

Initial Application Part I

Received: 04/15/2019

This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete

RECEIVED: 4/15/2019	REVIEWER:	TYPE: SWD	APP NO: PMAm 19105 599a
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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



ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: Delaware Energy, LLC	OGRID Number: 371195
Well Name: Sand Spout State SWD #1	API: Pending
Pool: SWD; Devonian	Pool Code: 96101

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

- 1) **TYPE OF APPLICATION:** Check those which apply for [A]
- A. Location – Spacing Unit – Simultaneous Dedication
 NSL NSP (PROJECT AREA) NSP (PRORATION UNIT) SD
- B. Check one only for [I] or [II]
- [I] Commingling – Storage – Measurement
 DHC CTB PLC PC OLS OLM
- [II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
 WFX PMX SWD IPI EOR PPR

- 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

FOR OCD ONLY	
<input type="checkbox"/>	Notice Complete
<input type="checkbox"/>	Application Content Complete

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

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

Sarah Presley

Print or Type Name

4/10/2019

Date

Print or Type Name

432-685-7005

Phone Number



 Signature

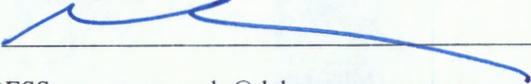
Phone Number

s.presley@delawareenergy.com

e-mail Address

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance XXX Disposal _____ Storage
Application qualifies for administrative approval? XX Yes _____ No
- II. OPERATOR: Delaware Energy, LLC
ADDRESS: 405 North Marienfeld, Suite 250, Midland TX 79701
CONTACT PARTY: Mike McCurdy PHONE: 432-312-5251
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? _____ Yes XXXX No
If yes, give the Division order number authorizing the project: _____
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and.
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- *X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- *XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Mike McCurdy TITLE: Vice-President
SIGNATURE:  DATE: 4/10/2019
E-MAIL ADDRESS: m.mccurdy@delawareenergy.com
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

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.

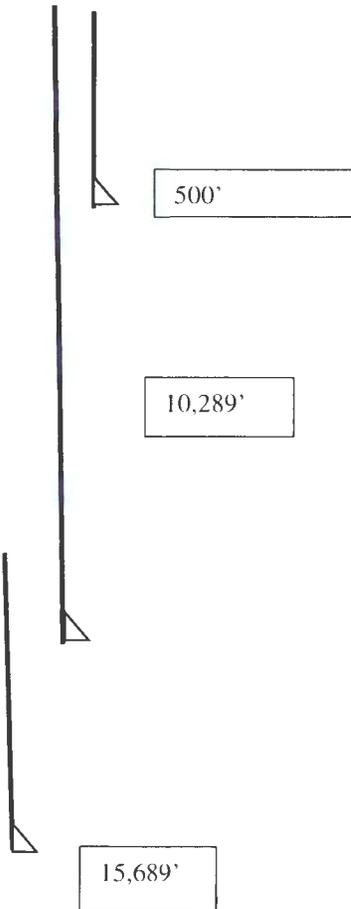
INJECTION WELL DATA SHEET

OPERATOR: Delaware Energy, LLC

WELL NAME & NUMBER: Sand Spout State SWD # 1

WELL LOCATION: 40' FSL & 1,942' FEL O 26 22S 33E
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

WELLBORE SCHEMATIC see attached wellbore sketch



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8", 54.5#
 Cemented with: 500 sx. *or* _____ ft³
 Top of Cement: surface Method Determined: Plan to Circulate

Intermediate Casing

Hole Size: 12-1/4" Casing Size: 9-5/8", 47#, L-80
 Cemented with: 2,500' sx. *or* _____ ft³
 Top of Cement: surface Method Determined: Plan to Circulate

Production Casing

Hole Size: 8-1/2" Casing Size: 7-5/8", 39#, P-110
 Cemented with: 650 sx. *or* _____ ft³
 Top of Cement: Top of Liner Method Determined: Plan to Circulate to liner top

Total Depth: 15,689'

Injection Interval

15,689' feet to 16,689'
(OPEN HOLE)

INJECTION WELL DATA SHEET

Tubing Size: 5.5" BTC x 5.5" Flush Joint Lining Material: Fiber Glass

Type of Packer: Weatherford Arrow Set 1X

Packer Setting Depth: 15,639'

Other Type of Tubing/Casing Seal (if applicable): none

Additional Data

1. Is this a new well drilled for injection? XXXXX Yes No
If no, for what purpose was the well originally drilled? N/A

2. Name of the Injection Formation: Devonian

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

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

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

Below: none

Next Higher: Delaware 5,239' – 8,989'; Bone Springs 8,989' – 10,289'; Wolfcamp 10,289' – 12,739'; Strawn 12,739' – 12,989'; Atoka 12,989' – 13,789'; Morrow 13,789' – 15,089'

Additional Questions on C-108

VII.

1. Proposed average and maximum daily rate and volume of fluids to be injected;

Average 15,000-20,000 BWPD, Max 25,000 BWPD

2. Whether the system is open or closed;

Open System, Commercial SWD

3. Proposed average and maximum injection pressure;

Average 1,500-2,500 PSI, Max 3,138 PSI

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,

Bone Spring, Delaware, and Wolfcamp produced water. No known incompatibility exists with these produced water types and the Devonian. Devonian formation is used as a disposal interval throughout the Delaware Basin for Wolfcamp, Bone Springs, and Delaware produced water. See attached water analysis from Bone Spring, Wolfcamp, and Delaware produced water.

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.).

See attached Lea County Devonian water samples

***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.**

The proposed disposal interval is in the Devonian formation 15,689'-16,689'. Devonian is an impermeable organic shale at the very top (15,489 ft, Woodford Shale) 100ft thick followed by permeable lime, dolomite, and small amount of shale 1000ft thick. There are no fresh water zones underlying the proposed injection zone. Usable water depth is from surface to +/- 100', the water source is older alluvium (Quaternary). All the fresh water wells in the area have an average depth to water of 100ft per State Engineer.

IX. Describe the proposed stimulation program, if any.

60,000 gallons 20% HCL acid job with packer

X. Attach appropriate logging and test data on the well

Mud log will be filed after the well has been drilled. All cased hole and open hole Logs will be filed following drilling operations.

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.

Attached is a water sample taken from 32.342705, -103.558062

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.

Delaware Energy, L.L.C. has reviewed and examined available geologic and engineering data in the area of interest for the Sand Spout State SWD #1 and have found no evidence of faults or other hydrologic connections between Devonian disposal zone and the underground sources of drinking water.

Furthermore, there exist many impermeable intervals between the injection interval and the fresh ground water from the top of the Devonian Carbonate and the base of the ground water.

Mike McCurdy **Vice President** **4/10/2019**
 _____ Title _____ Date _____

III. WELL DATA

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

Sand Spout State SWD #1, Sec. 26-T22S-R33E, 40' FSL & 1,942' FEL, UL O, Lea County, New Mexico

(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.

Casing Size	Setting Depth	Sacks of Cement	Hole Size	Top of Cement	Determined
13-3/8"	500'	500	17-1/2"	Surface	CIRC
9-5/8"	10,289'	2500	12-1/4"	Surface	CIRC
7-5/8"	10,089'-15,689'	650	8-1/2"	Liner Top	CIRC & CBL

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

5-1/2" BTC X 5-1/2" Flush Joint, Internally Fiber Glass Coated Tubing set 50 to 100ft above open hole

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

Weatherford Arrow Set 1X injection packer, nickel plated with on/off tool

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.

Devonian Formation
 Pool Name: SWD (Devonian)

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

15,689' to 16,689' (Open hole)

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

Well is a planned new drill for SWD

(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.

None, well is a planned new drill

(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.

Next Higher: Delaware 5,239' – 8,989'; Bone Springs 8,989' – 10,289'; Wolfcamp 10,289' – 12,739'; Strawn 12,739' – 12,989'; Atoka 12,989' – 13,789'; Morrow 13,789' – 15,089'

Next Lower: None

DISTRICT I
1825 N. French Dr., Hobbs, NM 88240
Phone (575) 393-8181 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 Rd., Artec, NM 87410
Phone (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 478-3480 Fax: (505) 478-3482

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

API Number	Pool Code 96101	Pool Name SWD; DEVONIAN
Property Code	Property Name SAND SPOUT STATE SWD	Well Number 1
OGRID No. 371195	Operator Name DELAWARE ENERGY	Elevation 3489'

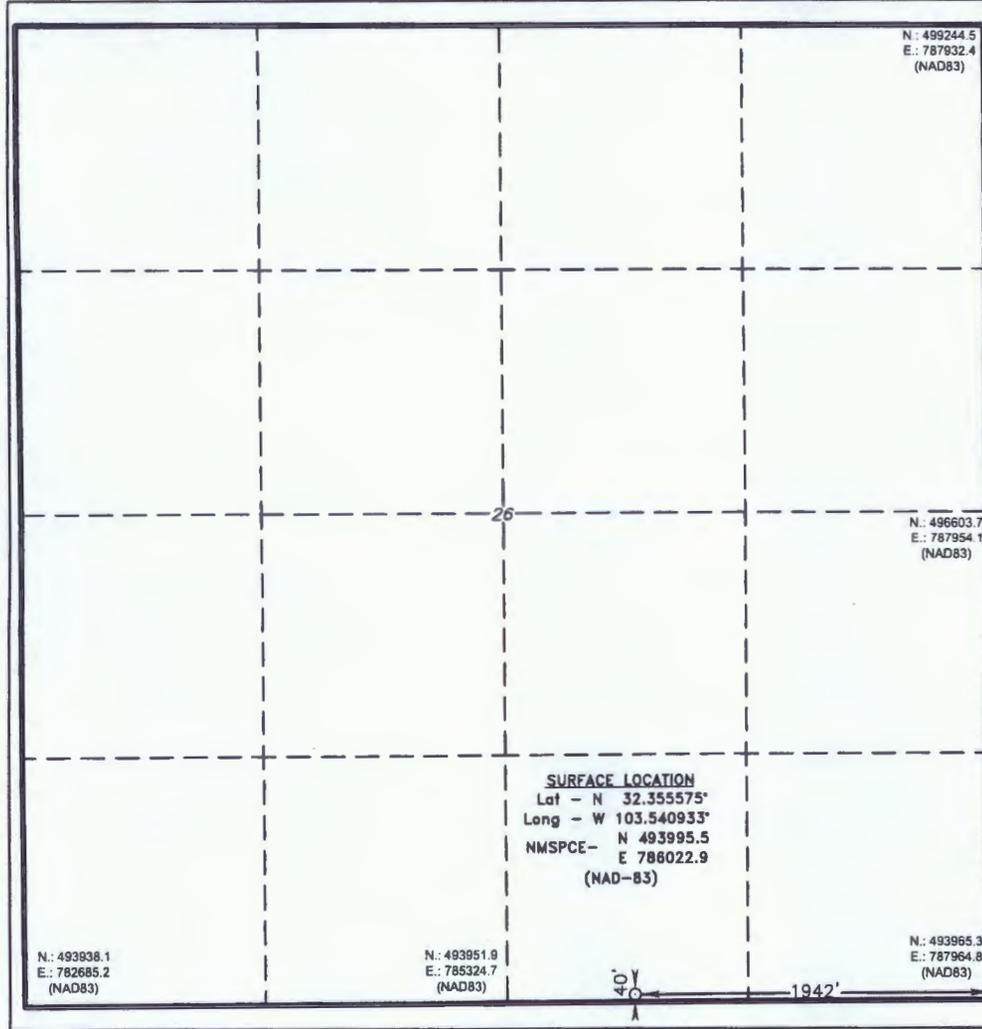
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	26	22 S	33 E		40	SOUTH	1942	EAST	LEA

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
Dedicated Acres		Joint or Infill		Consolidation Code		Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



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.

Sarah Presley 4-10-19
Signature Date

Sarah Presley
Printed Name

s.presley@delawareenergy.com
Email Address

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.

OCTOBER 31 2018
Date Surveyed

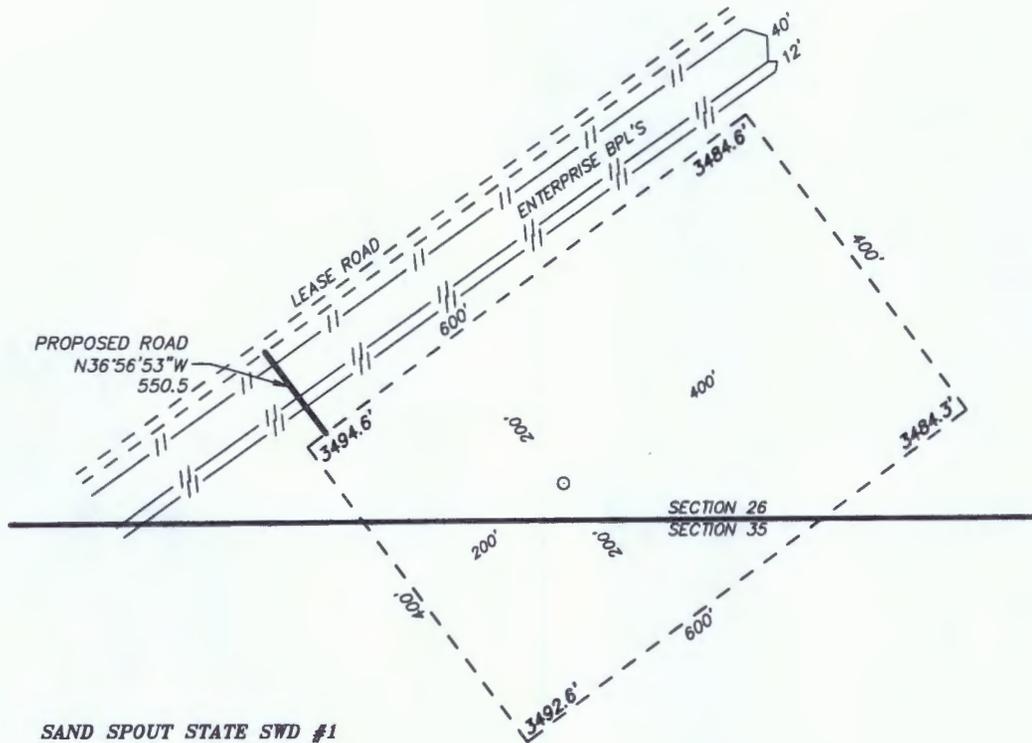
[Signature]
Signature & Seal of Professional Surveyor

7977
Certificate No.

7977
BASIN SURVEYS

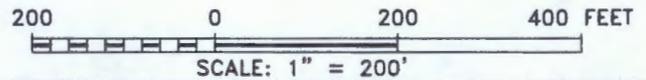
0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'
WO Num.: 34172

**SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



SAND SPOUT STATE SWD #1
ELEV. - 3489'
 Lat - N 32.355575°
 Long - W 103.540933°
 NMSPCE- N 493995.5
 E 786022.9
 (NAD-83)

EUNICE, NM IS ±23 MILES TO THE NORTHEAST OF LOCATION.



DELAWARE ENERGY

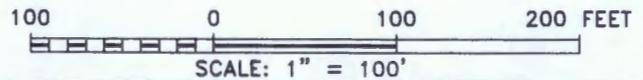
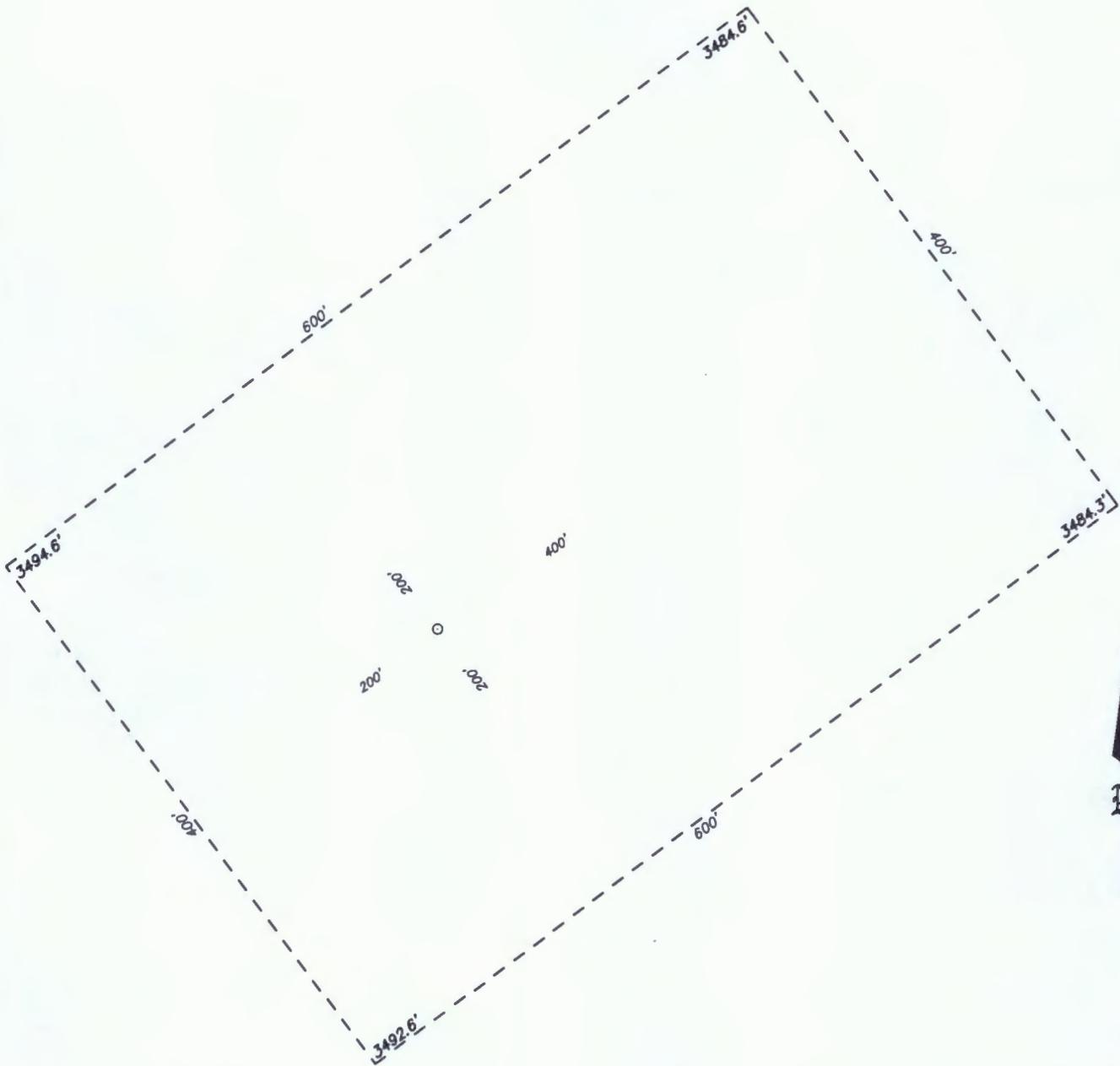
REF: SAND SPOUT STATE SWD #1 / WELL PAD TOPO

THE SAND SPOUT STATE SWD #1 LOCATED 40' FROM
 THE SOUTH LINE AND 1942' FROM THE EAST LINE OF
 SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA COUNTY, NEW MEXICO.

P.O. Box 1786 (575) 393-7316 - Office
 1120 N. West County Rd. (575) 392-2206 - Fax
 Hobbs, New Mexico 88241 basin-surveys.com

SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



DELAWARE ENERGY

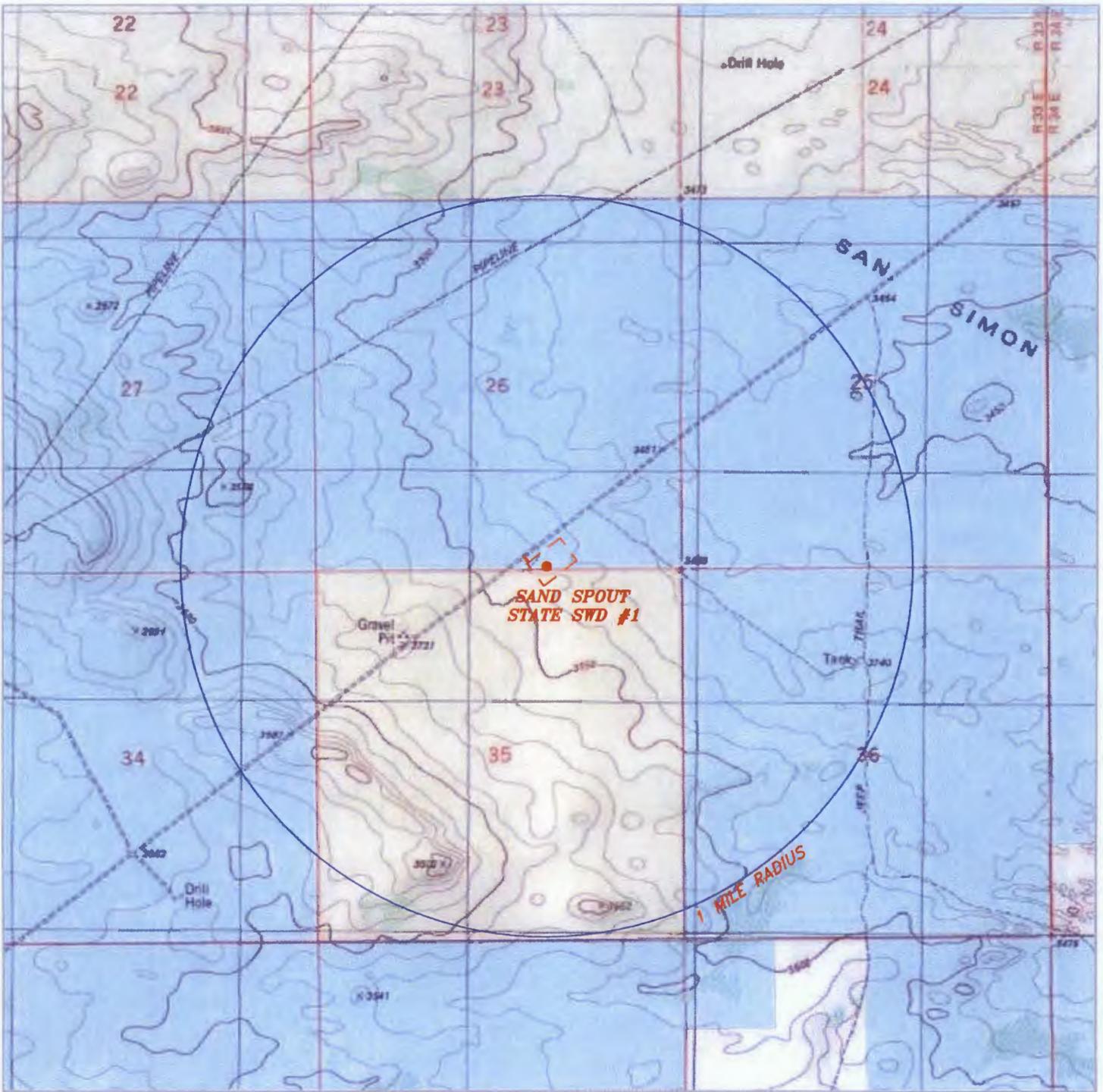
REF: SAND SPOUT STATE SWD #1 / WELL PAD TOPO

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SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA COUNTY, NEW MEXICO.



focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com



SAND SPOUT STATE SWD #1

Located 40' FSL and 1942' FEL
 Section 26, Township 22 South, Range 33 East,
 N.M.P.M., Lea County, New Mexico.



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 basinsurveys.com

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

W O Number: JG 34317

Survey Date: 2-5-2019

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



DELAWARE ENERGY

2S
3E

27

26

25

34

35

36

SAND SPOUT
STATE SWD #1

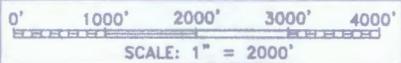
1 MILE RADIUS

SAND SPOUT STATE SWD #1

Located 40' FSL and 1942' FEL
Section 26, Township 22 South, Range 33 East,
N.M.P.M., Lea County, New Mexico.



P.O. Box 1786
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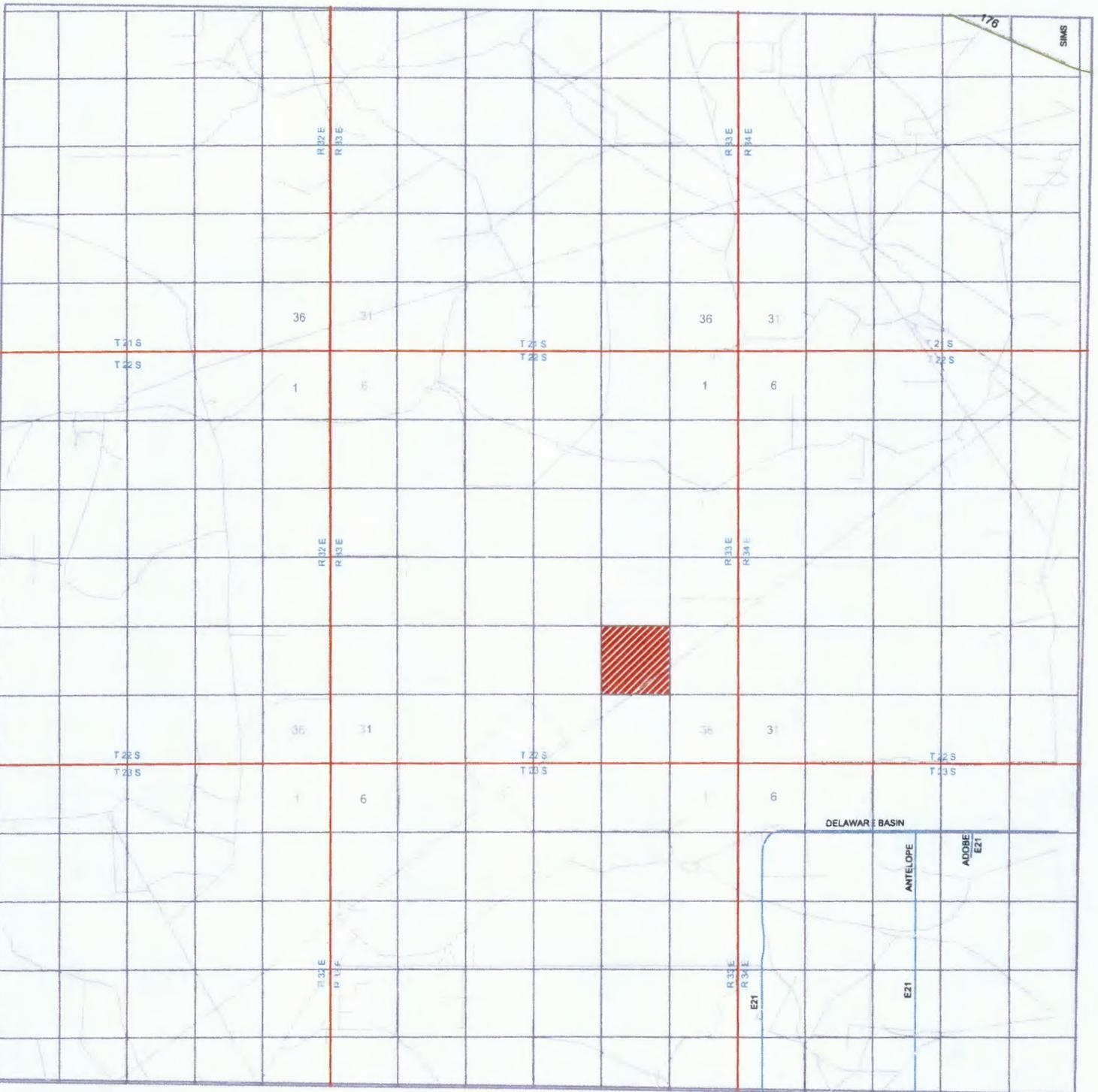
W.O. Number: JG 34317

Survey Date: 2-5-2019

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND



DELAWARE ENERGY

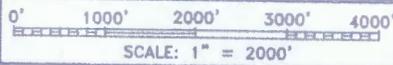


SAND SPOUT STATE SWD #1

Located 40' FSL and 1942' FEL
 Section 26, Township 22 South, Range 33 East,
 N.M.P.M., Lea County, New Mexico.



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 Hobbs, New Mexico 88241
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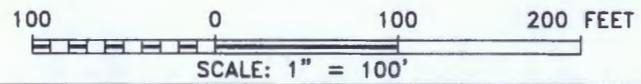
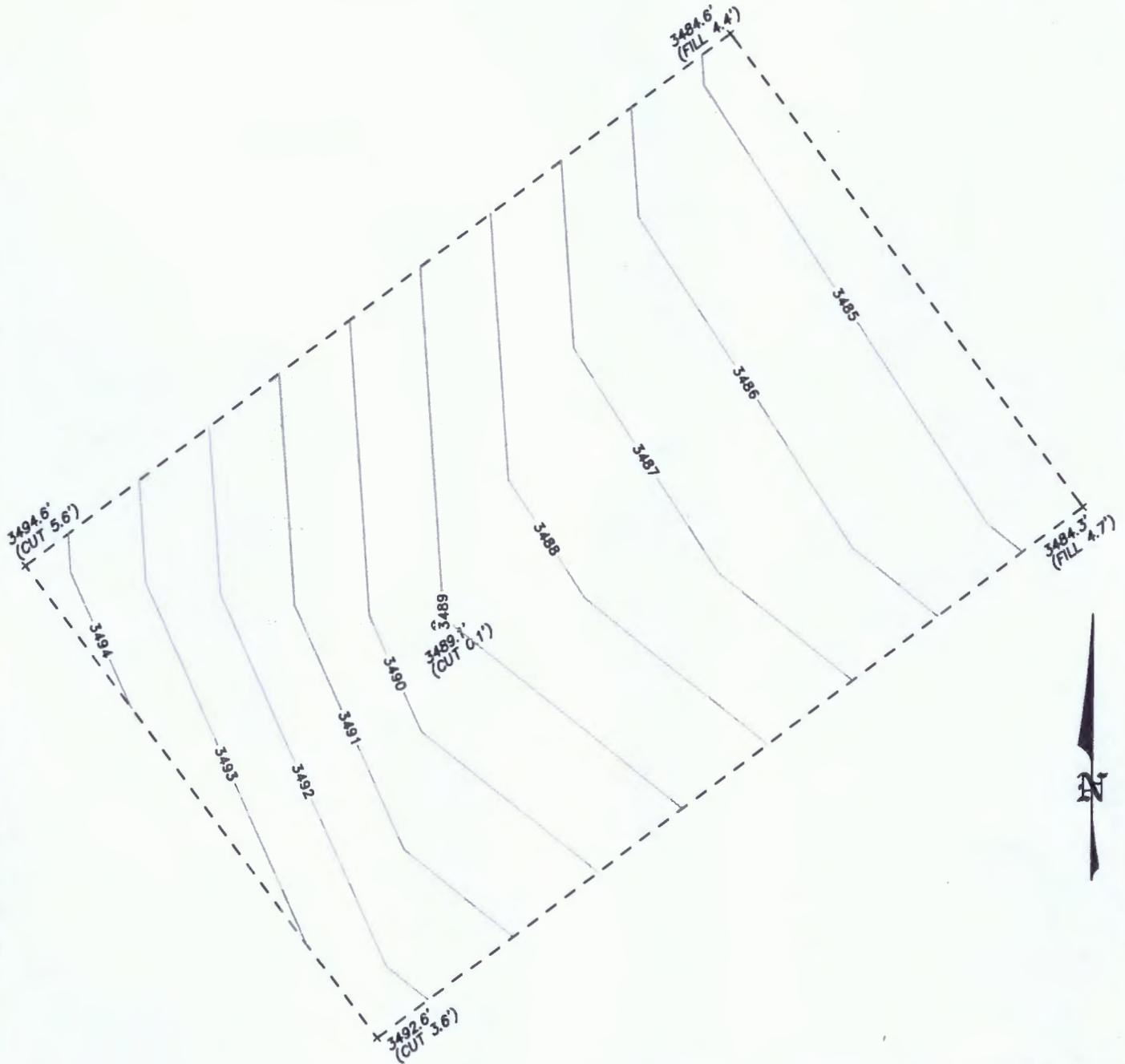
W.O. Number: JG 34317
 Survey Date: 2-5-2019

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



DELAWARE ENERGY

SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



DELAWARE ENERGY

REF: SAND SPOUT STATE SWD #1 / CUT & FILL

THE SAND SPOUT STATE SWD #1 LOCATED 40' FROM
THE SOUTH LINE AND 1942' FROM THE EAST LINE OF
SECTION 26, TOWNSHIP 22 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA COUNTY, NEW MEXICO.



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(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 34317	Drawn By: J GOAD	Date: 2-6-2019	Survey Date: 2-5-2019	Sheet 1 of 1 Sheets
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Water Analysis - Disposal Zone - DEVONIAN

NM WAIDS DATA				
S-T-R	FIELD	FORMATION	TDS	CHLRD
24-23S-29E	REMUDA	DEVONIAN	64582	37500
24-23S-29E	REMUDA	DEVONIAN	56922	29000
06-23S-34E	BELL LAKE NORTH	DEVONIAN	71078	42200
34-23S-34E	ANTELOPE RIDGE	DEVONIAN	80187	47900

Water Analysis - Source Zone - BONE SPRING



Requested by: T. Ratliff

Laboratory Analysis
Endurance
Jazzmaster 17 State #4H

Sample Date: 1/31/2014
Lea Co. NM

		Water Analysis Measurements		Calcite (v)		Anions (v)	
Oxygen (mg/L)	1.00	Oxygen Water (ppm)	0.0	Barium (Ba)	0	Carbonate (CO ₃)	0
Carbon Dioxide (mg/L)	889.16	Specific Gravity	1.150	Calcium (Ca)	18.660	Bicarbonate (HCO ₃)	16.00
Hydrogen Sulfide (mg/L)	0.0	Total Dissolved Solids (TDS)	180.600	Magnesium (Mg)	3.00	Chloride (mg/L)	118.520
ph	5.7	(mg/L) (ppm)	180.600	Sodium (Na)	34.270	Sulfate (SO ₄)	319
Temperature °F	73	Total Hardness (mg/L)	18.000	Iron (Fe)	3.00		
				Manganese (Mn)	0.00		

Water Analysis - Source Zone - DELAWARE

P. O. BOX 140
WILMINGTON, MISSISSIPPI 39201
PH: 601 378 3911 FAX 601 378 3912

Martin Water Laboratories, Inc.

RESULTS OF WATER ANALYSIS

MSL 101-1000
WILMINGTON, MISSISSIPPI
PHONE 601 378 3912

TO: Mr. Joe Small LABORATORY NO: 00293

FROM: P. O. Box 21210, Midland, TX 79710 SAMPLE RECEIVED: 9-16-97

RESULTS REPORTED: 9-18-97

COMPANY: Meridian Oil Company LEASE: Daggar, Lake #1

FIELD OR POOL: Wildcat

SECTOR: BLUCH SURVEY: Lea STATE: MS

SOURCE OF SAMPLE AND DATE TAKEN:

NO 1: Recovered water - taken from Daggar Lake #1. 9-9-97

NO 2: _____

NO 3: _____

NO 4: _____

REMARKS: Delaware

	CHEMICAL AND PHYSICAL PROPERTIES			
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity @ 60°F	1.1662			
Oil and Grease				
Oil and Grease (mg/L)	0.25			
Oil and Grease (ppm)	1.16			
Temperature @ 60°F				
Temperature @ 60°F	50.500			
Calcium (Ca)	18.000			
Magnesium (Mg)	1.336			
Sodium and Potassium	60.383			
Sulfate (SO ₄)	24.7			
Chloride (Cl)	160.618			
Iron (Fe)	90.0			
Barium (Ba)				
Hardness (mg/L)				
Hardness (ppm)				
Total Solids (mg/L)	229.533			
Temperature °F				
Carbon Dioxide (mg/L)				
Dissolved Oxygen				
Hydrogen Sulfide	0.0			
Acidity (mg/L as CaCO ₃)	0.033			
Residual Oil				
Fluoride (mg/L as F)				
Volume (ml)				
Total Dissolved Solids @ 180°C	184.361			



P.O. Box 3394, Midland, Texas 79702
 Phone (432) 684-4233 Fax (432) 684-4277

Water Analysis

Code	214056	Sample Information	
Client Information		Lease/Well: Sand Spout SWD/1	
Delaware Energy County:	Lea	Sample Point:	
Rep:	Derrick Boutwell	Date Sampled:	03/14/2019
		Date Reported:	03/19/2019

Results

Cations

Ion	Concentration(mg/L)
Barium (as Ba)	0
Calcium (as Ca)	7
Iron (as Fe)	0
Sodium (as Na)	95
Magnesium (as Mg)	39

Other Measurements

Measurement	Value
pH	9.48
SG	1.000
Turbidity	12
CO ₂	
Total Dissolved Solids	808.000

Anions

Ion	Concentration(mg/L)
Chlorides (as Cl)	46
Sulfate (as SO ₄)	84
Carbonate (as CO ₃)	0
Bicarbonates (as HCO ₃)	537
Sulfide (as S ²⁻)	0

Scaling Indices

Temp(F)	CaCO ₃	CaSO ₄ *2H ₂ O	CaSO ₄	BaSO ₄
80	1.6296	0.0000	0.0000	-27.5318
120	1.9344	0.0000	0.0000	-27.7375
160	2.2633	0.0000	0.0000	-27.8437
200	2.5616	0.0000	0.0000	-27.8871
250	2.8415	0.0000	0.0000	-27.9032

Low = < 0.200, Moderate = 0.200-0.999, High = > 1.00

Comments

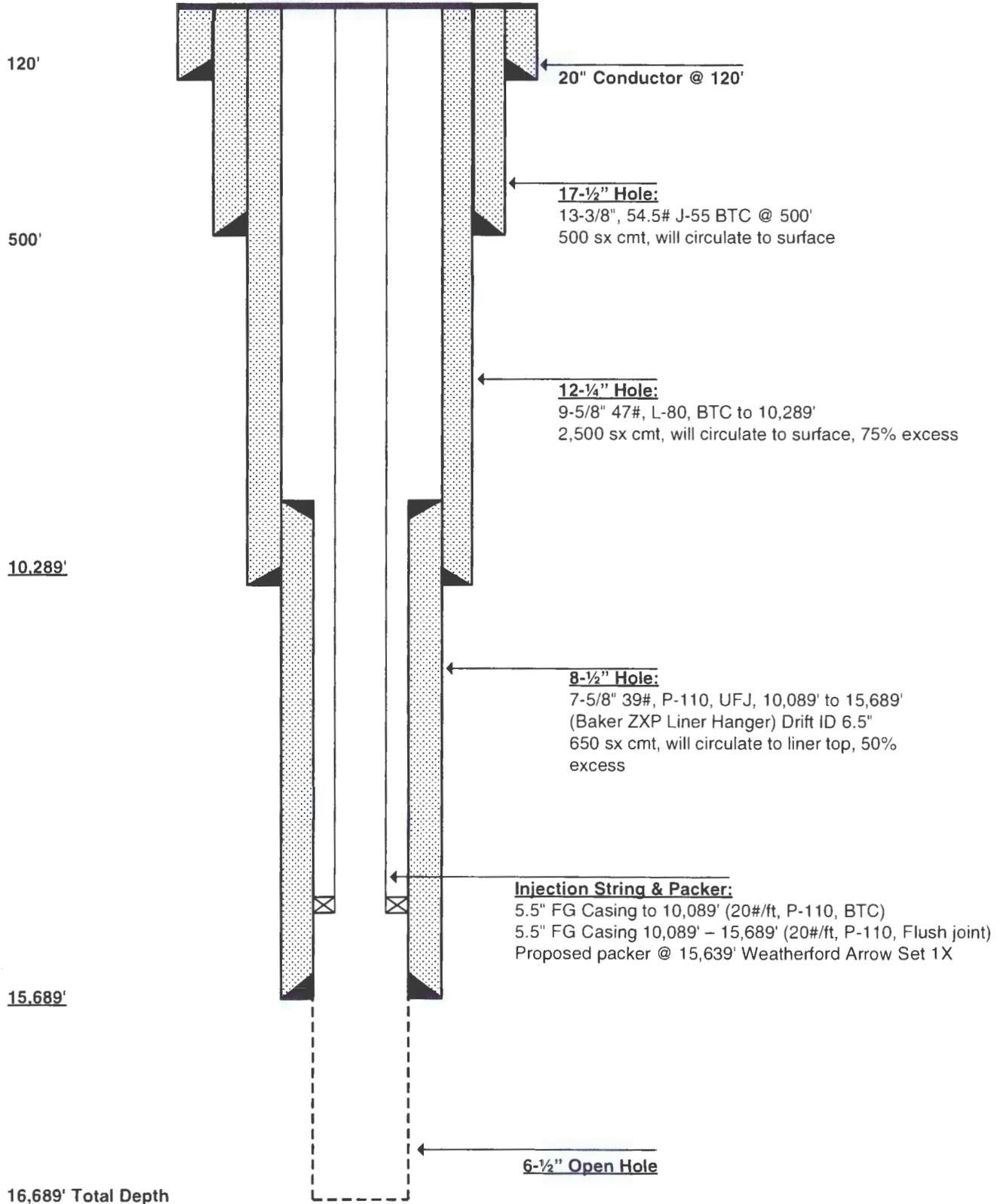
32.342705-103.558062

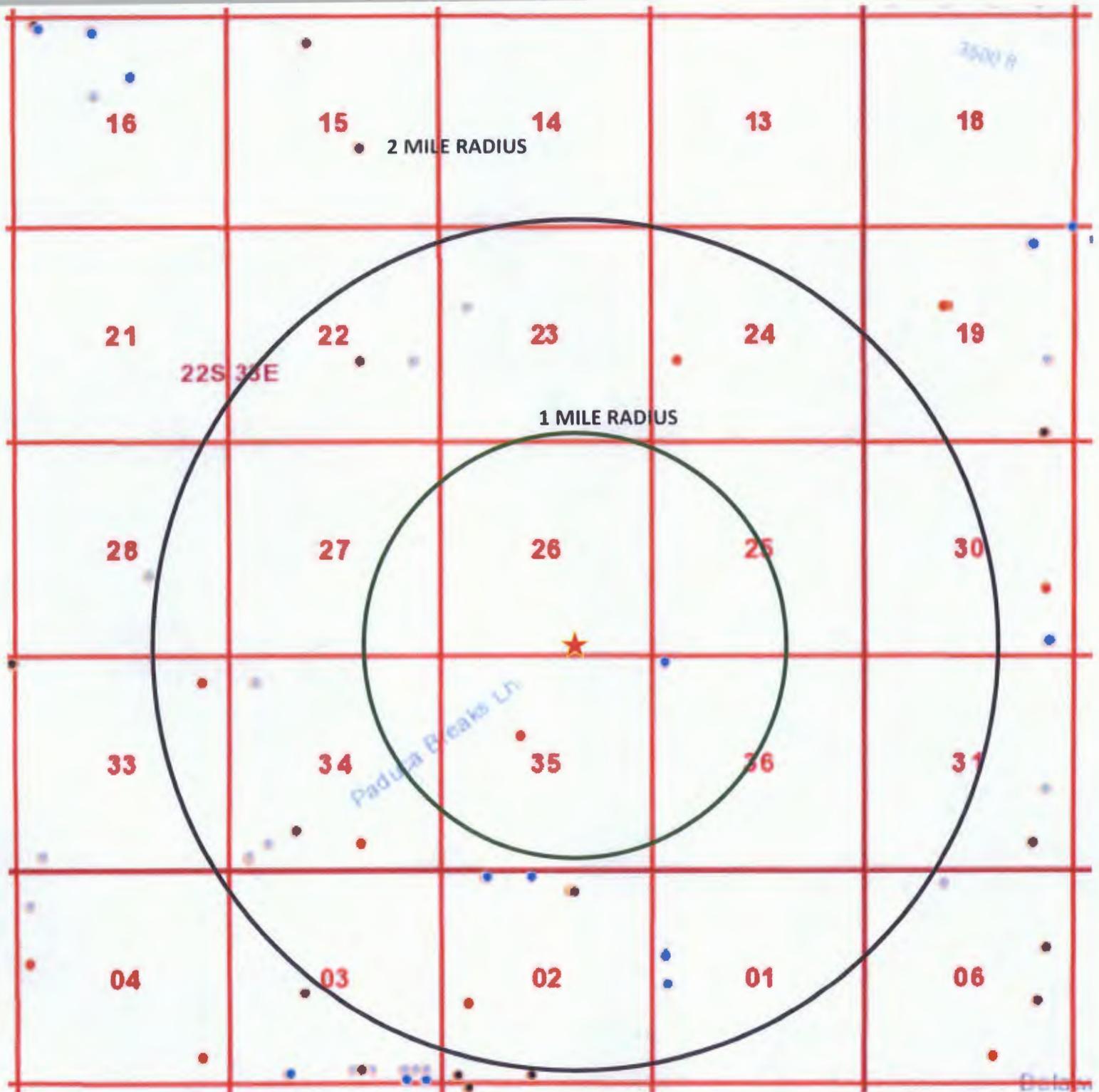
Sand Spout State SWD # 1

API # PENDING
40' FSL & 1,942' FEL, Sec. 26, T22S, R33E, UL "O"
LEA COUNTY, NEW MEXICO

ELEVATION:
GL: 3,489'

PROPOSED WELLBORE



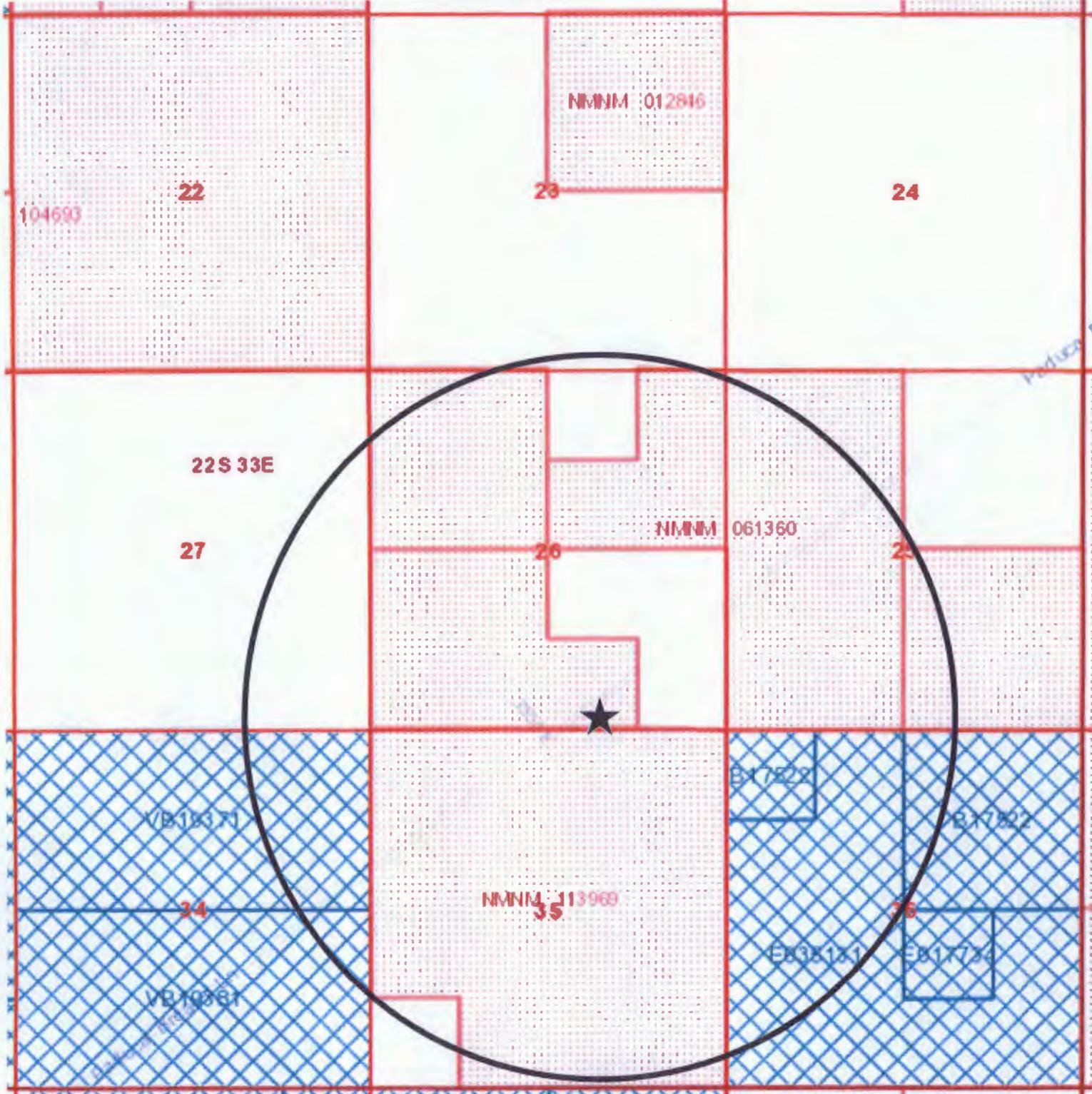


WELLS – ONE MILE RADIUS

NO WELLS PENETRATE THE DEVONIAN FORMATION IN THE AOR

SECTION 26-T22S-R33E

-  Sand Spout SWD #1
(Proposed Location)
- Delaware Energy, LLC



LEASES – ONE MILE RADIUS

★ Sand Spout State SWD #1
Sec. 26-T22S-R33E
Lea Co. NM

Sand Spout State State SWD #1

LEASES – ONE MILE RADIUS

Section 23, T22S-R33E

- **Bureau of Land Management**
620 E. Greene Street
Carlsbad, NM 88220

Section 27, T22S-R33E

- **Bureau of Land Management**
620 E. Greene Street
Carlsbad, NM 88220

Section 25, T22S-R33E

- Federal Lease (NMNM 012846)
- **Monty D McLane (Lessee)**
Box 9451
Midland, TX 79708
- Federal Lease (NMNM 061360)
- **Fred L Engle (Lessee)**
PO Box 26245
Milwaukee, WI 53226
 - **Bureau of Land Management**
620 E. Greene Street
Carlsbad, NM 88220

Section 26, T22S-R33E

- Federal Lease (NMNM 061360)
- **Fred L Engle (Lessee)**
PO Box 26245
Milwaukee, WI 53226
- Federal Lease (NMNM 012846)
- **Monty D McLane (Lessee)**
Box 9451
Midland, TX 79708

- **Bureau of Land Management**
620 E. Greene Street
Carlsbad, NM 88220

- **Marathon Oil**
5555 San Felipe Street
Houston, TX 77056

Section 34, T22S-R33E

State Leases (VB19371 & VB19381)

- **Devon Energy Production Co. LP (Lessee)**
333 W Sheridan Ave.
Oklahoma City, OK 73102-5010

Section 35, T22S-R34E

Federal Lease (NMNM 113969)

- **Devon Energy Production Co. LP (Lessee)**
333 W Sheridan Ave.
Oklahoma City, OK 73102-5010

- **Bureau of Land Management**
620 E. Greene Street
Carlsbad, NM 88220

Section 36, T22S-R33E

State Lease (B17522)

- **Conoco Phillips Co. (Lessee)**
3300 N A St. #6-100
Midland, TX 79705

State Lease (B035131)

- **Kaiser-Francis Oil Co.**
6733 S Yale Ave.
Tulsa, OK 74136

Sand Spout State SWD #1
Location: 40' FSL & 1942' FEL
Sec. 26, T-22-S, R-33-E

Estimated Pre-Drill Formation Tops

Top of Salt	1,264'
Base Salt	5,189'
Delaware Mountain Group	5,239'
Bone Spring/Abo	8,989'
Wolfcamp	10,289'
Strawn	12,739'
Atoka	12,989'
Morrow	13,789'
Barnett	14,839'
Mississippian	15,089'
Woodford	15,489'
Devonian	15,689'

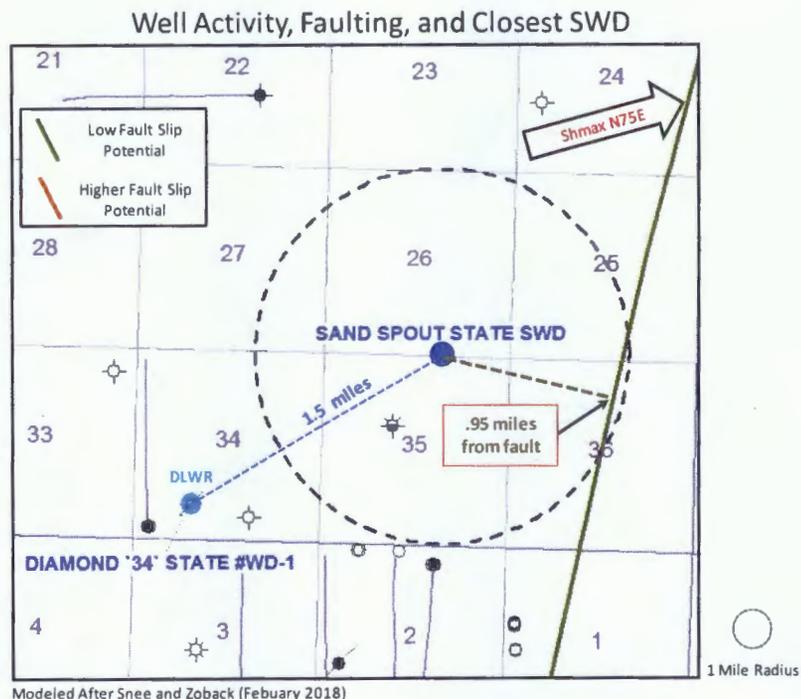
Statement Regarding Seismicity and Well Location (Sand Spout SWD #1)

Historically, the area near the proposed Sand Spout SWD #1 has seen only minor seismic activity. There has been one seismic event (as per public data available on the USGS database) close to this location. The event was 6.2 miles south of the location on December 4, 1984 and measured 2.9.

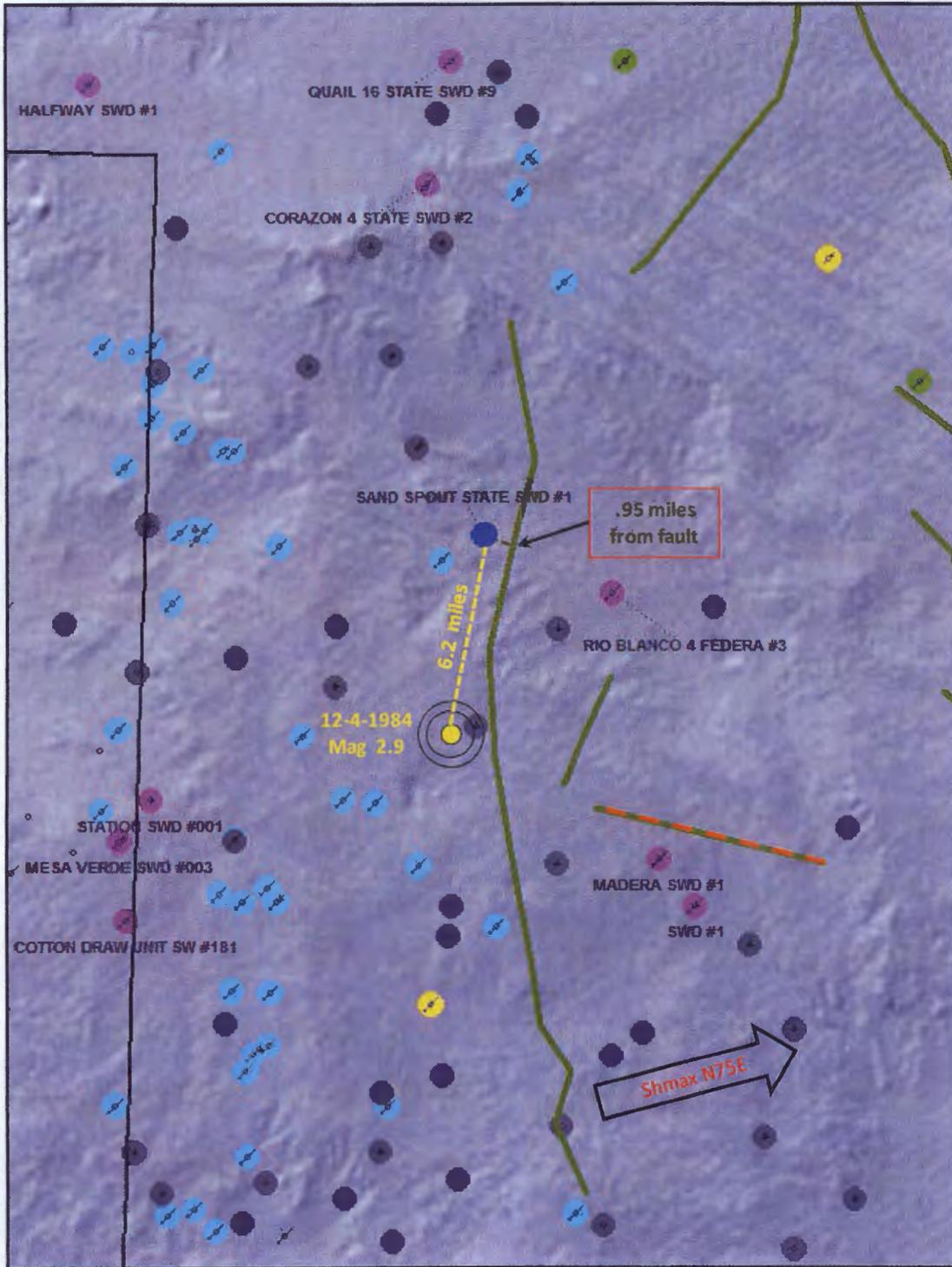
Delaware Energy does not own 2D or 3D seismic data near the proposed SWD location therefore the fault interpretations are based on data obtained from the USGS New Mexico Faults Database (2005) and other published data. Based on these sources the closest fault would be approximately .95 miles east of the location. A recent technical paper written by Snee and Zoback, "State of Stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity", was published in the February 2018 edition of The Leading Edge. The study evaluates the strike-slip probability of known faults using FSP analysis. The study predicts that the N-S trending fault east of the location (green) should have a very low probability of being critically stressed resulting in an induced seismicity event. Any W-E trending faults (orange) would have a higher probability of being critically stressed, resulting in potential slip, due to the relationship of the strike of the fault and the regional S_{hmax} orientation (approx. N 75 deg E) in the area. The exact position of this fault relative to the proposed location, and depth of the target formation, is unknown. Risk of contact with the fault should be evaluated and modeled prior to drilling the well. It is uncertain whether the seismic activity to the south was associated with this fault, or another fault not documented in the public domain.

The proposed Sand Spout SWD #1 is located well away from the nearest active Devonian SWD (see map below). The closest SWD well is 1.5 miles to the southwest in the Delaware formation. The Sand Spout SWD #1 is targeted for the Devonian and should not affect the Delaware activity. The well should meet current OCD and Industry recommended practices.

Kevin J. Schepel
Petrophysical Advisor
kevin.schepel@att.net
214-212-6540



Proximity to Historic Earthquake Activity and Faults



Modeled After Snee and Zoback (February 2018)

- Devonian SWD ● Morrow SWD ● Delaware SWD ● Yates SWD ● Proposed Location ○ Permits
- USGS Earthquake — Low Fault Slip Potential — Higher Fault Slip Potential

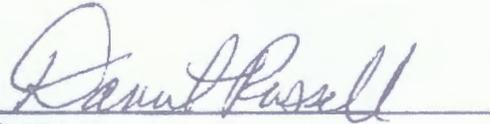
Data and Interpretation Disclosure - Although care has been taken to ensure that these data are up to date and accurate, this information and data is being providing as is. The data are what is believed to be the best public data available based on published documents, reports, and information available through the USGS. The user assumes all responsibility and risk for use of the data and interpretations. Users of the data agree not to misuse, add to without permission, or misrepresent the data provided in any way. In no event will the provider of this document be liable to any party for any direct, indirect, incidental, consequential, special or exemplary damages, or lost profit resulting from any use or misuse of this data. Additionally, provider is not liable for any inaccurate data. No person, entity, or user shall use the information in a manner that is in violation of any federal, state, or local law or regulation.

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

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

Beginning with the issue dated
February 28, 2019
and ending with the issue dated
February 28, 2019.



Publisher

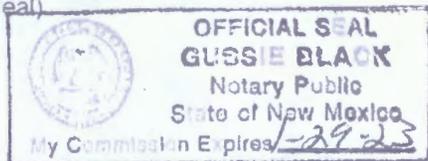
Sworn and subscribed to before me this
28th day of February 2019.



Business Manager

My commission expires
January 29, 2023

(Seal)



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

LEGAL NOTICE FEBRUARY 28, 2019

Delaware Energy, L.L.C., 405 N. Marienfeld St. Suite 200, Midland, TX 79701, has filed a form C-108 (Application for Authorization to Inject) with the Oil Conservation Division seeking administrative approval to drill the Sand Spout State SWD #1 as a Commercial Salt Water Disposal well.

The Sand Spout State SWD #1 is located at 40' FSL and 1,942' FEL, Unit Letter O, Section 26, Township 22 South, Range 33 East, Lea County, New Mexico. The well will dispose of water produced from oil and gas wells into the Devonian Formation from 15,689' to 16,689' at a maximum rate of 25,000 barrels of water per day at a maximum pressure of 3,138 psi.

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.

Additional information can be obtained by contacting Delaware Energy, L.L.C., at (432) 685-7005.
#33791

67114908

00225006

MIKE MCCURDY
DELAWARE ENERGY
405 N. MARIENFELD, STE 250
MIDLAND, TX 79701

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 5555 San Felipe Street
 Houston, TX 77056

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
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Total Postage and Fees	\$8.05

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 Street and Apt. No., or PO Box No.
 PO Box 9451
 Midland, TX 79708

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 Kaiser-Francis Oil Co.
 Street and Apt. No., or PO Box No.
 6733 S Yale Ave.
 Tulsa, OK 74136

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Total Postage and Fees	\$8.05

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 Street and Apt. No., or PO Box No.
 3300 North A. St. #6-100
 Midland, TX 79708

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Total Postage and Fees	\$8.05

Sent To
 Devon Energy Production Co. LP
 Street and Apt. No., or PO Box No.
 333 W. Sheridan Ave.
 Oklahoma City, OK 73102

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New Mexico State Land Office
Street and Apt. No., or PO Box No.
300 Old Santa Fe Trail
City, State, ZIP+4®
Santa Fe, NM 87501

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Total Postage and Fees	\$8.05



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629 E. Greene Street
City, State, ZIP+4®
Carlsbad, NM 88220

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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$1.75
Total Postage and Fees	\$8.05



Sent To
State of New Mexico OCD District I
Street and Apt. No., or PO Box No.
1625 N. French Dr.
City, State, ZIP+4®
Hobbs, NM 88240

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Delaware Energy, LLC
Application for Injection/SWD
Sand Spout State SWD #1

APR 15 2019 PM02:57

UL O, Sec. 26, T-22-S, R-33-E, 40' FSL & 1,942' FEL, Lea Co., NM

April 10, 2019

Contents:

1. Administrative Application Checklist
2. Form C-108: Application for Authority to Inject
3. Form C-108 Additional Questions Answered
4. Form C-102
5. Chemical Analysis of Devonian Formation Water Sample
6. Chemical Analysis of Bone Spring Formation Water Sample
7. Chemical Analysis of Delaware Formation Water Sample
8. Planned wellbore diagram for the Sand Spout State SWD #1
9. ~~Tabular Data on All Wells of Public Record within the Area of Review which Penetrate the Proposed Injection Zone~~ (No applicable wells)
10. Map Identifying all Wells and Leases within Two Miles of Any Proposed Injection Well with a One Mile Radius Circle Drawn Around the Proposed Injection Well
11. Sample of Letter Sent with This Application Packet to Owner of Surface of the Land on Which the Well is to be Located and to each Leasehold Operator within One Mile of the Well Location
12. Formation Tops
13. Certified Mailers
14. Seismicity Assessment
15. Carlsbad Current-ARGUS Affidavit of publication

Delaware Energy, L.L.C.
405 N. Marienfeld, Suite 200
Midland, TX 79701
Office: (432) 685-7005

April 10, 2019

Surface Owner / Offset Operators

Re: Notification of Application for Authorization to Inject
Sand Spout State SWD #1 Well

Ladies and Gentlemen:

Delaware Energy, LLC is seeking administrative approval to utilize the proposed Sand Spout State SWD #1 as a commercial Salt Water Disposal well. As required by the New Mexico Oil Conservation Division Rules, we are notifying you of the following proposed salt water disposal well. This letter is a notice only. No action is required unless you have questions or objections.

<u>Well:</u>	Sand Spout State SWD #1
<u>Proposed Disposal Zone:</u>	Devonian Formation (from 15,689' - 16,689')
<u>Location:</u>	40' FSL & 1,942' FEL, UL O, Sec. 26, T22S, R33E, Lea Co., NM
<u>Applicants Name:</u>	Delaware Energy, L.L.C.
<u>Applicants Address:</u>	405 N. Marienfeld, Suite 200, Midland, TX 79701

This application for water disposal well will be filed with the New Mexico Oil Conservation Division. If they determine the application complies with the applicable regulations, then it will be approved. The New Mexico Conservation Division address is 1220 South St. Francis Dr., Santa Fe, NM 87505. And their phone number is 505-476-3460.

Please call Sarah Presley with Delaware Energy, LLC if you have any questions at 432-685-7005.

Sincerely,



Sarah Presley

DISTRIBUTION LIST

Surface Owner:

State of New Mexico
310 Old Santa Fe Trail
Santa Fe NM 87501

Offset Operators/Leasehold Owners:

Bureau of Land Management
620 E. Greene Street
Carlsbad, NM 88220

Conoco Phillips Co.
3300 N A St. #6-100
Midland, TX 79705

Devon Energy Production Co. LP
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Oklahoma City, OK 73102-5010

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Kaiser-Francis Oil Co.
6733 S Yale Ave.
Tulsa, OK 74136

Marathon Oil
5555 San Felipe Street
Houston, TX 77056

Monty D McLane
Box 9451
Midland, TX 79708

State of New Mexico Oil Conservation Division
District I
1625 N. French Dr.
Hobbs, NM 88240

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