MEWBOURNE
OIL COMPANY

February 1, 2019

New Mexico Oil Conservation Division
Engineering Bureau
Attn: Mr. Phillip Goetze
1220 South St. Francis Drive
Santa Fe, NM 87505

Re: Red Hills SWD #2 (SWD-1635)
Request for Increase in Tubing Size
Section 8, Township 26 South, Range 32 East
1100' FSL & 900' FWL
Lea County, New Mexico

Dear Mr. Goetze:

Mewbourne Oil Company is requesting permission to modify SWD-1635 to allow us to utilize a 7" x 5.5" injection string in the subject well. This SWD well is scheduled to be spud in early March 2019 and will become an important part of our Red Hills Water Management System that was built to accommodate the utilization of produced water for the fracture stimulation of 80+ future new drills in the area. Mewbourne stimulated 23 new completions out of these pits in 2018, averaging eight-six percent produced water. Our new estimated average injection volume will be 20,000 Bwpd and the larger diameter tubing is necessary to handle volumes as high as 45,000 Bwpd during periods when recycling operations are suspended and / or when existing commercial SWD outlets are restricted.

At your request, we extended the area of review and the area of notification from one half mile to one mile in July 2018, when we submitted a BLM Sundry Notice 3160-5 to obtain permission for the larger tubing size. This application was never processed since the BLM decided to approve our request through the drilling permit process. Two new operators were notified of our intent at this time (copy of expanded distribution list attached). Attached are the following:

- Copy of approved BLM drilling permit (note: approved with 7" x 5.5" tubing)
- Updated C-108
- Updated well schematic
- 1 mile Area of Review Well List (no wells penetrate the proposed disposal interval)
- Expanded Notification List
- Devonian-Silurian SWD Map
- Devonian-Silurian SWD Map with Faults and Earthquakes
- Statement Regarding Seismicity and Well Spacing
- Map of Red Hills Water Management System
- Plugging Risk Assessment

P.O. Box 7698 • Tyler, Texas 75711
3620 Old Bullard Road • Tyler, Texas 75701

Should you have any questions or require any further information, please contact us at (903) 534-7647.

Sincerely yours,

MEWBOURNE OIL COMPANY

Tim Harrington
Reservoir Engineer
tharrington@mewbourne.com

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM105560

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other INJ-DIS

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
RED HILLS WEST SWD
2

2. Name of Operator
MEWBOURNE OIL COMPANY

9. API Well No.

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
PO Box 5270 Hobbs NM 88240	(575)393-5905	SWD; DEVONIAN-SILURIAN / DEVONIAI

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SWSW / 1100 FSL / 900 FWL / LAT 32.0531182 / LONG -103.702479
At proposed prod. zone SWSW / 1100 FSL / 900 FWL / LAT 32.0531182 / LONG -103.702479

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 8 / T26S / R32E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
20 miles	LEA	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
185 feet	200	320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
1012 feet	19350 feet / 19350 feet	FED: NM1693

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3208 feet	09/29/2018	60 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Bradley Bishop / Ph: (575)393-5905	07/05/2018

Title
Regulatory

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	12/21/2018

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 12/21/2018

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: SWSW / 1100 FSL / 900 FWL / TWSP: 26S / RANGE: 32E / SECTION: 8 / LAT: 32.0531182 / LONG: -103.702479 (TVD: 0 feet, MD: 0 feet)
   BHL: SWSW / 1100 FSL / 900 FWL / TWSP: 26S / RANGE: 32E / SECTION: 8 / LAT: 32.0531182 / LONG: -103.702479 (TVD: 19350 feet, MD: 19350 feet)

BLM Point of Contact

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: 5752345934

Email: pperez@blm.gov

Side 1

INJECTION WELL DATA SHEET

OPERATOR: **Mewbourne Oil Company**

WELL NAME & NUMBER: **Red Hills SWD #2**

WELL LOCATION:	**1100' FSL & 900' FWL**	**M**	**08**	**26S**	**32E**
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC *(See Attached)*

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: **26"**

Casing Size: **20" @ 1100'**

Cement with: **1640 sx**

Top of Cement: **Surface**
(Proposed: Circulated)

Intermediate Casing

Hole Size: **17 1/2"**

Casing Size: **13 3/8" @ 4275'**

Stage 1: 2040 sx

Top of Cement: **Surface**
(Proposed: Circulated)

Intermediate 2 Casing

Hole Size: **12 1/4"**

Casing Size: **9 5/8" @ 11,650**

Stage 1: Cement with: 1525 sx
Stage 2 (DV @ 4400'): Cement with: 1015 sx

Top of Cement: **Surface**
(Proposed: Circulated)

Intermediate 3 Liner

Hole Size: **8 3/4"**

Casing Size: 7 5/8" **Top @ 11,450'**
Bottom @ 17,300'

External Csg Packer @ 17,280'

Top of Cement: **Surface**
(Proposed: circulated)

Cement with: 825 sx

TD @ 19,350'

Injection Interval

Open Hole Completion from 17,300'-19,350'

Side 2

INJECTION WELL DATA SHEET

Tubing Size: **7" P110 UFJ GB & 5 ½" P110 UFJ GB** Lining Material: **None**

Type of Packer: **Model R (nickel plated)**

Packer Setting Depth: **+/- 17,280'**

Other Type of Tubing/Casing Seal (if applicable): **N/A**

Additional Data

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

   If no, for what purpose was the well originally drilled?

2. Name of the Injection Formation: **Devonian, Fusselman, Montoya and Simpson - Open Hole Completion**

3. Name of Field or Pool (if applicable): **98109 SWD; DEV-FUS-MON-SIMP**

4. Has the well ever been perforated in any other zone(s)? No. This is a new drill.

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

   Overlying producing zone(s) – **Avalon Shale (8,500'), 2nd Bone Spring (10,100'), 3rd Bone Spring (11,300'), Wolfcamp (11,650') & Morrow (15,550'),**

   Underlying producing zone – **N/A**

RED HILLS SWD #2
Additional Details

VI. There are no wells penetrating the disposal formation within the area of review.

VII. 1. Proposed average rate of 10,000 bwpd and maximum rate of 25,000 bwpd.

2. Closed system.

3. Proposed average injection pressure is unknown and the maximum injection pressure is approximately 3448 psi (0.2 psi/ft x 17,240 ft).

4. Injection fluid will be formation water from the Mewbourne Oil Company operated wells currently producing or planned in the area. Representative water samples from the Wolfcamp and Avalon Shale formations are attached.

5. We will be injecting into the Devonian formation. Devonian formation water is known to be compatible with the formation water of the Avalon, Bone Spring and Wolfcamp. No Devonian water analysis are available within the immediate area. The following data is the closest produced water analysis that is available on the USGS

IDUSGS	IDORIG	IDDB	SOURCE	LATITUDE	LONGITUDE	API	COUNTY	FIELD	WELLNAME	TOWNRANGE
35292	30000310	USGSBREIT	Pan American Petroleum Corporation	32.183	-103.7766	30015108590000	Eddy	Poker Lake South	Poker Lake Unit #36	S 24 E 31 28

DATESAMPLE	METHOD	FORMATION	DEPTHUPPER	DEPTHLOWER	SG	SPGRAV	RESIS	RESIST	PH	TDSUSGS	TDS
1967-04-06	Separator	Devonian	16578	16660	1.086	1.086	0.067	77	6.6	120326	120326

VIII. 1. The proposed injection interval is within the Devonian formation which is a porous dolomitic limestone from 17240' to 19,350'.

2. The underground fresh water aquifers (unnamed) are present at shallow depths <150'. There are no known fresh water intervals underlying the injecting formation.

IX. The proposed stimulation is an open-hole acid treatment of 30000 gallons of 15% HCL.

IX. No logs are currently on file with the Division. A gamma-ray / neutron log will be run from TD to surface upon the drilling and completion of proposed well.

X. There are no water wells on file with the State Engineers Office within in the area of interest. A fresh water sample caught in Section 6, 26S, 31E is attached.

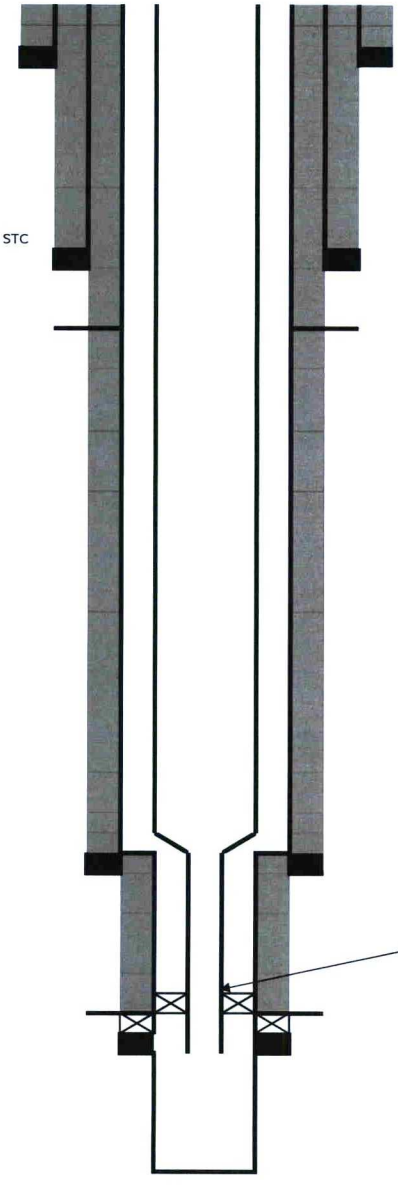
XI. Mewbourne Oil Company has examined geologic and engineering data and has found that there is no evidence of faulting between the proposed disposal zone and any underground sources of drinking water. An signed affidavit is attached.

XII. See attached Proof of Notice

Mewbourne Oil Company

Well Name: Red Hills SWD #2
Spud: 2019

Last Updated by S. Puryear:11/14/2018



20" 94 & 106.5# J-55 BTC
Set @ 1100'
Cmt w/ 1640 sx

13 3/8" 54.5#, 61# & 68# J55 & HCL80 STC
Set @ 4275'
Cmt w/ 2040 sx

ECP/DV Tool @ 4400'
Cmt 2nd stg w/ 1015 sx

9 5/8" 40# & 43.5 HCL80 LTC
Set @ 11650'
Cmt 1st stg w/ 1525 sx

Injection String
7" P110 UFJ GB & 5 1/2" P110 UFJ GB
Nickel-Plated Pkr Set @ 17230'

DV Tool @ 17240'
External Csg Pkr Set @ 17280'

7 5/8" 39# P-110 UFJ Liner
Set from 11450'-17300'
Cmt w/ 825 sx

6 1/8" Open Hole
TD @ 19350'

MEWBOURNE OIL COMPANY
RED HILLS SWD #2 PERMIT APPLICATION
TABULATION OF WELLS WITHIN 1 MILE RADIUS
January 31, 2019 Review

TOP DISPOSAL INTERVAL **17300 FT TVD**

Hole Direction	API	Lease Name	Well Num	Operator Name	Current Operator	Surface Loc Sec	Twp	Rge	Footage	Current Status	Final Status	IP Prod Form Name	TVD	Driller Td	Proj Depth	Proj Form	Permit Date	Spud Date	Comp Date	
V	30025082490000	SUN-FEDERAL	1	HILL & MEEKER	HILL & MEEKER	5	26S	32E	330 FSL 2310 FEL	P&A	DRY & ABANDONED		4703	4703		DELAWARE	1956-03-01	1956-03-11	1956-04-09	4/10/1956
H	30025404550100	HALLERTAU '5' FEDERAL	3H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	330 FSL 1980 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	12044	16552	13686	UPPER WOLFCAMP	2012-02-21	2015-01-25	2015-03-28	
H	30025402540100	HALLERTAU '5' FEDERAL	4H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	350 FSL 660 FWL	PRODUCING	OIL PRODUCER	AVALON	9233	13840	13471	UPPER BONE SPRING SH	2011-08-23	2011-11-29	2012-02-21	
H	30025426730000	HALLERTAU 5 FEDERAL COM	6H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	205 FSL 1495 FEL	PERMIT	WELL PERMIT		9350 Est		13986	BONE SPRING UPPER	2015-06-29			
H	30025410630000	HALLERTAU 5 FEDERAL	7C	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	331 FSL 1830 FWL	UNKNOWN	AT TOTAL DEPTH			16355	13403	BONE SPRING	2013-03-15	2017-11-07		
H	30025439110000	HALLERTAU 5 FEDERAL	007H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	318 FSL 1802 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11885	16532	16355	WOLFCAMP UPPER	2017-07-21	2017-11-04	2018-04-19	
H	30025426660000	HALLERTAU 5 FEDERAL	008H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	491 FSL 358 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11843	16124	16140	WOLFCAMP	2015-06-26	2017-09-27	2018-04-22	
H	30025433030000	HALLERTAU 5 FEDERAL	009H	CIMAREX ENERGY COMPANY	CIMAREX ENERGY COMPANY	5	26S	32E	318 FSL 1762 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11875	16590	16374	WOLFCAMP UPPER	2016-06-14	2017-09-27	2018-04-22	
H	30025433040000	HALLERTAU 5 FEDERAL	010H	CIMAREX ENERGY COMPANY	CIMAREX ENERGY COMPANY	5	26S	32E	318 FSL 1782 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11903	16394	16366	WOLFCAMP UPPER	2016-06-14	2017-10-16	2018-04-06	
H	30025438860000	HALLERTAU 5 FEDERAL	011H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	490 FSL 398 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11891	16579	16332	WOLFCAMP UPPER	2017-06-27	2017-12-02	2018-04-23	
H	30025438870000	HALLERTAU 5 FEDERAL	016H	CIMAREX ENERGY CO OF COLORADO	CIMAREX ENERGY CO OF COLORADO	5	26S	32E	490 FSL 378 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	12048	16529	16365	WOLFCAMP UPPER	2017-06-27	2017-11-03	2018-04-17	
V	30025082520000	CONTINENTAL-FEDERAL	1	LOVELADY I W	LOVELADY I W	7	26S	32E	660 FSL, 1980 FWL	P&A	DRY & ABANDONED		4,471	4,471		DELAWARE	09/09/1962	09/19/1962	10/06/1962	10/06/1962
V	30025245000000	HIGGINS NC-FEDERAL	2	TEXACO INCORPORATED	TEXACO INCORPORATED	7	26S	32E	990 FNL, 660 FEL	P&A	DRY & ABANDONED		4,535	4,535		DELAWARE	8/14/1973	8/24/1973	9/16/1973	Sep-73
V	30025082530000	MARATHON-FEDERAL	1	READ CHARLES B	READ CHARLES B	8	26S	32E	1980 FNL, 660 FEL	P&A	DRY & ABANDONED	DELAWARE	4,532	4,532		DELAWARE	1962-08-21	1962-08-31	1962-11-27	11/28/1962
V	30025232500000	HIGGINS N C FEDERAL	1	TEXACO INCORPORATED	TEXACO INCORPORATED	8	26S	32E	1980 FSL 660 FWL	P&A	P&A OIL	DELAWARE	4,550	4,550	4,650	DELAWARE	1969-08-07	1969-08-17	1969-09-26	12/28/1971
V	30025273580000	EXXON FEDERAL	1	EQUITABLE PETROLEUM CORPORATION	TEMPO ENERGY INCORPORATED	8	26S	32E	660 FSL, 660 FEL	SWD	OIL / CONVERT TO SWD	DELAWARE	4,444	4,444		DELAWARE	1981-06-09	1981-06-19	1981-08-28	
V	30025284830000	EXXON FEDERAL	1	HIGHLAND PRODUCTION COMPANY	QUAY VALLEY INCORPORATED	8	26S	32E	1980 FSL, 660 FEL	P&A	P&A OIL	DELAWARE	4,445	4,445		DELAWARE	1984-04-17	1984-04-27	1984-06-26	3/1/2004
V	30025287260000	AMOCO FEDERAL	1	LYCO ENERGY CORP	SAHARA OPERATING CO	8	26S	32E	2004 FSL 2004 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4,425	4,425	4,500	DELAWARE	1984-06-19	1984-06-29	1984-10-03	
V	30025295400000	HIGHLAND FEDERAL	1	HIGHLND PROD CO	QUAY VALLEY INC	8	26S	32E	1005 FSL 2337 FEL	P&A	P&A OIL	DELAWARE	4,430	4,430	4,600	DELAWARE	1985-12-05	1985-12-15	1986-01-31	12/15/1993
H	30025399020100	RED HILLS WEST UNIT	1H	MEWBOURNE OIL COMPANY	MEWBOURNE OIL COMPANY	8	26S	32E	330 FSL, 380 FEL	PRODUCING	OIL PRODUCER	AVALON	8,933	13,513	13,688	UPPER BONE SPRING	2010-09-14	2010-10-28	2011-01-08	
H	30025404420000	RED HILLS WEST UNIT	3H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	150 FSL 890 FWL	PRODUCING	OIL PRODUCER	AVALON	8852	13479	13477	BONE SPRING UPPER	2012-02-09	2012-03-11	2012-05-21	
H	30025427050000	RED HILLS WEST UNIT	9H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	330 FSL 380 FWL	PRODUCING	OIL PRODUCER	AVALON	9247	13770	13639	BONE SPRING UPPER	2015-07-23	2015-08-05	3/2/2016	
H	30025429010000	RED HILLS WEST UNIT	8H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	150 FSL 2250 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	12115	16860	16613	WOLFCAMP UPPER	2015-10-23	4/7/2017	6/10/2017	
H	30025439130000	RED HILLS WEST UNIT	018H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	370 FSL 364 FWL	PRODUCING	OIL PRODUCER	WOLFCAMP	11914	16635	16561	WOLFCAMP	07/27/2017	09/10/2017	02/02/2018	
H	30025446020000	RED HILLS WEST UNIT	019H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	150 FSL 1205 FWL	PERMIT	PERMIT		12113 Est		16869	WOLFCAMP	02/14/2018			
H	30025446030000	RED HILLS WEST UNIT	020H	MEWBOURNE OIL CO	MEWBOURNE OIL CO	8	26S	32E	220 FSL 1205 FWL	PERMIT	PERMIT		11854 Est		16631	WOLFCAMP	02/14/2018			
V	30025282590000	EXXON FEDERAL	2	JUBILEE ENERGY CORPORATION	TEMPO ENERGY INCORPORATED	9	26S	32E	705 FSL, 660 FWL	SWD	SWD	DELAWARE	4545	4545	4500	DELAWARE	1983-06-28	1983-07-08	1983-10-28	
H	30025431360000	RED HILLS WEST UNIT	014H	MEWBOURNE OIL COMPANY	MEWBOURNE OIL COMPANY	9	26S	32E	200 FSL, 690 FWL	PRODUCING	GAS PRODUCER	WOLFCAMP	12066	16900	16515	WOLFCAMP	2016-03-17	2016-07-29	2016-11-06	
V	30025275570000	EXXON FEDERAL	1	MSM PRODUCERS INCORPORATED	TEMPO ENERGY INCORPORATED	9	26S	32E	1750 FSL, 400 FWL	P&A	P&A OIL	DELAWARE	4452	4452		DELAWARE	1982-06-16	1982-06-26	1983-02-28	9/4/1991
V	30025205720000	STATE	1	HOLTROBT& HISSOM DLG	HOLTROBT& HISSOM DLG	16	26S	32E	660 FNL, 660 FWL	P&A	DRY & ABANDONED		4584	4584		DELAWARE	1962-12-14	1962-12-24	1963-01-06	1963
H	30025404100000	RED HILLS WEST 16 STATE	1H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	16	26S	32E	180 FNL, 640 FWL	PRODUCING	OIL PRODUCER	AVALON SH	8918	13434	13482	UPPER BONE SPRING SH	2012-01-25	2012-08-24	2013-07-29	
V	30025275250000	OHIO STATE	1	EQUITABLE PETROLEUM CORPORATION	FORREST ROBERT H JR OIL LLC	16	26S	32E	750 FNL, 400 FWL	PRODUCING	OIL PRODUCER	DELAWARE	4449	4449	4500	DELAWARE	1981-10-21	1981-10-31	1982-03-02	
H	30025404140000	RED HILLS WEST 16 STATE	005H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	16	26S	32E	180 FNL, 690 FWL	PRODUCING	OIL PRODUCER	AVALON SH	9309	13616	13891	BONE SPRING UPPER	2012-01-25	2012-09-18	2013-05-18	
V	30025404820000	BUCK 17 FEDERAL SWD	1	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	17	26S	32E	2284 FNL, 1950 FWL	SWD	SWD	DELAWARE	6278	6278	6300	DELAWARE	2012-03-08	2012-04-06	2013-03-07	
V	30025289090000	RUSSELL 17 FEDERAL	11	HIGHLAND PRODUCTION COMPANY	SAHARA OPERATING COMPANY	17	26S	32E	1980 FSL, 2310 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4363	4363	4500	DELAWARE	1984-09-07	1984-09-17	1984-10-13	
V	30025277160000	RUSSELL 17 FEDERAL	12	CONOCO INCORPORATED	SAHARA OPERATING COMPANY	17	26S	32E	1980 FSL, 1980 FWL	PRODUCING	OIL PRODUCER	DELAWARE	4502	4502	4500	DELAWARE	1982-02-15	1982-02-25	1982-04-16	
V	30025279370000	RUSSELL 17 FEDERAL	13	CONOCO INCORPORATED	SAHARA OPERATING COMPANY	17	26S	32E	1980 FSL, 660 FWL	P&A	P&A OIL	DELAWARE	4550	4550	4550	DELAWARE	1982-10-10	1982-10-20	1983-02-07	2/20/2008
H	30025402810000	BUCK 17 FEDERAL	1H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	17	26S	32E	330 SNL, 400 FEL	PRODUCING	OIL PRODUCER	AVALON SH	9226	13715	13650	UPPER BONE SPRING SH	2011-08-31	2011-11-26	2012-03-12	
H	30025404010000	BUCK 17 FEDERAL	2H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	17	26S	32E	1105 FSL, 1650 FEL	PRODUCING	OIL PRODUCER	AVALON/SH/	9227	12845	12850	UPPER BONE SPRING SH	2012-01-09	2012-01-23	2012-03-29	
H	30025409010000	BUCK 17 FEDERAL	6H	CONOCOPHILLIPS CO	CONOCOPHILLIPS CO	17	26S	32E	28 FSL 2604 FEL	PRODUCING	OIL PRODUCER	AVALON SH	8825	13592	13539	UPPER BONE SPRING SH	2012-12-18	2013-04-04	2013-12-19	
V	30025082590000	THOMPSON-FEDERAL 18	1	CONTINENTAL OIL COMPANY	SAHARA OPERATING COMPANY	18	26S	32E	1980 FSL, 660 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4403	4403		DELAWARE	06/10/1957	06/20/1957	08/10/1957	
V	30025082600000	THOMPSON-FEDERAL 18	2	CONTINENTAL OIL COMPANY	SAHARA OPERATING COMPANY	18	26S	32E	1980 FNL, 1980 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4418	4418		DELAWARE	10/11/1958	10/21/1958	11/2/1958	
V	30025279300000	THOMPSON-FEDERAL 18	5	CONOCO INCORPORATED	SAHARA OPERATING COMPANY	18	26S	32E	1980 FNL, 660 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4600	4600		DELAWARE	10/26/1982	11/5/1982	1/24/1983	
V	30025308990000	CONOCO D FEDERAL	1	HIGHLAND PRODUCTION COMPANY	SAHARA OPERATING COMPANY	18	26S	32E	2310 FSL, 1650 FEL	PRODUCING	OIL PRODUCER	DELAWARE	4352	4352		DELAWARE	05/06/1990	5/16/1990	6/9/1990	
V	30025310160000	CONOCO 'D' FEDERAL	4	HIGHLAND PRODUCTION COMPANY	SAHARA OPERATING COMPANY	18	26S	32E	2282 FNL, 2287 FWL	PRODUCING	OIL PRODUCER	DELAWARE	4373	4373	4550	DELAWARE	1991-04-12	1991-04-22	1991-05-25	
H	30025442360000	ZIA HILLS 19 FEDERAL COM	109H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	19	26S	32E	2498 FNL, 1600 FWL	PERMIT	PERMIT		11619 Est		22124	WOLFCAMP	11/11/2017			
H	30025442370000	ZIA HILLS 19 FEDERAL COM	110H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	19	26S	32E	2498 FNL, 1633 FWL	PERMIT	PERMIT		11619 Est		22123	WOLFCAMP	11/01/2017			
H	30025442380000	ZIA HILLS 19 FEDERAL COM	111H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	19	26S	32E	2498 FNL, 1666 FWL	PERMIT	PERMIT		11619 Est		22137	WOLFCAMP	11/17/2017			
H	30025442390000	ZIA HILLS 19 FEDERAL COM	112H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	19	26S	32E	2498 FNL, 1699 FWL	PERMIT	PERMIT		11619 Est		22167	WOLFCAMP	11/17/2017			
H	30025409000000	BUCK 17 FEDERAL COM	3H	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	20	26S	32E	10 FNL, 2625 FEL	PRODUCING	OIL PRODUCER	AVALON SH	9233	14080	14046	UPPER BONE SPRING SH	2012-12-18	2013-03-08	2013-11-13	

THERE ARE NO WELLS WITHIN ONE MILE RADIUS THAT PENETRATE THE PROPOSED SWD INTERVAL

Amended Listing of Notified Persons (7/16/18)

Red Hills SWD #2 Application
1100' FSL & 900' FWL
Section 8, T26S, R32E, Lea County, NM

Surface Owner

Bureau of Land Management
620 East Greene Street
Carlsbad, New Mexico 88220

Offsetting Operators

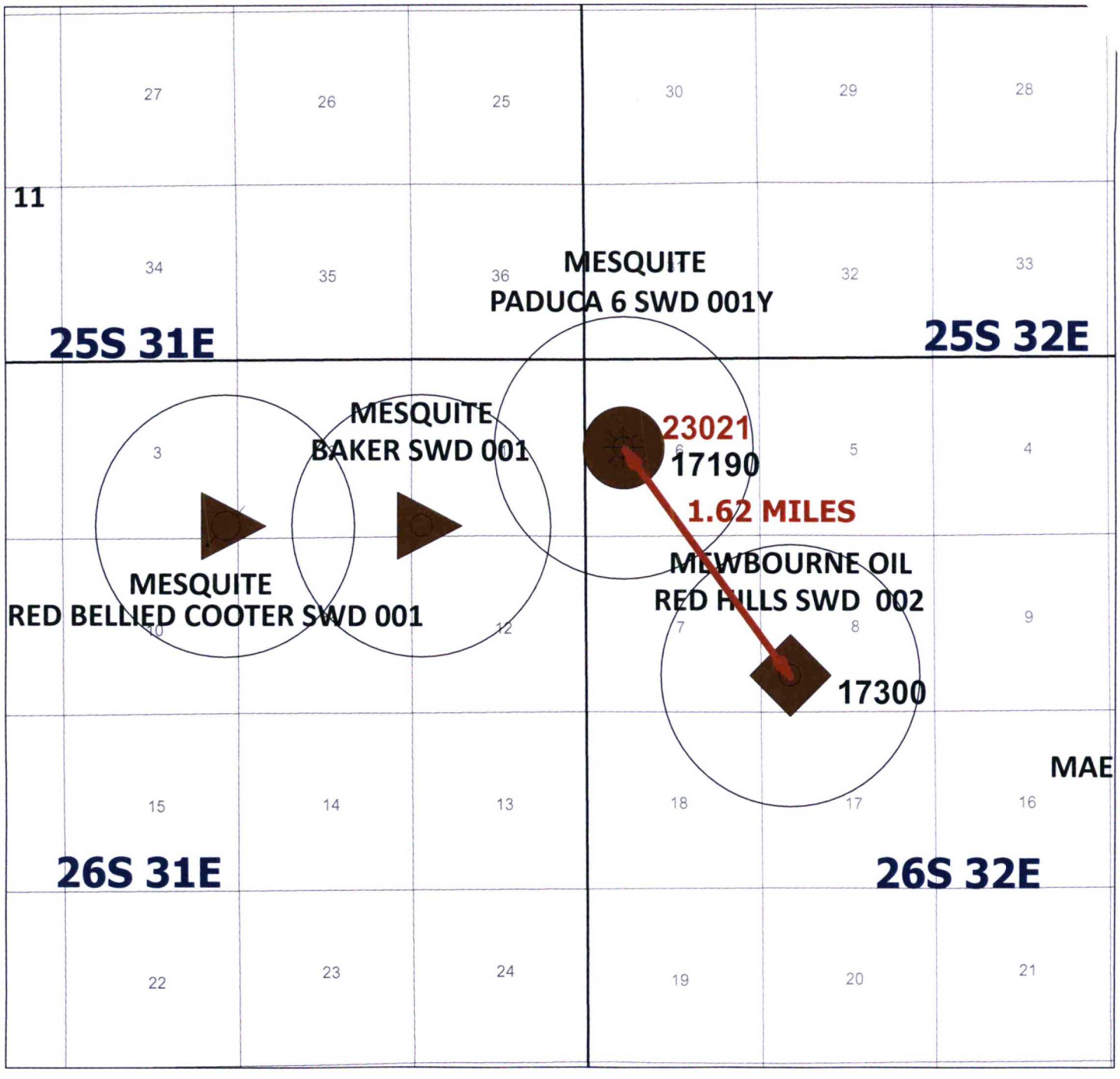
Sahara Operating
306 W. Wall St, #1025
Midland, TX 79701

ConocoPhillips Company
600 N. Dairy Ashford Road
Houston, TX 77252

Additional Offsetting Operators Within 1 Mile Radius

Cimarex Energy Co.
202 S. Cheyenne, Suite 1000
Tulsa, OK 74103

Robert H Forrest Jr Oil LLC
609 Eldora Dr.
Carlsbad, NM 88220



PERMITTED DISPOSAL WELL

ACTIVE DISPOSAL WELL

PLUGGED DISPOSAL WELLS

TEMPORARILY ABANDON

SHUT - IN

SWD WELLS IN APPLICATION PROCESS

DEVONIAN SWD WELLS

2018 AVG RATE

TOP INTERVAL

3/4 MILE CIRCLE

Mewbourne Oil Company

RED HILLS SWD #002
SWD - 1635

Author: Tim Harrington		**Date:** 8 January, 2019
Tech: S. Daughtry	**Scale:** 1" = 4500'	

Mewbourne Oil Company
Red Hills SWD #2
February 1, 2019

STATEMENTS REGARDING SEISMICITY AND WELL SPACING

Historically, the area nearby our proposed Red Hills SWD #2 has not seen seismic activity. The closest seismic event (per USGS database) was a magnitude 2.9 earthquake in 1984 that is located 17 miles northeast of our proposed SWD. The TexNet database was also consulted and the closest document seismic event in Texas is approximately 24 miles away.

Mewbourne Oil Company does not own 2D or 3D seismic data near our proposed SWD therefore our fault interpretation is based on subsurface mapping and data obtained from public technical sources. Based off our subsurface mapping of the deep formations, Mewbourne has not interpreted any faults in the immediate area. Our map does include a Precambrian fault documented by Ruppel, et al. (2005), that is located approximately 13.4 miles NE of our proposed SWD.

A very recent technical paper written by Snee and Zoback , "State of Stress in the Permian, Basin, Texas and New Mexico: Implications for induced seismicity", that was published in the February 2018 edition of The Leading Edge, evaluates the strike-slip probability, using probabilistic FSP analysis, of known Permian Basin faults. This study predicts that the Precambrian fault located on our map has less than a 10% probability of being critically stressed so as to create an induced seismicity event. The main reason for this low probability is due to the relationship of the strike of this fault to the regional Shmax orientation (approx. N 70 deg E) as obtained in the Mewbourne Red Hills West 8 Federal #1H that is located only 4150' away.

Our Red Hills SWD #2 is located approximately 1.62 miles away from any active, permitted or pending Devonian SWD application (see map), to meet current OCD and industry recommended practices.

Timothy R. Harrington

Reservoir Engineer
tharrington@mewbourne.com
903-534-7647

Mewbourne Oil Company
Red Hills SWD #2
February 1, 2019

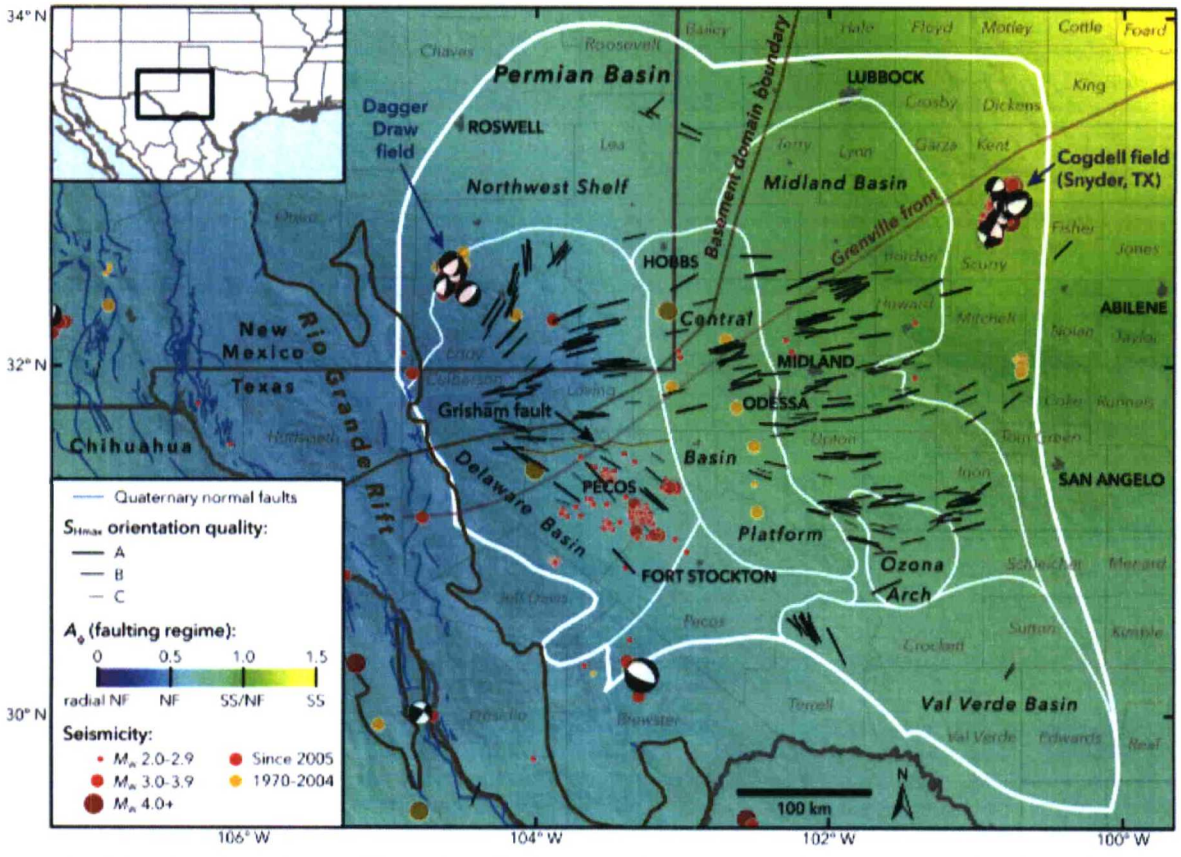


Figure 1. State of stress in the Permian Basin, Texas and New Mexico. Black lines are the measured orientations of S_{Hmax}, with line length scaled by data quality. The colored background is an interpolation of measured relative principal stress magnitudes (faulting regime) expressed using the A_ϕ parameter (see text for details) of Simpson (1997). Blue lines are fault traces known to have experienced normal-sense offset within the past 1.6 Ma, from the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000). The boundary between the Shawnee and Mazatzal basement domains is from Lund et al. (2015), and the Precambrian Grenville Front is from Thomas (2006). The Permian Basin boundary is from the U.S. Energy Information Administration, and the subbasin boundaries are from the Texas Bureau of Economic Geology Permian Basin Geological Synthesis Project. Earthquakes are from the USGS National Earthquake Information Center, the TexNet Seismic Monitoring Program, and Gan and Frohlich (2013). Focal mechanisms are from Saint Louis University (Herrmann et al., 2011).

Mewbourne Oil Company
Red Hills SWD #2
February 1, 2019

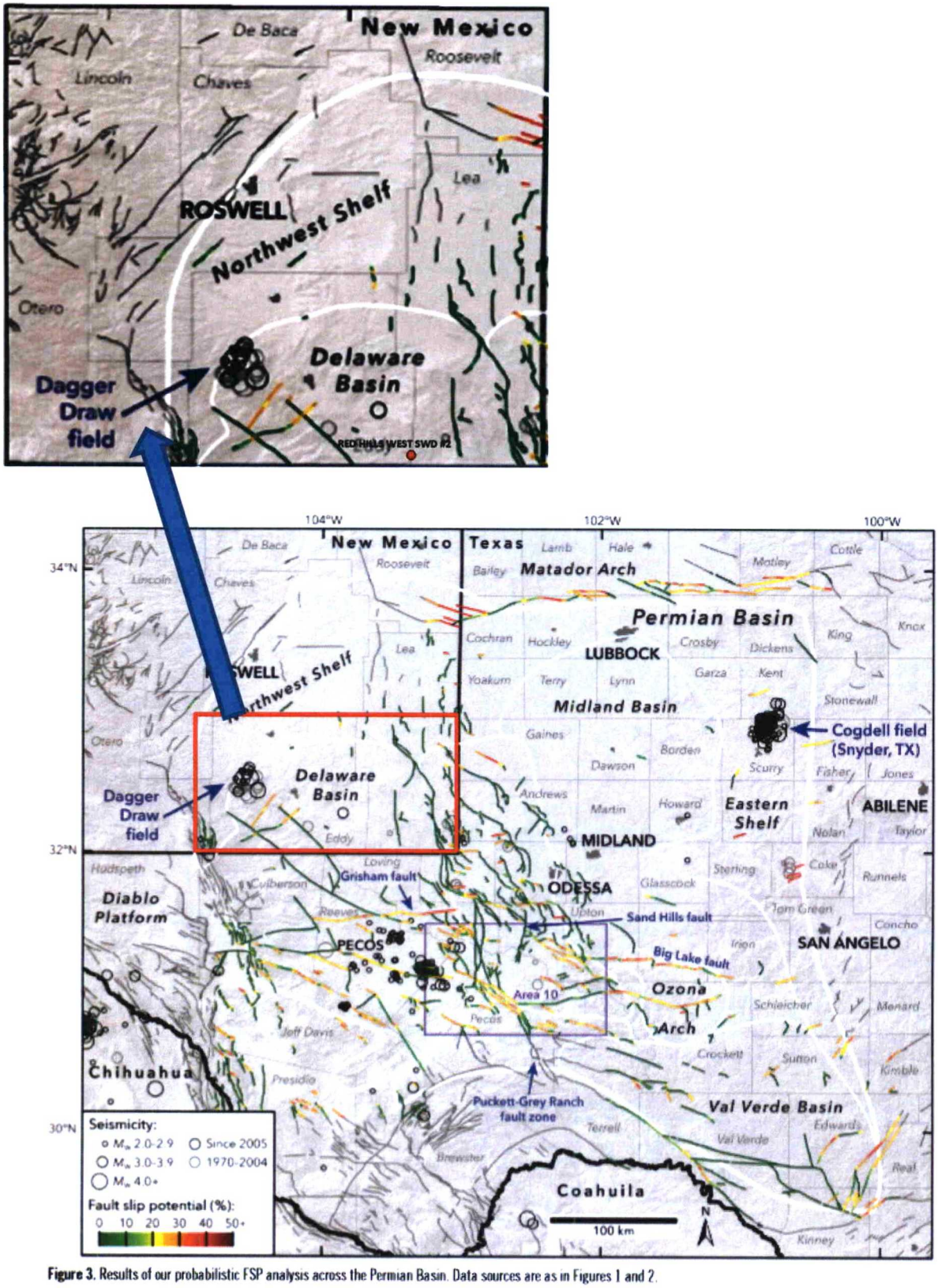
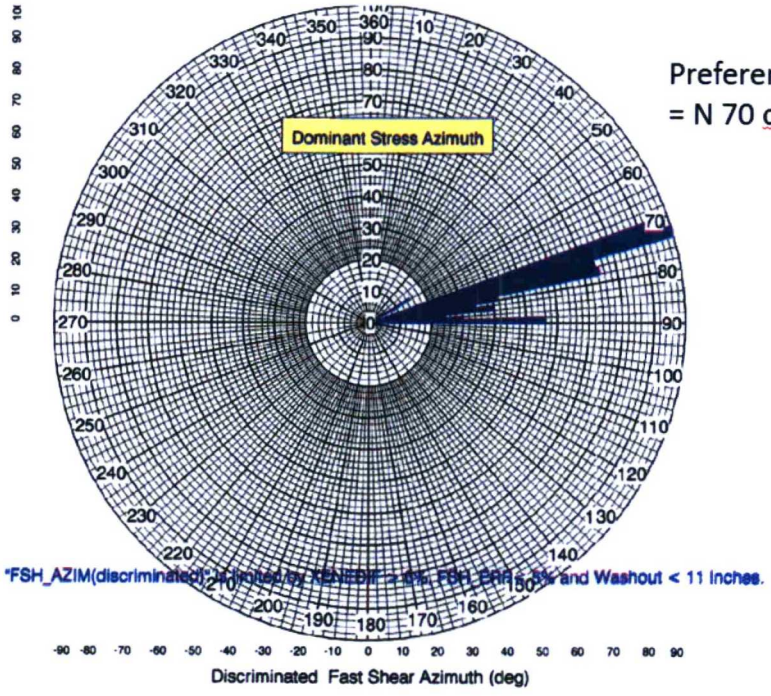


Figure 3. Results of our probabilistic FSP analysis across the Permian Basin. Data sources are as in Figures 1 and 2.

Mewbourne Oil Company
Red Hills SWD #2
February 1, 2019

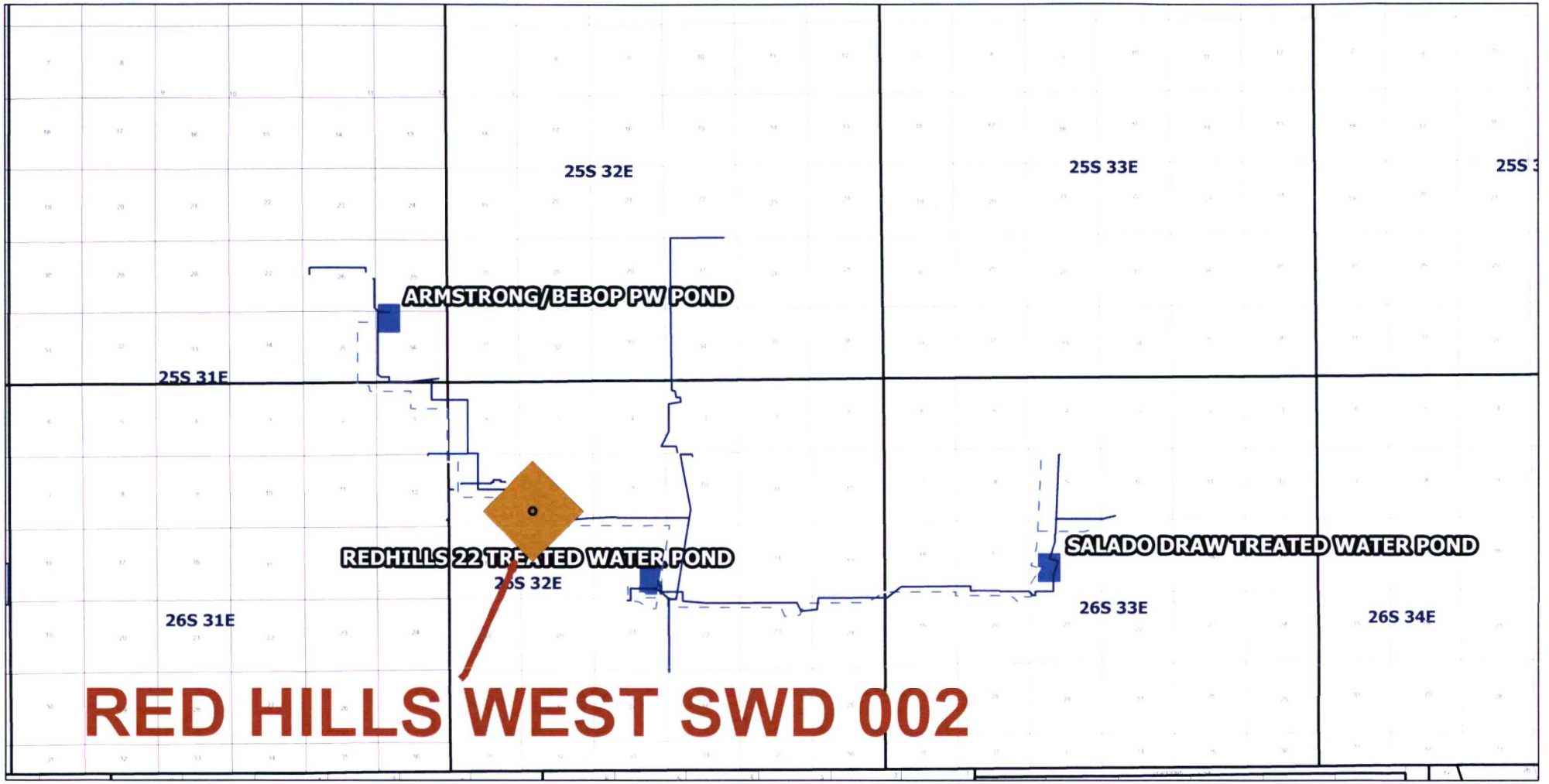


Preferential frac direction
= N 70 deg E

Mewbourne Oil Company
Sonic Scanner Shear Anisotrophy Analysis – For Maximum Stress Direction
Red Hills West 8 Federal #1H (3002539902)
Sec 8, Twp 26S, Rge 32E
Logged 10/24/2010.

References

Jens-Erik Lund Snee and Mark D. Zoback, 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: The Leading Edge, February 2018.



DELAWARE

CISCO CANYON

DEVONIAN

PERMITTED DISPOSAL WELL

ACTIVE DISPOSAL WELL

PLUGGED DISPOSAL WELLS

TEMPORARILY ABANDON

SHUT - IN REASON UNKNOWN

SWD WELLS IN APPLICATION PROCESS

ACTIVE SWD LINES

RECYCLING LINES

Mewbourne Oil Company

RED HILLS WATER MANAGEMENT SYSTEM

Author: T. Harrington		**Date:** 1 February, 2019
Tech: sd	**Scale:** 1" =11000'	Mewbourne Oil Co SWD Well Program Map Red Hills Area 8x11.gmp

MEWBOURNE OIL COMPANY
RED HILLS SWD #2

PLUGGING RISK ASSESSMENT

5 ½" Flush Joint Injection Tubing Inside of 7 ⅝" Casing

Specs

5 ½" 17# HCP110 Flush Joint Tubing	OD (in)	ID (in)	Drift (in)	LINED ID (in)	FLARE DRIFT (in)
Coupling	N/A	N/A	N/A	N/A	N/A
Body	5.500	4.892	4.767	4.520	4.275
7 ⅝" 39# P110 Casing	OD (in)	ID (in)	Drift (in)	Wall Thickness (in)	5 ½" Flush Jt. Clearance (in)
	7.625	6.625	6.500	0.500	0.562

*All fishing procedures are subject to well conditions. Determinations are made onsite on a case by case scenario.

Overshot Fishing Procedure

A 6.625" O.D. Bowen Series 150 overshot (Assembly 8625) with a spiral grapple will be utilized to perform this overshot operation. *NOTE: (The 6.625" O.D. will be turned down to 6.500" O.D. prior to commencing operation). Details on the overshot are noted below.

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 4¾" to 5½" Inclusive

Maximum Catch Size (Spiral)		4¾	4¾	4¾	4¾	5	5	5½
Maximum Catch Size (Basket)		3¹¹⁄₁₆	4⅛	4¼	4¼	4¼	4¼	4⅞
Overshot O.D.		5¾	5⅞	5⅞	5¾	5⅞	6⅛	6⅛
Type		F.S.	S.H.	S.H.	S.F.S.	S.H.	F.S.	S.H.
Complete Assembly	Part No.	5696	5698	C-5168	8675	C-5171	C-4825	8625
(Dressed Spiral Parts)	Weight	130	130	133	138	140	192	185
Replacement Parts								
Top Sub	Part No.	5697	5699	A-5169	8676	A-5172	B-4826	8626
Bowl	Part No.	5698	5700	B-5170	8677	B-5173	B-4827	8617
Packer	Part No.	169	1140	B-2199	6114	L-5950	L-4505	8618
Spiral Grapple	Part No.	165	1135	B-2201	6112	B-4369	M-1071	8619
Spiral Grapple Control	Part No.	186	1137	B-2202	6113	B-4370	M-1072	8620
Standard Guide	Part No.	187	1143	B-2203	6121	B-4371	L-1074	8621
Basket Parts								
Basket Grapple	Part No.	165	1135	B-2201	6112	B-4369	M-1071	8619
Basket Grapple Control	Part No.	186	1137	B-2202	6113	B-4370	M-1072	8620
Mill Control Packer	Part No.	169-R	1140-R	B-2199-R	6114-R	L-5950-R	M-4505	L-8618-R

In the Event of a Connection Break

1. If dressing is needed, trip in hole with a mill and mill connection to allow for (above listed) turned-down overshot to be latched onto the body of the tubing. If no milling is required, trip in hole with (above listed) turned-down overshot and latch onto fish.
2. Once latched onto fish, pick up string weight and straight pull to release Model R packer.
3. Once packer is released, trip out of hole with fish.

In the Event of a Body Break

1. If dressing is needed, trip in hole with a mill and mill tubing to allow for (above listed) turned-down overshot to be latched onto the body of the tubing. If no milling is required, trip in hole with (above listed) turned-down overshot and latch onto fish.
2. Once latched onto fish, pick up string weight and straight pull to release Model R packer.
3. Once packer is released, trip out of hole with fish.

*NOTE: (Wash pipe with a mill may be substituted for dressing off a break instead of a standard mill to ensure pipe stabilization and to ensure that the casing is not damaged due to milling.)

In the Event a Mill Cannot be Used

If an inadequate fishing neck is looking up and a mill cannot be used to dress the fish, a cutting tool may be utilized to cut off the damaged portion of tubing and a spear used to retrieve the cut-off piece. Once the cut-off piece is retrieved, the (above listed) turned-down overshot may be utilized to retrieve the fish and release the packer.

Spear Fishing Procedure

In the event the (above listed) turned-down overshot cannot be used or the fishing neck is inadequate, a spear may be used to spear into the fish. In the case of insert lined pipe, a smaller spear will be utilized to go inside the insert liner and pull out the lining. Once the lining has been removed, trip out of hole with insert liner. Pick up the proper sized spear for the pipe ID. Trip in hole with tubing spear, spear the fish, pick up string weight and straight pull to release the packer. Trip out of hole with fish and packer assembly.

7" Flush Joint Injection Tubing Inside of 9 ⅝" Casing

Specs

7" 26# HCP110 Flush Joint Tubing	OD (in)	ID (in)	Drift (in)	LINED ID (in)	FLARE DRIFT (in)
Coupling	N/A	N/A	N/A	N/A	N/A
Body	7.000	6.276	6.151	6.080	5.815
9 ⅝" 47# HCL80 Casing	OD (in)	ID (in)	Drift (in)	Wall Thickness (in)	7" Flush Jt. Clearance (in)
	9.625	8.681	8.525	0.472	0.840

*All fishing procedures are subject to well conditions. Determinations are made onsite on a case by case scenario.

Overshot Fishing Procedure

A Bowen Series 150 overshot (Assembly 9217) with a spiral grapple will be utilized to perform this overshot operation. Details on the overshot are noted below.

Bowen Series 150 Releasing and Circulation Overshots

Maximum Catch Size 6⅝" to 7⅛" Inclusive

Maximum Catch Size (Spiral)		6⅝	6¾	7	7⅛
Maximum Catch Size (Basket)		5⅞	6⅞	6¾	6⅞
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	260	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

In the Event of a Connection Break

1. If dressing is needed, trip in hole with a mill and mill connection to allow for (above listed) overshot to be latched onto the body of the tubing. If no milling is required, trip in hole with (above listed) overshot and latch onto fish.
2. Once latched onto fish, pick up string weight and straight pull to release Model R packer.
3. Once packer is released, trip out of hole with fish.

In the Event of a Body Break

1. If dressing is needed, trip in hole with a mill and mill tubing to allow for (above listed) overshot to be latched onto the body of the tubing. If no milling is required, trip in hole with (above listed) overshot and latch onto fish.
2. Once latched onto fish, pick up string weight and straight pull to release Model R packer.
3. Once packer is released, trip out of hole with fish.

*NOTE: (Wash pipe with a mill may be substituted for dressing off a break instead of a standard mill to ensure pipe stabilization and to ensure that the casing is not damaged due to milling.)

In the Event a Mill Cannot be Used

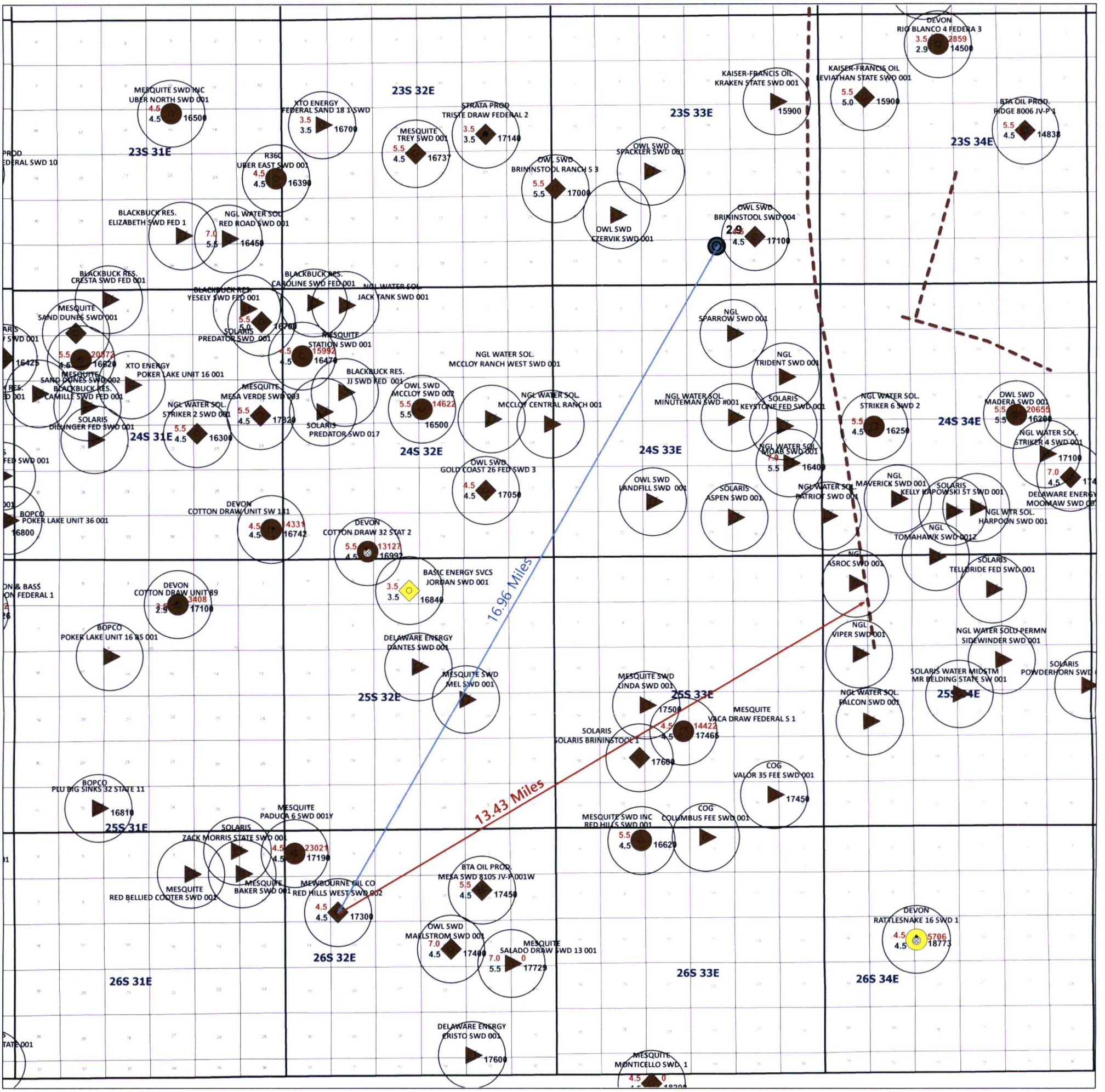
If an inadequate fishing neck is looking up and a mill cannot be used to dress the fish, a cutting tool may be utilized to cut off the damaged portion of tubing and a spear used to retrieve the cut-off piece. Once the cut-off piece is retrieved, the (above listed) overshot may be utilized to retrieve the fish and release the packer.

Spear Fishing Procedure

In the event the (above listed) overshot cannot be used or the fishing neck is inadequate, a spear may be used to spear into the fish. In the case of insert lined pipe, a smaller spear will be utilized to go inside the insert liner and pull out the lining. Once the lining has been removed, trip out of hole with insert liner. Pick up the proper sized spear for the pipe ID. Trip in hole with tubing spear, spear the fish, pick up string weight and straight pull to release the packer. Trip out of hole with fish and packer assembly.

Abandonment Procedure in-the-Event that Injection Tubing Cannot be Fished

The operator will need to ensure that geological formations are properly isolated to prevent future fluid communication. The operator will first insure that the injection tubing I.D. is open and clear. Once injection tubing I.D. is confirmed to be open and clear, run in hole with a wireline set profile plug and set plug inside of the packer assembly. This plug would allow for cement to fill both the I.D. of the injection tubing and the tubing-to-casing annulus to provide isolation between the different geological formations. Next, run in hole with wireline conveyed perforating guns and shoot perforations at the deepest depth that the injection tubing is still in the wellbore. Trip in hole with a workstring and latch onto the injection tubing with an overshot, spear, cement retainer or any other tool that would ensure a work string-to-injection tubing seal and allow the operator to pump cement down the remaining injection tubing. Rig up cement truck and cement the annulus between the injection tubing and casing to surface.



PERMITTED DISPOSAL WELL

ACTIVE DISPOSAL WELL

PLUGGED DISPOSAL WELLS

TEMPORARILY ABANDON

SHUT - IN

SWD WELLS IN APPLICATION PROCESS

DEVONIAN SWD WELLS

2018 AVG RATE

TOP INTERVAL

3/4 MILE CIRCLE

3.5 EARTHQUAKE DATA FROM USGS

TECTONIC BASEMENT FAULTS
(BUREAU OF ECONOMIC GEOLOGY)

Mewbourne Oil Company

RED HILLS WEST SWD
LEA, NM
8-26S-32E

Author: Tim Harrington		**Date:** 31 January, 2019
Tech: S. Daughtry	**Scale:** 1" = 11250'	