

Initial Application Part I

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

MM 04/29/2019
mm 04/24/2019

RECEIVED:

REVIEWER:

TYPE:

APP NO:

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

DMM19116 41102

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:** Whirlwind State SWD #1**API:** Pending**Pool:** SWD; Devonian**Pool Code:** 96101

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

1) TYPE OF APPLICATION: Check those which apply for [A]

APR 24 2019 AM 11:47

A. Location - Spacing Unit - Simultaneous Dedication

☐ NSL☐ NSP (PROJECT AREA)☐ NSP (PRORATION UNIT)☐ SD

SWD 2073

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.

Sarah Presley

Print or Type Name

Signature

4/10/2019

Date

432-685-7005

Phone Number

s.presley@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: 4/10/2019
E-MAIL ADDRESS: m.mccurdy@delawareenergy.com
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

III. WELL DATA

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

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

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

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

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

XIV. PROOF OF NOTICE

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

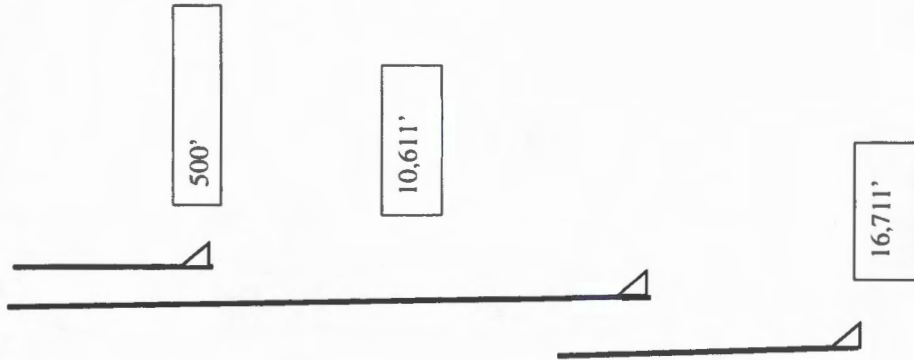
Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

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

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

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

INJECTION WELL DATA SHEET

OPERATOR: Delaware Energy, LLCWELL NAME & NUMBER: Whirlwind State SWD # 1WELL LOCATION: 20' FSL & 1,520' FEL 0 5 23S 33E
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGEWELLBORE SCHEMATIC see attached wellbore sketchWELL CONSTRUCTION DATASurface CasingHole Size: 17-1/2" Casing Size: 13-3/8", 54.5#
Cemented with: 500 sx. or ft³
Top of Cement: surface Method Determined: Plan to CirculateIntermediate CasingHole 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 CirculateProduction CasingHole 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 topTotal Depth: 16,711'Injection Interval16,711' feet to 17,711'
(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: Delaware 5,111' - 9,061'; Bone Springs 9,061' - 10,611'; Wolfcamp 10,611' - 13,786'; Strawn 13,786' - 14,011'; Atoka 14,011' - 14,711'; Morrow 14,711' - 16,111'.

VII.

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

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

2. Whether the system is open or closed;

Open System, Commercial SWD

3. Proposed average and maximum injection pressure;

Average 1,500-2,500 PSI, Max 3,342 PSI

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

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

5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

See attached Lea County Devonian water samples

***VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.**

The proposed disposal interval is in the Devonian formation 16,711'-17,711'. Devonian is an impermeable organic Shale at the very top (16,511 ft, Woodford Shale) 100ft thick followed by permeable lime, dolomite, and small amount of shale 1000ft thick. There are no fresh water zones underlying the proposed injection zone. Usable water depth is from surface to +/- 100', the water source is older alluvium (Quaternary). All the fresh water wells in the area have an average depth to water of 100ft per State Engineer.

IX. Describe the proposed stimulation program, if any.

60,000 gallons 20% HCL acid job with packer

X. Attach appropriate logging and test data on the well

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

XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

Attached is a water sample taken from 32.325532, -103.587956

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 Whirlwind State SWD #1 and have found no evidence of faults or other hydrologic connections between Devonian disposal zone and the underground sources of drinking water.

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

Mike McCurdy

Vice President

4/10/2019

Title

Date

III. WELL DATA

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

Whirlwind State SWD #1, Sec. 5-T23S-R33E, 20' FSL & 1,520' FEL, UL O, Lea County, New Mexico

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

Casing Size	Setting Depth	Sacks of Cement	Hole Size	Top of Cement	Determined
13-3/8"	500'	500	17-1/2"	Surface	CIRC
9-5/8"	10,611'	2500	12-1/4"	Surface	CIRC
7-5/8"	10,411'-16,711'	650	8-1/2"	Liner Top	CIRC & CBL

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

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

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

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

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

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

Devonian Formation

Pool Name: SWD (Devonian)

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

16,711' to 17,711' (Open hole)

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

Well is a planned new drill for SWD

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

None, well is a planned new drill

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

Next Higher: Delaware 5,111' – 9,061'; Bone Springs 9,061' – 10,611'; Wolfcamp 10,611' – 13,786'; Strawn 13,786' – 14,011'; Atoka 14,011' – 14,711'; Morrow 14,711' – 16,111'

Next Lower: None

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 2,955 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 14,775'-15,775'. Devonian is an impermeable organic shale at the very top (14,625 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.

Attached is a water sample taken from 32.047938, -104.052527

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 Red Bluff 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** **3/26/2019**

Title _____ Date _____

III. WELL DATA

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

Red Bluff SWD #1, Sec. 14-T26S-R28E, 433' FSL & 1,318' FWL, UL M, 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"	9,275'	2500	12-1/4"	Surface	CIRC
7-5/8"	9,075'-14,775'	650	8-1/2"	Liner Top	CIRC & CBL

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

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

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

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

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

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

Devonian Formation
Pool Name: SWD (Devonian)

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

14,775' to 15,775' (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 2,575' – 6,275'; Bone Springs 6,275' – 9,275'; Wolfcamp 9,275' – 12,075'; Strawn 12,075' – 12,275'; Atoka 12,275' – 12,975'; Morrow 12,975' – 14,275'

Next Lower: None

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-5151 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 745-1253 Fax: (575) 745-9725

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 354-6176 Fax: (505) 354-6170

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

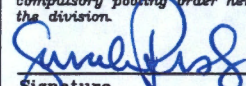
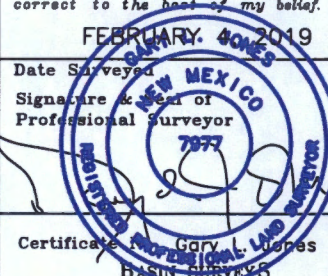
☐ AMENDED REPORT

API Number	Pool Code 96101	Pool Name SWD; DEVONIAN
Property Code	Property Name WHIRLWIND STATE SWD	Well Number 1
OGRID No. 371195	Operator Name DELAWARE ENERGY	Elevation 3711'

Surface Location									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	5	23 S	33 E		20	SOUTH	1520	EAST	LEA

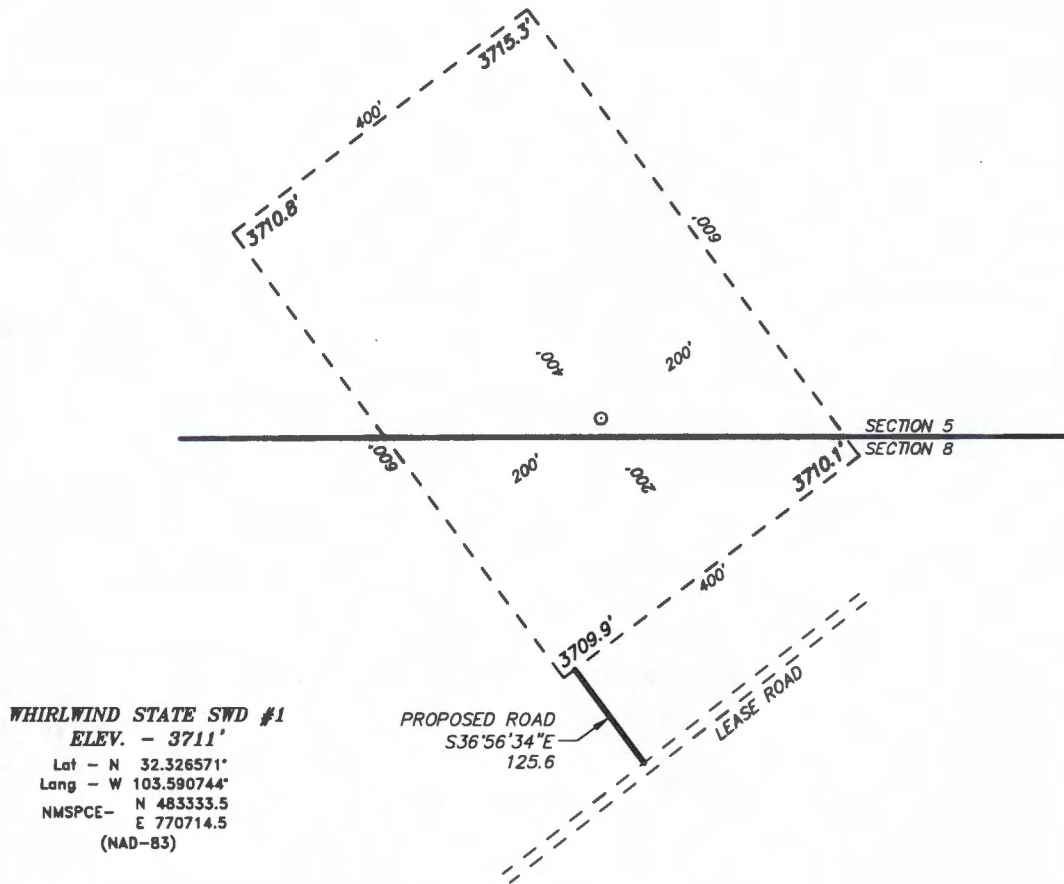
Bottom Hole Location If Different From Surface									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						

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

N.: 488576.0 E.: 766885.1 (NAD83)		N.: 488589.5 E.: 769520.5 (NAD83)		N.: 488604.6 E.: 772167.3 (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 4-10-19 Sarah Presley Printed Name s.presley@delawareenergy.com Email Address	
N.: 485936.0 E.: 766915.4 (NAD83)		N.: 485945.9 E.: 772215.6 (NAD83)		N.: 485945.9 E.: 772215.6 (NAD83)			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. FEBRUARY 4 2019 Date Surveyed  Signature & Seal of Professional Surveyor Certificate No. Gary L. Jones 7977 BASIN SURVEYS
N.: 483295.1 E.: 766949.1 (NAD83)		N.: 483309.0 E.: 769591.4 (NAD83)		N.: 483319.5 E.: 772234.3 (NAD83)			
SURFACE LOCATION Lat - N 32.326571° Long - W 103.590744° NMSPCE- N 483333.5 E 770714.5 (NAD-83)							

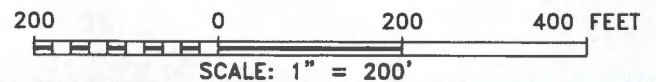
0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'
WO Num.: 34315

**SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



WHIRLWIND STATE SWD #1
ELEV. - 3711'
 Lat - N 32.326571°
 Long - W 103.590744°
 NMSPCE- N 483333.5
 E 770714.5
 (NAD-83)

EUNICE, NM IS ±26 MILES TO THE NORTHEAST OF LOCATION.



DELAWARE ENERGY

REF: WHIRLWIND STATE SWD #1 / WELL PAD TOPO

THE WHIRLWIND STATE SWD #1 LOCATED 20' FROM
 THE SOUTH LINE AND 1520' FROM THE EAST LINE OF
 SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST.

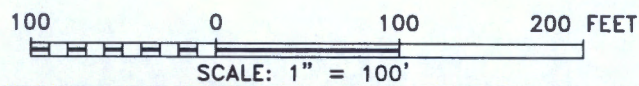
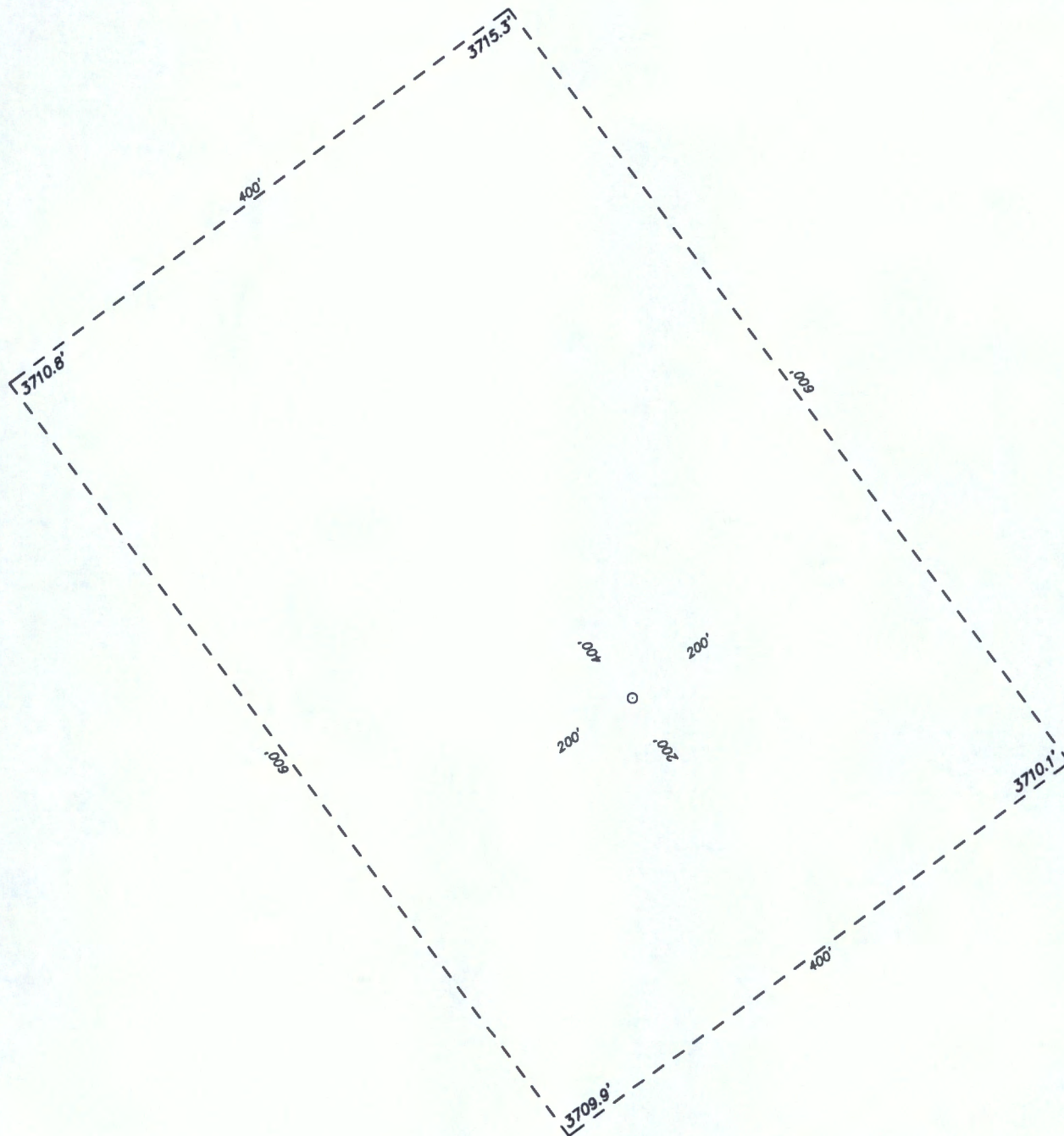
N.M.P.M., LEA COUNTY, NEW MEXICO.

basin
surveys

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
 basin-surveys.com

W.O. Number: 34315	Drawn By: J GOAD	Date: 2-11-2019	Survey Date: 2-4-2019	Sheet 1 of 1 Sheets
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**SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



DELAWARE ENERGY

REF: WHIRLWIND STATE SWD #1 / WELL PAD TOPO

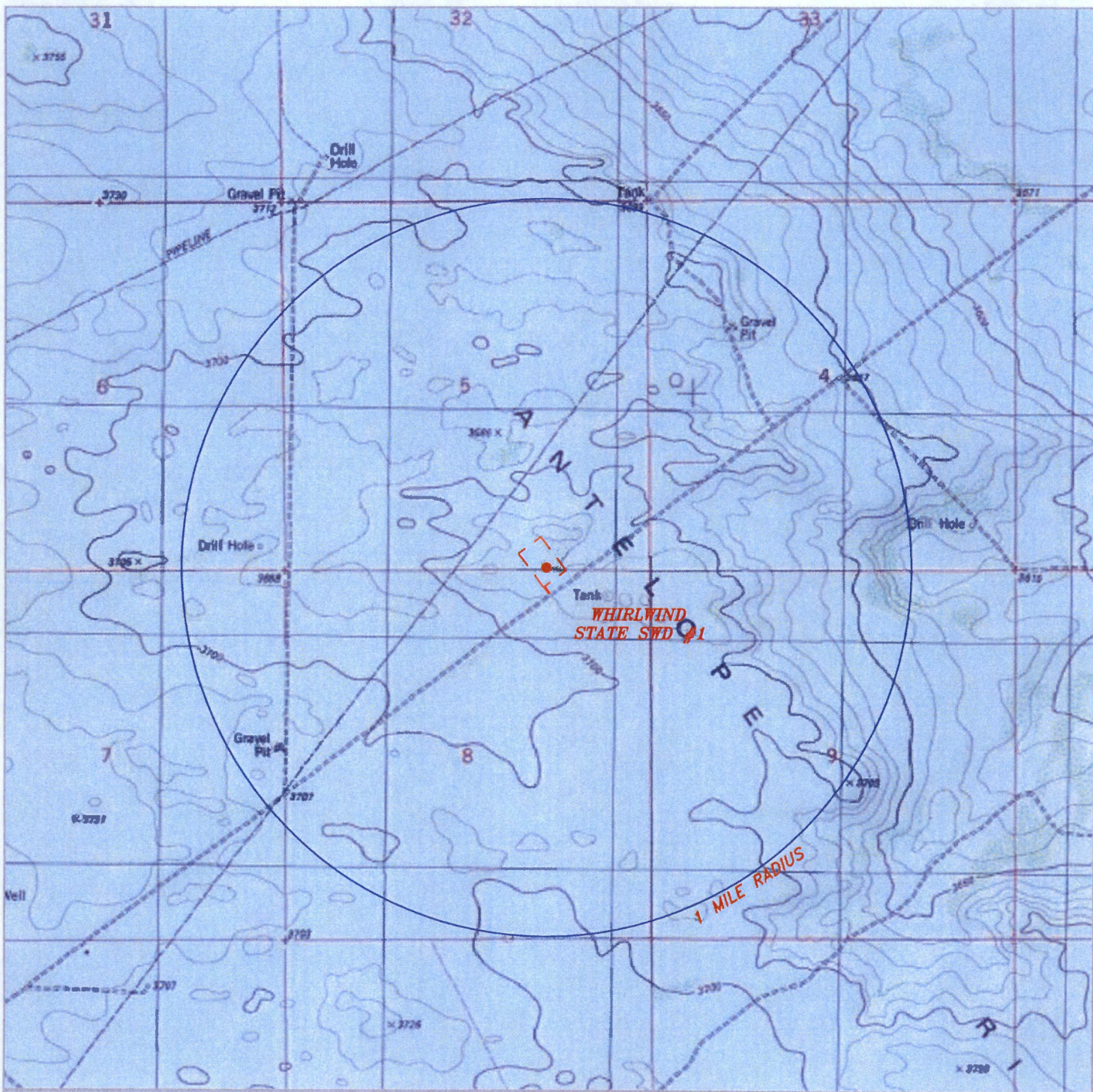
THE WHIRLWIND STATE SWD #1 LOCATED 20' FROM
THE SOUTH LINE AND 1520' FROM THE EAST LINE OF
SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST.

N.M.P.M., LEA 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

W.O. Number: 34315	Drawn By: J GOAD	Date: 2-11-2019	Survey Date: 2-4-2019	Sheet 1 of 1 Sheets
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WHIRLWIND STATE SWD #1

Located 20' FSL and 1520' FEL
 Section 5, Township 23 South, Range 33 East,
 N.M.P.M., Lea County, New Mexico.

basin
surveys
 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

0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

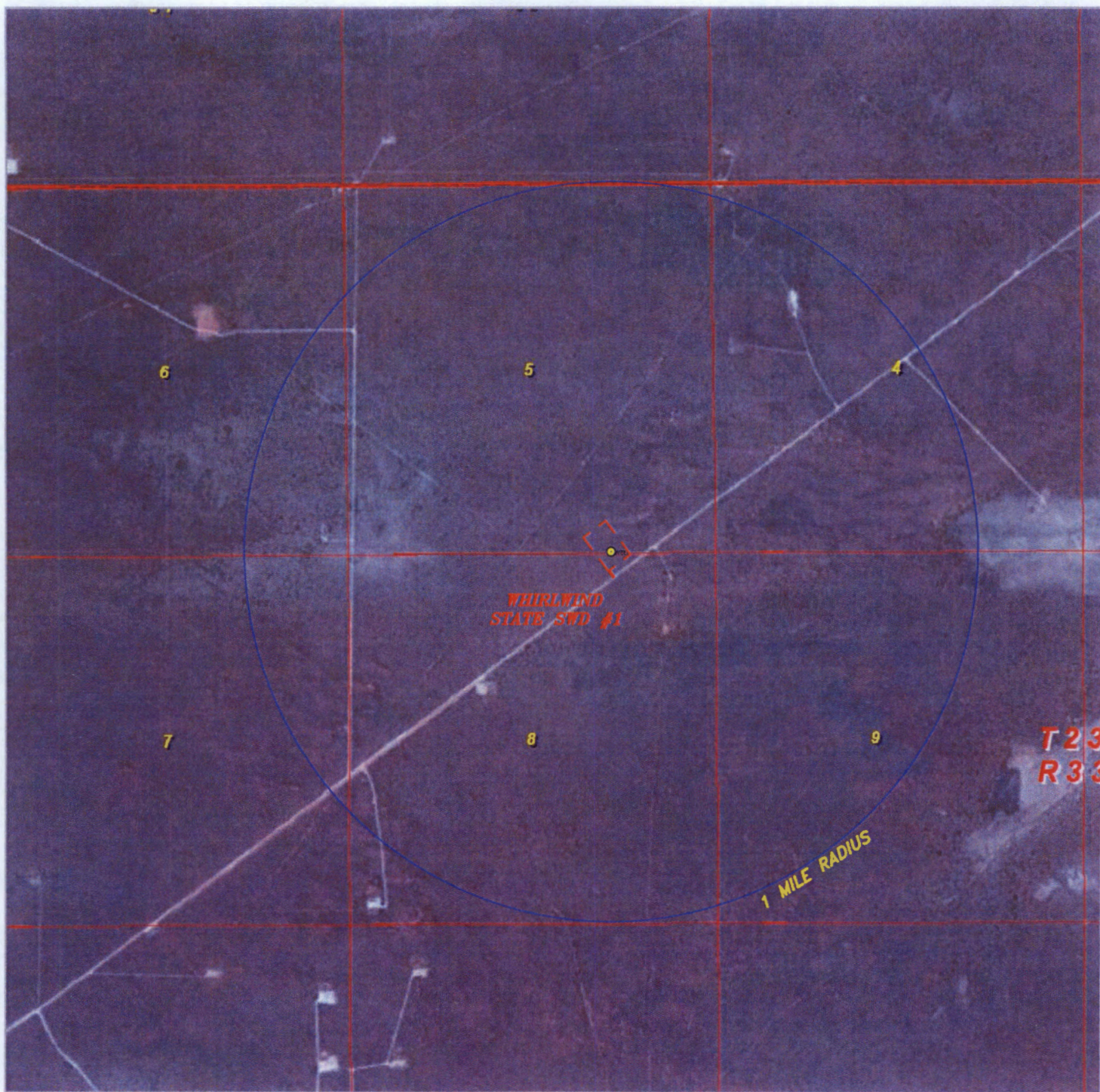
W.O. Number: JG 34315

Survey Date: 2-4-2019

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



DELAWARE
ENERGY



WHIRLWIND STATE SWD #1

Located 20' FSL and 1520' FEL
Section 5, Township 23 South, Range 33 East,
N.M.P.M., Lea County, New Mexico.

basin
surveys
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

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

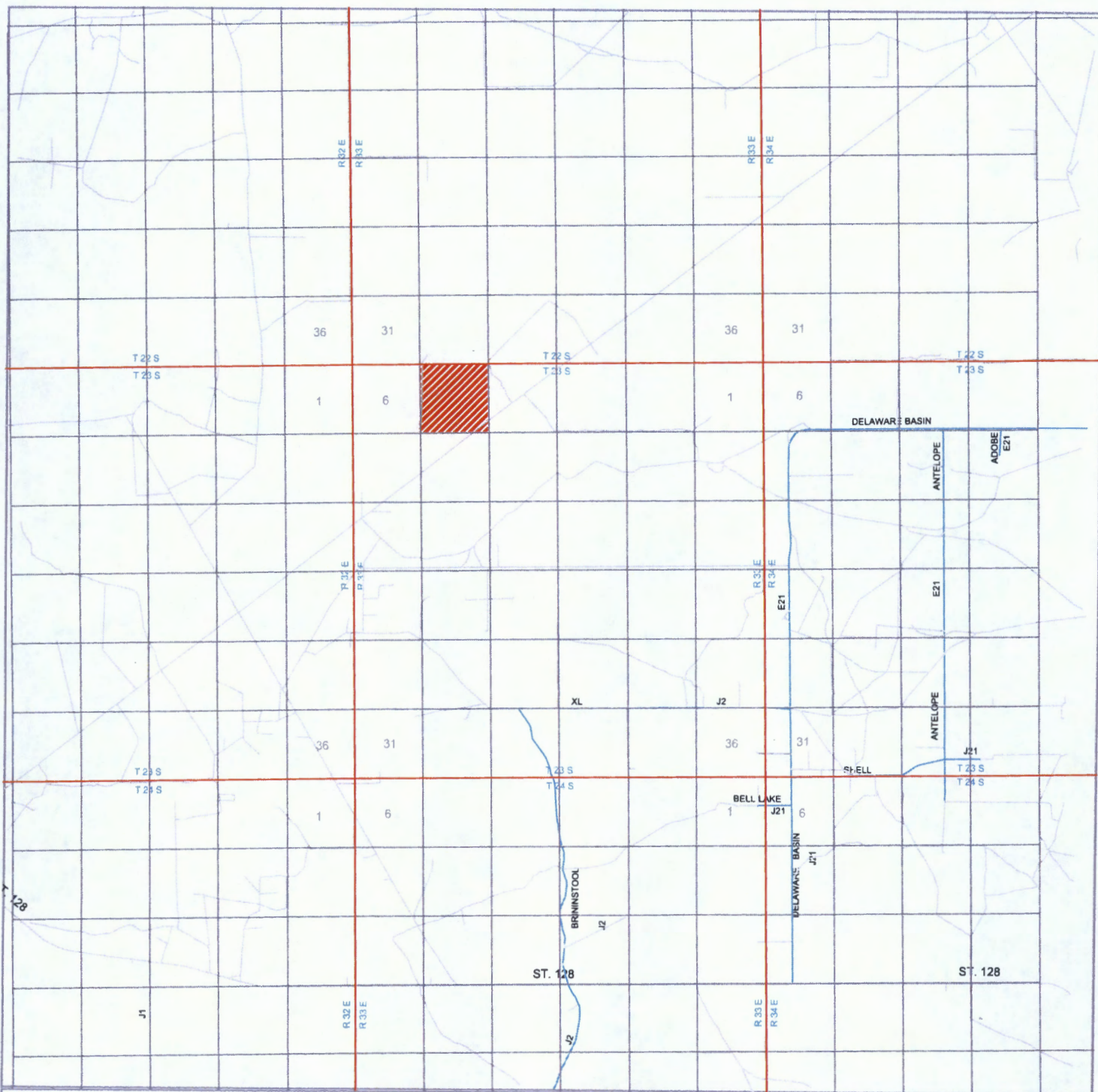
W.O. Number: JG 34315

Survey Date: 2-4-2019

YELLOW TINT - USA LAND
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 SCALE: 1" = 2000'

W.O. Number: JG 34315

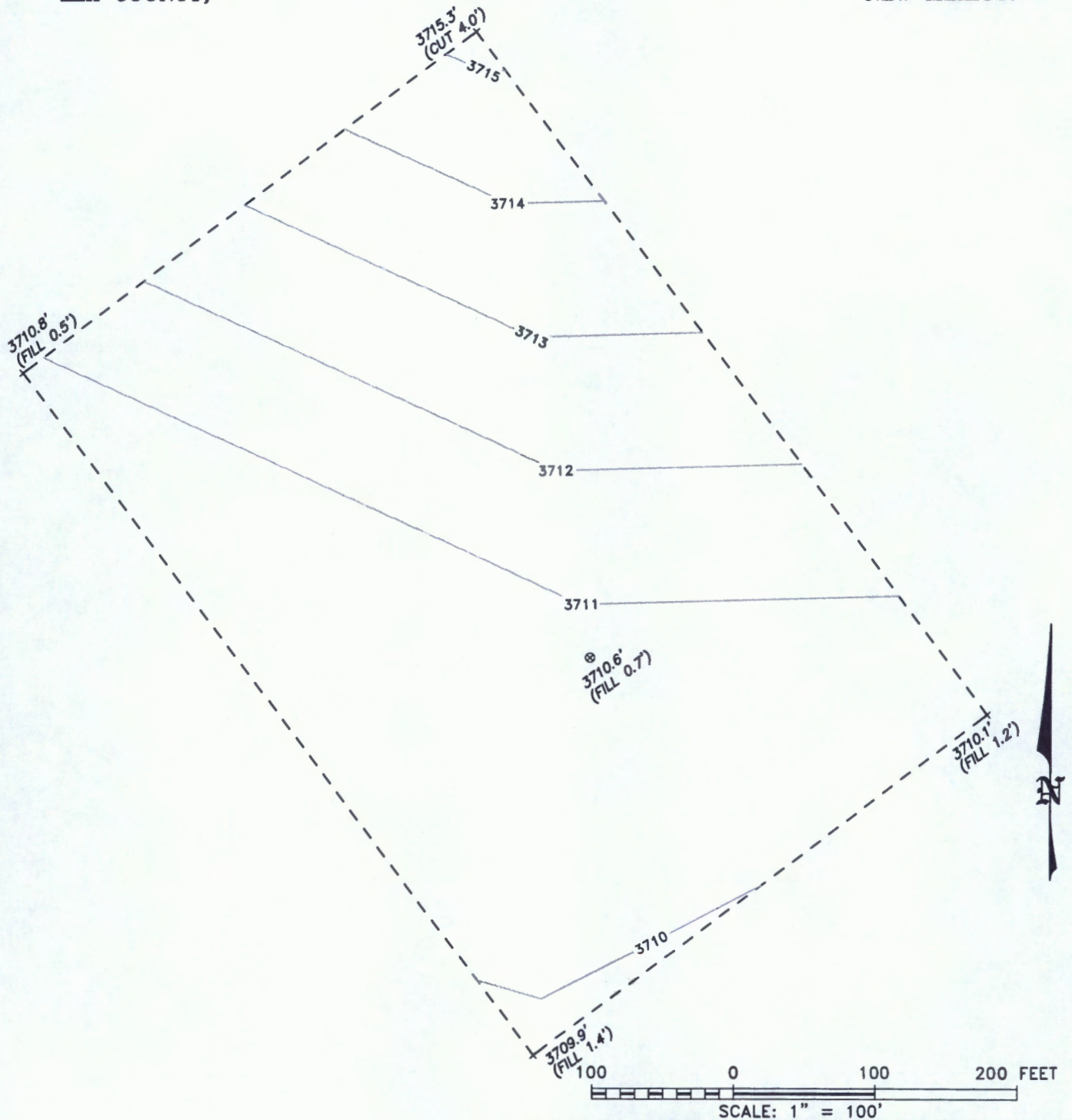
Survey Date: 2-4-2019

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



**DELAWARE
 ENERGY**

**SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



DELAWARE ENERGY

REF: WHIRLWIND STATE SWD #1 / CUT & FILL

THE WHIRLWIND STATE SWD #1 LOCATED 20' FROM
THE SOUTH LINE AND 1520' FROM THE EAST LINE OF
SECTION 5, TOWNSHIP 23 SOUTH, RANGE 33 EAST.

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

basin
surveys
focused on excellence
in the oilfield

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

W.O. Number: 34315

Drawn By: J GOAD

Date: 2-11-2019

Survey Date: 2-4-2019

Sheet 1 of 1 Sheets

Water Analysis - Disposal Zone - DEVONIAN

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

Water Analysis - Source Zone - BONE SPRING



Requested by: T. Ratliff

Laboratory Analysis
Endurance
Jazzmaster 17 State #4H

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

		Water Analysis Measurements		Cations (+)		Anions (-)	
Oxygen (mg/L)	1.00	Oil in Water (ppm)	ND	Sodium (Na)	0	Carbonate (CO ₃)	0
Carbon Dioxide (mg/L)	000.16	Specific Gravity	1.130	Calcium (Ca)	16.440	Bicarbonate (HCO ₃)	16.00
Hydrogen Sulfide (mg/L)	0.0	Total Dissolved Solids (TDS)	180.520	Magnesium (Mg)	3.00	Chloride (mg/L)	118.520
pH	5.7	(mg/L) (µm)	180.520	Sulfate (SO ₄)	34.270	Sulfate (SO ₄)	310
Temperature °F	73	Total Hardness (mg/L)	18.000	Iron (Fe)	100		
				Manganese (Mn)	0.00		

Water Analysis - Source Zone - DELAWARE

7000 N. 10th St.
Tulsa, OK 74116
918.437.1234

Martin Water Laboratories, Inc.

REPORT OF WATER ANALYSES

7000 N. 10th St.
Tulsa, OK 74116
918.437.1234

TO: Mr. Joe Seall LABORATORY NO: 99293

FROM: P.O. Box 31810, Midland, TX 79710 SAMPLE RECEIVED: 9-18-92

RESULTS REPORTED: 9-18-92

COMPANY: Mexican Oil Company LEASE: Dagger Lake #1

FIELD OR POOL: Wildcat

SECTION: BLOCK 1 SURVEY: 1988 COUNTY: Lea STATE: NM

SOURCE OF SAMPLE AND DATE TAKEN: NO 1 Recovered Water - taken from Dagger Lake #1. 9-8-92

NO 2 _____

NO 3 _____

NO 4 _____

REMARKS: Delaware

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity @ 60°F	1.1462			
Oil in Water (ppm)				
Specific Gravity				
Total Dissolved Solids (TDS)	6.20			
(mg/L) (µm)	1.66			
Total Hardness (mg/L)				
Oil in Water (ppm)				
Specific Gravity				
Total Dissolved Solids (TDS)	50.500			
(mg/L) (µm)	18.000			
Oil in Water (ppm)	1.336			
Specific Gravity	60.483			
Total Dissolved Solids (TDS)	9.67			
(mg/L) (µm)	140.618			
Oil in Water (ppm)	90.0			
Specific Gravity				
Total Dissolved Solids (TDS)				
(mg/L) (µm)	229.331			
Oil in Water (ppm)				
Specific Gravity				
Total Dissolved Solids (TDS)				
(mg/L) (µm)	0.0			
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(mg/L) (µm)	0.053			
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Total Dissolved Solids (TDS)				
(mg/L) (µm)				
Oil in Water (ppm)				



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

Water Analysis

Code 214053

Client Information

Sample Information

Delaware Energy
County:

Lea

Lease/Well: Whirlwind SWD/1

Sample Point:

Date Sampled: 03/14/2019

Date Reported: 03/19/2019

Rep:

Derrick Boutwell

Results

Cations

Ion	Concentration(mg/L)
Barium (as Ba)	0
Calcium (as Ca)	7
Iron (as Fe)	0
Sodium (as Na)	89
Magnesium (as Mg)	38

Other Measurements

Measurement	Value
pH	9.47
SG	1.000
Turbidity	7
CO ₂	
Total Dissolved Solids	768.000

Anions

Ion	Concentration(mg/L)
Chlorides (as Cl)	34
Sulfate (as SO ₄)	88
Carbonate (as CO ₃)	0
Bicarbonates (as HCO ₃)	512
Sulfide (as S ²⁻)	0

Scaling Indices

Temp(F)	CaCO ₃	CaSO ₄ *2H ₂ O	CaSO ₄	BaSO ₄
80	1.6003	0.0000	0.0000	-27.5262
120	1.9047	0.0000	0.0000	-27.7319
160	2.2330	0.0000	0.0000	-27.8379
200	2.5307	0.0000	0.0000	-27.8814
250	2.8101	0.0000	0.0000	-27.8984

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

Comments

32.325532-103.587956

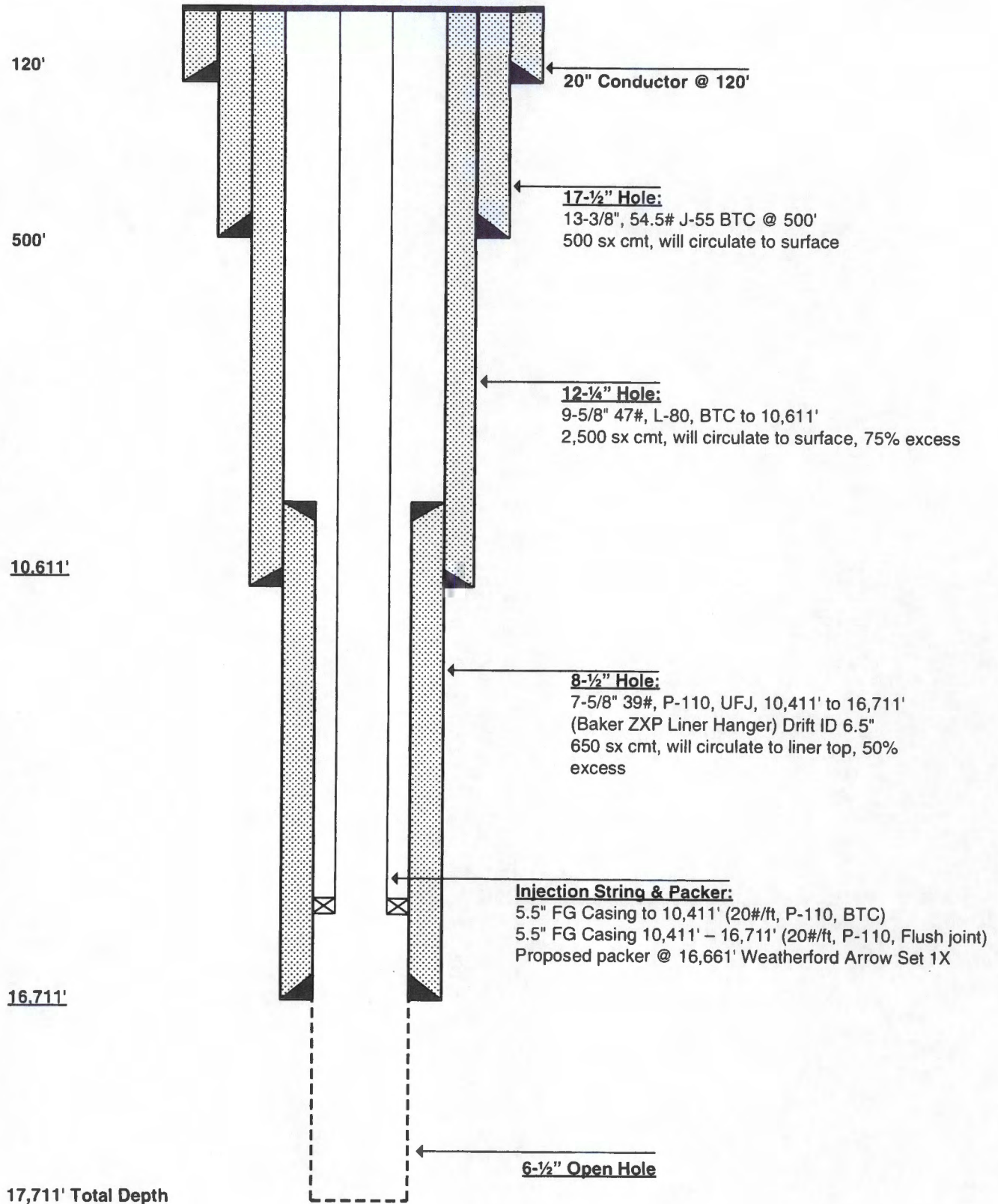
Whirlwind State SWD # 1

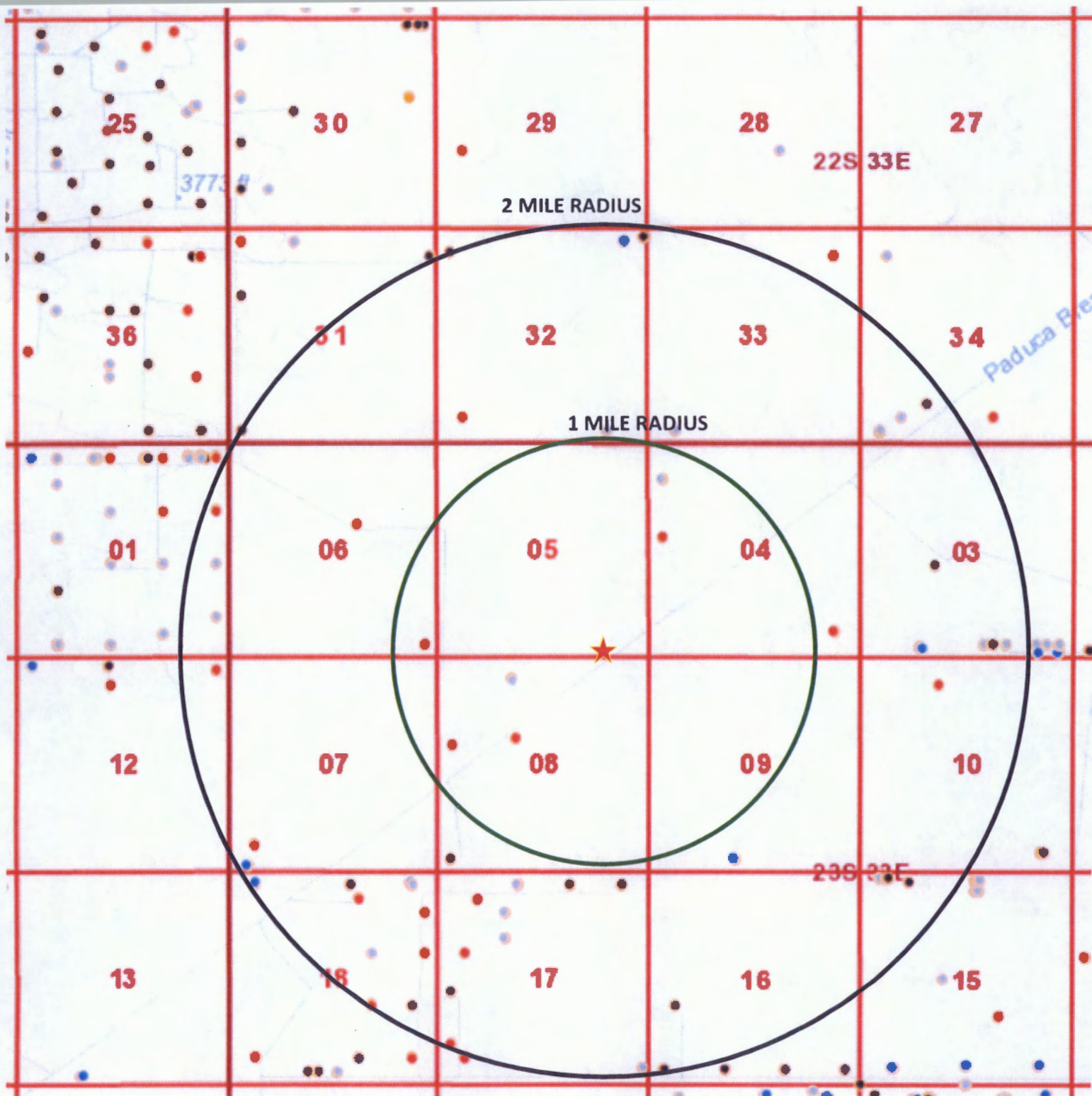
API # PENDING
20' FSL & 1,520' FEL, Sec. 5, T23S, R33E, UL "O"
LEA COUNTY, NEW MEXICO

ELEVATION:

GL: 3,711'

PROPOSED WELLBORE





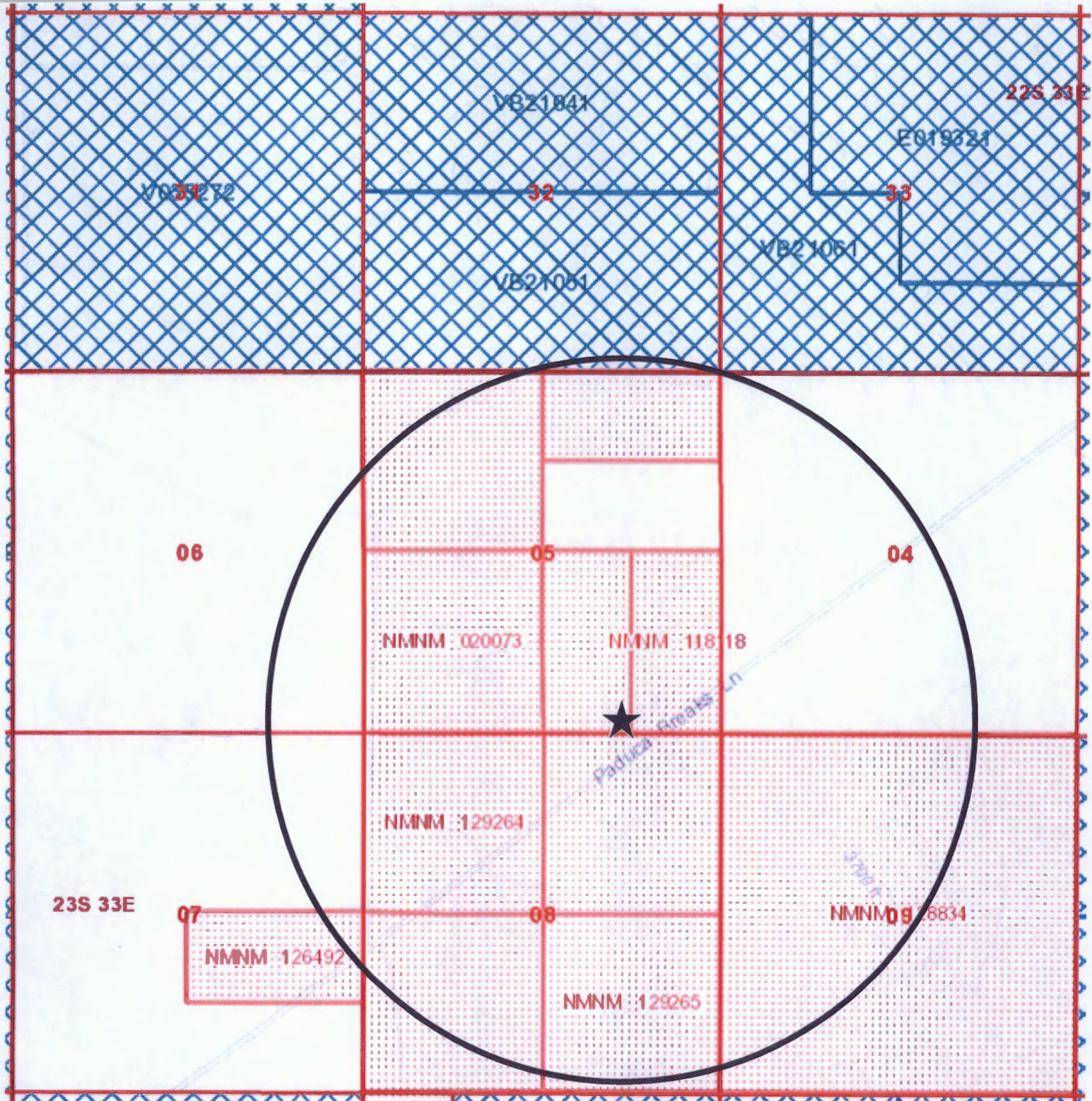
WELLS – ONE MILE RADIUS

NO WELLS PENETRATE THE DEVONIAN FORMATION IN THE AOR

SECTION 5-T23S-R33E



Whirlwind State SWD #1
(Proposed Location)
Delaware Energy, LLC



LEASES – ONE MILE RADIUS

★ Whirlwind State SWD #1
Sec. 5-T23S-R33E
Lea Co. NM

Whirlwind State SWD #1

LEASES – ONE MILE RADIUS

Section 5, T23S-R33E

Federal Lease (NMNM 020073)

- **EOG Resources, Inc (Lessee)**
PO Box 2267
Midland, TX 79702-2267
- **Chevron USA, Inc (Lessee) (NMNM 114985 & NMNM 118118)**
6301 Deauville Blvd.
Midland, TX 79706

Section 6, T23S-R33E

- **Matador Resources Company (Permian)**
5400 LBJ Fwy Ste 1500
Dallas, TX 75240

Section 7, T23S-R33E

Federal Leases (NMNM 126492)

- **EOG Y Resources, Inc (Lessee)**
104 S. 4TH Street
Artesia, NM 88210
- **EOG A Resources, Inc (Lessee)**
104 S. 4TH Street
Artesia, NM 88210
- **EOG M Resources, Inc (Lessee)**
104 S. 4TH Street
Artesia, NM 88210
- **Matador Resources Company (Permian)**
5400 LBJ Fwy Ste 1500
Dallas, TX 75240

Section 8, T23S-R33E

- **Cimarex Energy Co.**
600 N Marienfeld St # 600
Midland, TX 79701

Federal Lease (NMNM 020073)

- **EOG Resources, Inc (Lessee)**
PO Box 2267
Midland, TX 79702-2267

Federal Lease (NMNM 129264)

- **EOG Resources, Inc (Lessee)**
5509 Champions Drive
Midland, TX 79706

Federal Lease (NMNM 129265)

- **COG Operating, LLC (Lessee)**
600 W. Illinois
Midland, TX 79701

Section 9, T23S-R33E

Federal Lease (NMNM 128834)

- **COG Operating, LLC (Lessee)**
600 W. Illinois
Midland, TX 79701

Section 32, T22S-R33E

State Lease (VB21051)

- **EOG Resources, Inc. Held by and (Lessee)**
PO Box 2267
Midland, TX 79702-2267

Section 33, T22S-R33E

State Lease (VB21081)

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

Whirlwind State SWD #1
Location: 20' FSL & 1520' FEL
Sec. 5, T-23-S, R-33-E

Estimated Pre-Drill Formation Tops

Top of Salt	1,236'
Base Salt	5,061'
Delaware Mountain Group	5,111'
Bone Spring/Abo	9,061'
Wolfcamp	10,611'
Strawn	13,786'
Atoka	14,011'
Morrow	14,711'
Barnett	15,861'
Mississippian	16,111'
Woodford	16,511'
Devonian	16,711'

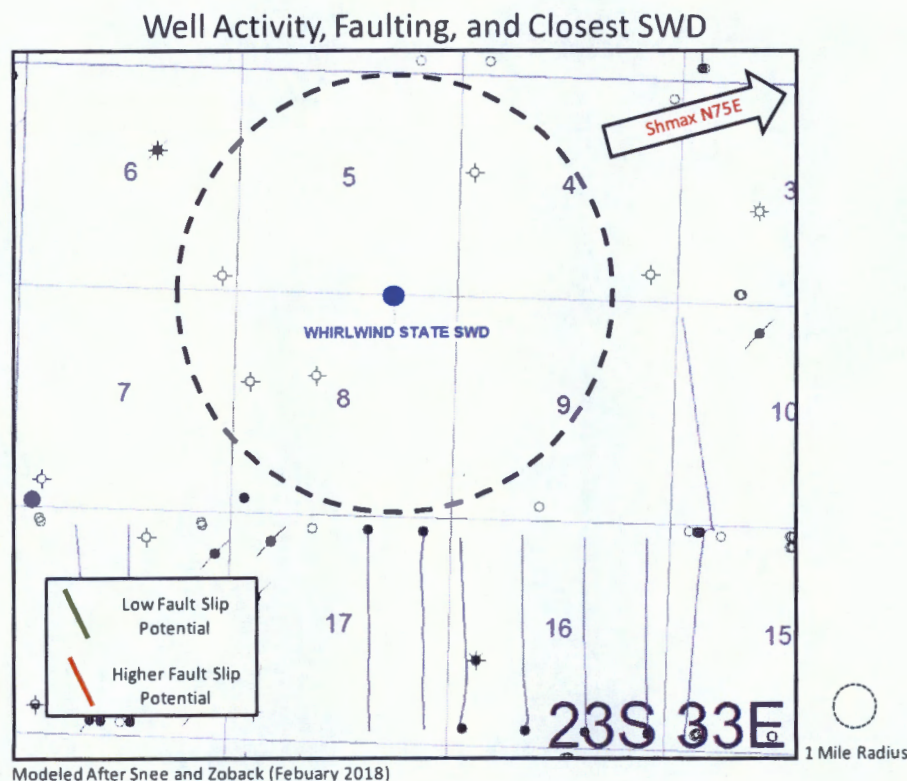
Statement Regarding Seismicity and Well Location (Whirlwind State SWD #1)

Historically, the area near the proposed Whirlwind State SWD #1 has seen only minor seismic activity. There has been one seismic event (as per public data available on the USGS database) close to this location. The event was 4.6 miles south of the location on December 4, 1984 and measured 2.9.

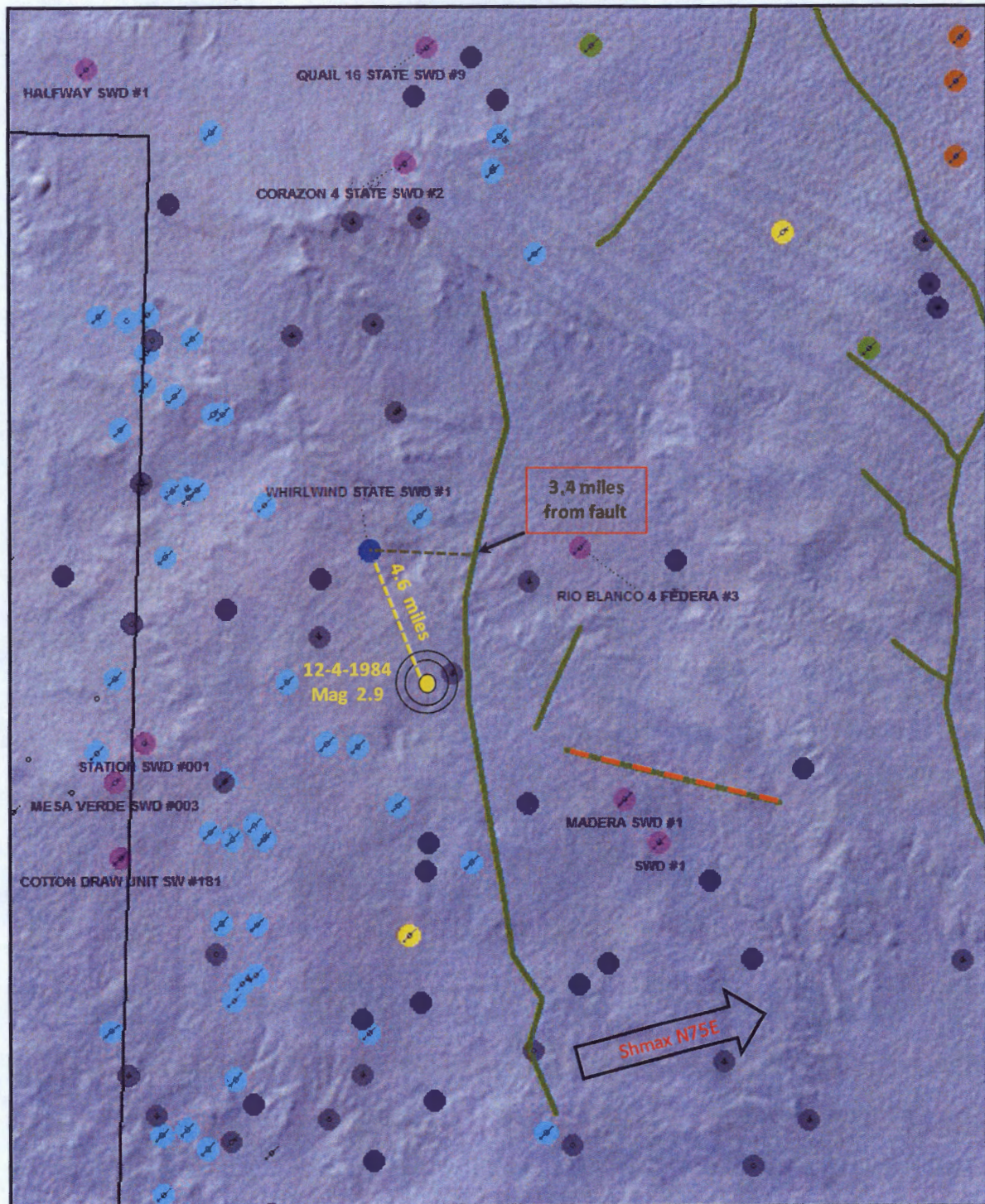
Delaware Energy does not own 2D or 3D seismic data near the proposed SWD location therefore the fault interpretations are based on data obtained from the USGS New Mexico Faults Database (2005) and other published data. Based on these sources the closest fault would be approximately 3.4 miles east of the location. A recent technical paper written by Snee and Zoback, "State of Stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity", was published in the February 2018 edition of The Leading Edge. The study evaluates the strike-slip probability of known faults using FSP analysis. The study predicts that the N-S trending fault east of the location (green) should have a very low probability of being critically stressed resulting in an induced seismicity event. Any W-E trending faults (orange) would have a higher probability of being critically stressed, resulting in potential slip, due to the relationship of the strike of the fault and the regional Shmax orientation (approx. N 75 deg E) in the area. The exact position of this fault relative to the proposed location, and depth of the target formation, is unknown. Risk of contact with the fault should be evaluated and modeled prior to drilling the well. It is uncertain whether the seismic activity to the south was associated with this fault, or another fault not documented in the public domain. Any potential contact with the fault should be reduced due to the distance of the proposed SWD well from the fault (3.4 miles).

The proposed Whirlwind State SWD #1 is located well away from the nearest active Devonian SWD or other SWD wells (see map below). The well should meet current OCD and Industry recommended practices.

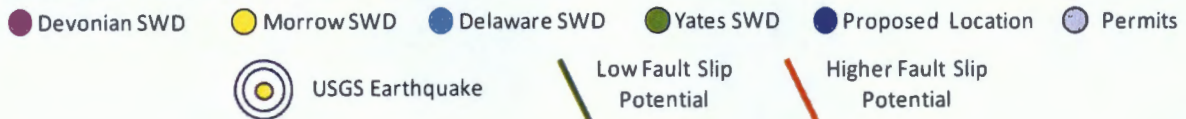
Kevin J. Schepel
Petrophysical Advisor
kevin.schepel@att.net
214-212-6540



Proximity to Historic Earthquake Activity and Faults



Modeled After Snee and Zoback (February 2018)



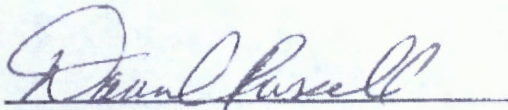
Data and Interpretation Disclosure - Although care has been taken to ensure that these data are up to date and accurate, this information and data is being providing as is. The data are what is believed to be the best public data available based on published documents, reports, and information available 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.

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

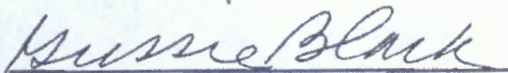
I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

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



Publisher

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

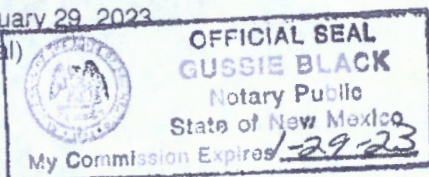


Business Manager

My commission expires

January 29, 2023

(Seal)



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

LEGALS

LEGAL NOTICE FEBRUARY 28, 2019

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

The Whirlwind State SWD #1 is located at 20' FSL and 1,520' FEL, Unit Letter O, Section 5, Township 23 South, Range 33 East, Lea County, New Mexico. The well will dispose of water produced from oil and gas wells into the Devonian Formation from 16,711' to 17,711' at a maximum rate of 25,000 barrels of water per day at a maximum pressure of 3,342 psi.

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

Additional information can be obtained by contacting Delaware Energy, L.L.C., at (432) 685-7005. #33793

67114908

00225009

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

7018 0680 0000 0582 5743

U.S. Postal Service
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For delivery information, visit our website at www.usps.com.

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Extra Services & Fees (check box, add fee as appropriate)

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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 \$1.75

Total Postage and Fees \$8.05

Sent To
Matador Resources Company
Street and Apt. No., or PO Box No.
5400 LBJ Hwy. Ste 1500
City, State, ZIP+4®
Dallas, TX 75240

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

Whirlwind State
DOWNTOWN STATION MIDLAND TX
APR 11 2019
79701-USPS

7018 0680 0000 0582 5729

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Whirlwind State
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Cimarex Energy Co.
Street and Apt. No., or PO Box No.
600 N. Marienfeld St #600
City, State, ZIP+4®
Midland, TX 79701

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EOG Y, A, M Resources, Inc.
Street and Apt. No., or PO Box No.
104 S. 4th Street
City, State, ZIP+4®
Artesia, NM 88210

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

Whirlwind State
DOWNTOWN STATION MIDLAND TX
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Postage \$1.75

Total Postage and Fees \$8.05

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Street and Apt. No., or PO Box No.
5509 Champions Dr.
City, State, ZIP+4®
Midland, TX 79706

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

Whirlwind State
DOWNTOWN STATION MIDLAND TX
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Total Postage and Fees	\$8.05

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

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Whirlwind State
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APR 11 2019
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Total Postage and Fees	\$8.05

Sent To
State of New Mexico OCD District I
1625 N. French Pr.
Hobbs, NM 88240

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

Whirlwind State
DOWNTOWN STATION MIDLAND TX
APR 11 2019
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Delaware Energy, LLC
Application for Injection/SWD
Whirlwind State SWD #1

APR 24 2019 AM 11:47

UL O, Sec. 5, T-23-S, R-33-E, 20' FSL & 1,520' FEL, Lea Co., NM

April 10, 2019

Contents:

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

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

April 11, 2019

Surface Owner / Offset Operators

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

Ladies and Gentlemen:

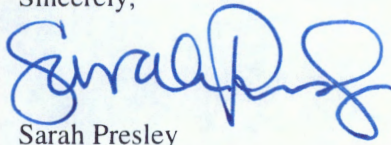
Delaware Energy, LLC is seeking administrative approval to utilize the proposed Whirlwind State SWD #1 as a commercial Salt Water Disposal well. As required by the New Mexico Oil Conservation Division Rules, we are notifying you of the following proposed salt water disposal well. This letter is a notice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

<u>Well:</u>	Whirlwind State SWD #1
<u>Proposed Disposal Zone:</u>	Devonian Formation (from 16,711' - 17,711')
<u>Location:</u>	20' FSL & 1,520' FEL, UL O, Sec. 5, T23S, R33E, Lea Co., NM
<u>Applicants Name:</u>	Delaware Energy, L.L.C.
<u>Applicants Address:</u>	405 N. Marienfeld, Suite 200, Midland, TX 79701

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

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

Sincerely,



Sarah Presley

DISTRIBUTION LIST

Surface Owner:

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

Offset Operators/Leasehold Owners:

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

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

EOG Y, A, M Resources, Inc
104 S. 4TH Street
Artesia, NM 88210

Chevron USA, Inc
6301 Deauville Blvd.
Midland, TX 79706

Cimarex Energy Co.
600 N Marienfeld St # 600
Midland, TX 79701

Matador Resources Company
5400 LBJ Fwy. Ste 1500
Dallas, TX 75240

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

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

APR 24 2019 AM 11:46

Delaware Energy, LLC
Application for Injection/SWD
Tasmanian Devil SWD #1

UL M, Sec. 10, T-25-S, R-27-E, 306' FSL & 695' FWL, Eddy Co., NM

April 15, 2019

Contents:

1. Administrative Application Checklist
2. Form C-108: Application for Authority to Inject
3. Form C-108 Additional Questions Answered
4. Form C-102
5. Chemical Analysis of Bone Spring Formation Water Sample
6. Chemical Analysis of Wolfcamp Formation Water Sample
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12. Formation Tops
13. Certified Mailers
14. Seismicity Assessment
15. Carlsbad Current-ARGUS Affidavit of publication

McMillan, Michael, EMNRD

From: Sarah Presley <s.presley@delawareenergy.com>
Sent: Monday, April 29, 2019 2:52 PM
To: McMillan, Michael, EMNRD
Subject: [EXT] RE: Whirlwind State SWD Well No.1
Attachments: whirlwind state swd.pdf

Hey Mike,

Here is the certified receipt for the BLM.

Thanks,

SP

Regards,

Sarah Presley | Operations Manager
405 N. Marienfeld, Suite 200
Midland, TX 79701
O: (432) 685-7005
C: (432) 269-3789



From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Friday, April 26, 2019 12:27 PM
To: Sarah Presley <s.presley@delawareenergy.com>
Subject: Whirlwind State SWD Well No.1

Sarah:

Per our conversation on April 24, 2019 your application is suspended, because you did not notify BLM
Your application is suspended until you provide notice to them.

Mike

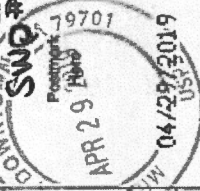
Michael McMillan
1220 South St. Francis
Santa Fe, New Mexico
505-476-3448
Michael.mcmillan@state.nm.us

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Whitwin State
COMMUNITY
SWP #1



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Street and Apt. No., or PO Box No.
620 E. Greene Street
City, State, ZIP+4®
Carlsbad NM 88720

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