

October 22, 2018

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

Re: Bear Trap SWD #1
Updated Location

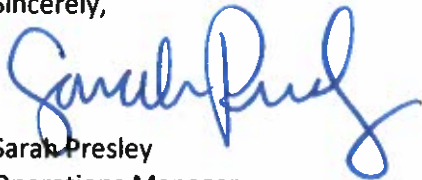
Mr. Goetze:

Delaware Energy, LLC has amended the location for the Bear Trap SWD #1. The enclosed packet has been re-sent to all affected persons. We have found that there are no new wells within the AOR and there were 4 new affected parties (Chevron, Devon, Conoco Phillips & Caza Petroleum)

<u>Well:</u>	Bear Trap SWD #1
<u>API:</u>	Pending
<u>Disposal Zone:</u>	Devonian Formations (from 13,280' - 14,280')
<u>Location:</u>	205' FSL & 765' FEL, UL O, Sec. 34-T23S-R27E, Eddy Co., NM
<u>Applicants Name:</u>	Delaware Energy, L.L.C.
<u>Applicants Address:</u>	405 N. Marienfeld, Suite 200, Midland, TX 79701

Please contact me if you have any questions at 432-685-7005 or 432-269-3789.

Sincerely,



Sarah Presley
Operations Manager

s.presley@delawareenergy.com

Delaware Energy, LLC
Application for Injection/SWD
Bear Trap SWD #1

UL O, Sec. 34, T-23-S, R-27-E, 326' FSL & 2,564' FEL, Eddy Co., NM

October 22, 2018

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 Bone Spring Formation Water Sample
6. Chemical Analysis of Wolfcamp Formation Water Sample
7. Chemical Analysis of Delaware Formation Water Sample
8. Planned wellbore diagram for the Bear Trap 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. Legal Notice that was run as required in the Carlsbad Current-ARGUS
13. Formation Tops
14. Certified Mailers
15. Seismicity Assessment

RECEIVED:	REVIEWER:	TYPE:	APP NO:
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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: Bear Trap 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 holdersB. ☐ Royalty, overriding royalty owners, revenue ownersC. ☒ Application requires published noticeD. ☒ Notification and/or concurrent approval by SLOE. ☐ Notification and/or concurrent approval by BLMF. ☒ Surface ownerG. ☒ For all of the above, proof of notification or publication is attached, and/or,H. ☐ No notice required

FOR OCD ONLY

☐ Notice Complete☐ 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.

Mike McCurdy

10/22/2018

Date

Print or Type Name

432-685-7005


Phone Number

Signature

m.mccurdy@delawareenergy.com

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: 10/17/2018
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: Bear Trap SWD # 1

WELL LOCATION: 326' FSL & 2,564' FEL O 34 23S 27E

FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

WELLBORE SCHEMATIC see attached wellbore sketch

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17.5" 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

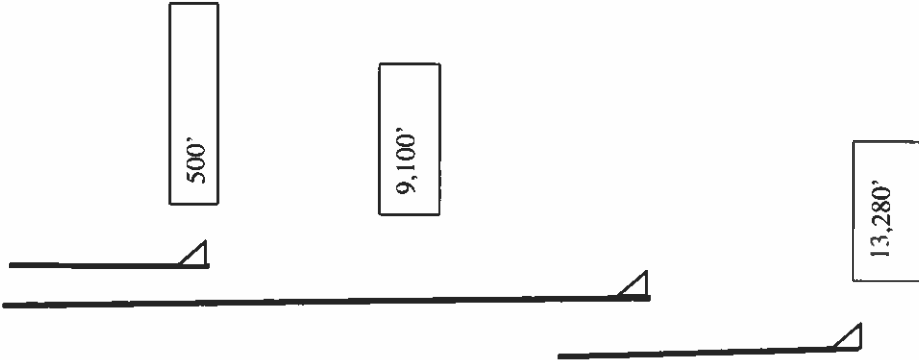
Production Casing

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: 13,280'

Injection Interval

13,280' feet to 14,280'
(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: 13,230'

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 4,200' – 5,605'; Bone Springs 5,605' -8,980'; Wolfcamp 8,980' - 10,805'; Strawn 10,805-10,965', Atoka 10,965' -11,665'; Morrow 11,665' – 12,830'

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 2,656 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.).

Disposal zone produces water and no hydrocarbons, nearby Devonian test wells have only tested water in DST's. Nearby Top Gun SWD tested Sulphur water.

***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 13,280'-14,280'. Devonian is an impermeable organic Shale at the very top (13,180 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 +/- 150', the water source is older alluvium (Quaternary). All the fresh water wells in the area have an average depth to water of 150ft 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.

Included in the application is a water well sample from Section 34 of T23S R27E

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 Bear Trap 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

10/17/2018

Title _____ Date _____

III. WELL DATA

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

Bear Trap SWD #1, Sec. 3-T24S-R27E, 660' FWL & 1470' FSL, UL L, Eddy 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"	9,100'	2500	12-1/4"	Surface	CIRC
7-5/8"	8,900'-13,280'	650	8-1/2"	Surface	CIRC

(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.

13,280' to 14,280' (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 4,200' – 5,605'; Bone Springs 5,605' -8,980'; Wolfcamp 8,980' - 10,805'; Strawn 10,805-10,965', Atoka 10,965'-11,665'; Morrow 11,665' – 12,830'.

Next Lower: None

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3463

ON A NON STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

N:461406.7
E:591905.1
(NAD 83)

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 10/17/18
Signature Date

SARAH PRESLEY
Printed Name

s.presley@delawareenergy.com
Email Address

SURFACE LOCATION
Lat - N 32.25494356°
Long - W 104.17789265°
NMSPCE- N 456516.5
E 589388.5
(NAD-83)

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 16, 2018
Date Surveyed

Gary L. Jones
Signature & Seal of Professional Surveyor

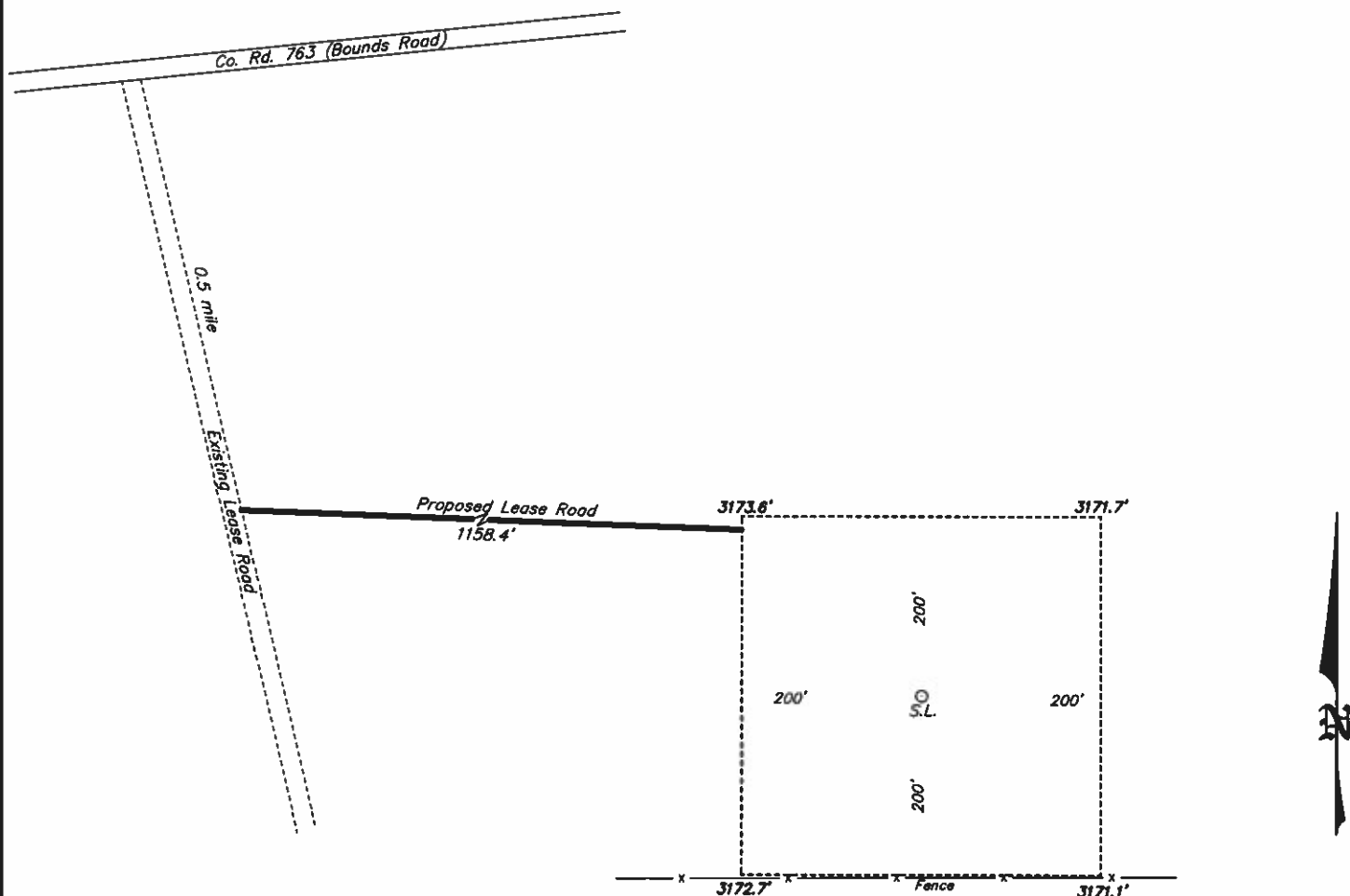
Certificate No. Gary L. Jones 7977
State of Delaware

N:456174.4
E:586662.0
(NAD 83)

0' 500' 1000' 1500' 2000'

SCALE: 1" = 1000'
WO Num.: 34149

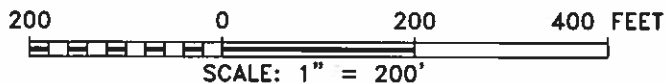
**SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.**



**BEAR TRAP SWD #1
ELEV. - 3172'**

Lat - N 32.25494356°
Long - W 104.17789265°
NMSPCE- N 456516.5
E 589388.5
(NAD-83)

CARLSBAD, NM IS ±10 MILES TO THE NORTH OF LOCATION.



DELAWARE ENERGY

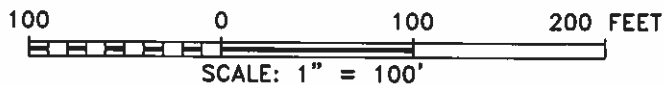
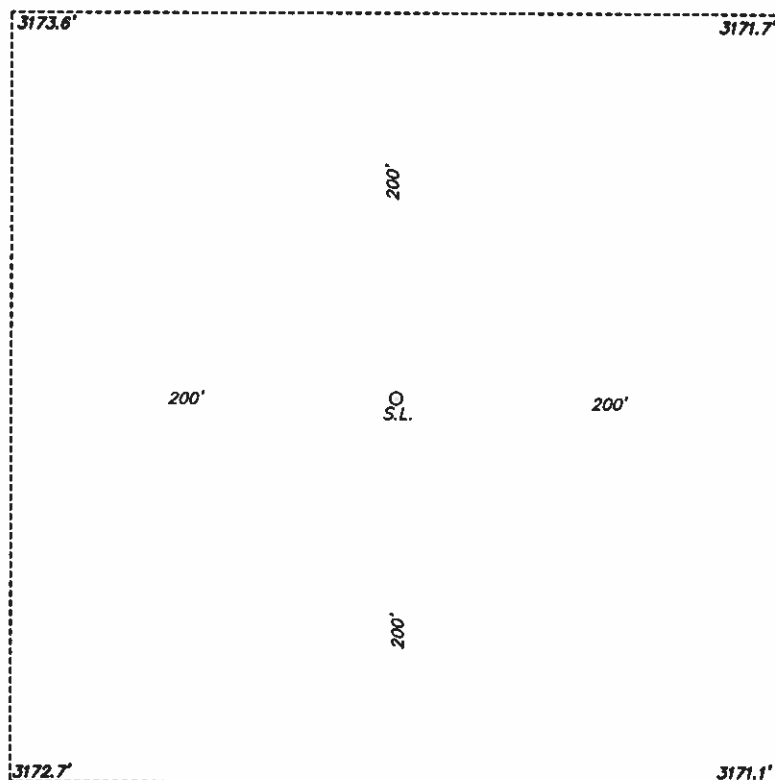
REF: BEAR TRAP SWD #1 / WELL PAD TOPO

THE BEAR TRAP SWD #1 LOCATED 326' FROM
THE SOUTH LINE AND 2564' FROM THE EAST LINE OF
SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST,
N.M.P.M., EDDY 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

**SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.**



DELAWARE ENERGY

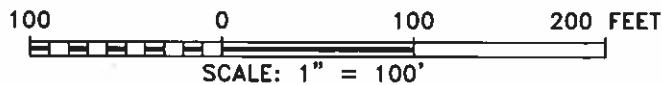
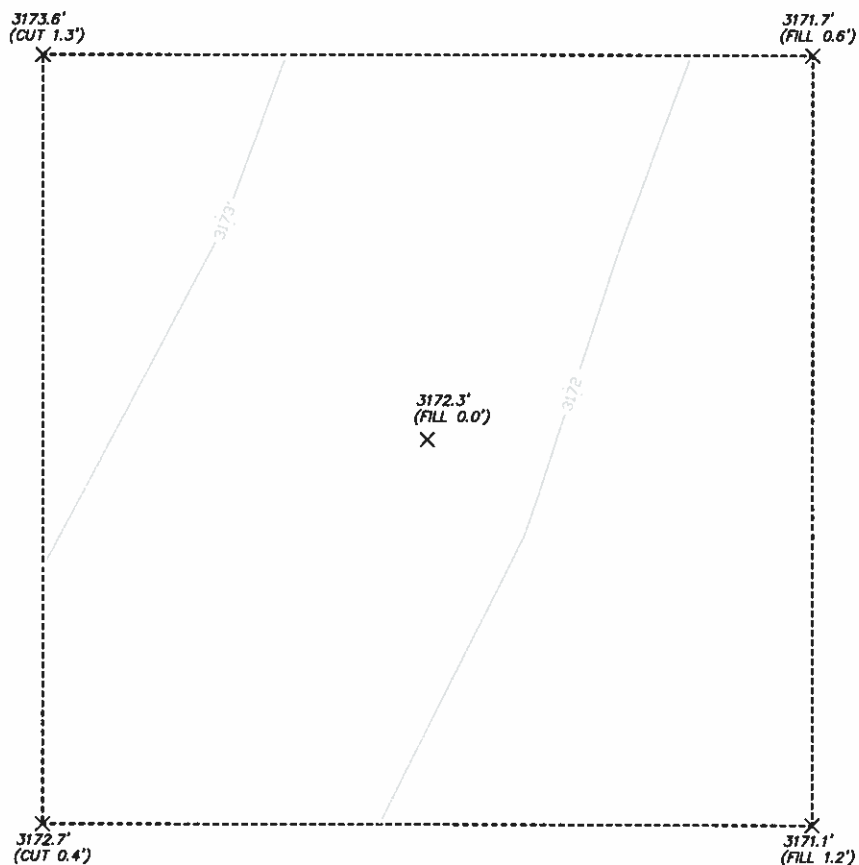
REF: BEAR TRAP SWD #1 / WELL PAD TOPO

*THE BEAR TRAP SWD #1 LOCATED 326' FROM
THE SOUTH LINE AND 2564' FROM THE EAST LINE OF
SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.*



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**SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.**



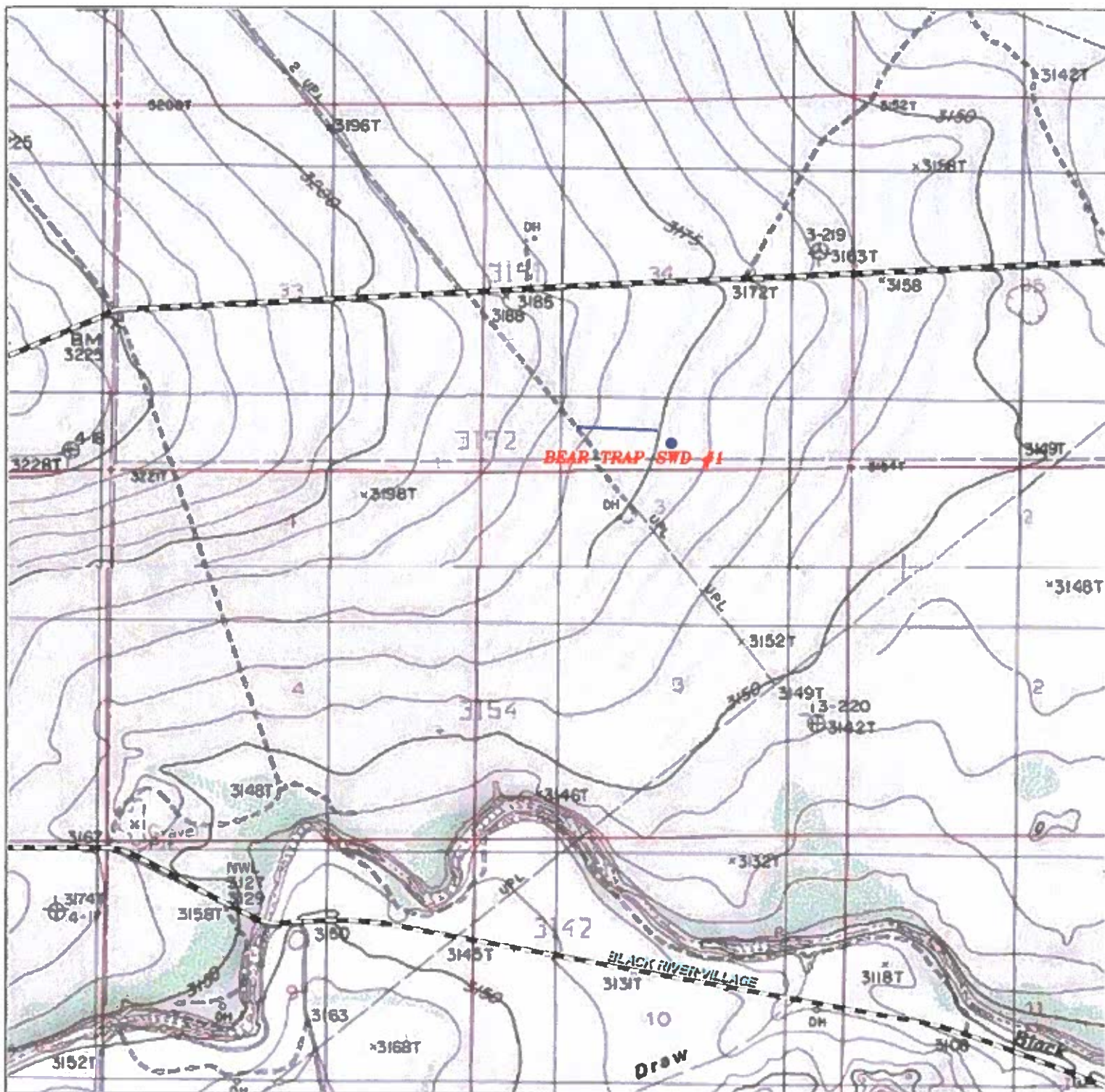
DELAWARE ENERGY

REF: BEAR TRAP SWD #1 / CUT & FILL

*THE BEAR TRAP SWD #1 LOCATED 326' FROM
THE SOUTH LINE AND 2564' FROM THE EAST LINE OF
SECTION 34, TOWNSHIP 23 SOUTH, RANGE 27 EAST,
N.M.P.M., EDDY 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



BEAR TRAP SWD #1

Located 326' FSL & 2564' FEL
 Section 34, Township 23 South, Range 27 East,
 N.M.P.M., Eddy County, New Mexico.

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

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

W.O. Number: KJG - 34149

Survey Date: 10-16-2018

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



DELAWARE
ENERGY



BEAR TRAP SWD #1

Located 326' FSL & 2564' FEL
Section 34, Township 23 South, Range 27 East,
N.M.P.M., Eddy County, New Mexico.



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

0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'

W.O. Number: KJG - 34149

Survey Date: 10-16-2018

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



**DELAWARE
ENERGY**



Sec 22, T25S, R28E

North Permian Basin Region

P.O. Box 740

Sundown, TX 79372-0740

(806) 228-8121

Lab Team Leader - Shella Hernandez

(432) 495-7240

Bone Spring

Water Analysis Report by Baker Petrolite

Company:		Sales RDT:	33514.1
Region:	PERMIAN BASIN	Account Manager:	TONY HERNANDEZ (575) 910-7135
Area:	ARTESIA, NM	Sample #:	534665
Lease/Platform:	PINOCHLE 'BPN' STATE COM	Analysis ID #:	106795
Entity (or well #):	2 H	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 534665 @ 75 F					
Sampling Date:	03/10/11	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	03/18/11	Chloride:	109618.0	3091.92	Sodium:	70275.7	3056.82
Analyst:	SANDRA GOMEZ	Bicarbonate:	2135.0	34.99	Magnesium:	195.0	18.04
TDS (mg/l or g/m3):	184911.1	Carbonate:	0.0	0.	Calcium:	844.0	42.12
Density (g/cm3, tonne/m3):	1.113	Sulfate:	747.0	15.55	Strontium:	220.0	5.02
Anion/Cation Ratio:	1	Phosphate:			Barium:	0.8	0.01
		Borate:			Iron:	6.5	0.23
		Silicate:			Potassium:	869.0	22.22
					Aluminum:		
Carbon Dioxide:	0.50 PPM	Hydrogen Sulfide:		0 PPM	Chromium:		
Oxygen:		pH at time of sampling:		7	Copper:		
Comments:		pH at time of analysis:			Lead:		
		pH used in Calculation:		7	Manganese:	0.100	0.
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	1.08	188.52	-1.20	0.00	-1.18	0.00	-0.11	0.00	0.56	0.29	1.72
100	0	1.10	208.05	-1.29	0.00	-1.20	0.00	-0.15	0.00	0.35	0.29	2.35
120	0	1.12	224.17	-1.36	0.00	-1.19	0.00	-0.17	0.00	0.16	0.00	3.17
140	0	1.13	243.17	-1.42	0.00	-1.18	0.00	-0.18	0.00	0.00	0.00	4.21

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

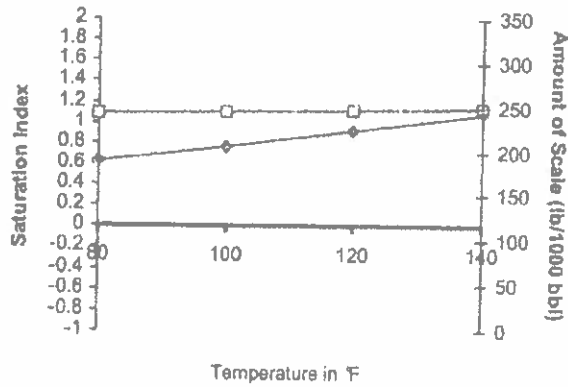
Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

Scale Predictions from Baker Petrolite

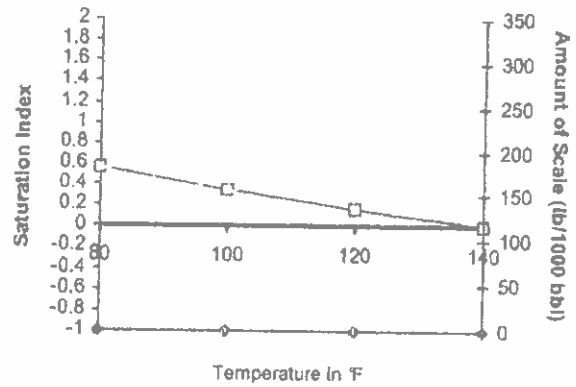
Analysis of Sample 534665 @ 75 °F for

03/18/11

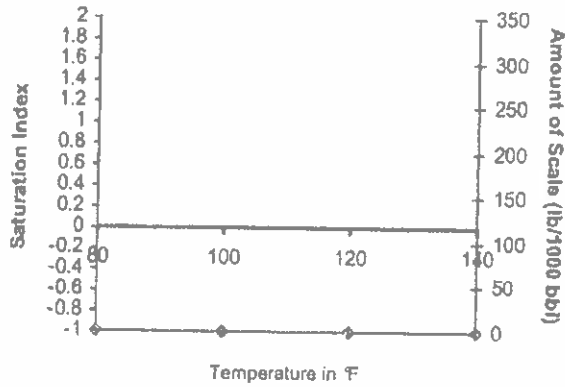
Calcite - CaCO_3



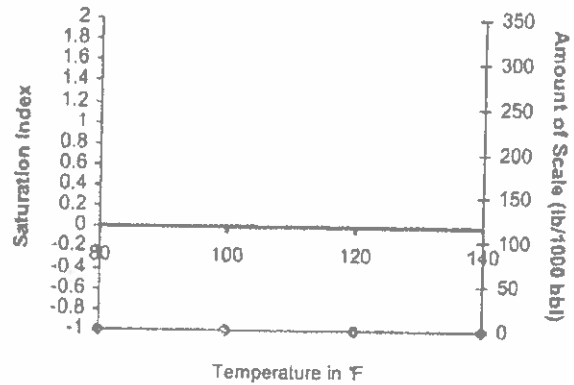
Barite - BaSO_4



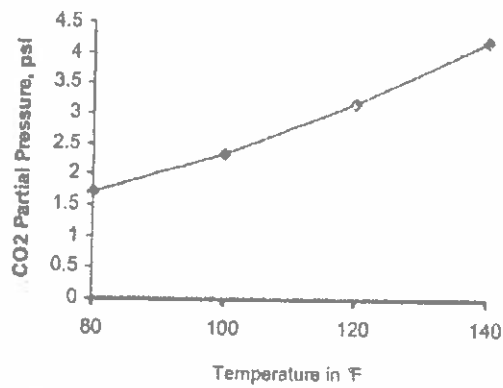
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



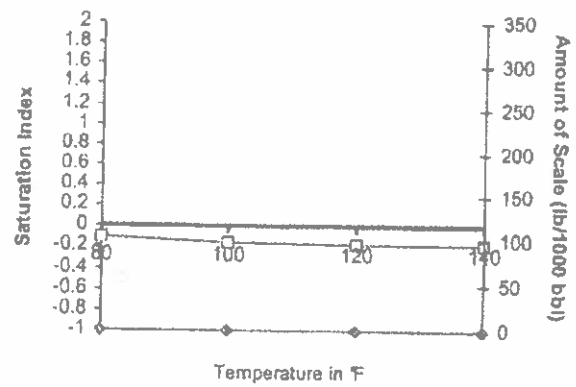
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4



Wolfcamp



Water Analysis

Date: 23-Aug-11

2708 West County Road, Hobbs NM 88240

Phone (575) 392-5556 Fax (575) 392-7307

Analyzed For

Brushy Draw 1#1

Company	Well Name	County	State
	BD	Lea	New Mexico

Sample Source

Swab Sample

Sample #

Eddy

1-265-295

1

Formation

Depth

Specific Gravity	1.170	SG @ 60 °F	1.172
pH	6.30	Sulfides	Absent
Temperature (°F)	70	Reducing Agents	

Cations

Sodium (Calc)	in Mg/L	77,962	in PPM	66,520
Calcium	in Mg/L	4,000	in PPM	3,413
Magnesium	in Mg/L	1,200	in PPM	1,024
Soluble Iron (FE2)	in Mg/L	10.0	in PPM	9

Anions

Chlorides	in Mg/L	130,000	in PPM	110,922
Sulfates	in Mg/L	250	in PPM	213
Bicarbonates	in Mg/L	127	in PPM	108

Total Hardness (as CaCO3)	in Mg/L	15,000	in PPM	12,799
Total Dissolved Solids (Calc)	in Mg/L	213,549	in PPM	182,209
Equivalent NaCl Concentration	in Mg/L	182,868	in PPM	158,031

Scaling Tendencies

*Calcium Carbonate Index 507,520

Below 500,000 Remote / 500,000 - 1,000,000 Possible / Above 1,000,000 Probable

*Calcium Sulfate (Gyp) Index 1,000,000

Below 500,000 Remote / 500,000 - 10,000,000 Possible / Above 10,000,000 Probable

*This Calculation is only an approximation and is only valid before treatment of a well or several weeks after treatment.

Remarks RW=.048@70F

Report # 3188

Sec 16, T23S R 28E



PRODUCTION DEPARTMENT

MILLER CHEMICALS, INC.

Post Office Box 298
Artesia, N.M. 88211-0298
(505) 746-1919 Artesia Office
(505) 392-2893 Hobbs Office
(505) 746-1918 Fax
mci@plateautel.net

Delaware Brushy Canyon

WATER ANALYSIS REPORT

Company : Date : MARCH 17, 2008
Address : Date Sampled : MARCH 17, 2008
Lease : LOVING "AIB" Analysis No. :
Well : #15
Sample Pt. : WELLHEAD

ANALYSIS	mg/L	* meq/L
1. pH	6.0	
2. H2S	0	
3. Specific Gravity	1.070	
4. Total Dissolved Solids	304684.9	
5. Suspended Solids	NR	
6. Dissolved Oxygen	NR	
7. Dissolved CO2	NR	
8. Oil In Water	NR	
9. Phenolphthalein Alkalinity (CaCO3)		
10. Methyl Orange Alkalinity (CaCO3)		
11. Bicarbonate	HCO3 927.0	HCO3 15.2
12. Chloride	Cl 187440.0	Cl 5287.4
13. Sulfate	SO4 500.0	SO4 10.4
14. Calcium	Ca 37200.0	Ca 1856.3
15. Magnesium	Mg 996.3	Mg 82.0
16. Sodium (calculated)	Na 77586.6	Na 3374.8
17. Iron	Fe 35.0	
18. Barium	Ba NR	
19. Strontium	Sr NR	
20. Total Hardness (CaCO3)	97000.0	

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt X meq/L	= mg/L
1856 *Ca <----> *HCO3 15	Ca(HCO3)2	81.0 15.2	1231
----- /-----> -----	CaSO4	68.1 10.4	709
82 *Mg <----> *SO4 10	CaCl2	55.5 1830.7	101584
----- <-----/ -----	Mg(HCO3)2	73.2	
3375 *Na <----> *Cl 5287	MgSO4	60.2	
----- +-----+ -----+	MgCl2	47.6 82.0	3902
Saturation Values Dist. Water 20 C	NaHCO3	84.0	
CaCO3 13 mg/L	Na2SO4	71.0	
CaSO4 * 2H2O 2090 mg/L	NaCl	58.4 3374.8	197223
BaSO4 2.4 mg/L			

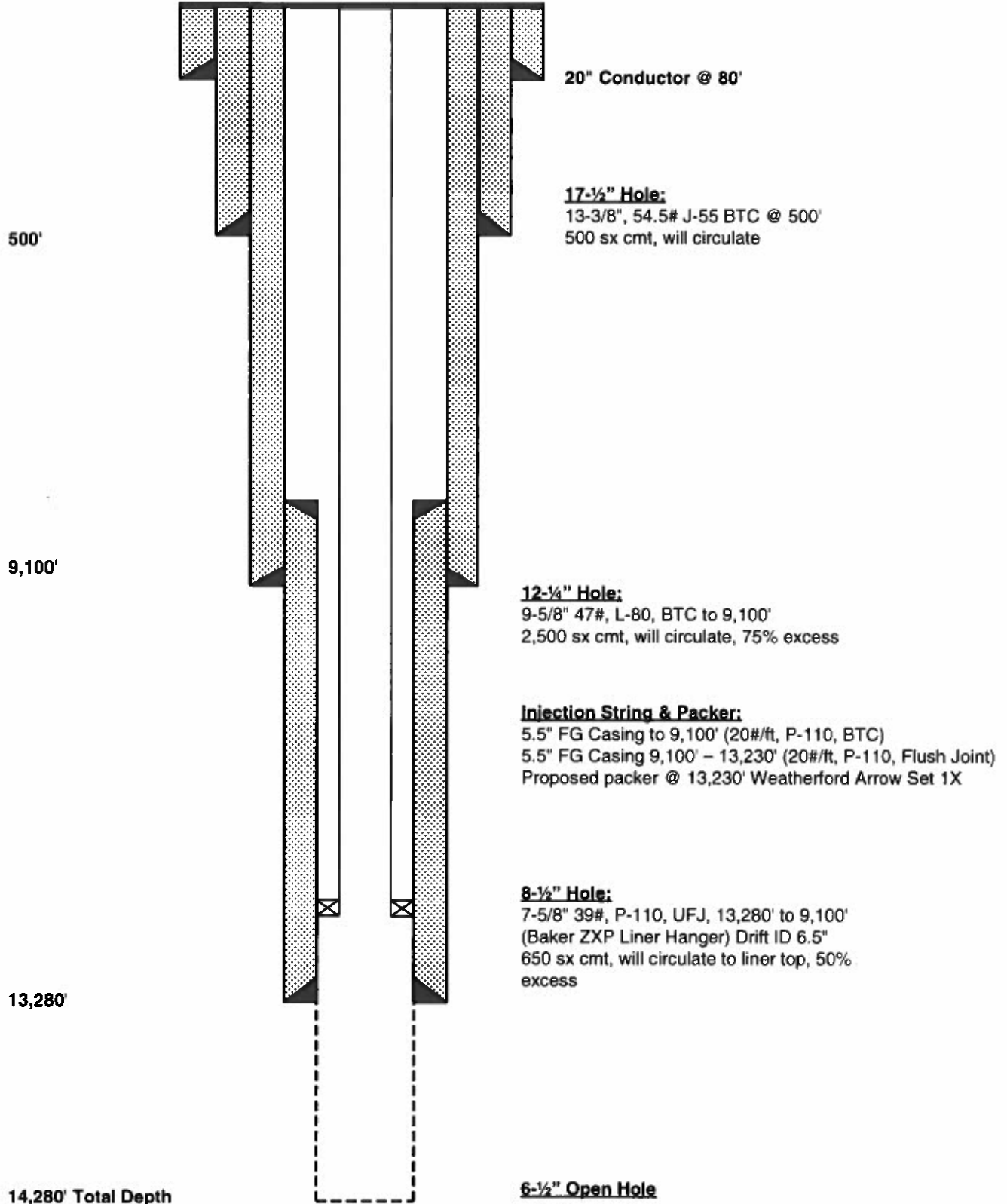
REMARKS:

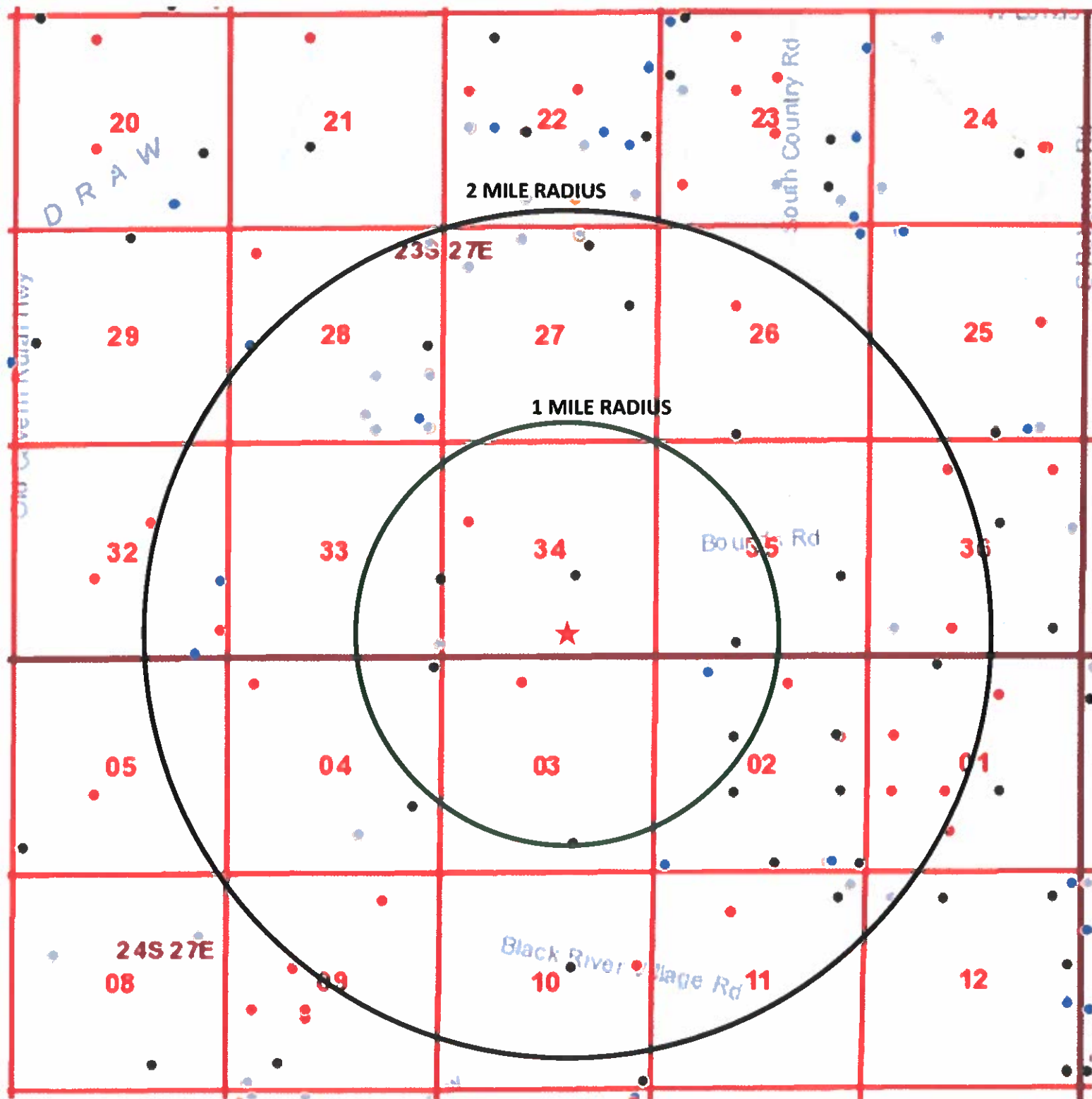
Bear Trap SWD # 1

API # PENDING
326' FSL & 2,564' FEL, Sec. 34, T23S, R27E
EDDY COUNTY, NEW MEXICO

ELEVATION:
GL: 3,172'

PROPOSED WELLBORE





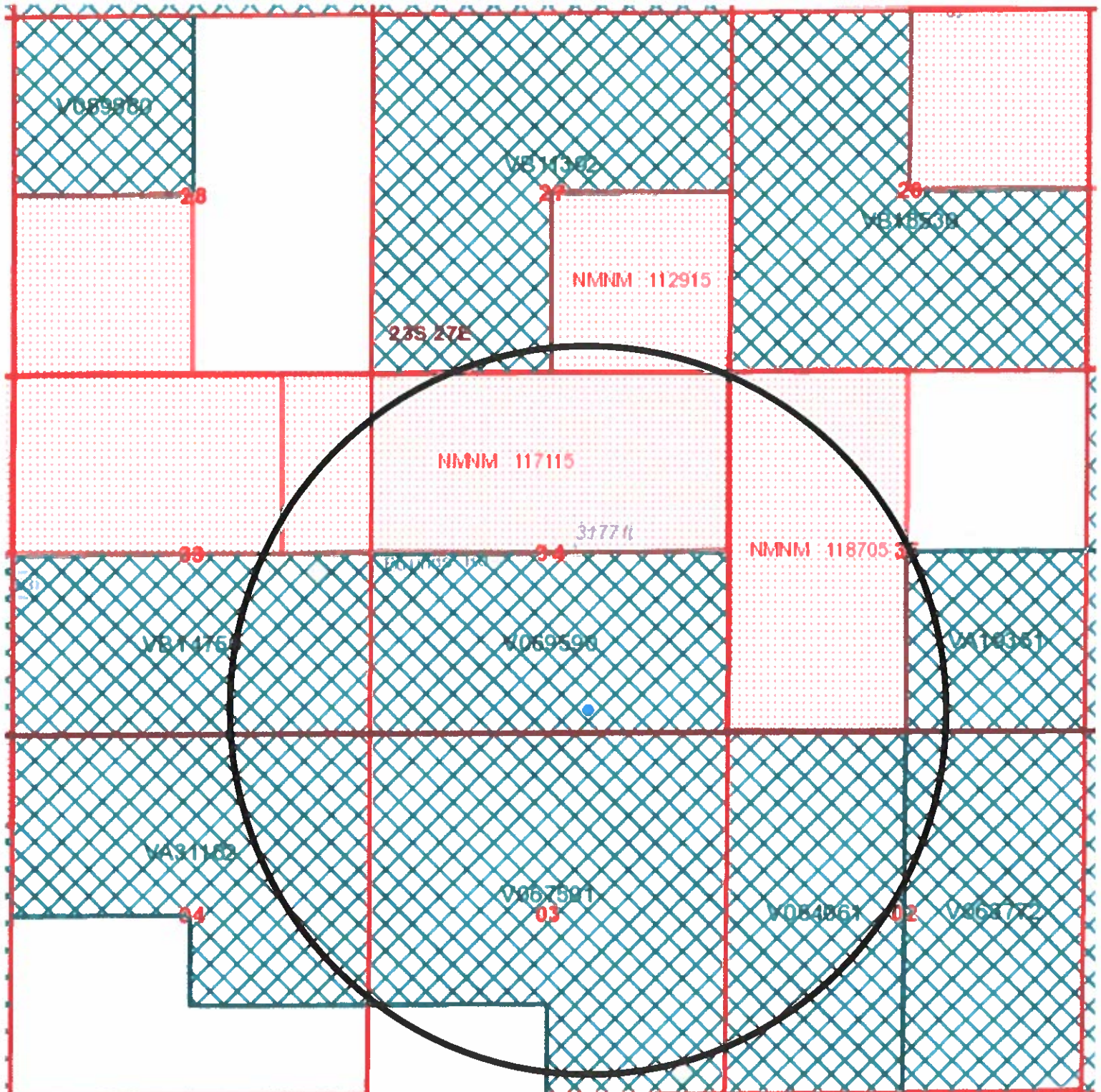
WELLS – ONE MILE RADIUS

NO WELLS PENETRATE THE DEVONIAN FORMATION IN THE AOR

SECTION 34-T23S-R27E



Bear Trap SWD #1
(Proposed Location)
Delaware Energy, LLC



LEASES – ONE MILE RADIUS

SECTION 27-T23S-R27E

- STATE & FEDERAL

SECTION 33-T23S-R27E

- STATE & FEDERAL

SECTION 34-T23S-R2E

- STATE & FEDERAL

SECTION 35-T23S-R27E

- FEDERAL & STATE

SECTION 2 & 4-T24S-R27E

- STATE

SECTION 3-T24S-R27E

- FEE & STATE

SECTION 2-T24S-R27E

- Mewbourne Oil Co.
P.O. Box 7698
Tyler, TX 75711

SECTION 3-T24S-R27E

- Concho Resources
600 W. Illinois Ave
Midland, TX 79701
- Featherstone Development Corp.
601 N. Marienfeld, Suite 202
Midland, TX 79701

SECTION 4-T24S-R27E

- Concho Resources
600 W. Illinois Ave
Midland, TX 79701

SECTION 27-T23S-R27E

- Chevron Midcontinent
6301 Deauville Blvd.
Midland, TX 79706
- Caza Petroleum
200 N. Loraine, Suite 1550
Midland, TX 79701

SECTION 33-T23S-R27E

- Chevron Midcontinent
6301 Deauville Blvd.
Midland, TX 79706
- Devon Energy
333 W. Sheridan Ave.
Oklahoma City, OK 73102
- Conoco Phillips
3300 N A St # 6-100
Midland, TX 79705

SECTION 34-T23S-R27E

- Chevron Midcontinent
6301 Deauville Blvd.
Midland, TX 79706
- Devon Energy
333 W. Sheridan Ave.
Oklahoma City, OK 73102

CARLSBAD
CURRENT-ARGUS

AFFIDAVIT OF PUBLICATION

**Ad No.
0001265809**

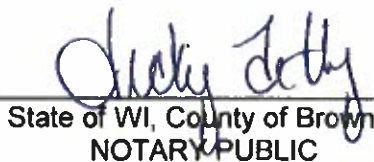
DELAWARE ENERGY, L.L.C.
405 N. MARIENFELD
SUITE 250
MIDLAND TX 79701

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:

10/20/18


Legal Clerk

Subscribed and sworn before me this
23th of October 2018.


State of WI, County of Brown
NOTARY PUBLIC


My Commission Expires

Ad#:0001265809
P O : The Bear Trap
of Affidavits :0.00

LEGAL NOTICE
Delaware Energy,
L.L.C., 405 N.
Marienfeld St. Suite
250, 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
Bear Trap SWD #1 as
a Commercial Salt
Water Disposal well.
The Bear Trap SWD
#1's **UPDATED**
LOCATION is located
at 326' FSL and 2564'
FEL, Unit Letter O,
Section 34, Township
23 South, Range 27
East, Eddy County,
New Mexico. The well
will dispose of water
produced from oil and
gas wells into the
Devonian Formation
from 13,280' to
14,280' at a maximum
rate of 25,000 barrels
of water per day at a
maximum pressure of
2,656 psi.
Interested parties
must file objections or
requests for hearing
with the Oil
Conservations
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.
October 20



Delaware Energy, L.L.C.
405 N. Marienfeld, Suite 250
Midland, TX 79701
Office: (432) 685-7005

October 17, 2018

Surface Owner / Offset Operators

Re: Notification of **UPDATED LOCATION** Application for Authorization to Inject
Bear Trap SWD #1 Well. Originally sent 5/9/18

Ladies and Gentlemen:

Delaware Energy, LLC is seeking administrative approval to utilize the proposed Bear Trap 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>	Bear Trap SWD #1
<u>Proposed Disposal Zone:</u>	Devonian Formation (from 13,280' - 14,280')
<u>Location:</u>	<u>326' FSL & 2,564' FEL, UL O, Sec. 34, T23S, R27E,</u> Eddy Co., NM
<u>Applicants Name:</u>	Delaware Energy, L.L.C.
<u>Applicants Address:</u>	405 N. Marienfeld, Suite 250, 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 Mike McCurdy 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:

COG Operating, LLC
600 W. Illinois
Midland, TX 79701

Marathon Oil Permian
5555 San Felipe Street
Houston, TX 77056-2723

Mewbourne Oil Co.
P.O. Box 7698
Tyler, TX 75711

Featherstone Development Corp.
601 N. Marienfeld, Suite 202
Midland, TX 79701

EOG Resources, Inc
5509 Champions Dr.
Midland, TX 79706

Faulconer Resources 1999 – NO LONGER AFFECTED
P.O. Box 7995
Tyler, TX 75701

Read & Stevens Inc. – NO LONGER AFFECTED
400 N. Pennsylvania Ave.
Roswell, NM 88201

Chevron Midcontinent
6301 Deauville Blvd.
Midland, TX 79706

Devon Energy
333 W. Sheridan Ave.
Oklahoma City, OK 73102

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

Caza Petroleum
200 N. Loraine, Suite 1550
Midland, TX 79701

State of New Mexico Oil Conservation Division
District II
811 S. First St.
Artesia, NM 88210

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

Bear Trap SWD #1**Location: Sec. 34, T-23S, R-27E, UL O****Estimated Pre-Drill Formation Tops**

Top of Salt	605'
Base Salt	1,905'
Delaware – Bell Canyon	2,185'
Bone Spring	5,605'
Wolfcamp	8,980'
Strawn	10,805'
Atoka	10,965'
Morrow	11,665'
Mississippian	12,830'
Woodford	13,180'
Devonian	13,280'

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Total Postage and Fees \$8.04

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Marathon Oil Permian
 Street and Apt. No., or PO Box No.
5555 San Felipe Street
 City, State, ZIP+4®
Houston, TX 77056-2723

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

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Total Postage and Fees \$8.04

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 Street and Apt. No., or PO Box No.
3300 N. A St. #40-100
 City, State, ZIP+4®
Midland, TX 79705

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.84

Total Postage and Fees \$8.04

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 Street and Apt. No., or PO Box No.
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 City, State, ZIP+4®
Midland, TX 79706

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Postage \$1.84

Total Postage and Fees \$8.04

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 Street and Apt. No., or PO Box No.
863 W. Sheridan Ave.
 City, State, ZIP+4®
Oklahoma City, OK 73102

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

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Total Postage and Fees \$8.04

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 Street and Apt. No., or PO Box No.
10 Delta Drive 181-W
 City, State, ZIP+4®
Midland, TX 79705

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OGG Operating, LLC
 Street and Apt. No., or PO Box No.
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 City, State, ZIP+4®
Midland, TX 79701

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Roswell, NM 88201

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☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00

Postage \$1.84

Total Postage and Fees \$8.04

Sent To
Caza Petroleum
Street and Apt. No., or PO Box No.
200 N. Loraine, Suite 1550
City, State, ZIP+4®
Midland, TX 79701

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☐ Adult Signature Required \$0.00
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Postage \$1.84

Total Postage and Fees \$8.04

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Mewbourne Oil Co.
Street and Apt. No., or PO Box No.
P.O. Box 7698
City, State, ZIP+4®
Tyler, TX 75711

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☐ Certified Mail Restricted Delivery \$0.00
☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00

Postage \$1.84

Total Postage and Fees \$8.04

Sent To
Faulkner Resources 1999
Street and Apt. No., or PO Box No.
P.O. Box 7995
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Tyler, TX 75701

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City, State, ZIP+4®
Santa Fe, NM 87501

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☐ Adult Signature Restricted Delivery \$0.00

Postage \$1.84

Total Postage and Fees \$8.04

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Oil Conservation Division District II
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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$1.84
Total Postage and Fees	\$8.04
Chevron Midcontinent	
6301 Deauville Blvd.	
Midland, TX 79706	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

Bear Trap Swp #1
OCT 18 2018
Postmark Here

10/18/2018

Statement Regarding Seismicity and Well Location (Bear Trap SWD #1)

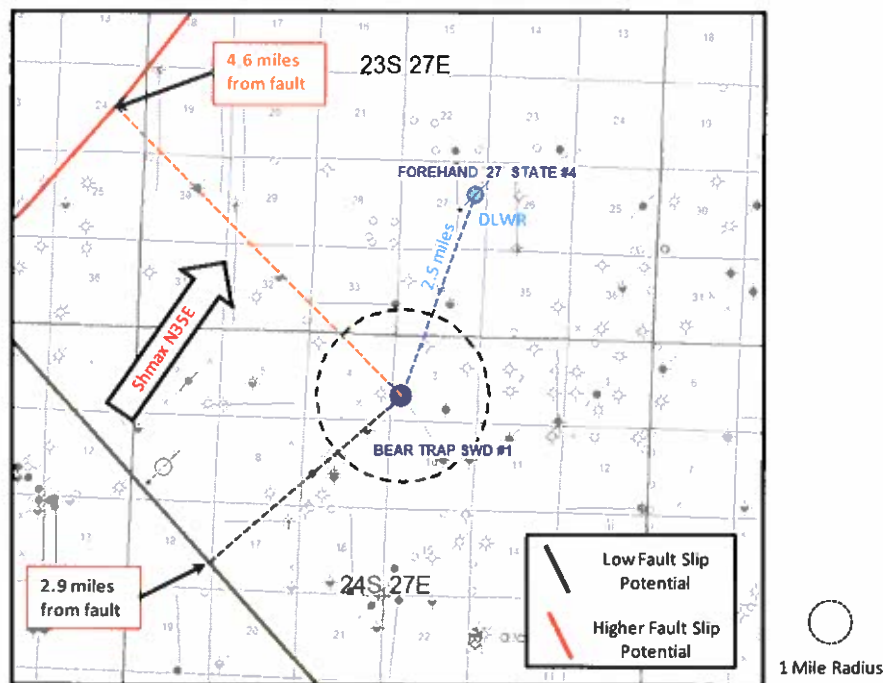
Historically, the area near the proposed Bear Trap SWD #1 has seen some nearby seismic activity. There have been two seismic events (as per public data available on the USGS database) in the area. All events are over 4.0 miles from the proposed SWD location. The most recent event is 17.2 miles east, measuring 3.1, and the closest is 4.2 miles to the NNE which measured 3.9 on November 24, 1978

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 faults would be approximately 4.6 miles northwest of the location and 2.9 miles southwest 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 NW-SE trending fault NE of the location (green) should have a very low probability of being critically stressed resulting in an induced seismicity event. The SW-NE trending fault NW and closest to the location (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 Shmax orientation (approx. N 35 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 this fault should be reduced due to the distance of the proposed SWD well from the fault (4.6 miles).

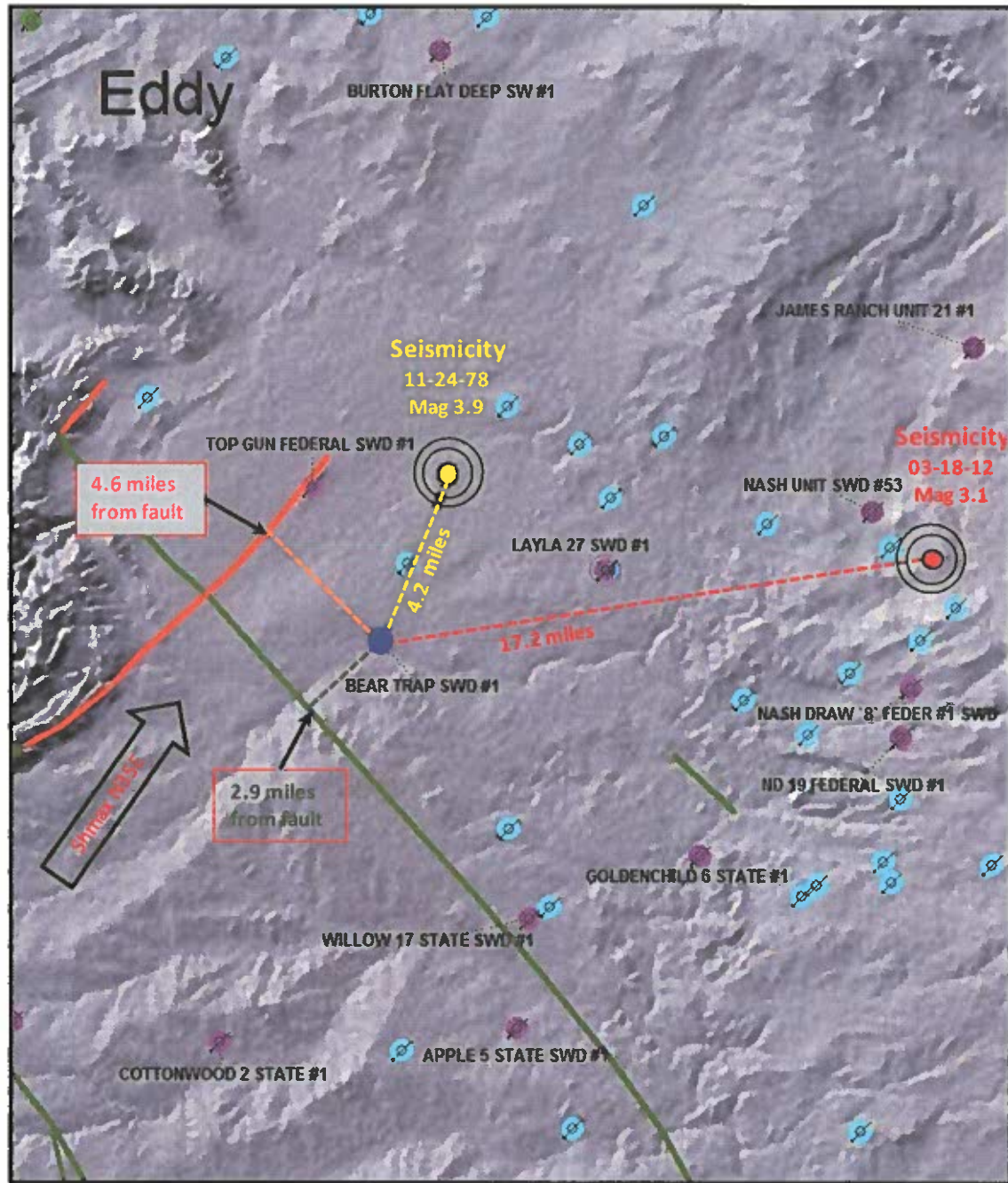
The proposed Bear Trap SWD #1 location is located 2.5 miles away from the nearest active injector which is in the Delaware (see map below). The well should meet current OCD and Industry recommended practices.

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

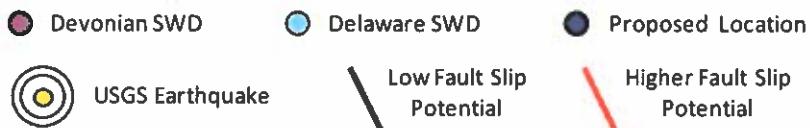
Well Activity, Faulting, and Closest SWD



Proximity to Historic Earthquake Activity and Faults



Modeled After Snee and Zoback (February 2018)



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.