

DATE IN 7/18/2018	SUSPENSE	ENGINEER	LOGGED IN Y22/2018	TYPE SWD	APP NO PMAM1802253348
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- 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

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

- [A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

- [B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

- [D] Other: Specify _____

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

- [A] ☐ Working, Royalty or Overriding Royalty Interest Owners
 [B] ☒ Offset Operators, Leaseholders or Surface Owner
 [C] ☒ Application is One Which Requires Published Legal Notice
 [D] ☒ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
 [E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,
 [F] ☒ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **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

Print or Type Name

Signature

Vice President

Title

01/12/2018

Date

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: _____ 01/12/2018 _____
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: _____

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

Side 2

III. WELL DATA

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

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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, LLCWELL NAME & NUMBER: Johelen SWD No 1WELL LOCATION: 975' FSL, 2,373'FWL N 12 26S 26E
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGEWELLBORE SCHEMATIC see attached wellbore sketchWELL CONSTRUCTION DATASurface CasingHole Size: 17.5" Casing Size: 13-3/8"Cemented with: 550 sx. or ft³Top of Cement: surface Method Determined: Plan to CirculateIntermediate CasingHole Size: 12.25" Casing Size: 9-5/8"Cemented with: 2,500 sx. or ft³Top of Cement: surface Method Determined: Plan to CirculateProduction CasingHole Size: 8-1/2" Casing Size: 7-5/8"Cemented with: 650 sx. or ft³Top of Cement: Surface Method Determined: Plan to Circulate
to liner topTotal Depth: 12,900'Injection Interval12,900' feet to 13,900'
(OPEN HOLE)

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

Additional Data

1. Is this a new well drilled for injection? _____ XXXXXX 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: Morrow 11,320'-12,000', Atoka 10,660'-11,320', Strawn 10,430'-10,660', Wolfcamp 8,620'-10,430', Bone Springs 5,130'-8,620'.

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 1,500-1,800 PSI, Max 2,580 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 interval tested Sulphur water by Mewbourne in nearby Top Gunn #1 SWD.

***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 formations 12,900'-13,900'. Devonian is an impermeable organic Shale at the very top (12,800ft, 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 300', the water source is older alluvium (Quaternary). All of the fresh water wells in the area have an average depth to water of 30ft – 150ft. The Devonian was tested in the offset Top Gunn and produced Sulphur water.

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 12 of T26S R26E.

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 Johelen 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 01/12/2018

Title _____ Date _____

III. WELL DATA

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

Johelen SWD #1, Sec. 12-T26S-R26E, 975' FSL & 2,373' FWL, UL N, 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'	550	17-1/2"	Surface	CIRC
9-5/8"	9000'	2500	12-1/2"	Surface	CIRC
7-5/8"	8,800'-12,900'	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" X 5" OD, Internally Plastic 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.

12,900' to 13,900' (OH)

(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

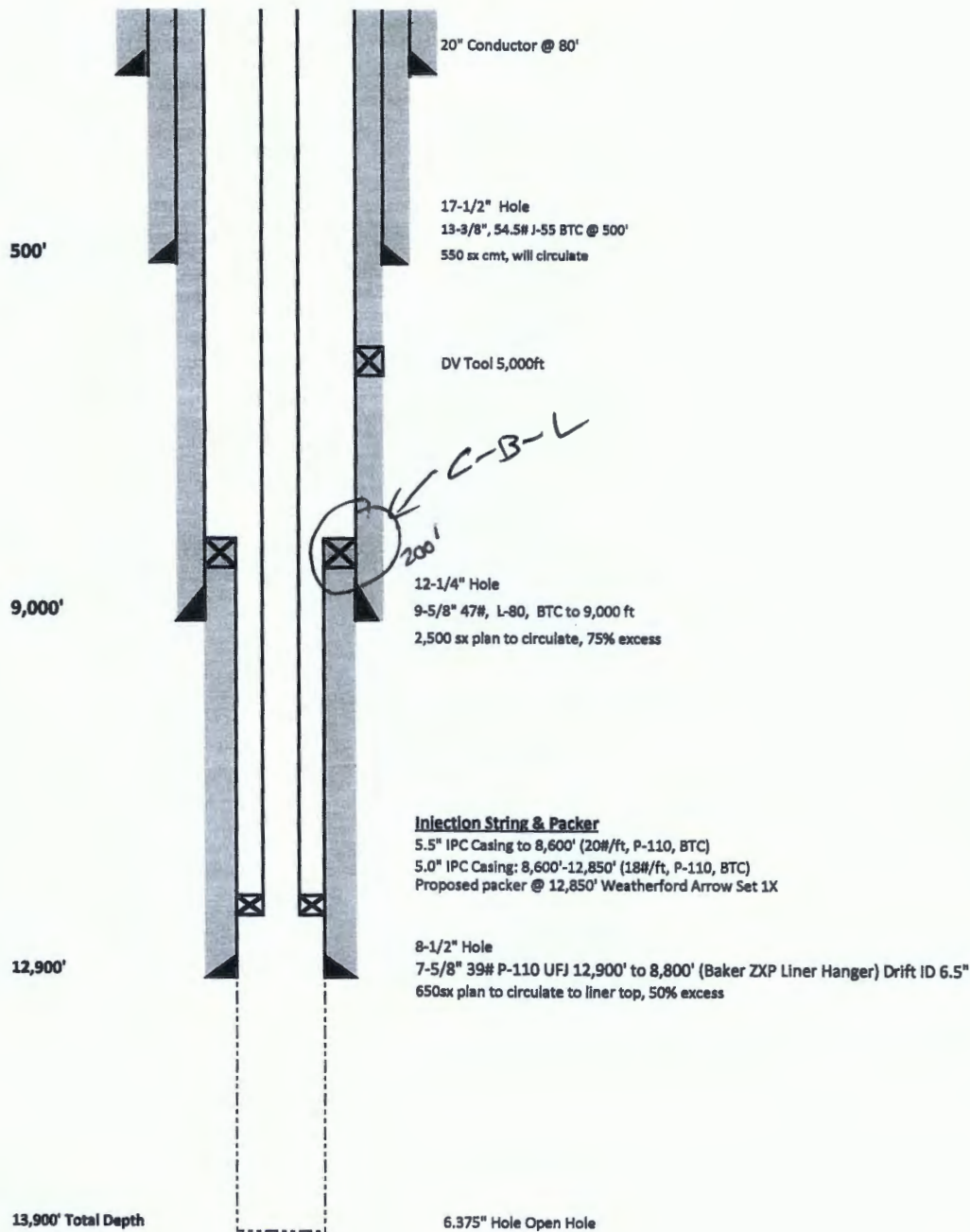
(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

Next Higher: Morrow 11,320'-12,000', Atoka 10,660'-11,320', Strawn 10,430'-10,660', Wolfcamp 8,620'-10,430', Bone Springs 5,130'-8,620'.

Next Lower: None

Delaware Energy LLC
 Johelen SWD No 1
 975' FSL & 2,373' FWL, UL N, SEC. 12, T-26S R-26E, Eddy County, NM
 API # 30-015-

GL 3245
 KB
 KB+GL 3245



DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
511 S. First St., Artesia, NM 88210
Phone (505) 748-1223 Fax: (505) 748-0720

DISTRICT III
1000 Rio Brasos Rd., Aztec, NM 87410
Phone (505) 834-5176 Fax: (505) 834-5170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-2466 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name JOHELEN SWD	Well Number 1
OGRID No.	Operator Name DELAWARE ENERGY	Elevation 3245'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	12	26 S	26 E		975	SOUTH	2373	WEST	EDDY

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

N.: 387166.1 E.: 585449.3 (NAD83)	N.: 387182.3 E.: 588143.1 (NAD83)	N.: 387217.9 E.: 570837.1 (NAD83)
N.: 384501.7 E.: 585507.6 (NAD83)		N.: 384564.0 E.: 570850.7 (NAD83)
<p>SURFACE LOCATION Lat - N 32.052481° Long - W 104.247541° NADSPCE- N 382841.0 E 587916.9 (NAD-83)</p>		
N.: 381846.3 E.: 585506.4 (NAD83)	N.: 381868.2 E.: 588215.7 (NAD83)	N.: 381889.0 E.: 570864.2 (NAD83)

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

Signature: Date: 1/12/2018
Printed Name: Mike McCurdy
Email Address: m.mccurdy@delawareenergy.com

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.

DECEMBER 120 2017
Date Surveyed:
Signature:
Professional Surveyor 7977
Certificate:
BASIN NUMBER: 7977

0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'
WO Num.: 33462

Sec 22, T25S, R28E

North Permian Basin Region

P.O. Box 740

Sundown, TX 79372-0740

(806) 229-8121

Lab Team Leader - Sheila 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	16.04
		Carbonate:	0.0	0.	Calcium:	844.0	42.12
TDS (mg/l or g/m3):	184911.1	Sulfate:	747.0	15.55	Strontium:	220.0	5.02
Density (g/cm3, tonne/m3):	1.113	Phosphate:			Barium:	0.8	0.01
Anion/Cation Ratio:	1	Borate:			Iron:	6.5	0.23
		Silicate:			Potassium:	889.0	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	206.05	-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.

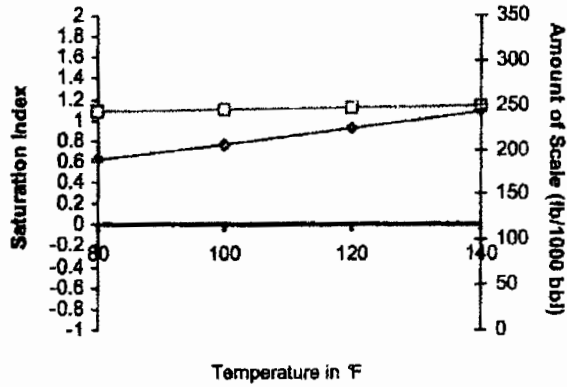
Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

Scale Predictions from Baker Petrolite

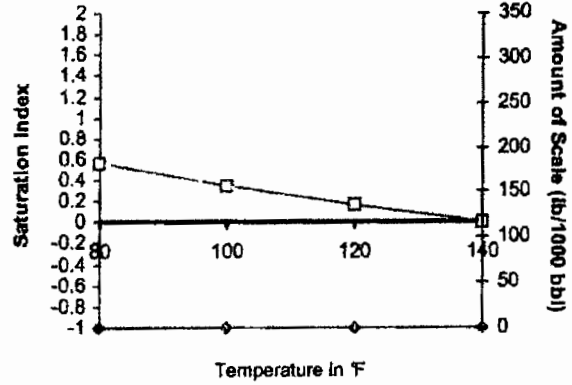
Analysis of Sample 534865 @ 75 °F for

03/18/11

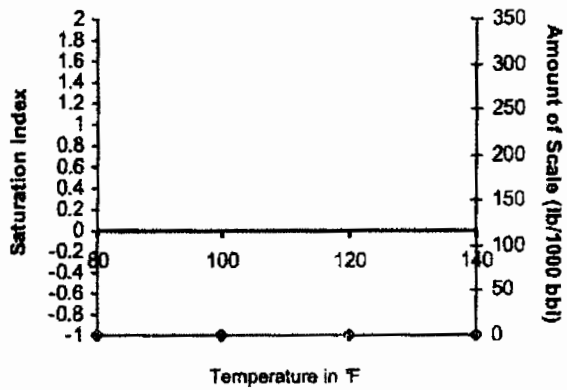
Calcite - CaCO_3



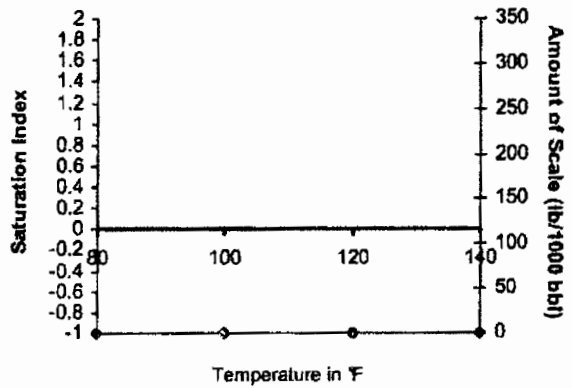
Barite - BaSO_4



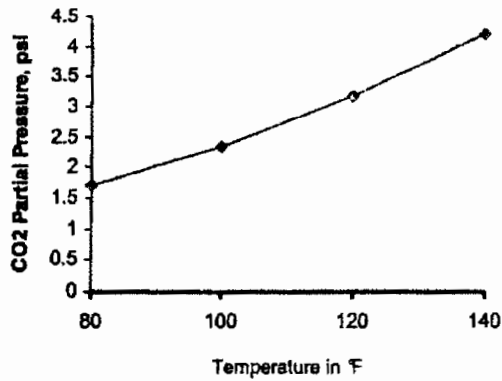
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



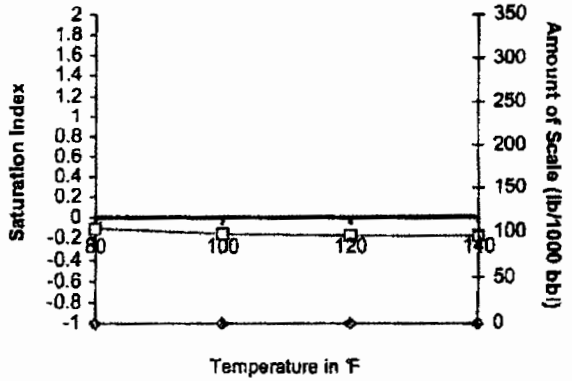
Anhydrite - CaSO_4



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	156,031

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 :
Address :
Lease : LOVING "AIB"
Well : #15
Sample Pt. : WELLHEAD

Date : MARCH 17, 2008
Date Sampled : MARCH 17, 2008
Analysis No. :

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	69.1	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:



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

202251

SAMPLE ANALYSIS FORM

Company	Delaware Energy	Date	01/08/2018
State	County Eddy	Date in Lab	01/08/2018
Lease	Carleton Farms	Well Type	Well
Sample Date	01/08/2018	Sample Pt	Sec 12 T26S R26E
		Sales Rep	Derrick Boutwell

Number of Yrs Old	Top Perf
-------------------	----------

Production

Fluids:	Oil(bpd)	Gravity API	Color of Oil
	Water(bpd)	Estimated Chlorides	Water Produced
	Gas(mcf)	Working Pressure(psi)	Shut in Pressure(psi)

Well Class and Type Lift:	Iron Count(mg/l)
---------------------------	------------------

Equipment:	Temperature(F)
------------	----------------

Chemicals in Use

Product	Amount	Unit	Treatment
---------	--------	------	-----------

Problem:

Location:

Water Quality	
---------------	--

Recommendations: No

Details:

Fresh water out of cow tank. W/A. Sampling Point: Cow Tank



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

Water Analysis

Code 202251	
Client Information	Sample Information
Delaware Energy County: Eddy Rep: Derrick Boutwell	Lease/Well: Carleton Farms/ Sample Point: Date Sampled: 01/08/2018 Date Reported: 01/09/2018

Results

Cations

Ion	Concentration(mg/L)
Barium (as Ba)	0
Calcium (as Ca)	715
Iron (as Fe)	6
Sodium (as Na)	0
Magnesium (as Mg)	436

Other Measurements

Measurement	Value
pH	7.08
SG	1.005
Turbidity	17
CO ₂	
Total Dissolved Solids	4053.000

Anions

Ion	Concentration(mg/L)
Chlorides (as Cl)	76
Sulfate (as SO ₄)	2600
Carbonate (as CO ₃)	0
Bicarbonates (as HCO ₃)	220
Sulfide (as S ²⁻)	0

Scaling Indices

Temp(F)	CaCO ₃	CaSO ₄ *2H ₂ O	CaSO ₄	BaSO ₄
80	0.4735	-0.0173	-0.0176	-28.2808
120	0.8542	-0.0140	-0.0142	-28.4997
160	1.3203	-0.0126	-0.0129	-28.6436
200	1.7455	-0.0105	-0.0107	-28.7168
250	2.1260	-0.0073	-0.0074	-28.6768

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

Comments

Fresh Water



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	Sub-basin	County	Q	Q	Q	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
C_02438			ED	4	2	3	12	26S	26E	571015	3546705*		30	

Average Depth to Water: —

Minimum Depth: —

Maximum Depth: —

Record Count: 1

PLSS Search:

Section(s): 12

Township: 26S

Range: 26E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/5/18 4:31 PM

WATER COLUMN/ AVERAGE DEPTH TO
WATER



New Mexico Office of the State Engineer

Point of Diversion Summary

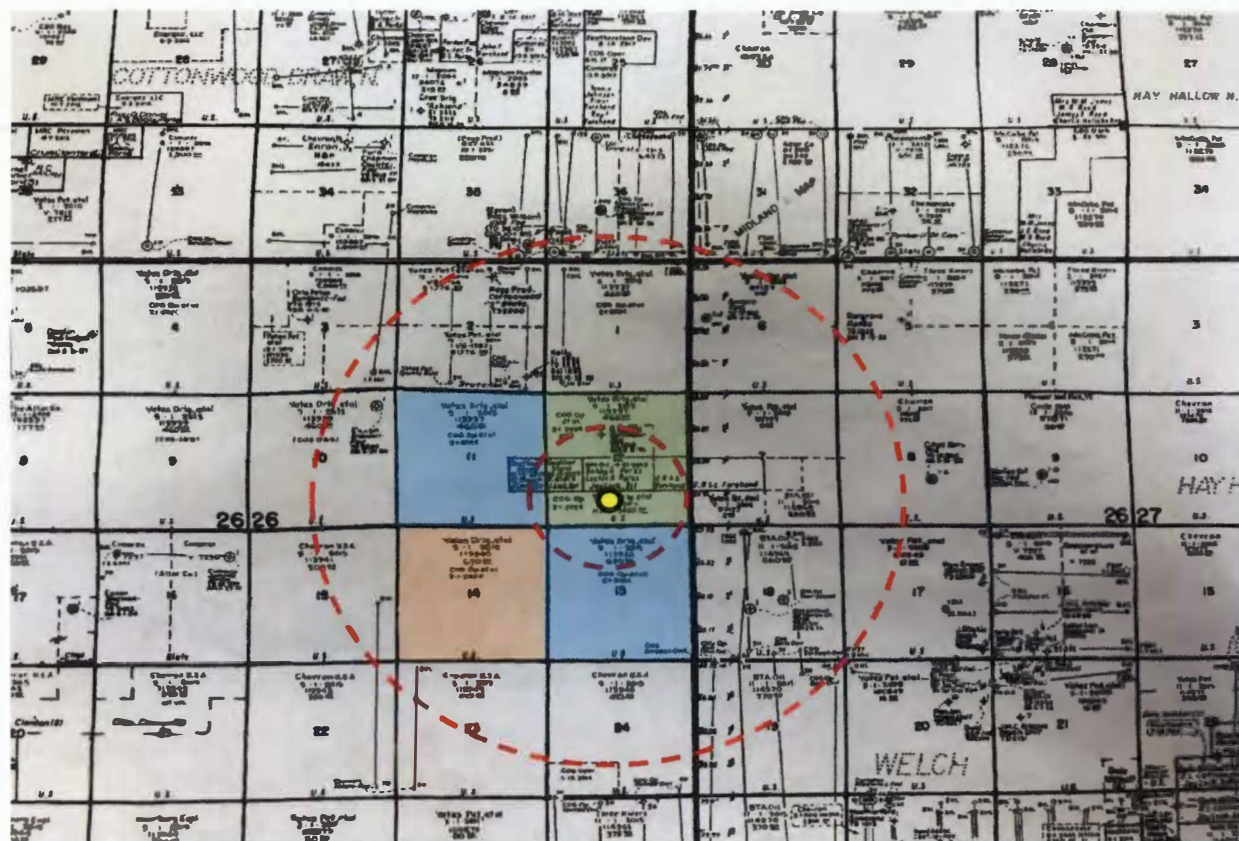
		(quarters are 1=NW 2=NE 3=SW 4=SE)						(NAD83 UTM in meters)	
		(quarters are smallest to largest)						X	Y
Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng		
	C 02438	4	2	3	12	26S	26E	571015	3546705*
<hr/>									
Driller License:		Driller Company:							
Driller Name:									
Drill Start Date:		Drill Finish Date:		12/31/1945		Plug Date:			
Log File Date:		PCW Rcv Date:				Source:			
Pump Type:		Pipe Discharge Size:				Estimated Yield:			
Casing Size: 3.00		Depth Well:		30 feet		Depth Water:			

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/5/18 4:31 PM

POINT OF DIVERSION SUMMARY



- COG Production, LLC
- EOG Resources
- COG Production, LLC and EOG Resources Jointly Owned Leasholders

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

January 8, 2018

Surface Owner / Offset Operators

Re: Notification of Application for Authorization to Inject
Johelen SWD #1 Well

Ladies and Gentlemen:

Delaware Energy, LLC is seeking administrative approval to utilize the proposed Johelen SWD #1 as a 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>	Johelen SWD #1
<u>Proposed Disposal Zone:</u>	Devonian Formations (from 12,900' - 13,900')
<u>Location:</u>	975' FSL & 2,373' FWL, Sec. 12, UL N, T26S, R26E, 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 432-312-5251.

Sincerely,



Mike McCurdy

DISTRIBUTION LIST

Joseph Owen and Doris Bruton Carleton
P.O. Box 14,
Malaga, NM 88263

COG Production, LLC
600 W. Illinois Ave
Midland, TX, 79701

EOG Resources
5509 Champions Drive
Midland, TX 79706

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

State Land Office of New Mexico

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 Johelen SWD #1 as a Salt Water Disposal well.

The Johelen SWD #1 is located at 975' FSL and 2,373' FWL, Unit Letter N, Section 12, Township 26 South, Range 26 East, Eddy County, New Mexico. The well will dispose of water produced from oil and gas wells into the Devonian Formation from 12,900' to 13,900' at a maximum rate of 30,000 barrels of water per day at a maximum pressure of 2,580 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.

Johelen SWD No 1

API#: 30-015-

Location: Sec. 12, T-26S, R-26E, UL N

Estimated Pre-Drill Formation Tops

Lamar	2,000'
Delaware Sand	2,100'
Bone Springs	5,130'
Wolfcamp	8,620'
Strawn	10,430'
Atoka	10,660'
Morrow	11,320'
Barnett/Upper Miss	12,000'
Mississippian Lime	12,300'
Woodford Shale	12,800'
Devonian	12,900'

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☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00
Postage \$2.03
Total Postage and Fees \$8.13

Sent To
Joseph + Doris Carleton
Street and Apt. No., or PO Box No.
P.O. Box 14
City, State, ZIP+4®
Malaga, NM 88263
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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☐ Return Receipt (electronic) \$0.00
☐ Certified Mail Restricted Delivery \$0.00
☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00
Postage \$1.82
Total Postage and Fees \$7.92

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600 W. Illinois Ave.
City, State, ZIP+4®
Midland, TX 79701
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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☐ Certified Mail Restricted Delivery \$0.00
☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00
Postage \$1.82
Total Postage and Fees \$4.92

Sent To
EOG Resources
Street and Apt. No., or PO Box No.
5509 Champions Drive
City, State, ZIP+4®
Midland, TX 79706
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

RECEIVED OGD
JAN 31 2018 P 3:20
NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

MEMORANDUM OF SALT WATER DISPOSAL AGREEMENT

THE STATE OF NEW MEXICO §
 § KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF EDDY §

This Memorandum of Salt Water Disposal Agreement is made and entered into this 2 day of January, 2018, between Joseph Owen Jr. and Doris Bruton Carleton, whose address is ("Lessor"), and **DELAWARE ENERGY, LLC**, whose address is 405 North Marienfeld, Suite 250, Midland, Texas 79701 ("Lessee"):

WITNESSETH:

Lessor and Lessee have this day entered into an exclusive Salt Water Disposal Agreement, dated effective as of the date first-written above, covering the following described lands in **Eddy** County, New Mexico, to-wit:

Section 12 of Township 26 South, Range 26 East

Said Salt Water Disposal Agreement, subject to certain termination provisions, contains a primary term of five (5) years and shall remain in force as long thereafter, subject to the further conditions and limitations stated in the terms and provisions of said Salt Water Disposal Agreement.

Lessor and Lessee are executing this Memorandum of Salt Water Disposal Agreement for the purpose of placing the same of record in Eddy County, New Mexico, and in order to constitute constructive notice of said Salt Water Disposal Agreement in lieu of recording of said Salt Water Disposal Agreement in its entirety. A full and complete copy of said Salt Water Disposal Agreement will be maintained in the office of both Lessor and Lessee at the address shown above.

IN WITNESS WHEREOF, this Memorandum of Salt Water Disposal Agreement is executed as of the day, month and year first hereinabove written.

LESSOR:

Joseph Owen Carleton Jr.
Joseph Owen Carleton Jr.



Doris Bruton Carleton

ACKNOWLEDGMENTS

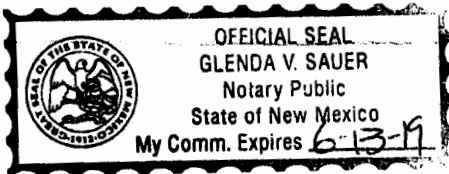
STATE OF NEW MEXICO

COUNTY OF

Eddy

§
§
§

This instrument was acknowledged before me on the 2 of January, 2018 by Joseph Owen Carleton Jr., in the capacity herein stated.



Notary Public, State of New Mexico
GLENDA V. SAUER

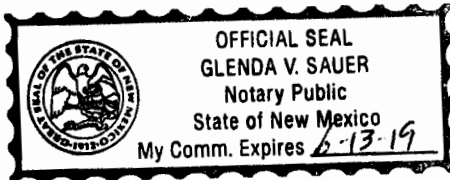
STATE OF NEW MEXICO

COUNTY OF

Eddy

§
§
§

This instrument was acknowledged before me on the 2 of January, 2018 by Doris Bruton Carleton, in the capacity herein stated.



Notary Public, State of New Mexico
GLENDA V. SAUER

AFTER RECORDING, RETURN TO:

DELAWARE ENERGY
405 N. Marienfeld, Suite 250
Midland, TX 79701

Affidavit of Publication

State of New Mexico,
County of Eddy, ss.

Danny Fletcher, being first duly
sworn, on oath says:

That he is the Publisher 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:

January 3 2018

That the cost of publication is **\$62.87**
and that payment thereof has been
made and will be assessed as court
costs.

January 3, 2018

Delaware Energy, L.L.C.,
405 N. Marlenfeld St.
Suite 250, Midland, TX
79701, has filed a
form C-108 (Applica-
tion for Authorization
to Inject) with the Oil
Conservation Division
seeking administrative
approval to drill the
Johelen SWD #1 as a
Salt Water Disposal well.

The Johelen SWD #1 is
located at 975' FSL
and 2,373' FWL,
Unit Letter N, Section 12,
Township 26 South,
Range 26 East,
Eddy County, New
Mexico. The well will
dispose of water pro-
duced from oil and
gas wells into the
Devonian Formation
from 12,900' to
13,900' at a maximum
rate of 30,000 barrels
of water per day at a
maximum pressure of
2,580 psi.

Interested parties must
file objections or re-
quests for hearing
with the Oil
Conservations Division,
1220 South St. Francis
Dr., Santa Fe, New Mexico
87505, within 15 days.

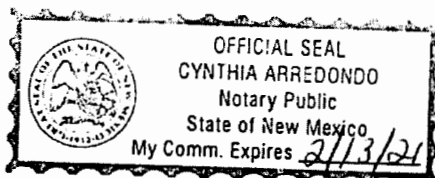
Additional information
can be obtained by
contacting Delaware En-
ergy, L.L.C., at (432)
685-7005.

Subscribed and sworn to before me
this 3 day of January, 2018

Cynthia Arredondo

My commission Expires 2/13/21

Notary Public



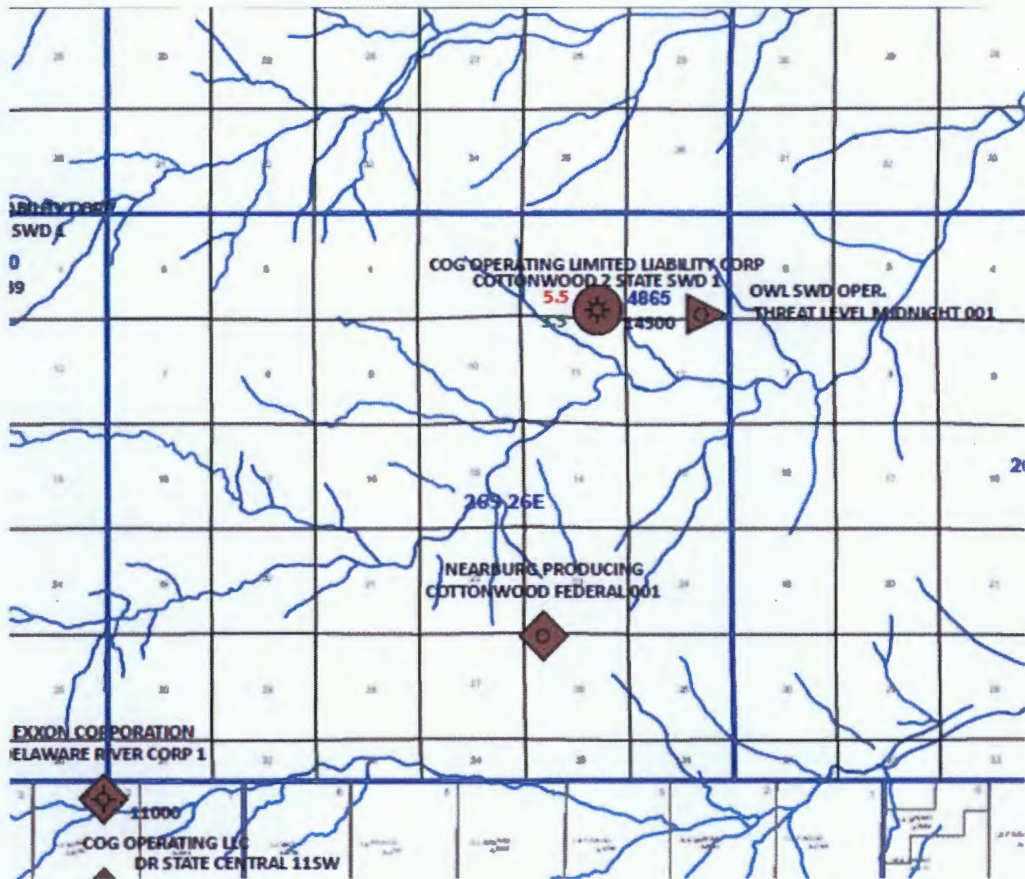
Delaware Energy, LLC
Application for Injection/SWD
Johelen SWD #1

UL N, Sec. 12, T-26-S, R-26-E, 975' FSL & 2373' FWL, Eddy Co., NM

January 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 Springs Formation Water Sample
6. Chemical Analysis of Wolfcamp Formation Water Sample
7. Chemical Analysis of Delaware Formation Water Sample
8. Wellbore diagram of Johelen SWD #1 As Proposed
9. ~~Tabular Data on All Wells of Public Record within the Area of Review which Penetrate the Proposed Injection Zone~~ (No applicable wells)
10. Water Well Samples and Water Column Information
11. Map Identifying 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
12. 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-half Mile of the Well Location
13. Legal Notice that will be run as required in the Carlsbad Current-Argus
14. Formation Tops



Additional Questions on C-108(Johelen#1)

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 1,500-1,800 PSI, Max 2,580 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 interval tested Sulphur water by Mewbourne in nearby Top Gunn #1 SWD.

***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 formations 12,900'-13,900'. Devonian is an impermeable organic Shale at the very top (12,800ft, 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 300', the water source is older alluvium (Quaternary). All of the fresh water wells in the area have an average depth to water of 30ft – 150ft. The Devonian was tested in the offset Top Gunn and produced Sulphur water.

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 12 of T26S R26E.

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 Johelen 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

01/12/2018

Title

Date

III. WELL DATA

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

Johelen SWD #1, Sec. 12-T26S-R26E, 975' FSL & 2,373' FWL, UL N, 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'	550	17-1/2"	Surface	CIRC
9-5/8"	9000'	2500	12-1/2"	Surface	CIRC
7-5/8"	8,800'-12,900'	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" X 5" OD, Internally Plastic 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.

12,900' to 13,900' (OH)

(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: Morrow 11,320'-12,000', Atoka 10,660'-11,320', Strawn 10,430'-10,660', Wolfcamp 8,620'-10,430', Bone Springs 5,130'-8,620'.

Next Lower: None

Goetze, Phillip, EMNRD

From: Mike McCurdy <m.mccurdy@delawareenergy.com>
Sent: Thursday, March 8, 2018 1:37 PM
To: McMillan, Michael, EMNRD; Goetze, Phillip, EMNRD
Cc: Sarah Presley; Jason Goss; Scott Grifo
Subject: Johelen SWD (Pending Approval)
Attachments: JoHelen.1 mile AoR (003).XLSX

Importance: High

Gentlemen,

I understand that the New Mexico OCD may be increasing the "Area of Review" to a one mile radius. I assume this is to provide additional parties notice and allow them to protest.

We are currently under contract with an expensive drilling rig, and we are obligated to keep it drilling for one more well. As you can see from the attached maps, we have extended the "Area of Review" to cover a one mile radius. No additional parties will be effected, nor will any additional parties need to be notified.

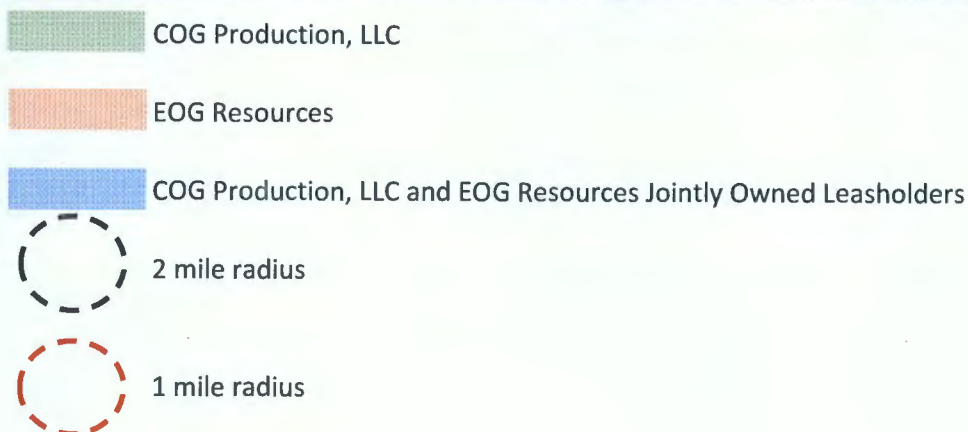
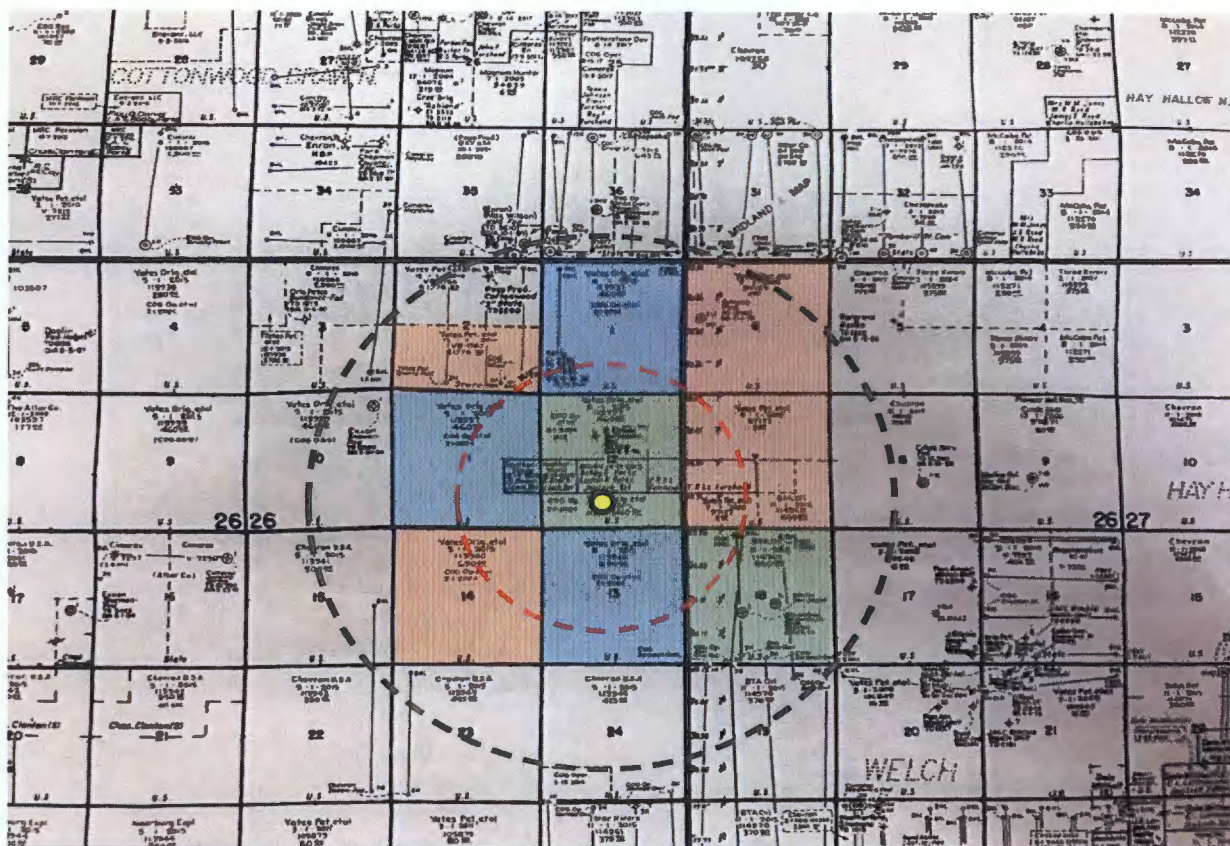
In addition, the Johelen is also designed very similar to the Calderon Farms SWD, which only disposes 13,000 barrels per day.

Please let us know if you are able to approve the Johelen this week (Protest ended: 28th of January 2018, Pending OCD approval since January 12th). We believe that under the current rules we have satisfied all requirements necessary for an approval.

Best Regards,

Mike McCurdy | VP Operations
[Delaware Energy](#)
405 N Marienfeld, Suite 250
Midland, Texas 79701
O: 432-685-7005
C: 432-312-5251

Sent from [Mail](#) for Windows 10



Goetze, Phillip, EMNRD

From: Mike McCurdy <m.mccurdy@delawareenergy.com>
Sent: Monday, March 12, 2018 12:19 PM
To: Goetze, Phillip, EMNRD; McMillan, Michael, EMNRD
Cc: Jason Goss; Scott Grifo; Sarah Presley
Subject: Johelen Statements Regarding Seismicity
Attachments: Johelen SWD #1.docx

Importance: High

Phillip/Michael,

We have consulted with Kevin Schepel who is our Petrophysical Advisor. Attached is Kevin Schepel's statements/findings regarding seismicity for the Johelen SWD #1. Please let us know if we have the commission's approval for the Johelen SWD #1.

Mr. Schepel is widely regarded as one of the industry's leading experts in advanced geoscience, engineering and formation evaluation methodologies for oil and gas exploration, field development and improved reservoir management. Prior to joining Talon III, Mr. Schepel served as Chief Geoscience and Technology Officer for ZaZa Energy Corporation. He began his career in 1980 with Exxon Company U.S.A. in Midland, Texas, and later with Exxon Production Research Company in Houston, where he served as a Lead Technical Advisor focused on domestic and international research applications. After leaving Exxon, Mr. Schepel served as Vice President of Worldwide Exploitation for Pioneer Natural Resources from 1998-2008, where he lead a multidisciplinary reservoir characterization team that provided advanced technical support for evaluating, developing and managing Pioneer's petroleum assets in South Texas, East Texas and the Permian Basin.

Mr. Schepel has been involved in numerous industry forums and is an active member of the American Association of Petroleum Geologists and the Society of Petroleum Engineers, presenting and chairing several forums and annual meetings for each organization. He has served on the Board of Directors for the Louisiana Independent Oil & Gas Association and the Advisory Council for the Energy Forum Unconventional Resource Series. Mr. Schepel received a Bachelor of Science degree in geology from Michigan State University and is licensed by the Texas Board of Professional Geoscientists.

The paragraph above is copied from his bio of his last job. As you can see Mr. Schepel has decades of experience and is very highly regarded his field.

Best Regards,

Mike McCurdy | VP Operations
[Delaware Energy](#)
405 N Marienfeld, Suite 250
Midland, Texas 79701
O: 432-685-7005
C: 432-312-5251

Statements Regarding Seismicity and Well Location (Johelen SWD #1)

Historically, the area near the proposed Johelen SWD has not seen any seismic activity. There have been two seismic events (as per public data available on the USGS database) in the area. Both events are over 15 miles from the proposed SWD location.

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 dated January 1, 2005. Based on these sources the closest fault would be approximately 11.3 miles northwest 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 Precambrian fault activity in this region of NM should have a low probability of being critically stressed resulting in an induced seismicity event, due to the relationship of the strike of the faults and the regional Shmax orientation in the area.

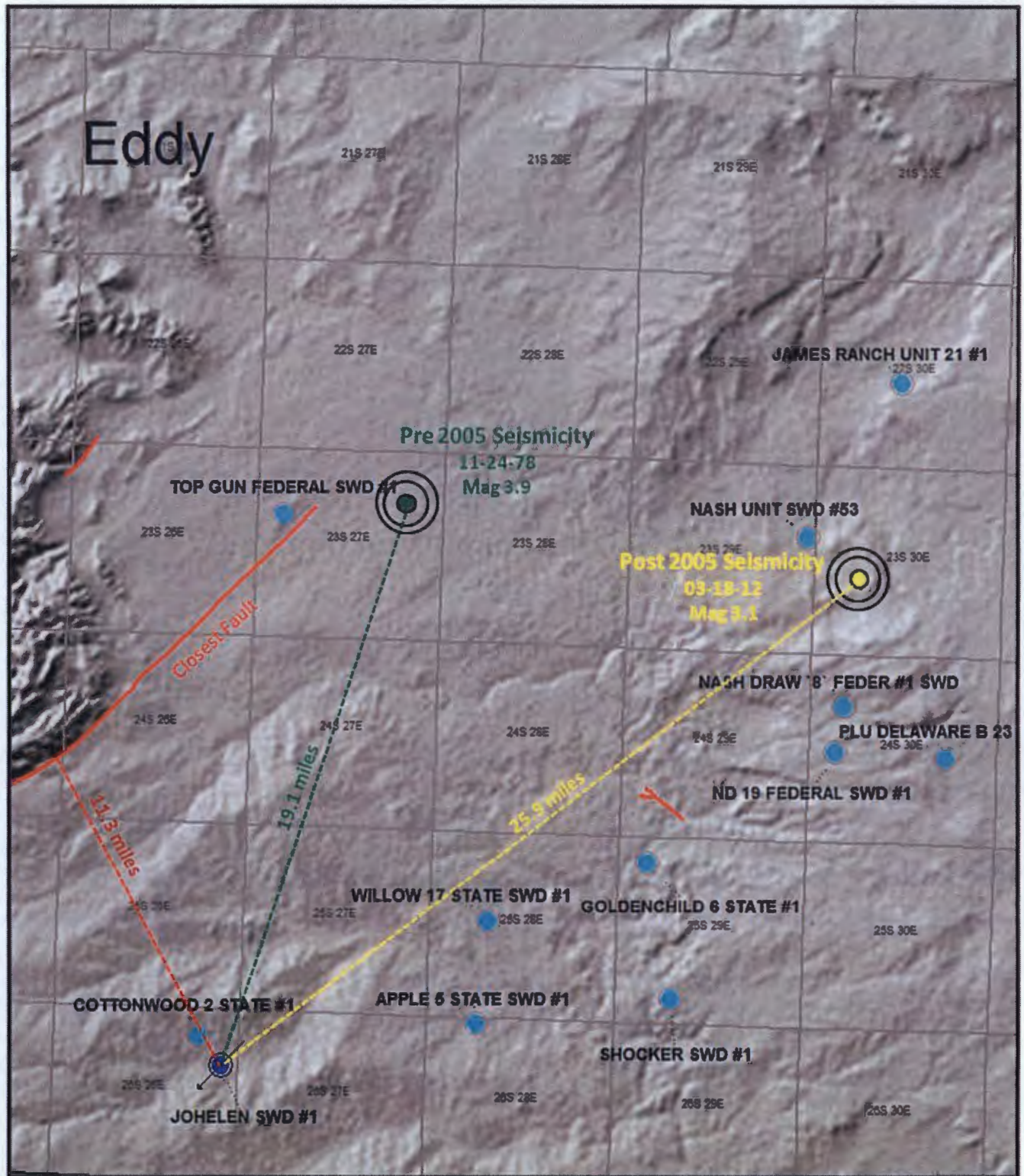
The proposed Johelen SWD #1 location is located 1.17 miles away from the nearest active Devonian SWD well (see map below) and meets current OCD and Industry recommended practices.

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

Well Activity and Closest SWD



Proximity to Historic Earthquake Activity and Faults



● Active Devonian SWD

● Proposed Location

— Fault

⊙ USGS Earthquake



FORM C-108 Technical Review Summary [Prepared by reviewer and included with application; V16.2]

DATE RECORD: First Rec: 01/18/18 Admin Complete: 01/18/18 or Suspended: _____ Add. Request/Reply: *03/12/18

ORDER TYPE: WFX / PMX / (SWD) Number: 1720 Order Date: _____ Legacy Permits/Orders: _____

Well No. 1 Well Name(s): Sohelen SWD * Request for tubing size increase

API: 30-0 15-44866 Spud Date: TBD New or Old (EPA): New (UIC Class II Primacy 03/07/1982)

Footages 975 FSL / 2323 FWL Lot - or Unit N Sec 12 Tsp 26 S Rge 26E County Eddy

General Location: 2 1/2 miles south of Malaga Pool: SWD; Devonian Pool No.: 96106

BLM 100K Map: Carlsbad Operator: Delaware Energy LLC OGRID: 371195 Contact: M. McCurdy

COMPLIANCE RULE 5.9: Total Wells: 8 Inactive: 0 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Yes Date: 04/16/18

WELL FILE REVIEWED ☒ Current Status: APD filed

WELL DIAGRAMS: NEW: Proposed ☒ or RE-ENTER: Before Conv. ☐ After Conv. ☐ Logs in Imaging: _____

Planned Rehab Work to Well: _____

Well Construction Details		Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/>	Surface	17 1/2 / 13 9/8	0 to 500'	550	Circulated to surface
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/>	Interm/Prod	12 1/4 / 9 5/8	0 to 9000'	2500	Circulated to surface
Planned <input type="checkbox"/> or Existing <input type="checkbox"/>	Interm/Prod	—	—	—	—
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/>	Prod/Liner	8 1/2 / 7 5/8	8800 to 12900	6500	Top of liner None provided
Planned <input type="checkbox"/> or Existing <input type="checkbox"/>	Liner	—	—	—	—
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/>	OH/ PERF	6 3/8	12900 to 13900	Inj Length 1000	Completion/Operation Details:
Injection Lithostratigraphic Units:		Depths (ft)	Injection or Confining Units	Tops	
Adjacent Unit: Litho. Struc. Por.				Drilled TD <u>13900</u> PBTD <u>—</u>	
Confining Unit: <u>(Litho)</u> Struc. Por.			<u>Woodford</u>	NEW TD <u>—</u> NEW PBTD <u>—</u>	
Proposed Inj Interval TOP:		<u>12900</u>	<u>Devonian</u>	NEW Open Hole <input checked="" type="checkbox"/> or NEW Perfs <input type="checkbox"/>	
Proposed Inj Interval BOTTOM:		<u>13900</u>		Tubing Size <u>4 1/2 in</u> Inter Coated? <u>Yes</u>	
Confining Unit: <u>(Litho)</u> Struc. Por.			<u>Silurian</u>	Proposed Packer Depth <u>12850</u> ft	
Adjacent Unit: Litho. Struc. Por.				Min. Packer Depth <u>12800</u> (100-ft limit)	
				Proposed Max. Surface Press. <u>2580</u> psi	
				Admin. Inj. Press. <u>2580</u> (0.2 psi per ft)	

AOR: Hydrologic and Geologic Information

POTASH: R-111-P NA Noticed? NA BLM Sec Ord NA WIPP NA Noticed? NA Salt/Salado T: — B: — NW: Cliff House fm NA

FRESH WATER: Aquifer minor bedrock / alluvial Max Depth <100' HYDRO AFFIRM STATEMENT By Qualified Person ☒

NMOSE Basin: Carlsbad CAPITAN REEF: thru — adj — NA ☒ No. GW Wells in 1-Mile Radius? — FW Analysis? —

Disposal Fluid: Formation Source(s) Permian & possible existing Analysis? Yes On Lease ☐ Operator Only ☐ or Commercial ☒

Disposal Interval: Inject Rate (Avg/Max BWPD): 20000/25000 Protectable Waters? No Source: Historical System: Closed or Open

HC Potential: Producing Interval? No Formerly Producing? No Method: Logs/DST/P&A/Other Mudlog 2-Mi Radius Pool Map ☒

AOR Wells: 1/2-M Radius Map and Well List? NA No. Penetrating Wells: 0 [AOR Horizontals: — AOR SWDs: —]

Penetrating Wells: No. Active Wells 0 Num Repairs? — on which well(s)? — Diagrams? —

Penetrating Wells: No. P&A Wells 0 Num Repairs? — on which well(s)? — Diagrams? —

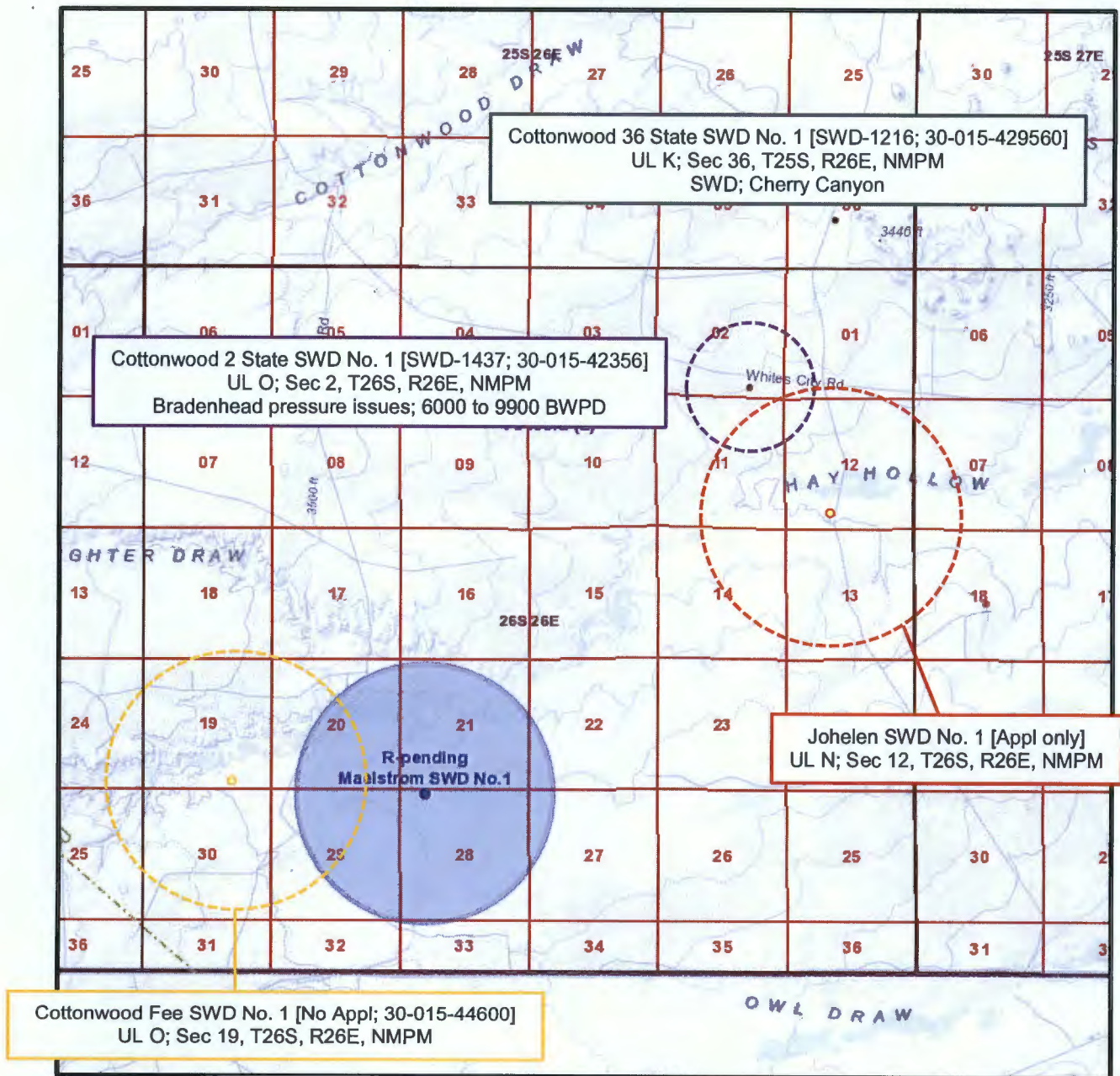
NOTICE: Newspaper Date 01/03/2018 Mineral Owner BLM Surface Owner Private N. Date 01/12/18

RULE 26.7(A): Identified Tracts? Yes Affected Persons: COG / EOG / no additional notice* N. Date 01/12/18

Order Conditions: Issues: IS assessment provided *

Additional COAs: Mudlog / picks / CBL for liner + tie-in

Evaluation of Pending Application for High-Volume Devonian Disposal Well C-108 Application for Johelen SWD No. 1 - Delaware Energy LLC



Maelstrom SWD No. 1; Chevron

API pending; Application under Case No. 15911; order in draft review

Proposed interval: Devonian-Silurian interval

Proposed operation: <50,000 BWPD; 7-inch tubing [in casing] and 4.5-inch tubing [in liner]

Johelen SWD No. 1; Delaware Energy LLC

API pending; Application No. pMAM1801250966; RBDMS Rcvd 1.18.2018; modified application for larger tubing Rcvd: 3.12.2018

Proposed interval: Devonian interval

Proposed operation: 25,000 BWPD; 7-inch tubing [in casing] and 5.0-inch tubing [in liner]

Threat Level Midnight SWD No. 1; OWL SWD Operating LLC: cancelled 8.14.2017 after protest by COG [UL O, Sec 1, T26S, R26E, NMPM]