.7 | 8743.8 | 636.1 | 1649.2 | 6.75 | 134075 | 366 | 0 | 300 |
| SNAPPING 2 STATE #003H | 3001539036 | EDDY | AVALON UPPER | 6.1 | 223019 | 76001.7 | 10437.8 | 209.9 | 1922.4 | 4.5 | 131072 | 366 | 632 | 1100 |
| SNAPPING 2 STATE #006H | 3001539162 | EDDY | AVALON UPPER | 6.5 | 179788.5 | 71575.7 | 617.4 | 21.8 | 109.6 | 0 | 101374 | 3660 | 0 | 500 |
| SNAPPING 2 STATE #006H | 3001539162 | EDDY | AVALON UPPER | 6.5 | 179938 | 71575.7 | 617.4 | 21.8 | 109.6 | 0 | 101374 | 3660 | 844 | 500 |
| SNAPPING 10 FEDERAL #003H | 3001539866 | EDDY | BONE SPRING 2ND SAND | 6.5 | 152439.2 | 48495.7 | 6731.3 | 29.1 | 801.4 | 1.06 | 94055 | 244 | 0 | 100 |
| USA #001 | 3001504776 | EDDY | DELAWARE | | 156733 | | | | | | 98120 | 137 | 616 | |
| USA #001 | 3001504776 | EDDY | DELAWARE | | 159967 | | | | | | 97900 | 137 | 1100 | |
| E D WHITE FEDERAL NCT 1 #003 | 3001505886 | EDDY | DELAWARE | | 212112 | | | | | | 132100 | 195 | 425 | |
| FED J #001 | 3001522471 | EDDY | DELAWARE | 7.4 | 265727 | | | | | | 158000 | 37 | 3600 | |
| FED J #001 | 3001522471 | EDDY | DELAWARE | 7.6 | 255336 | | | | | | 156000 | 76 | 790 | |
| FED J #001 | 3001522471 | EDDY | DELAWARE | 8.5 | 263830 | | | | | | 157000 | 78 | 3700 | |
| SNAPPING 10 FEDERAL #001H | 3001537899 | EDDY | AVALON UPPER | 7.1 | 209352.4 | 70089.5 | 7327 | 203 | 1557 | 2.5 | 127230 | 146.4 | 600 | 600 |
| SNAPPING 11 FEDERAL #001H | 3001538193 | EDDY | AVALON UPPER | 7 | 196576.7 | 68797.3 | 5059 | 12 | 1066 | 0.9 | 118943 | 122 | 872 | 380 |
| SNAPPING 11 FEDERAL #001H | 3001538193 | EDDY | AVALON UPPER | 7 | 203078.9 | 72261.4 | 4407 | 112 | 904 | 1.5 | 122172 | 1098 | 658 | 80 |
| SNAPPING 2 STATE #001Y | 3001539104 | EDDY | AVALON UPPER | 7 | 162560.1 | 57137 | 3886 | 42 | 776 | 0.6 | 97161 | 1403 | 756 | 70 |

# Exhibits of Scott Wilson
# On Behalf of NGL Water Solutions Permian, LLC

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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475**
**(WHITT 32)**

**AFFIDAVIT OF SCOTT J. WILSON**

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

I, Scott J. Wilson, 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 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 business from the University of Colorado. I have worked as a petroleum engineer since 1983.

4. I am familiar with the amended 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 application. A copy of my study is attached hereto as Exhibit A.

5. The applicant, NGL (OGRID No. 372338), seeks an order approving the Whitt 32 SWD #1 well, which is a salt water disposal well.

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

7. 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 had been 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.

8. 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.

9. 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 well would result in fractures to the formation.

10. I have also studied the potential impact on pore pressures and put together a simulation of the radial influence that the 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.

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

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

*[Signature page follows]*

Scott J. Wilson

SUBSCRIBED AND SWORN to before me this 19th day of ~~June~~ May, 2019 by Scott J. Wilson.

Notary Public

My commission expires: Feb 22, 2022

ALISHA LUCERO
Notary Public – State of Colorado
Notary ID 20184009500
My Commission Expires Feb 28, 2022



27

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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475**
**(WHITT 32)**

**SUPPLEMENTAL AFFIDAVIT OF SCOTT J. WILSON**

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

I, Scott J. Wilson, 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 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 am familiar with the application that NGL Water Solutions Permian, LLC ("NGL") has filed in this matter, and I conducted a nodal analysis and reservoir study related to the area which is the subject matter of the application. A copy of my study is attached to my affidavit that was submitted at the hearing on this matter on July 25, 2019.

4. At the July 25, 2019 hearing, a question was asked regarding the injection rate I used for my study.

EXHIBIT
tabbies
2-Supp

27-a

5. I used a constant injection rate of 25,000 barrels of water per day for wells that were modelled prior to 2019, and 40,000 barrels of water per day for all of the remaining wells in the study area.

6. Slide A-18 of my study identifies the injection rate as 40,000 barrels per day for Concho's Littlefield 33 Federal SWD #1, NGL's Whitt 31 SWD #1, and NGL's Whitt 32 SWD #1, held constant over time until maximum injection pressure is reached.

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

*[Signature page follows]*

Scott J. Wilson

SUBSCRIBED AND SWORN to before me this 6th day of August, 2019 by Scott J. Wilson.

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

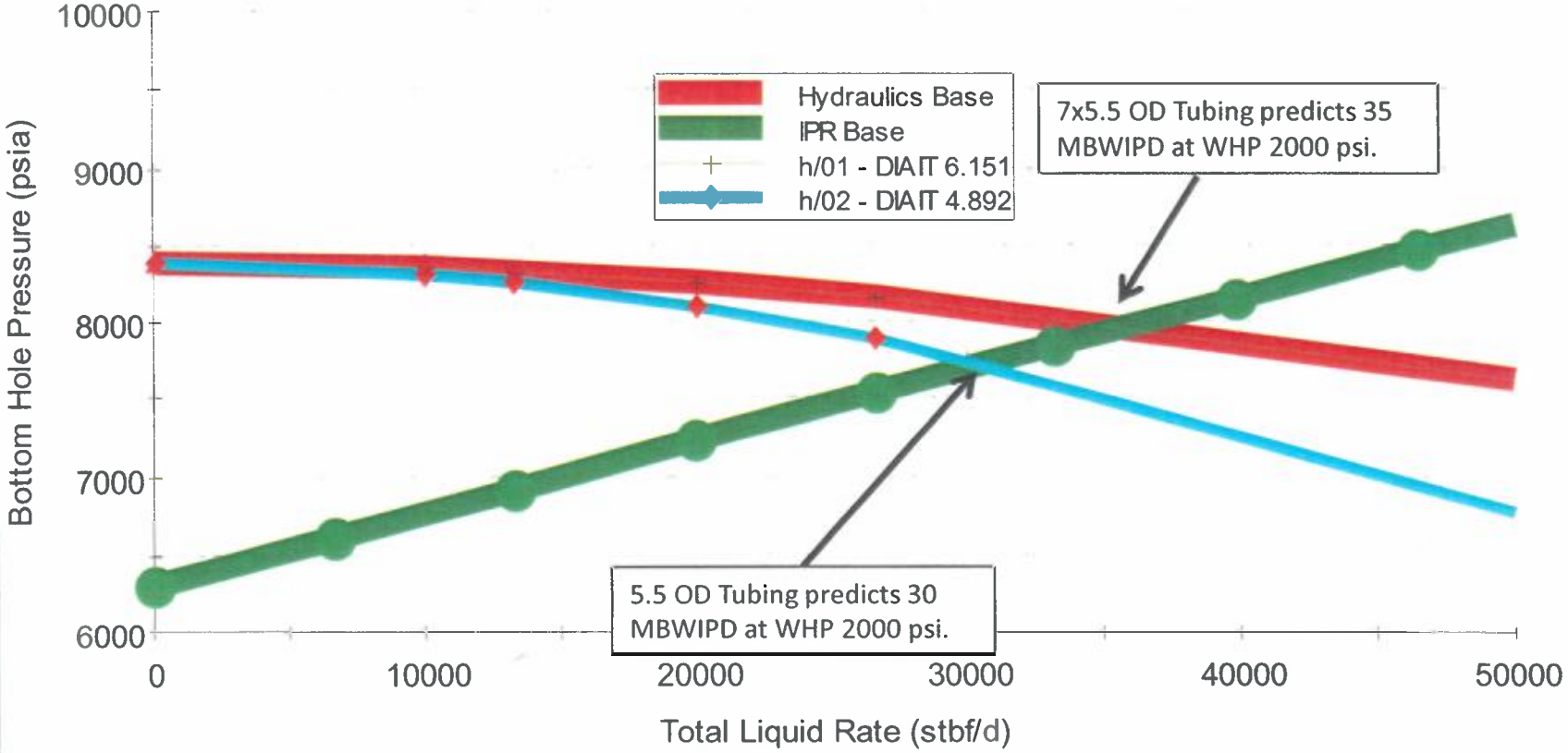
# NGL Water Solutions, LLC

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

Whitt 32 SWD1
Reservoir Data
Pressure = 6300.00 psia
kh = 13560.0
Skin = 0.00

Whitt32 SWD1.snp

Rate vs. Pressure19-Jul-19 14:30:44
WB Depth (MD ft)= 14000
WHPres (psia) = 2000.00
Tubing I.D. = 6.151 (s1)



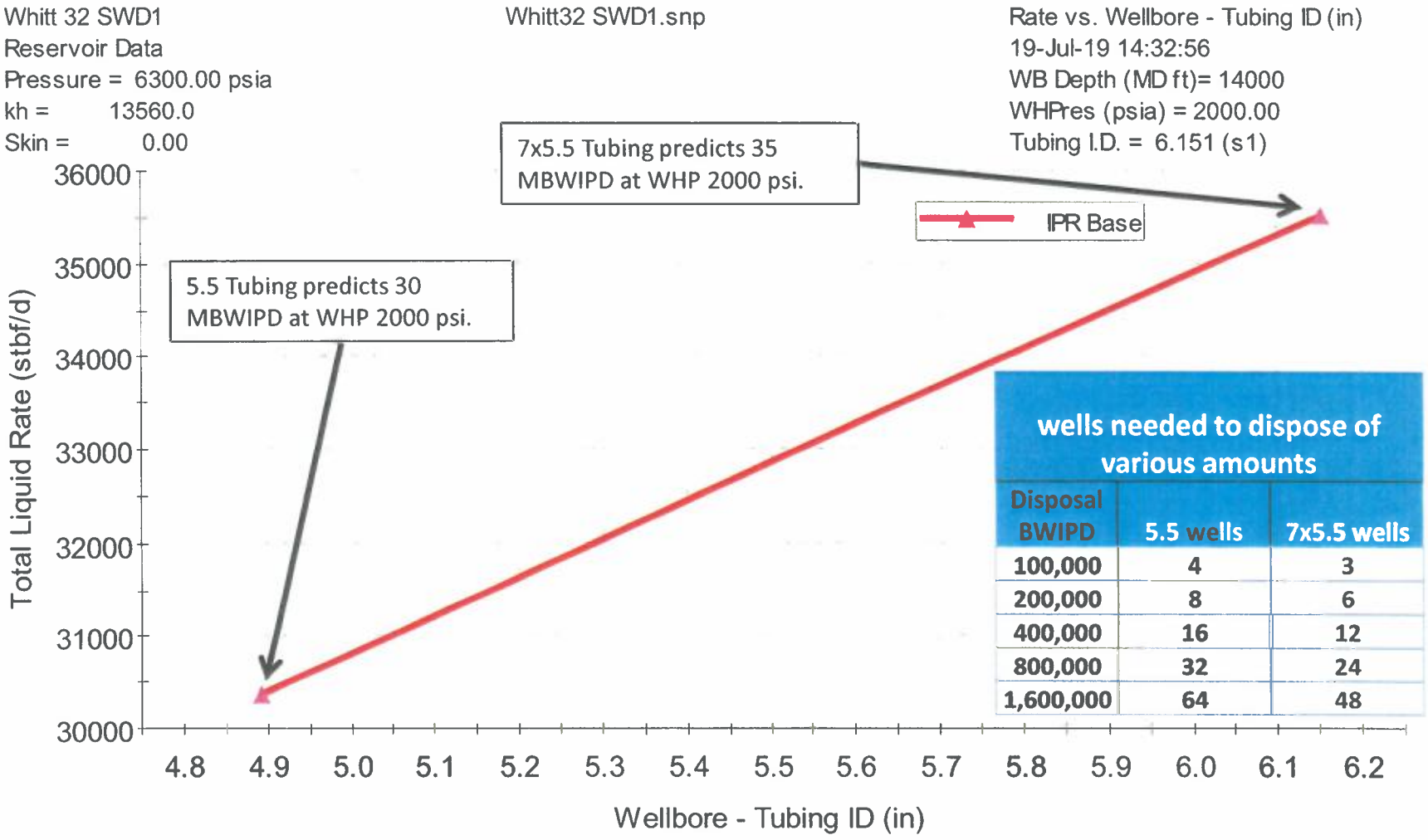

7/23/2019

tabbies
EXHIBIT 2-A

Exh. A2

# 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 | 4 | 3 |
| 200,000 | 8 | 6 |
| 400,000 | 16 | 12 |
| 800,000 | 32 | 24 |
| 1,600,000 | 64 | 48 |

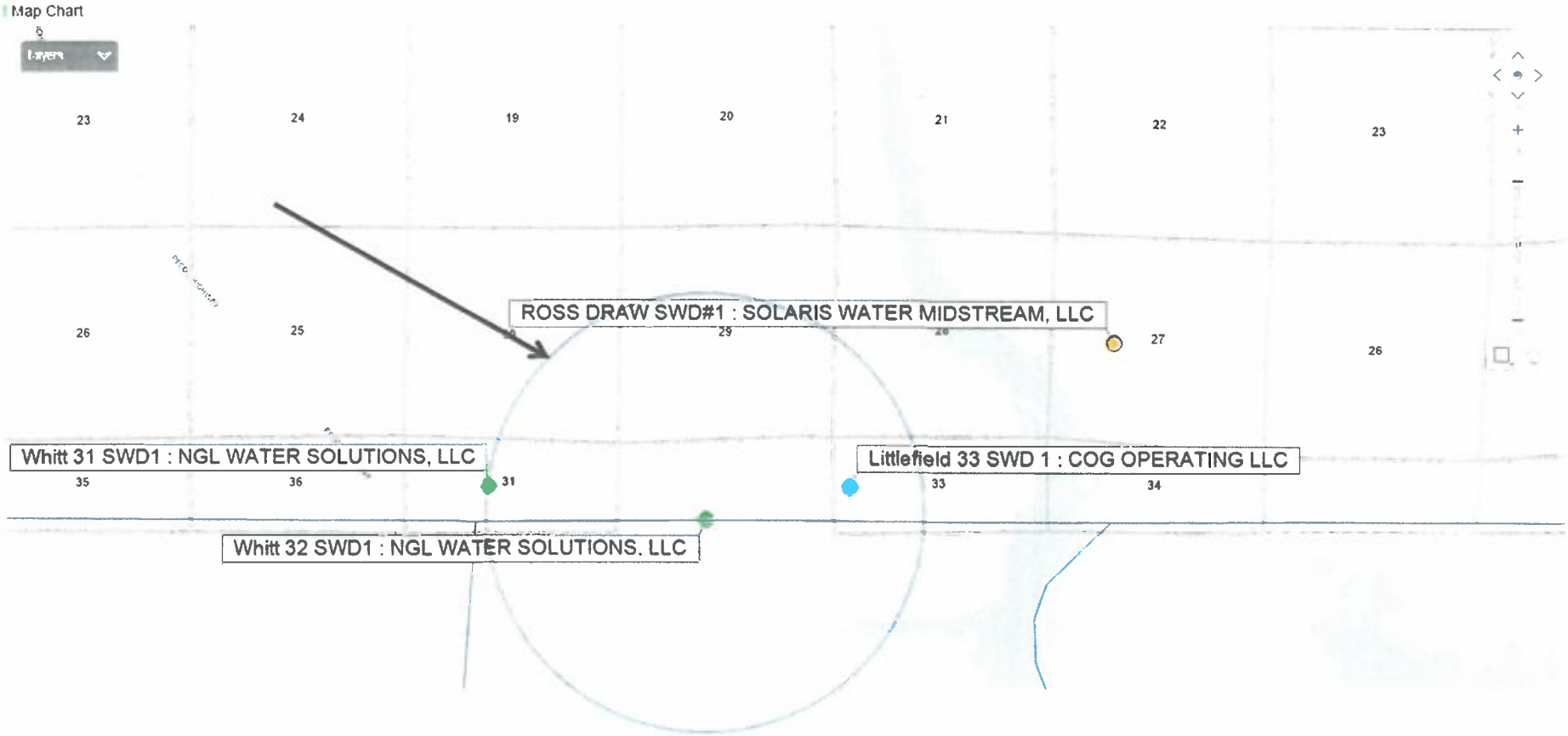
7/23/2019

# NGL Water Solutions, LLC

Exh. A3

Wells injecting water into the Devonian formation in the area.
Area is roughly 20 miles (E-W) by 15 miles (N-S)

Whitt 32 SWD1
With 1 Mile Radii

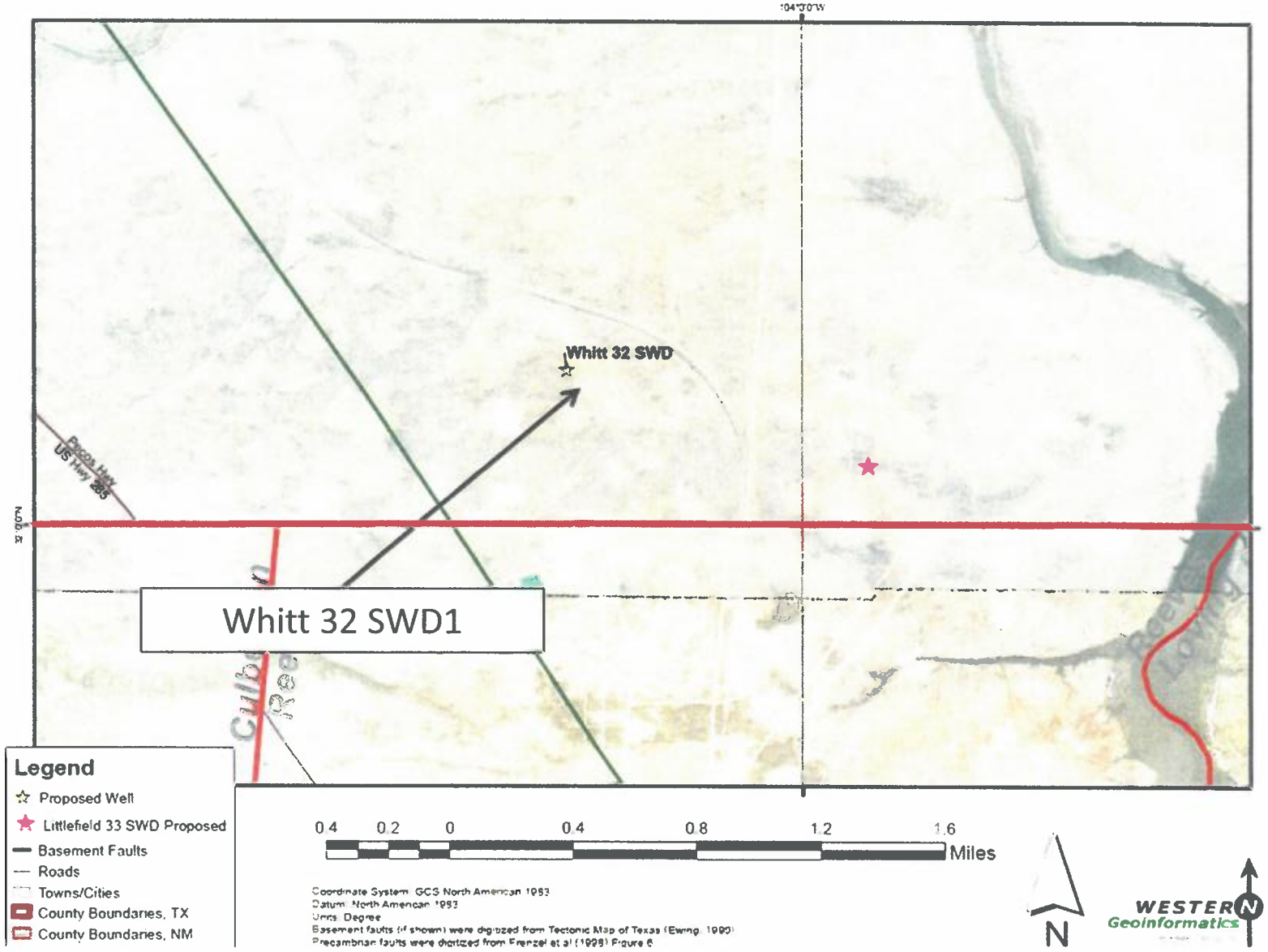


Exh. A4

# NGL Water Solutions, LLC

## Sil/Dev Thickness at Whitt 32 is 1100 feet

Isopach, Faults, and Well Locations



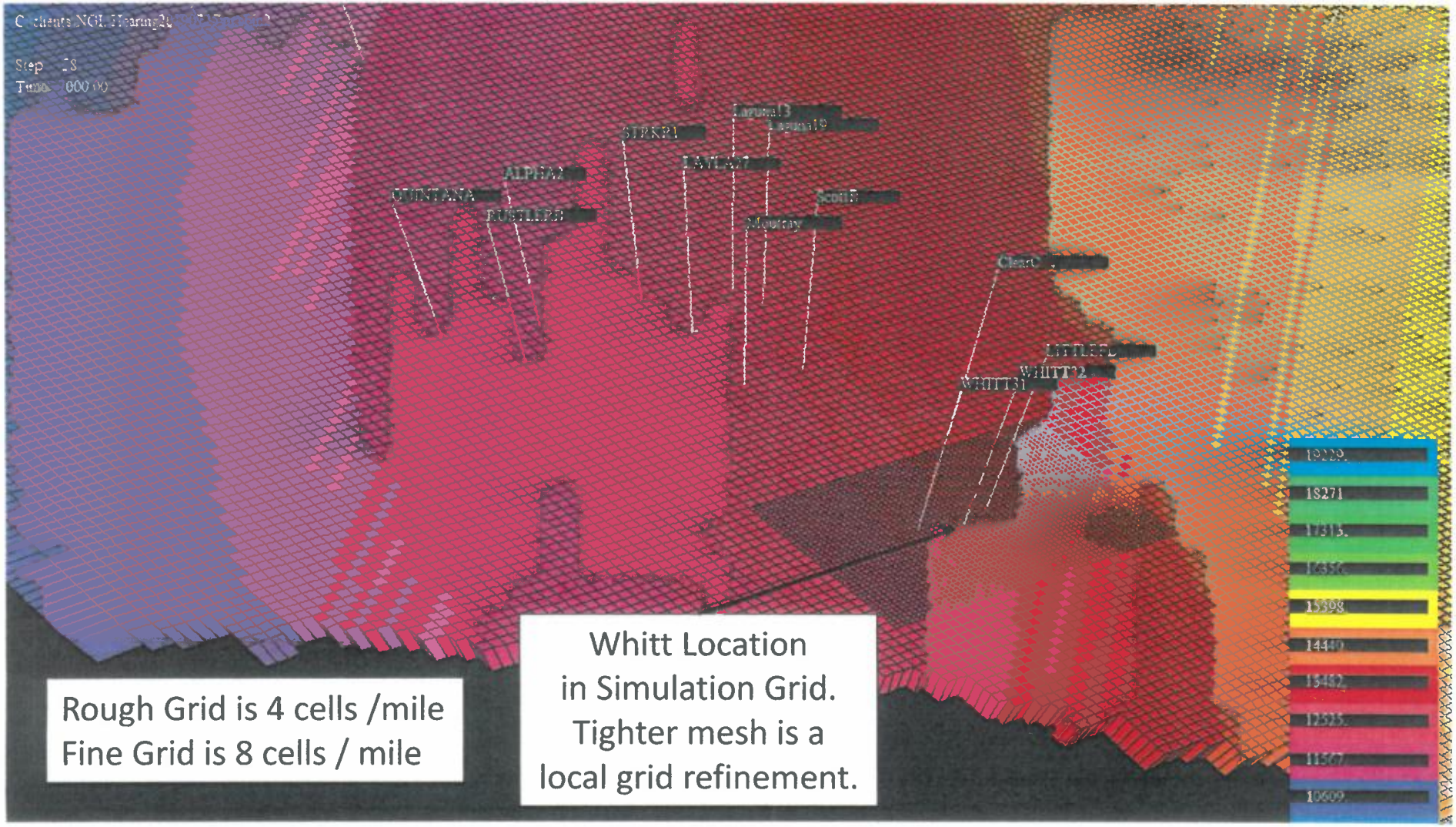
# NGL Water Solutions, LLC

Exh. A5

## Simulation Grid matches Structure and Thickness

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

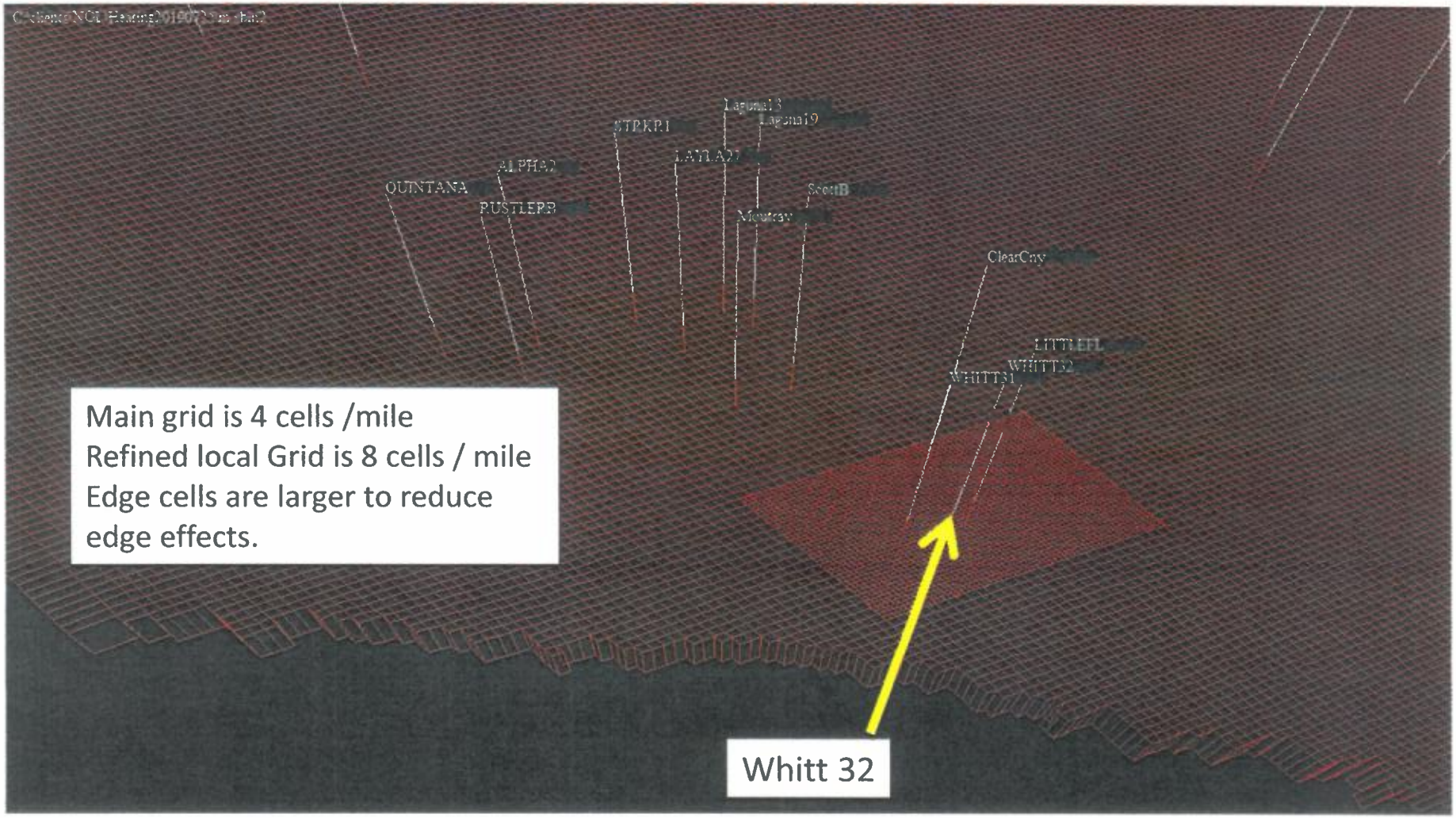
Observation wells are placed in grid corners to monitor the large scale pressure distribution.



# NGL Water Solutions, LLC

## 3D view of grid shows Structural Relief.

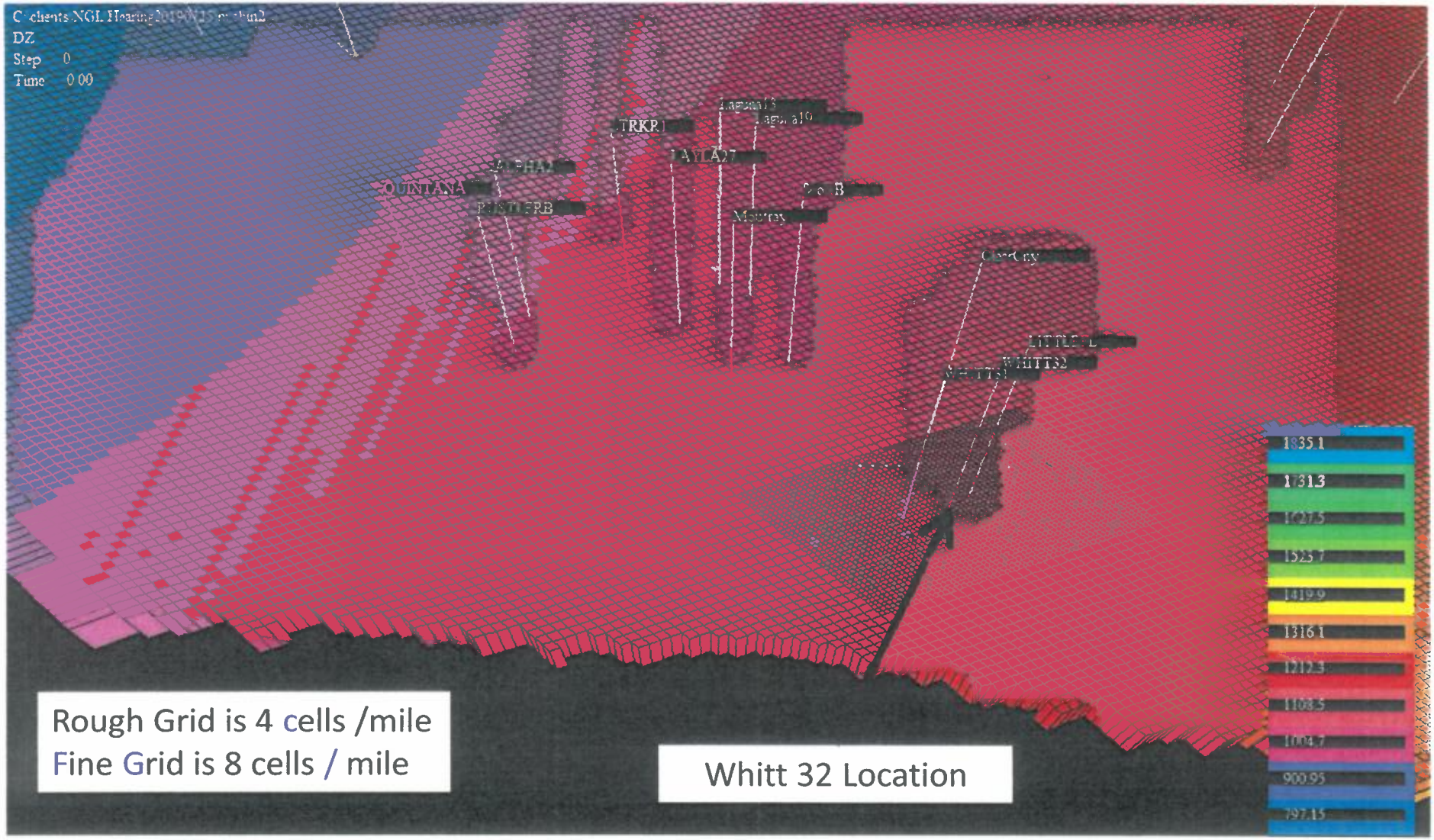
Thickness is accurate but not easy to see at this aspect ratio.



Exh. A7

# NGL Water Solutions, LLC

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

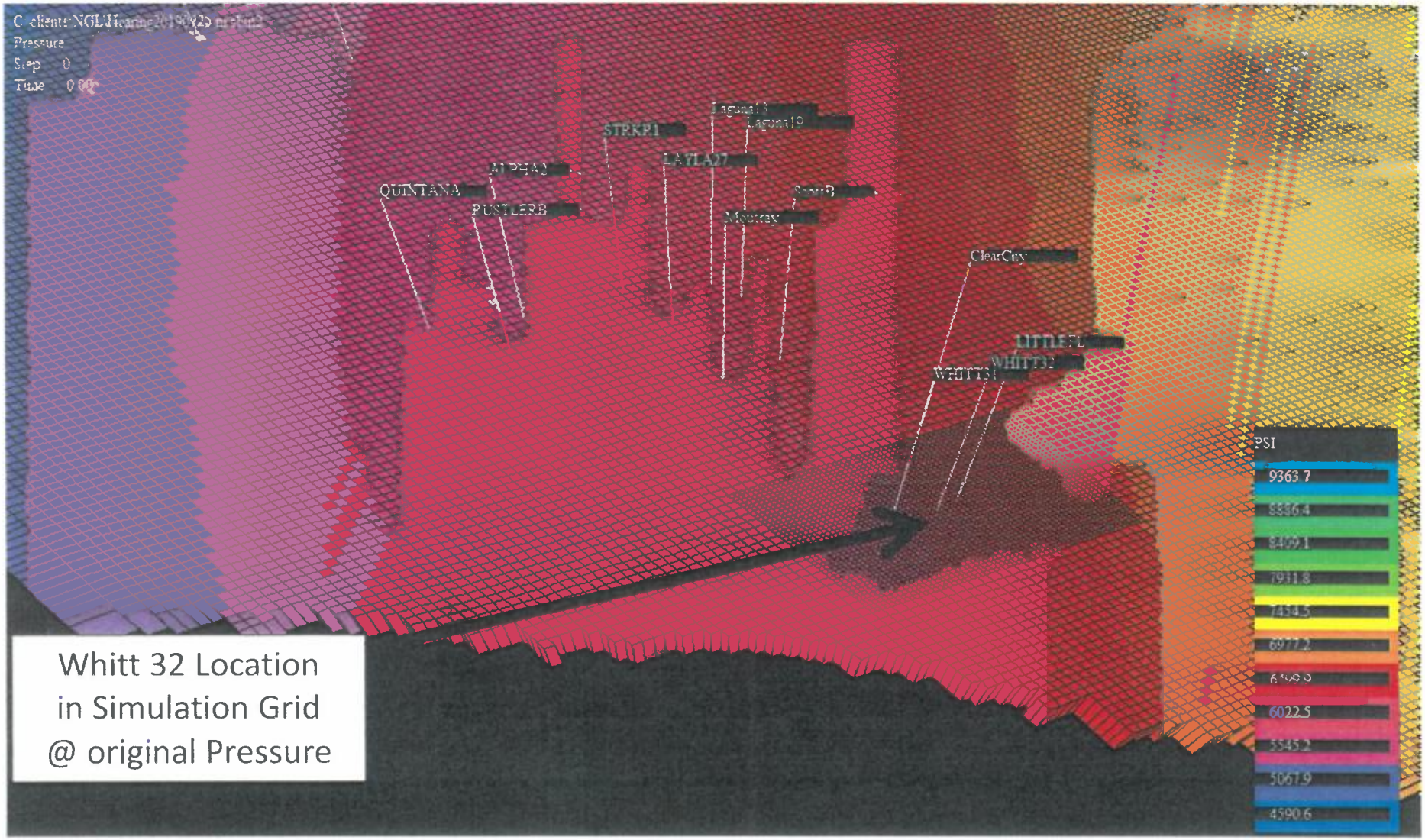



34

# NGL Water Solutions, LLC

Exh. A8

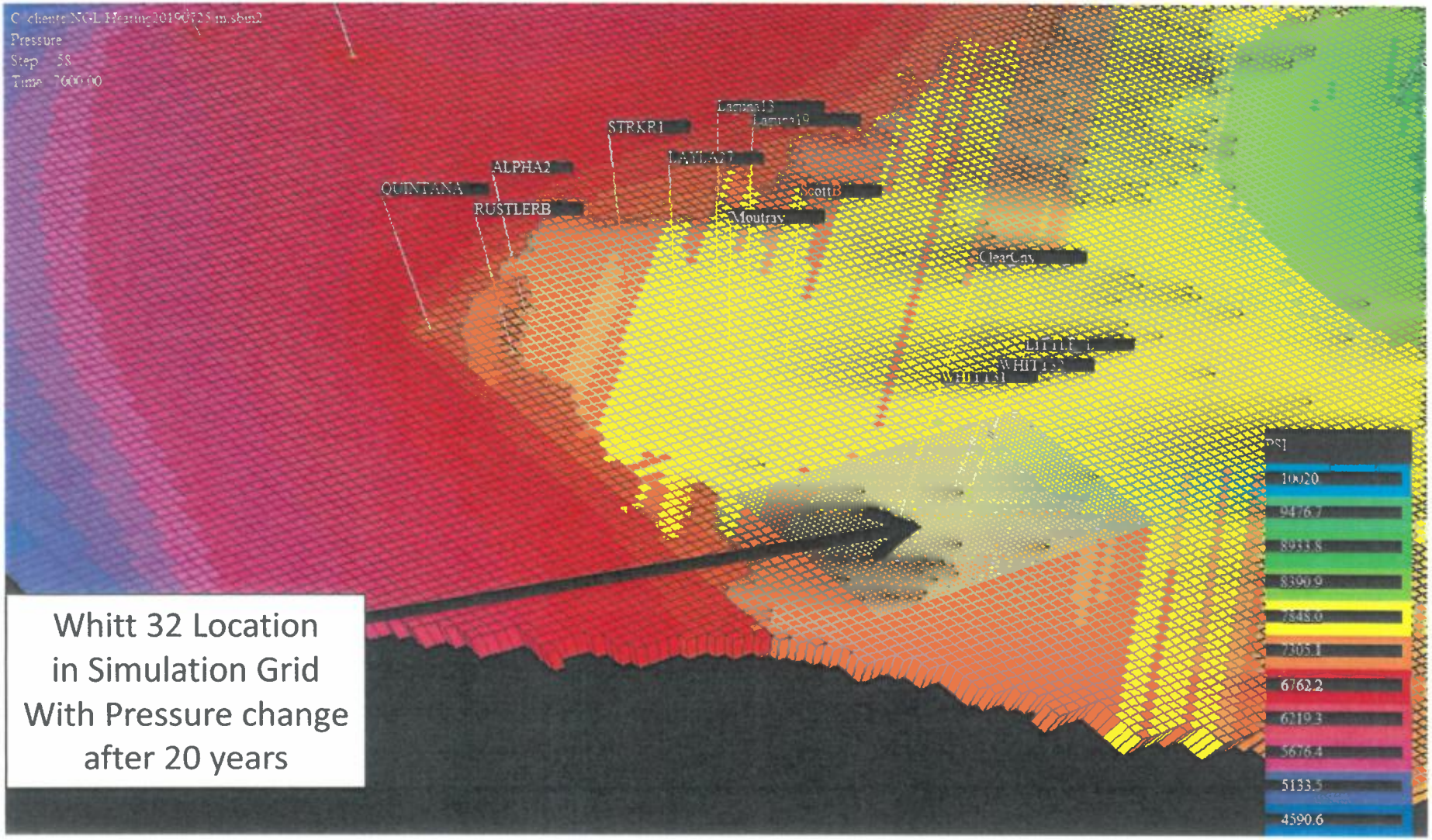
Initial pressure is equilibrated by the model based on grid cell depth, fluids(water) and capillary pressure.



# NGL Water Solutions, LLC

Exh. A9

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

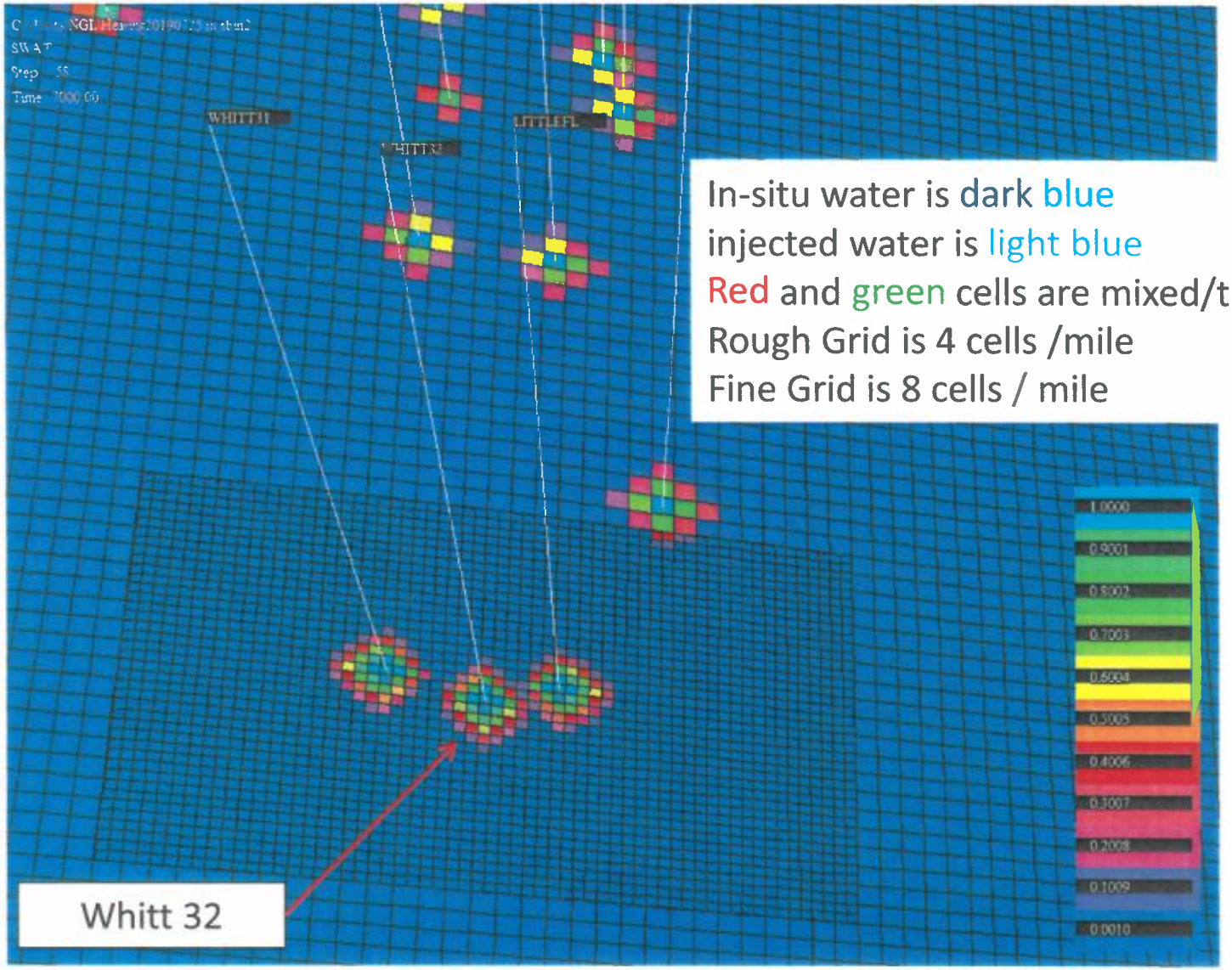



Whitt 32 Location in Simulation Grid With Pressure change after 20 years

Exh. A10

# NGL Water Solutions, LLC

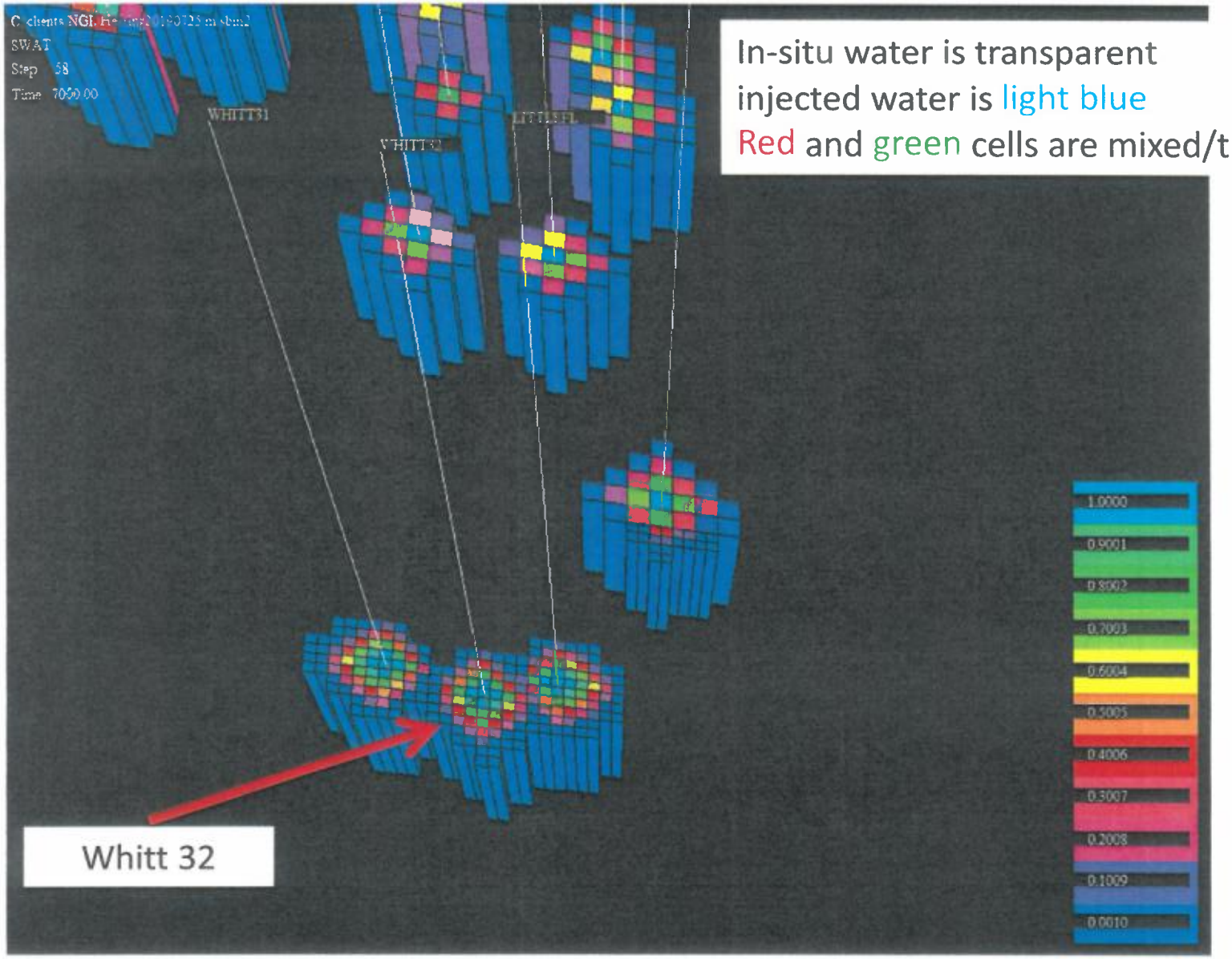
## Large scale saturation profiles after 20 years of injection.




In-situ water is dark blue
injected water is light blue
Red and green cells are mixed/transition
Rough Grid is 4 cells /mile
Fine Grid is 8 cells / mile

# NGL Water Solutions, LLC

## Detailed saturation profiles after 20 years of injection.

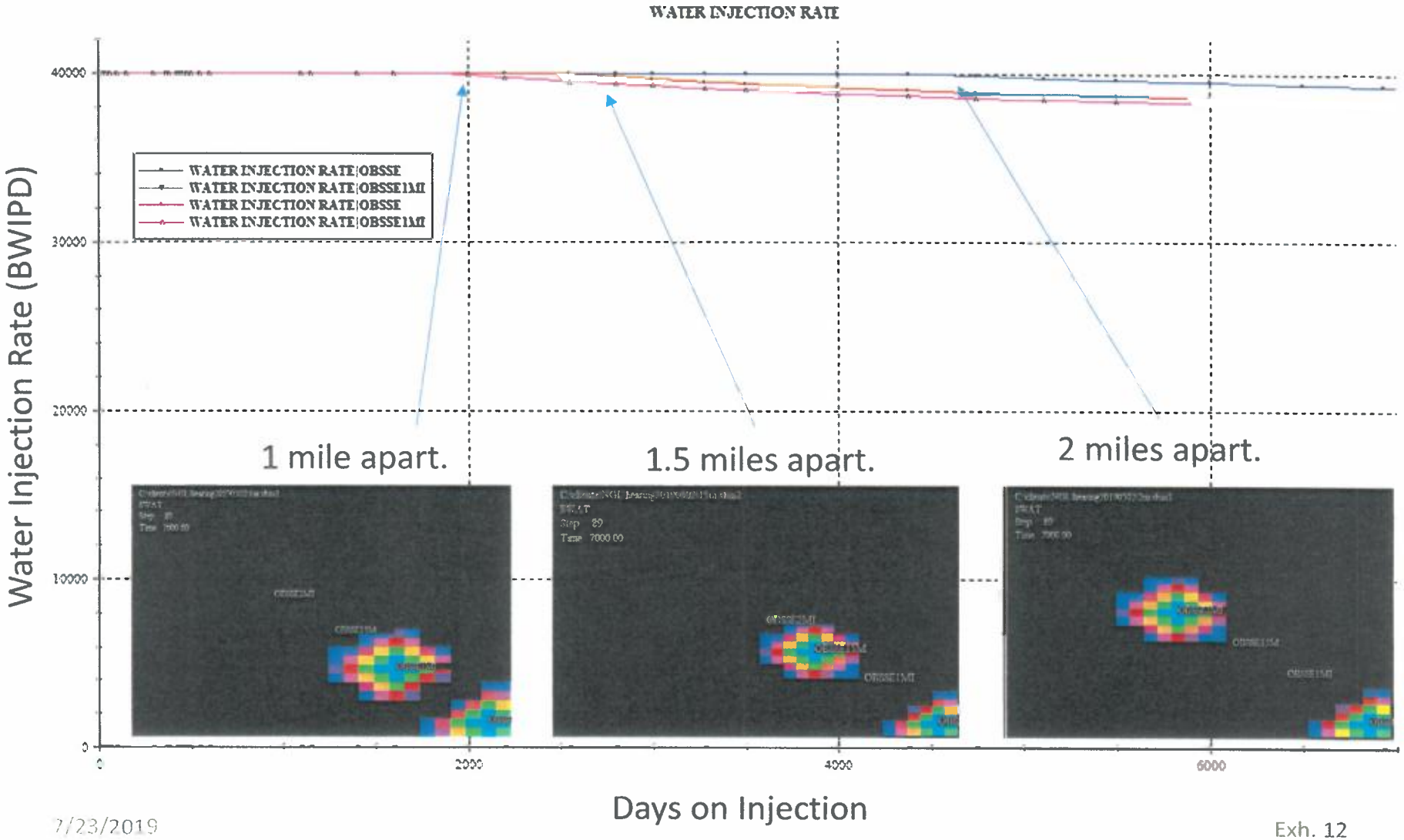



In-situ water is transparent
injected water is light blue
Red and green cells are mixed/transition

# NGL Water Solutions, LLC

Exh. A12

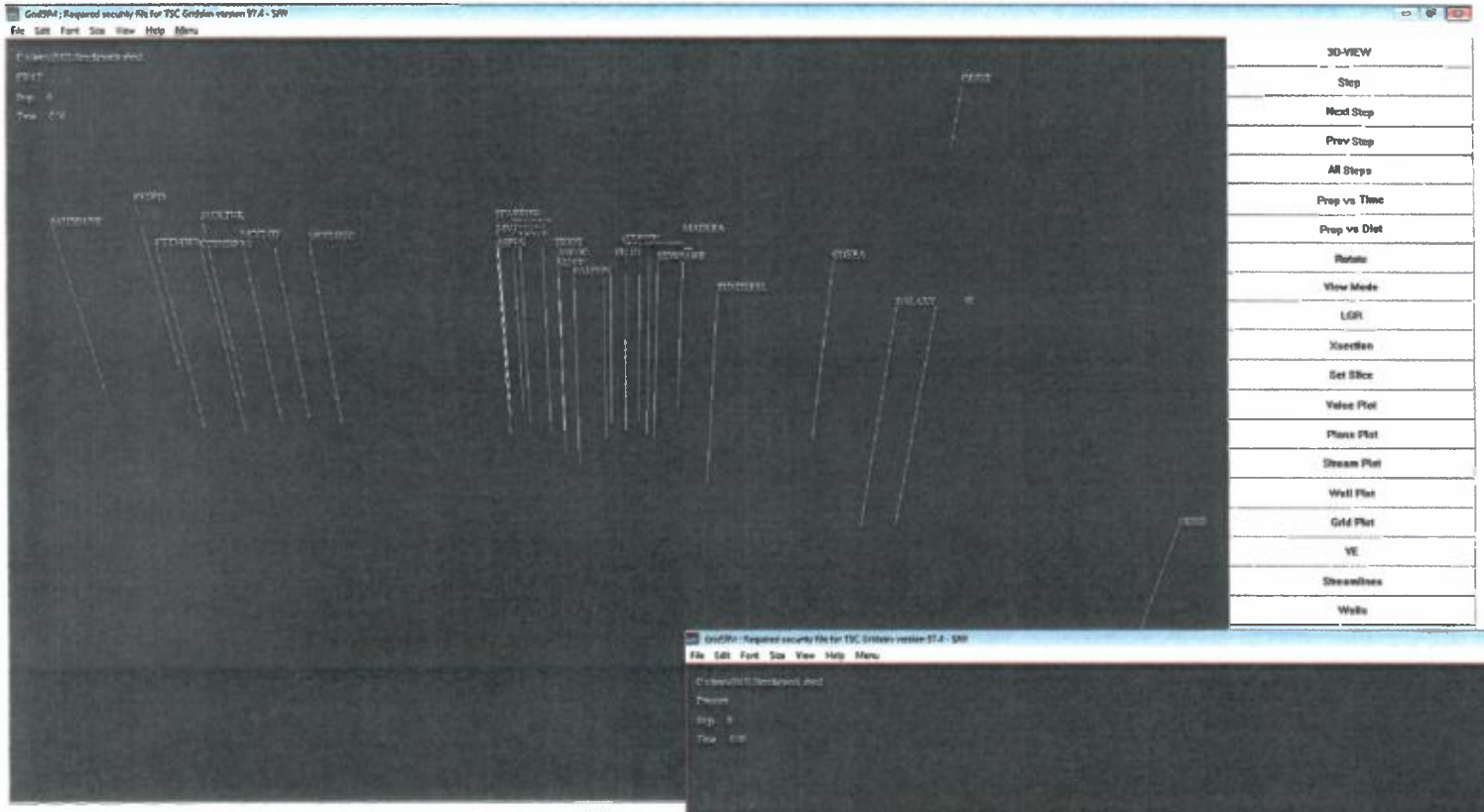
Typical wells showing interference when spaced 1, 1.5, and 2 miles apart.
Closer spacing causes rates to fall, but not significantly.



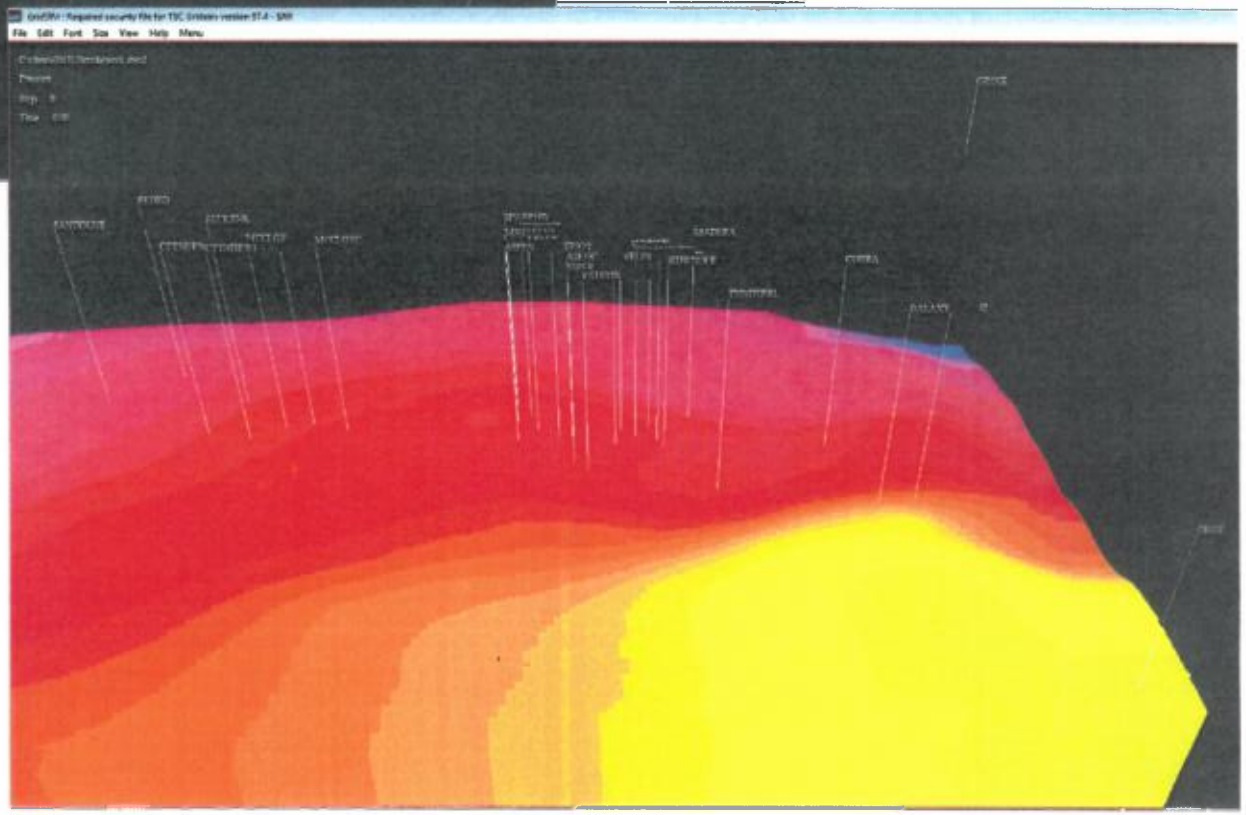

7/23/2019

Exh. 12

Exh. A13



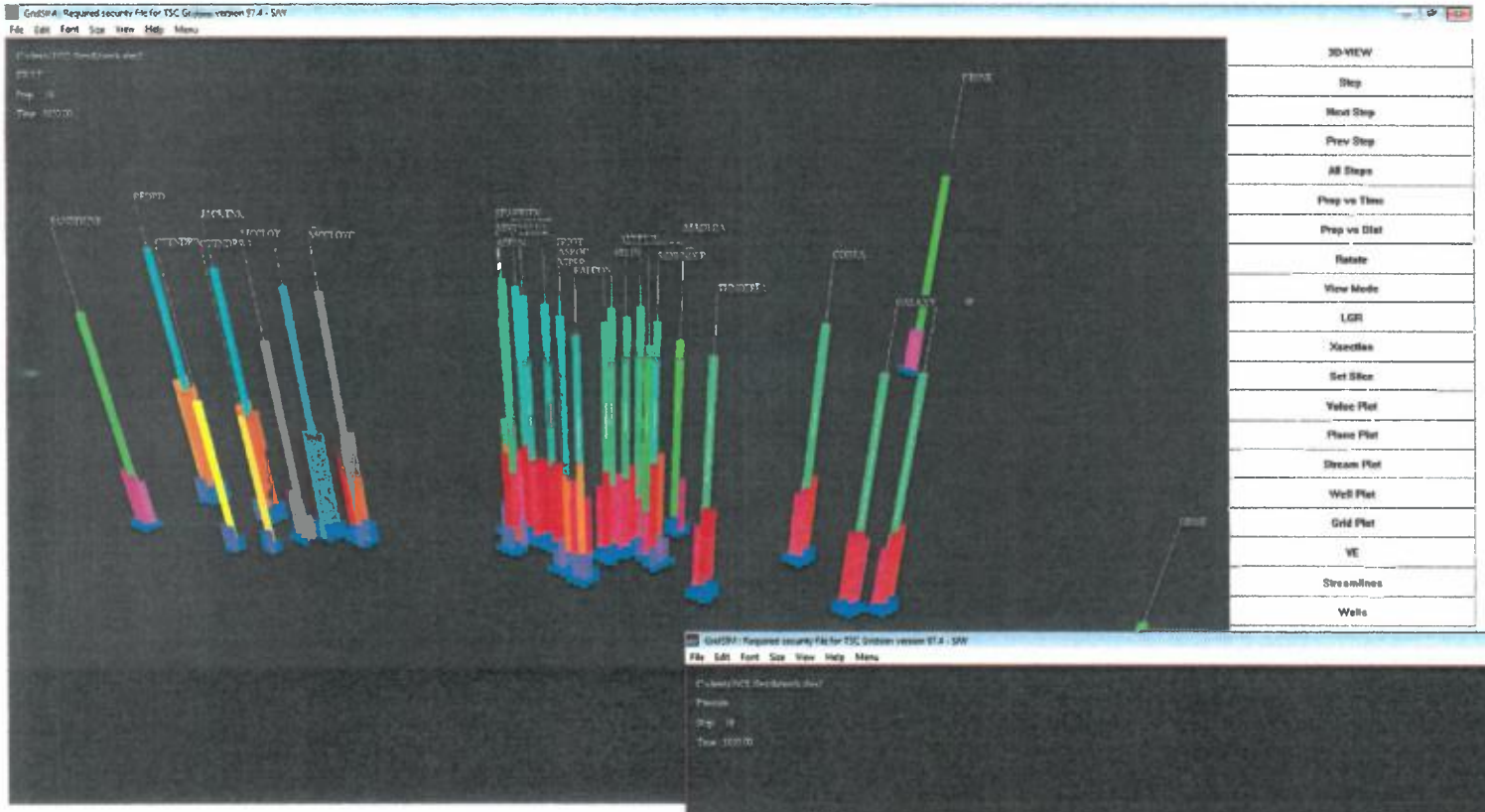

**2019**
**(0 years)**



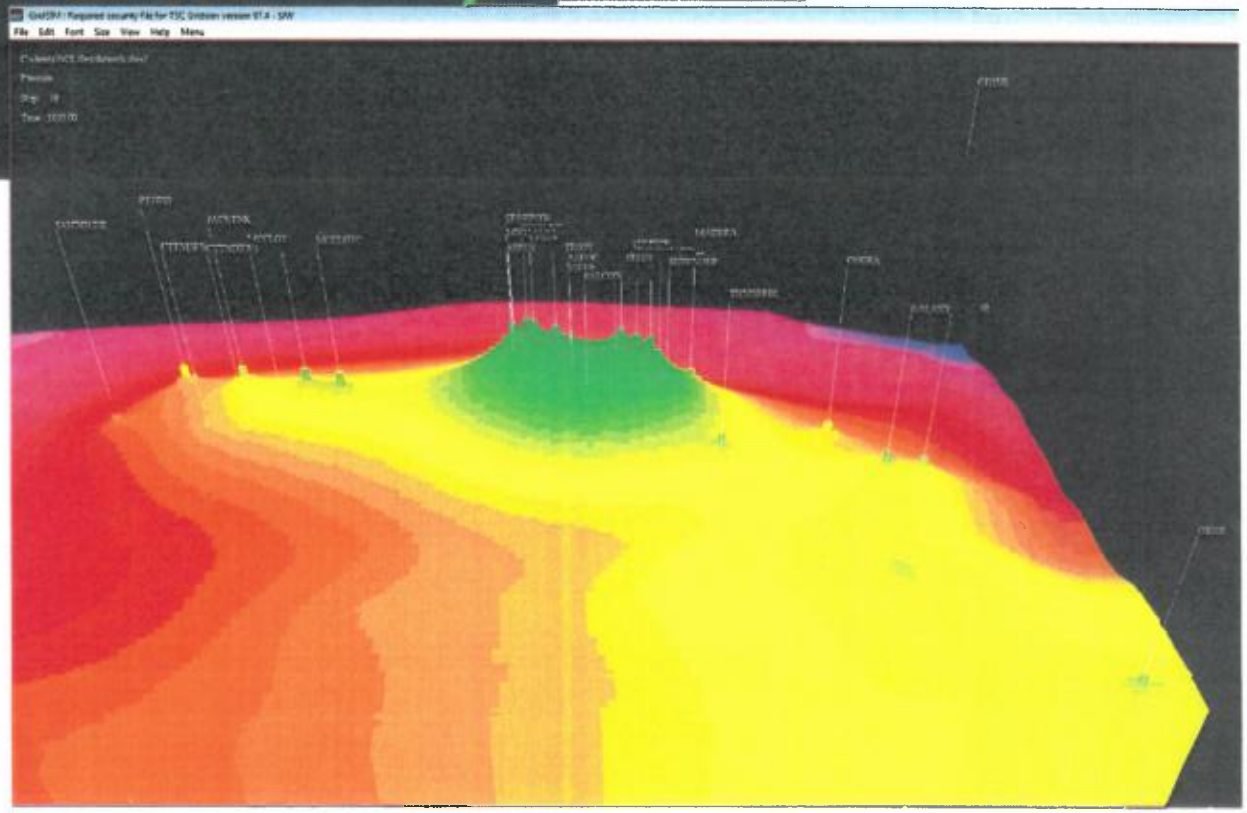
# Typical Water movement & Pressure

7/23/2019

Exh. A14




# 2029 (10 years)

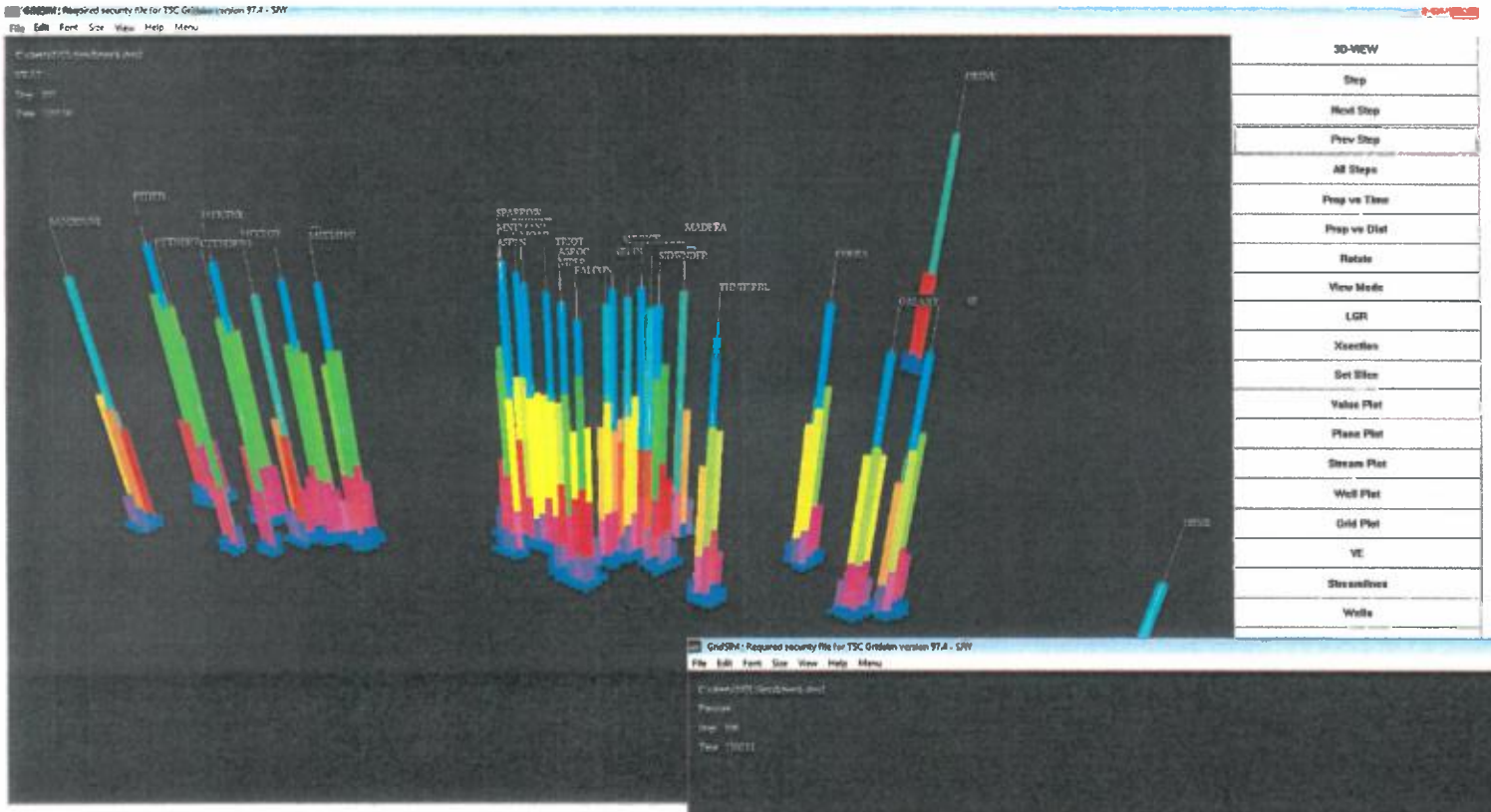


# Typical Water movement & Pressure

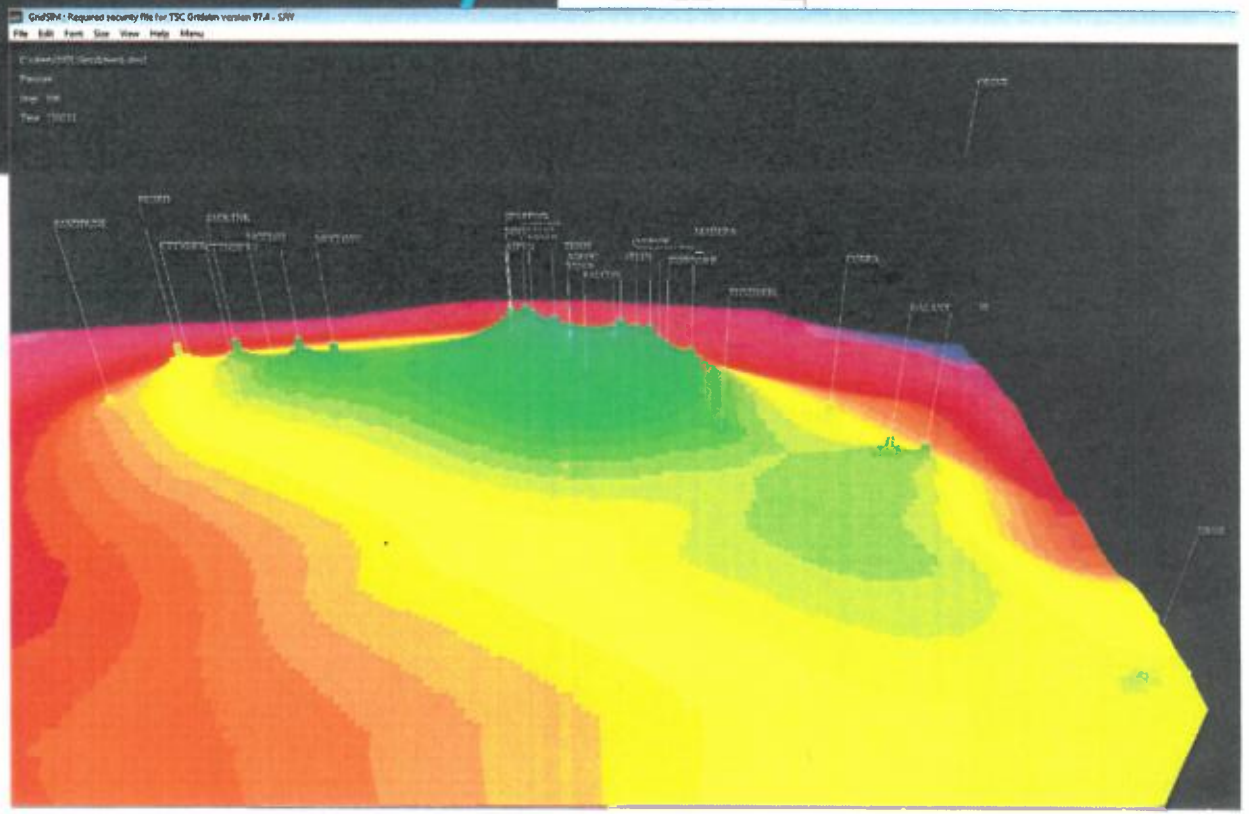
7/23/2019

14

Exh. A15



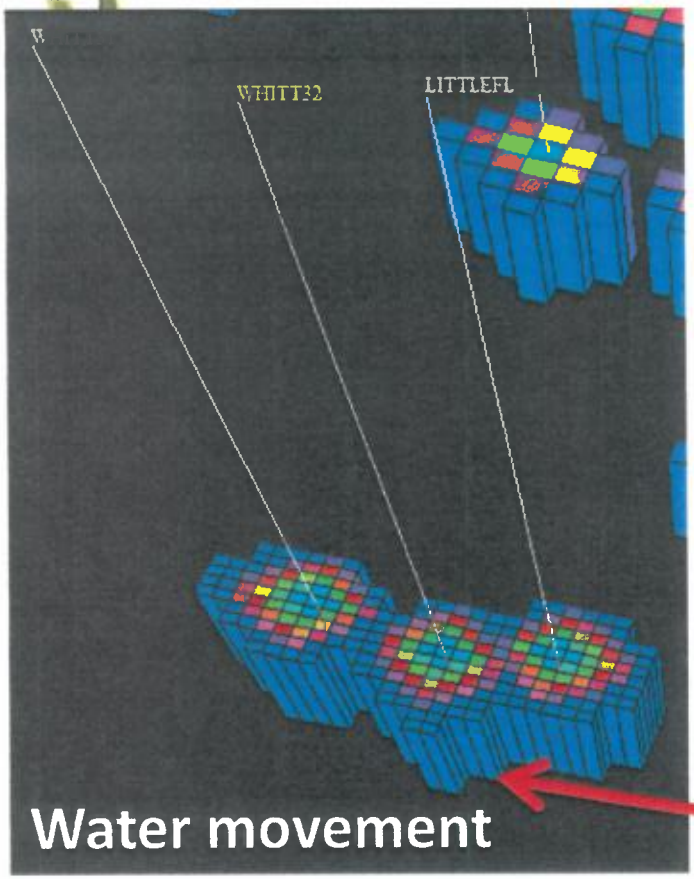

**2039**
**(20 years)**



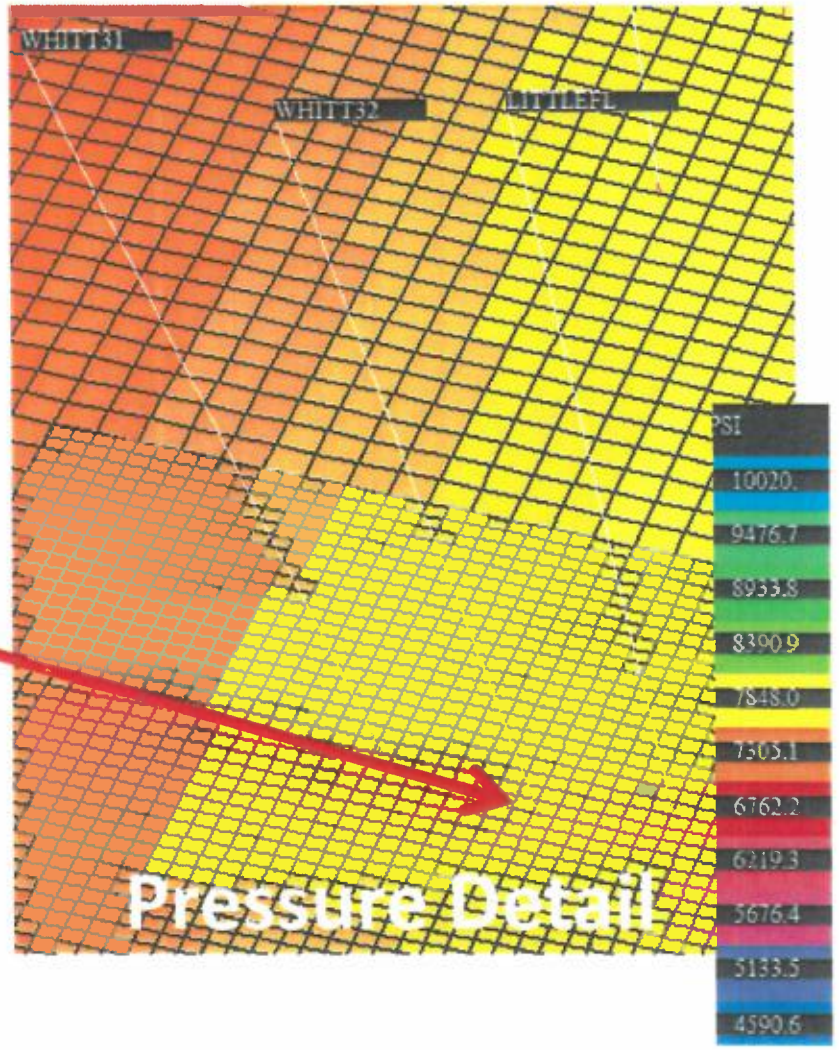
# Typical Water movement & Pressure

7/23/2019

# Detail water saturation and pressure distributions at 2039 (20 years)



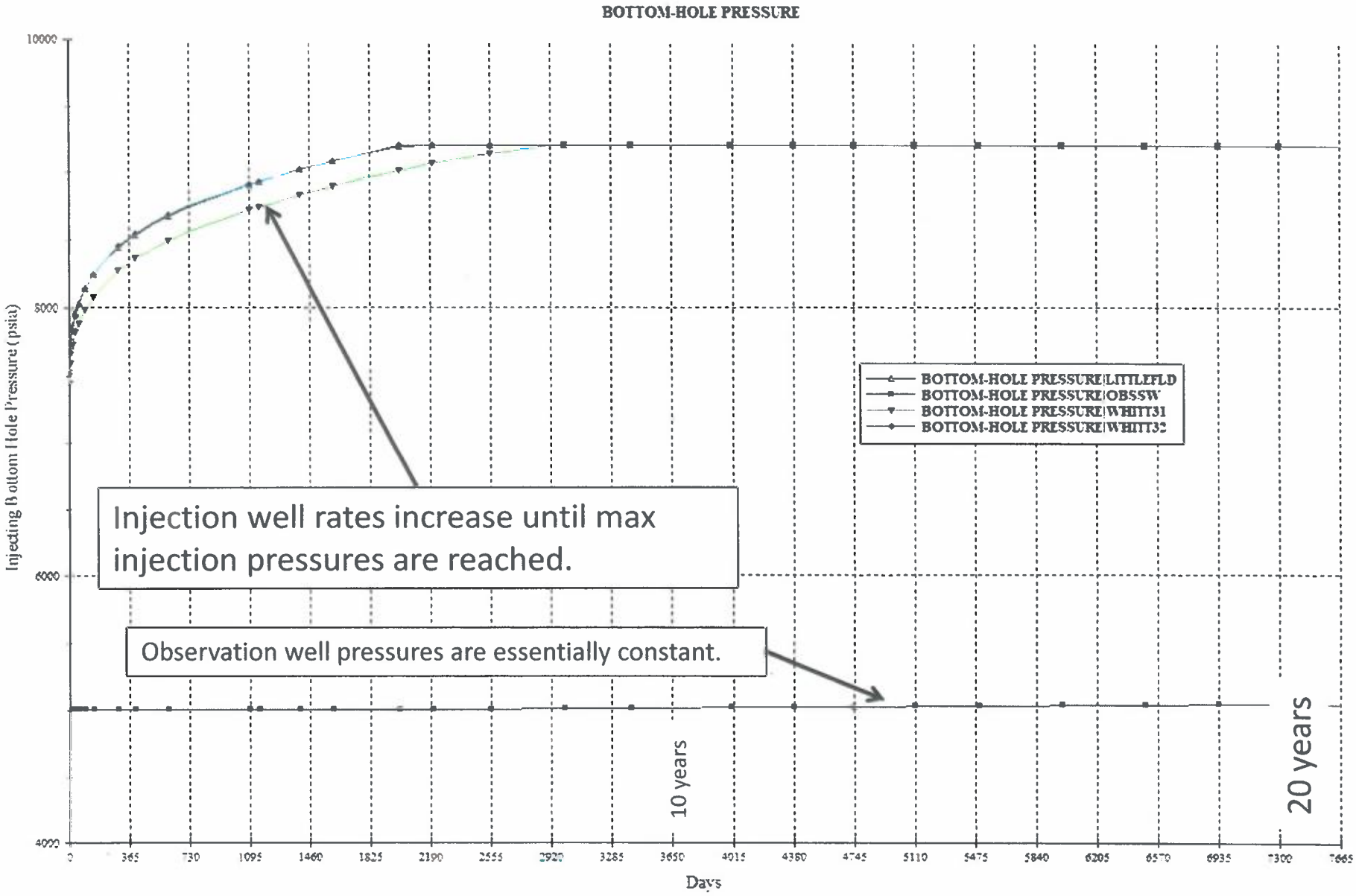

Whitt 32



# NGL Water Solutions, LLC

Exh. A17

## Simulation BHIP predictions for wells near Whitt 32

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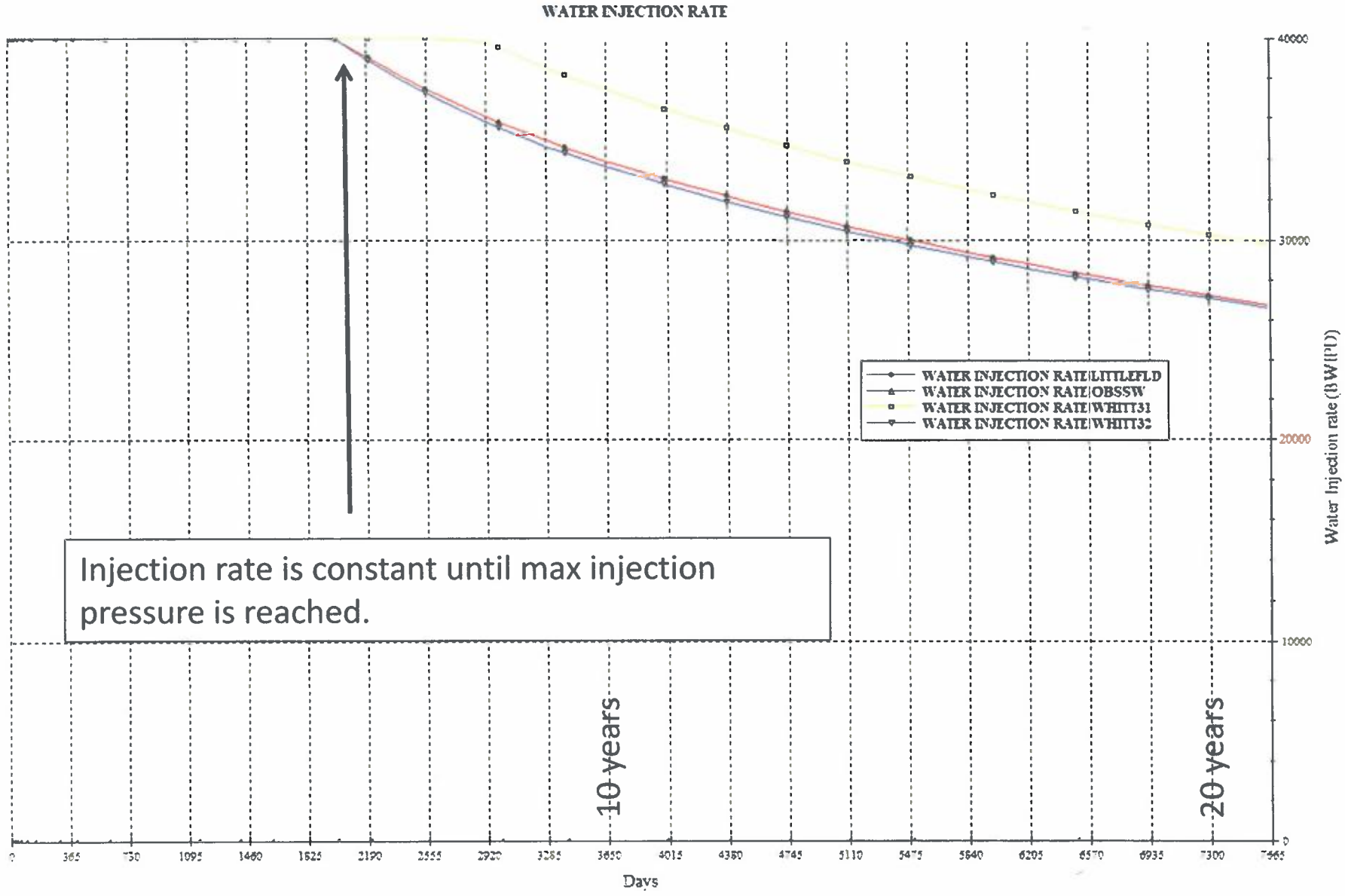
# NGL Water Solutions, LLC

Exh. A18

## Simulation predictions for individual wells over 20 Years

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# Exhibits of Dr. Kate Zeigler
# On Behalf of NGL Water Solutions Permian, LLC

Delaware Basin Stratigraphic Unit Descriptions

Lower Paleozoic

**Woodford Shale (Upper Devonian)**

The Woodford Shale is dominated by organic-rich mudstone interbedded with carbonate (limestone and/or dolostone) beds, chert beds and radiolarian laminae. This unit has been interpreted to include sedimentary gravity-flow deposits. Dominantly shale means lower porosity and permeability than the limestone/dolostone units above and below. The Woodford Shale is unconformable on the units below it. Locally this contact includes solution cavities and fissures down into the underlying carbonate unit(s), creating a complex boundary. It is up to 150' thick locally.

**Thirtyone Formation (Lower Devonian)**

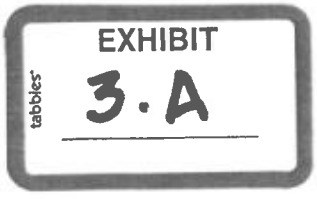
The Thirtyone Formation is part of a wedge of sedimentary rocks that thins to the north and the west where the wedge ends up truncated beneath the base of the overlying Woodford Shale. The Thirtyone Formation is only present in southeastern Lea County and consists of an upper coarsely crystalline dolostone unit and lower chert unit. This unit is not present in the area of concern.

**Wristen Group (Middle-Upper Silurian)**

The Wristen Group consists of interbedded limestone and dolostone that has a maximum thickness in Lea County, then thins to the north and the west. Thicknesses range from 0 to 1,400' thick. In the Delaware Basin, it occurs up to 19,000' below land surface, then rises to 10,000' to 12,000' subsurface to the north and west. It represents deposition in a shelf-margin environment and includes buildups of coral reefs, stromatoporoids and other invertebrate colonialists. The carbonate beds include boundstones, rudstones and oolitic grainstones with significant primary porosity. To the north, reservoirs targeted for production are dolomitic with vugular and fracture-related porosity.

**Fusselman Formation (Late Ordovician-Lower Silurian)**

The Fusselman Formation is almost entirely dolostone and can be up to 1,500' thick. As with the overlying Thirtyone Formation and Wristen Group, the Fusselman Formation thinks to the north and west where it is truncated beneath the Woodford Shale to the north of where the Wristen Group pinches out. In Lea County, the Fusselman Formation can be 18,000' or more below land surface. It is primarily coarsely crystalline dolostone that is vugular, fractured and/or brecciated, with significant secondary porosity due to the fracturing and brecciation.



**Montoya Group (Middle-Upper Ordovician)**

The Montoya Formation includes three dolostone members overlying a sandstone unit. The three upper carbonate units include the Upham, Aleman and Cutter Members and the lower sandstone unit is the Cable Canyon Sandstone. The entire package can be up to 600' thick and depth to the top of the unit ranges from 5,500' near the northern pinchout in Chaves County to as much as 20,000' in southern Lea County. The Montoya Group was stripped from the higher parts of the Central Basin Platform by erosion in the Late Pennsylvanian and Early Permian.

**Simpson Group (Middle-Upper Ordovician)**

The Simpson Group in a heterogeneous unit with limestone, dolostone, sandstone and green shale horizons. Up to 1000' thick, it is dominated by the shale beds (55% of total thickness), followed by the dolostone and limestone beds (40%) and finally sandstone (5%). The shale horizons can serve as a permeability barrier between the underlying Precambrian basement rocks and overlying reservoirs where the Simpson Group is present and has sufficient thickness. Depths to the Simpson Group range from 6,700' on parts of the Central Basin Platform to up to 21,000' in the Delaware Basin.

**Ellenburger Formation (Lower Ordovician)**

The Ellenburger Formation is up to 1000' thick and composed of limestone and dolostone that represent cyclic deposition in waters of the inner platform with restricted circulation. Porosity in the Ellenburger Formation includes porosity in the matrix, vugs, major karst dissolution features, collapse karst breccias and fractures. Depths to the top of the unit range from 7,500' on the Central Basin Platform to up to 22,000' in the Delaware Basin.

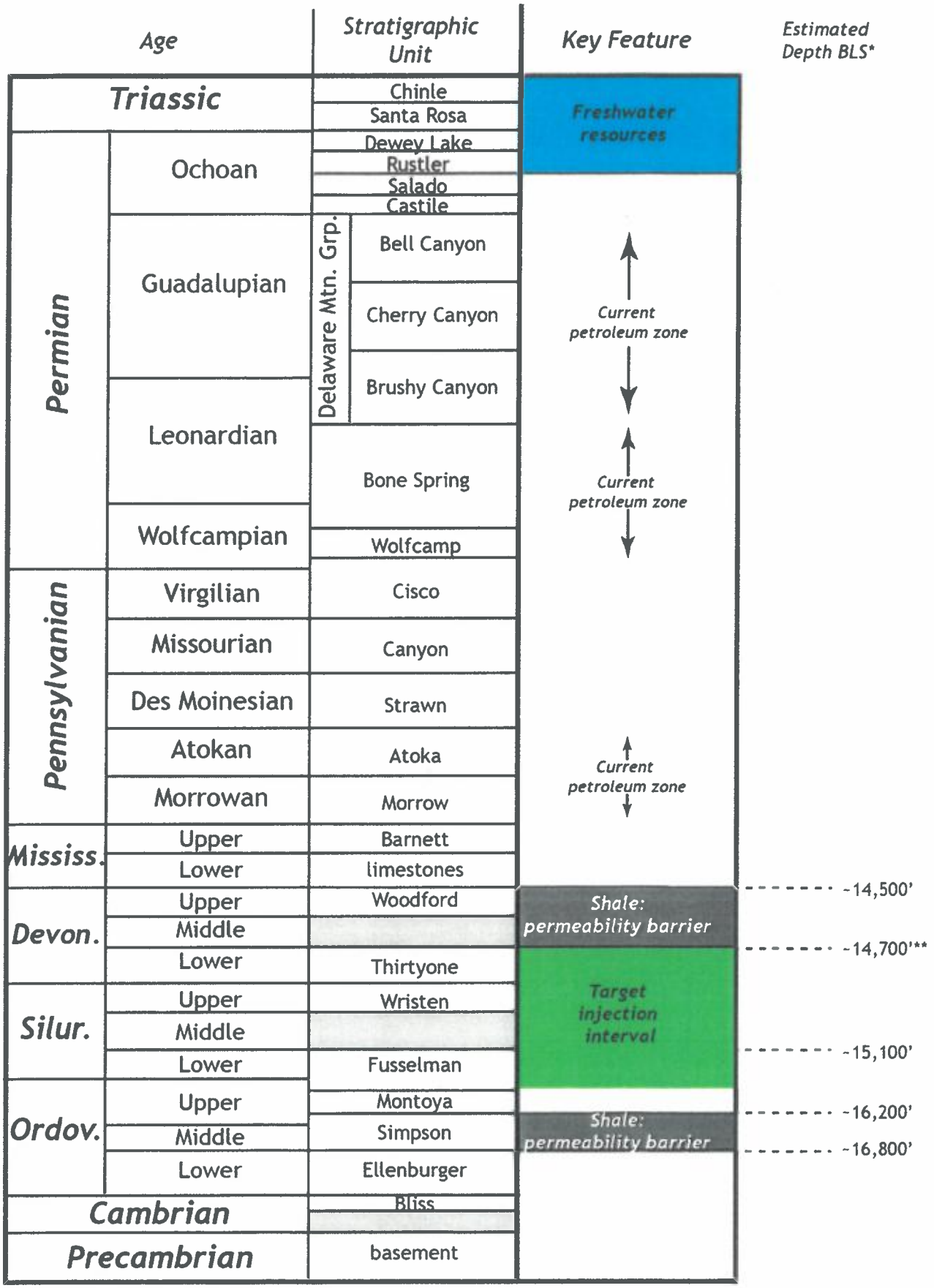
**References**

Broadhead, R.F., 2017, Petroleum Geology: *in* V.T. McLemore, S. Timmons and M. Wilks (eds.), Energy and Mineral Resources of New Mexico, New Mexico Bureau of Geology and Mineral Resources Memoir 50, vol. A, 90 p.

Comer, J.B., 1991, Stratigraphic analysis of the Upper Devonian Woodford Formation, Permian Basin, West Texas and southeastern New Mexico: Bureau of Economic Geology, University of Texas at Austin, Report of Investigations no. 201, 63 p.

Hemmesch, N.T., Harris, N.B., Mnich, C.A. and Selby, D., 2014, A sequence-stratigraphic framework for the Upper Devonian Woodford Shale, Permian Basin, west Texas: American Association of Petroleum Geologists Bulletin, v. 98, no. 1, p. 23-47, doi:10.1306/05221312077

Texas Bureau of Economic Geology, 2009, Integrated Synthesis of the Permian Basin: Data and Models for Recovering Existing and Undiscovered Oil Resources from the Largest Oil-Bearing Basin in the U.S.: Department of Energy Final Technical Report, Award No: DE-FC26-04NT15509, 964 p.

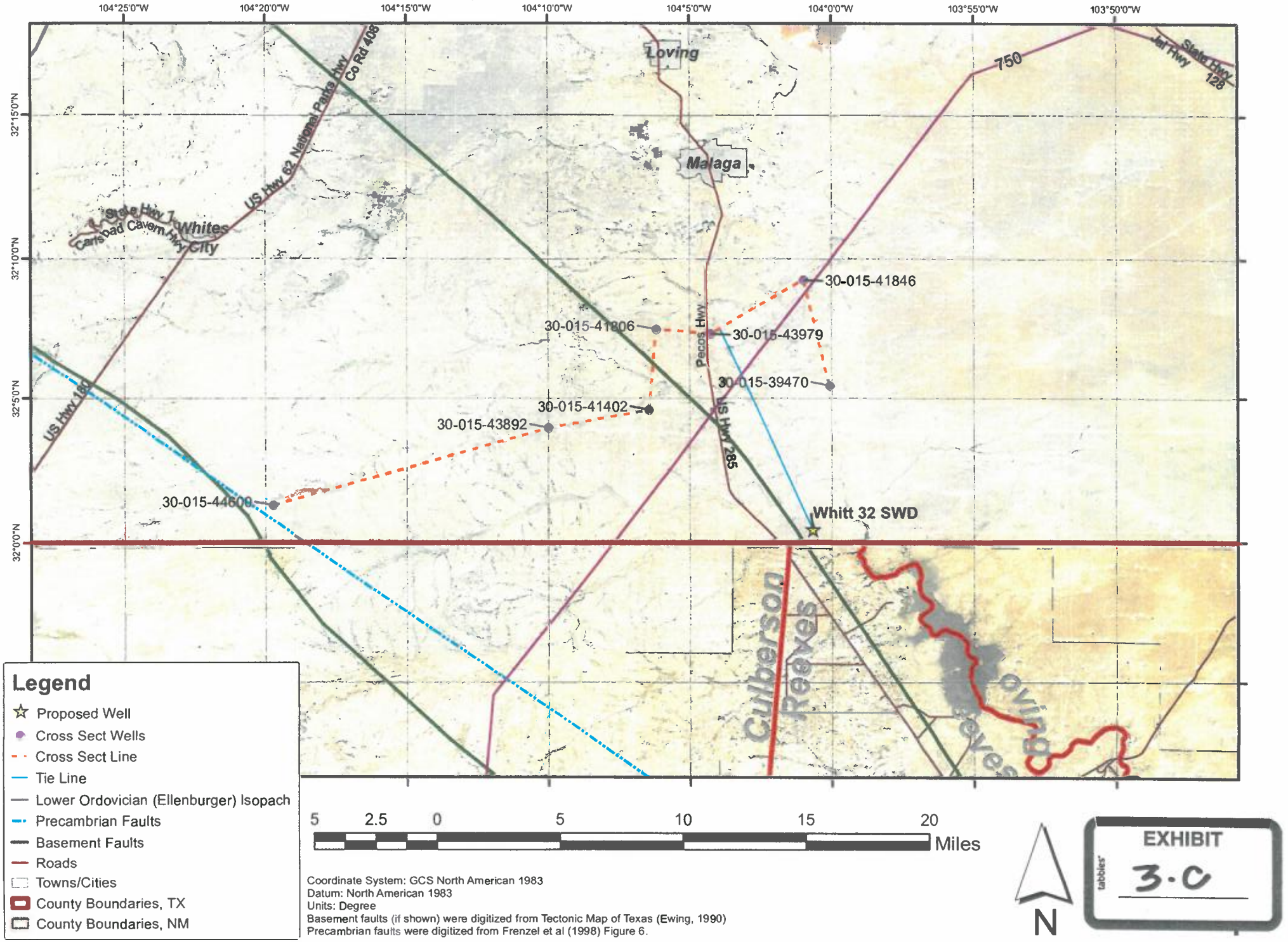



Stratigraphic chart for the Delaware Basin from Broadhead (2017).

* Based on data from 30-015-41846 Goldenchild 6 SWD #1 (06-25S-29E)

EXHIBIT 3.B

# Ellenburger Isopach, Faults, and Well Locations




## Legend

- Proposed Well
- Cross Sect Wells
- Cross Sect Line
- Tie Line
- Lower Ordovician (Ellenburger) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, TX
- County Boundaries, NM

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults (if shown) were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.

EXHIBIT 3-C

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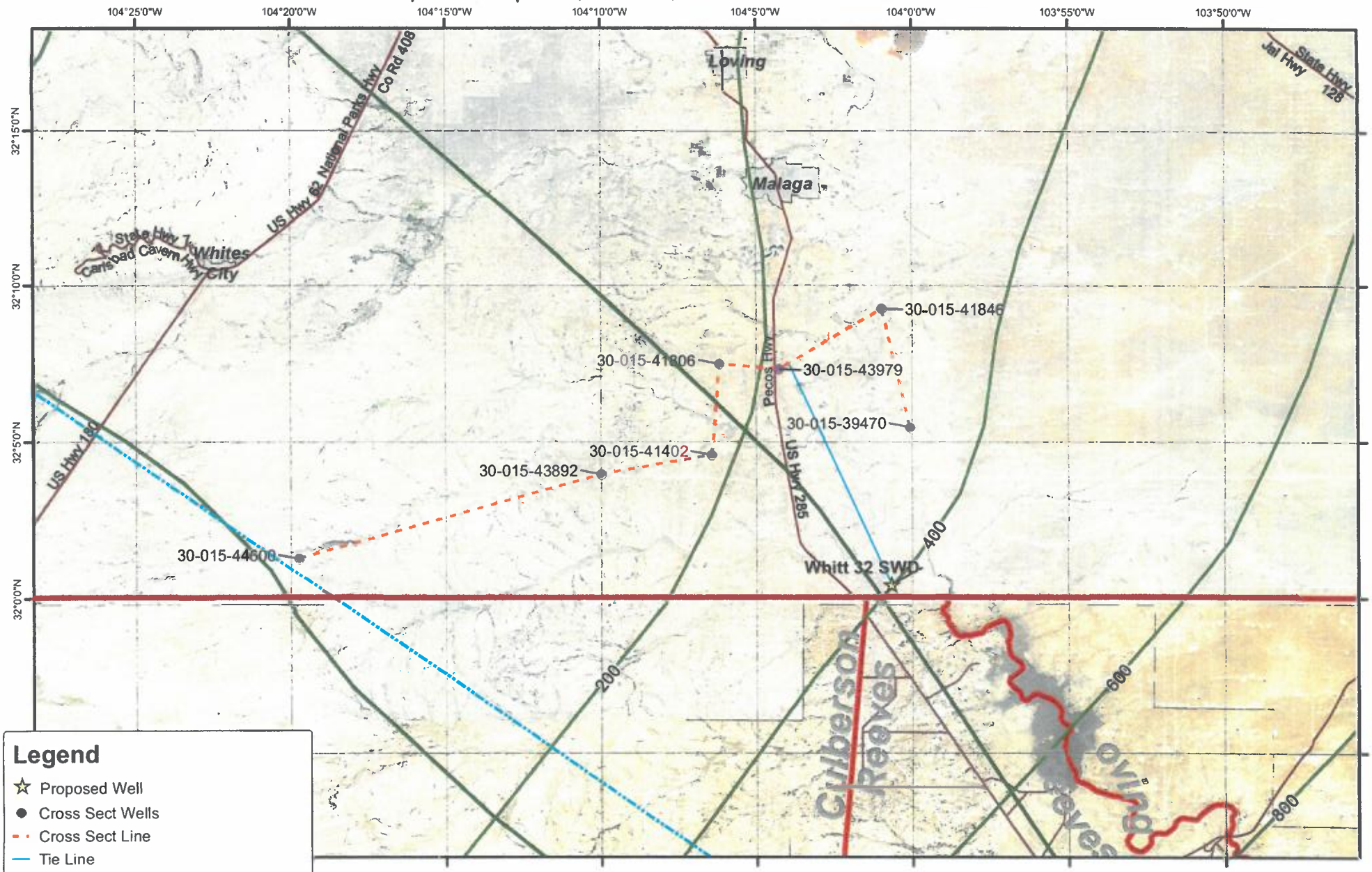
# Simpson Isopach, Faults, and Well Locations




## Legend

- Proposed Well
- Cross Sect Wells
- Cross Sect Line
- Tie Line
- Middle Ordovician (Simpson) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, TX
- 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 (if shown) were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.

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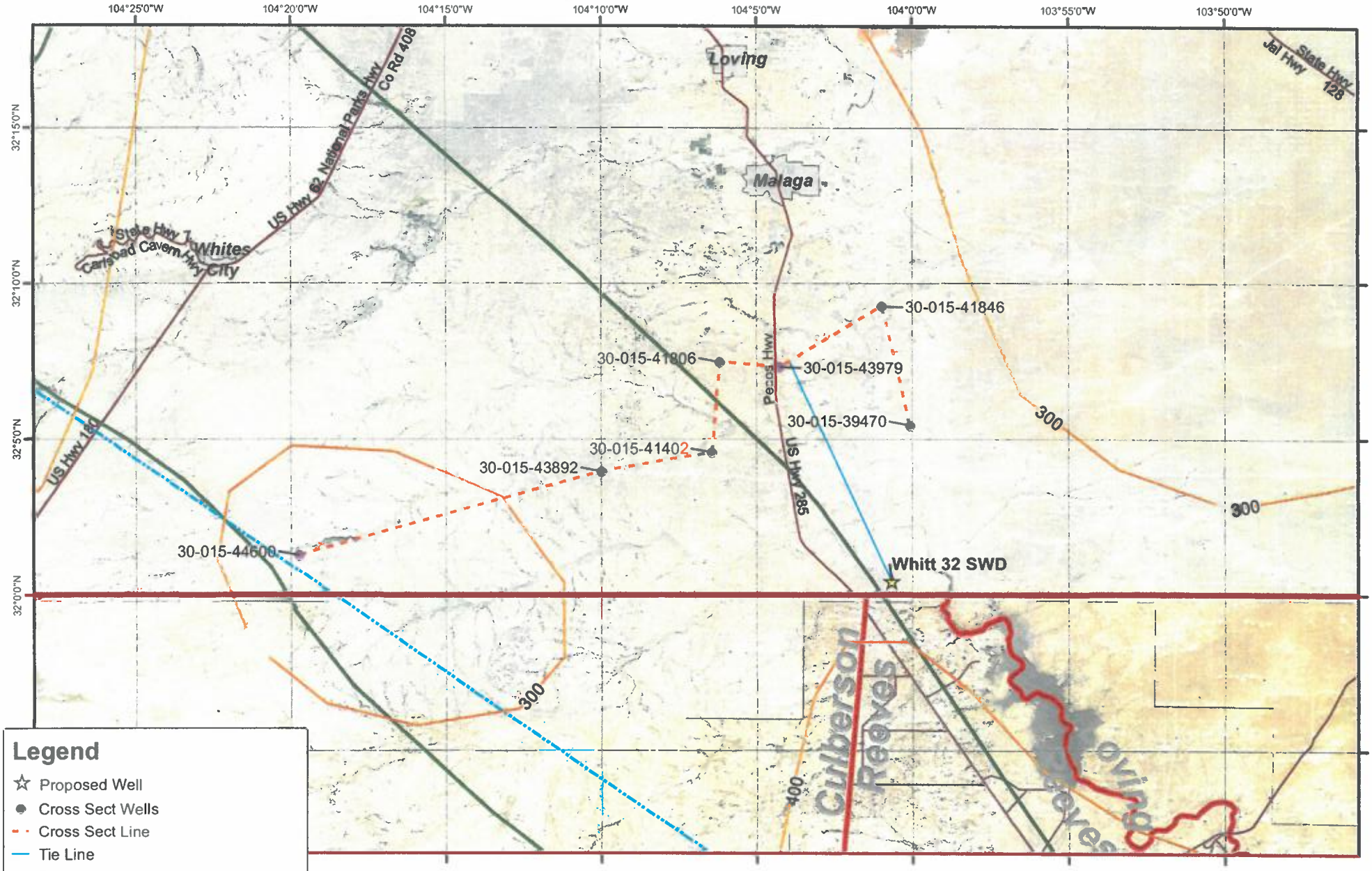
WESTERN Geoinformatics

# Montoya Isopach, Faults, and Well Locations




## Legend

- Proposed Well
- Cross Sect Wells
- Cross Sect Line
- Tie Line
- Upper Ordovician (Montoya) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, TX
- County Boundaries, NM

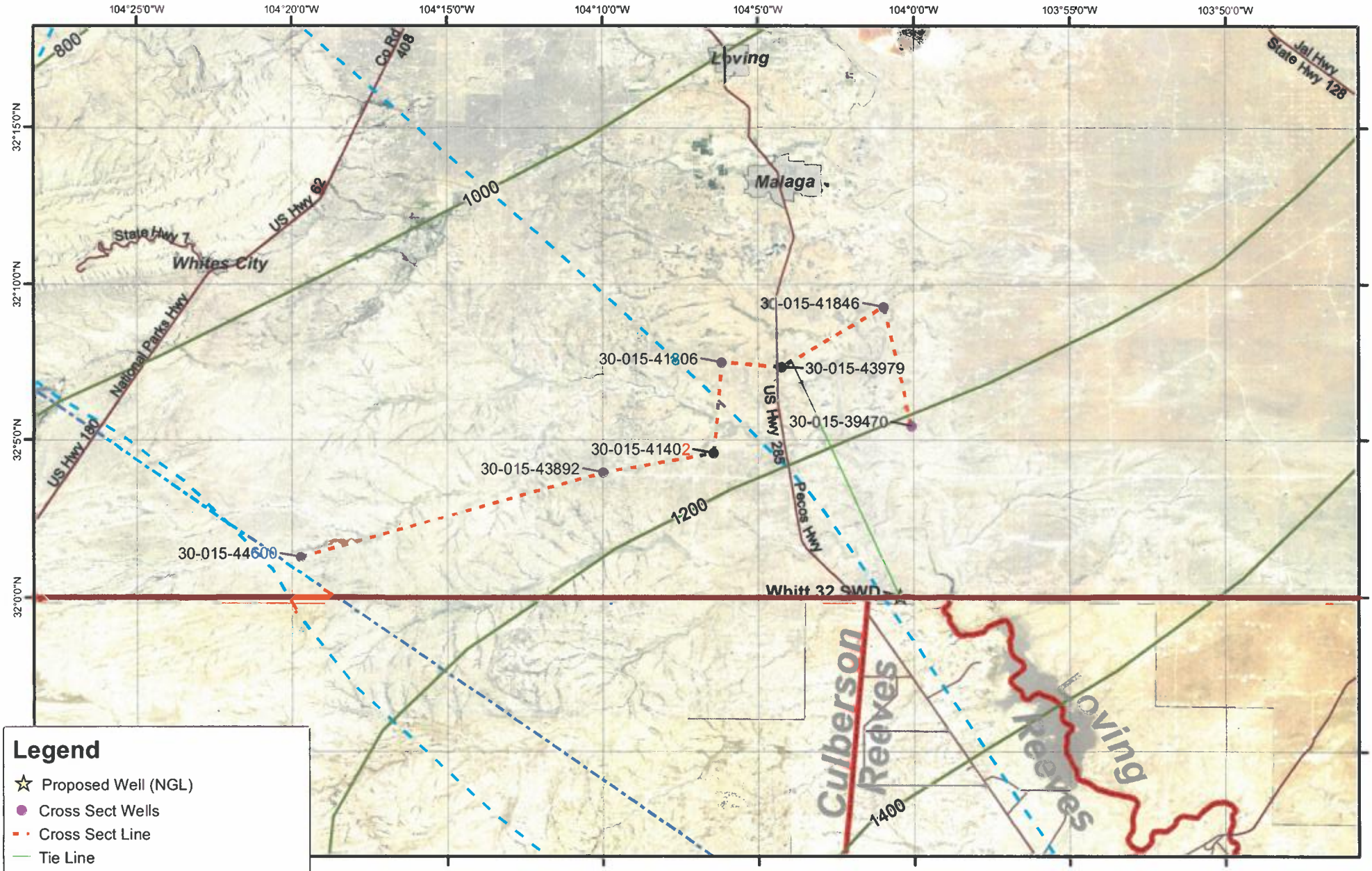
5 2.5 0 5 10 15 20 Miles

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults (if shown) were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.

N

WESTERN Geoinformatics
CUSTOM MAPPING FOR EVERYONE

# Wristen/Fusselman Isopach, Faults, and Well Locations




## Legend

- ☆ Proposed Well (NGL)
- Cross Sect Wells
- Cross Sect Line
- Tie Line
- Sil/Dev (Wristen/Fusselman) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, TX
- County Boundaries, NM

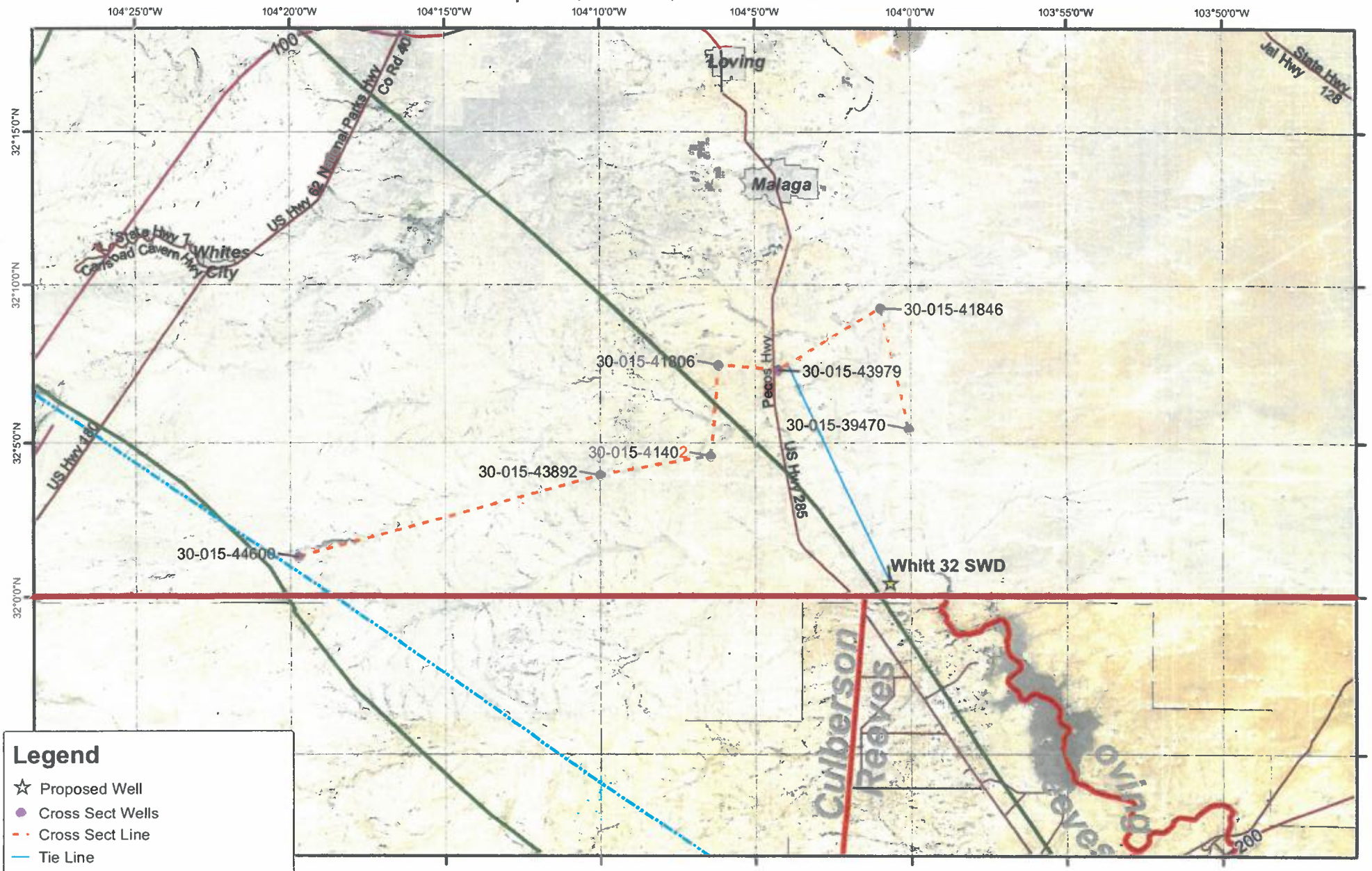
5 2.5 0 5 10 15 20 Miles

N

Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Basement faults (if shown) were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.

WESTERN Geoinformatics

# Woodford Isopach, Faults, and Well Locations




## Legend

- Proposed Well
- Cross Sect Wells
- Cross Sect Line
- Tie Line
- Late Devonian (Woodford) Isopach
- Precambrian Faults
- Basement Faults
- Roads
- Towns/Cities
- County Boundaries, TX
- 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 (if shown) were digitized from Tectonic Map of Texas (Ewing, 1990)
Precambrian faults were digitized from Frenzel et al (1998) Figure 6.

WESTERN Geoinformatics

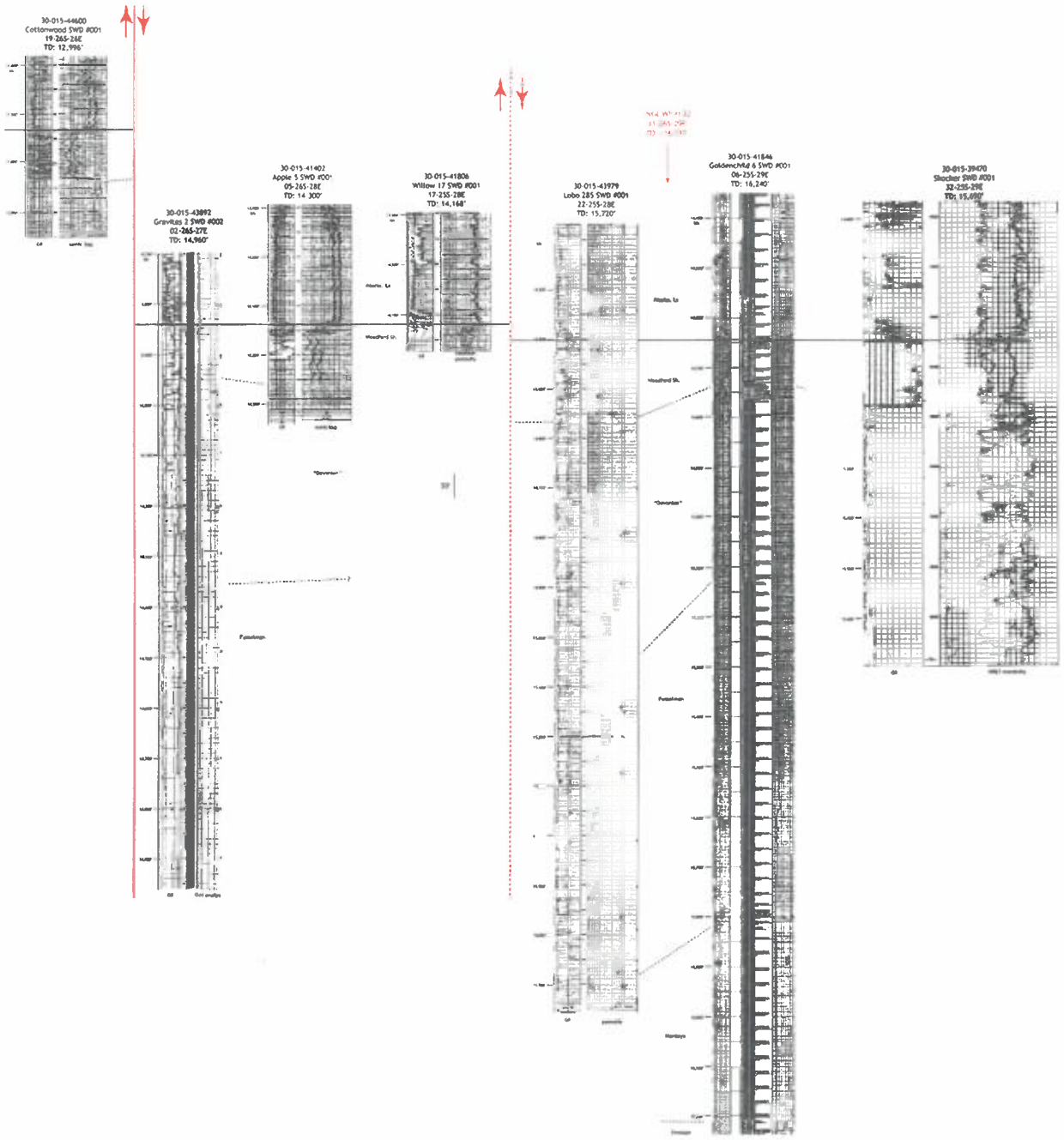

30-015-44600
Cottonwood SWD #001
19-26S-26E
TD: 12,996'
30-015-43892
Gravitas 2 SWD #002
02-26S-27E
TD: 14,960'
30-015-41402
Apple 5 SWD #001
05-26S-28E
TD: 14,300'
30-015-41806
Willow 17 SWD #001
17-25S-28E
TD: 14,168'
30-015-43979
Lobo 28S SWD #001
22-25S-28E
TD: 15,720'
30-015-41846
Goldenchild 6 SWD #001
06-25S-29E
TD: 16,240'
30-015-39470
Shocker SWD #001
32-25S-29E
TD: 15,690'

EXHIBIT
3-D

# Exhibits of Dr. Steven Taylor
# On Behalf of NGL Water Solutions Permian, LLC

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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475 (WHITT 32)**

**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 amended application that NGL Water Solutions Permian, LLC ("NGL") filed in this matter and I have conducted a study related to the areas which is the subject matter of the application.

EXHIBIT
4

5. The applicant, NGL (OGRID No. 372338), seeks an order approving the Whitt 32 SWD #1 well, which is a salt water disposal well.

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

7. The closest known fault line is located approximately 2 to 20 miles away from where the well is proposed to be located.

8. I have studied seismic catalogs, unpublished catalogs and USGS catalogs for the time period of 2010 – 2017 selective events within 50 km of one the Striker SWD wells. Attached as Exhibit A is a copy of my study, which I prepared in May 2019 when this case was originally set for hearing. My study concludes that there is very little seismic activity in the areas where the well is proposed to be located. My conclusions have not changed since I prepared my study.

9. 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 well. A copy of the studies are attached hereto as Exhibit B.

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

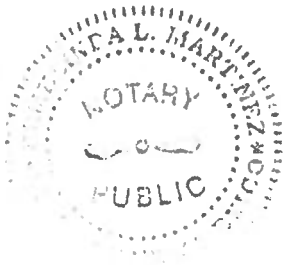
*[Signature page follows]*

Steven Taylor
Dr. Steven Taylor

SUBSCRIBED AND SWORN to before me this 19th day of July, 2019 by Dr. Steven Taylor.

Notary Public

My commission expires: 02.18.22



# Seismic Catalog Analysis Within 50 km of Whitt 32 SWD #1 Well

Prepared for NGL-Permian
by
GeoEnergy Monitoring Systems
May 22, 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 April 30, 2019 from the three NGL seismic stations installed at Striker 2, Striker 3 and Striker 6 SWD wells installed on September 6, 2018. NGL/GeoEMS installed a seismic monitor at the Salty Dog SWD well (SDOG) in Texas just across New Mexico border on March 28, 2019 that will help constrain locations in southeastern NM.

Striker Two (STR2), Sand Dunes well, Lat/Long: 32.2072820/-103.7557370
Striker Three (STR3), Gossett well, Lat/Long: 32.2551110/-104.0868610
Striker Six (STR6), Madera well, Lat/Long: 32.2091150/-103.5359570
Salty Dog (SDOG), Salty Dog well, Lat/Long: 32.22531/ -103.045212

**Figure 1** shows seismic station locations 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 no 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 event detections listed in Table 2 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 |

EXHIBIT
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4-A

**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 |
| 01/03/19 | 09:15:48.809 | 32.2761 | -103.6732 | 6 | 5.64 | 1.63 | 0.00 |
| 01/03/19 | 23:05:33.122 | 32.2599 | -103.7654 | 4 | 5.51 | 1.60 | 0.25 |
| 01/04/19 | 09:45:38.943 | 32.2346 | -103.7798 | 4 | 4.34 | 1.98 | 0.38 |
| 01/09/19 | 10:18:54.389 | 32.2255 | -103.7166 | 5 | 2.80 | 1.47 | 0.41 |
| 01/27/19 | 07:33:47.127 | 32.2219 | -103.7220 | 5 | 3.53 | 1.72 | 0.31 |
| 02/19/19 | 09:35:15.109 | 32.2443 | -103.6898 | 1 | 4.17 | 1.20 | 0.00 |

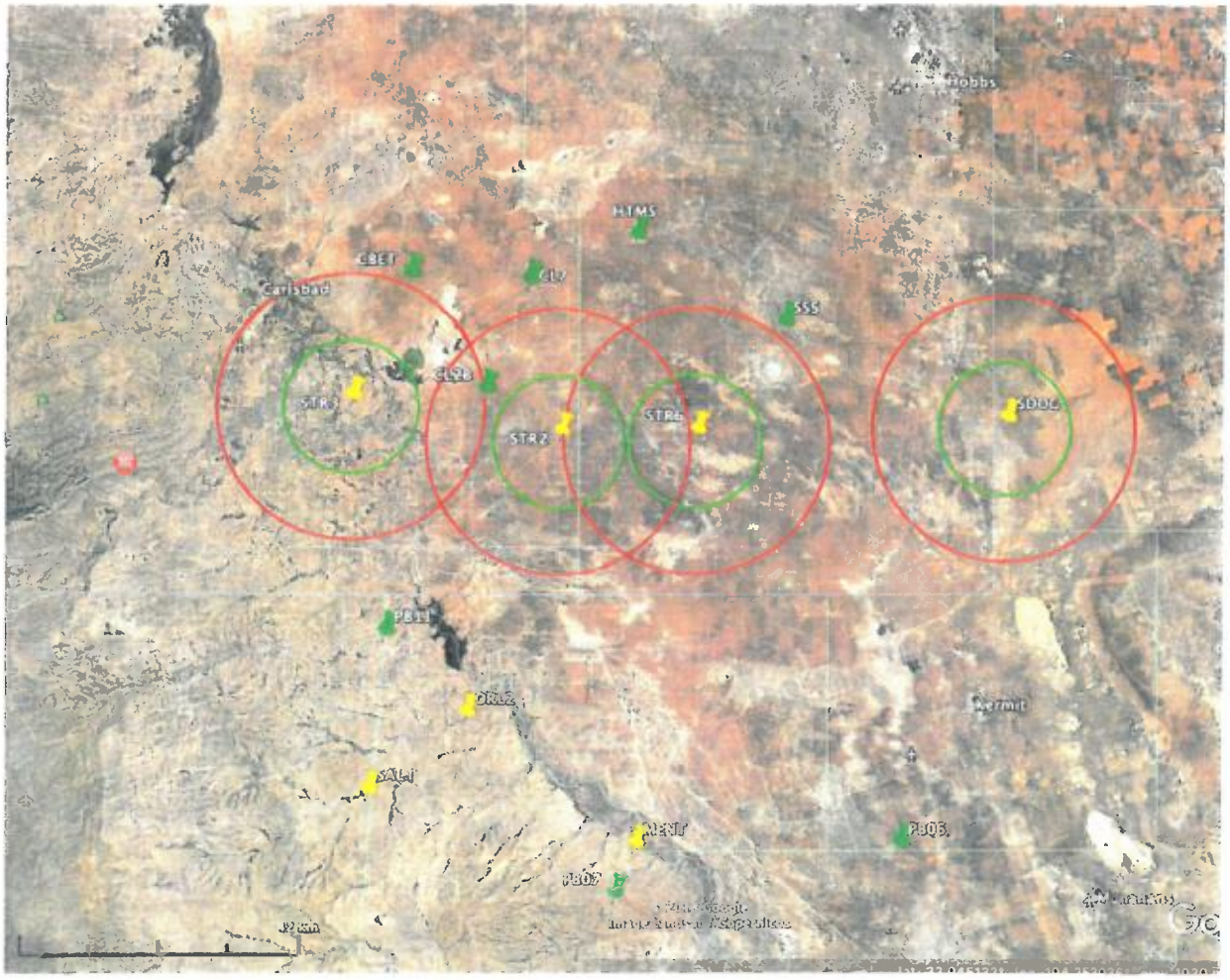


**Figure 1.** NGL-Permian seismic stations (yellow pushpins). Green and red circles around stations show approximate detection levels for ML 1.0 and 1.5, respectively.

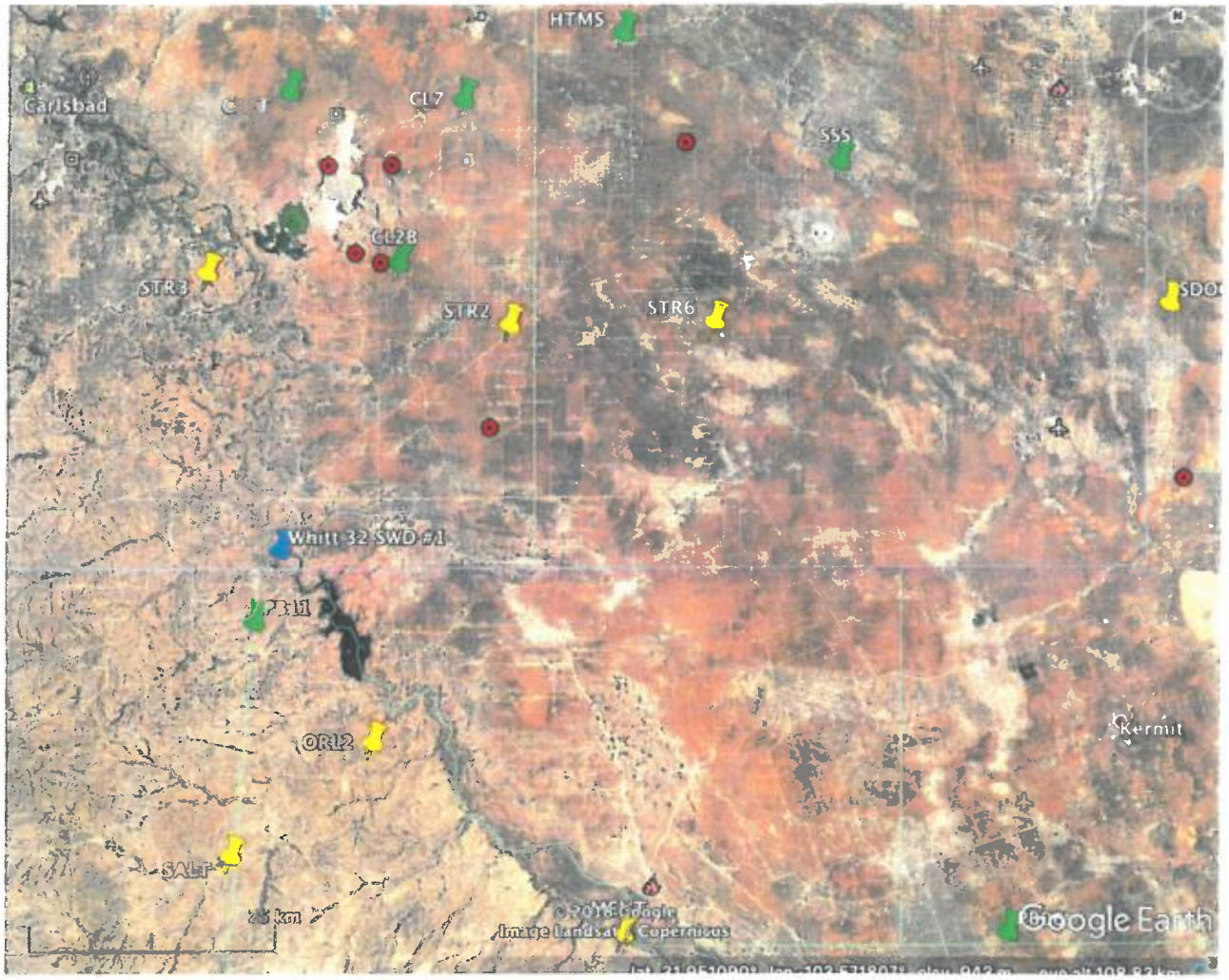


**Figure 2.** Striker SWD wells seismic station locations (yellow push pins) and existing NGL-Permian seismic stations (yellow pushpins). Other regional seismic stations run by TexNet and New Mexico Tech are shown as green pushpins. Historic seismicity listed in Table 1 shown as red circles. Whitt 32 SWD #1 well is shown as blue pushpin.

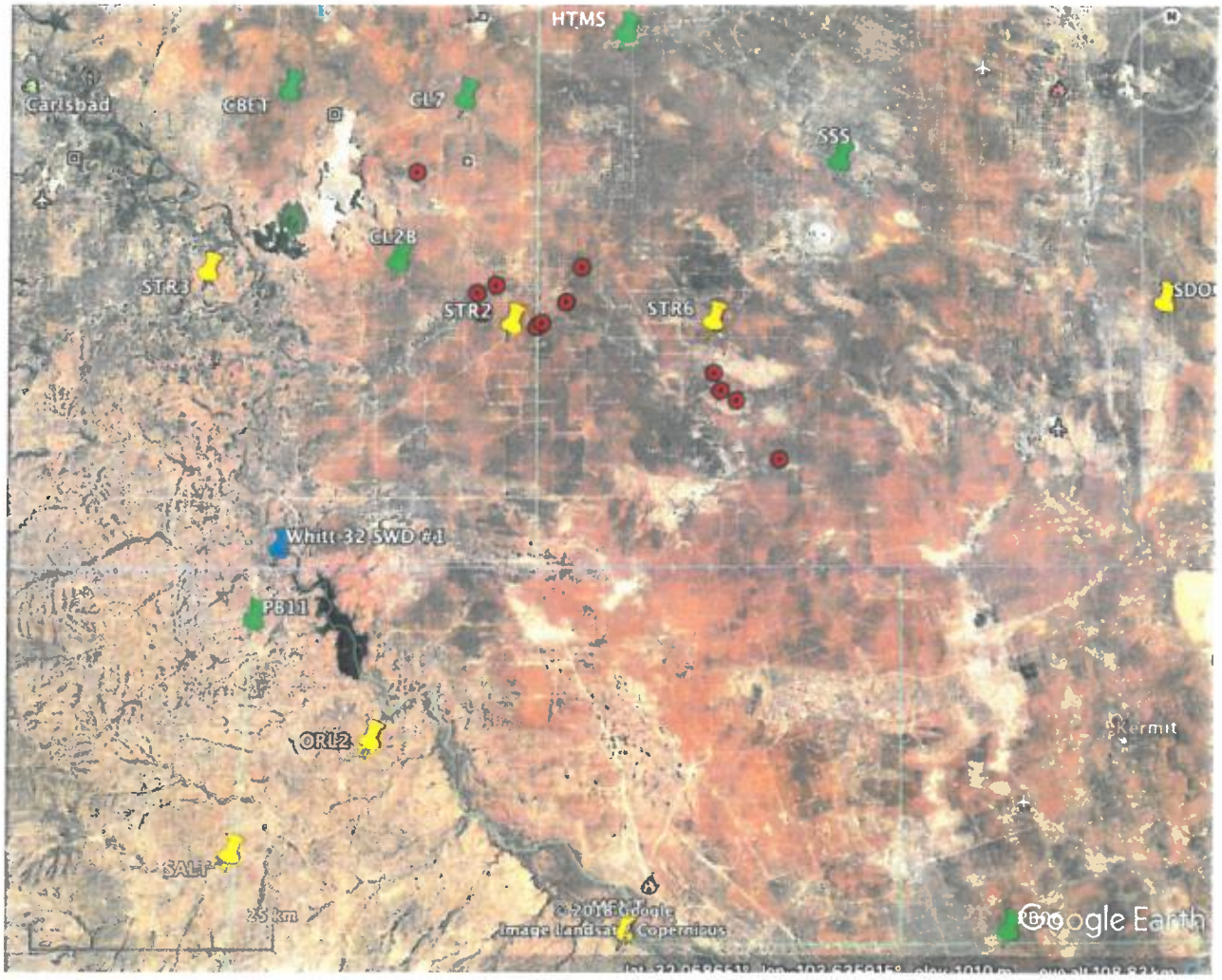


**Figure 3**. Seismic events in between September 6 and April 30, 2019 as red circles (Table 2). Whitt 32 SWD #1 well shown as blue pushpin. Seismic stations as yellow (NGL) or green (NMT and TexNet) pushpins.

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Texas Registered Engineering Firm No F – 16381

July 22, 2019

RE: FSP Analysis
NGL Water Solutions Permian, LLC **(Whitt 32 SWD #1)**
Eddy County, 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 **Whitt 32 SWD #1** well does 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 the proposed well location 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. There are no historical USGS earthquake locations within the review area. (see **Exhibit No. 1)**

**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 well relative to the faults documented in this area. The faults are sourced from the Texas Bureau of Economic Geology

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EXHIBIT tabbies 4.B

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.

In my own independent subsurface mapping of the area I did not find evidence for the BEG fault in this area. Also, Geomap structure maps on the top of the Siluro-Devonian do not show any faults in this area. In my opinion this area is unfaulted, however I did honor the BEG faults in the FSP model.

The FSP 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 Subject well was modelled at 50,000 bbls/day and held constant for the life of the analysis (+25 years). The proposed Whitt 31 SWD is also included in the model at 50,000 bbls/day and held constant for the life of the analysis (+25 years). The Concho Littlefield 33 Federal SWD #1 was included in the model at 40,000 bbls/day.
(Only wells within the 10 km radius are used in the model)

The wells in the model: **(Exhibit No. 3 and Exhibit No. 1)**

8 – Whitt 31 SWD
9 – Whitt 32 SWD (proposed)
10 – Littlefield 33 Federal SWD #1
1 – 3001523615
2 – 3001525530
3 – 3001539470
4 – 3001543630
5 – 3001544001
6 – 4210932853
7 – 4210933166

**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 ΔP to slip. Faults 1-9 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 2,800 psi still only results in a 10% probability of fault slip.

**Exhibit No. 7** 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 5,383 psi along this fault. A 10% change in the azimuth of the fault could lower ΔP needed to slip to 3,250psi. The analysis is essentially the same for segments F1-F9, with the fault segments F2-F9 requiring slightly higher ΔP needed to slip. (See table 1)

**Exhibit No. 8** 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 increase of 192 psi at F6.

**Exhibit No. 9** 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 increase of 1,303 psi at F6.

**Exhibit No. 10** 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 increase of 1,671 psi at F6.

**Exhibit No. 11** 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 increase of 1,916 psi at F6.. Note that this pressure is still well below the pressure that could initiate fault slip, which takes +3,650 psi.

**Exhibit No. 12** 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 increase of 2,106 psi at F6. Note that this pressure is still well below the pressure that could initiate fault slip, which takes +3,650 psi.

**Exhibit No. 13** 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 increase of 2,262 psi at F6. Note that this pressure is still well below the pressure that could initiate fault slip, which takes +3,650 psi.

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 | 5,383 | 3,250 | 199 |
| F2 | 5,901 | 3,850 | 447 |
| F3 | 5,901 | 3,850 | 525 |
| F4 | 6,246 | 3,800 | 730 |
| F5 | 6,246 | 3,800 | 1,282 |
| F6 | 6,232 | 3,650 | 2,262 |
| F7 | 6,190 | 3,450 | 2,017 |
| F8 | 6,244 | 3,700 | 934 |
| F9 | 6,242 | 3,700 | 246 |

**TABLE 1**

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

**Conclusion**

The BEG faults and fault trends in the area of review are not optimally oriented to slip. The orientation of the faults requires significant pressure changes (ΔP +5,383 psi) based on the fixed input parameters and the ΔP increase at the faults only reaches 2,262 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

Todd W. Reynolds

**FTI Platt Sparks**
512.327.6930 office

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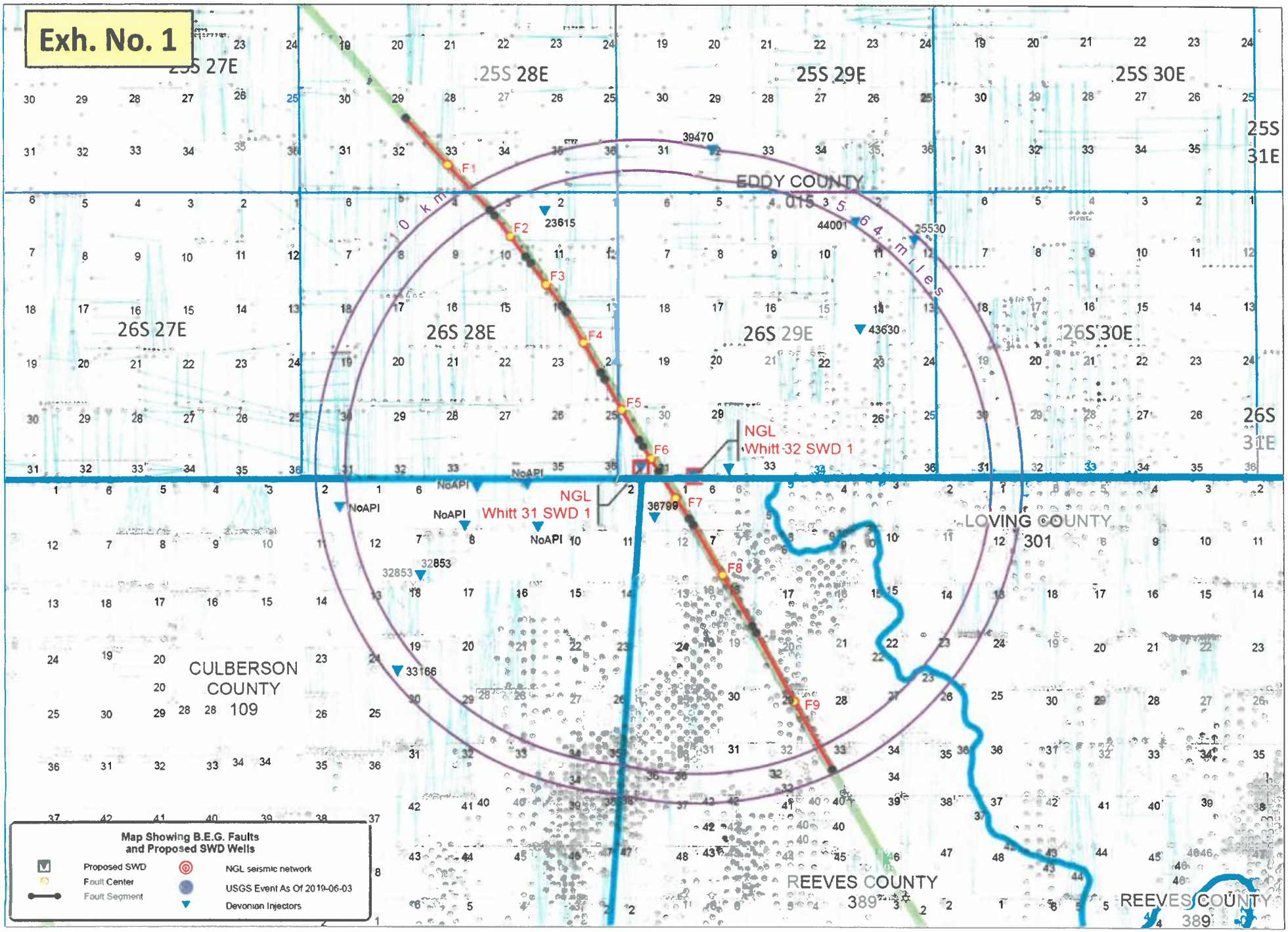


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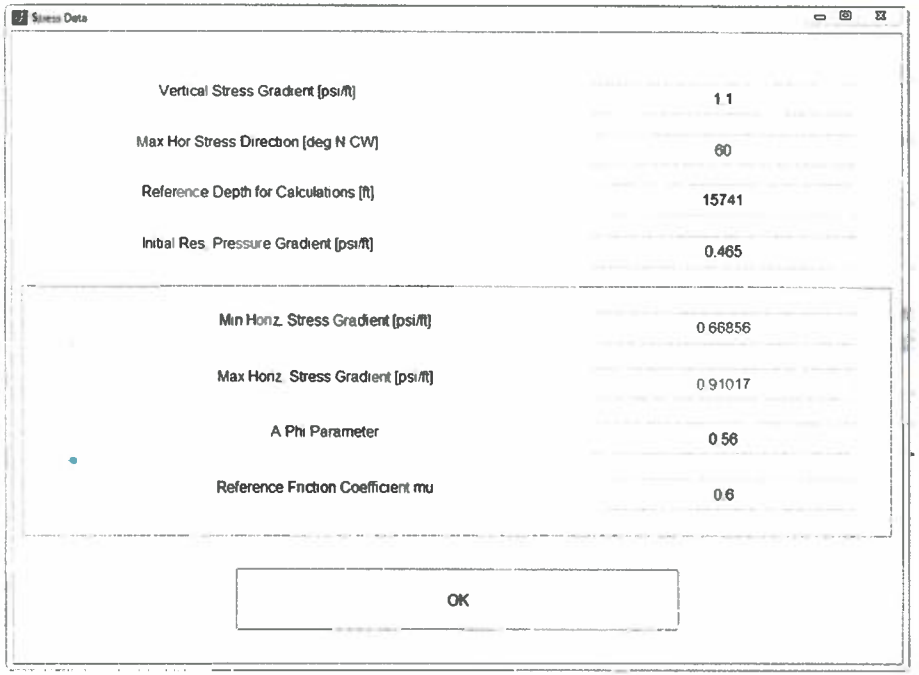
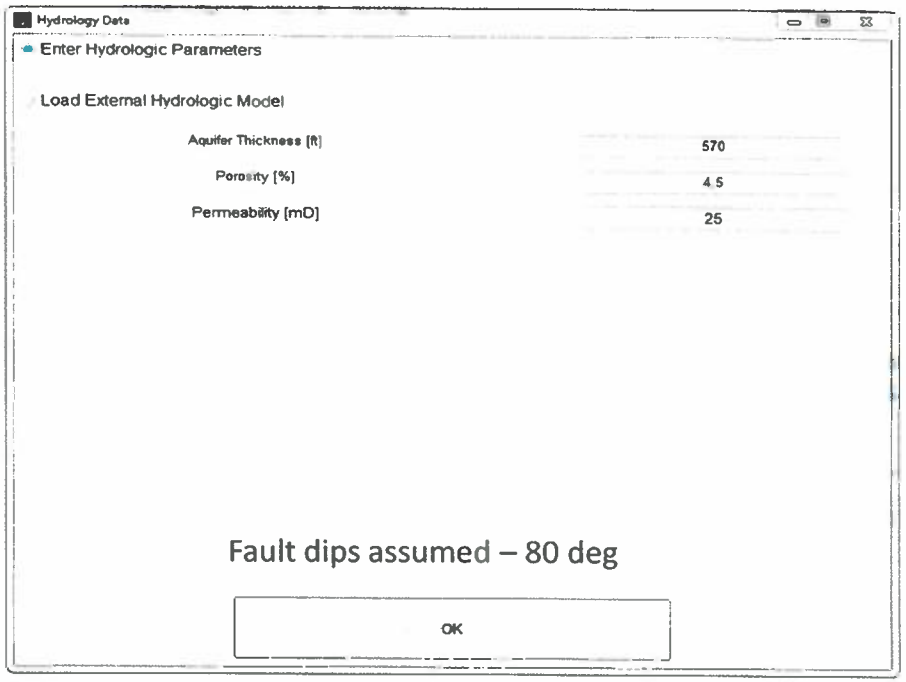
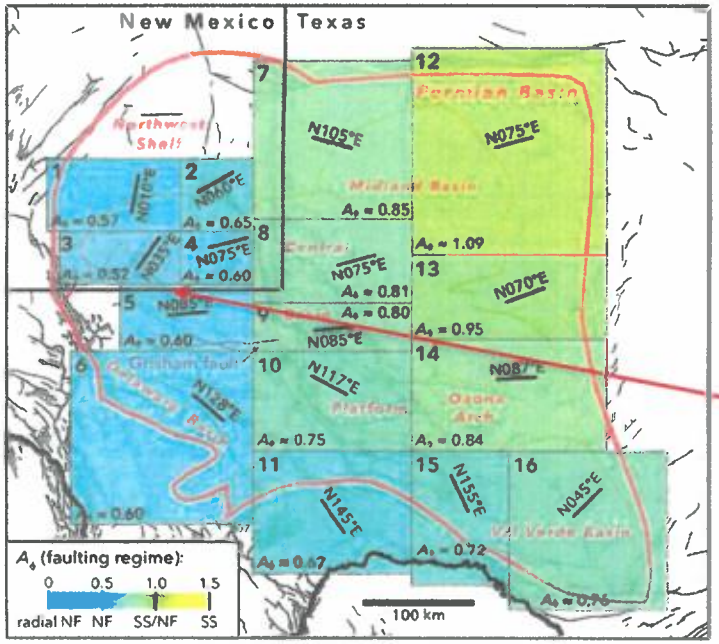
68

**Exh. No. 2**

# FSP INPUT PARAMETERS




## Input Parameter Comments

Hydrologic Parameters – Derived from nearby logs

Stress Gradients – Derived from A Phi parameter from Snee/Zoback paper (.56)

Max Hor. Stress Direction - Derived from Snee/Zoback paper (N60E)

**Exh. No. 3**

Zoom

*Fault Slip Potential*

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

Fault Selector:

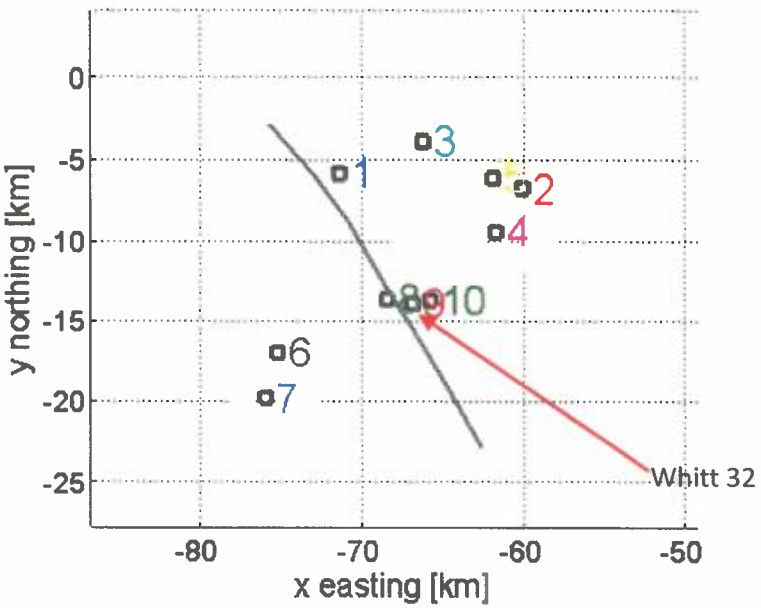
- All Faults
- Fault #1
- Fault #2
- Fault #3
- Fault #4
- Fault #5
- Fault #6
- Fault #7
- Fault #8
- Fault #9

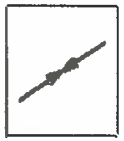
Calculate

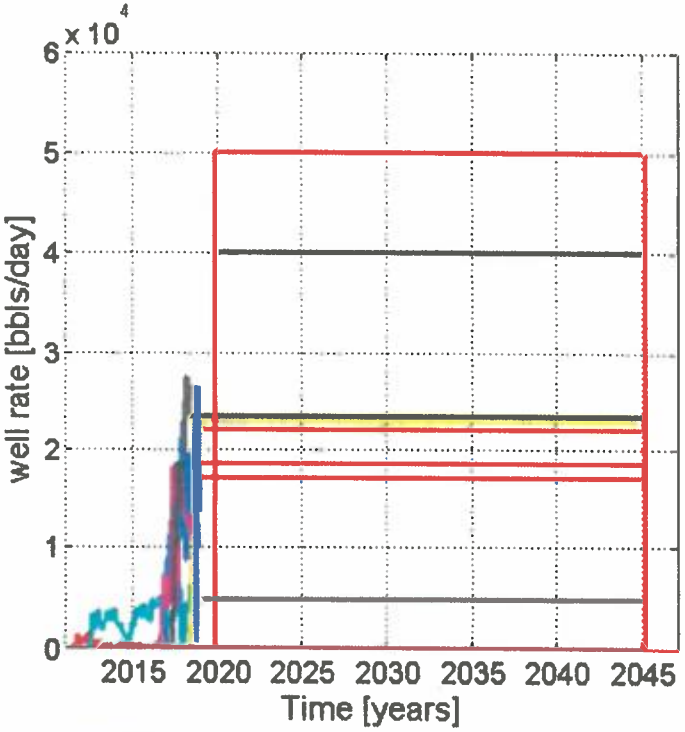
Stress Regime: Normal Faulting

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)

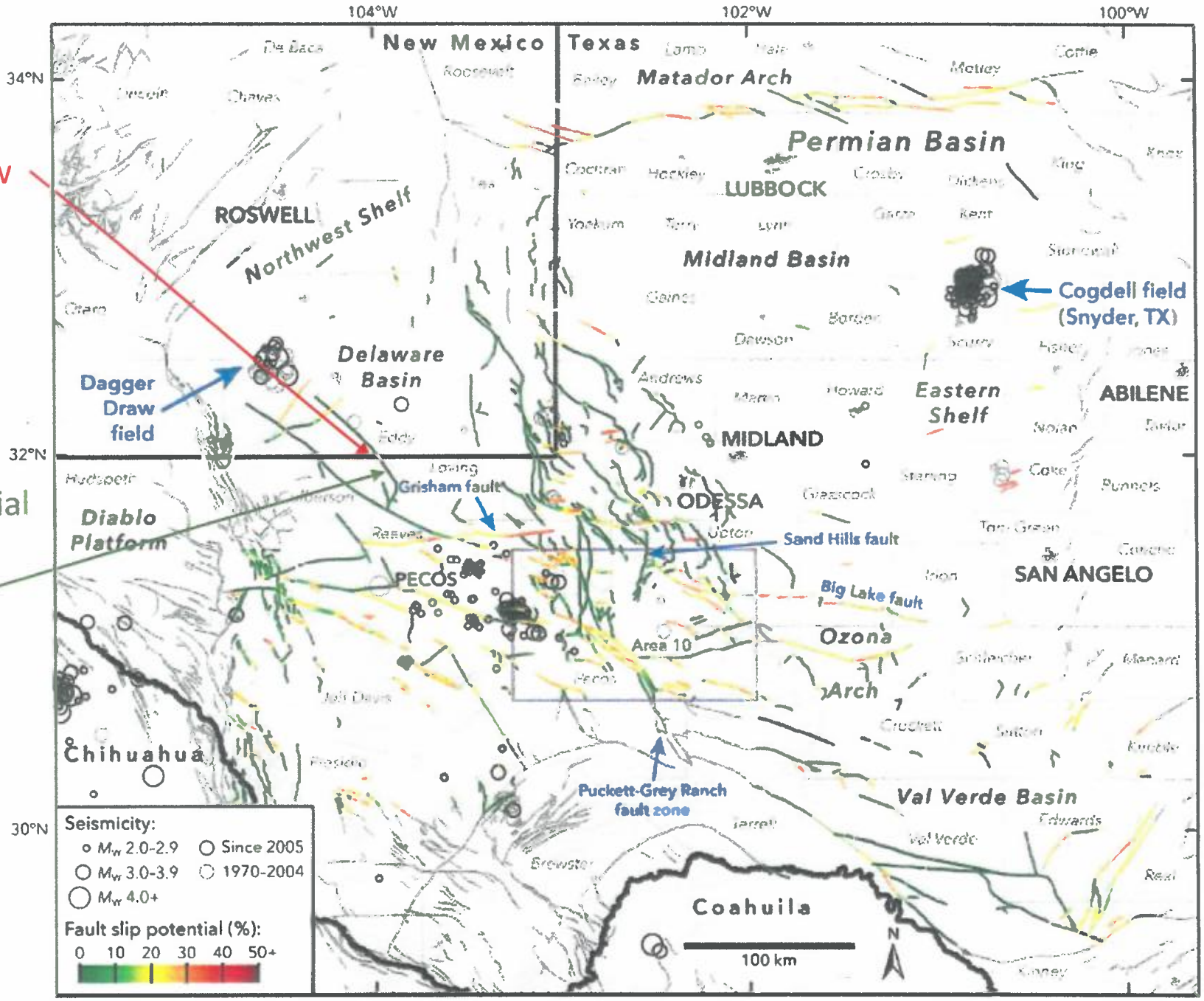



**Figure 3.** Results of our probabilistic FSP analysis across the Permian Basin. Data sources are as in Figures 1 and 2.

From Lund Snee and Zoback (2018)

**Exh. No. 5**

Zoom

# Fault Slip Potential

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

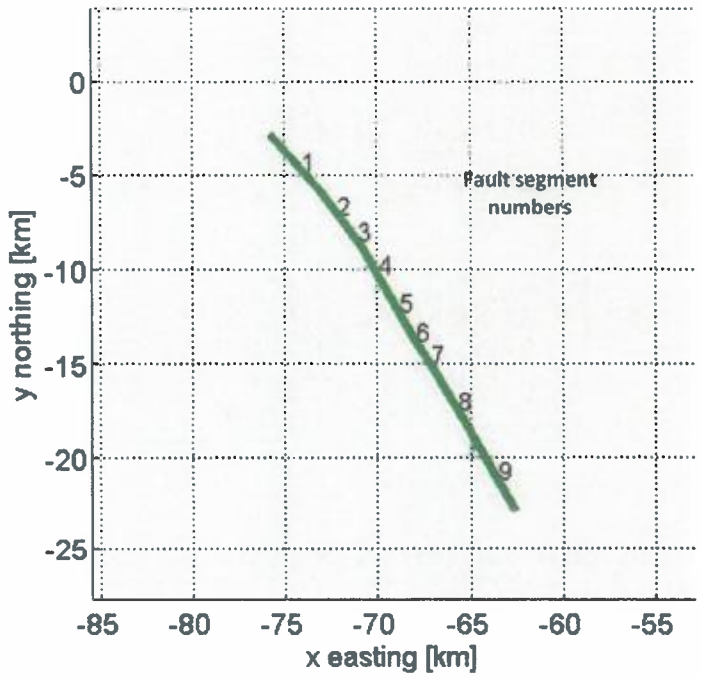
Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9

Calculate

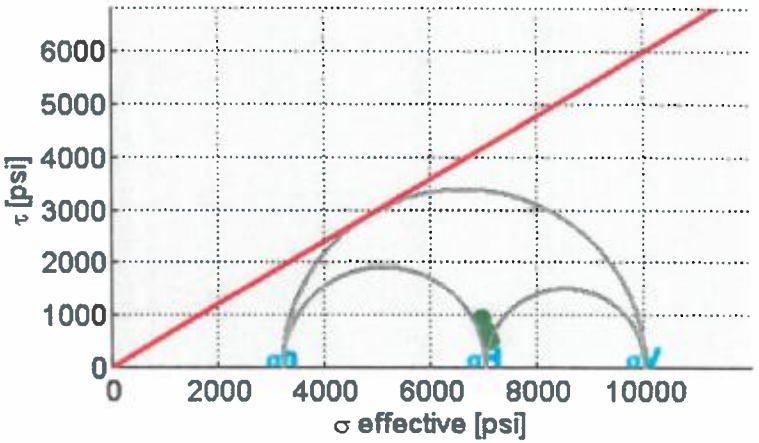
a) Fault Number

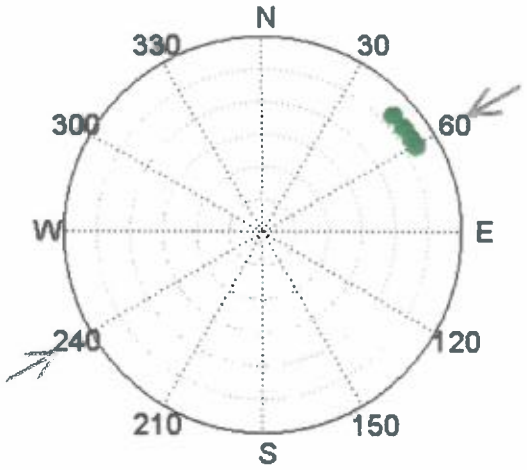
Help





Stress Regime: Normal Faulting




Stereonet Show: Fault Normals

Exh. No. 6

Zoom

# Fault Slip Potential

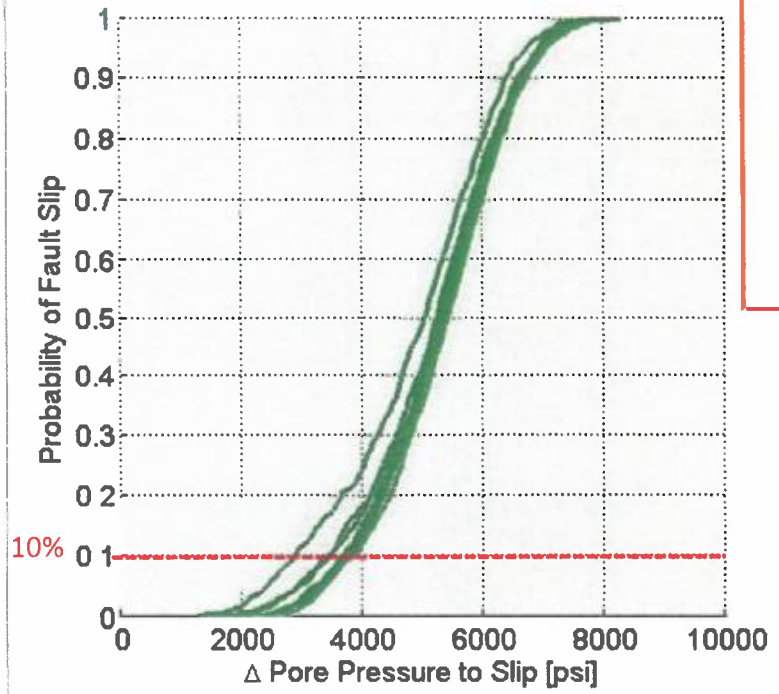
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9

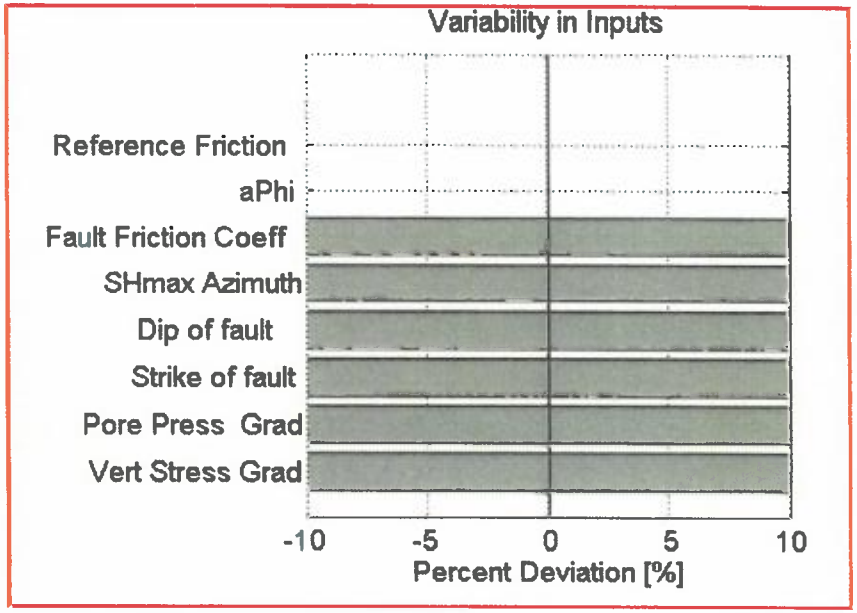
Calculate

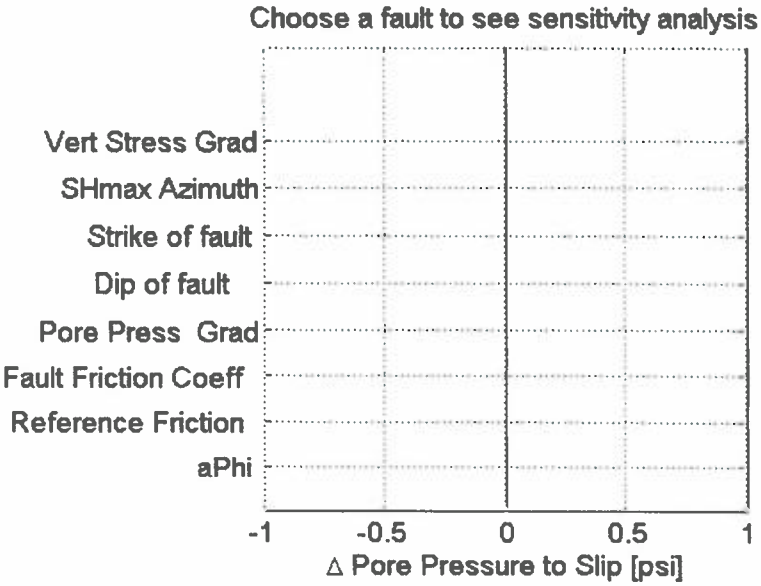
Load Distributions | Run Analysis




Max Delta PP [psi]: 10000

Export CDF data | Show Input Distributions




73

Exh. No. 7

Zoom

# Fault Slip Potential

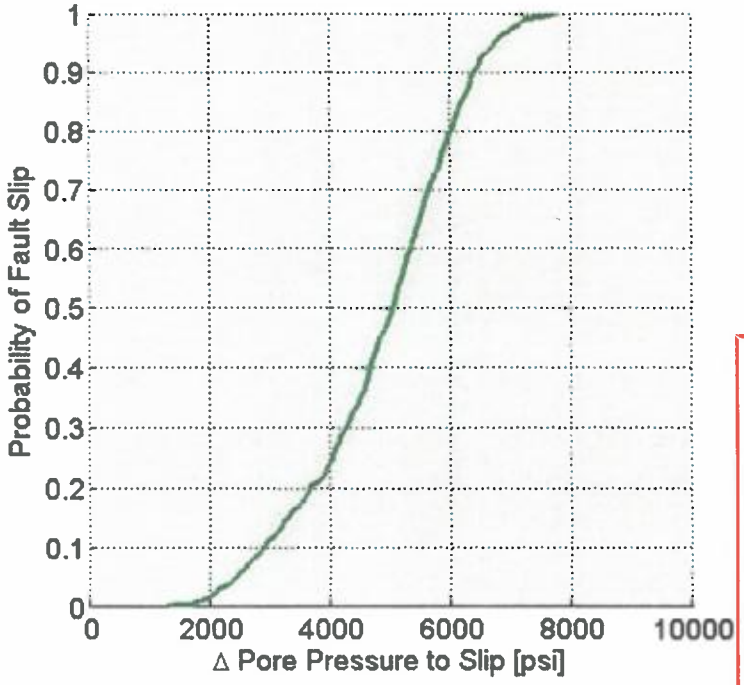
MODEL INPUTS | GEOMECHANICS | PROB. GEOM... | HYDROLOGY | PROB. HYDRO | INTEGRATED

Fault Selector:

All Faults
Fault #1
Fault #2
Fault #3
Fault #4
Fault #5
Fault #6
Fault #7
Fault #8
Fault #9

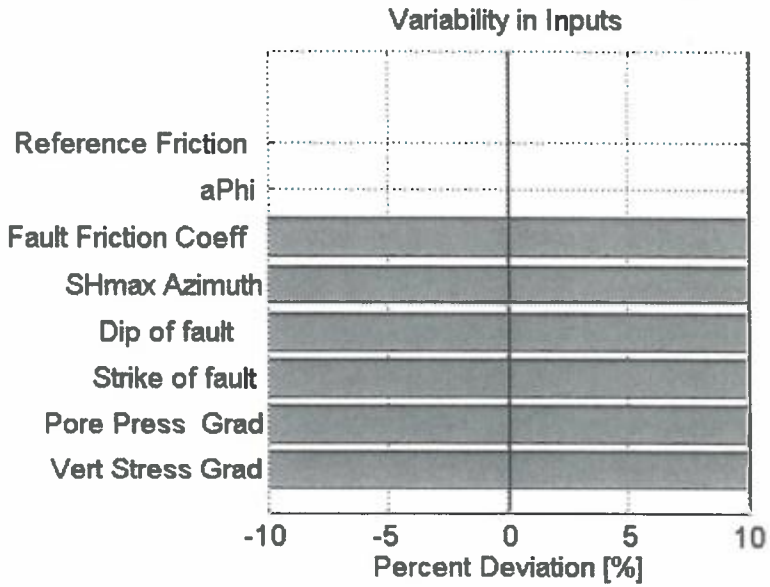
Calculate

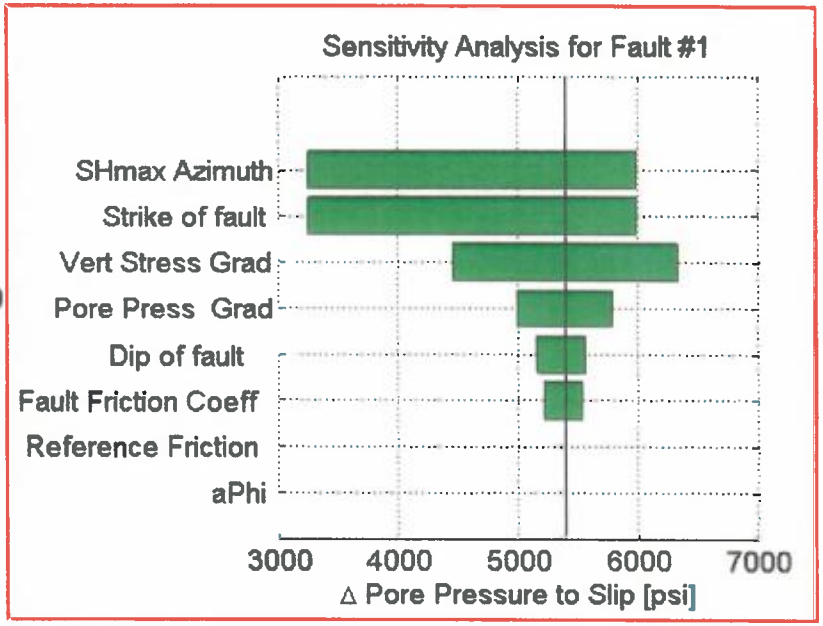
Load Distributions | Run Analysis




Max Delta PP [psi]: 10000

Export CDF data | Show Input Distributions



Exh. No. 8

Zoom

# Fault Slip Potential

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

Export

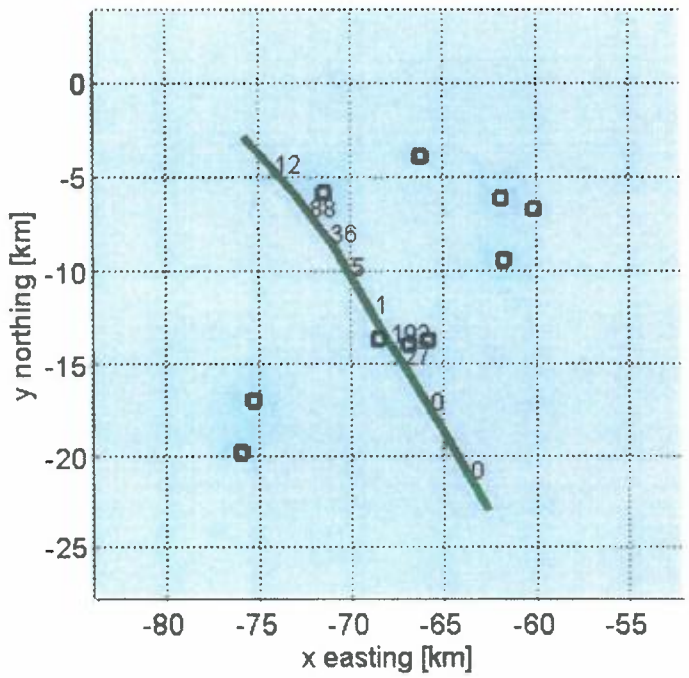
Fault Selector:

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

Calculate

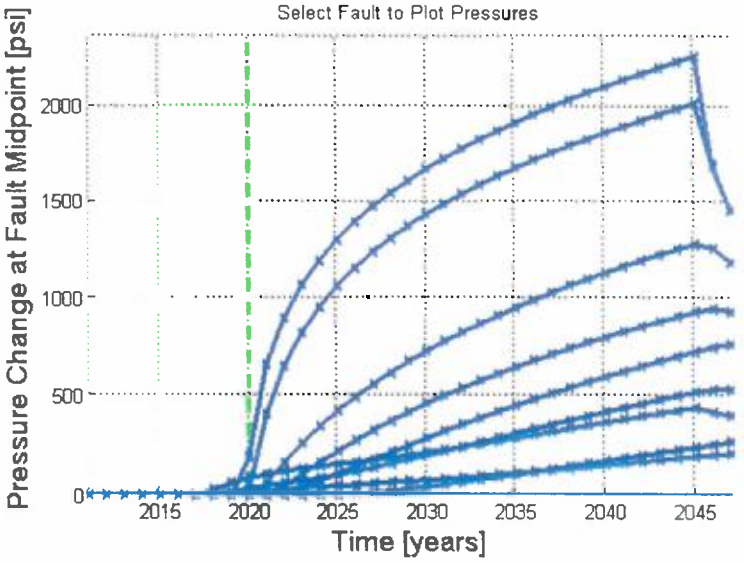
b) PP Change at fault [psi]

Summary Plots





Year: 2020

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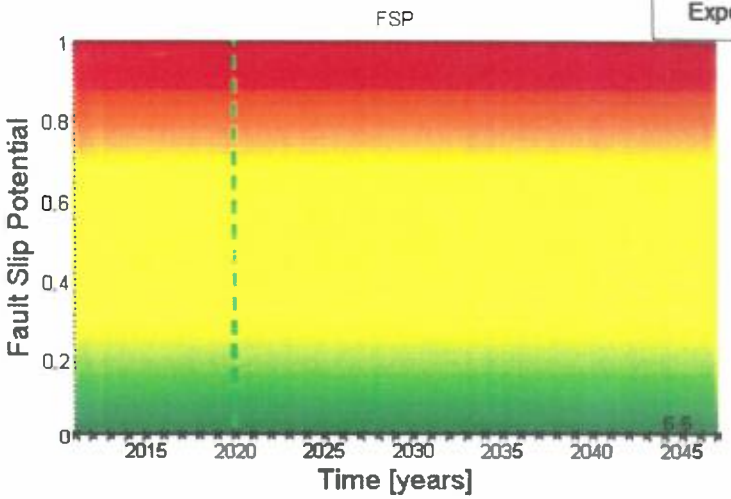


**Exh. No. 9**

Zoom

# Fault Slip Potential

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

Fault Selector:

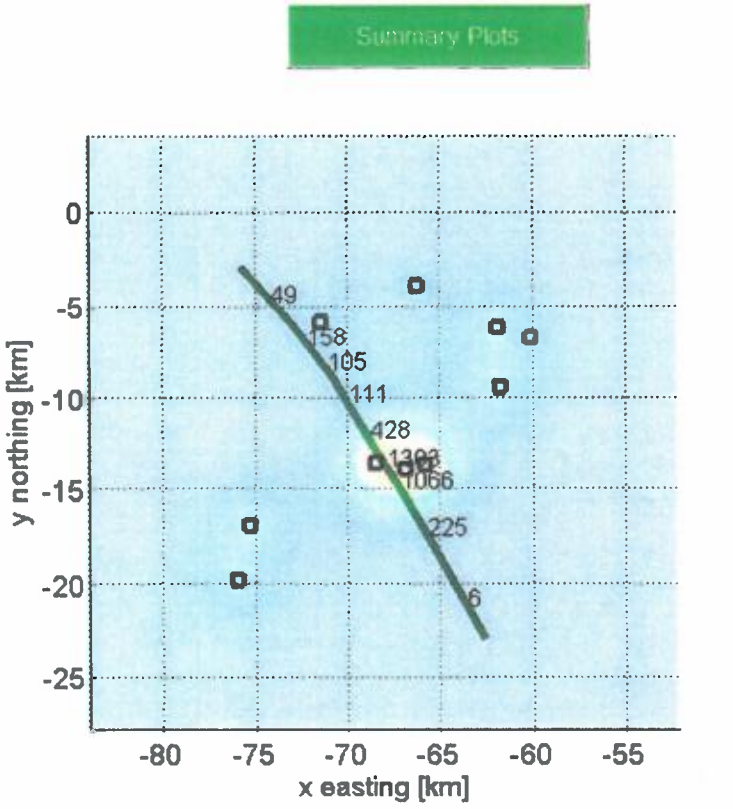
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP

Calculate

Export

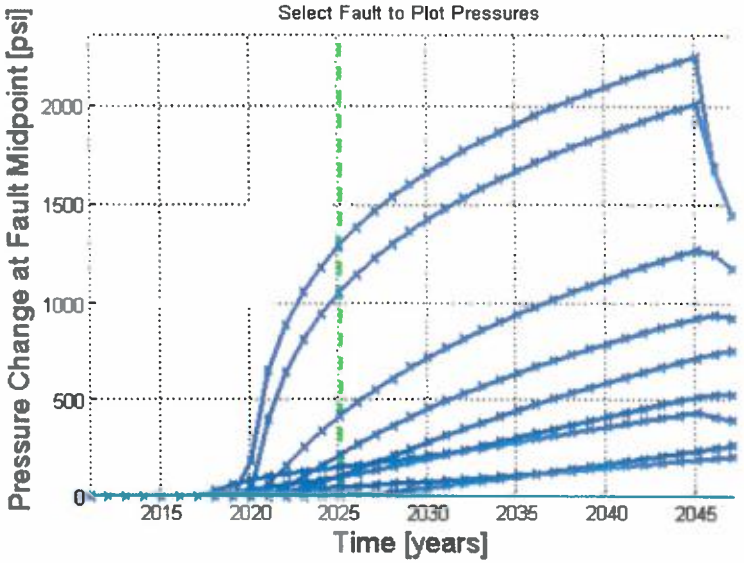
b) PP Change at fault [psi]

Summary Plots

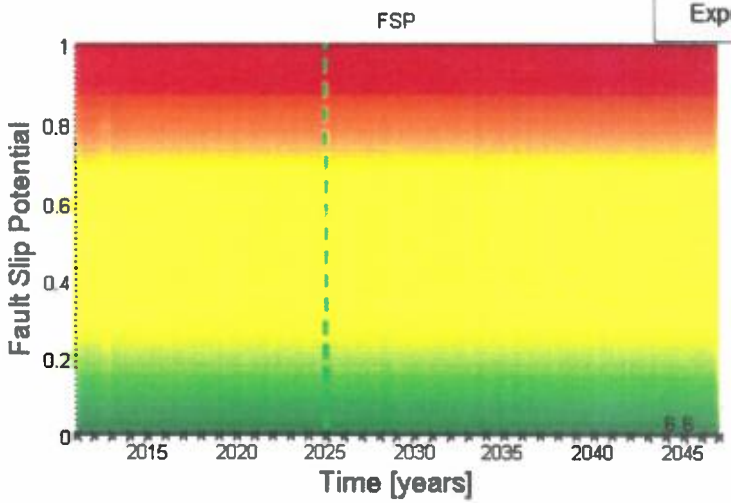




Year: 2025




Export



**Exh. No. 10**

*Fault Slip Potential*

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

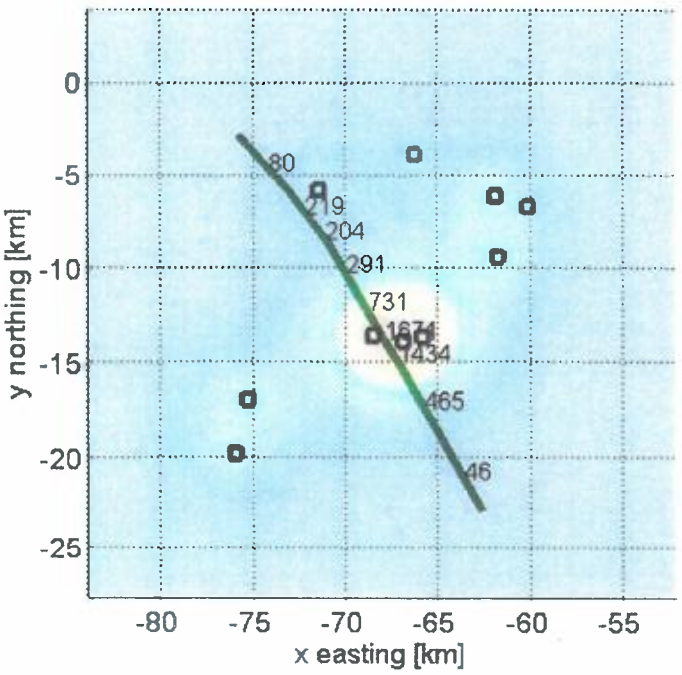
Fault Selector:

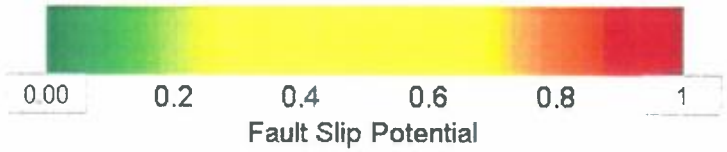
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP

Calculate

b) PP Change at fault [psi]

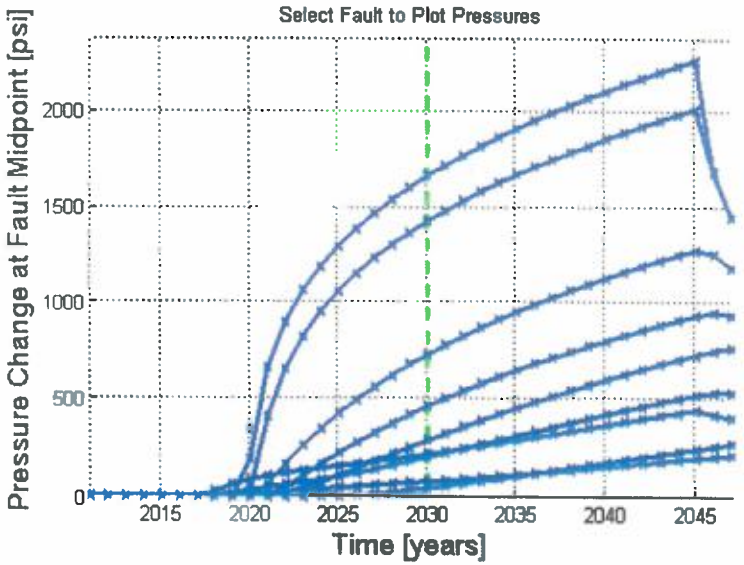
Summary Plots



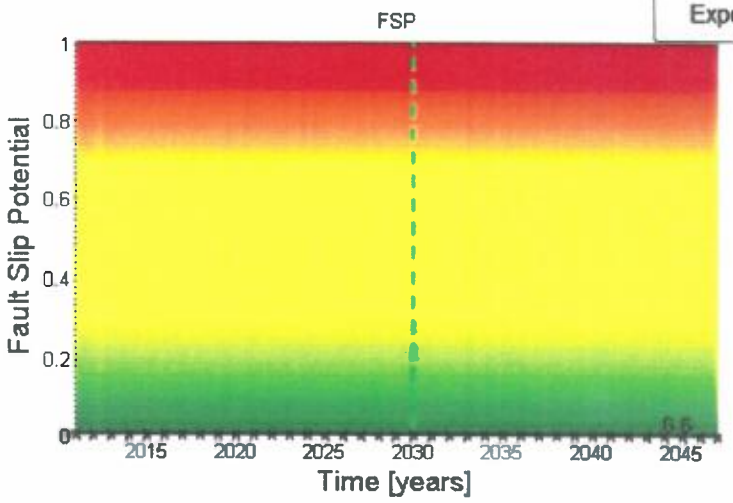




Year: 2030

Export




Export



**Exh. No. 11**

*Fault Slip Potential*

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

Fault Selector:

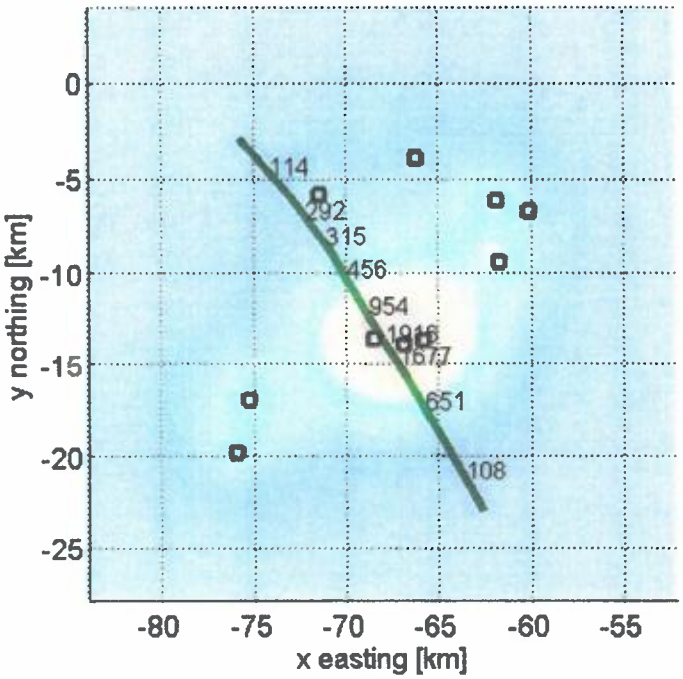
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP

Calculate

Export

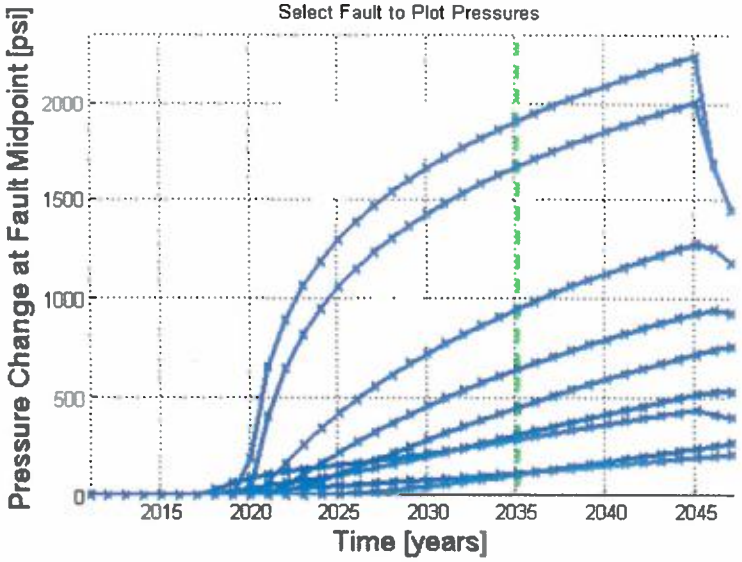
b) PP Change at fault [psi]

Summary Plots

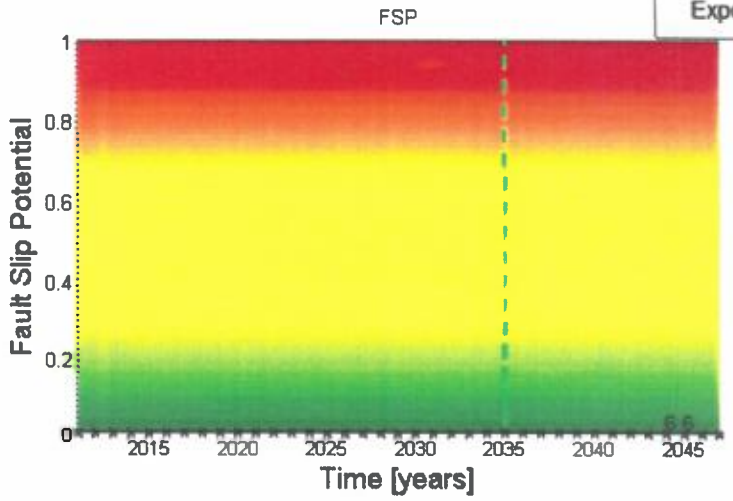




Year: 2035




Export



Exh. No. 12

# Fault Slip Potential

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

Fault Selector:

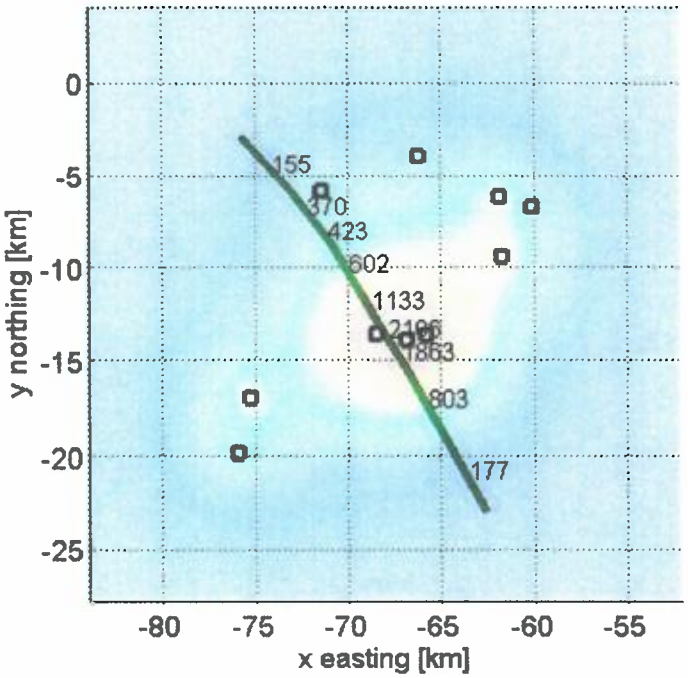
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP

Calculate

Export

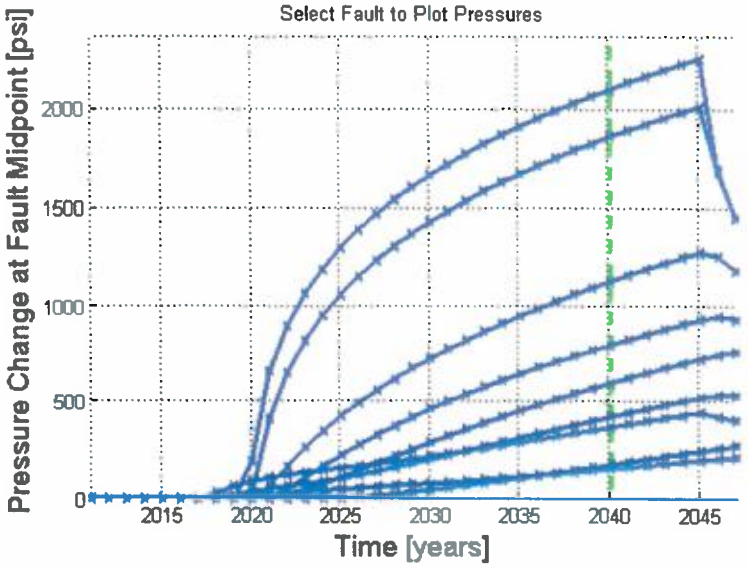
b) PP Change at fault [psi]

Summary Plots

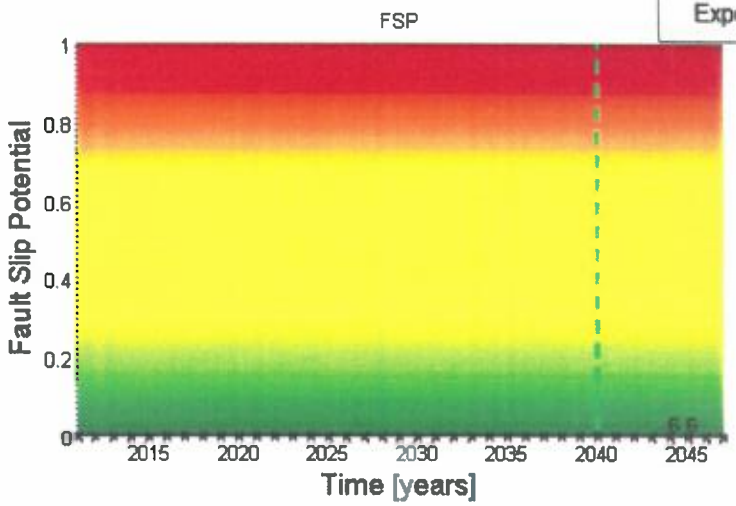




Year: 2040




Export



Exh. No. 13

# Fault Slip Potential

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

Fault Selector:

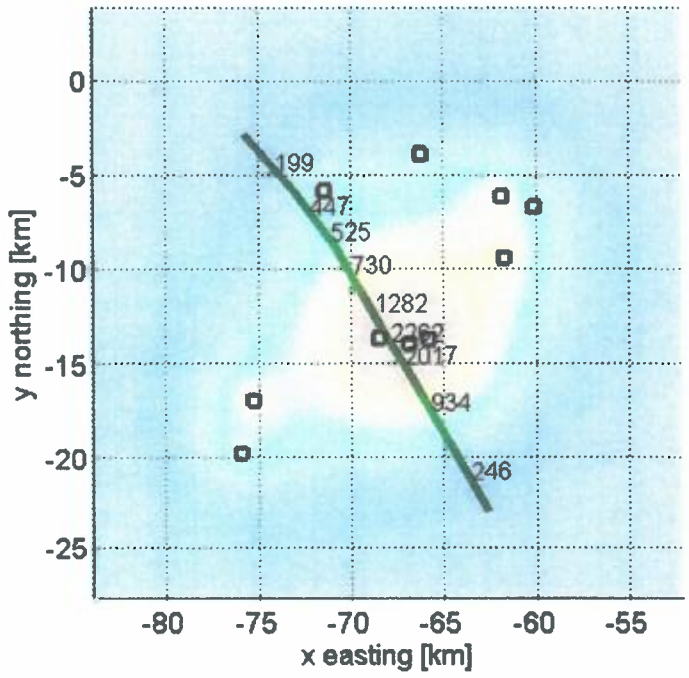
All Faults
Fault #1, 0.00 FSP
Fault #2, 0.00 FSP
Fault #3, 0.00 FSP
Fault #4, 0.00 FSP
Fault #5, 0.00 FSP
Fault #6, 0.00 FSP
Fault #7, 0.00 FSP
Fault #8, 0.00 FSP
Fault #9, 0.00 FSP

Calculate

Export

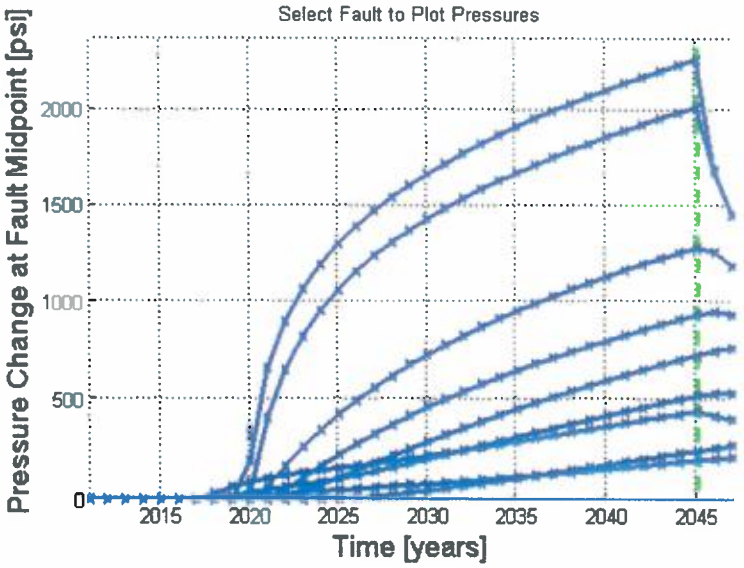
b) PP Change at fault [psi]

Summary Plots

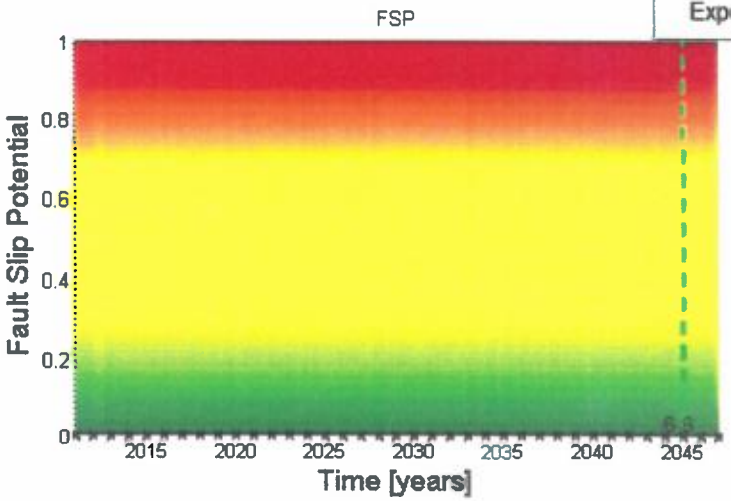




Year: 2045




Export



# Notice Affidavit

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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475**

## AFFIDAVIT

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

Deana M. Bennett, attorney in fact and authorized representative of NGL Water Solutions Permian LLC, the Applicant herein, being first duly sworn, upon oath, states that the above-referenced Application was provided under a notice letter and that proof of receipt is attached hereto.

Deana M. Bennett

SUBSCRIBED AND SWORN to before me this 19th day of July, 2019 by Deana M. Bennett.

OFFICIAL SEAL
Karlene Schuman
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 02/27/21

Notary Public

My commission expires: 02/27/21

EXHIBIT
5.A

Karlene Schuman
Modrall Sperling Roehl Harris & Sisk P.A.
500 Fourth Street, Suite 1000
Albuquerque NM 87102

PS Form 3877

Type of Mailing: CERTIFIED MAIL
04/12/2019

Firm Mailing Book ID: 165101

| Line | USPS Article Number | Name, Street, City, State, Zip | Postage | Service Fee | RR Fee | Rest.Del.Fee | Reference Contents |
|---|---|---|---|---|---|---|---|
| 1 | 9314 8699 0430 0058 0396 74 | Oil Conservation Division District IV<br>1220 South St. Francis Drive<br>Santa Fe NM 87505 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 2 | 9314 8699 0430 0058 0396 81 | Oil Conservation Division District II - Artesia<br>811 S. First Street<br>Artesia NM 88210 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 3 | 9314 8699 0430 0058 0396 98 | NGL WATER SOLUTIONS PERMIAN, LLC<br>1509 W Wall St., Ste. 306<br>Midland TX 79701 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 4 | 9314 8699 0430 0058 0397 04 | Ramsey Minerals<br>500 W 5TH ST STE 1210<br>Austin TX 78701 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 5 | 9314 8699 0430 0058 0397 11 | BUREAU OF LAND MGMT<br>301 Dinosaur Trail<br>Santa Fe NM 87508 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 6 | 9314 8699 0430 0058 0397 28 | COG OPERATING LLC<br>600 W Illinois Ave<br>Midland TX 79701 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 7 | 9314 8699 0430 0058 0397 35 | OCCIDENTAL PERMIAN LP<br>5 Greenway Plaza<br>Houston TX 77046 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 8 | 9314 8699 0430 0058 0397 42 | COG PRODUCTION LLC<br>PO Box 2064, Midland, TX 79702<br>Midland TX 79702 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 9 | 9314 8699 0430 0058 0397 59 | CONOCOPHILLIPS COMPANY<br>ATTN Charlene Winston<br>PO BOX 2197<br>Houston TX 77252 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 10 | 9314 8699 0430 0058 0397 66 | CM TX PRODUCTION LLC<br>PMB 513 12081 W Alameda Pkwy<br>Lakewood CO 80228 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| 11 | 9314 8699 0430 0058 0397 73 | Tap Rock Resources, LLC<br>602 Point Park Dr. Suite 200<br>Golden CO 80401 | $1.45 | $3.50 | $1.60 | $0.00 | 87806.007 Whitt32 Notice |
| | | **Totals:** | **$15.95** | **$38.50** | **$17.60** | **$0.00** | |
| | | | | | **Grand Total:** | **$72.05** | |

| List Number of Pieces Listed by Sender | Total Number of Pieces Received at Post Office | Postmaster: Name of receiving employee | Dated: |
|---|---|---|---|
| 11 | | | |

Transaction Report Details - CertifiedPro.net
Firm Mail Book ID= 165101
Generated: 7/18/2019 3:00:24 PM

| Transaction Report Details - CertifiedPro.net | Date Created | Reference Number | Name 1 | Name 2 | Address | City | State | Zip | Mailing Status | Service Options | Mail Delivery Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9314869904 00058039773 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | Tap Rock Resources, LLC | | 602 Point Park Dr. Suite 200 | Golden | CO | 80401 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |
| 9314869904300058039766 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | CM TX PRODUCTION LLC | | PMB 513 12081 W Alameda Pkwy | Lakewood | CO | 80228 | Delivered | Return Receipt - Electronic, Certified Mail | 04-16-2019 |
| 9314869904300058039759 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | CONOCOPHILLIPS COMPANY | ATTN Charlene Winston | PO BOX 2197 | Houston | TX | 77252 | Delivered | Return Receipt - Electronic, Certified Mail | 04-16-2019 |
| 9314869904300058039742 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | COG PRODUCTION LLC | | PO Box 2064, Midland, TX 79702 | Midland | TX | 79702 | To be Returned | Return Receipt - Electronic, Certified Mail | |
| 9314869904300058039735 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | OCCIDENTAL PERMIAN LP | | 5 Greenway Plaza | Houston | TX | 77046 | Delivered | Return Receipt - Electronic, Certified Mail | 04-16-2019 |
| 9314869904300058039728 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | COG OPERATING LLC | | 600 W Illinois Ave | Midland | TX | 79701 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |
| 9314869904300058039711 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | BUREAU OF LAND MGMT | | 301 Dinosaur Trail | Santa Fe | NM | 87508 | To be Mailed | Return Receipt - Electronic, Certified Mail | |
| 9314869904300058039704 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | Ramsey Minerals | | 500 W 5TH ST STE 1210 | Austin | TX | 78701 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |
| 9314869904300058039698 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | NGL WATER SOLUTIONS PERMIAN, LLC | | 1509 W Wall St , Ste. 306 | Midland | TX | 79701 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |
| 9314869904300058039681 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | Oil Conservation Division District II - Artesia | | 811 S. First Street | Artesia | NM | 88210 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |
| 9314869904300058039674 | 2019-04-12 9:14 AM | 87806.007 Whitt32 | Oil Conservation Division District IV | | 1220 South St. Francis Drive | Santa Fe | NM | 87505 | Delivered | Return Receipt - Electronic, Certified Mail | 04-15-2019 |

CARLSBAD
CURRENT-ARGUS

## AFFIDAVIT OF PUBLICATION

Ad No.
0001283504

MODRALL SPERLING
PO BOX 2168

ALBUQUERQUE NM 87103

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

**04/18/19**

Legal Clerk

Subscribed and sworn before me this
18th of April 2019.

State of WI, County of Brown
NOTARY PUBLIC

My Commission Expires

KAZOUA YANG
NOTARY PUBLIC
STATE OF WISCONSIN

Ad#:0001283504
P O : 0001283504
# of Affidavits :0.00

**CASE NO. 20475: Notice to all affected parties, as well as the heirs and devisees of RAMSEY MINERALS; BUREAU OF LAND MGMT; COG OPERATINGLLC; OCCIDENTALPERMIAN LP; COG PRODUCTIONLLC; CONOCOPHILLIPS COMPANYATTN CHARLENEWINSTON; CM TX PRODUCTION LLC; TAP ROCK RESOURCES LLC** that NGL Water Solutions Permian, LLC, 1509 W. Wall Street. Suite 306, Midland, Texas 79701 has filed an application for hearing along with a C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division for approval of salt water disposal well in Eddy County, New Mexico. The State of New Mexico, through its Oil Conservation Division, hereby gives notice that the Division will conduct a public hearing at 8:15 a.m. on May 2, 2019, to consider this application. Applicant seeks an order approving disposal into the Silurian-Devonian formation through the Whitt 32 SWD #1 well at a surface location 219 feet from the South line and 2,395 feet from the West line of Section 32, Township 26 South, Range 29 East, NMPM, Eddy County, New Mexico for the purpose of operating a salt water disposal well. NGL seeks authority to inject salt water into the Silurian-Devonian formation at a depth of 15,170' to 16,312'. 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 location is 15.8 miles South of Malaga, New Mexico.
Pub: April 18, 2019 #1283504

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

**APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC FOR APPROVAL OF SALT WATER DISPOSAL WELL IN EDDY COUNTY, NEW MEXICO**

**CASE NO. 20475 (WHITT 32)**

## AFFIDAVIT OF CHRIS WEYAND

STATE OF TEXAS )
) ss.
COUNTY OF TRAVIS )

I, Chris Weyand, 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 a Staff Engineer at Lonquist & Co., LLC. My responsibilities at Lonquist & Co., LLC include saltwater disposal well permitting efforts in New Mexico as well as other states and jurisdictions.

3. I graduated from Texas A&M University in 2010 with an engineering degree.

4. I am familiar with the application that NGL Water Solutions Permian, LLC ("NGL") has filed in this matter.

5. In this case, NGL (OGRID No. 372338) seeks an order approving the Whitt 32 SWD #1 well, which is a salt water disposal well.

6. I compiled a list of all parties entitled to notice within a one-mile area of review. I reviewed County and Division records to determine the parties entitled to notice, including the

owner of the surface (NGL) and leasehold operators or other affected person. With respect to affected parties, I determined whether there was an operator, as shown in the Division records, or a designated unit operator, and if not, whether there were any working interests whose interest is evidenced by a written conveyance document either of record; and as to any tract or interest not subject to an existing oil and gas lease, whether there were mineral interest owner whose interest is evidenced by a written conveyance document either of record; and whether the United States or state of New Mexico owns the mineral estate in the spacing unit or identified tract or any part thereof, the BLM or state land office, as applicable.

7. The area of review was evaluated for offset wellbores penetrating the injection formation and to determine notice parties as part of the C-108 Application.

8. In my review, I identified Ramsey Minerals as an adjacent landowner in Texas and I provided that information, along with the other notice information, to NGL's counsel.

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

*[Signature page follows]*

Chris Weyand

SUBSCRIBED AND SWORN to before me this 23 th day of July, 2019 by Chris Weyand.

MARIA L. RIVAS
Notary Public, State of Texas
My Commission Expires
September 16, 2019

Notary Public

My commission expires: 9/16/2019