SWD

Initial

Application

Received: 09/25/19

Revised March 23, 2017

RECEIVED: 9/25/19	REVIEWER:	TYPE: SWD	APP NO: pDM1926960462

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: Permian Oilfield Partners, LLC. **OGRID Number:** 328259
Well Name: Glacier Federal SWD #1 **API:** 30-025-Pending
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.

9-25-2019
Date

Gary E. Fisher
Print or Type Name

817-606-7630
Phone Number

Gary E Fisher
Signature

gfisher@popmidstream.com
e-mail Address

PERMIAN OILFIELD PARTNERS

Mr. Phillip Goetze
New Mexico Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

Re: C-108 Application for Authorization to Inject
Permian Oilfield Partners, LLC
Glacier Federal SWD #1
659' FNL & 250' FEL
Sec 8, T26S, R31E
Eddy County, NM

Mr. Goetze,
Attached is a C-108 Application for administrative approval of Permian Oilfield Partners LLC's proposed Glacier Federal SWD #1 located in Sec 8, Twp 26S, Rge 31E, Eddy County, New Mexico. This well will be completed open hole in the Devonian-Silurian formation and will be operated as a commercial salt water disposal well.

Similar application exhibits were sent to all Affected Persons. The distribution list and proof of mailing, as well as affidavit of publication are enclosed. A copy of this application has also been sent to NM OCD District 2 in Artesia.

If you have any questions, please contact us at (817)606-7630.

Sincerely,

Sean Puryear
Permian Oilfield Partners, LLC
spuryear@popmidstream.com

Date: 9-25-2019

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: **Disposal**
Application qualifies for administrative approval? **Yes**

II. OPERATOR: **Permian Oilfield Partners, LLC.**

ADDRESS: **P.O. Box 3329, Hobbs, NM 88241**

CONTACT PARTY: **Sean Puryear** PHONE: **(817) 600-8772**

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? **No**

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-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: **Sean Puryear** TITLE: **Manager**

SIGNATURE:  DATE: 9-24-2019

E-MAIL ADDRESS: **spuryear@popmidstream.com**

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted.

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

III. WELL DATA

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

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

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

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

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

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

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

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

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

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

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

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

XIV. PROOF OF NOTICE

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

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

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

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

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

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

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

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

Additional Data

1. **Is this a new well drilled for injection?**
   Yes

2. **Name of the Injection Formation:**
   Devonian: Open Hole Completion

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

4. **Has the well ever been perforated in any other zone(s)?**
   No: New Drill for Injection of Produced Water

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

   Overlying Potentially Productive Zones:
   Delaware, Bone Spring, Wolfcamp, Strawn, Atoka & Morrow Tops all above 14,157'

   Underlying Potentially Productive Zones:
   None

WELL CONSTRUCTION DATA

Permian Oilfield Partners, LLC.
Glacier Federal SWD #1
659' FNL, 250' FEL
Sec. 8, T26S, R31E, Eddy Co. NM
Lat 32.0629261° N, Lon 103.7926187° W
GL 3281', RKB 3311'

Surface - (Conventional)

Hole Size: 26" **Casing:** 20" - 94# H-40 & 106.5# J-55 STC Casing
Depth Top: Surface
Depth Btm: 1076'
Cement: 710 sks - Class C + Additives
Cement Top: Surface - (Circulate)

Intermediate #1 - (Conventional)

Hole Size: 17.5" **Casing:** 13.375" - 54.5# J-55 & 61# J-55 STC Casing
Depth Top: Surface
Depth Btm: 4068'
Cement: 1389 sks - Lite Class C (50:50:10) + Additives
Cement Top: Surface - (Circulate)

Intermediate #2 - (Conventional)

Hole Size: 12.25" **Casing:** 9.625" - 40# L-80 & 40# HCL-80 BTC Casing
Depth Top: Surface
Depth Btm: 11243' **ECP/DV Tool:** 4168'
Cement: 1902 sks - Lite Class C (60:40:0) + Additives
Cement Top: Surface - (Circulate)

Intermediate #3 - (Liner)

Hole Size: 8.5" **Casing:** 7.625" - 39# HCL-80 FJ Casing
Depth Top: 11043'
Depth Btm: 16921'
Cement: 270 sks - Lite Class C (60:40:0) + Additives
Cement Top: 11043' - (Volumetric)

Intermediate #4 - (Open Hole)

Hole Size: 6.5" **Depth:** 18111'
Inj. Interval: 16921' - 18111' (Open-Hole Completion)

Tubing - (Tapered)

Tubing Depth: 16876' **Tubing:** 7" - 26# HCP-110 FJ Casing & 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
X/O Depth: 11043'
X/O: 7" 26# HCP-110 FJ Casing - X - 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
Packer Depth: 16886' **Packer:** 5.5" - Perma-Pak or Equivalent (Inconel)

WELLBORE SCHEMATIC

Permian Oilfield Partners, LLC.
Glacier Federal SWD #1
659' FNL, 250' FEL
Sec. 8, T26S, R31E, Eddy Co. NM
Lat 32.0629261° N, Lon 103.7926187° W
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Cement Top: Surface - (Circulate)

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Hole Size: 12.25"
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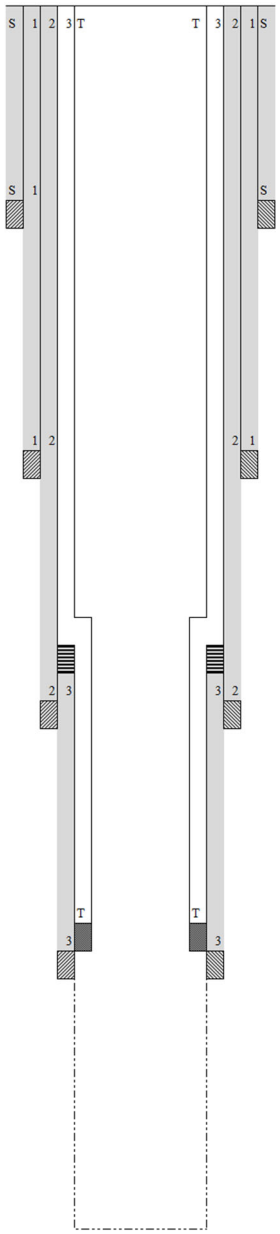
Depth Top: Surface
Depth Btm: 11243'
Cement: 1902 sks - Lite Class C (60:40:0) + Additives
Cement Top: Surface - (Circulate)
ECP/DV Tool: 4168'

Intermediate #3 - (Liner)
Hole Size: 8.5"
Casing: 7.625" - 39# HCL-80 FJ Casing
Depth Top: 11043'
Depth Btm: 16921'
Cement: 270 sks - Lite Class C (60:40:0) + Additives
Cement Top: 11043' - (Volumetric)

Intermediate #4 - (Open Hole)
Hole Size: 6.5"
Depth: 18111'
Inj. Interval: 16921' - 18111' (Open-Hole Completion)



Tubing - (Tapered)
Tubing Depth: 16876'
Tubing: 7" - 26# HCP-110 FJ Casing & 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
X/O Depth: 11043'
X/O: 7" 26# HCP-110 FJ Casing - X - 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
Packer Depth: 16886'
Packer: 5.5" - Perma-Pak or Equivalent (Inconel)

VI: There are no wells within the proposed wells area of review that penetrate the Devonian Formation.

VII:

1. The average injected volume anticipated is 40,000 BWPD
   The maximum injected volume anticipated is 50,000 BWPD

2. Injection will be through a closed system

3. The average injection pressure anticipated is 2,000 psi
   The proposed maximum injection pressure is 3,384 psi

4. Disposal Sources will be produced waters from surrounding wells in the Delaware, Avalon, Bone Spring and Wolfcamp formations. These formation waters are known to be compatible with Devonian formation water. Representative area produced water analyses were sourced from Go-Tech's website and are listed below.

WELL NAME	COOTER 16 STATE COM #006H	SNAPPING 2 STATE #013H	USA #001	SNAPPING 2 STATE #014H
API	3001537876	3001542113	3001504776	3001542688
Latitude	32.123642	32.0654	32.0288582	32.06555986
Longitude	-103.9862061	-103.7498165	-103.9109955	-103.7413815
Section	16	2	20	2
Township	25S	26S	26S	26S
Range	29E	31E	30E	31E
Unit	O	N	E	P
Ftg NS	330S	200S	2310N	250S
Ftg EW	1650E	2375W	330W	330E
County	EDDY	EDDY	EDDY	EDDY
State	NM	NM	NM	NM
Formation	AVALON UPPER	BONE SPRING 3RD SAND	DELAWARE	WOLFCAMP
Sample Date	7/22/2011	12/14/2015		42284
PH	7	6.8		7.3
TDS mgL	193732.3	91289.1	176882	81366.4
Resistivity Ohm-cm		0.089		0.1004
Sodium_mgL	74027.8	28721.3		26319.4
Calcium_mgL	513	3441		2687.4
Iron_mgL	104	16.3		26.1
Magnesium_mgL	118	437.4		326.7
Manganese_mgL	1			
Chloride_mgL	113441	56957.4	108700	50281.2
Bicarbonate_mgL	1830		139	
Sulfate_mgL	2665	327.9	1332	399.7
CO2_mgL	700	150		100

5. Devonian water analysis from the area of review is unavailable. Representative area water analyses were sourced from Go-Tech's website and are listed below.

WELL NAME	ANTELOPE RIDGE UNIT #003	BELL LAKE UNIT #006
API	3002521082	3002508483
Latitude	32.2593155	32.3282585
Longitude	-103.4610748	-103.507103
Sec	34	6
Township	23S	23S
Range	34E	34E
Unit	K	O
Ftg NS	1980S	660S
Ftg EW	1650W	1980E
County	LEA	LEA
State	NM	NM
Field	ANTELOPE RIDGE	BELL LAKE NORTH
Formation	DEVONIAN	DEVONIAN
Sample Source	UNKNOWN	HEATER TREATER
PH	6.9	7
TDS_mgL	80187	71078
Chloride_mgL	42200	47900
Bicarbonate_mgL	500	476
Sulfate_mgL	1000	900

VIII: Injection Zone Geology

Fluid injection will take place in the Devonian-Silurian formations. This sequence is bounded above by the Upper Devonian Woodford shale. Underlying the Woodford is the first injection formation, the Devonian, consisting of dolomitic carbonates & chert, followed by the Upper Silurian dolomites, and the Lower Silurian Fusselman dolomite. The lower bound of the injection interval is the limestone of the Upper Ordovician Montoya. This proposed well will TD above the top of the Montoya, and will not inject fluids into the Montoya itself, in order to provide a sufficient barrier to preclude fluid injection into the Middle Ordovician Simpson, the Lower Ordovician Ellenburger, the Cambrian, and the PreCambrian below.

Injection zone porosities are expected to range from 0% to a high of 8%, with the higher ranges being secondary porosity in the form of vugs & fractures due to weathering effects, with occasional interbedded shaly intervals. Permeabilities in the 2-3% porosity grainstone intervals are estimated to be in the 10-15 mD range, with the higher porosity intervals conservatively estimated to be in the 40-50 mD range. It is these intervals of high secondary porosity and associated high permeability that are expected to take the majority of the injected water.

The Devonian-Silurian sequence is well suited for SWD purposes, with a low permeability shale barrier overlying the injection interval to prevent upward fluid migrations to USDW's, sufficient permeabilities and porosities in zone, and multiple formations available over a large depth range. This large injection depth range means there is a large injection surface area available, allowing for low injection pressures at high injection rates.

Permian Oilfield Partners, LLC.
Glacier Federal SWD #1
659' FNL, 250' FEL
Sec. 8, T26S, R31E, Eddy Co. NM
Lat 32.0629261° N, Lon 103.7926187° W
GL 3281', RKB 3311'

GEOLOGY PROGNOSIS			
FORMATION	**TOP** KB TVD (ft)	**BOTTOM** KB TVD (ft)	**THICKNESS** (ft)
Salt	1,400	3,830	2,430
Delaware	4,043	7,976	3,933
Bone Spring	7,976	11,193	3,217
Wolfcamp	11,193	12,570	1,377
Lwr. Mississippian	16,180	16,559	379
Woodford	16,559	16,886	327
Devonian	16,886	17,669	783
Fusselman (Silurian)	17,669	18,136	467
Montoya (U. Ordovician)	18,136	18,643	507
Simpson (M. Ordovician	18,643	19,019	376

2. According to the New Mexico Office of the State Engineer, there are 3 fresh water wells drilled within the proposed well's one-mile area of review, indicating fresh water in the Quaternary at depths shallower than 325'. Regionally, shallow fresh water is known to exist at depths less than 325'. There are no underground sources of fresh water present below the injection interval.

IX: Formation chemical stimulation with 40,000 gals of 15% Hydrochloric Acid is planned after well completion.

X: A compensated neutron/gamma ray log will be run from surface to TD upon well completion. All logs will be submitted to the NMOCD upon completion.

XI: According to the New Mexico Office of the State Engineer and field exploration, there are 3 fresh water wells drilled within the proposed well's one-mile area of review, as shown in the table below. C02248 appears to be a re-drill of C02249 at same location, and C0177 was not found. A water sample was taken from C02248, and water analysis is attached.

Well Name	Formation Name	Depth Top	Depth Bottom	Thickness	Status
C 01777	Quaternary	300’	325’	25’	**Not Found**
C 02248	Quaternary	292’	300’	8’	**Active-Sampled**
C 02249	Quaternary	292’	300’	8’	**Same as C 02248**

XII: Hydrologic affirmative statement attached.

XIII: Proof of notice and proof of publication 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
30-015-	97869	SWD; DEVONIAN-SILURIAN

4 Property Code	5 Property Name	6 Well Number
	GLACIER FEDERAL SWD	1

7 OGRID NO.	8 Operator Name	9 Elevation
328259	PERMIAN OILFIELD PARTNERS LLC	3281'

10 Surface Location

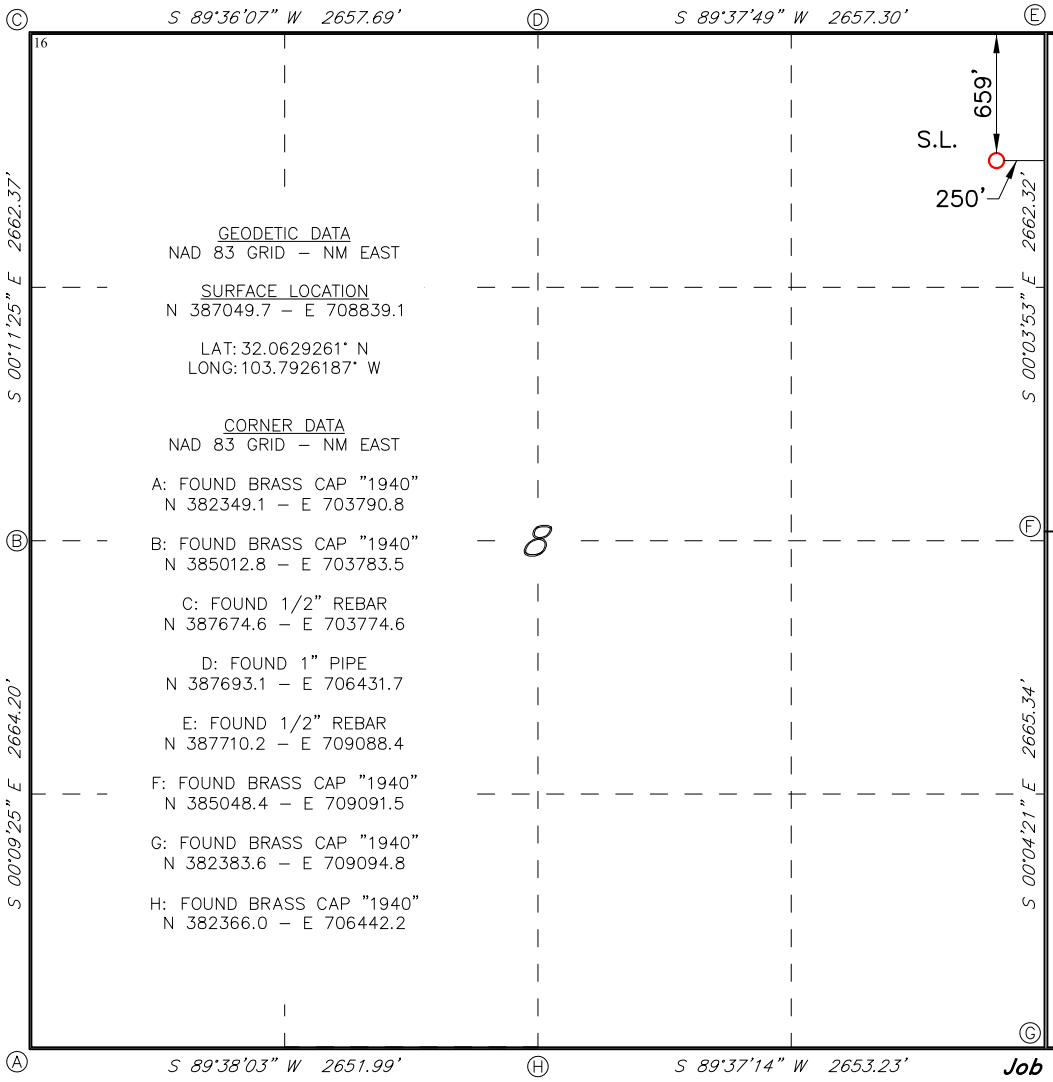
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
A	8	26S	31E		659	NORTH	250	EAST	EDDY

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 interest 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 8-2-2019 Date

Gary E Fisher
Printed Name

gfisher@popmidstream.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.

07-20-2019
Date of Survey

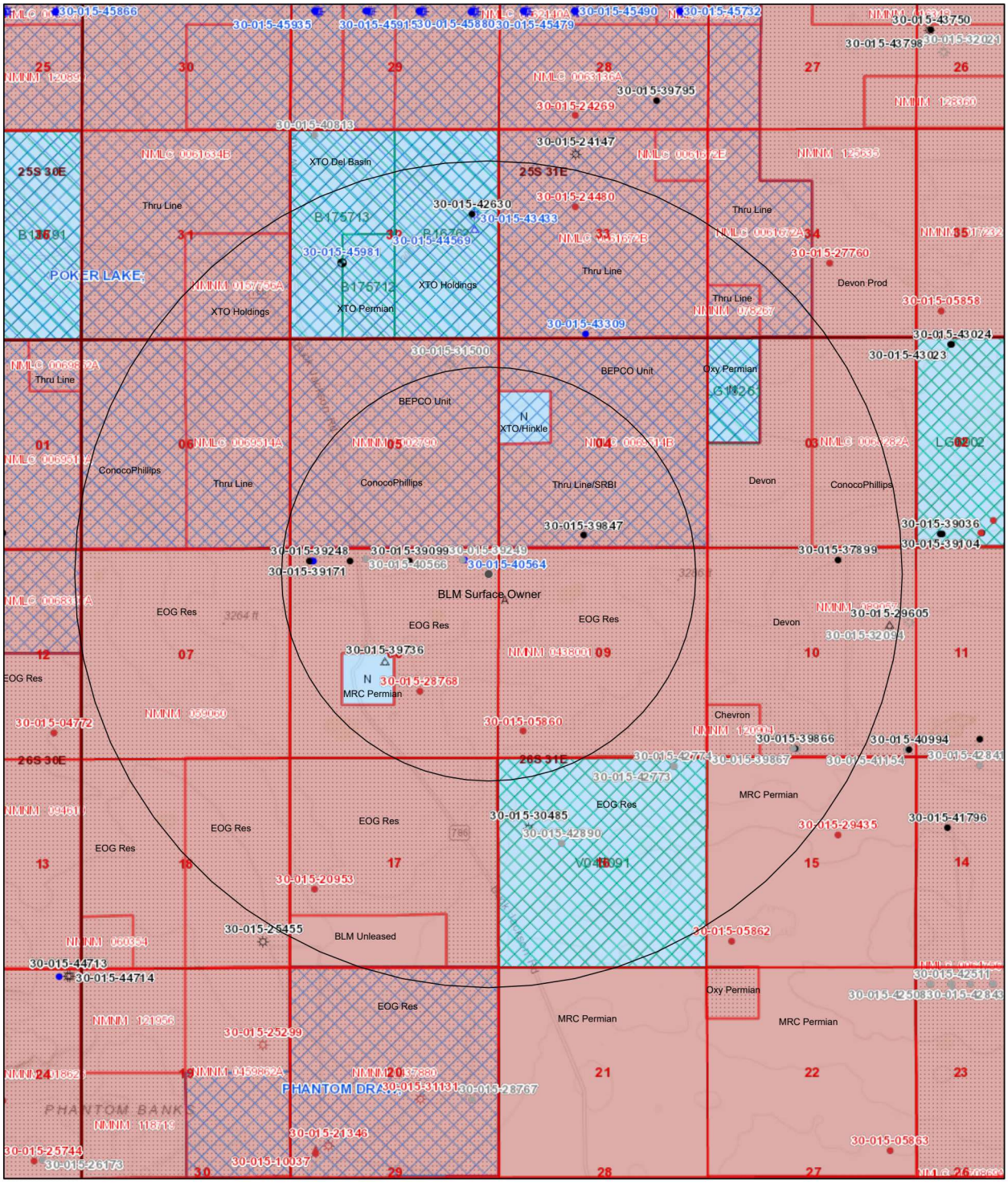
Signature and Seal of Professional Surveyor:

JEFFREY L. FANSLER
NEW MEXICO
10034
PROFESSIONAL SURVEYOR

10034
Certificate Number

Job No.: LS19070767

Glacier Federal SWD #1, 1 & 2 Mile AOR



9/24/2019, 6:02:21 PM

1:36,112

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

- Override 1

Well Locations - Small Scale
- Active
- New
- Plugged
- Cancelled
- Temporarily Abandoned

Well Locations - Large Scale
- Miscellaneous
- CO2 Active
- CO2 Cancelled
- CO2 New
- CO2, Plugged
- CO2, Temporaily Abandoned
- Gas Active
- Gas, Cancelled, Never Drilled
- Gas, New
- Gas, Plugged
- Gas, Temporarily Abandoned
- Injection, Active
- Injection, Cancelled
- Injection, New
- Injection, Plugged
- Injection, Temporarily Abandoned
- Oil, Active
- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abondoned
- Salt Water Injection, Active
- Salt Water Injection, Cancelled
- Salt Water Injection, New
- Salt Water Injection, Plugged
- Salt Water InjectionTemporarily Abandoned
- Water, Active
- Water, Cancelled
- Water, New
- Water, Plugged
- Water, Temporarily Abandoned
- PLSS First Division

U.S. BLM
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

New Mexico Oil Conservation Division

Glacier Federal SWD #1 - Wells within 1 Mile Area of Review

API Number	Current Operator	Well Name	Well Number	Well Type	Well Direction	Well Status	Section	Township	Range	OCD Unit Letter	Surface Location	Bottomhole Location	Formation	MD	TVD
30-015-05860	PRE-ONGARD WELL OPERATOR	PRE-ONGARD WELL	#001	Oil	Vertical	Plugged, Site Released	09	T26S	R31E	M	M-09-26S-31E 660 FSL 660 FWL	M-09-26S-31E 660 FSL 660 FWL	DELAWARE	4150	4150
30-015-28768	EOG RESOURCES INC	INKLING 8 FEDERAL	#001	Oil	Vertical	Plugged, Site Released	08	T26S	R31E	O	O-08-26S-31E 1680 FSL 1980 FEL	O-08-26S-31E 1680 FSL 1980 FEL	BONE SPRING	11460	11460
30-015-39099	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#002H	Oil	Horizontal	Active	08	T26S	R31E	B	B-08-26S-31E 330 FNL 2240 FEL	O-08-26S-31E 360 FSL 1708 FEL	BONE SPRING	12800	8374
30-015-39171	EOG RESOURCES INC	ROSS GULCH 8 FEDERAL COM	#001H	Oil	Horizontal	Active	08	T26S	R31E	C	C-08-26S-31E 330 FNL 1540 FWL	N-08-26S-31E 369 FSL 2279 FWL	BONE SPRING	13170	8703
30-015-39248	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#001H	Oil	Horizontal	Active	08	T26S	R31E	D	D-08-26S-31E 330 FNL 520 FWL	M-08-26S-31E 224 FSL 375 FWL	BONE SPRING	14750	9981
30-015-39249	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#003H	Oil	Horizontal	Cancelled Apd	08	T26S	R31E	A	A-08-26S-31E 330 FNL 880 FEL	P-08-26S-31E 330 FSL 330 FEL	BONE SPRING	12841	8350
30-015-39736	EOG RESOURCES INC	ROSS GULCH 8	#003	Salt Water Disposal	Vertical	Active	08	T26S	R31E	K	K-08-26S-31E 2440 FSL 2440 FWL	K-08-26S-31E 2440 FSL 2440 FWL	DELAWARE	9306	9306
30-015-39847	XTO PERMIAN OPERATING LLC.	POKER LAKE CVX JV PB	#003H	Oil	Horizontal	Active	04	T26S	R31E	N	N-04-26S-31E 300 FSL 2180 FWL	C-04-26S-31E 100 FNL 1980 FWL	BONE SPRING	13675	8866
30-015-40563	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#005H	Oil	Horizontal	Cancelled Apd	08	T26S	R31E	B	B-08-26S-31E 50 FNL 1494 FEL	O-08-26S-31E 330 FSL 1370 FEL	BONE SPRING	13541	8721
30-015-40564	EOG RESOURCES INC	ROSS GULCH 8 FEDERAL COM	#006H	Oil	Horizontal	New	08	T26S	R31E	A	A-08-26S-31E 330 FNL 850 FEL	P-08-26S-31E 330 FSL 380 FEL	BONE SPRING	13578	8765
30-015-40565	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#004H	Oil	Horizontal	New	08	T26S	R31E	D	D-08-26S-31E 330 FNL 610 FWL	M-08-26S-31E 230 FSL 1100 FWL	BONE SPRING	13298	8430
30-015-40566	EOG RESOURCES INC	ROSS GULCH 8 FEDERAL COM	#002H	Oil	Horizontal	Cancelled Apd	08	T26S	R31E	C	C-08-26S-31E 290 FNL 1945 FWL	N-08-26S-31E 330 FSL 1710 FWL	BONE SPRING	13133	8341
30-015-42264	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#007H	Oil	Horizontal	Active	08	T26S	R31E	D	D-08-26S-31E 333 FNL 553 FWL	M-08-26S-31E 230 FSL 620 FWL	BONE SPRING	13100	8359
30-015-42265	EOG RESOURCES INC	ROSS DRAW 8 FEDERAL	#008H	Oil	Horizontal	New	08	T26S	R31E	D	D-08-26S-31E 333 FNL 583 FWL	M-08-26S-31E 230 FSL 860 FWL	BONE SPRING	14813	10000

PERMIAN OILFIELD PARTNERS

Statement of Notifications

Re: C-108 Application for Authorization to Inject
Permian Oilfield Partners, LLC
Glacier Federal SWD #1
659' FNL & 250' FEL
Sec 8, T26S, R31E
Eddy County, NM

Permian Oilfield Partners, LLC has mailed notifications to Affected Persons as per the following list:

Glacier Federal SWD #1 - Affected Persons within 1 Mile Area of Review						
Notified Name	**Notifed Address**	**Notified City, State, ZIP Code**	**Lease Location**	**Shipper**	**Tracking No.**	**Mailing Date**
Bureau Of Land Management	620 E Greene St.	Carlsbad, NM 88220		USPS	9414811899561538741068	9/25/2019
New Mexico State Land Office	310 Old Santa Fe Trail	Santa Fe, NM 87501		USPS	9414811899561538779283	9/25/2019
EOG Resources Inc	P.O. Box 2267	Midland, TX 79702	Sec 7, 8, 9, 16, 17-26S-31E	USPS	9414811899561538741433	9/25/2019
XTO Permian Operating LLC	6401 Holiday Hill Road Bldg 5	Midland, TX 79707	Sec 4-26S-31E	USPS	9414811899561538779665	9/25/2019
Madison M. Hinkle	PO Box 2292	Roswell, NM 88202	Sec 4-26S-31E	USPS	9414811899561538741525	9/25/2019
XTO Holdings LLC	810 Houston Street	Fort Worth, TX 76102	Sec 4-26S-31E	USPS	9414811899561538779955	9/25/2019
Thru Line OG NM LLC	201 Main Street	Fort Worth, TX 76102	Sec 4, 6-26S-31E	USPS	9414811899561538779757	9/25/2019
SRBI OG NM LLC	201 Main Street	Fort Worth, TX 76102	Sec 4-26S-31E	USPS	9414811899561538779801	9/25/2019
ConocoPhillips Co.	PO Box 2197	Houston, TX 77252	Sec 5-26S-31E	USPS	9414811899561538741075	9/25/2019
MRC Permian Co.	5400 LBJ Freeway, Suite 1500	Dallas, TX 75240	Sec 5-26S-31E	USPS	9414811899561538741532	9/25/2019
BEPCO LP (BOPCO)	6401 Holiday Hill Road Bldg 5	Midland, TX 79707	Unit, Sec 4, 5, 6-26S-31E	USPS	9414811899561538741396	9/25/2019

Sean Puryear
Permian Oilfield Partners, LLC
spuryear@popmidstream.com

Date: 9-25-2019

U.S. Postal Service **Certified Mail Receipt**

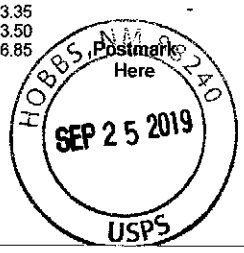
ARTICLE NUMBER: 9414 8118 9956 1538 7410 68

ARTICLE ADDRESSED TO:

Bureau of Land Management
620 E Greene St
Carlsbad NM 88220-6292

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



U.S. Postal Service **Certified Mail Receipt**

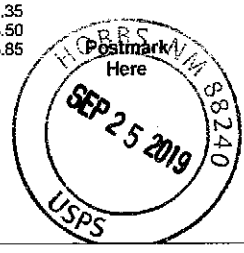
ARTICLE NUMBER: 9414 8118 9956 1538 7792 83

ARTICLE ADDRESSED TO:

New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe NM 87501-2708

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



U.S. Postal Service **Certified Mail Receipt**

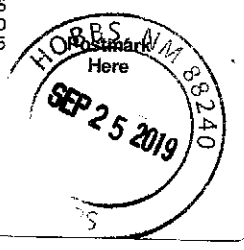
ARTICLE NUMBER: 9414 8118 9956 1538 7414 33

ARTICLE ADDRESSED TO:

EOG Resources, Inc.
PO Box 2267
Midland TX 79702-2267

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



U.S. Postal Service **Certified Mail Receipt**

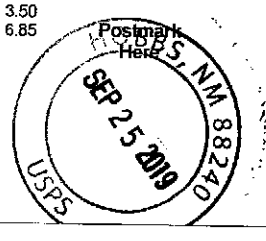
ARTICLE NUMBER: 9414 8118 9956 1538 7798 65

ARTICLE ADDRESSED TO:

XTO Permian Operating, LLC
6401 Holiday Hill Road, Building 5
Midland TX 79707-2157

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



U.S. Postal Service **Certified Mail Receipt**

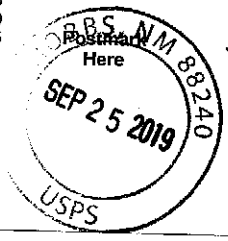
ARTICLE NUMBER: 9414 8118 9956 1538 7415 25

ARTICLE ADDRESSED TO:

Madison M. Hinkle
PO BOX 2292
Roswell NM 88202-2292

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



U.S. Postal Service **Certified Mail Receipt**

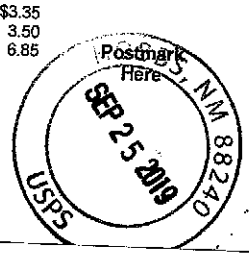
ARTICLE NUMBER: 9414 8118 9956 1538 7799 55

ARTICLE ADDRESSED TO:

XTO Holdings, LLC
810 Houston Street Ste 2000
Fort Worth TX 76102-6223

FEES

Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



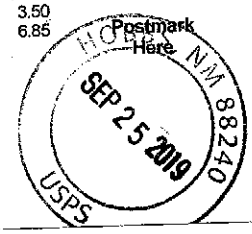
U.S. Postal Service **Certified Mail Receipt**

ARTICLE NUMBER: 9414 8118 9956 1538 7797 57

ARTICLE ADDRESSED TO:

Thru Line O&G NM LLC
201 Main Street
Fort Worth TX 76102-3105

FEES	
Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



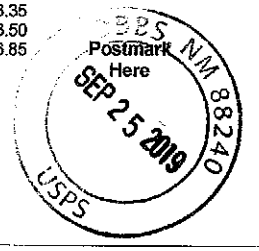
U.S. Postal Service **Certified Mail Receipt**

ARTICLE NUMBER: 9414 8118 9956 1538 7798 01

ARTICLE ADDRESSED TO:

SRBI O&G NM, LLC
201 Main Street
Fort Worth TX 76102-3105

FEES	
Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



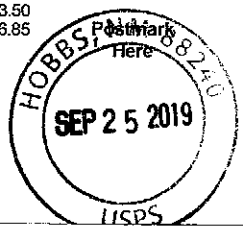
U.S. Postal Service **Certified Mail Receipt**

ARTICLE NUMBER: 9414 8118 9956 1538 7410 75

ARTICLE ADDRESSED TO:

ConocoPhillips Company
PO Box 2197
Houston TX 77252-2197

FEES	
Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



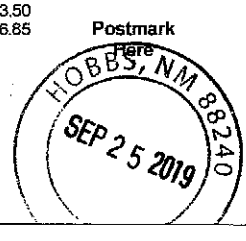
U.S. Postal Service **Certified Mail Receipt**

ARTICLE NUMBER: 9414 8118 9956 1538 7415 32

ARTICLE ADDRESSED TO:

MRC Permian
5400 LBJ Freeway, Suite 1500
Dallas TX 75240-1017

FEES	
Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



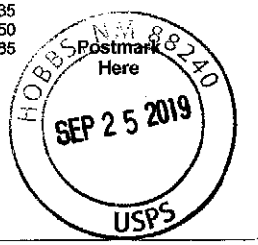
U.S. Postal Service **Certified Mail Receipt**

ARTICLE NUMBER: 9414 8118 9956 1538 7413 96

ARTICLE ADDRESSED TO:

BOPCO, LP
6401 Holiday Hill Rd, Bldg 5
Midland TX 79707-2157

FEES	
Postage Per Piece	$3.35
Certified Fee	3.50
Total Postage & Fees:	6.85



CARLSBAD
CURRENT-ARGUS

AFFIDAVIT OF PUBLICATION

Ad No.
0001293200

PERMIAN OILFIELD PARTNERS, LLC
PO BOX 3329

HOBBS NM 88241

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:

08/07/19

Kathleen Allen
Legal Clerk

Subscribed and sworn before me this
7th of August 2019.

Melissa Rome
State of WI, County of Brown
NOTARY PUBLIC

1-12-2021
My Commission Expires

MELISSA ROME NOTARY PUBLIC STATE OF WISCONSIN

Newspaper Publication Notice

Permian Oilfield Partners, LLC, PO Box 3329, Hobbs, NM 88241, phone (817)606-7630, attention Gary Fisher, has filed form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking approval to drill a commercial salt water disposal well in Eddy County, New Mexico. The well name is the Glacier Federal SWD #1, and is located 659' FNL & 250' FEL, Unit Letter A, Section 8, Township 26 South, Range 31 East, NMPM. The well will dispose of water produced from nearby oil and gas wells into the Devonian formation from a depth of 16,921 feet to 18,111 feet. The maximum expected injection rate is 50,000 BWPD at a maximum surface injection pressure of 3,384 psi.
Interested parties must file objections or requests for hearing with the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico, 87505 within 15 days.
Aug. 7, 2019

Ad#:0001293200
P O : 0001293200
# of Affidavits :0.00

Glacier Federal SWD #1, Water Wells Within 1 Mile

8/20/2019, 5:15:23 PM

Override 1

Points

- Override 1
- Override 2
- Override 3
- PLSS First Division
- PLSS Second Division
- PLSS Townships

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

New Mexico Office of the State Engineer

Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twp	Rng	X	Y
	C 01777				08	26S	31E	613245	3547409*

Driller License:	208	**Driller Company:**	VAN NOY, W.L.		
Driller Name:	VAN NOY, W.L.				
Drill Start Date:	09/09/1977	**Drill Finish Date:**	09/16/1977	**Plug Date:**	
Log File Date:	09/28/1977	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	6.63	**Depth Well:**	325 feet	**Depth Water:**	300 feet

Water Bearing Stratifications:	Top	Bottom	Description
	300	325	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	295	325

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	C 02248	1	2	3	08	26S	31E	612942	3547316*

Driller License:		**Driller Company:**			
Driller Name:	UNKNOWN				
Drill Start Date:		**Drill Finish Date:**	12/31/1946	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	6 GPM
Casing Size:	6.38	**Depth Well:**	300 feet	**Depth Water:**	292 feet

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02249	1	2	3	08	26S	31E	612942	3547316*

Driller License: **Driller Company:**

Driller Name: UNKNOWN

Drill Start Date:		**Drill Finish Date:**	12/31/1899	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	6 GPM
Casing Size:	6.38	**Depth Well:**	300 feet	**Depth Water:**	292 feet

***UTM location was derived from PLSS - see Help**

Imperative Water Analysis Report

IMPERATIVE
CHEMICAL PARTNERS

SYSTEM IDENTIFICATION

Company: Permian Oilfield Partners, LLC
Location: Glacier Federal SWD 1-2
Sample Source: Tank Fresh Water
Account Rep: Gage Rennie

Sample ID#: W-12288

Sample Date: 08-02-2019
Report Date: 08-07-2019

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	59.97
Magnesium(as Mg)	20.40
Barium(as Ba)	0.0910
Strontium(as Sr)	1.02
Sodium(as Na)	5128
Potassium(as K)	21.00
Iron(as Fe)	0.205
Manganese(as Mn)	0.0300

ANIONS

Chloride(as Cl)	8000
Sulfate(as SO_4)	84.00
Dissolved CO_2(as CO_2)	0.00
Bicarbonate(as HCO_3)	183.00
H_2S (as H_2S)	10.26
Boron(as B)	8.31

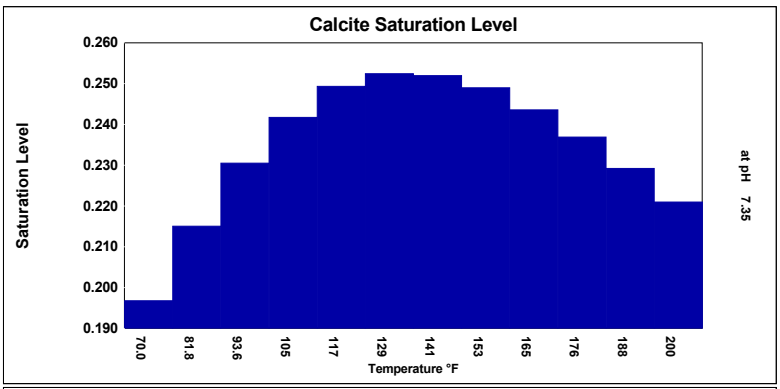
PARAMETERS

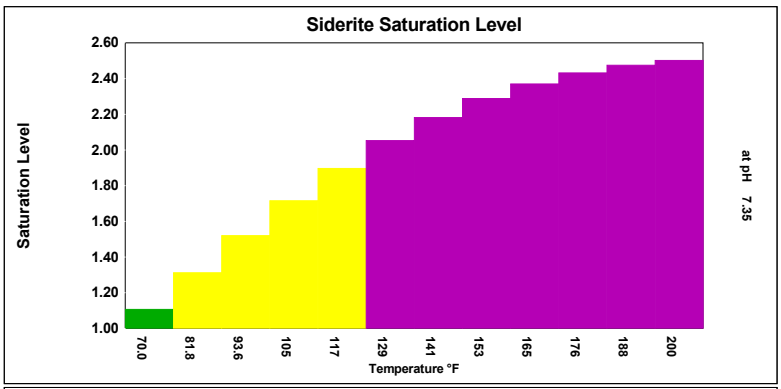
Temperature(^oF)	97.40
Sample pH	7.33
Conductivity	20313
T.D.S.	13523
Resistivity	49.23
Sp.Gr.(g/mL)	1.01

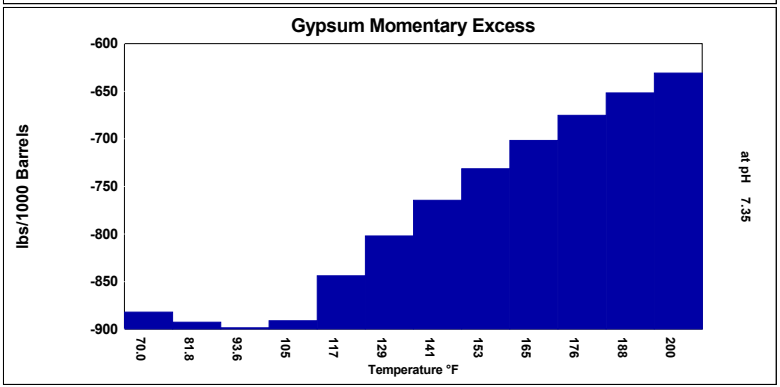
SCALE AND CORROSION POTENTIAL

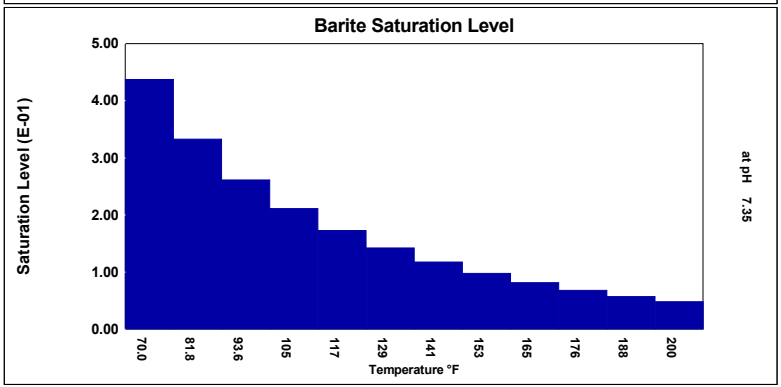
Temp. (^oF)	Press. (atm)	Calcite $CaCO_3$		Anhydrite $CaSO_4$		Gypsum $CaSO_4*2H_2O$		Barite $BaSO_4$		Celestite $SrSO_4$		Siderite $FeCO_3$		Mackawenite FeS		CO_2 (mpy)	pCO_2 (atm)
70.00	1.00	0.197	-0.929	0.00217	-1028	0.00366	-882.15	0.437	-0.0693	0.00306	-87.19	1.11	0.00931	4.85	0.0276	0.0269	0.0133
81.82	1.36	0.215	-0.828	0.00222	-1009	0.00354	-892.72	0.333	-0.108	0.00307	-86.76	1.31	0.0238	4.14	0.0261	0.0339	0.0157
93.64	1.73	0.230	-0.746	0.00235	-975.44	0.00346	-898.51	0.261	-0.152	0.00313	-85.39	1.52	0.0351	3.54	0.0243	0.0387	0.0181
105.45	2.09	0.242	-0.678	0.00254	-930.31	0.00348	-891.17	0.211	-0.201	0.00322	-83.53	1.71	0.0433	3.01	0.0223	0.0401	0.0205
117.27	2.45	0.249	-0.624	0.00282	-876.13	0.00382	-843.97	0.173	-0.257	0.00332	-81.72	1.90	0.0492	2.55	0.0200	0.0314	0.0229
129.09	2.82	0.252	-0.580	0.00320	-815.58	0.00417	-802.03	0.142	-0.323	0.00341	-80.15	2.05	0.0530	2.13	0.0171	0.0124	0.0253
140.91	3.18	0.252	-0.544	0.00370	-751.10	0.00451	-764.69	0.117	-0.402	0.00348	-78.81	2.18	0.0552	1.76	0.0137	0.0145	0.0277
152.73	3.55	0.249	-0.515	0.00436	-684.86	0.00486	-731.43	0.0975	-0.494	0.00355	-77.67	2.29	0.0562	1.45	0.00962	0.0165	0.0301
164.55	3.91	0.244	-0.492	0.00522	-618.70	0.00520	-701.79	0.0813	-0.603	0.00360	-76.73	2.37	0.0562	1.19	0.00479	0.0171	0.0325
176.36	4.27	0.237	-0.472	0.00634	-554.07	0.00554	-675.39	0.0680	-0.729	0.00364	-75.97	2.43	0.0555	0.973	>-0.001	0.0161	0.0349
188.18	4.64	0.229	-0.456	0.00781	-492.10	0.00586	-651.90	0.0571	-0.877	0.00366	-75.39	2.47	0.0543	0.796	-0.00738	0.00742	0.0373
200.00	5.00	0.221	-0.443	0.00974	-433.64	0.00618	-631.06	0.0480	-1.05	0.00368	-74.98	2.50	0.0526	0.652	-0.0149	0.0297	0.0398
		xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels		

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. $\{Ca\}\{CO_3\}/K_{sp}$. pCO_2 (atm) is the partial pressure of CO_2 in the gas phase.
Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.









New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 01777		C	ED				08	26S	31E	613245	3547409*	966	325	300	25
C 02248		CUB	ED	1	2	3	08	26S	31E	612942	3547316*	1261	300	292	8
C 02249		CUB	ED	1	2	3	08	26S	31E	612942	3547316*	1261	300	292	8

Average Depth to Water: **294 feet**

Minimum Depth: **292 feet**

Maximum Depth: **300 feet**

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 613969.37 **Northing (Y):** 3548048.128 **Radius:** 3218.6

***UTM location was derived from PLSS - see Help**

8/20/19 3:22 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

PERMIAN OILFIELD
PARTNERS

Item XII. Affirmative Statement

Re: C-108 Application for Authorization to Inject
Permian Oilfield Partners, LLC
Glacier Federal SWD #1
659' FNL & 250' FEL
Sec 8, T26S, R31E
Eddy County, NM

Permian Oilfield Partners, LLC. has 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.

Gary Fisher
Manager
Permian Oilfield Partners, LLC.

Date: 8/2/2019

Plugging Risk Assessment

Permian Oilfield Partners, LLC.
Glacier Federal SWD #1
659' FNL & 250' FEL
Sec 8, T26S, R31E
Eddy County, NM

WELLBORE SCHEMATIC

Permian Oilfield Partners, LLC.
Glacier Federal SWD #1
659' FNL, 250' FEL
Sec. 8, T26S, R31E, Eddy Co. NM
Lat 32.0629261° N, Lon 103.7926187° W
GL 3281', RKB 3311'

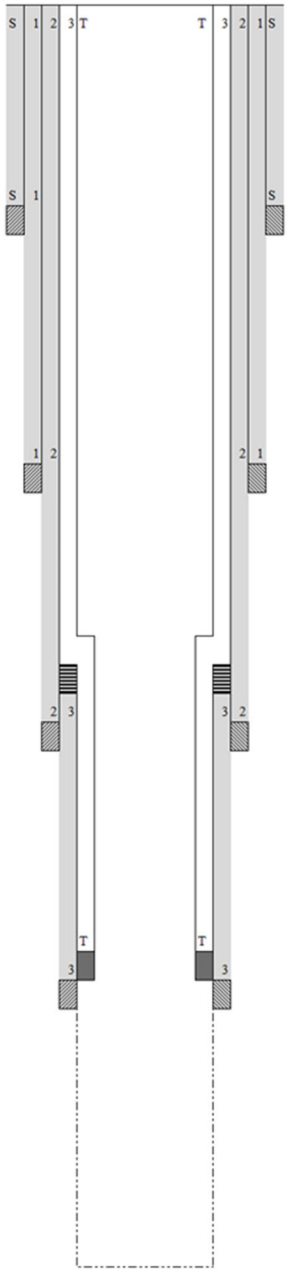
Surface - (Conventional)
Hole Size: 26"
Casing: 20" - 94# H-40 & 106.5# J-55 STC Casing
Depth Top: Surface
Depth Btm: 1076'
Cement: 710 sks - Class C + Additives
Cement Top: Surface - (Circulate)

Intermediate #1 - (Conventional)
Hole Size: 17.5"
Casing: 13.375" - 54.5# J-55 & 61# J-55 STC Casing
Depth Top: Surface
Depth Btm: 4068'
Cement: 1389 sks - Lite Class C (50:50:10) + Additives
Cement Top: Surface - (Circulate)

Intermediate #2 - (Conventional)
Hole Size: 12.25"
Casing: 9.625" - 40# L-80 & 40# HCL-80 BTC Casing
Depth Top: Surface
Depth Btm: 11243'
Cement: 1902 sks - Lite Class C (60:40:0) + Additives
Cement Top: Surface - (Circulate)
ECP/DV Tool: 4168'

Intermediate #3 - (Liner)
Hole Size: 8.5"
Casing: 7.625" - 39# HCL-80 FJ Casing
Depth Top: 11043'
Depth Btm: 16921'
Cement: 270 sks - Lite Class C (60:40:0) + Additives
Cement Top: 11043' - (Volumetric)

Intermediate #4 - (Open Hole)
Hole Size: 6.5"
Depth: 18111'
Inj. Interval: 16921' - 18111' (Open-Hole Completion)



Tubing - (Tapered)
Tubing Depth: 16876'
Tubing: 7" - 26# HCP-110 FJ Casing & 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
X/O Depth: 11043'
X/O: 7" 26# HCP-110 FJ Casing - X - 5.5" 17# HCL-80 FJ Casing (Fiberglass Lined)
Packer Depth: 16886'
Packer: 5.5" - Perma-Pak or Equivalent (Inconel)

7" UFJ Tubing Inside of 9 ⅝" 40# Casing

Bowen Series 150 Releasing and Circulation Overshots

Maximum Catch Size 6⅝" to 7¼" Inclusive

Maximum Catch Size (Spiral)		6⅝	6¼	7	7¼
Maximum Catch Size (Basket)		5⅞	6⅛	6⅜	6⅝
Overshot O.D.		8¼	7⅞	8⅛	8⅜
Type		F.S.	S.H.	S.H.	S.H.
Complete Assembly	Part No.	C-3032	C-5222	9217	C-5354
(Dressed Spiral Parts)	Weight	280	243	251	260
Replacement Parts					
Top Sub	Part No.	A-3033	A-5223	9218	A-5355
Bowl	Part No.	B-3034	B-5224	9219	B-5356
Packer	Part No.	A-1814	B-5225	9224	B-5357
Spiral Grapple	Part No.	N-84	B-5227	9222	B-5359
Spiral Grapple Control	Part No.	M-89	A-5228	9223	B-5360
Standard Guide	Part No.	A-1818	A-5229	9226	A-5361
Basket Parts					
Basket Grapple	Part No.	N-84	B-5227	9222	B-5359
Basket Grapple Control	Part No.	M-89	A-5228	9223	B-5360
Mill Control Packer	Part No.	A-1814-R	B-5225-R	9224-R	B-5357-R

A 8.125" O.D. Bowen Series 150 Overshot will be used to perform this overshot operation. Details on the overshot are listed above. Casing to tubing clearance dimensions are listed below.

7" 26# FJ Casing Inside 9.625" 40# BTC Casing

Clearance (in)	Pipe Size (in)	Weight lb/ft	Grade	Conn.	Type	Body O.D. (in)	Coupling O.D. (in)	I.D. (in)	Drift (in)	Lined Wt. lb/ft	Lined I.D. (in)	Flare I.D. (in)	Lined Drift (in)
0.840	9 5/8	40.0	L-80	BTC	Casing	9.625	10.625	8.835	8.679	-	-	-	-
	7	26.0	HCP-110	FJ	Casing	7.000	7.000	6.276	6.151	28.500	6.080	5.940	5.815

*Red Indicates Tubing

Fishing Procedure

Overshot Fishing Procedure

In the Event of a Connection Break

- **If fishing neck is clean**

1. Trip in hole with overshot and engage fish.
2. Pick up 2 points over neutral weight.
3. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
4. Once released from packer, trip out of hole with fish.

   A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

- **If dressing fishing neck is required**

1. Trip in hole with mill and dress fishing neck to allow for overshot to engage tubing.
2. Trip out of hole with mill.
3. Trip in hole with overshot and engage fish.
4. Pick up 2 points over neutral weight.
5. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
6. Once released from packer, trip out of hole with fish.

   A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

In the Event of a Body Break

- **If fishing neck is clean**

1. Trip in hole with overshot and engage fish.
2. Pick up 2 points over neutral weight.
3. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
4. Once released from packer, trip out of hole with fish.

- **If dressing fishing neck is required**

1. Trip in hole with mill and dress fishing neck to allow for overshot to engage tubing.
2. Trip out of hole with mill.
3. Trip in hole with overshot and engage fish.
4. Pick up 2 points over neutral weight.

5. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
6. Once released from packer, trip out of hole with fish.

A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

Spear Fishing Procedure

If an overshot cannot be used to retrieve the fish, a spear may be used.

- Due to the use of insert lined tubing, the composite liner must be removed from the tubing before engaging the fish with a spear.

1. Trip in hole with spear sized to engage the I.D. of the insert liner.
2. Engage the insert liner inside the tubing with spear.
3. Pull the insert liner out of the tubing.
4. Trip out of hole with insert liner.
5. Trip in hole with spear sized to engage the I.D. of the tubing.
6. Engage the tubing with spear.
7. Pick up 2 points over neutral weight.
8. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
9. Once released from packer, trip out of hole with fish.

Inside Diameter Cutting Tool Fishing Procedure

If an overshot is required but a mill cannot be used to dress off a fishing neck, an inside diameter cutting tool may be used.

- Due to the use of insert lined tubing, the composite liner must be removed from the tubing before engaging the fish with a spear.

1. Trip in hole with spear sized to engage the I.D. of the insert liner.
2. Engage the insert liner inside the tubing with spear.
3. Pull the insert liner out of the tubing.
4. Trip out of hole with insert liner.
5. Trip in hole with inside diameter cutting tool and cut the tubing below the damaged fishing neck.
6. Trip out hole with cutting tool.
7. Trip in hole with spear sized to engage the I.D. of the tubing.
8. Engage the previously cut tubing segment with spear.
9. Trip out hole with cut tubing segment and spear.
10. Trip in hole with overshot and engage fish.
11. Pick up 2 points over neutral weight.
12. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
13. Once released from packer, trip out of hole with fish.

5 ½" UFJ Tubing Inside of 7 ⅝" 39# Casing

Series 150 Overshots

Tools are listed in order of maximum catch size.

The following table shows only a partial listing of available NOV Dowhole Bowen® overshots.

NOTE: Nitralloy Grapples are available upon request.

Bowen Series 150 Releasing and Circulation Overshots

Maximum Catch Size 4¼" to 5½" Inclusive

Maximum Catch Size (Spiral)		4¼	4⅝	4¾	4¾	5	5	5½
Maximum Catch Size (Basket)		3¹⁵⁄₁₆	4⅛	4¼	4¼	4¼	4¼	4⅞
Overshot O.D.		5⅜	5⅜	5⅜	5¾	5⅞	6⅜	6⅜
Type		F.S.	S.H.	S.H.	S.F.S.	S.H.	F.S.	S.H.
Complete Assembly	Part No.	5896	5698	C-5168	8975	C-5171	C-4825	8825
(Dressed Spiral Parts)	Weight	130	130	133	138	140	192	185
Replacement Parts								
Top Sub	Part No.	5897	5699	A-5169	8976	A-5172	B-4826	8826
Bowl	Part No.	5898	5700	B-5170	8977	B-5173	B-4827	8817
Packer	Part No.	169	1140	B-2199	6114	L-5950	L-4505	8818
Spiral Grapple	Part No.	165	1135	B-2201	6112	B-4369	M-1071	8819
Spiral Grapple Control	Part No.	186	1137	B-2202	6113	B-4370	M-1072	8820
Standard Guide	Part No.	187	1143	B-2203	6121	B-4371	L-1074	8821
Basket Parts								
Basket Grapple	Part No.	165	1135	B-2201	6112	B-4369	M-1071	8819
Basket Grapple Control	Part No.	186	1137	B-2202	6113	B-4370	M-1072	8820
Mill Control Packer	Part No.	169-R	1140-R	B-2199-R	6114-R	L-5950-R	M-4505	L-8818-R

A (6.625" turned down to **6.500"** O.D.) Bowen Series 150 Overshot will be used to perform this overshot operation. Details on the overshot are listed above. Casing to tubing clearance dimensions are listed below.

5.5" 17# FJ Casing Inside 7.625" 39# FJ Casing

Clearance (in)	Pipe Size (in)	Weight lb/ft	Grade	Conn.	Type	Body O.D. (in)	Coupling O.D. (in)	I.D. (in)	Drift (in)	Lined Wt. lb/ft	Lined I.D. (in)	Flare I.D. (in)	Lined Drift (in)
0.500	7 5/8	39.0	HCL-80	FJ	Casing	7.625	7.625	6.625	6.500	-	-	-	-
	5 1/2	17.0	HCL-80	FJ	Casing	5.500	5.500	4.892	4.767	18.500	4.520	4.400	4.275

*Red Indicates Tubing

Fishing Procedure

Overshot Fishing Procedure

In the Event of a Connection Break

- **If fishing neck is clean**

1. Trip in hole with overshot and engage fish.
2. Pick up 2 points over neutral weight.
3. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
4. Once released from packer, trip out of hole with fish.

   A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

- **If dressing fishing neck is required**

1. Trip in hole with mill and dress fishing neck to allow for overshot to engage tubing.
2. Trip out of hole with mill.
3. Trip in hole with overshot and engage fish.
4. Pick up 2 points over neutral weight.
5. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
6. Once released from packer, trip out of hole with fish.

   A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

In the Event of a Body Break

- **If fishing neck is clean**

1. Trip in hole with overshot and engage fish.
2. Pick up 2 points over neutral weight.
3. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
4. Once released from packer, trip out of hole with fish.

- **If dressing fishing neck is required**

1. Trip in hole with mill and dress fishing neck to allow for overshot to engage tubing.
2. Trip out of hole with mill.
3. Trip in hole with overshot and engage fish.
4. Pick up 2 points over neutral weight.

5. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
6. Once released from packer, trip out of hole with fish.

A skirted mill may be substituted for a standard mill to ensure pipe stabilization and the casing is not damaged while milling

Spear Fishing Procedure

If an overshot cannot be used to retrieve the fish, a spear may be used.

- Due to the use of insert lined tubing, the composite liner must be removed from the tubing before engaging the fish with a spear.

1. Trip in hole with spear sized to engage the I.D. of the insert liner.
2. Engage the insert liner inside the tubing with spear.
3. Pull the insert liner out of the tubing.
4. Trip out of hole with insert liner.
5. Trip in hole with spear sized to engage the I.D. of the tubing.
6. Engage the tubing with spear.
7. Pick up 2 points over neutral weight.
8. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
9. Once released from packer, trip out of hole with fish.

Inside Diameter Cutting Tool Fishing Procedure

If an overshot is required but a mill cannot be used to dress off a fishing neck, an inside diameter cutting tool may be used.

- Due to the use of insert lined tubing, the composite liner must be removed from the tubing before engaging the fish with a spear.

1. Trip in hole with spear sized to engage the I.D. of the insert liner.
2. Engage the insert liner inside the tubing with spear.
3. Pull the insert liner out of the tubing.
4. Trip out of hole with insert liner.
5. Trip in hole with inside diameter cutting tool and cut the tubing below the damaged fishing neck.
6. Trip out hole with cutting tool.
7. Trip in hole with spear sized to engage the I.D. of the tubing.
8. Engage the previously cut tubing segment with spear.
9. Trip out hole with cut tubing segment and spear.
10. Trip in hole with overshot and engage fish.
11. Pick up 2 points over neutral weight.
12. Turn pipe 10-15 turns to the right to release the seal assembly from the packer.
13. Once released from packer, trip out of hole with fish.

Abandonment Procedure

If the tubing cannot be recovered and the well is to be abandoned.

- The operator will ensure that all geologic formations are properly isolated.

1. Confirm the I.D. of the injection tubing is free from obstructions.
2. Run in hole with wireline set profile plug.
3. Set plug inside of packer assembly.
   (Plug will allow cement to fill the I.D. of the injection tubing and the tubing to casing annulus)
4. Run in hole with wireline conveyed perforating guns and perforate the tubing immediately above the packer.
5. Trip in hole with an overshot, spear, cement retainer or isolation tool that will provide a work string-to- injection tubing seal.
6. Engage the fish with sealing tool.
7. Confirm circulation down the tubing and up the tubing-to-casing annulus.
8. Cement the work string, injection tubing, injection tubing-to-casing annulus and work string-to-casing annulus to surface.
9. Confirm the entirety of the wellbore is cemented to surface and all zones are isolated.
10. ND wellhead and install permanent capping flange.

Attachment to C-108 Application for Authorization to Inject
Permian Oilfield Partners, LLC
Glacier Federal SWD #1
659' FNL & 250' FEL
Sec 8, T26S, R31E
Eddy County, NM

September 25, 2019

STATEMENT REGARDING SEISMICITY

Examination of the USGS and TexNet seismic activity databases has shown minimal historic seismic activity in the area (< 30 miles) of our proposed above referenced SWD well as follows:

Magnitude	Date	Lat	Lon	Distance (mi.)	Bearing (°)
M2.9 USGS	12/4/1984	32.266	-103.556	19.73	44.72
M3.1 USGS	3/18/2012	32.281	-103.892	16.15	338.83

Permian Oilfield Partners does not own any 2D or 3D seismic data in the area of this proposed SWD well. Our fault interpretations are based on well to well correlations and publicly available data and software as follows:

1. USGS Quaternary Fault & Fold database shows no quaternary faults in the nearby area.
2. Based on offset well log data, we have not interpreted any faults in the immediate area.
3. Basement PreCambrian faults are documented in the Snee & Zoback paper, “State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity”, published in the February 2018 issue of the SEG journal, The Leading Edge, along with a method for determining the probability of fault slip in the area.
4. Fault data was also correlated to the publicly available USGS GIS geologic units & structural features database, to Ewing’s 1990 Tectonic map of Texas (via Ruppel’s 2005 Preparation of Maps Depicting Geothermal Gradient and PreCambrian Structure in the Permian Basin), and to fault maps as published in the New Mexico Geological Society Special Publication 13A, “Energy and Mineral Resources of New Mexico: Petroleum Geology,” by R. F. Broadhead, 2017.
5. Software as discussed in #3 from the Stanford Center for Induced and Triggered Seismicity, “FSP 1.0: A program for probabilistic estimation of fault slip potential resulting from fluid injection”, was used to calculate the probability of a fault being stressed so as

to create an induced seismic event, assuming full proposed capacity of 50,000 BBL/day for 30 years.

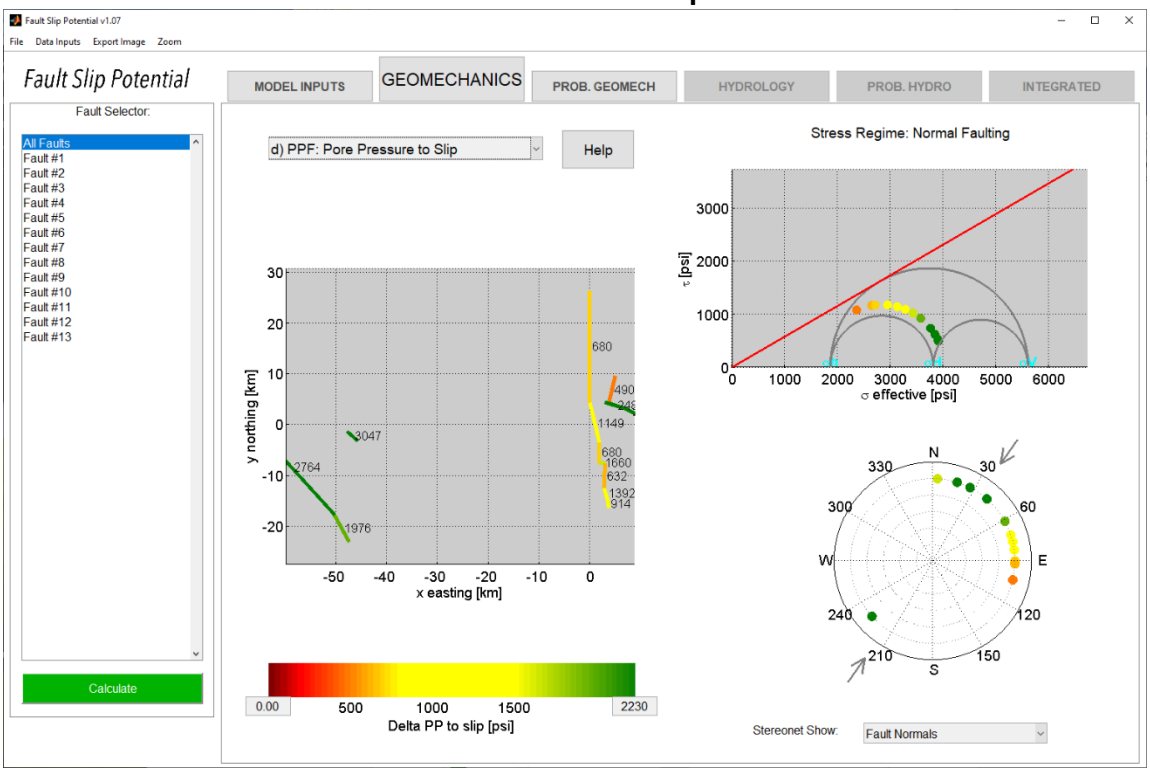
6. Two FSP scenarios were run:
    a. The first FSP scenario assumes PreCambrian faults as per the available data described above, with an improbable catastrophic well failure that would allow full rate injected water to penetrate the Montoya and Simpson permeability barriers, the Ellenburger, and the Cambrian to access the PreCambrian faults.
    b. Because there is evidence that the PreCambrian faults extend into the Devonian in areas, we ran a second FSP scenario with Devonian depth & lithology assumptions.
7. The distance from the proposed injection well to the nearest fault is approximately 23km. The probability of an induced seismic event in the PreCambrian is calculated to be 0% after 5, 10, 20, & 30 years as per the FSP results screenshots below. The probability of an induced seismic event in the Devonian is also calculated to be 0% after 5, 10, 20, & 30 years.
8. As per NM OCD requirements (injection well to injection well spacing minimum of 1.5 miles), this proposed above referenced SWD well is located 1.66 miles away from the nearest active or permitted Devonian disposal well (XTO PLU Big Sinks State SWD #11, in Sec 32-25S-31E).

Part 6 a: PreCambrian Fault Scenario

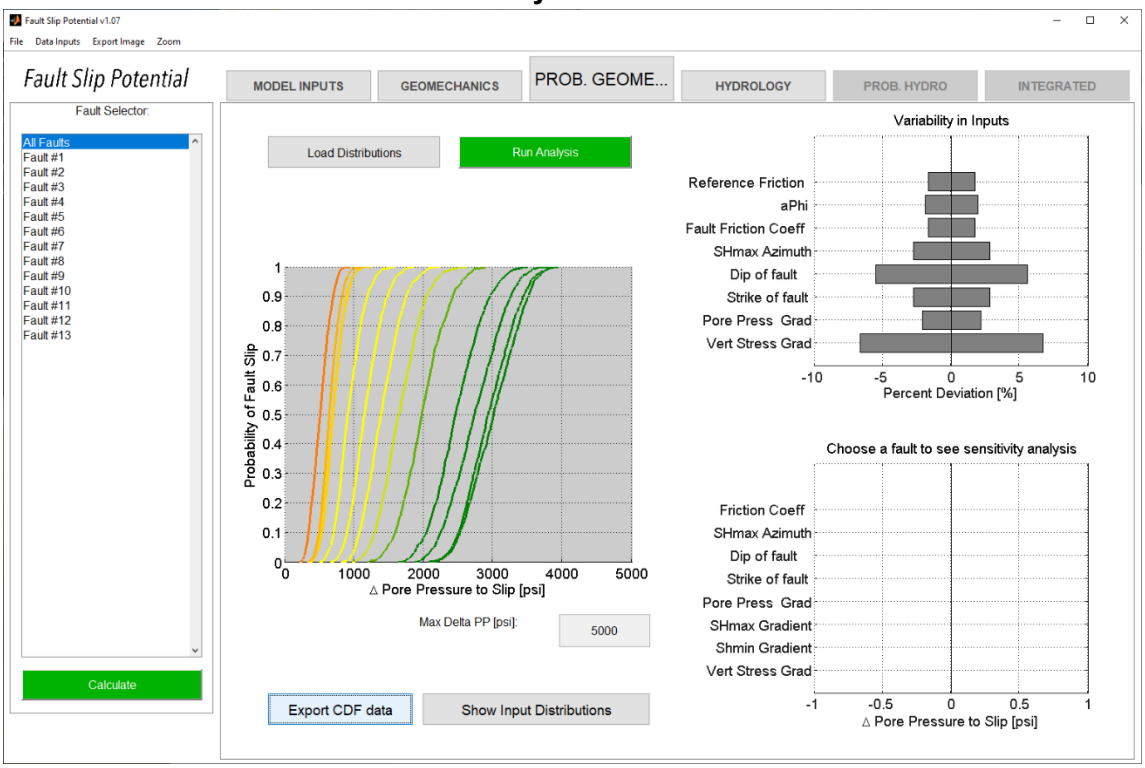
PreCambrian input assumptions:

Rate (BBL/day)	50000
Interval height (ft)	1500
Average Porosity (%)	3
Vert stress gradient (psi/ft)	0.75
Hor stress direction (deg N)	35
Fault dip (deg)	75
Ref depth (ft)	20000
Initial res press gradient (psi/ft)	0.47
A phi	0.52
Friction coefficient	0.58
Average perm (mD)	12.5
Fluid density (kg/m3)	1100
Dynamic viscosity (Pa-s)	0.0003
Fluid compressibility (/Pa)	4 e-10
Rock compressibility (/Pa)	1.08 e-09

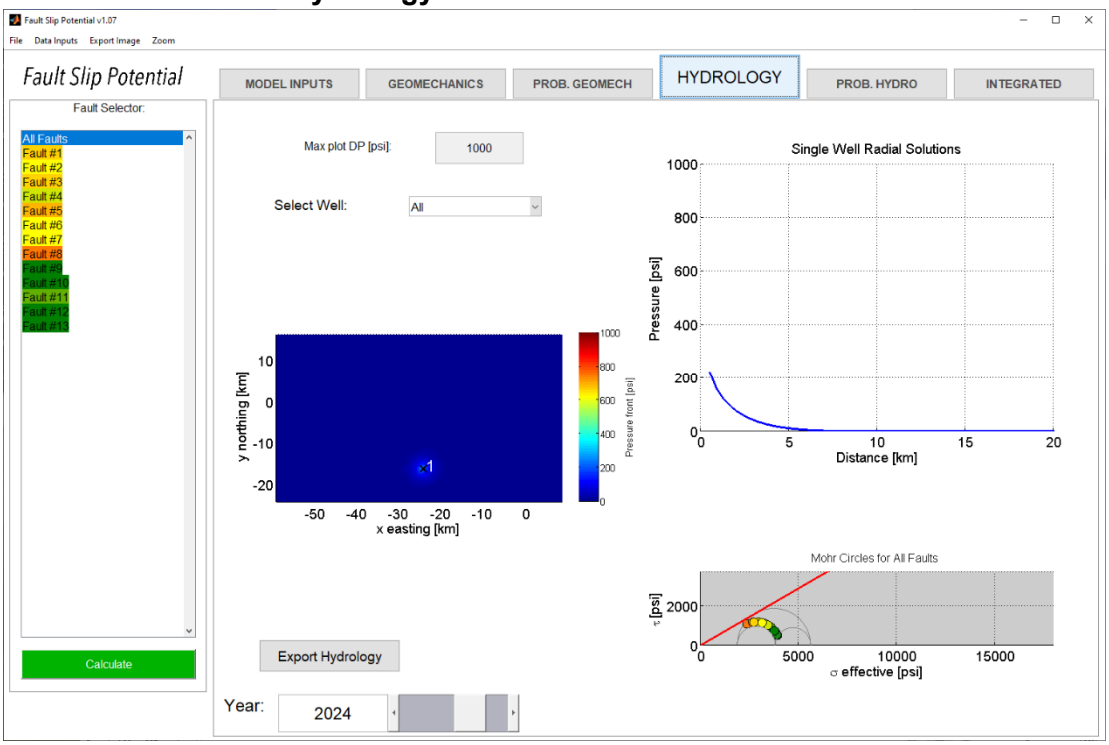
PreCambrian Geomechanics Pore Pressure to Slip



PreCambrian GeoMechanics Variability

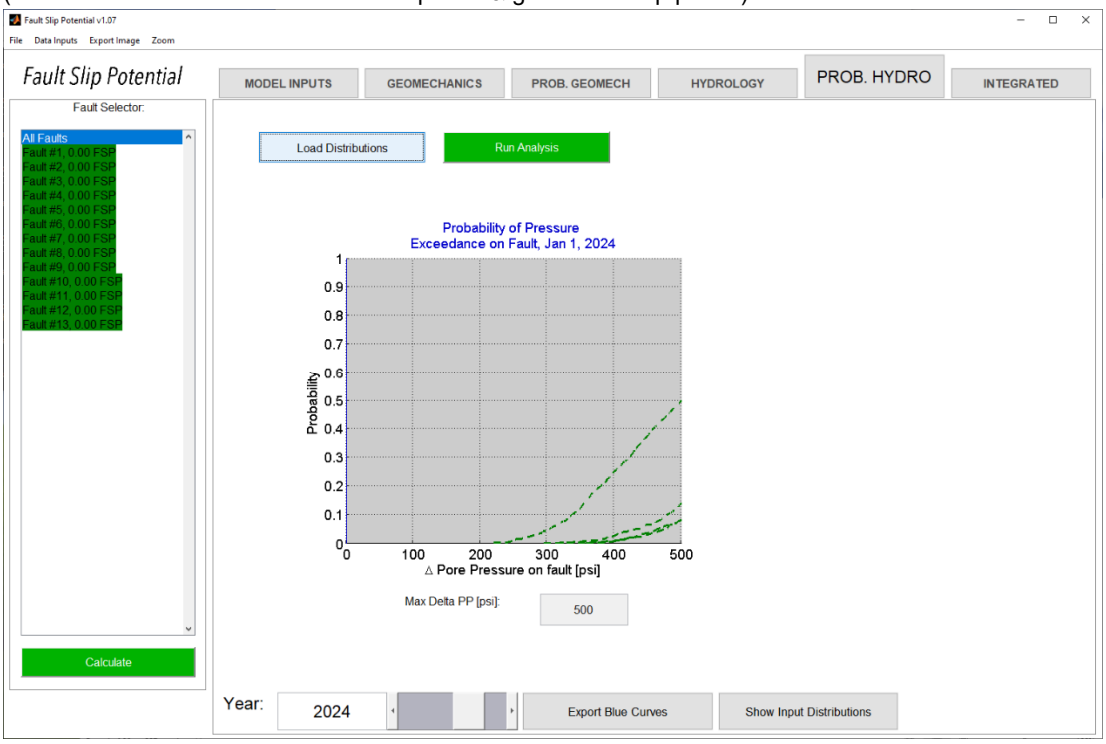


PreCambrian Year 5 Hydrology



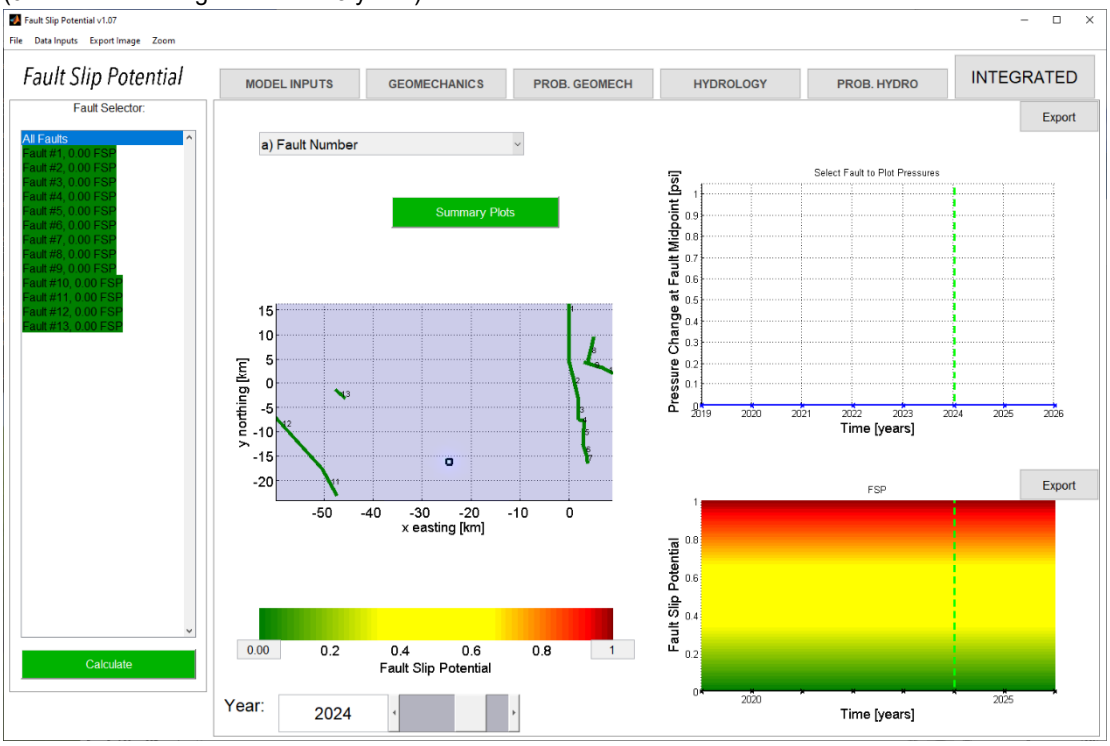
PreCambrian Year 5 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

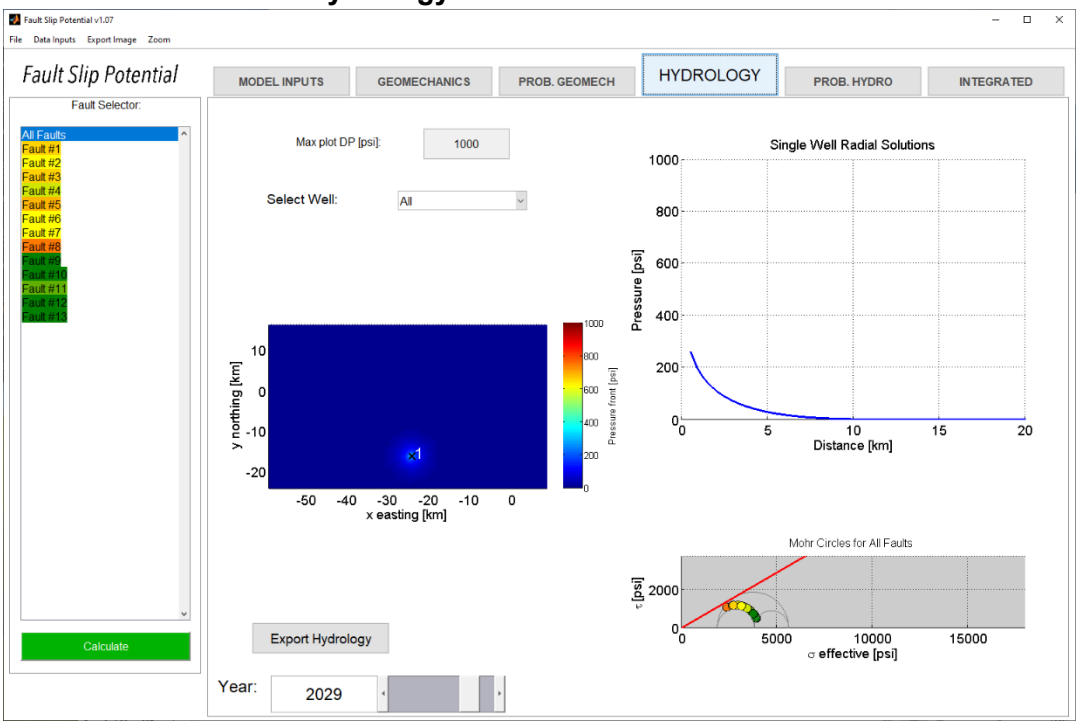


PreCambrian Year 5 Fault Slip Probability

(0% for all fault segments after 5 years)

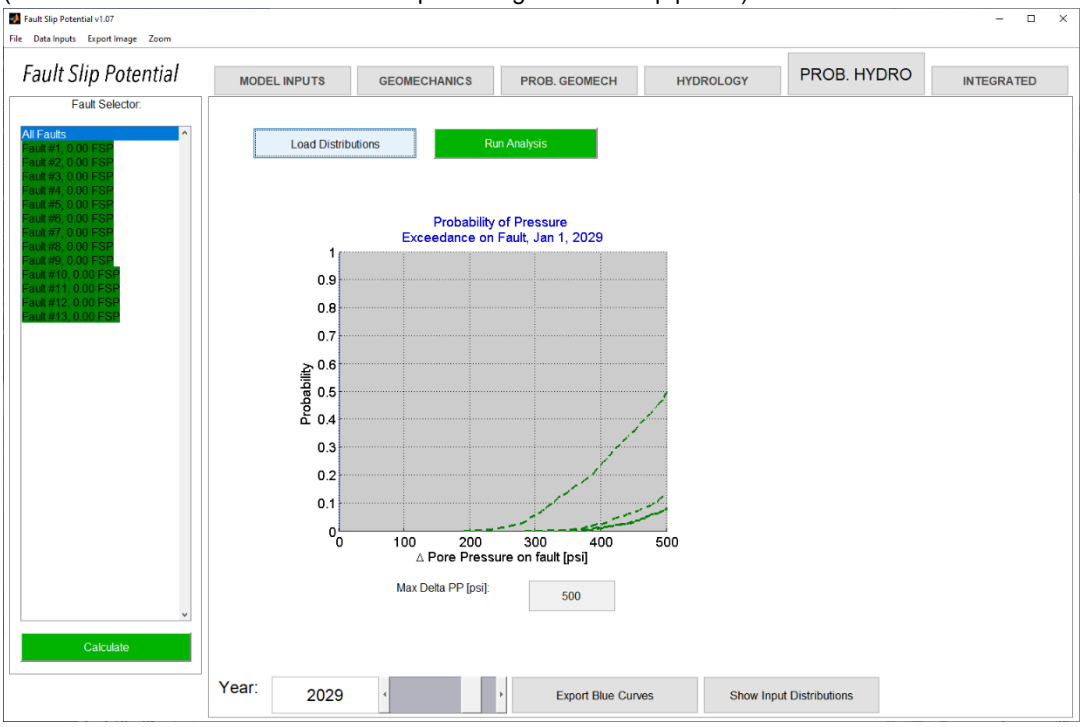


PreCambrian Year 10 Hydrology



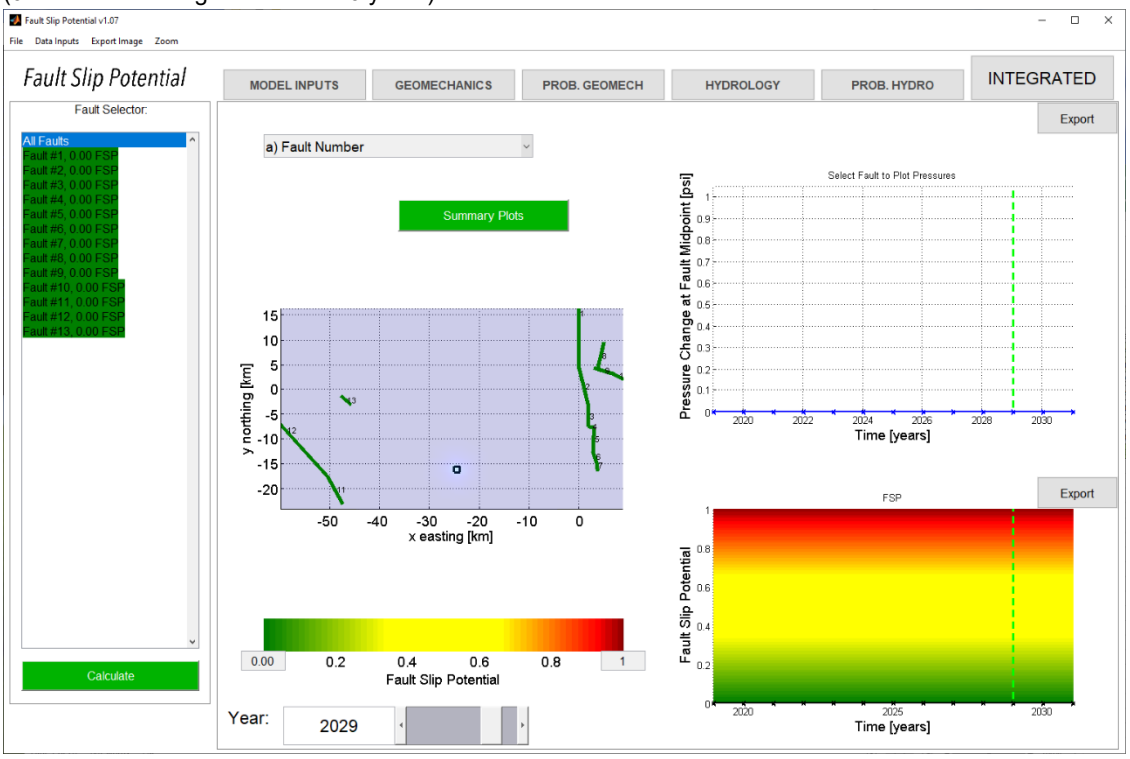
PreCambrian Year 10 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

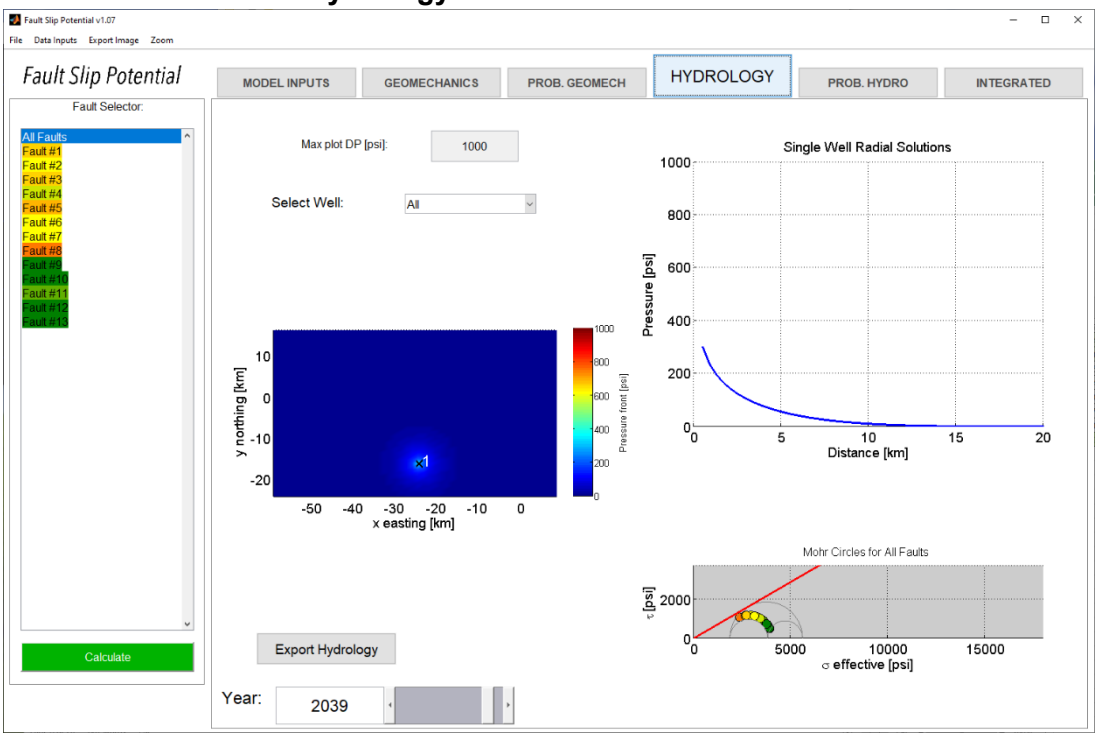


PreCambrian Year 10 Fault Slip Probability

(0% for all fault segments after 10 years)

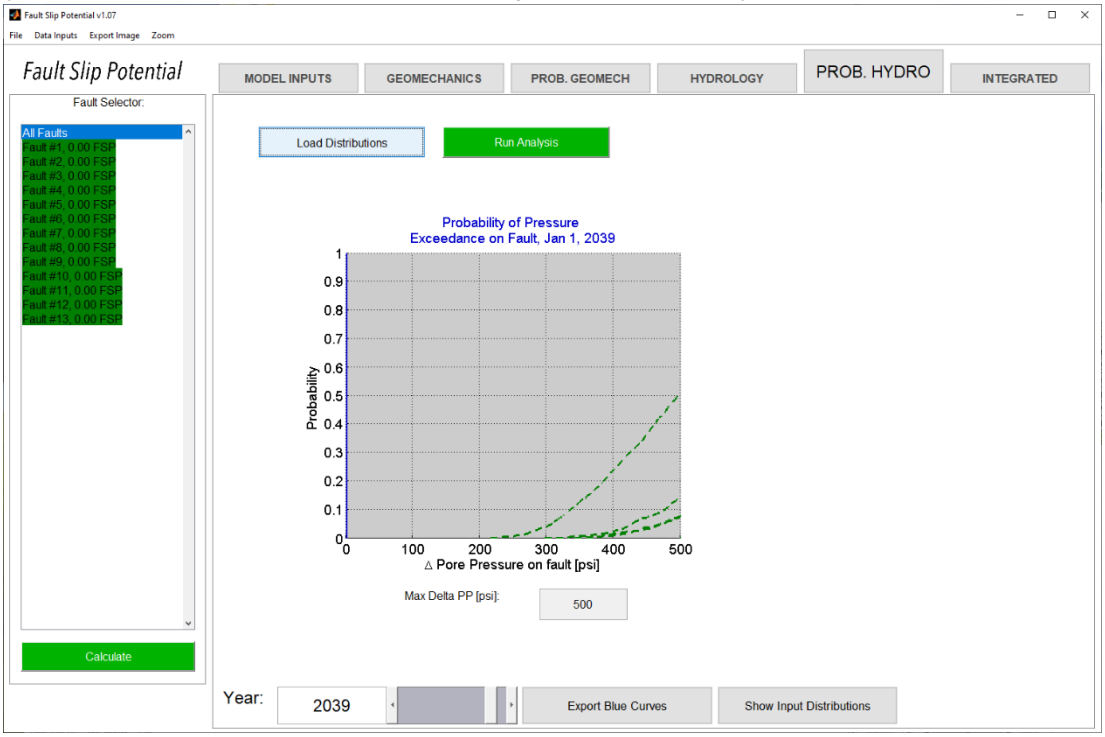


PreCambrian Year 20 Hydrology



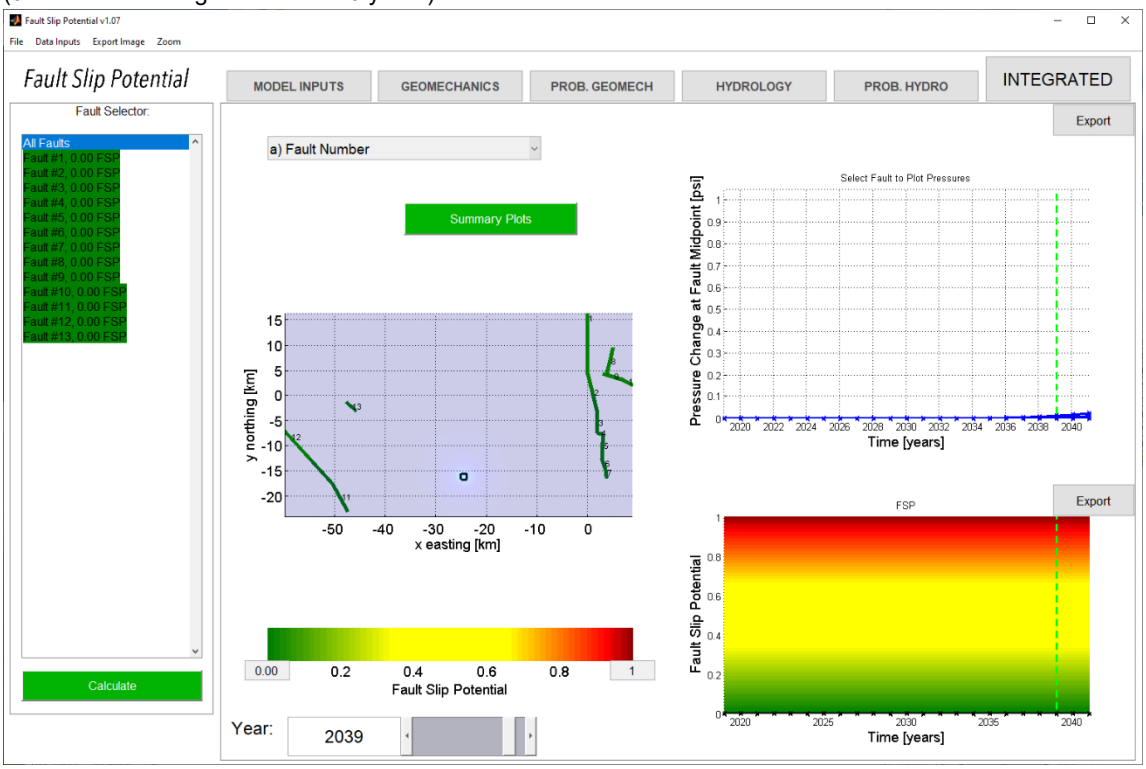
PreCambrian Year 20 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

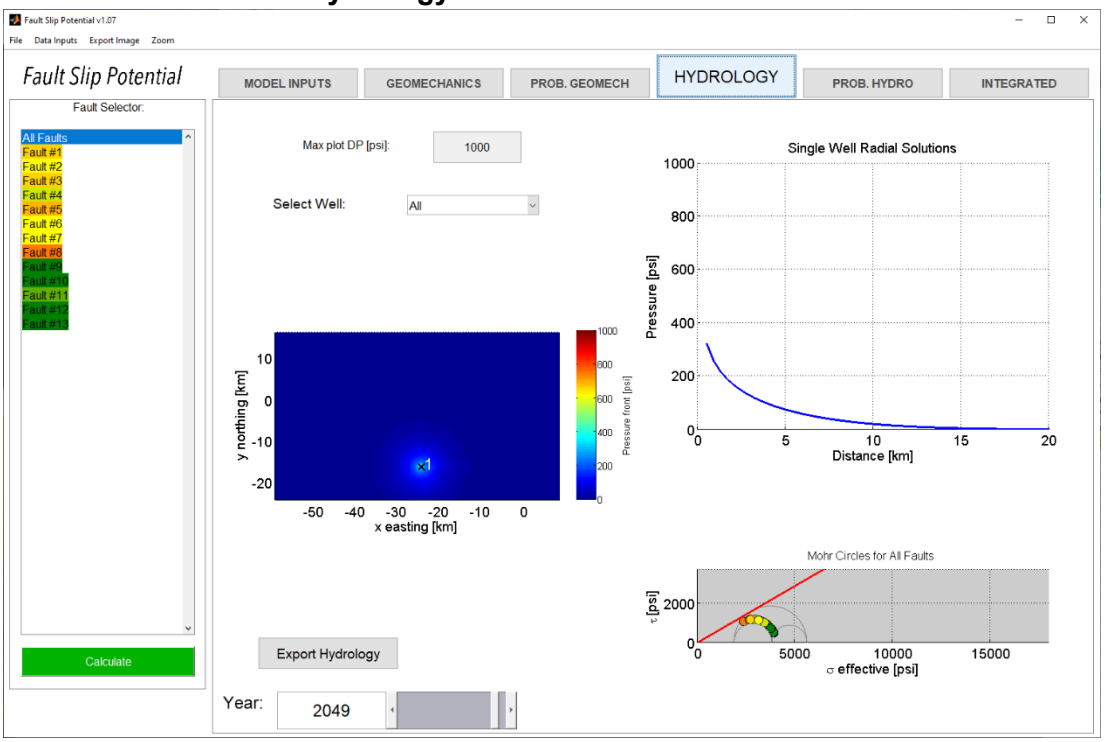


PreCambrian Year 20 Fault Slip Probability

(0% for all fault segments after 20 years)

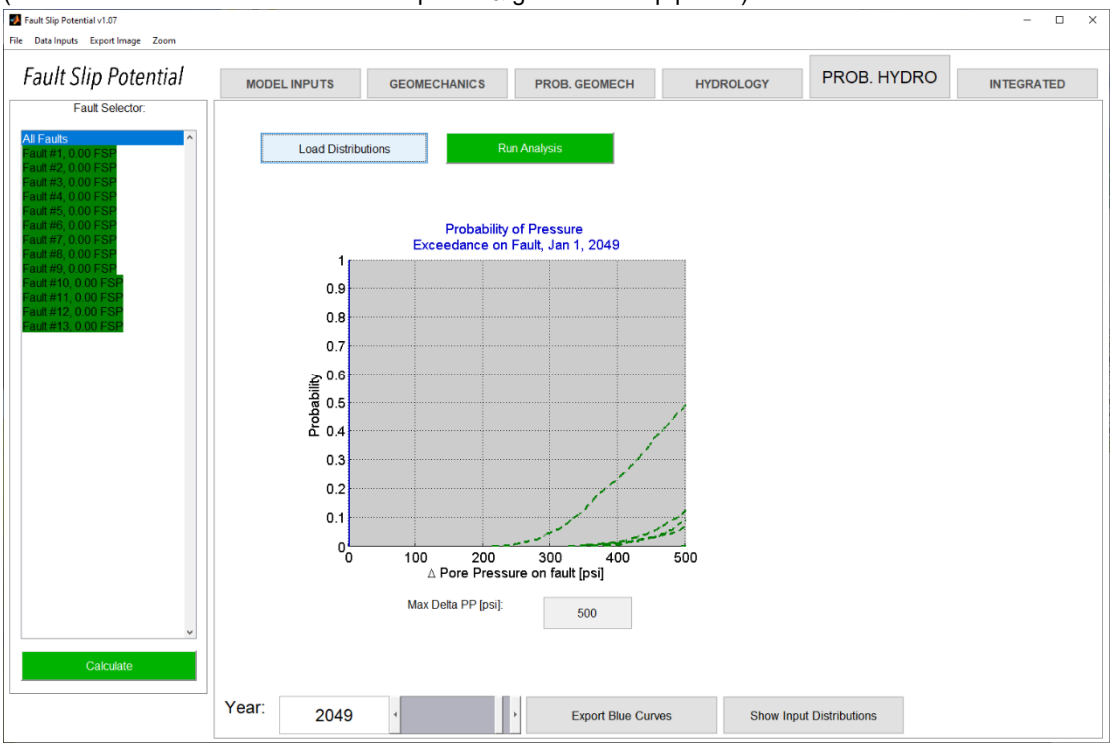


PreCambrian Year 30 Hydrology



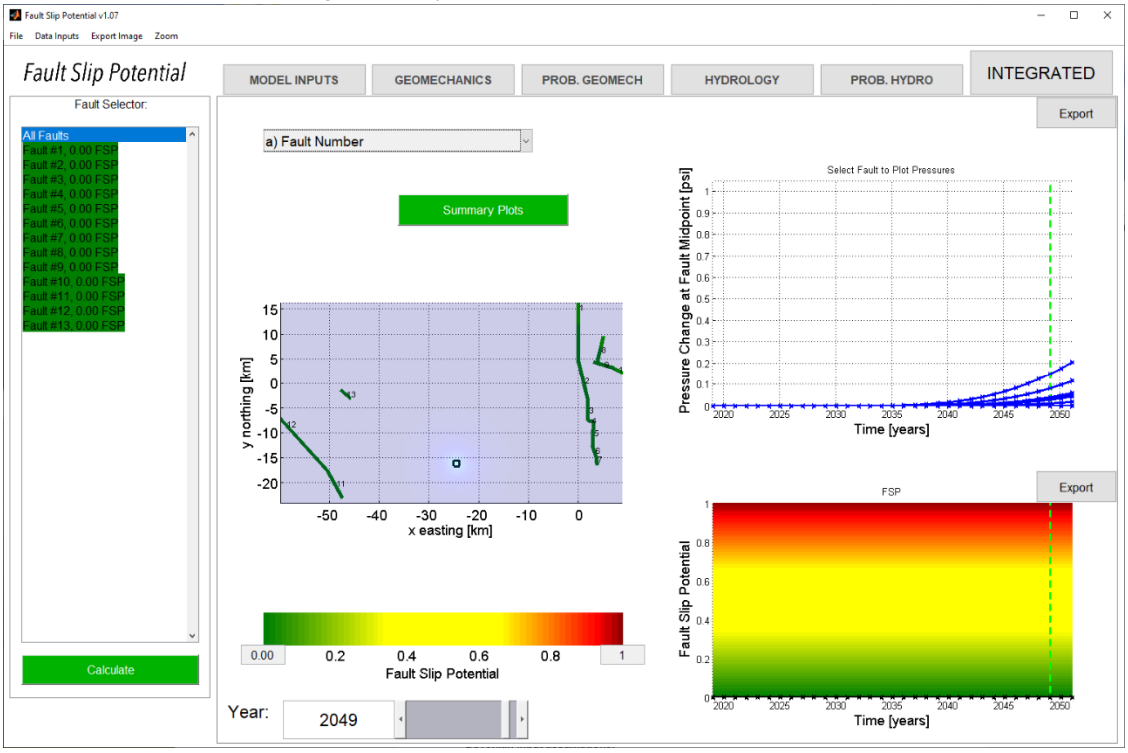
PreCambrian Year 30 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)



PreCambrian Year 30 Fault Slip Probability

(0% for all fault segments after 30 years. 0.15 psi fault delta pressure is much less than the 1976 psi required for fault slip in the closest fault segment #11)

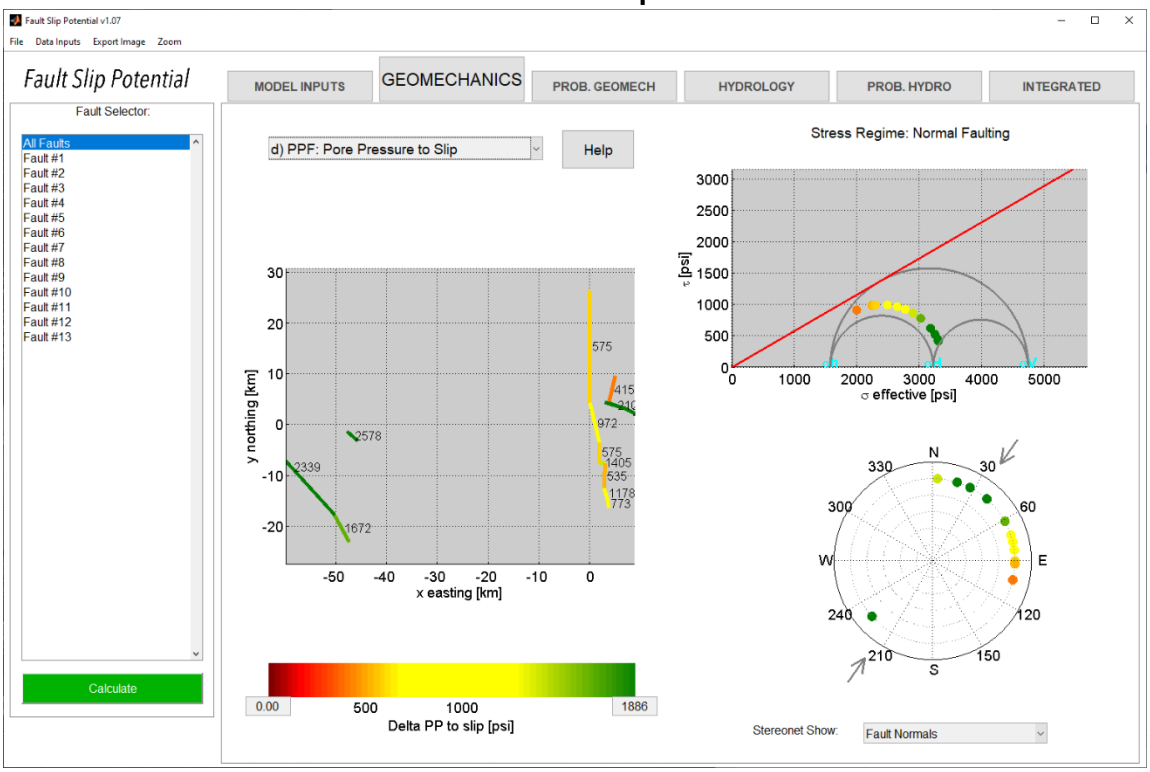


Part 6 b: Devonian Fault Scenario

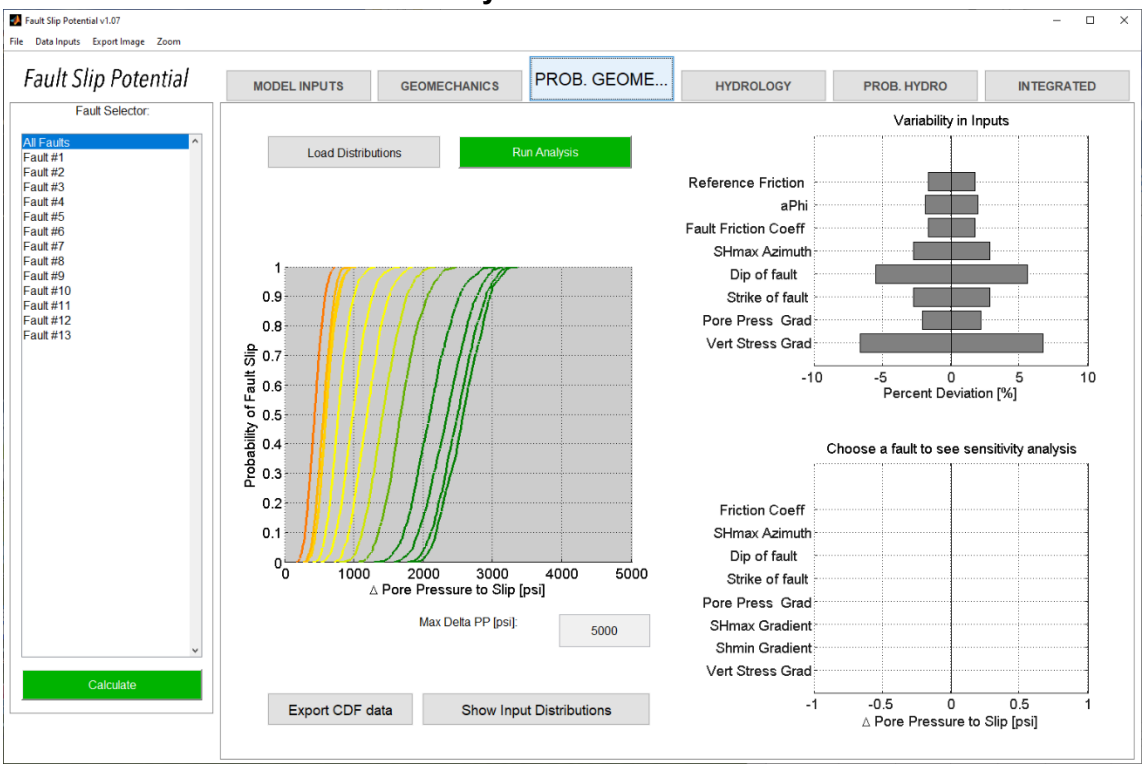
Devonian input assumptions:

Rate (BBL/day)	50000
Interval height (ft)	1190
Weighted Average Porosity (%)	3.3
Vert stress gradient (psi/ft)	0.75
Hor stress direction (deg N)	35
Fault dip (deg)	75
Ref depth (ft)	16921
Initial res press gradient (psi/ft)	0.47
A phi	0.52
Friction coefficient	0.58
Weighted Average perm (mD)	19
Fluid density (kg/m3)	1100
Dynamic viscosity (Pa-s)	0.0003
Fluid compressibility (/Pa)	4 e-10
Rock compressibility (/Pa)	1.08 e-09

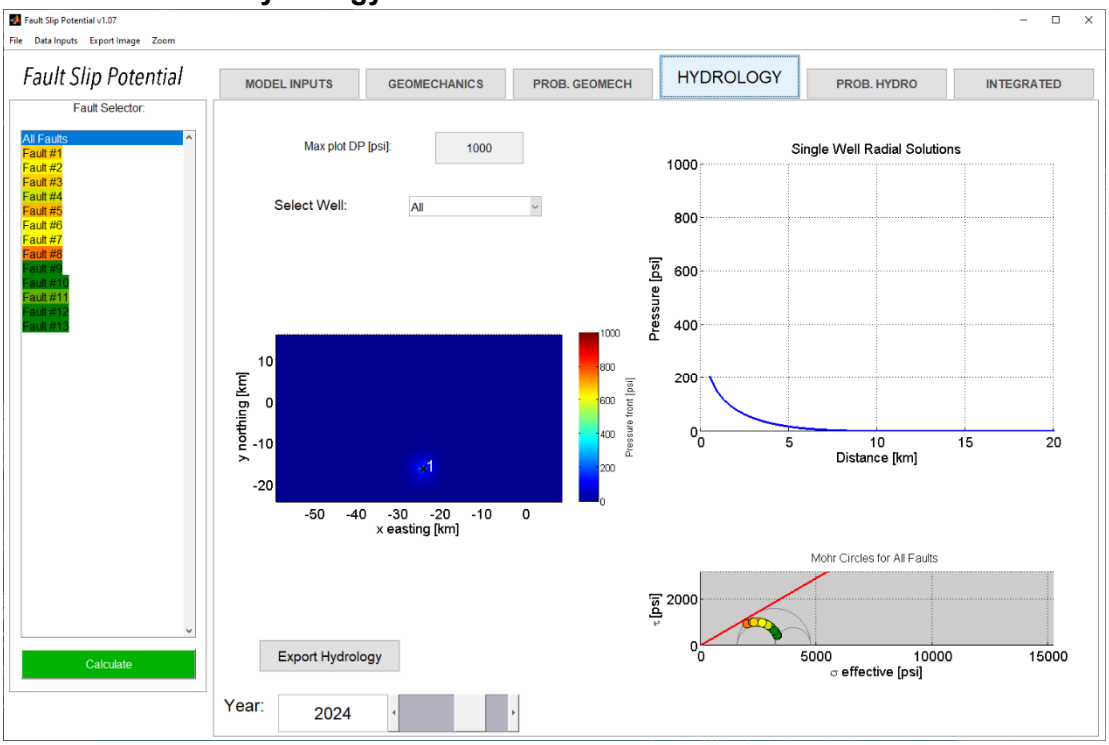
Devonian Geomechanics Pore Pressure to Slip



Devonian GeoMechanics Variability

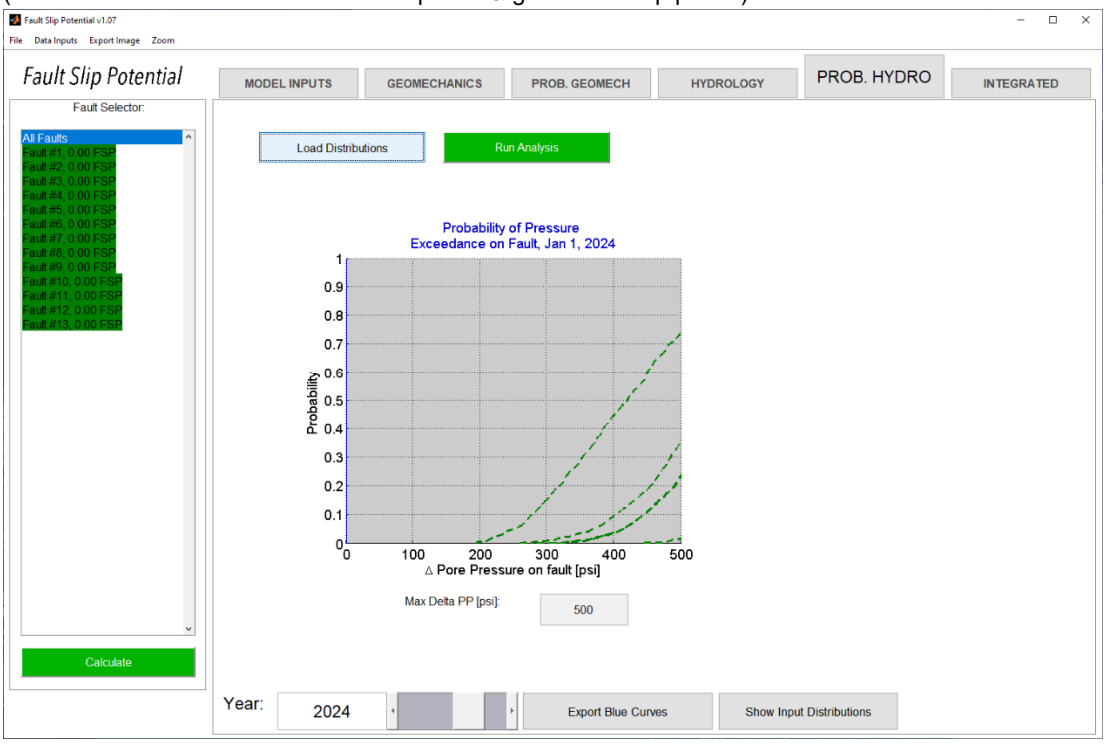


Devonian Year 5 Hydrology



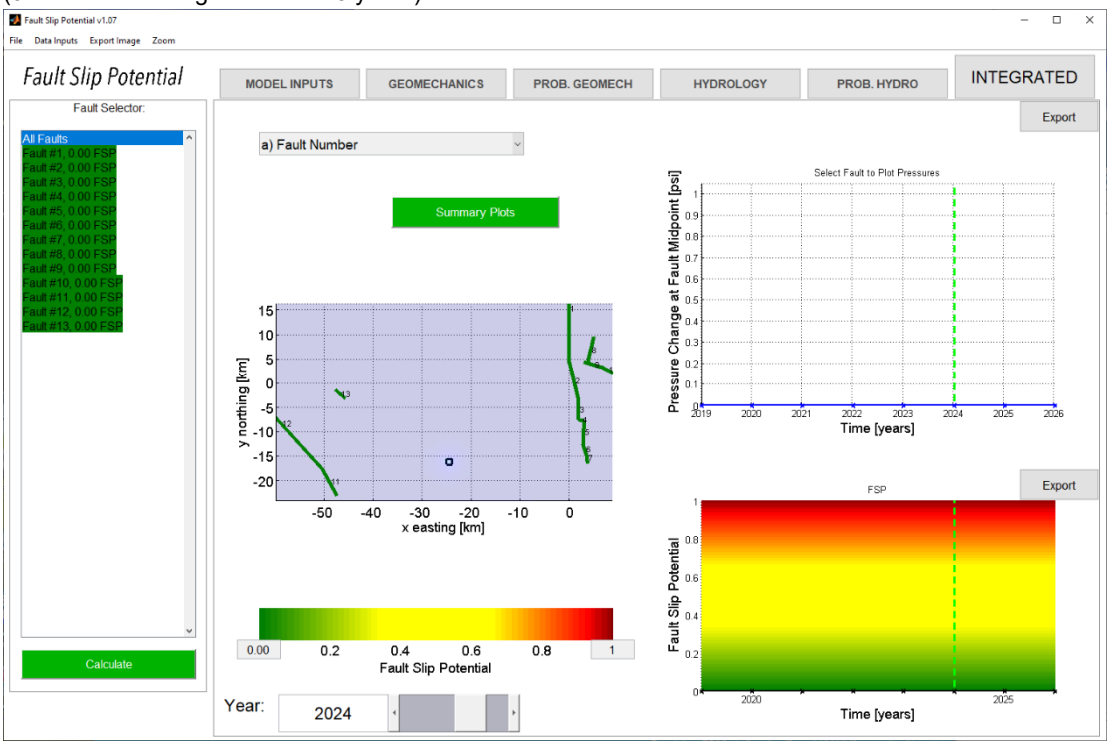
Devonian Year 5 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

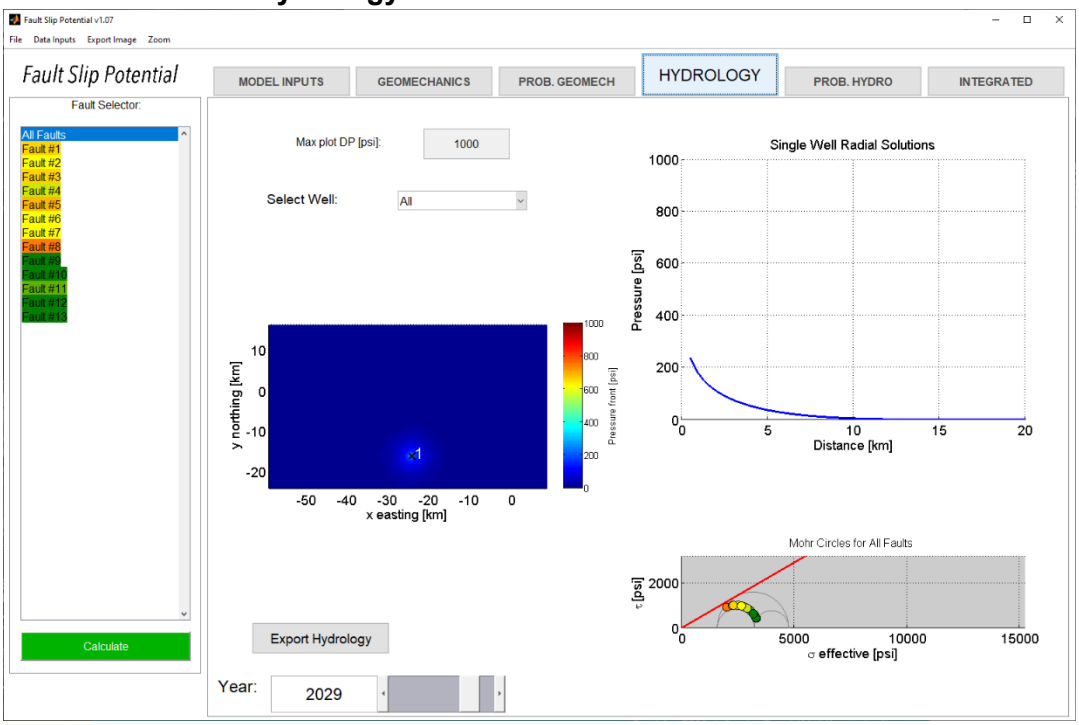


Devonian Year 5 Fault Slip Probability

(0% for all fault segments after 5 years)

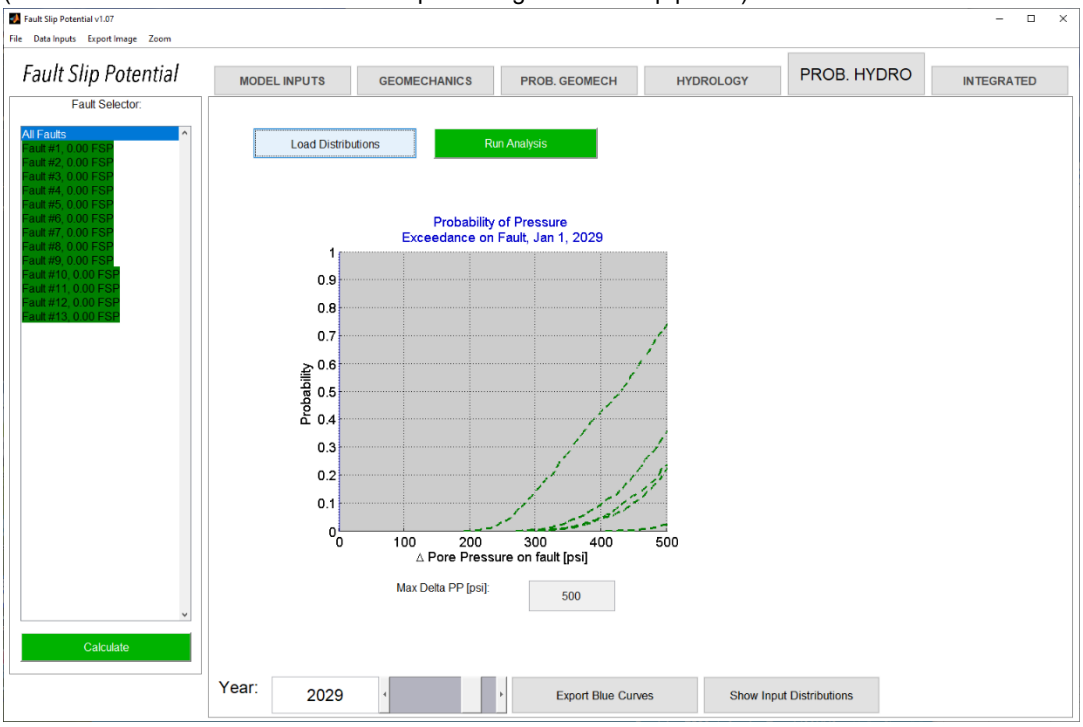


Devonian Year 10 Hydrology



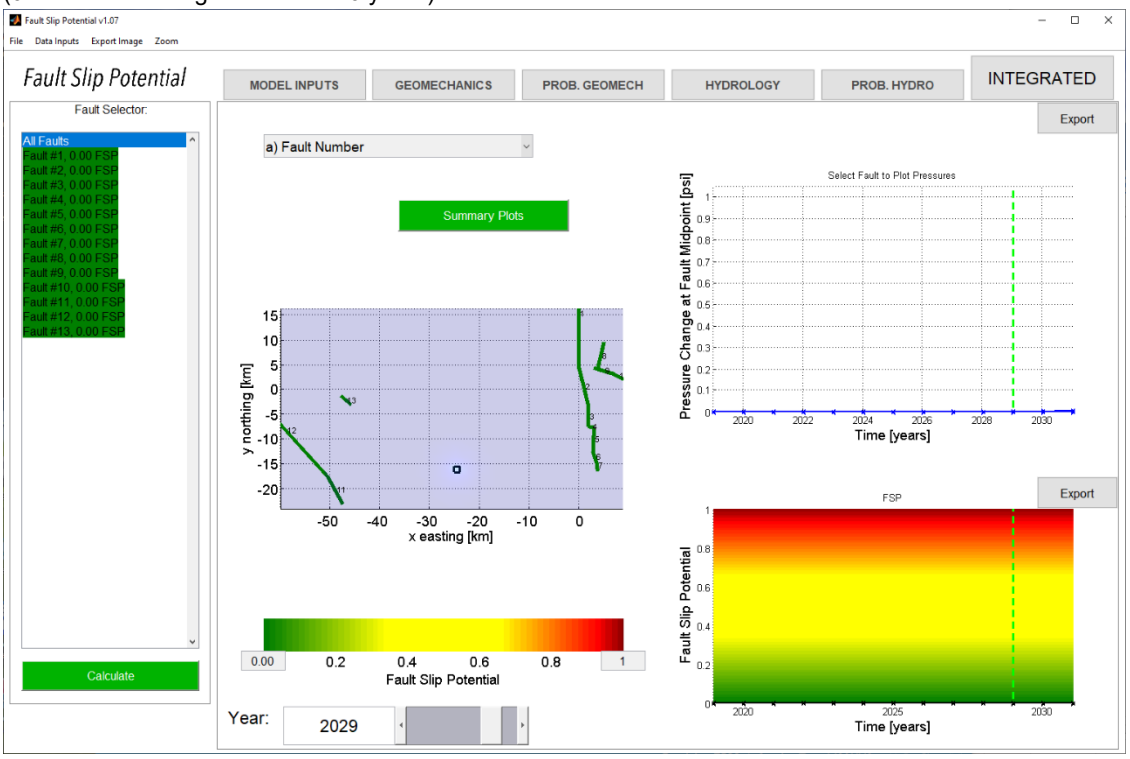
Devonian Year 10 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

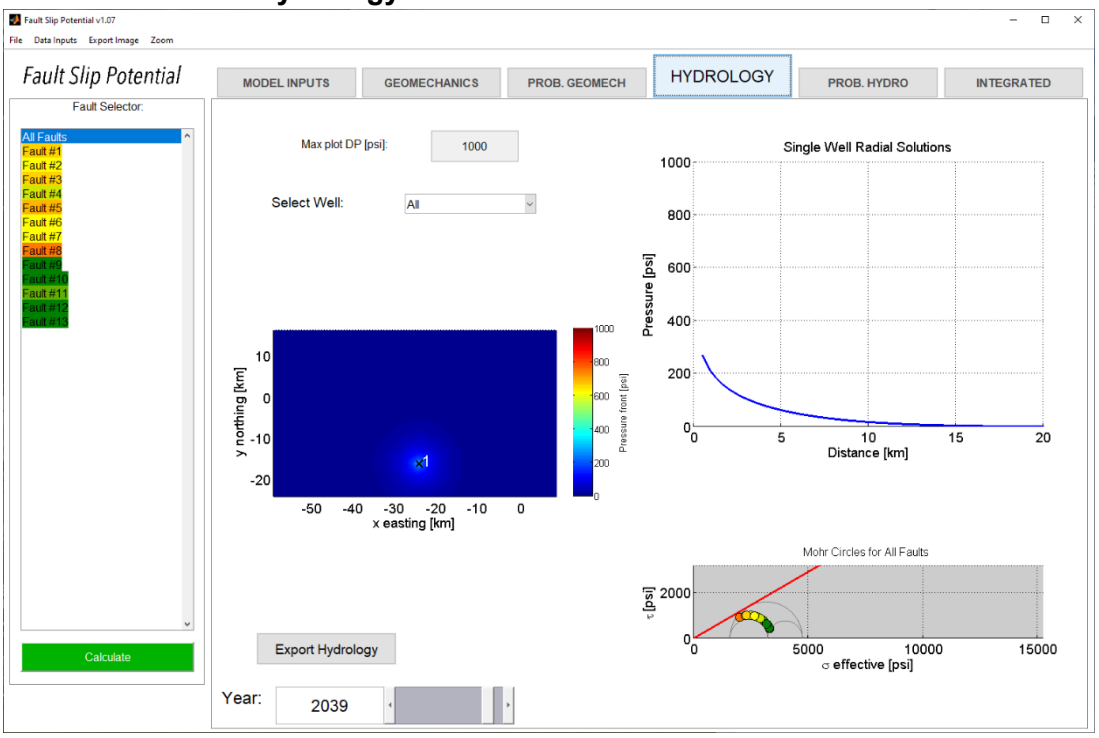


Devonian Year 10 Fault Slip Probability

(0% for all fault segments after 10 years)

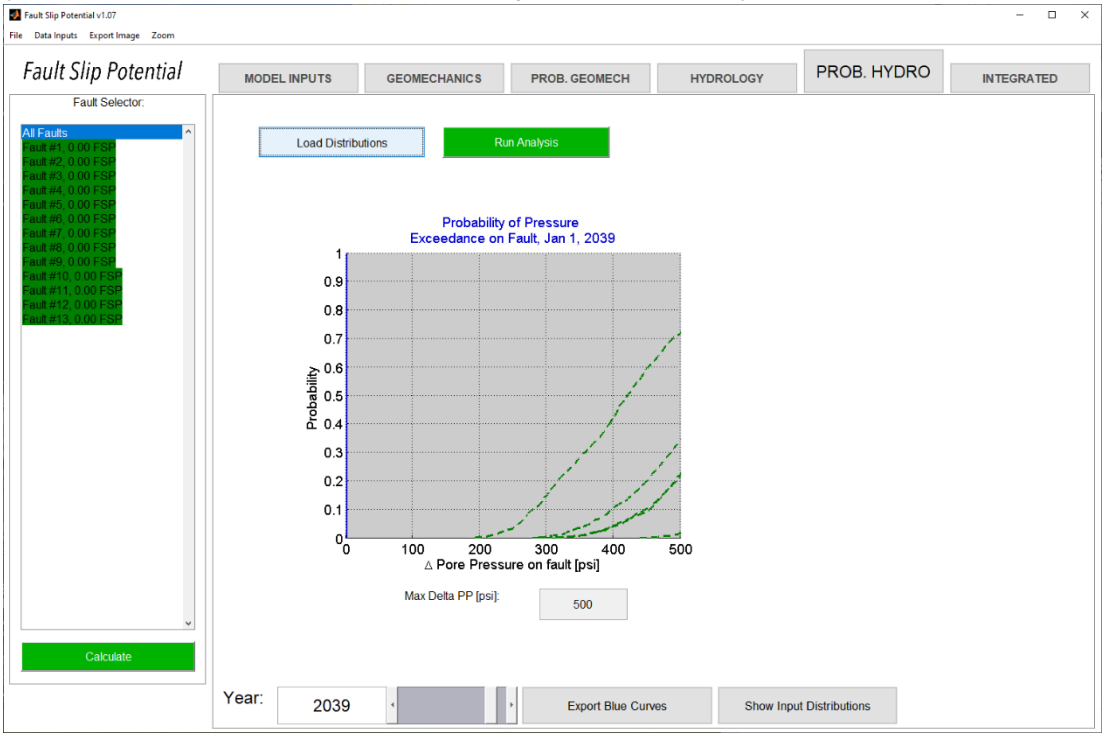


Devonian Year 20 Hydrology



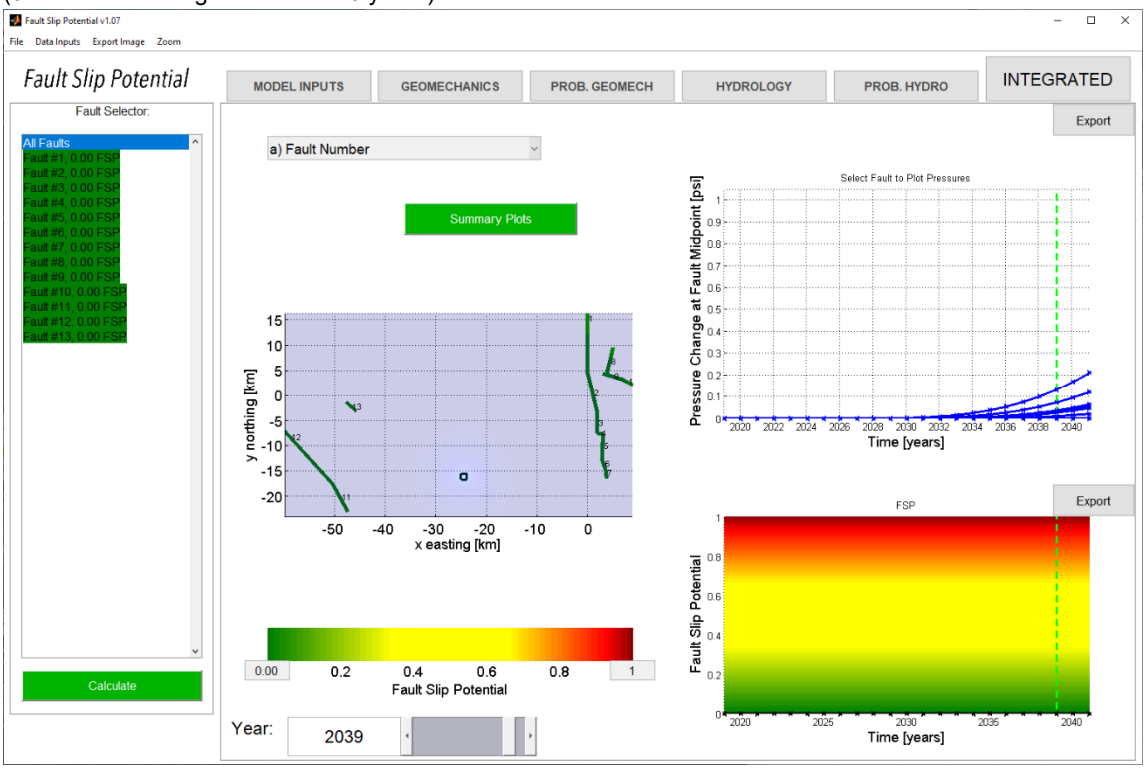
Devonian Year 20 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)

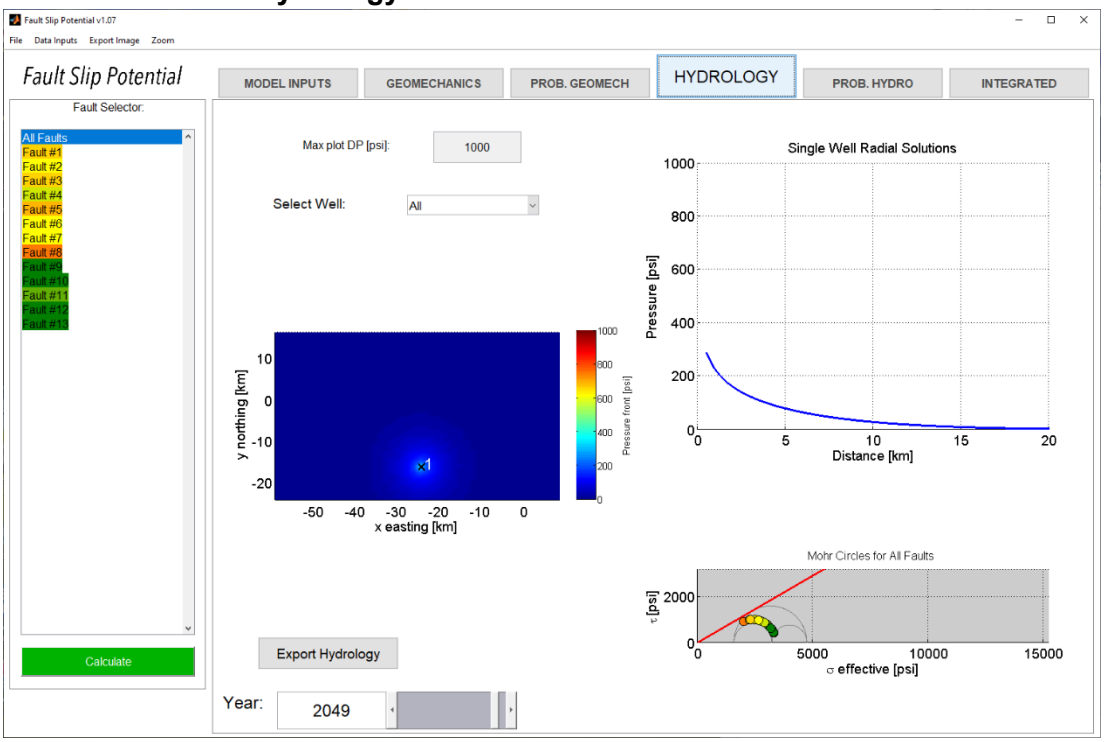


Devonian Year 20 Fault Slip Probability

(0% for all fault segments after 20 years)

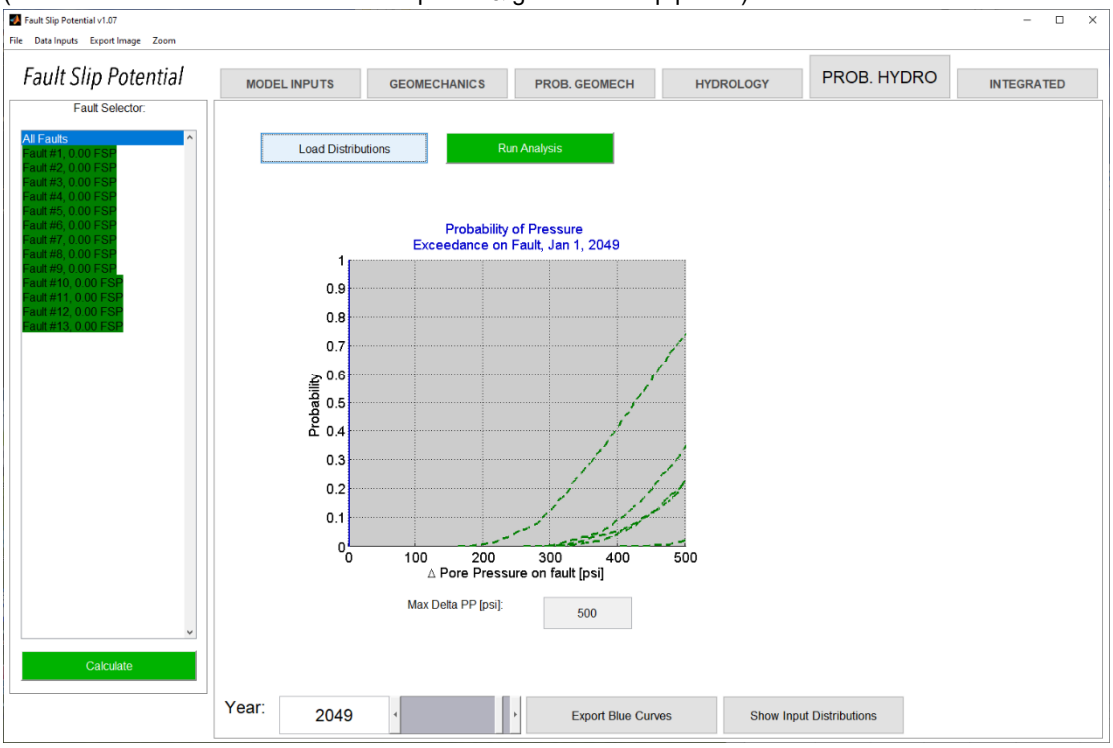


Devonian Year 30 Hydrology



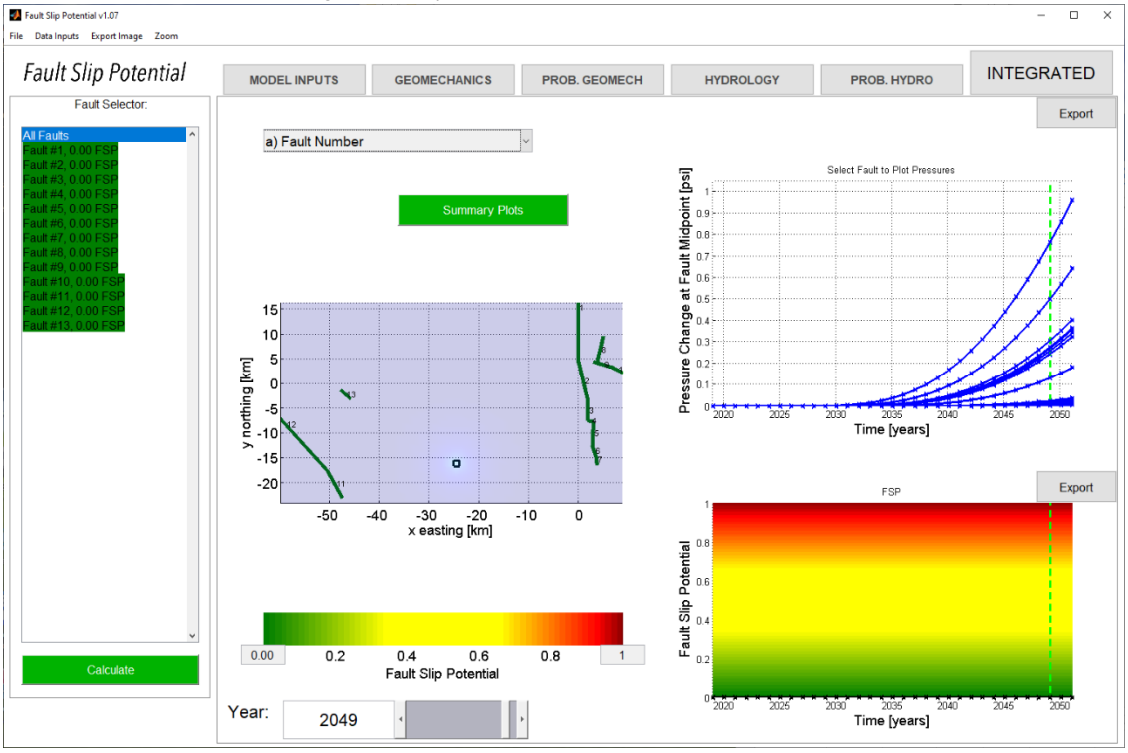
Devonian Year 30 Probabilistic Hydrology

(note no crossover between blue delta-press. & green fault slip press.)



Devonian Year 30 Fault Slip Probability

(0% for all fault segments after 30 years. 0.75 psi fault delta pressure is much less than the 1672 psi required for fault slip in the closest fault segment #11)



gfisher@popmidstream.com
(817) 606-7630