BEFORE THE OIL CONSERVATION DIVISION
EXAMINER HEARING MARCH 5, 2020

CASE NO. 21129

FLOWERS SWD NO. 3 WELL

EDDY COUNTY, NEW MEXICO

LONGWOOD WATER MANAGEMENT COMPANY, LLC

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

APPLICATION OF LONGWOOD WATER MANAGEMENT COMPANY, LLC FOR AUTHORIZATION TO INJECT INTO THE FLOWERS SWD No. 3 WELL FOR PURPOSES OF DISPOSAL, EDDY COUNTY, NEW MEXICO.

CASE NO. 21129

AFFIDAVIT OF MARSHALL BROOKS VERSCHOYLE

I, Marshall Brooks Verschoyle, of lawful age and being first duly sworn, declare as follows:

1. My name is Marshall Brooks Verschoyle. I work for MRC Energy Company, an affiliate of Matador Production Company ("Matador"), as the surface land manager for MRC Energy. Longwood Water Management Company, LLC ("Longwood Water Management") is the applicant in this case and is an affiliated company.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum land matters. My credentials as an expert in petroleum land matters have been accepted by the Division and made a matter of record.

3. I am familiar with the application filed by Longwood Water Management in this case, and I am familiar with the status of the lands in the subject area.

4. This application was originally filed for administrative approval on December 4, 2019. It was protested during the administrative review period by the New Mexico State Land Office. As a result of that protest, Longwood Water Management requested that the application be set for hearing before a Division Examiner.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. A
Submitted by: **Longwood Water Management**
Hearing Date: March 05, 2020
Case No. 21129

5. The New Mexico State Land Office is the only entity that objected to this application. The State Land Office has stated that it does not oppose presentation of this case by affidavit. Therefore, I do not expect any opposition at hearing.

6. **Exhibit A-1**, attached hereto, is a full and complete copy of the C-108 application prepared for Longwood Water Management by Brian Wood of Permits West.

7. In this application, Longwood Water Management Company seeks authority to inject produced salt water for purposes of disposal through its proposed **Flowers SWD No. 3 Well** (API No. 30-015-pending), which will be located 1153 feet from the north line and 858 feet from the west line (Unit D), Section 21, Township 26 South, Range 31 East, NMPM, Eddy County, New Mexico. Page 12 in Exhibit A-1 contains a C-102 depicting the location for the proposed injection well.

8. The proposed injection disposal interval will be within the Devonian formation [SWD; Devonian (Pool Code 96101)] through an open-hole completion between 16,927 feet and 17,871 feet below the ground. The estimated average disposal volume will be 50,000 barrels of water per day with a maximum anticipated volume of 60,000 barrels of water per day. The average injection pressure is expected to be approximately 2,500 psi with a maximum injection pressure of 3,385 psi.

9. The proposed injection is a new project and will be an open and closed injection system as water will be both trucked and piped. It will operate as a commercial salt water disposal well.

10. Notice of this application was provided to the surface owner and oil and gas lessees and operators of record within a one-mile area of review that are entitled to receive notice. Parties entitled to notice were identified based on a determination of the title of lands and interests as

recorded in the records of Eddy County and from a review of New Mexico Oil Conservation Division and BLM operator records as of the time the application was filed.

11. It is my opinion that Longwood Water Management undertook a good faith effort to locate and identify the correct parties and valid addresses required for notice within the one-mile area of review. To the best of my knowledge the addresses used for notice purposes are valid and correct. There were no unlocatable parties for whom we were unable to locate a valid address.

12. The U.S. Bureau of Land Management owns the surface at the location of the proposed injection well. Page 16 in Exhibit A-1 is a map depicting all oil and gas leases within a one-mile radius of the proposed injection well. Page 17 of that same exhibit contains a table identifying each of the lessees of record and the operators for those leases.

13. Pages 27 to 34 of Exhibit A-1 contain a copy of a sample notice letter sent by certified mail, return receipt requested, to all parties entitled to notice of the C-108 administrative application within the one-mile area of review, along with proof that notice was sent, as required by Division rule. Constructive notice was also provided by publication in a newspaper of general circulation in Eddy County, New Mexico, where the proposed injection well will be located. A copy of the affidavit of publication is included in Exhibit A-1 at page 28.

14. **Exhibit B** is a copy of an attorney affidavit prepared by Holland & Hart LLP reflecting that notice of this hearing was sent to the State Land Office, as the sole protestant.

FURTHER AFFIANT SAYETH NOT.

Marshall Brooks Verschoyle

STATE OF TEXAS)
)
COUNTY OF Dallas)

SUBSCRIBED and SWORN to before me this 2nd day of March 2020 by Marshall Brooks Verschoyle.

NOTARY PUBLIC

My Commission Expires:
9/28/2023

Sarah Melita Pitts
My Commission Expires
09/28/2023
ID No. 130365561

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: Longwood Water Management Company, LLC **OGRID Number:** 328484
Well Name: Flowers SWD 3 **API:** 30-015-
Pool: SWD; Devonian **Pool Code:** 96101

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

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

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

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.

Brian Wood
Print or Type Name

Signature

12-4-19
Date

505 466-8120
Phone Number

brian@permitswest.com
e-mail Address

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. A1
Submitted by: Longwood Water Management
Hearing Date: March 05, 2020
Case No. 21129

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 XXX Disposal _____ Storage
Application qualifies for administrative approval? XXX Yes _____ No

II. OPERATOR: LONGWOOD WATER MANAGEMENT COMPANY, LLC

ADDRESS: 5400 LBJ FREEWAY, SUITE 1500, DALLAS TX 75240

CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120

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 XXX 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:

Flowers SWD 3
Devonian (96101)

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: BRIAN WOOD TITLE: CONSULTANT

SIGNATURE:  DATE: NOV. 18, 2019

E-MAIL ADDRESS: brian@permitswest.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 2

INJECTION WELL DATA SHEET

Tubing Size: 7" by 5.5" Lining Material: IPC or Fiberglass lined

Type of Packer: STAINLESS STEEL &/OR NICKEL

Packer Setting Depth: 16,827' - 16,927'

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

Additional Data

1. Is this a new well drilled for injection? XXX Yes _____ No

   If no, for what purpose was the well originally drilled? _____

2. Name of the Injection Formation: DEVONIAN

3. Name of Field or Pool (if applicable): SWD; DEVONIAN (POOL CODE 96101)

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

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

   OVER: DELAWARE (3,982'), BONE SPRING (7,921'), WOLFCAMP (11,170'), & PENN (13,500')

   UNDER: none

Side 1

INJECTION WELL DATA SHEET

OPERATOR: LONGWOOD WATER MANAGEMENT COMPANY, LLC

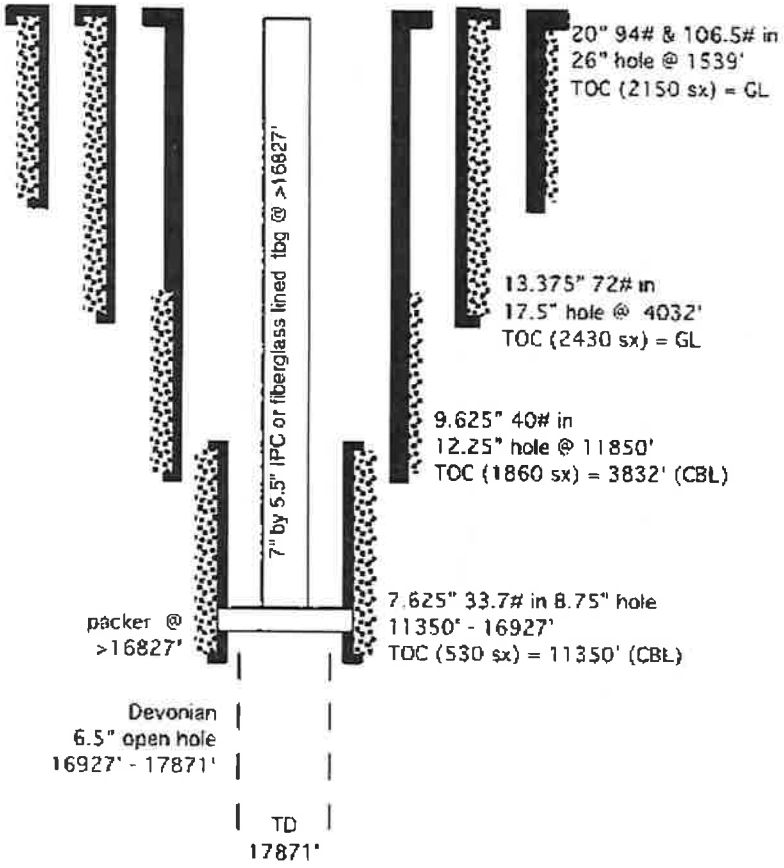
WELL NAME & NUMBER: FLOWERS SWD 3

WELL LOCATION: 1153' FNL & 858' FWL | D | 21 | 26 S | 31 E

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

(not to scale)



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 26" Casing Size: 20"

Cemented with: 2150 sx. *or* _____ ft³

Top of Cement: SURFACE Method Determined: VISUAL

Intermediate Casing

Hole Size: 17.5" & 12.25 Casing Size: 13.375" & 9.625"

Cemented with: 2430 & 1860 sx. *or* _____ ft³

Top of Cement: SURFACE & 3832' Method Determined: VISUAL & CBL

Production Casing

Hole Size: 8.75" Casing Size: 7.625" @ 11,350'

Cemented with: 530 sx. *or* _____ ft³

Top of Cement: 11,350' Method Determined: CBL

Total Depth: 16,927'

Injection Interval 6.5" OPEN HOLE

16,927' feet to 17,871'

(Perforated or Open Hole; indicate which)

I. Goal is to drill a 17,871' deep commercial saltwater disposal well on BLM. Disposal interval will be 16,927' – 17,871' in the SWD; Devonian (96101). See Exhibit A for C-102 and map.

II. Operator: Longwood Water Management Company, LLC [OGRID 328484]
Operator phone number: (972) 371-5420
Operator address: 5400 LBJ Freeway, Suite 1500, Dallas TX 75240
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease (BLM): NMNM-138866 Lease Size: 640 acres
Lease Area: all Sec. 21, T. 26 S., R 31 E.
Well name and number: Flowers SWD 3
Location: 1153' FNL & 858' FWL Section 21, T. 26 S., R. 31 E.

A. (2) Surface casing (20", 94 & 106.5#, J-55, BTC) will be set at 1,539' in a 26" hole and cemented to GL with 2,150 sacks (based on 50% OH excess).

First intermediate casing (13.375", 72#, N-80, BTC) will be set at 4,032' in a 17.5" hole and cemented to GL with 2,430 sacks (based on 50% OH excess).

Second intermediate casing (9.625", 40#, P-110 EC, BTC) will be set at 11,850' in a 12.25" hole and cemented to 3,832' with 1,860 sacks (based on 35% OH excess). An optional DV tool may be set at ≈4282'.

Third intermediate casing (7.625", 33.7#, P-110HP, USS Liberty FJM) will be set from 11,350' to 16,927' in an 8.75" hole and cemented to 11,350' (CBL) with 530 sacks (based on 10% OH excess).

A 6.5" open hole will be drilled from 16,927' to 17,871'.

A. (3) Tubing will be a tapered string. 7", 26#, P-110, BTC fiberglass lined tubing will be run from GL to 11,250'. 5.5", 20#, P-110IC, IPC or fiberglass lined will be run from 11,250' to 16,827'. Setting depth will be ≥16,827'. (Disposal interval will be 16,927' to 17,871'.)

A. (4) A stainless steel and/or nickel packer will be set at ≥16,827' (top of the open hole which will be at 16,927').

B. (1) Disposal zone will be the Devonian (SWD; Devonian (96101) pool). Estimated fracture gradient is ≈0.62 to ≈0.68 psi per foot. Variation depends on whether limestone or dolomite.

B. (2) Disposal interval will be open hole from 16,927' to 17,871'.

B. (3) Well has not been drilled. It will be drilled as a saltwater disposal well.

B. (4) No perforated intervals are in the well.

B. (5) Only zones producing, now or in the past, in the area of review and above the Devonian (16,917') are the Delaware (3,982'), Bone Spring (7,912'), Wolfcamp (11,170'), and Penn (13,500'). No oil or gas zone is below the Devonian in the area of review.

IV. This is not an expansion of an existing injection project. It is disposal only.

V. Exhibit B shows and tabulates the 3 existing wells (1 gas + 2 P&A) within a 1-mile radius along with the closest existing well outside of that radius (P&A). Deepest well within a mile is 13,500' TVD. Closest partially approved (APD) SWD; Devonian well (30-025-44569) is 3.75 miles north in H-32-25s-31e. Closest fully approved (AAPD & C-108) SWD; Devonian well (30-025-45223) is 4.01 miles northwest in P-2-26s-30e. (Longwood has applied for a SWD; Devonian well (Jack Hammack Fed SWD 1) 1.81 miles east-northeast in P-15-26s-31e. Approvals are pending). Closest Devonian oil or gas well is >2 miles away. Exhibit C shows all wells within 2-miles.

All leases within a one-mile radius are BLM or NMSLO. Exhibit D shows and tabulates all the leases within a mile. Exhibit E shows all lessors within a two-mile radius. Two-mile radius leases are BLM, fee, or NMSLO.

VI. No Devonian penetrator is within a mile. Deepest existing or proposed well within a mile is 13,500'. That well bottomed in the Penn.

VII. 1. Average injection rate will be ≈50,000 bwpd.
Maximum injection rate will be 60,000 bwpd.
2. System will be open and closed. Water will both be trucked and piped.
3. Average injection pressure will be ≈2,500 psi
Maximum injection pressure will be 3,385 psi (= 0.2 psi/foot x 16,927' (top of open hole)).
4. Disposal water will be produced water, mainly from Bone Spring, Delaware, and Wolfcamp wells. There are 36 approved Bone Spring wells, 10 approved Delaware wells, and 61 approved Wolfcamp wells in T. 26 S., R. 31 E. The well will take other Permian Basin waters. A summary of produced water analyses from T. 26 S., R. 31 E. is Exhibit F. Devonian produced water analyses (in mg/L) from wells in T. 25 S., R. 31 E. are in the table below. Compatibility problems are not expected. At least 15,798,856 barrels of water have been disposed in a Devonian; SWD (30-025-43379) that is 4-1/2 miles northeast.

API	section	unit	TDS (mg/L)	Chloride (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)
3001529252	1	L	128946.5	78100	317	481
3001529728	2	I	131449.7	79220	353	542
3001529728	2	I	85798.5	51300	59	389
3001529850	12	J	131449.7	79220	353	542
3001529252	1	L	135335.2	82003	248.9	477
3001529728	2	I	136044.4	82374	311.1	468
3001529728	2	I	136576.4	82850	122.4	499
3001529252	1	L	133147.6	80547	341.6	468

5. No Devonian production is within >2 miles.

VIII. The Devonian (estimated 964' thick) is comprised of limestone and dolomite. Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary at the surface. There has been some interest in developing the brackish Dewey Lake which is below the Quaternary and above the Rustler.

According to State Engineer records (Exhibit G), 2 water wells are within 2 miles. Closest of the 2 wells is 1.84 miles northwest. Deepest of the 2 wells is 325'. Commingled flow from the wells was sampled on October 22, 2019. No underground source of drinking water is below the proposed disposal interval.

Formation tops are:

Quaternary = 0'
Rustler anhydrite = 1514'
Salado = 1895'
Castile = 2260'
Lamar = 3951'
Bell Canyon = 3982'
Cherry Canyon = 5094'
Brushy Canyon = 6324'
Bone Spring = 7912'
Wolfcamp = 11170'
Strawn = 13914'
Atoka = 14032'
Morrow = 14977'
Barnett = 16117'
Mississippian limestone = 16440'
Woodford shale = 16781'
Devonian carbonate = 16917'
disposal interval = 16927' – 17871'
TD = 17871'
(Montoya = 17881')

Two water wells are within a 2-mile radius according to State Engineer records (Exhibit G) and were sampled on October 22, 2019. There will be >2.9 miles of vertical separation and shale, salt, and anhydrite intervals between the bottom of the only likely underground water source (Quaternary) and the top of the Devonian.

IX. The well will be stimulated with acid.

X. GR log will be run from the third intermediate to TD.

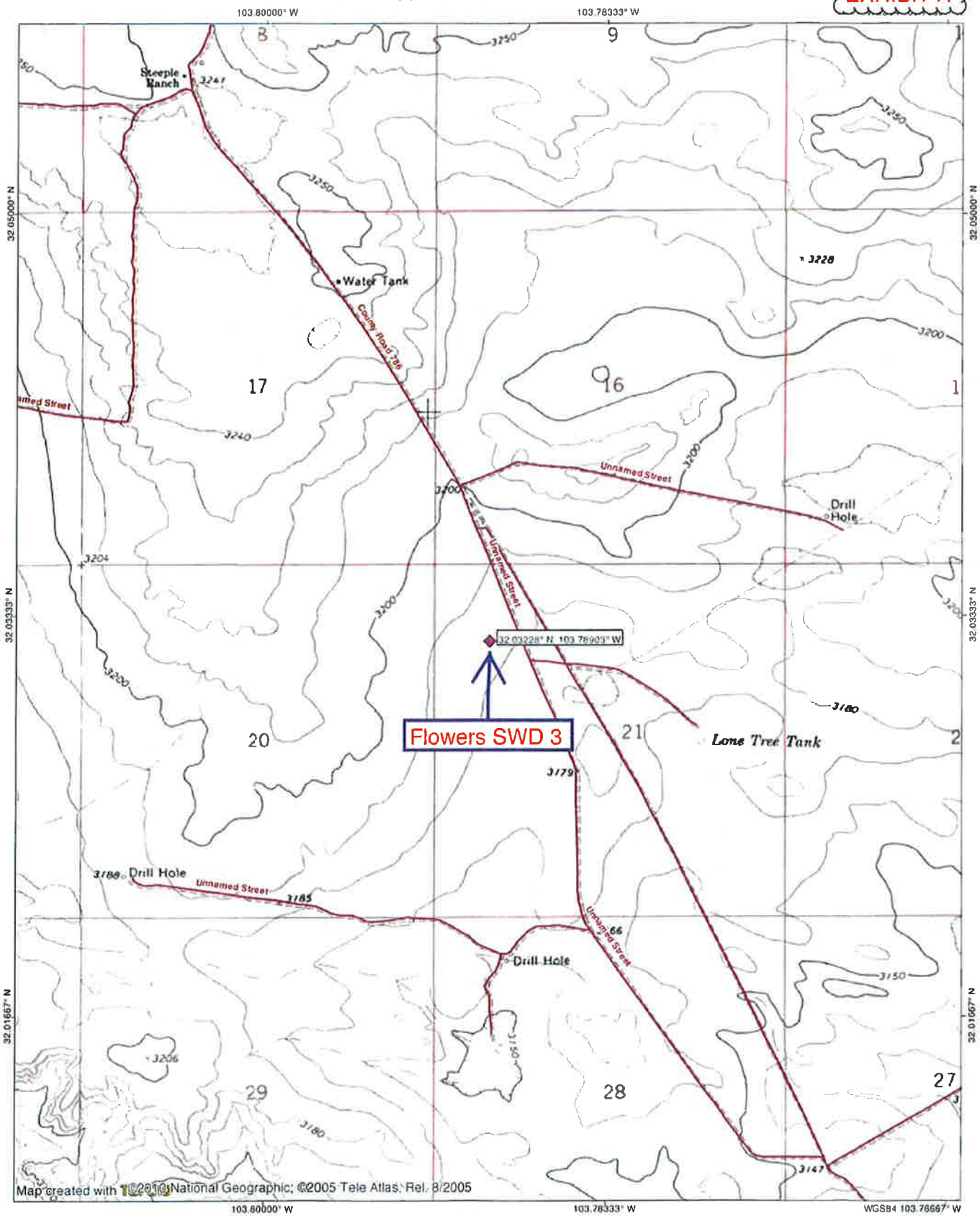
XI. Two water wells within 2 miles were found and sampled during an October 22, 2019 field inspection.

XII. Longwood Water Management Company, LLC (Exhibit H) is not aware of any geologic or engineering data that may indicate the Devonian is in hydrologic connection with any underground sources of water. There are 156 active Devonian SWD wells and 9 active Devonian water injection wells in New Mexico.

XIII. A legal ad (see Exhibit I) was published on October 31, 2019. Notice (this application) has been sent (Exhibit J) to the surface owner (BLM) and all operators, lessees, and unleased mineral interest owners within a mile who are required to receive notice.

TOPO! map printed on 10/12/19 from "Untitled.tpo"

EXHIBIT A



NATIONAL GEOGRAPHIC

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 miles
0.0 0.5 1.0 km

TN / MN
6.5°

11 10/12/19

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**

EXHIBIT A

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-	96101	SWD; Devonian

[4] Property Code	[5] Property Name	[6] Well Number
	FLOWERS SWD	3

[7] OGRID No.	[8] Operator Name	[9] Elevation
328484	LONGWOOD WATER MANAGEMENT COMPANY, LLC	3186'

[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
D	21	26-S	31-E	–	1153'	NORTH	858'	WEST	EDDY

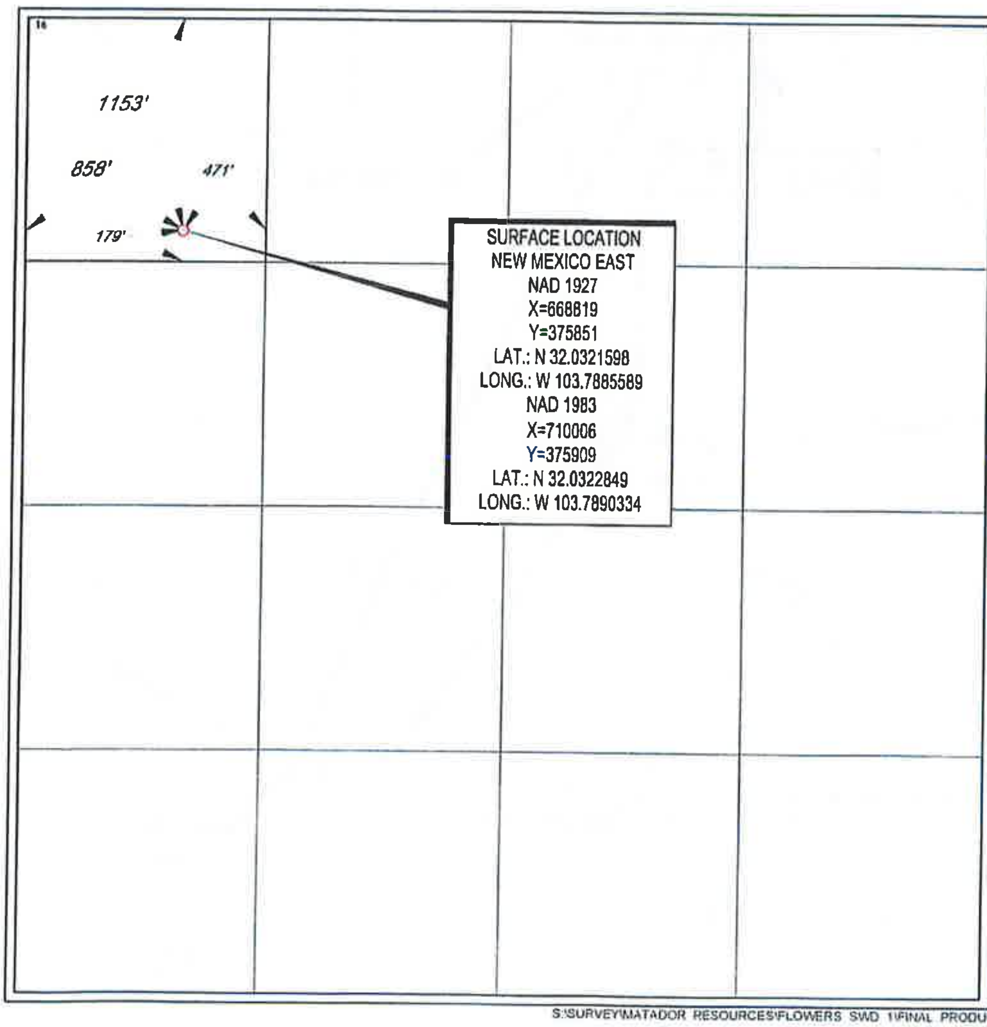
[11] Bottom Hole Location If Different From Surface

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.

[16]



[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] 11-17-19
Signature Date

Brian Wood
Printed Name

brian@permitswest.com
E-mail Address

505 466-8120

[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 to the best of my belief.

10/08/2019
Date of Survey
Signature and Seal of Professional Surveyor

ANGEL M. BAEZA
NEW MEXICO
25116
PROFESSIONAL SURVEYOR

Certificate Number 12

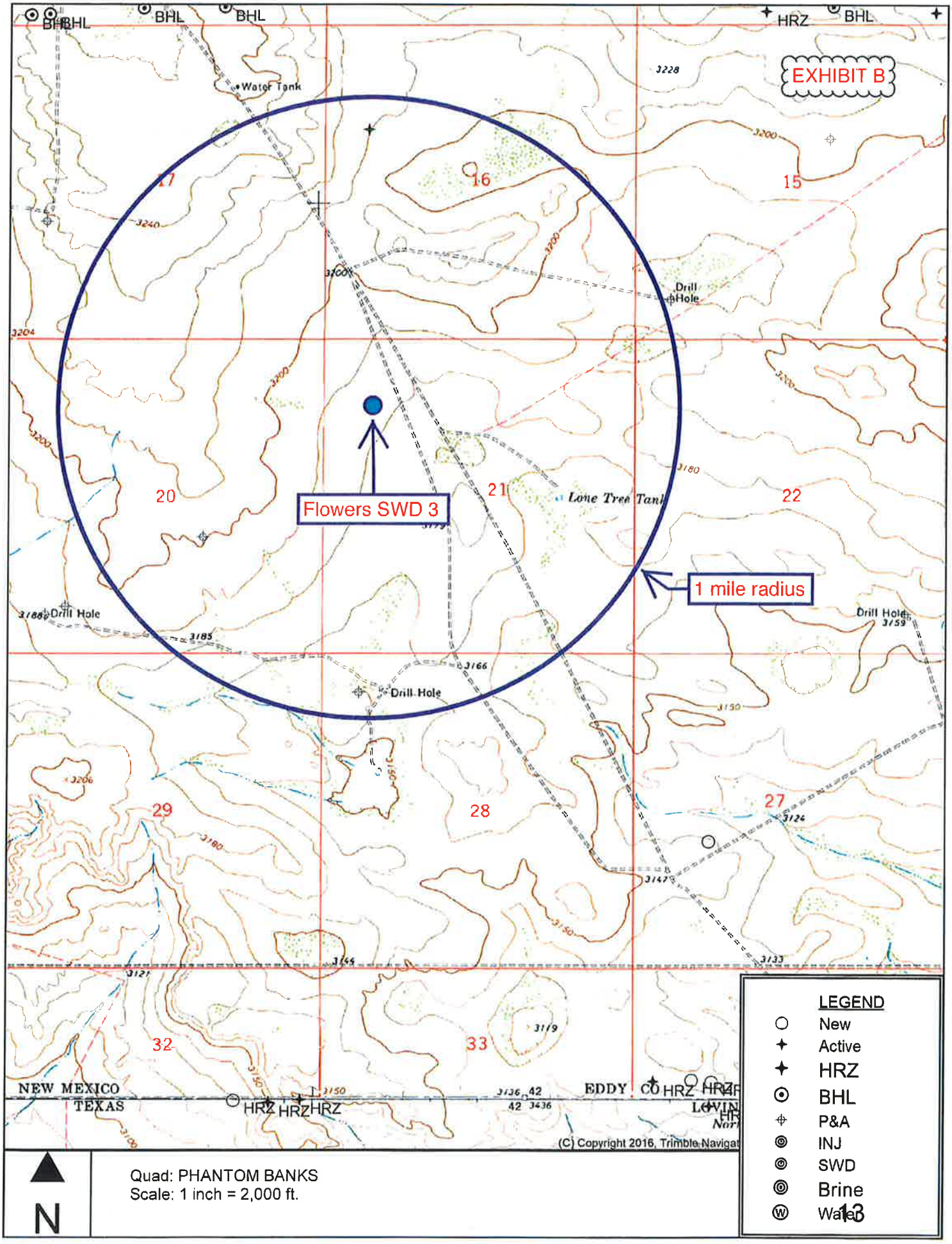


EXHIBIT B
Flowers SWD 3
1 mile radius
Water Tank
Drill Hole
Lone Tree Tank
NEW MEXICO
TEXAS
EDDY CO
LEGEND
New
Active
HRZ
BHL
P&A
INJ
SWD
Brine
Water
N
Quad: PHANTOM BANKS
Scale: 1 inch = 2,000 ft.
(C) Copyright 2016, Trimble Navigat

SORTED BY DISTANCE FROM FLOWERS SWD 3

API	OPERATOR	WELL	STATUS	UNIT-SECTION-T26S-R31E	TVD	ZONE @ TD	FEET FROM FLOWERS SWD 3
3001531131	EOG	Phantom Draw Federal Unit 003	P&A	J-20	13500	Penn	3604
3001530485	EOG	Merphan 16 State 001	G	E-16	12643	Wolfcamp	4692
3001505888	Finley & Cherry	Buchly	P&A	D-28	4080	Delaware	4791
3001505862	*Buckles Mosie*	*Federal 1-15*	*P&A*	*M-15*	*4155*	*Delaware*	*5413*

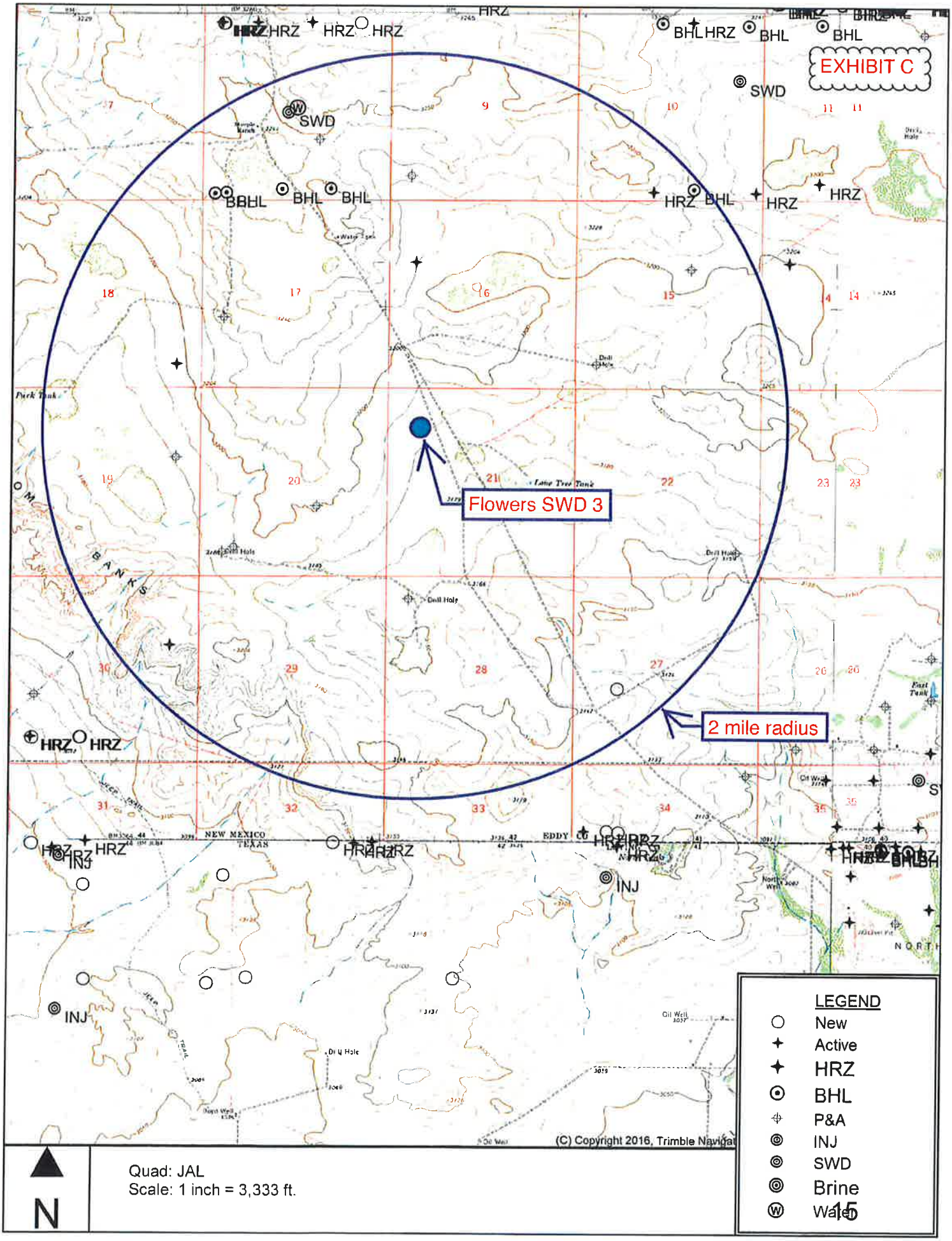
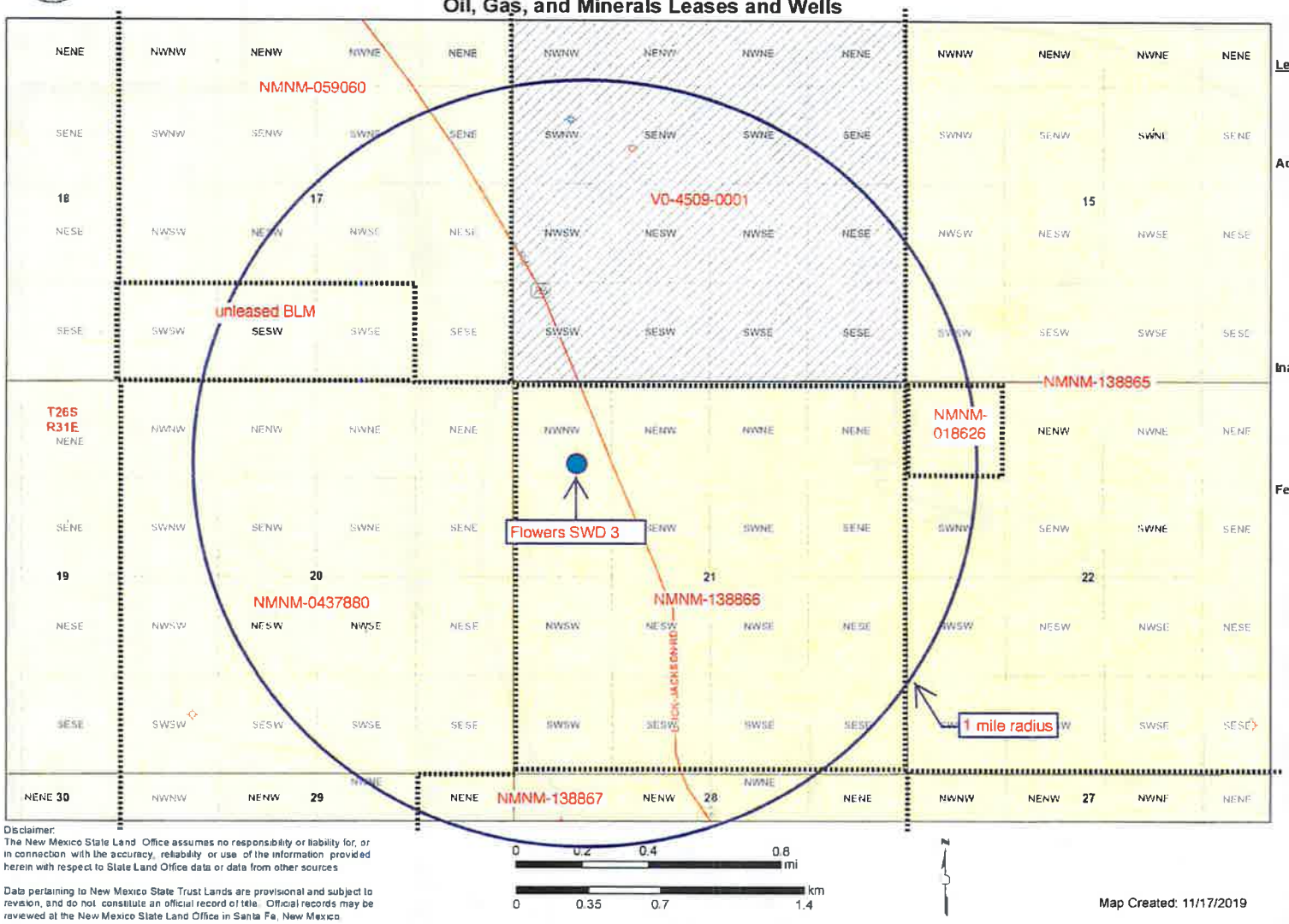


EXHIBIT C
Flowers SWD 3
2 mile radius
LEGEND
New
Active
HRZ
BHL
P&A
INJ
SWD
Brine
Water
N
Quad: JAL
Scale: 1 inch = 3,333 ft.
(C) Copyright 2016, Trimble Navigat

New Mexico State Land Office

Oil, Gas, and Minerals Leases and Wells



Legend

- Townships
- Sections
- Subdivisions

Active Wells

- Water Storage
- Miscellaneous
- Salt Water Disposal
- Injection
- Carbon Dioxide
- Gas
- Oil

Inactive Wells

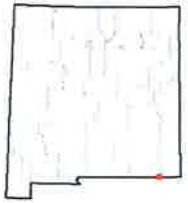
- Plugged / Dry / Abandoned
- Cancelled / Not Drilled

- Detailed Roads
- Oil and Gas Leases

Federal Minerals Ownership

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

EXHIBIT D



0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Map Created: 11/17/2019

Disclaimer:
The New Mexico State Land Office assumes no responsibility or liability for, or in connection with the accuracy, reliability or use of the information provided herein with respect to State Land Office data or data from other sources

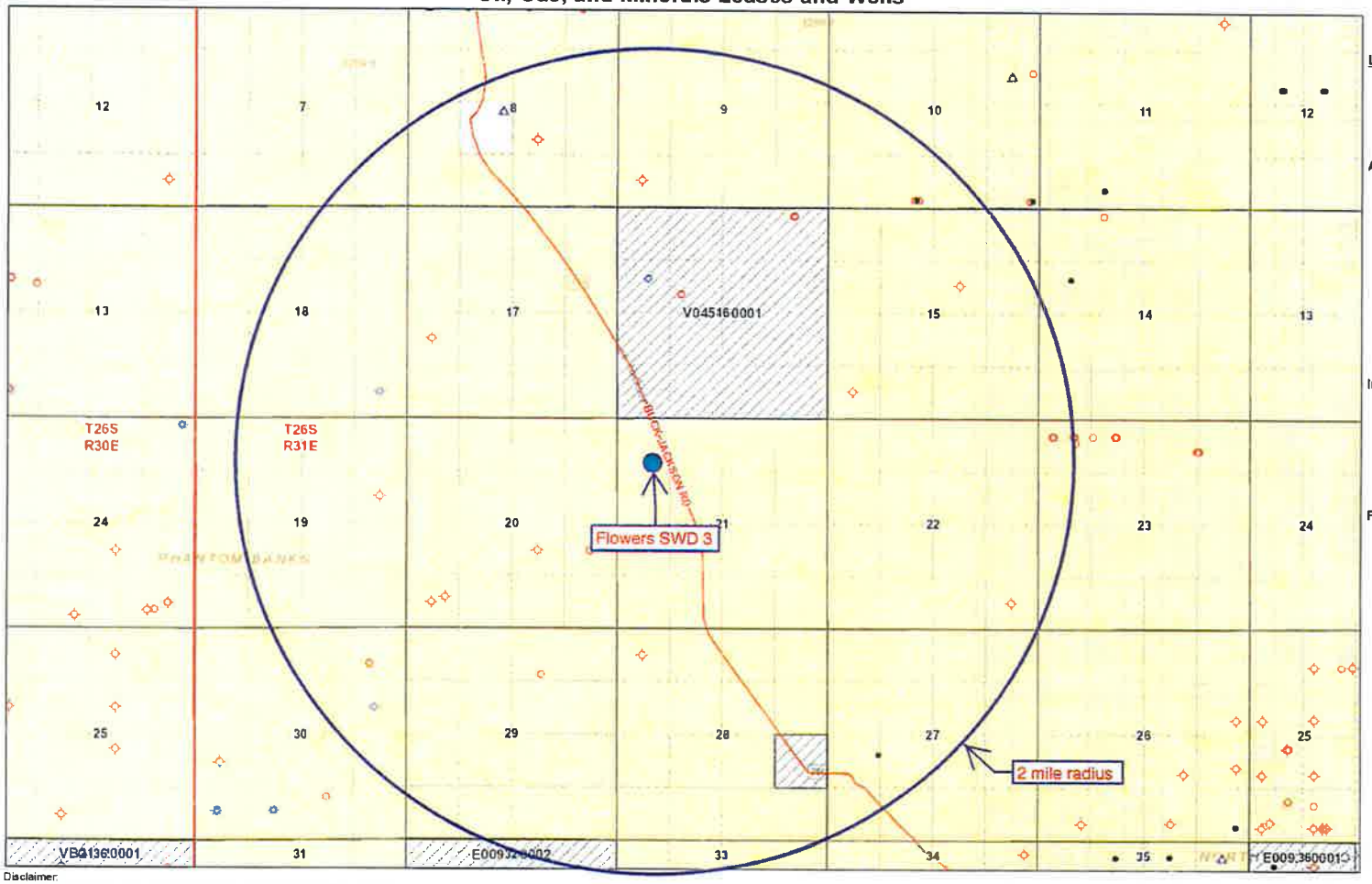
Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico

FLOWERS SWD 3 AREA OF REVIEW LEASES

Aliquot Parts in Area of Review (T. 26 S., R. 31 E.)	Lessor	Lease	Lessee(s) of Record	Operators (all shallower than Devonian)
W2SW4 Sec. 15	BLM	NMNM-138865	MRC Permian	N/A
W2, S2NE4, & SE4 Sec. 16	NMSLO	V0-4509-0001	EOG	EOG
E2E2, SENW, SWNE, NWSE, & NESW Sec. 17	BLM	NMNM-059060	EOG	N/A
S2SW4 & SWSE Sec. 17	BLM	unleased	N/A	N/A
N2, N2S2, SESW, & S2SE4 Sec. 20	BLM	NMNM-0437880	EOG	N/A
all Sec. 21	BLM	NMNM-138866	MRC Permian	N/A
NWNW Sec. 22	BLM	NMNM-018626	Occidental Permian	N/A
SWNW & W2SW4 Sec. 22	BLM	NMNM-138865	MRC Permian	N/A
N2N2 Sec. 28	BLM	NMNM-138867	MRC Permian	N/A
NENE Sec. 29	BLM	NMNM-138867	MRC Permian	N/A
NWNE Sec. 29	BLM	NMNM-0437880	EOG	N/A

New Mexico State Land Office

Oil, Gas, and Minerals Leases and Wells



Legend

- Townships
- Sections
- Subdivisions

Active Wells

- Water Storage
- Miscellaneous
- Salt Water Disposal
- Injection
- Carbon Dioxide
- Gas
- Oil

Inactive Wells

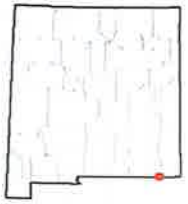
- Plugged / Dry / Abandoned
- Cancelled / Not Drilled

- Detailed Roads
- Oil and Gas Leases

Federal Minerals Ownership

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

EXHIBIT E



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0 0.4 0.8 1.6 mi

0 0.5 1 2 km

N

Map Created: 11/17/2019

PRODUCED WATER SAMPLES FROM T. 26 S., R. 31 E. (in mg/l)

API	Section	UL	Formation	TDS	Sodium	Calcium	Iron	Magnesium	Chloride	Sulfate
3001539036	2	M	AVALON UPPER	223019	76002	10438	210	1922	131072	632
3001539104	2	N	AVALON UPPER	162560	57137	3886	42	776	97161	756
3001539162	2	O	AVALON UPPER	179789	71576	617	22	110	101374	0
3001539162	2	O	AVALON UPPER	179938	71576	617	22	110	101374	844
3001537899	10	B	AVALON UPPER	199639	68948	7560	111	1523	118195	0
3001537899	10	B	AVALON UPPER	209352	70090	7327	203	1557	127230	600
3001538193	11	N	AVALON UPPER	225190	77011	8744	636	1649	134075	0
3001538193	11	N	AVALON UPPER	196577	68797	5059	12	1066	118943	872
3001538193	11	N	AVALON UPPER	203079	72261	4407	112	904	122172	658
3001539866	10	N	BONE SPRING 2ND SAND	152439	48496	6731	29	801	94055	0
3001540994	10	P	BONE SPRING 2ND SAND	138162	44459	6281	30	781	84470	0
3001540994	10	P	BONE SPRING 2ND SAND	138376	44459	6281	30	781	84470	618
3001542113	2	N	BONE SPRING 3RD SAND	94966	31353	3679	32	484	57490	0
3001542113	2	N	BONE SPRING 3RD SAND	94518	30032	3403	20	439	58782	355
3001542113	2	N	BONE SPRING 3RD SAND	94864	30225	3424	15	444	59015	365

PRODUCED WATER SAMPLES FROM T. 26 S., R. 31 E. (in mg/l)

API	Section	UL	Formation	TDS	Sodium	Calcium	Iron	Magnesium	Chloride	Sulfate
3001542113	2	N	BONE SPRING 3RD SAND	91289	28721	3441	16	437	56957	328
3001505886	26	O	DELAWARE	212112					132100	425
3001542688	2	P	WOLFCAMP	81366	26319	2687	26	327	50281	400

EXHIBIT G

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	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 01777		C	ED				08	26S	31E	613245	3547409*	2965	325	300	25
C 02248		CUB	ED	1	2	3	08	26S	31E	612942	3547316*	3008	300	292	8
C 02249		CUB	ED	1	2	3	08	26S	31E	612942	3547316*	3008	300	292	8

Average Depth to Water: **294 feet**

Minimum Depth: **292 feet**

Maximum Depth: **300 feet**

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 614346 **Northing (Y):** 3544655 **Radius:** 3220

***UTM location was derived from PLSS - see Help**

10/12/19 2:03 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

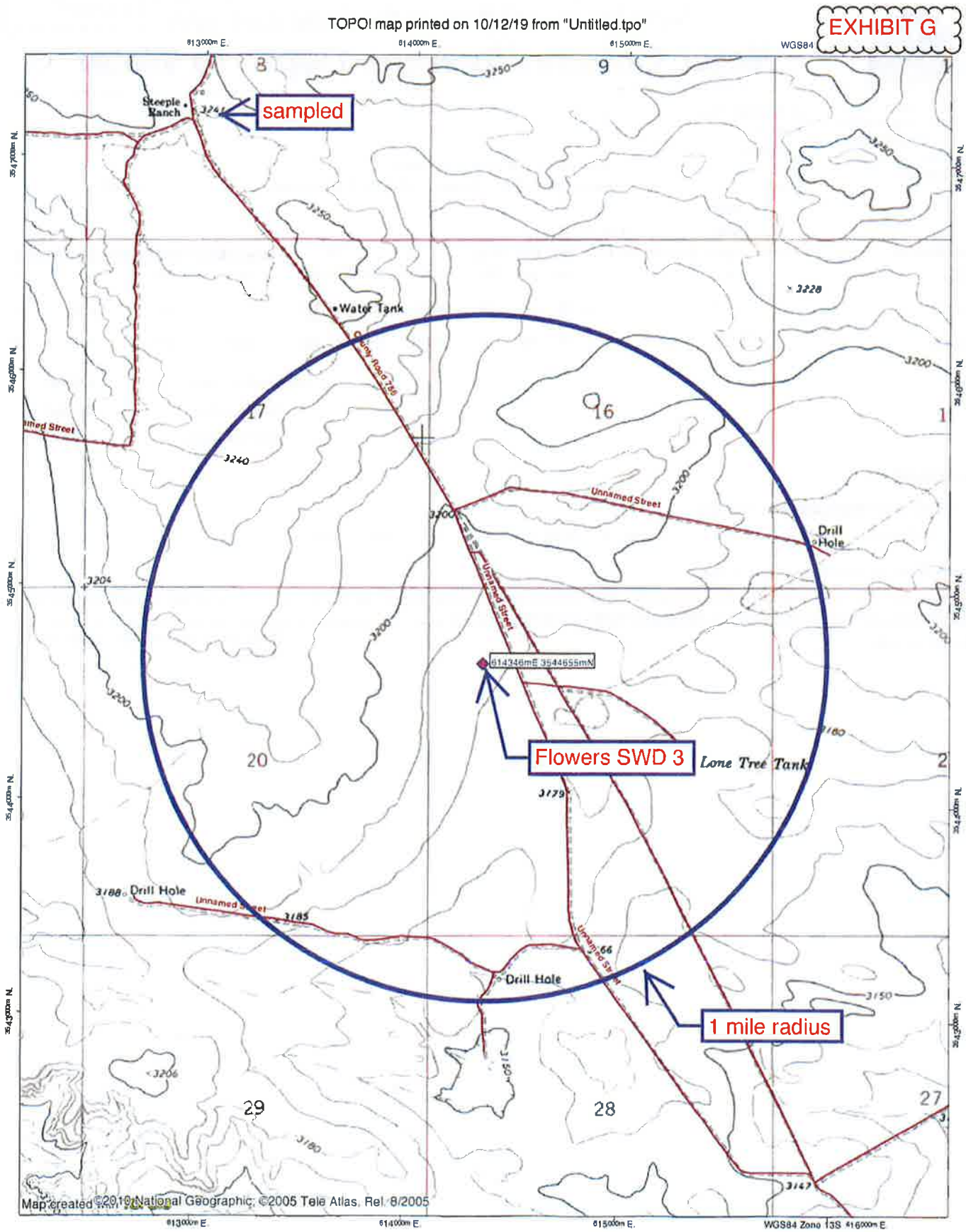

TOPO! map printed on 10/12/19 from "Untitled.tpo"
EXHIBIT G
WGS84
sampled
Steeple Ranch
Water Tank
County Road 765
Unnamed Street
Drill Hole
614346mE 3544655mN
Flowers SWD 3
Lone Tree Tank
1 mile radius
Map created ©2019 National Geographic. ©2005 Tele Atlas, Rel. 8/2005
WGS84 Zone 13S
NATIONAL GEOGRAPHIC
TN MN
6.5°
22
10/12/19

EXHIBIT G

Analytical R

Lab Order **1910C90**

Hall Environmental Analysis Laboratory, Inc.

Date Reported: **10/31/2019**

CLIENT: Permits West
Client Sample ID: Trough WM 1 Flowers SWD 3

Project: Longwood Flowers SWD 3
Collection Date: 10/22/2019 11:50:00 AM

Lab ID: 1910C90-001
Matrix: AQUEOUS
Received Date: 10/23/2019 3:28:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B						Analyst: **KMN**	
N-Hexane Extractable Material	ND	9.26		mg/L	1	10/30/2019 9:47:00 AM	48413
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	19	0.50		mg/L	1	10/23/2019 6:08:35 PM	R63920
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	340	20.0		mg/L	1	10/28/2019 5:39:00 PM	48386

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

EXHIBIT G

QC SUMMARY REPORT

WO#: 1910C90

Hall Environmental Analysis Laboratory, Inc.

31-Oct-19

Client: Permits West
Project: Longwood Flowers SWD 3

Sample ID: **MB-48413**	SampType: **MBLK**	TestCode: **EPA Method 1664B**							
Client ID: **PBW**	Batch ID: **48413**	RunNo: **64068**							
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192136**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	ND	10.0								

Sample ID: **LCS-48413**	SampType: **LCS**	TestCode: **EPA Method 1664B**							
Client ID: **LCSW**	Batch ID: **48413**	RunNo: **64068**							
Prep Date: **10/28/2019**	Analysis Date: **10/30/2019**	SeqNo: **2192137**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Hexane Extractable Material	39.2	10.0	40.00	0	98.0	78	114			

Qualifiers:

*	Value exceeds Maximum Contaminant Level
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

EXHIBIT G

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1910C90

31-Oct-19

Client: Permits West

Project: Longwood Flowers SWD 3

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R63920**	RunNo: **63920**
Prep Date:	Analysis Date: **10/23/2019**	SeqNo: **2185716** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R63920**	RunNo: **63920**
Prep Date:	Analysis Date: **10/23/2019**	SeqNo: **2185717** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

EXHIBIT G

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1910C90

31-Oct-19

Client: Permits West

Project: Longwood Flowers SWD 3

Sample ID: MB-48386	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 48386	RunNo: 64021							
Prep Date: 10/25/2019	Analysis Date: 10/28/2019	SeqNo: 2190105	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: LCS-48386	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 48386	RunNo: 64021							
Prep Date: 10/25/2019	Analysis Date: 10/28/2019	SeqNo: 2190106	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

EXHIBIT H

Longwood Water Management Company, LLC

One Lincoln Centre • 5400 LBJ Freeway • Suite 1500 • Dallas, Texas 75240
Voice 972.371.5200 • Fax 972.371.5201
jharrington@matadorresources.com

Jake Harrington
Senior Geologist

October 10, 2019

NM Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505

Re: Geology Statement
Flowers SWD #3
Section 21, T. 26S, R. 31E
Eddy County, New Mexico

To whom it may concern:

Available geologic and engineering data related to the proposed Well have been thoroughly reviewed, and no evidence for a hydrological connection between the proposed deep Devonian injection zone, located at approximately 16,917 ft., and any underground sources of drinking water has been found.

Sincerely,
Longwood Water Management Company, LLC

Jake Harrington

Carlsbad Current Argus.

EXHIBIT I

Affidavit of Publication

Ad # 0003874372

F. /
37 VERANO LOOP

SANTA FE, NM 87508

I, a legal clerk of the **Carlsbad Current Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

October 31, 2019

Legal Clerk

Subscribed and sworn before me this October 31, 2019:

State of WI, County of Brown
NOTARY PUBLIC

9-19-21
My commission expires

Longwood Water Management Company, LLC is applying to drill the Flowers SWD 3 as a saltwater disposal well. The well is staked at 1153' FNL & 858' FWL Sec 21, T. 26 S., R. 31 E., Eddy County, NM. This is 21 miles southeast of Loving, NM and 16 miles northeast of Orla, TX. Disposal will be in the Devonian from 16,927' to 17,871'. Maximum injection pressure will be 3,385 psi. Maximum disposal rate will be 60,000 bwpd. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.

October 31, 2019

VICKY FELTY
NOTARY PUBLIC
STATE OF WISCONSIN

Ad # 0003874372
PO #: Longwood Water Management
# of Affidavits : 1

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

EXHIBIT J

November 23, 2019

BLM
620 E. Greene
Carlsbad NM 88220

Longwood Water Management Company, LLC is applying (see attached application) to drill the Flowers SWD 3 well as a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposed saltwater disposal well. This letter is a notice only. No action is needed unless you have questions or objections.

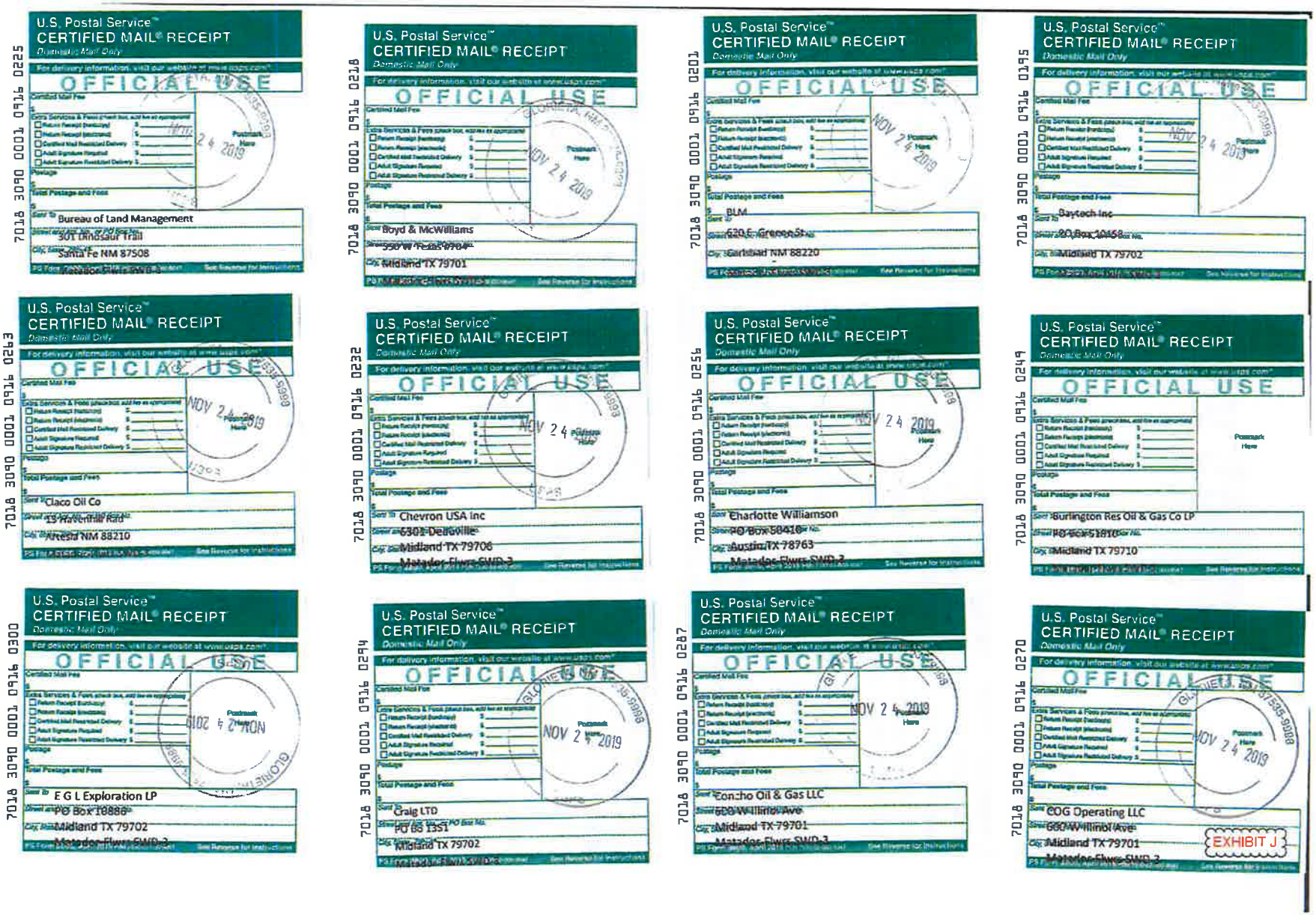
Well Name: Flowers SWD 3 (BLM surface & lease) TD = 17,871'
Proposed Disposal Zone: Devonian (from 16,927' to 17,871')
Location: 1153' FNL & 858' FWL Sec. 21, T. 26 S., R. 31 E., Eddy County, NM
Approximate Location: 21 miles southeast of Loving, NM
Applicant: Longwood Water Management Company, LLC (972) 371-5420
Applicant's Address: 5400 LBJ Freeway, Suite 1500, Dallas TX 75240

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Phone is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood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Boyd & McWilliams
550 W Texas #704
Midland TX 79701
7018 3090 0001 0916 0201
BLM
620 E. Greene St
Carlsbad NM 88220
7018 3090 0001 0916 0195
Baytech Inc
PO Box 10458
Midland TX 79702
7018 3090 0001 0916 0263
Claco Oil Co
13 Haventhal Rd
Artesia NM 88210
7018 3090 0001 0916 0232
Chevron USA Inc
6301 Deauville
Midland TX 79706
Matador Flwrs SWD 2
7018 3090 0001 0916 0256
Charlotte Williamson
PO Box 50410
Austin TX 78763
Matador Flwrs SWD 2
7018 3090 0001 0916 0249
Burlington Res Oil & Gas Co LP
PO Box 51810
Midland TX 79710
7018 3090 0001 0916 0300
E G L Exploration LP
PO Box 10888
Midland TX 79702
Matador Flwrs SWD 2
7018 3090 0001 0916 0294
Craig LTD
PO Bx 1351
Midland TX 79702
7018 3090 0001 0916 0287
Concho Oil & Gas LLC
600 W Illinois Ave
Midland TX 79701
Matador Flwrs SWD 2
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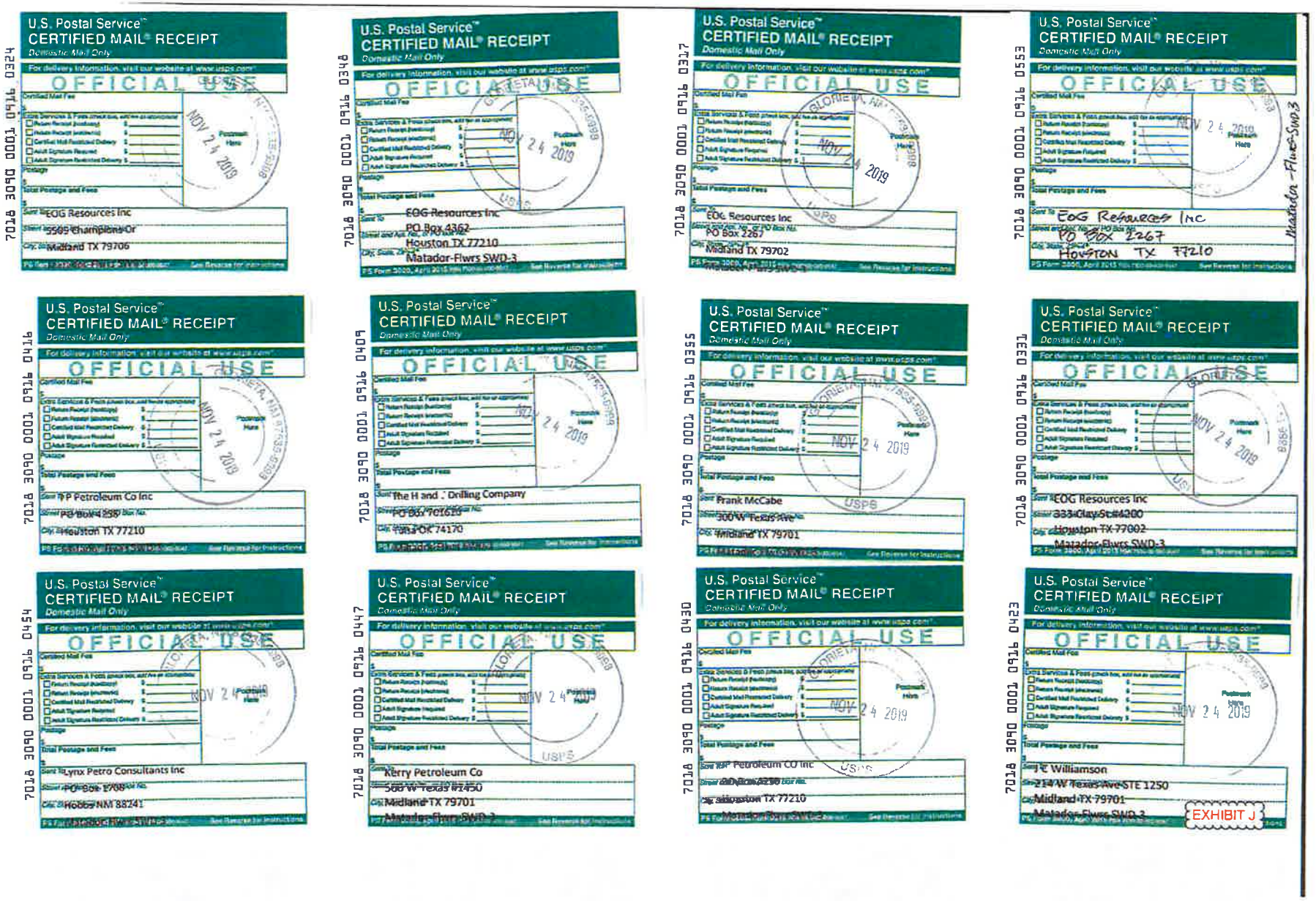
COG Operating LLC
600 W Illinois Ave
Midland TX 79701
Matador Flwrs SWD 2
EXHIBIT J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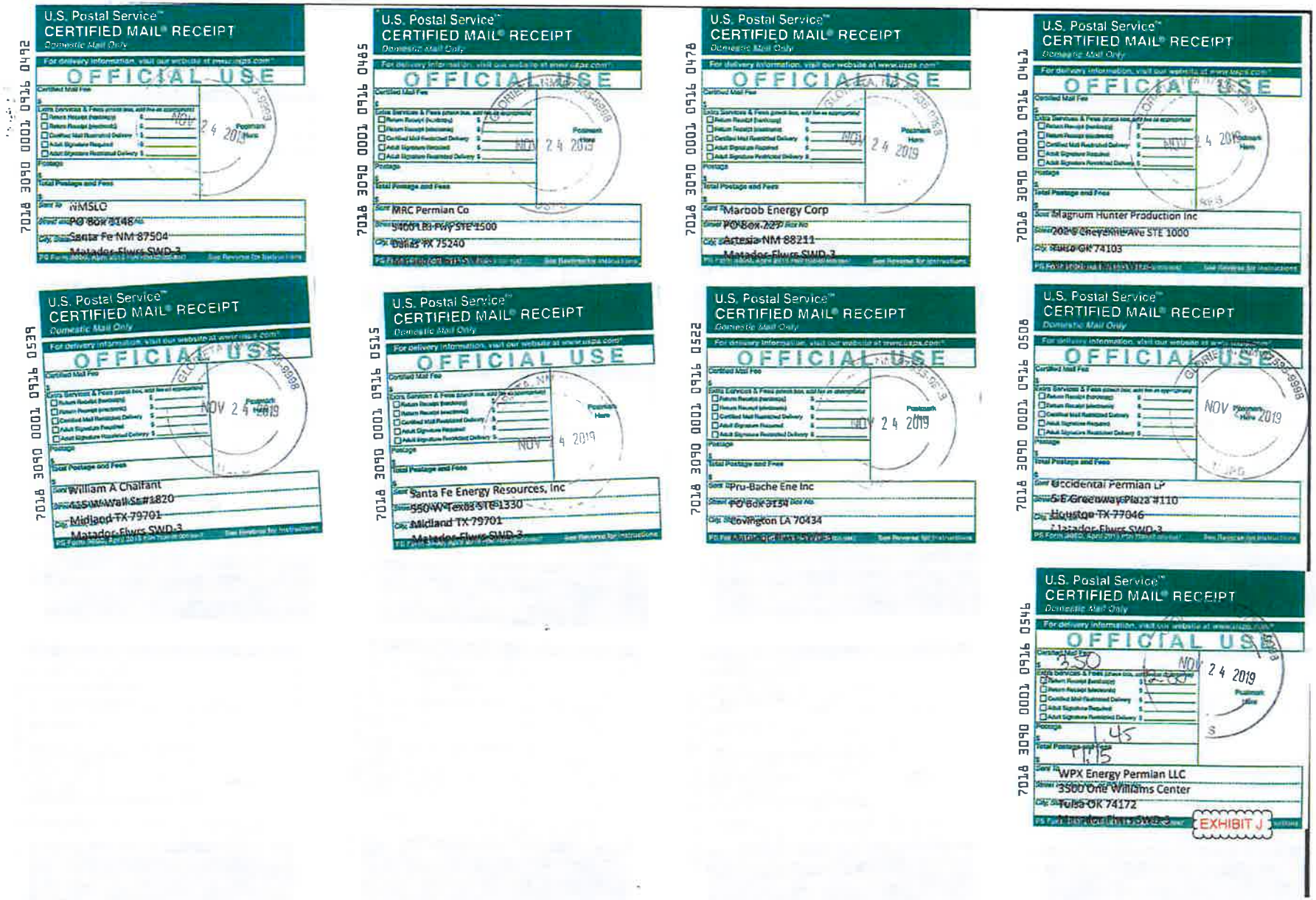
EOG Resources Inc
5509 Champions Dr
Midland TX 79706
7018 3090 0001 0916 0348
EOG Resources Inc
PO Box 4362
Houston TX 77210
Matador-Flwrs SWD-3
7018 3090 0001 0916 0317
EOG Resources Inc
PO Box 2267
Midland TX 79702
7018 3090 0001 0916 0553
EOG Resources Inc
PO Box 2267
Houston TX 77210
Matador-Flwrs SWD-3
7018 3090 0001 0916 0416
TP Petroleum Co Inc
PO Box 4358
Houston TX 77210
7018 3090 0001 0916 0409
The H and J Drilling Company
PO Box 701620
Tulsa OK 74170
7018 3090 0001 0916 0355
Frank McCabe
300 W Texas Ave
Midland TX 79701
7018 3090 0001 0916 0331
EOG Resources Inc
333 Clay St #4200
Houston TX 77002
Matador-Flwrs SWD-3
7018 3090 0001 0916 0454
Lynx Petro Consultants Inc
PO Box 2768
Hobbs NM 88241
7018 3090 0001 0916 0447
Kerry Petroleum Co
500 W Texas #1450
Midland TX 79701
7018 3090 0001 0916 0430
TP Petroleum CO Inc
PO Box 4358
Houston TX 77210
7018 3090 0001 0916 0423
T Williamson
214 W Texas Ave STE 1250
Midland TX 79701
Matador-Flwrs SWD-3
EXHIBIT J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PO Box 2148
Santa Fe NM 87504
Matador Flwrs SWD 3
7018 3090 0001 0916 0485
MRC Permian Co
5400 LBJ Fwy STE 1500
Dallas TX 75240
7018 3090 0001 0916 0478
Marbob Energy Corp
PO Box 227
Artesia NM 88211
Matador Flwrs SWD 3
7018 3090 0001 0916 0461
Magnum Hunter Production Inc
2024 Cheyenne Ave STE 1000
Tulsa OK 74103
7018 3090 0001 0916 0539
William A Chalfant
415 W Wall St #1820
Midland TX 79701
Matador Flwrs SWD 3
7018 3090 0001 0916 0515
Santa Fe Energy Resources, Inc
550 W Texas STE 1330
Midland TX 79701
Matador Flwrs SWD 3
7018 3090 0001 0916 0522
Pru-Bache Ene Inc
PO Box 3154
Covington LA 70434
7018 3090 0001 0916 0508
Occidental Permian LP
5 E Greenway Plaza #110
Houston TX 77046
Matador Flwrs SWD 3
7018 3090 0001 0916 0546
WPX Energy Permian LLC
3500 One Williams Center
Tulsa OK 74172
NOV 24 2019
EXHIBIT J

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EXHIBIT J

FAQs >

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EXHIBIT J

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December 2, 2019, 8:58 pm
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OKLAHOMA CITY OK DISTRIBUTION CENTER

December 2, 2019, 1:43 pm
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November 30, 2019, 10:26 am
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MIDLAND, TX

November 29, 2019, 4:23 pm
Forwarded
MIDLAND, TX

November 29, 2019, 2:23 pm
Arrived at Unit
MIDLAND, TX 79705

November 29, 2019, 2:19 pm
Available for Pickup
MIDLAND, TX 79710

November 28, 2019, 6:10 am
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November 27, 2019, 8:05 pm
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November 25, 2019, 10:18 pm
Departed USPS Facility
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November 25, 2019, 10:02 pm
Arrived at USPS Origin Facility
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November 25, 2019, 4:18 pm
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GLORIETA, NM 87535

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

APPLICATION OF LONGWOOD WATER MANAGEMENT COMPANY, LLC OR AUTHORIZATION OT INJECT INTO THE FLOWERS SWD NO. 3 WELL FOR PURPOSES OF DISPOSAL, EDDY COUNTY, NEW MEXICO.

CASE NO. 21129

AFFIDAVIT

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

Adam G. Rankin, attorney in fact and authorized representative of Longwood Water Management Company, LLC, the Applicant herein, being first duly sworn, upon oath, states that the above-referenced Application has been provided under the notice letters and proof of receipts attached hereto.

Adam G. Rankin

SUBSCRIBED AND SWORN to before me this 4th day of March, 2020 by Adam G. Rankin.

Notary Public

My Commission Expires:

Nov. 12, 2023

OFFICIAL SEAL
Carla Garcia
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: Nov. 12, 2023

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. B
Submitted by: Longwood Water Management
Hearing Date: March 05, 2020
Case No. 21129

HOLLAND&HART LLP

Adam G. Rankin
Phone (505) 988-4421
Fax (505) 983-6043
agrankin@hollandhart.com

February 5, 2020

VIA CERTIFIED MAIL
CERTIFIED RECEIPT REQUESTED
New Mexico Sate Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504-1148

Re: Application of Longwood Water Management Company, LLC For Authorization to Inject into the Flowers SWD No. 3 Well For Purposes of Disposal, Eddy County, New Mexico.
Flowers SWD No. 3 Well

Ladies & Gentlemen:

This letter is to advise you that Longwood Water Management Company, LLC has filed the enclosed application with the New Mexico Oil Conservation Division. A hearing has been requested before a Division Examiner on March 5, 2020, and the status of the hearing can be monitored through the Division's website at http://www.emnrd.state.nm.us/ocd/. Division hearings will commence at 8:15 a.m. in Porter Hall at the Oil Conservation Division's Santa Fe Offices located at 1220 South Saint Francis Drive, Santa Fe, New Mexico 87505. You are not required to attend this hearing, but as an owner of an interest that may be affected by this application, you may appear and present testimony. Failure to appear at that time and become a party of record will preclude you from challenging the matter at a later date.

Parties appearing in cases are required by Division Rule 19.15.4.13.B to file a Pre-hearing Statement four business days in advance of a scheduled hearing. This statement must be filed at the Division's Santa Fe office at the above specified address and should include: the names of the parties and their attorneys; a concise statement of the case; the names of all witnesses the party will call to testify at the hearing; the approximate time the party will need to present its case; and identification of any procedural matters that are to be resolved prior to the hearing.

If you have any questions about this matter please contact Tara Flume at (972) 629-2129 or tflume@matadorresources.com.

Sincerely,

Adam G. Rankin
ATTORNEY FOR LONGWOOD WATER MANAGEMENT COMPANY, LLC

T505.988.4421 F505.983.6043
110 North Guadalupe, Suite 1, Santa Fe, NM 87501-1849
Mail to: P.O. Box 2208, Santa Fe, NM 87504-2208
www.hollandhart.com

Longwood - Flowers SWD No. 3
Case No. 21129 Postal Delivery Report

Tracking Number	Recipient	Status
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Longwood (MRC) - Flowers SWD No.3
Case No. 21129
CM# 88379.0001

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1.	9214 8901 9403 8305 6223 43	New Mexico State Land Office 310 Old Santa Fe Trail Santa Fe NM 87504-1148	1.45	3.55								1.70			
2.	9214 8901 9403 8305 6223 50	New Mexico State Land Office PO BOX 1148 Santa Fe NM 87504-1148	1.45	3.55								1.70			

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

APPLICATION OF LONGWOOD WATER MANAGEMENT COMPANY, LLC FOR AUTHORIZATION TO INJECT INTO THE FLOWERS SWD No. 3 WELL FOR PURPOSES OF DISPOSAL, EDDY COUNTY, NEW MEXICO.

CASE NO. 21129

AFFIDAVIT OF DR. EDMUND LOCKE FROST III

I, Dr. Edmund Locke Frost III, of lawful age and being first duly sworn, declare as follows:

1. My name is Dr. Edmund Locke Frost III. I work for MRC Energy Company, an affiliate of Matador Production Company ("Matador"), as the senior vice president of geoscience for MRC Energy and all of its affiliates. Longwood Water Management Company, LLC ("Longwood Water Management") is the applicant in this case and is an affiliated company.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum geology. My credentials as an expert in petroleum geology have been accepted by the Division and made a matter of record.

3. I am familiar with the application filed by Longwood Water Management in this case and have conducted a geologic study of the subject lands.

4. Item VIII in the C-108, starting at page 9 of **Exhibit A-1**, contains all the geologic information, including a geologic description of the target injection interval and the approximate depth of the formation tops in the area, required for approval.

5. The proposed injection interval is the Devonian formation, which is comprised of dolomite and limestone and is approximately 964 feet thick in the area of the proposed well. The proposed injection interval will be within the Siluro-Devonian at approximately 16,927 feet and 17,871 feet below the surface.

6. My opinions and conclusions are based on my review of both publicly available data and information on the geology and injection interval in this area, as well as proprietary and confidential business records.

7. 7. Injection into the Siluro-Devonian will be contained and prevented from migrating out of the injection interval to shallower zones by the shales of the overlying Devonian Woodford formation, which is a shale deposit that functions as a 340 foot thick an impermeable barrier and is approximately 700 feet thick. Below the injection interval the Shales of the Ordovician Simpson Group functions as a basal seal, which is also a shale interval, and will prevent any downward migration of injection fluids out of the injection zone.

8. Recent nearby injection has demonstrated that the Siluro-Devonian formation in this area is suitable for injection and is capable of receiving the injection volumes and rates proposed.

9. An analysis of proprietary 3D seismic data shows that there are no faults or other geologic features around the injection site that would serve as a conduit or pathway for injection fluids to escape the injection interval. The C-108, at page 27 of **Exhibit A-1**, contains a geologic statement from Jake Harrington, senior geologist with the company, confirming that the geologic and engineering data related to the proposed injection well has been thoroughly reviewed and no evidence has been found for a hydrological connection between the proposed Siluro-Devonian injection zone and any underground sources of drinking water.

10. Injection will not impair correlative rights and will not adversely affect the production of hydrocarbons. The Siluro-Devonian formation is not prospective for hydrocarbons in this area and no zones below the Devonian are prospective. The geologic seals identified above the injection interval will serve to isolate the disposal fluids from overlying zones capable of producing hydrocarbons. In addition, there is a significant vertical offset between the proposed injection and overlying formations capable of production.

11. Fresh water in this area is found within Quaternary sediments at a depth of about 700 feet or less below the surface. No underground sources of drinking water exist below the injection interval in this area. A review of the State Engineer's database indicates that there are no freshwater wells within a one-mile radius of the proposed injection, as depicted in the search results on page 21 and a one-mile radius map on page 22 of Exhibit A-1. According to State Engineer records, two water wells are within two miles of the proposed injection well, the closest of the two wells about 1.84 miles northwest, with the deepest well at 325 feet. Commingled flow from the wells was sampled on October 22, 2019.

12. Based on this review and analysis of freshwater, the geologic seals above and below the injection interval, and the significant vertical offset between the injection zone and shallow zones containing freshwater, it is my opinion that the proposed injection will not threaten any drinking water sources or zones of freshwater.

13. In addition to the foregoing standard geologic analysis, I also prepared a modeling study characterizing the fault-slip potential of known faults in the area resulting from injection in the proposed well at the proposed rates and volumes, taking into consideration all currently existing and proposed injection into the Devonian in the area. That study is attached as **Exhibit C-1**.

14. The results of the study indicate that the overall probability of a fault slip as a result of the proposed injection is less than 10 percent over a 30-year economic life of the injection well, even with multiple high-volume injectors spaced roughly one mile apart. The geochemical modeling shows that distance to failure for all faults in the study area is greater than 500 psi; meaning that aquifer pore pressure would need to increase by greater than 500 psi at a given fault plane for there to be a risk of failure. The model predicts a maximum pressure increase of 235 psi by year 2030, and 297 psi by 2045, assuming maximum injection rates for all wells in the study area, which is well below the potential threshold for fault failure. Therefore, I view this as a low-risk setting for fault-slip potential.

15. Caution still needs to be employed to avoid locating injection wells near potentially unstable geologic features. Accordingly, Longwood Water Management screened the proposed location for this well, as it does for all its disposal wells, against its proprietary 3D seismic data to avoid injecting near faults. The location for the proposed well was chosen to avoid potential faults, which further reduces the risk.

16. In my opinion, granting this application will help conserve resources, avoid waste, and protect correlative rights.

FURTHER AFFIANT SAYETH NOT.

Dr. Edmund Locke Frost III

STATE OF TEXAS)
)
COUNTY OF Dallas)

SUBSCRIBED and SWORN to before me this 2nd day of March 2020 by Dr. Edmund Locke Frost III.

NOTARY PUBLIC

My Commission Expires:

3/5/21

TRISHA INURRIGARRO
My Notary ID # 12254918
Expires March 5, 2021

Fault-Slip Probability Assessment for the Flowers Federal SWD #3,

Dr. Edmund L Frost III, Senior Vice President—Geoscience, Longwood Water Management Company

In order to minimize the potential risk of induced seismicity associated with deep waste water disposal, Longwood Water Management Company, LLC ("LWMC") has undertaken a study to characterize the fault-slip potential for the Flowers Federal SWD #3 in Eddy County, New Mexico. This document presents the results of an eight well model, which investigates the impact of waste water injection with rates varying from 28,000 to 50,000 bbl/day until 2050 (Figure 1a, Table 1). This study utilizes a mix of public and proprietary data in conjunction with the Stanford Center for Induced and Triggered Seismicity's (SCITS) Fault Slip Potential (FSP; Walsh et al., 2017) code (table 2).

The model presented here interrogates the stability of population of 500 stochastically oriented, and located, faults. The orientations (strike, dip) of the model fault population are constrained by data from 26 regional basement faults mapped by LWMC in the Flowers area on a 48 mi^2 proprietary PSTM 3D seismic volume. A maximum horizontal stress orientation of N35°E. was taken from published regional stress orientations (Lund Snee and Zoback 2018). Horizontal stress magnitudes were not modeled explicitly by Matador, instead the published Aø value of 0.52 (Lund Snee and Zoback 2018; Table 2) for southern Eddy County, New Mexico was used, which implies a pure normal faulting environment.

The impact of high-rate injection in the eight-well case can be seen as a modest regional increase in pore pressure with time (Figure 1b). At the Flowers Federal SWD #3 the model predicts a maximum reservoir pressure increase of 235, by 2030, and 297 psi by 2045. At the modelled depth of 16,750 ft, this translates to a pore pressure gradient increase of 0.014 psi/ft and 0.018 psi/ft. respectively. Results of the geomechanical modeling show that all faults have a "distance to failure" of greater than 500 psi; meaning that aquifer pore pressure would need to be increased by greater than 500 psi at a given fault plane to potentially induce failure. The results of the model case presented here are well below this limit. Based on the simulation run by this study, the overall probability of fault slip is less than 10% well into the future (2045), even with multiple high-volume (~60,000 bbl/d) injectors spaced roughly one-and-a-half miles apart. However, caution still needs to be exercised to avoid injection near unstable features. In order to minimize risk, LWMC screens all of its SWD locations, including the Flowers Federal SWD #3, against its 3D seismic to avoid injection near faults.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. C1
Submitted by: **Longwood Water Management**
Hearing Date: March 05, 2020
Case No. 21129

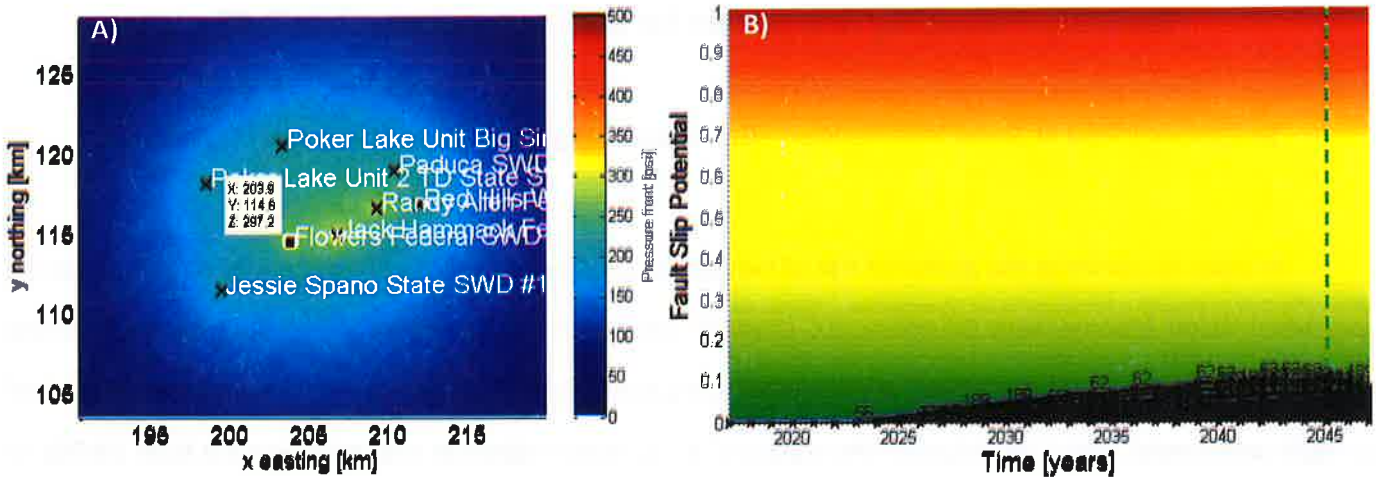

Figure 1: A) Modeled reservoir pressure for the eight-well case at year 2045. A maximum pressure of 297 psi is observed at Flowers Federal SWD #3. B) Fault slip potential (FSP) for the eight-well case. FSP on all faults remains below 10%. The green dashed line marks year 2045, the black lines and numbers denote the slip probability of individual faults.

#	Well Name	Modeled Volume (bbl/d)	Start	End
1	Randy Allen Federal SWD #1	60,000	2020	2045
2	Randy Allen Federal SWD #1	60,000	2020	2045
3	Jack Hammack Federal SWD #1	60,000	2020	2045
4	Red Hills West SWD #2	40,000	2020	2045
5	Paduca SWD #1Y	30,000	2017	2045
6	Poker Lake Unit Big Sinks 32 State SWD #11	40,000	2020	2050
7	Jessie Spano State SWD #1	40,000	2020	2045
8	Poker Lake Unit 2 TD State SWD #1	40,000	2020	2045

Table 1: Well Data for FSP Modeling.

Parameter	Input Value	Variability (+/-)	Data Source
Vertical Stress Gradient	1.05 psi/ft	0.05 psi/ft	Pilot Hole
Shmax	N 35° E	5°	Pilot Hole
Fault Strike	variable	10°	3D Seismic
Fault Dip	variable	5°	3D Seismic
Reference Depth	13500 ft	na	Pilot Hole, 3D Seismic, Regional Mapping
Initial Reservoir Pressure Gradient	0.43 psi/ft	0.03 psi/ft	Pilot Hole
A Phi Parameter	0.52	0.03	Lund Snee and Zoback 2018
Reference Friction Coefficient	0.6	0.01	Standard Value
Aquifer Thickness	1000 ft	200	Pilot Hole, Regional Mapping
Porosity	6%	2%	Pilot Hole
Permeability	150 mD	100 mD	Pilot Hole, Step-Rate Tests
Fluid Density	1029 kg/m^3	10 kg/m^3	Assumed value
Dynamic Viscosity	0.0004 Pa. S	0.0001 Pa. S	Calculated value corrected for reservoir temperature

Table 2: Model Inputs, Variance, and Source.

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

APPLICATION OF LONGWOOD WATER MANAGEMENT COMPANY, LLC FOR AUTHORIZATION TO INJECT INTO THE FLOWERS SWD No. 3 WELL FOR PURPOSES OF DISPOSAL, EDDY COUNTY, NEW MEXICO.

CASE NO. 21129

AFFIDAVIT OF BRADLEY M. ROBINSON

I, Bradley M. Robinson, of lawful age and being first duly sworn, declare as follows:

1. My name is Bradley M. Robinson. I work for MRC Energy Company, an affiliate of Matador Production Company ("Matador"), as the Executive Vice President of Reservoir Engineering and Chief Technology Officer for MRC Energy and all of its affiliates. Longwood Water Management Company, LLC ("Longwood Water Management") is the applicant in this case and is an affiliated company.

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum engineering. My credentials as an expert in petroleum engineering have been accepted by the Division and made a matter of record.

3. I am familiar with the application filed by Longwood Water Management in this case and have conducted an engineering study of the proposed injection.

4. The proposed well is the **Flowers SWD No. 3**. It will be located 1153 feet from the north line and 858 feet from the west line (Unit D), Section 21, Township 26 South, Range 31 East, NMPM, Eddy County, New Mexico. A C-102 depicting the well's location, along with latitude and longitude coordinates may be found at page 12 of the C-108 in Exhibit A-1.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. D
Submitted by: **Longwood Water Management**
Hearing Date: March 05, 2020
Case No. 21129

5. All the well data and operational information required by the C-108 is included in the application. The proposed well design is contained in the Injection Well Data Sheet at pages 4-5 of the C-108 in Exhibit A-1. A description of the proposed well design may be found at pages 6-7 of the C-108 in Exhibit A-1. The disposal interval will be a 6.5-inch open-hole completion from approximately 16,927 feet to 17,871 in the Devonian formation. An acid wash will be used to clean the hole prior to injection.

6. The proposed well will have a tapered injection string consisting of both 7-inch and 5.5-inch internally coated tubing, which will permit Longwood Water Management to dispose of larger volumes of water over time. That means we will have to drill fewer injection wells over time, reducing the surface footprint of the industry.

7. The well's cement job will be confirmed with a cement bond log or an equivalent cement integrity log, to establish the top of the cement and the quality of the bonding to the casing.

8. The well's annular space will be filed with an inert packer fluid to protect both the casing and the tubing and surface pressure will be monitored at the wellhead to confirm the integrity of the well during injection.

9. The well design and cement plan will be protective of freshwater sources in the area and protective of correlative rights.

10. The average injection rate will be approximately 50,000 barrels of water per day, with a maximum anticipated volume of 60,000 barrels of water per day. The injection system will be both an open and closed system. Water will be trucked and piped to the injection well. The average surface injection pressure will be approximately 2,500 psi, with a maximum surface injection pressure of 3,385 psi, based on the Division's guideline limiting injection pressures to

0.2 psi per foot of depth to the top-most injection interval. The proposed injection volumes can be easily achieved without exceeding the maximum surface injection pressure.

11. Injection parameters will be continuously monitored through an electronic SCADA system.

12. The source of injection fluids will be produced water from the Bone Spring, Delaware, and Wolfcamp formations. A summary of produced water chemistry from the area is provided in a table on pages 19-20 of the C-108 in Exhibit A-1. A summary of Devonian formation water is reproduced on page 8 of the C-108 in Exhibit A-1. A review of the water chemistry and experience confirms that there will be no issues or problems with compatibility of fluids in the injection interval.

13. Page 18 of the C-108 in Exhibit A-1 depicts a map of oil and gas wells with a two-mile radius around the proposed well. Page 14 of the C-108 in Exhibit A-1 is a table identifying all wells within a one-mile radius. No wells, active, proposed, or plugged and abandoned, penetrate the proposed injection interval within one mile of the proposed well.

14. None of the wells within the one-mile area of review create a potential conduit for the transmission of injection fluids out of the injection zone.

15. In my opinion, granting this application will help conserve resources, avoid waste, and protect correlative rights.

FURTHER AFFIANT SAYETH NOT.

Bradley M. Robinson

STATE OF TEXAS)
)
COUNTY OF Dallas)

SUBSCRIBED and SWORN to before me this 2nd day of March 2020 by Bradley M. Robinson.

NOTARY PUBLIC

My Commission Expires:
3/5/21

TRISHA INURRIGARRO
My Notary ID # 12254918
Expires March 5, 2021