Application Part II

Affidavit of Publication

STATE OF NEW MEXICO **COUNTY OF LEA**

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

> Beginning with the issue dated June 28, 2019 and ending with the issue dated June 28, 2019.

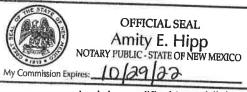
Publisher

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

Circulation Clerk

My commission expires October 29, 2022

(Seal)



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

LEGAL NOTICE June 28, 2019

June 28, 2019

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 is filling Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Butlkus SWD #1 will be located 434 feet from the South line and 207 feet from the East line, Section 25, Township 23 South, Range 34 East, Lea County, New Mexico. Produced water from area produced water from area produced water from area producion will be commercially disposed into the Silurian, Fusselman and Montoya Formations at a depth of 15,250 feet to 17,202 feet at a maximum surface pressure of 3,050 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 30 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the N e w M e x i c o 0 i 1 Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-

67115764

00230147

RANDALL HICKS R.T. HICKS CONSULTANTS, LTD 901 RIO GRANDE BLVD NM SUITE F-142 ALBUQUERQUE, NM 87104

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996 Artesia ▲ Carlsbad ▲ Durango ▲ Midland

June 26, 2019

NOTIFICATION TO INTERESTED PARTIES Via U.S. Certified Mail – Return Receipt Requested

To Whom It May Concern:

AWR Disposal LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete, for salt water disposal, the Butkus SWD #1. The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is located in Section 25, Township 23 South, Range 34 East, Lea County, New Mexico. The published notice states that the interval will be from 15,250 feet to 17,202 feet into the Silurian, Fusselman and Montoya Formations.

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Butkus SWD #1 will be located 434 feet from the South line and 207 feet from the East line, Section 25, Township 23 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Silurian, Fusselman and Montoya Formations at a depth of 15,250 feet to 17,202 feet at a maximum surface pressure of 3,050 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 30 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

You have been identified as a party who may be interested as an offset lessee or operator.

Thank you for your attention in this matter.

Sincerely,

R.T. Hicks Consultants

Randall Hicks Principal

OPERATORS, LEASEHOLDERS AND SURFACE OWNERS WITHIN 2 MILES -RADIUS

DATA EXTRACTED FROM TABLES 1, 2A, 2B AND 2C

New Mexico State Land Office Butkus SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501 Bureau of Land Management Butkus SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292 LIMESTONE BASIN PROP RANCH LLC
Butkus SWD #1
18 DESTA DRIVE
MIDLAND, TX 79705

QUAIL RANCH LLC Butkus SWD #1 PO BOX 2795 RUIDOSO, NM 88355 OXY USA WTP LP Butkus SWD #1 5005 LBJ FREEWAY P.O. BOX 809050 DALLAS, TX 75380 COG OPERATING LLC Butkus SWD #1 600 W Illinois Ave Midland, TX 79701

DEVON ENERGY PRODUCTION CO., LP Butkus SWD #1 333 W. SHERIDAN AVENUE OKLAHOMA CITY, OK 73102 REGENERATION ENERGY, CORPORATION
Butkus SWD #1
P. O. BOX 210
ARTESIA, NM 88210

ADVANCE ENERGY PARTNERS, LLC Butkus SWD #1 11490 WESTHEIMER RD, STE 950 HOUSTON, TX 77077

THE ALLAR COMPANY
Butkus SWD #1
P. O. BOX 1567
GRAHAM, TX 76450

EOG Y RESOURCES, INC. Butkus SWD #1 104 S 4TH ST ARTESIA, NM 88210 CHEVRON U S A INC Butkus SWD #1 6301 DEAUVILLE BLVD MIDLAND, TX 79706

BOB L JOHNSON Butkus SWD #1 2651 N HARWOOD ST 120 DALLAS, TX 75201 NORTEX CORPORATION
Butkus SWD #1
1415 LOUISIANASTE 3100
HOUSTON, TX 77002

MRC PERMIAN COMPANY Butkus SWD #1 5400 LBJ FREEWAY SUITE 1500 DALLAS, TX 75240

OXY NM LP Butkus SWD #1 PO BOX 809050 DALLAS, TX 753809050 MEWBOURNE OIL CO Butkus SWD #1 4801 BUSINESS PARK BLVD. PO BOX 5270 HOBBS, NM 88240 FEATHERSTONE DEVELOPMENT
CORPORATION
Butkus SWD #1
PO BOX 429
ROSWELL, NM 88202

DEVON ENERGY PRODUCTION COMPANY, LP Butkus SWD #1 333 West Sheridan Ave. Oklahoma City, OK 73102 MEWBOURNE OIL COMPANY Butkus SWD #1 P. O. BOX 7698 TYLER, TX 75711 PRE-ONGARD WELL OPERATOR
Butkus SWD #1
1220 S ST FRANCIS
SANTA FE, NM BADADDR

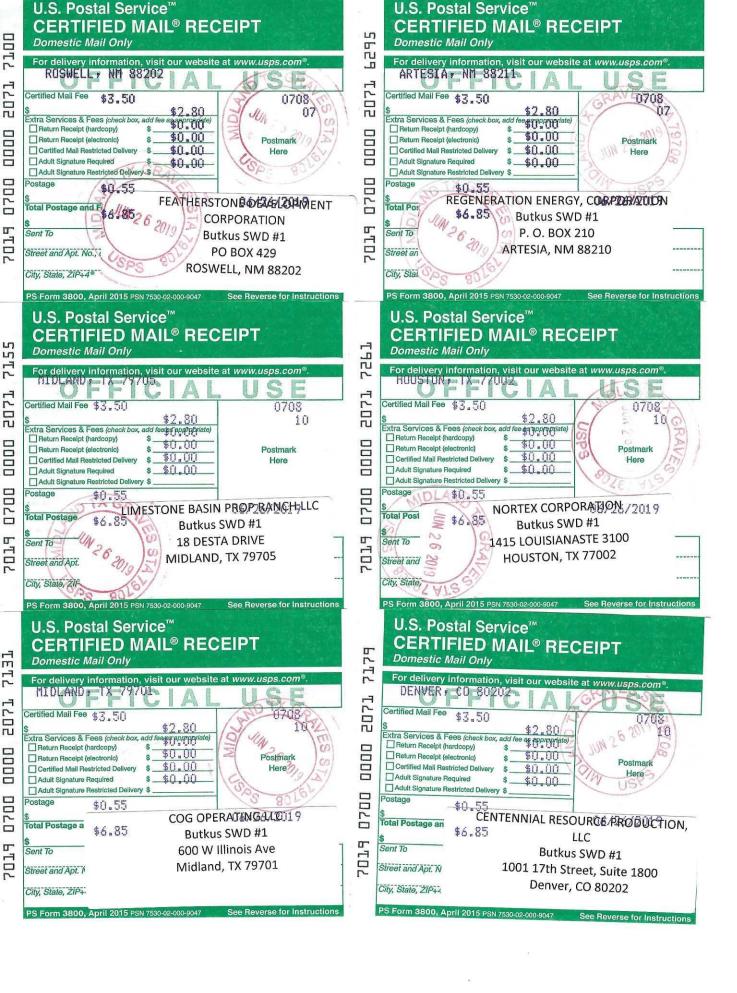
MATADOR PRODUCTION COMPANY
Butkus SWD #1
One Lincoln Centre
5400 LBJ Freeway, Ste 1500
Dallas, TX 75240

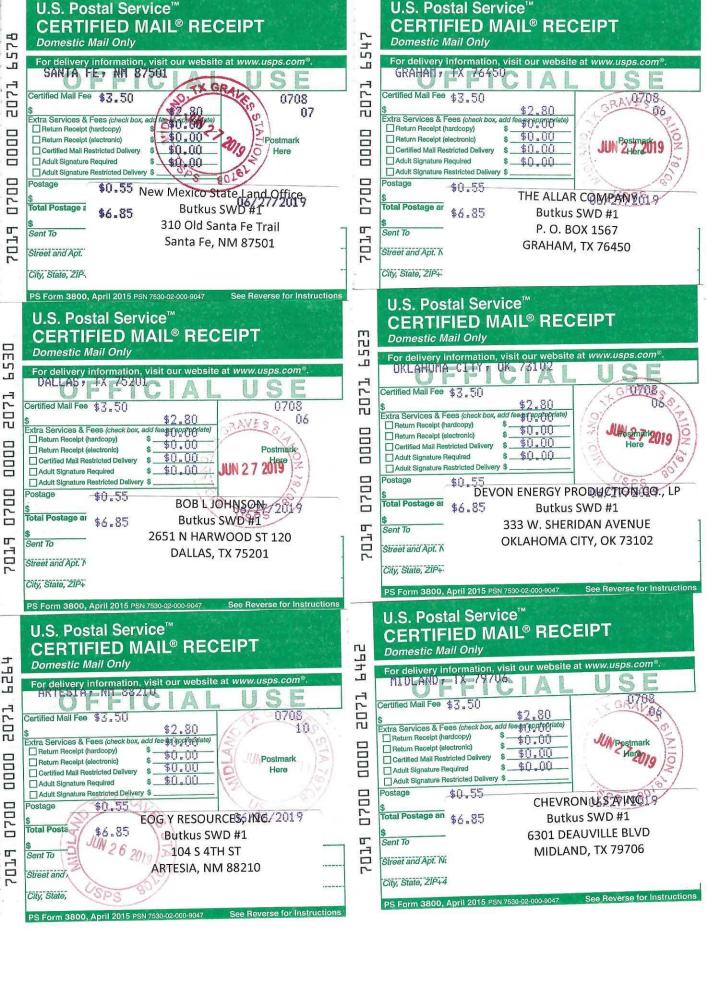
CHESAPEAKE OPERATING, INC.
Butkus SWD #1
P. O. BOX 18496
OKLAHOMA CITY, OK 731540496

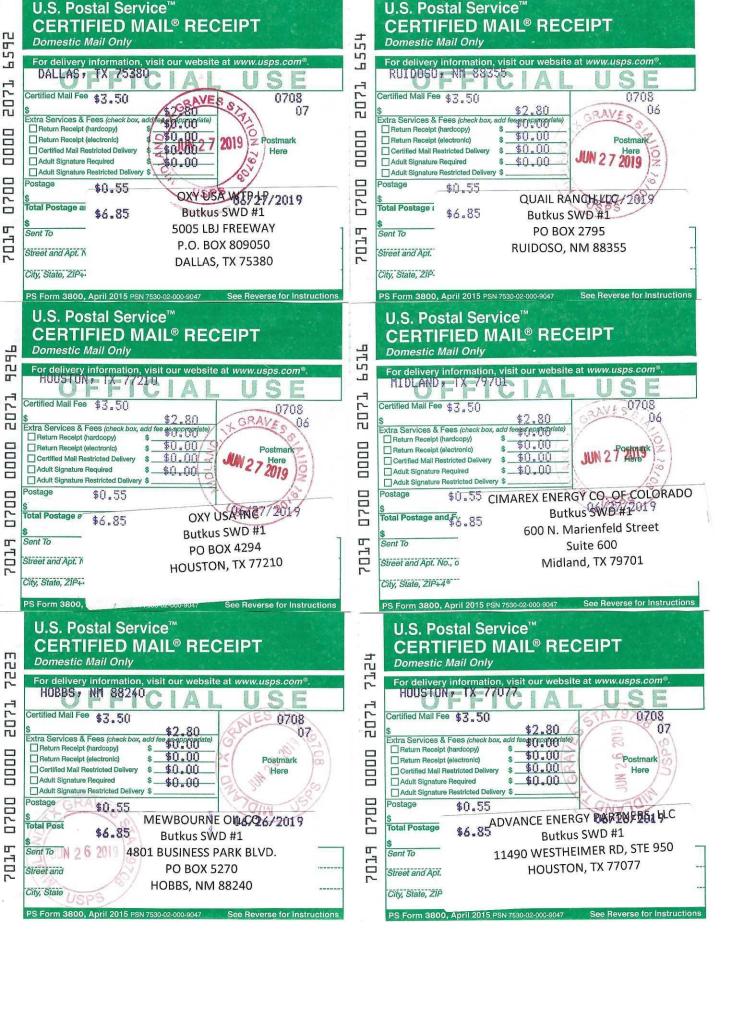
OXY USA INC Butkus SWD #1 PO BOX 4294 HOUSTON, TX 77210

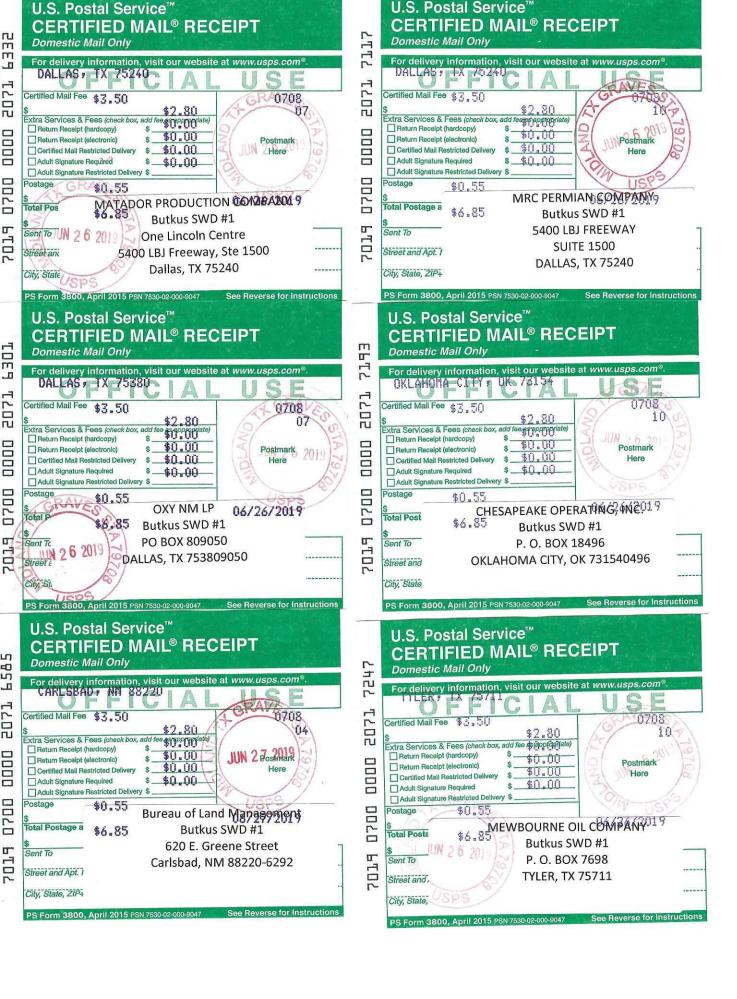
CIMAREX ENERGY CO. OF COLORADO
Butkus SWD #1
600 N. Marienfeld Street
Suite 600
Midland, TX 79701

CENTENNIAL RESOURCE PRODUCTION, LLC Butkus SWD #1 1001 17th Street, Suite 1800 Denver, CO 80202









U.S. Postal Service[™] CERTIFIED MAIL® RECEIPT Domestic Mail Only For delivery information, visit our website at www.usps.com®. Certified Mail Fee \$3.50 0708 Extra Services & Fees (check box, add feeds sportoprate) Return Receipt (hardcopy) 10 \$0.00 Return Receipt (electronic) Postmark \$0.00 Certified Mail Restricted Delivery \$_ Here Adult Signature Required \$_\$Q_QQ Adult Signature Restricted Delivery \$ __ Postage \$0.55 PRE-ONGARD WELL OFERATOR Total Posta Butkus SWD #1 Sent To 1220 S ST FRANCIS Street and A SANTA FE, NM BADADDR 87505 City, State, PS Form 3800, April 2015 PSN 7530-02-000-9047

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996 Artesia ▲ Carlsbad ▲ Durango ▲ Midland

June 27, 2019

Mr. Phillip Goetze, P.G. New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505

RE: AWR Disposal LLC Butkus SWD#1 UL P, Section 25, T23S, R34E, Lea County

Dear Mr. Goetze:

On behalf of AWR Disposal LLC, R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018¹
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
 - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
 - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
 - o Green, G. N., and G. E. Jones, 1997, e digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
 - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
 - o NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology²

¹ https://scits.stanford.edu/sites/default/files/3702 tss lundsnee v2.pdf

² http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

- 1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
- 2. Areas of documented seismic activity, such as the Dagger Draw area and a magnitude 2.0-2.9 earthquake that occurred between 1970-2004 about 10-miles southwest of the proposed Butkus SWD #1. A slightly larger magnitude and more recent seismic event is reported about 15 miles east of the Butkus SWD #1 well location.
- 3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the mapped fault that is closest to the Butkus SWD #1 (about 3 miles to the west) exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
- 4. Other mapped faults in southern Lea County shown on Plate 5 also show a low FSP, except for part of southwest-northeast trending fault about 32 miles north-northwest of the Butkus SWD #1 well that has a FSP of about 25 33% in the central portion of this fault trace.

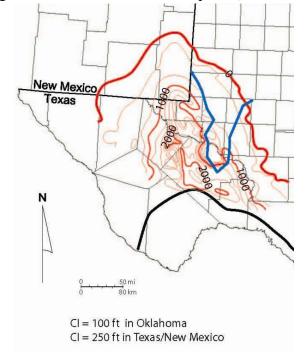
Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within an 6-mile radius around the proposed Butkus SWD #1, the OCD database shows about 4 active or new Devonian SWDs, which translates into an average density of about one SWD for every 28 square miles.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, And Reservoir Development) is

attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.

Data from the Amoco Federal CW Com 1 (3002528119) show that the thickness of the Simpson in the Antelope Ridge area of Lea County (Section 3 24S 34E) is about 450 feet thick with. This is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).

We contend that the data permit conclusion that unmapped faults (which may be located by



confidential seismic data that AWR Disposal does not possess) near the Butkus SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate 6

permit a conclusion that faults near the Butkus State SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Butkus SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Butkus State SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenberger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenberger and, over time, increase the fluid pressure. After fluid pressure in the Ellenberger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events. In my opinion, the probability that injection into the Butkus SWD will measurably contribute to the events described above and will cause a seismic event resulting in damage is so low as to be nil.

Sincerely,

R.T. Hicks Consultants

Randall T. Hicks

Principal

Copy: AWR Disposal LLC

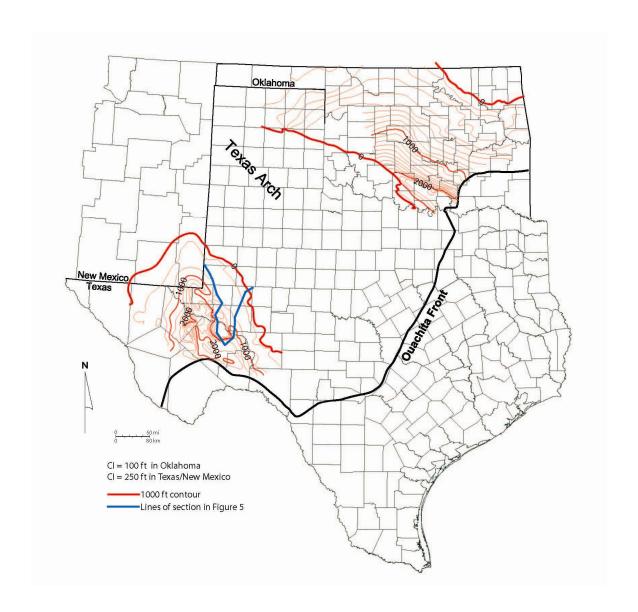


Figure 4. Thickness map of Simpson Group modified from Texas Water Development Board (1972), Frenzel and others (1988), and Northcutt and Johnson (1997). Thousand-foot contour lines and locations of figure 5 cross sections shown in heavy red and blue lines, respectively. Note that contour interval is 100 ft for Oklahoma and 250 ft for Texas and New Mexico.

☐ Miles

Folds Database (Crone and Wheeler, 2000).

Albuquerque, NM 87104 Ph: 505.266.5004 AWR Disposal, LLC

Butkus SWD #1

June 2019

Print

State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division

Receipt of Fee Application Payment



PO Number: GS4S3-190719-C-1080

Payment Date: 7/19/2019 9:46:40 AM

Payment Amount: \$500.00
Payment Type: Credit Card

Application Type: Application for a fluid injection well permit.

Fee Amount: \$500.00

Application Status: Under OCD Review

OGRID: 328805
First Name: John
Last Name: Langdon

Email: john@bpranches.com

IMPORTANT: If you are mailing or delivering your application, you must print and include your receipt of payment as the first page on your application. All mailed and delivered applications must be sent to the following address: 1220 S. St. Francis Dr., Santa Fe, NM 87505. For inquiries, reference the PO Number listed above.