STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION

APPLICATION OF NGL WATER SOLUTIONS PERMIAN, LLC TO APPROVE SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 20584

APPLICATION

NGL Water Solutions Permian, LLC ("NGL"), OGRID No. 372338, through its undersigned attorneys, hereby makes this application to the Oil Conservation Division pursuant to the provisions of N.M. Stat. Ann. § 70-2-12, for an order approving drilling of a salt water disposal well in Lea County, New Mexico. In support of this application, NGL states as follows:

(1) NGL proposes to drill the Thunderbird SWD #2 well at a surface location 1424 feet from the South line and 1873 feet from the West line of Section 30, Township 25 South, Range 36 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well.

(2) NGL seeks authority to inject salt water into the Delaware Mountain Group formation at a depth of 5,295' to 7,275'.

(3) NGL further seeks approval of the use of 7 inch tubing and requests that the Division approve a maximum daily injection rate for the well of 24,999 bbls per day.

(4) NGL anticipates using an average pressure of 795 psi for this well, and it requests that a maximum pressure of 1,059 psi be approved for the well.

(5) A proposed C-108 for the subject well is attached hereto in Attachment A.

(6) The granting of this application will avoid the drilling of unnecessary wells, will prevent waste, and will protect correlative rights.

WHEREFORE, NGL requests that this application be set for hearing before an Examiner of the Oil Conservation Division on July 11, 2019; and that after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

MODRALL, SPERLING, ROEHL, HARRIS
& SISK, P.A.

By: Deana M Bennett

Deana Bennett
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500 Fourth Street NW, Suite 1000
Albuquerque, New Mexico 87103-2168
Telephone: 505.848.1800
Attorneys for Applicant

CASE NO. 20584: Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving disposal into the Delaware Mountain Group formation through the Thunderbird SWD #2 well at a surface location 1424 feet from the South line and 1873 feet from the West line of Section 30, Township 25 South, Range 36 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. NGL seeks authority to inject salt water into the Delaware Mountain Group formation at a depth of 5,295' to 7,275'. NGL further seeks approval of the use of 7 inch tubing and requests that the Division approve a maximum daily injection rate for the well of 24,999 bbls per day. Said location is 6.7 miles west of Jal, NM.

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

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

ADMINISTRATIVE APPLICATION CHECKLIST

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

Applicant: NGL WATER SOLUTIONS PERMIAN LLC **OGRID Number:** 372338
Well Name: THUNDERBIRD SWD #2 **API:** TBD
Pool: SWD; DELAWARE **Pool Code:** 96100

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

1) **TYPE OF APPLICATION:** Check those which apply for [A]
   A. Location – Spacing Unit – Simultaneous Dedication
   ☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

   B. Check one only for [I] or [II]
   [I] Commingling – Storage – Measurement
   ☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
   [II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
   ☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
   A. ☒ Offset operators or lease holders
   B. ☒ Royalty, overriding royalty owners, revenue owners
   C. ☒ Application requires published notice
   D. ☒ Notification and/or concurrent approval by SLO
   E. ☒ Notification and/or concurrent approval by BLM
   F. ☒ Surface owner
   G. ☐ For all of the above, proof of notification or publication is attached, and/or,
   H. ☐ No notice required

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.

CHRIS WEYAND
Print or Type Name

5/21/2019
Date

512-600-1764
Phone Number

Signature

CHRIS@LONQUIST.COM
e-mail Address

EXHIBIT
tabbies
A

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-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance __X__ Disposal _____ Storage
Application qualifies for administrative approval? __X__ Yes _____ No

II. OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC

ADDRESS: 1509 W WALL ST // STE 306 // MIDLAND, TX 79701

CONTACT PARTY: SARAH JORDAN PHONE: (432) 685-0005 x1989

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 __X__ 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).

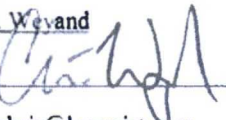
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

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: Christopher B. Weyand TITLE: Consulting Engineer

SIGNATURE:  DATE: 5/21/2019

E-MAIL ADDRESS: chris@lonquist.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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: NGL WATER SOLUTIONS PERMIAN, LLC

WELL NAME & NUMBER: THUNDERBIRD SWD #2

WELL LOCATION:	1424' FSL & 1873' FWL	K	30	25S	36E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 24.000"

Casing Size: 20.000"

Cemented with: 1,493 sx.

or _____ ft^3

Top of Cement: Surface

Method Determined: Circulation

1st Intermediate Casing

Hole Size: 17.500"

Casing Size: 13.375"

Cemented with: 2,411 sx.

or _____ ft^3

Top of Cement: Surface

Method Determined: Circulation

2nd Intermediate Casing

Hole Size: 12.250"

Casing Size: 9.625"

Cemented with: 893 sx.

or _____ ft^3

Top of Cement: Surface

Method Determined: Circulation

Production Liner

Hole Size: 8.500"

Casing Size: 7.625"

Cemented with: 115 sx.

or _____ ft^3

Top of Cement: 5,375'

Method Determined: Logged

Injection Interval

5,295 feet to 7,275 feet

(Perforated)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 7" P110, TCPC 26#
Lining Material: NOV TK805 IPC & KC CBR

Type of Packer: Nickel coated injection packer

Packer Setting Depth: 5,195'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? ___X___Yes _____No

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

2. Name of the Injection Formation: Delaware

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

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. No, new drill.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:
   Yates-Seven Rivers: 3,455'
   Bone Spring: 8,201'
   Wolfcamp: 11,273'

NGL Thundebird SWD #2

Energy Partners LP

Location - Section 30, T25S, R36E
Lea County, NM. Hobbs District

AFE Number -

TD - 7275'

Directions to Site - Travel 6.2 miles from Jal NM along NM 128W
Turn left (south) and travel 3.5miles to location.
Lat/Long (roughly): 32 10344, -103.31210

Vertical Injection DMG Target

Rig - tbd

Estimated Drilling Cost - $3.1MM

GL - 3045'

Geologic Tops (MD ft)		Section	Problems	Bit/BHA	Mud	Casing	Logging	Cement (HOLD)	Injection String
Triassic	40'	**Surface - to Isolate the Aquifers** Drill 1400' of 24" Hole 0'-1400' Set and Cement 20" Casing	Loss Circulation Hole Cleaning Wellbore stability in the Red Beds Anhydrite in the Rustler	24" PDC Bit + 9-5/8" X 8" 7/8 4.0 Combo MM w/17" NBS + 1X8" DC + 17" IBS + 1X8" DC + SS + 4X8" DC's + X/O +5" HWDP	Spud Mud MW < 9.0 ppg	1400' of 20" 106.5# J55 STC Centralizers - bottom 2 joints and every 3rd jt thereafter,	MWD Mudloggers onsite by drillout of surf shoe	**LEAD: 992 sx** 13.7 ppg EXTANDACEM, 1.694 ft3/sk @ 75% Excess (1000' of fill) **TAIL: 501sx** 14.8 ppg HALCEM, 1.342 ft3/sk @ 75% Excess (400' of fill)	5195' of 7" P110, TCPC 26# NOV TK805 IPC and KC CBR
Rustler Anhydrite -	1,326'								
Surface TD -	**1,400'**								
Top of Salt -	1,461'	**1st Intermediate to Isolate the Salt** Drill 2000' of 17-1/2" Hole 1400' - 3400' Set and Cement 13-3/8" Casing	Seepage Losses Possible H2S Anhydrite Salt Sections	17-1/2" Varel PDC Bit + 9-5/8"X 8" 7/8 4.0 Combo MM w/ 17" Steel NBS + 17" IBS + 2X8" DC's + Thruster + 4X8" DC's + 18X6" DC's + X/O + HWDP	Brine Water MW 9.0-10.0 ppg	5M A Section Casing Bowl 3400' of 13-3/8" 68# L80 BTC Centralizers - bottom jt, every 3rd joint in open hole and 2 jt inside the surface casing	MWD CBL of 13-3/8" casing if no circulation	**LEAD 537sx:** 12.9 ppg HALCEM, 1.849 ft3/sk @ 50% Excess (1000' of fill) **TAIL 1874sx:** 14.8 ppg HALCEM, 1.342 ft3/sk @ 50% Excess (2550' of fill)	
Salado -	1,686'								
Base of Salt -	3,385'								
1st Int TD -	**3,400'**								
Yates (E Delaware) -	3,455'	**2nd Intermediate - to Isolate the Capitan Reef** Drill 1895' of 12-1/4" Hole 3400' - 5240' Set and Cement 9-5/8" Casing in 2 Stages	Loss Circulation in the Capitan Reef complex Possible H2S Anhydrite and Salt Sections	12-1/4" Smith XS 716S AxeBlade PDC Bit, sub, 8" 7/8 4.0 0.16 MM w/ 12" NBS, ALS Roller Reamer DeMag , UBHO sub, ALS 12" RR/UBHO/NMDC, 6 jts: 8" DC, X/O sub, 18 jts. 6" DC, X/O sub, 8" Drilling Jars HWDP + 5" DP to Surface	Saturated Brine MW < 9.5 ppg Freshwater contingency based upon Losses in CR	5M B Section 5240' of 9-5/8" 43.5# P110 BTC **ECP DV Tool set 100' below Previous Casing shoe** Centralizers - bottom jt, 100' aside of DV tool, every 3rd joint in open hole and 5 within the 13-3/8" casing	MWD GR CBL of 9-5/8" casing if no cement is circulated on 2nd stage	**Stage 2:** **Lead 434sx:** 11.9 ppg HALCEM C, 2.046ft3/sk @ 30% Excess OH (From DV Tool - 1000' of fill) **TAIL 29sx:** 13.7 ppg HALCEM, 1.77 ft3/sk @ 50% Excess (2550' of fill) **Stage 1 112sx:** **Tail - 430sx** of13.7 ppg HALCEM, 1.685 ft3/sk @ 30% Excess (TD to DV Tool)	Nickel coated injecion packer set within 80' of injection zone
9-5/8" ECP/DV Tool -	**3,500'**								
7 Rivers (E Delaware) -	3,715'								
Queen (E Delaware) -	4,175'								
Grayburg (E Delaware) -	4,589'								
Capitan Reef	4,540'								
Injection Packer 5195'									
Liner Hanger PBR - 5220'									
2nd Int TD - 5240'									
DMG (Sh Marker) -	5,245'	Injection Interval - Drill 8-1/2" hole 5295' to 7275'	Seepage to Complete Loss Water Flows Some Anhydrite H2S possible Ballooning is possible in Cherry Canyon	8-1/2" Smith XS 716S AxeBlade PDC Bit, sub, 6-3/4" 7/8 5.7 MM w/ 8" NBS, UBHO sub, 8" NMIBS/UBHO/NMDC, Thruster, 18 jts: 6" DC 6" Drilling Jars HWDP + 5" DP to Surface	Freshwater MW 8.6 - 9.2 High visc. Sweeps and mud up for tight spots (<10 FL, 30-35 visc.)	2035' of 7-5/8" 29 7ppf, L80 FJ Connection. Centralizers on each joint	CBL of 9-5/8" during OH Logs (Triple Combo). CBL of 7-5/8" casing during Completion	Single Stage 115sx. 13.7 ppg HALCEM, 1.685 ft3/sk @ 30% Excess (TD to Liner Hanger)	
Lamar Limestone	5,246								
Bell Canyon	5,295'								
Cherry Canyon -	5,246'								
Brushy Canyon	7,225'								
2nd Int TD -	**7,275'**								

NGL Water Solutions Permian, LLC

Thunderbird SWD No. 2

FORM C-108 Supplemental Information

III. Well Data

A. Wellbore Information

1.

Well information	
Lease Name	Thunderbird SWD
Well No.	2
Location	S-30 T-25S R-36E
Footage Location	1424' FSL & 1873' FWL

2.

a. Wellbore Description

Casing Information				
Type	Surface	Intermediate 1	Intermediate 2	Liner
OD	20"	13.375"	9.625"	7.625"
WT	0.500"	0.480"	0.435"	0.430"
ID	19.000"	12.415"	8.755"	6.765"
Drift ID	18.812"	12.259"	8.599"	6.640"
COD	21"	14.375"	10.625"	7.625"
Weight	106.5 lb/ft	68 lb/ft	43.5 lb/ft	29.7 lb/ft
Grade	J-55	L-80	P-110	L-80
Hole Size	24"	17.5"	12.25"	8.5"
Depth Set	1,400'	3,400'	5,240'	Top: 5,220' Bottom: 7,275'

b. Cementing Program

Cement Information				
Casing String	Surface	Intermediate 1	Intermediate 2	Liner
Lead Cement	Extenda Cem	Halcem	Halcem	Halcem
Lead Cement Volume	992 sx	537 sx	Stage 1: 430 sx Stage 2: 434 sx	115 sx
Tail Cement	Halcem	Halcem	Halcem	N/A
Tail Cement Volume	501 sx	1,874 sx	Stage 1: N/A Stage 2: 29 sx	N/A
Cement Excess	75%	50%	30%	30%
TOC	Surface	Surface	Surface	5,220'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

Tubing Information	
OD	7"
WT	0.362"
ID	6.276"
Drift ID	6.151"
COD	7.875"
Weight	26 lb/ft
Grade	P-110 TCPC
Depth Set	5,195'

Tubing will be lined with NOV TK805 IPC with KC CBR.

4. Packer Description

Nickel coated injection packer

B. Completion Information

1. Injection Formation: Delaware Mountain Group
2. Gross Injection Interval: 5,295' – 7,275'

Completion Type: Perforated

3. Drilled for injection.
4. See the attached wellbore schematic.
5. Oil and Gas Bearing Zones within area of well:

Formation	Depth
Yates-Seven Rivers	3,455'
Bone Spring	8,201'
Wolfcamp	11,273'

VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

   Average Volume: 20,000 BPD
   Maximum Volume: 24,999 BPD

2. Closed System

3. Anticipated Injection Pressure:

   Average Injection Pressure: 795 PSI (surface pressure)
   Maximum Injection Pressure: 1,059 PSI (surface pressure)

4. This will be a commercial injection well. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Bone Spring and Wolfcamp formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Bone Spring and Wolfcamp formations.

5. The disposal interval is non-productive. No water samples are available from the surrounding area.

VIII. Geological Data

The Delaware Mountain Group (DMG) of the Delaware Basin comprises of Guadalupian-age arkosic to subarkosic sandstone, siltstone, and detrital limestone that was deposited in deep water, mainly during lowstand and early transgressive sea-level stages. The basin succession is formally divided into the Brushy Canyon, Cherry Canyon, and Bell Canyon Formations (descending order). Stratigraphic divisions within the Delaware Mountain Group are somewhat uncertain due to lithologic similarity and thus a lack of clear boundaries between the major formational intervals. The Delaware Basin during deposition of the Delaware Mountain Group was a deep-water basin bounded by carbonate-ramp (San Andres and Grayburg) and carbonate-rim (Goat Seep and Capitan) margins that developed on the western edge of the Central Basin Platform, the Northwest Shelf, and the Diablo Platform. The top of the interval is designated by another carbonate, the Lamar limestone included in the Bell Canyon Formation. The Bell Canyon contains carbonaceous silty sandstone along with clean, fine grained, massive friable sand. The Brushy Canyon and Cherry Canyon intervals consist of the following: (1) very fine to fine-grained arkosic to subarkosic sandstones, mostly massive in character, (2) very fine grained sandstones microlaminated with siltstones, (3) dark-colored organic siltstones (lutites), (4) carbonate beds (limestone or dolomite) more prevalent near shelf margins, and (5) black to dark gray, calcareous shales. Shale is notably rare in the section and is virtually absent from the Brushy Canyon Formation. Carbonate units (mainly limestone) are present in the upper Cherry Canyon and, especially, Bell Canyon intervals. Porosities and permeabilities in productive intervals range from 12–25% and 1–5 md, respectively, but occasional "streaks" of permeability of up to 200 md are sometimes present. These good porosities indicate a rock that is capable of taking water injection.

Isolation:
The nearly 350' of Lamar (Delaware) Limestone and the interbedded shales provide sufficient vertical separation between the Capitan Reef and Bell Canyon - Cherry Canyon to prevent upward migration of water into the Reef. The Delaware Mountain Group is composed predominately of sandstone and shales. All the Delaware members are interbedded, poorly consolidated, light gray sandstones and shales with occasional dense dolomite horizons. The lateral transmissivities of the sandstone beds are highly variable and often form effective barriers to the movement of hydrocarbons while allowing down-gradient movement of water. The transmissivity variations are fundamentally due to the very-fine grained nature of the sands and the local bounding shale, dolomite and/or silty shale horizons. Downward vertical separation between the Cherry Canyon and Brushy Canyon is sufficiently prevented by dense dolomite, limestone, and shale consisting of ~800' of the above described lithology to prevent downward vertical migration from the Cherry Canyon into potential pay in the Brushy Canyon.

A. Injection Zone: Delaware Mountain Group

Formation	Depth
Rustler	1,326'
Salado	1,686'
Yates	3,455'
Seven Rivers	3,715'
Queen	4,175'
Capitan Reef	4,540'
Delaware Mtn Group	5,245'
Lamar	5,246'
Bell Canyon	5,295'
Cherry Canyon	5,775'
Brushy Canyon	7,225'
Bone Spring	8,201'

B. Underground Sources of Drinking Water

Within 1-mile of the proposed Thunderbird SWD # 2 location, there are eight water wells. Total depth and depth to water have not been reported for these. Water wells in the surrounding area have an average depth of 495 ft and an average water depth of 295 ft generally producing from the Santa Rosa. The upper Rustler may also be another USDW and will be protected. The reef and corresponding aquifer has been identified as a protectable water source, so an additional casing string will be set in the well.

IX. Proposed Stimulation Program

Stimulate with acid as needed.

X. Logging and Test Data on the Well

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

XI. Chemical Analysis of Fresh Water Wells

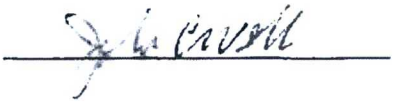
There are eight water wells that exist within one mile of the well location. If samples can be obtained, analysis results will be provided as soon as possible. A map showing the eight water wells is attached. Water Right Summaries from the New Mexico Office of the State Engineer were not available for these wells.

XII. Affirmative Statement of Examination of Geologic and Engineering Data

Based on the available engineering and geologic data we find no evidence of open faults or any other hydrologic connection between the disposal zone (in the proposed **Thunderbird SWD #2**) and any underground sources of drinking water.

NAME: John C. Webb

TITLE: Sr. Geologist

SIGNATURE: 

DATE: 4/29/2019

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised July 18, 2013

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
NGL WATER SOLUTIONS PERMIAN, LLC 1509 W WALL ST, STE 306 MIDLAND, TX 79701	372338
	3. API Number TBD

4. Property Code	5. Property Name	6. Well No.
	Thunderbird SWD	2

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
K	30	25S	36E	N/A	1424'	SOUTH	1873'	WEST	LEA

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
	-	-	-		-	-	-	-	-

9. Pool Information

Pool Name	Pool Code
SWD; DELAWARE	96100

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
N	SWD	R	Private	3,045'
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	7,275'	DELAWARE	TBD	ASAP

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
295'	1,860'	3,650'

☐ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	24"	20"	106.5 lb/ft	1,400'	1,493	Surface
Intermediate 1	17.5"	13.375"	68 lb/ft	3,400'	2,411	Surface
Intermediate 2	12.25"	9.625"	43.5 lb/ft	5,240'	893	Surface
Liner	8.5"	7.625"	29.7 lb/ft	5,220' – 7,275'	115	5,220'
Tubing	N/A	7"	26 lb/ft	5,195'	N/A	N/A

Casing/Cement Program: Additional Comments

See attached schematic.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydraulic Blinds, Pipe	5,000 psi	4,000 psi	TBD Schaffer Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if appli ab Signature:	OIL CONSERVATION DIVISION Approved By:
Printed name: Christopher B. Weyan	Title:
Title: Consulting Engineer	Approved Date: / Expiration Date:
E-mail Address: chris@lonquist.com	
Date: 5/16/2019 / Phone: (512) 600-1764	Conditions of Approval Attached

District I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	96100	SWD; DELAWARE

[4] Property Code	[5] Property Name	[6] Well Number
	THUNDERBIRD SWD	2

[7] OGRID No.	[8] Operator Name	[9] Elevation
372338	NGL WATER SOLUTIONS PERMIAN, LLC	3045.00'±

[10] Surface Location

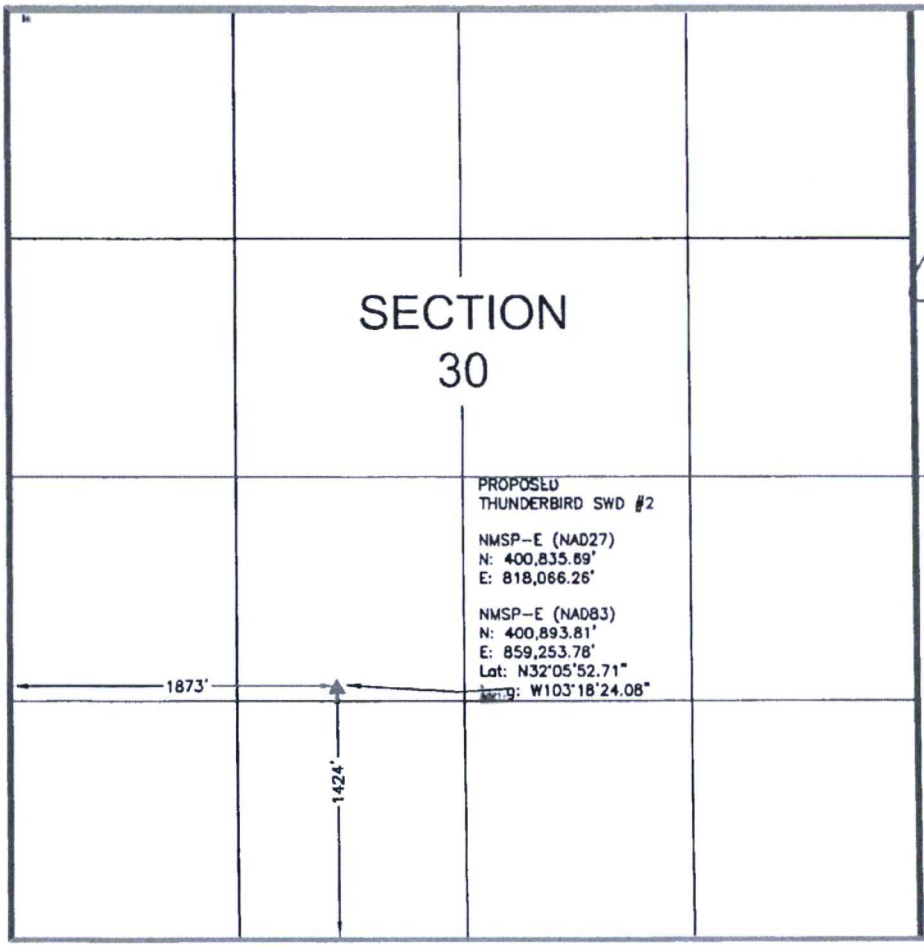
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	30	25 S	36 E	N/A	1424'	SOUTH	1873'	WEST	LEA

[11] 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

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] 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.



[17] 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: 5/21/2019

Chris Weyand
Printed Name

chris@lonquist.com
E-mail Address

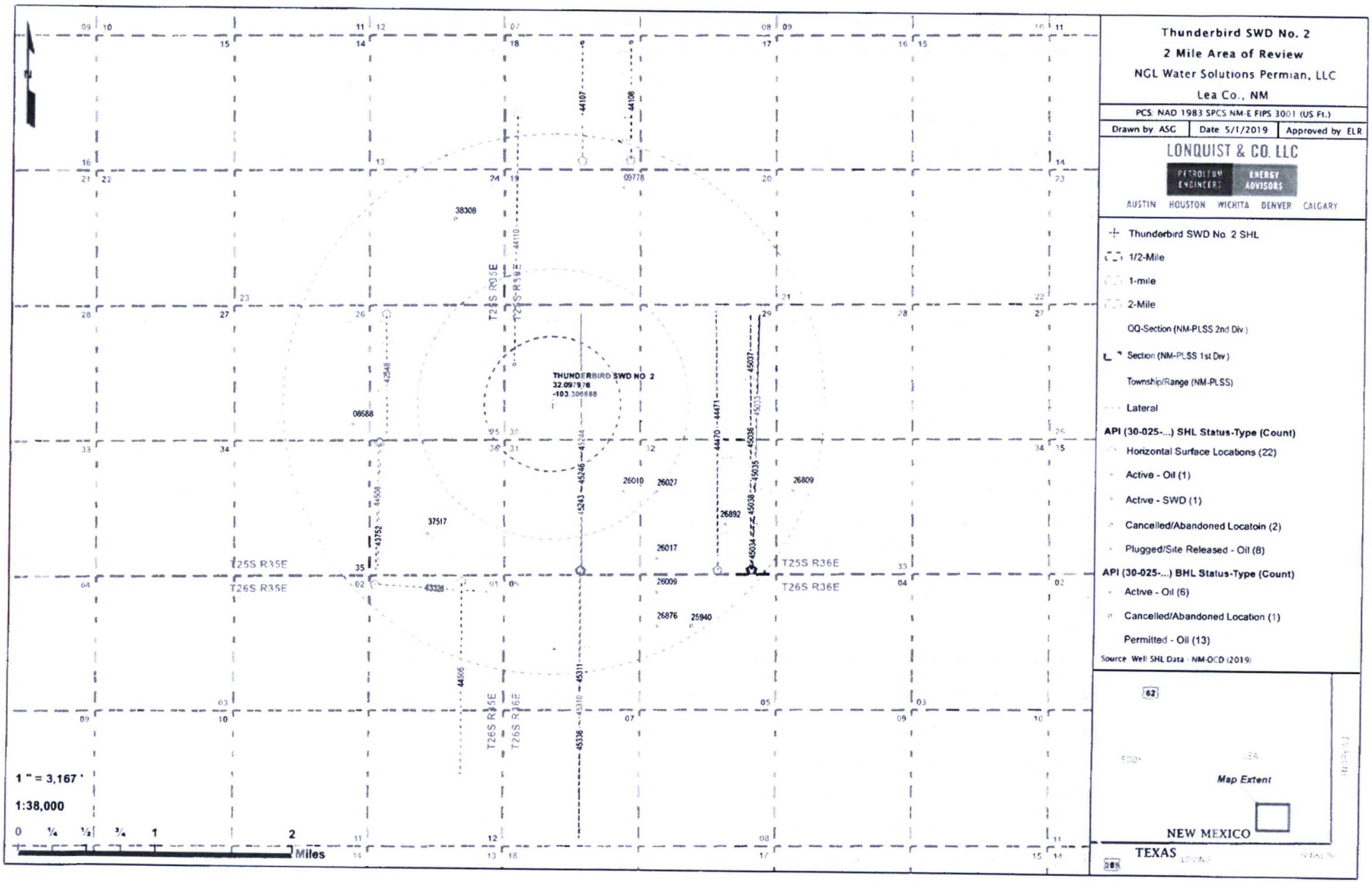
[18] SURVEYOR CERTIFICATION

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.

04/24/2019
Date of Survey

Signature and Seal of Professional Surveyor: Billy W. Barr Jr. NEW MEXICO 25114 PROFESSIONAL SURVEYOR

25114
Certificate Number



Thunderbird SWD No. 2

2 Mile Area of Review

NGL Water Solutions Permian, LLC

Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 5/1/2019	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN HOUSTON WICHITA DENVER CALGARY

- Thunderbird SWD No. 2 SHL
- 1/2-Mile
- 1-mile
- 2-Mile
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div)
- Township/Range (NM-PLSS)
- Lateral

API (30-025-...) SHL Status-Type (Count)

- Horizontal Surface Locations (22)
- Active - Oil (1)
- Active - SWD (1)
- Cancelled/Abandoned Locatoin (2)
- Plugged/Site Released - Oil (8)

API (30-025-...) BHL Status-Type (Count)

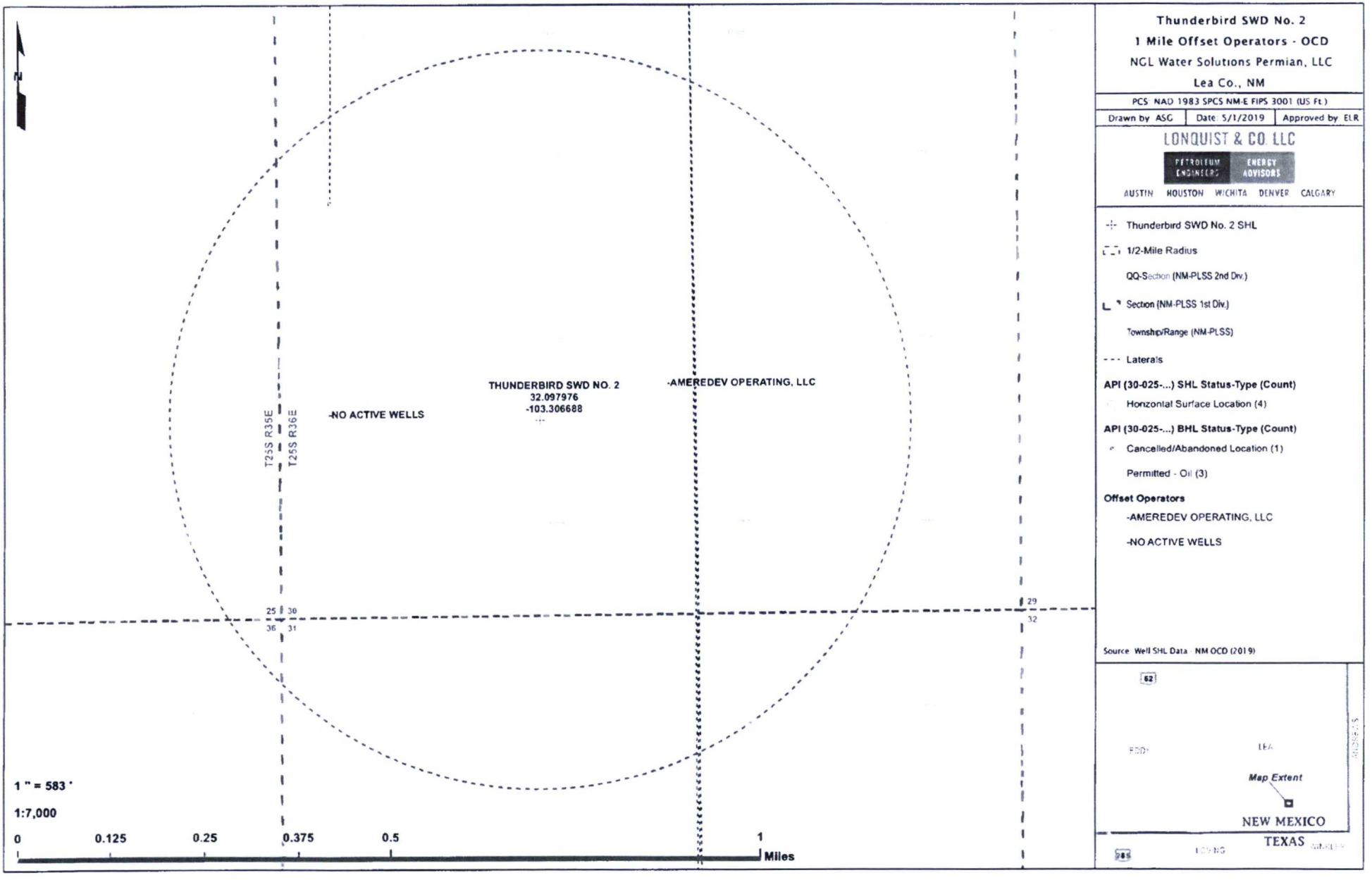
- Active - Oil (6)
- Cancelled/Abandoned Location (1)
- Permitted - Oil (13)

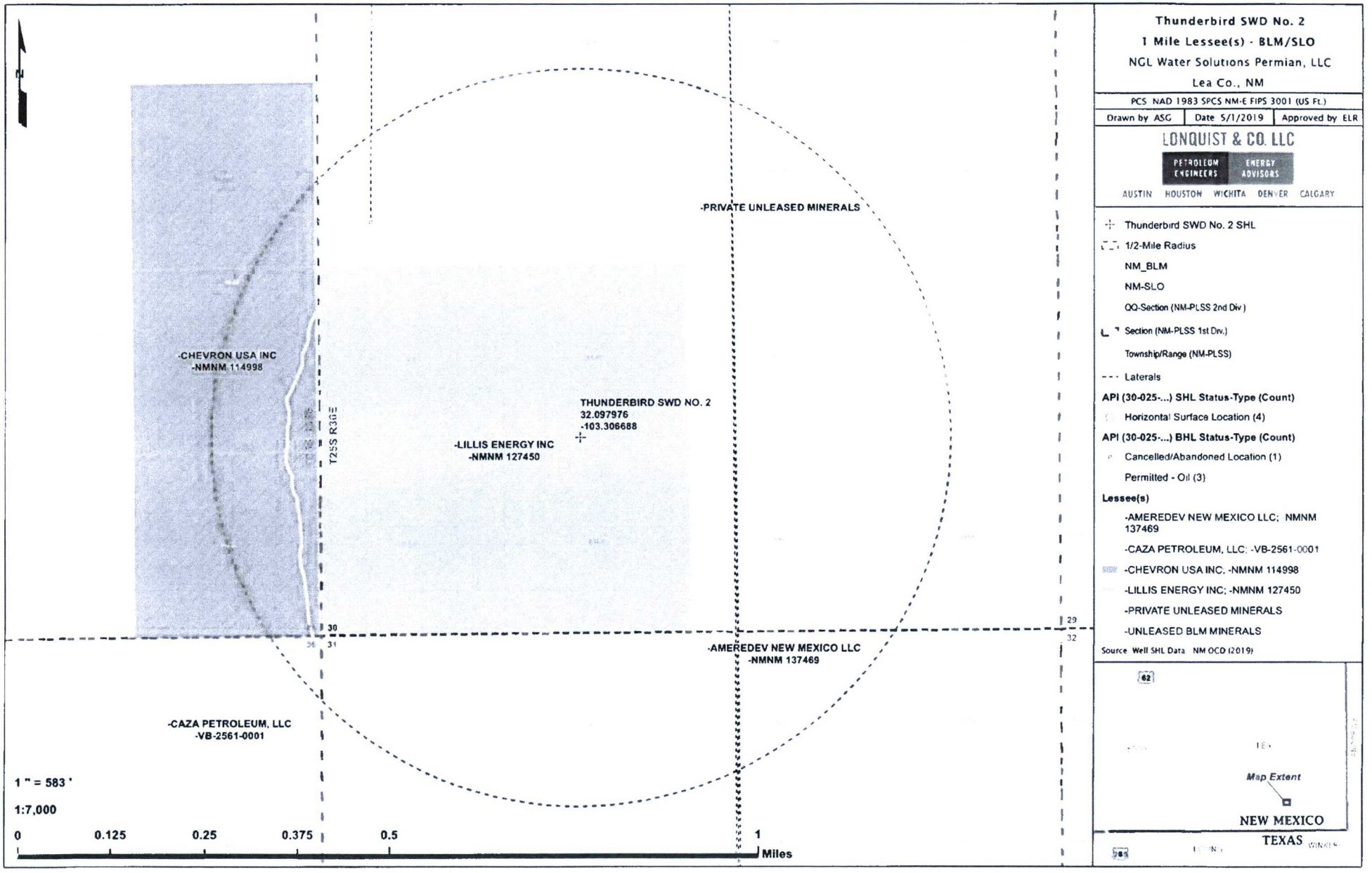
Source: Well SHL Data - NM-OCD (2019)

Thunderbird SWD No. 2

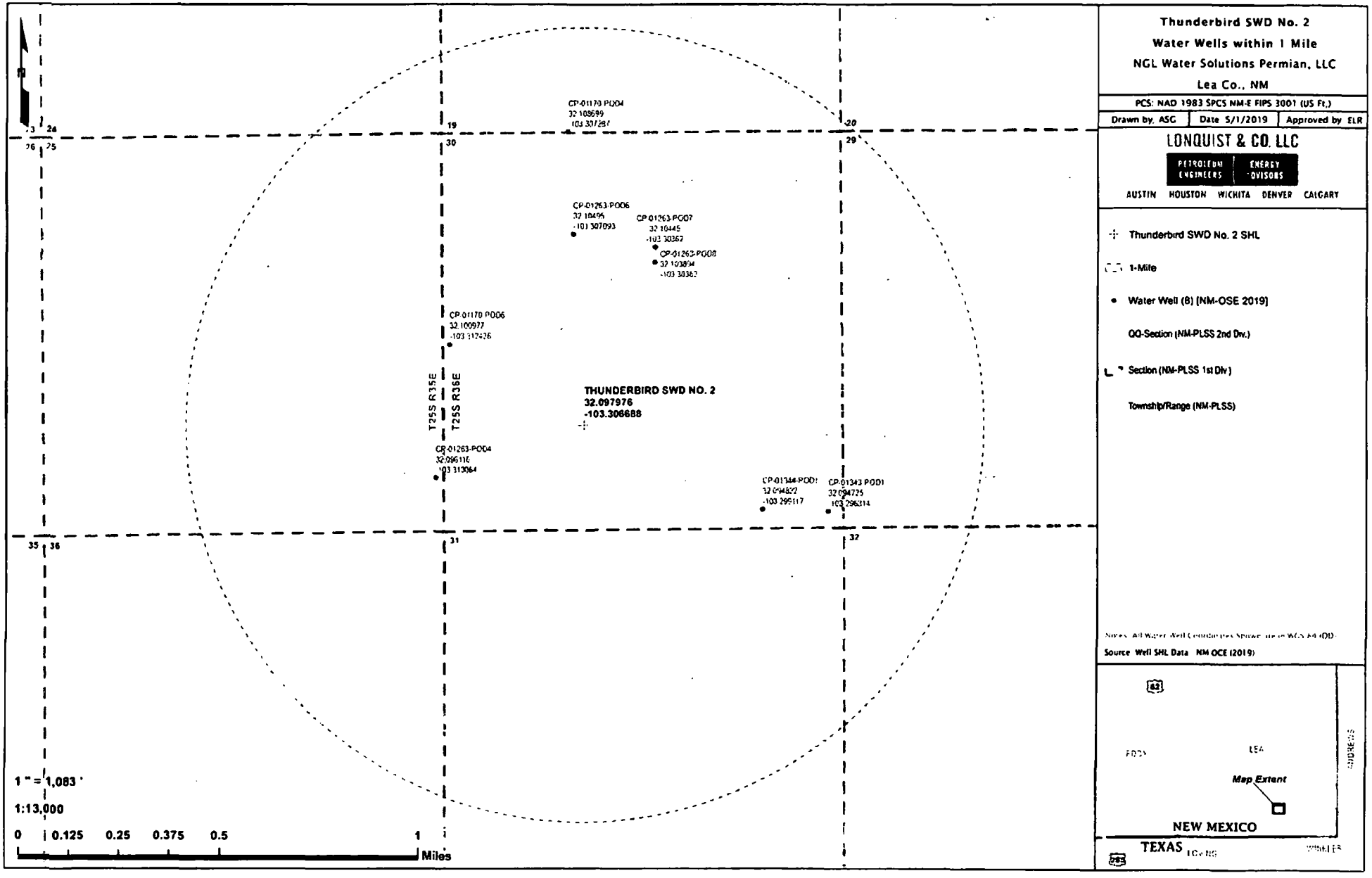
1/2 - Mile Area of Review List

API (30-025-...)	WELL NAME	WELL TYPE	STATUS	OPERATOR	TVD (FT.)	LATITUDE (NAD83 DD)	LONGITUDE (NAD83 DD)	DATE DRILLED
45244	NANDINA 25 36 31 FEDERAL COM #125H	O	N	AMEREDEV OPERATING, LLC	0	32.08012660000	-103.30300350000	12/31/9999
45243	NANDINA 25 36 31 FEDERAL COM #105H	O	N	AMEREDEV OPERATING, LLC	0	32.08012660000	-103.30313260000	12/31/9999
45246	NANDINA 25 36 31 FEDERAL COM #115H	O	N	AMEREDEV OPERATING, LLC	0	32.08012660000	-103.30306810000	12/31/9999
44110	PINCH FEE WCB #001C	O	C	ONEENERGY PARTNERS OPERATING, LLC	0	32.12923000000	-103.31103400000	12/31/9999


THUNDERBIRD SWD NO. 2
32.097976
-103.306688
-NO ACTIVE WELLS
-AMEREDEV OPERATING, LLC
T25S R35E
T25S R36E
25
30
36
31
29
32
1 " = 583 '
1:7,000
0
0.125
0.25
0.375
0.5
1
Miles
Thunderbird SWD No. 2
1 Mile Offset Operators - OCD
NGL Water Solutions Permian, LLC
Lea Co., NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 5/1/2019
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY
Thunderbird SWD No. 2 SHL
1/2-Mile Radius
QQ-Section (NM-PLSS 2nd Div.)
Section (NM-PLSS 1st Div.)
Township/Range (NM-PLSS)
Laterals
API (30-025-...) SHL Status-Type (Count)
Horizontal Surface Location (4)
API (30-025-...) BHL Status-Type (Count)
Cancelled/Abandoned Location (1)
Permitted - Oil (3)
Offset Operators
-AMEREDEV OPERATING, LLC
-NO ACTIVE WELLS
Source: Well SHL Data - NM OCD (2019)
62
EDDY
LEA
Map Extent
NEW MEXICO
TEXAS
285


-PRIVATE UNLEASED MINERALS
-CHEVRON USA INC
-NMNM 114998
THUNDERBIRD SWD NO. 2
32.097976
-103.306688
-LILLIS ENERGY INC
-NMNM 127450
T25S R30E
-AMEREDEV NEW MEXICO LLC
-NMNM 137469
-CAZA PETROLEUM, LLC
-VB-2561-0001
30
31
29
32
1 " = 583 '
1:7,000
0
0.125
0.25
0.375
0.5
1
Miles
Thunderbird SWD No. 2
1 Mile Lessee(s) - BLM/SLO
NGL Water Solutions Permian, LLC
Lea Co., NM
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 5/1/2019
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY
Thunderbird SWD No. 2 SHL
1/2-Mile Radius
NM_BLM
NM-SLO
QQ-Section (NM-PLSS 2nd Div.)
Section (NM-PLSS 1st Div.)
Township/Range (NM-PLSS)
Laterals
API (30-025-...) SHL Status-Type (Count)
Horizontal Surface Location (4)
API (30-025-...) BHL Status-Type (Count)
Cancelled/Abandoned Location (1)
Permitted - Oil (3)
Lessee(s)
-AMEREDEV NEW MEXICO LLC; NMNM 137469
-CAZA PETROLEUM, LLC; -VB-2561-0001
-CHEVRON USA INC; -NMNM 114998
-LILLIS ENERGY INC; -NMNM 127450
-PRIVATE UNLEASED MINERALS
-UNLEASED BLM MINERALS
Source: Well SHL Data: NM OCD (2019)
Map Extent
NEW MEXICO
TEXAS

Thunderbird SWD #2: Offsetting Produced Water Analysis																		
wellname	api	section	township	range	unit	county	formation	ph	tds_mgL	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
BELL LAKE UNIT #009	3002520261	18	23S	34E	K	LEA	BONE SPRING		204652						130000	512	260	
THISTLE UNIT #071H	3002542425	27	23S	33E	A	Lea	BONE SPRING 1ST SAND	5.6	171476.3	55363.2	9140	40.4	1023	1 1	104576.4	244	560	770
BELL LAKE 19 STATE #004H	3002541517	19	24S	33E	O	Lea	BONE SPRING 2ND SAND	6.3		76378	6238	11	834	0	131397	159	670	200
BELL LAKE 19 STATE #003H	3002541516	19	24S	33E	O	Lea	BONE SPRING 2ND SAND	6.7		59599	7326	11	942	0.69	108190	171	680	230
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	6.7	95604	31066	3196	10	394	0.5	59071	183	0	100
SALADO DRAW 6 FEDERAL #001H	3002541293	6	26S	34E	M	Lea	BONE SPRING 3RD SAND	7			3289	0.3	474.5	0.38		219.6		300
SNAPPING 2 STATE #014H	3001542688	2	26S	31E	P	EDDY	WOLFCAMP	7.3	81366.4	26319.4	2687.4	26.1	326.7		50281.2		399.7	100
BELLOQ 2 STATE #002H	3001542895	2	23S	31E	C	EDDY	WOLFCAMP	6.8	119471.8	37359.2	5659.1	22.4	746.1		73172.5		1035.5	250



Thunderbird SWD No. 2
Water Wells within 1 Mile
NGL Water Solutions Permian, LLC
Lea Co., NM

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 5/1/2019	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN HOUSTON WICHITA DENVER CALGARY

- Thunderbird SWD No. 2 SHL
- 1-Mile
- Water Well (8) [NM-OSE 2019]
- QQ-Section (NM-PLSS 2nd Div.)
- Section (NM-PLSS 1st Div)
- Township/Range (NM-PLSS)

Notes: All Water Well Coordinates Shown are in WGS 84 (DD)

Source: Well SHL Data: NM OCE (2019)

CASE NO. _____: Application of NGL Water Solutions Permian, LLC for approval of salt water disposal well in Lea County, New Mexico. Applicant seeks an order approving disposal into the Delaware Mountain Group formation through the Thunderbird SWD #2 well at a surface location 1424 feet from the South line and 1873 feet from the West line of Section 30, Township 25 South, Range 36 East, NMPM, Lea County, New Mexico for the purpose of operating a salt water disposal well. NGL seeks authority to inject salt water into the Delaware Mountain Group formation at a depth of 5,295' to 7,275'. NGL further seeks approval of the use of 7 inch tubing and requests that the Division approve a maximum daily injection rate for the well of 24,999 bbls per day. Said location is 6.7 miles west of Jal, NM.