

Application

Part III

OSE Well Logs – NO WATER SUPPLY WELLS

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

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

July 17, 2019

Hobbs News Sun
201 N. Thorp
P.O. Box 850
Hobbs, N.M. 88240

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 is filing 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 Leonard SWD #1 will be located 397 feet from the North line and 822 feet from the West line, Section 11, Township 23 South, Range 34 East, Lea County, New Mexico. Produced water and recycled produced water from area production will be commercially disposed into the Silurian, Fusselman and Montoya Formations at a depth of 14,700 feet to 16,652 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 24 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.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants



Randall Hicks
Principal

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
July 17, 2019
and ending with the issue dated
July 17, 2019.



Publisher

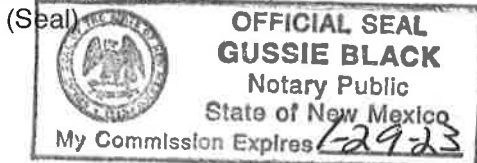
Sworn and subscribed to before me this
17th day of July 2019.



Business Manager

My commission expires

January 29, 2023



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 JULY 17, 2019

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Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants
Randall Hicks
Principal
#34444

67115764

00230911

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

July 17, 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 Leonard 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 11, Township 23 South, Range 34 East, Lea County, New Mexico.

The published notice states that the interval will be from 14,700 feet to 16,652 feet into the Silurian, Fusselman and Montoya Formations.

LEGAL NOTICE

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You have been identified as a party who may be interested as an offset lessee or operator. **IF YOU WOULD LIKE AN ELECTRONIC COPY OF THE ENTIRE PERMIT PACKAGE, PLEASE SEND YOUR REQUEST TO r@rthicksconsult.com** (request a read receipt to avoid your email becoming stuck in spam).

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

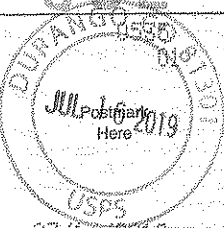
New Mexico State Land Office Leonard SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501	Bureau of Land Management Leonard SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292	LIMESTONE BASIN PROP RANCH LLC Leonard SWD #1 18 DESTA DRIVE MIDLAND, TX 79705
MEWBOURNE OIL CO Leonard SWD #1 4801 BUSINESS PARK BLVD. PO BOX 5270 HOBBS, NM 88240	EOG RESOURCES INC Leonard SWD #1 P.O. Box 2267 Midland, TX 79702	OCCIDENTAL PERMIAN, LP Leonard SWD #1 5 GREENWAY PLAZA, SUITE 110 HOUSTON, TX 77046
	NORTEX CORP Leonard SWD #1 100 THROCKMORTON ST STE 400 FORT WORTH, TX 76102	ESTORIL PRODUCING CORP Leonard SWD #1 400 W ILLINOIS STE 1600 MIDLAND, TX 79701
ROBERT E. LANDRETH Leonard SWD #1 110 W. LOUISIANA SUITE 404 MIDLAND, TX 79701	XTO ENERGY INC Leonard SWD #1 810 HOUSTON STREET SUITE 2000 FT. WORTH, TX 761026298	APACHE CORPORATION Leonard SWD #1 303 VETERANS AIRPARK LN #1000 MIDLAND, TX 79705
CONOCOPHILLIPS COMPANY Leonard SWD #1 P. O. BOX 7500 BARTLESVILLE, OK 74005	V-F PETROLEUM INC Leonard SWD #1 P.O. BOX 1889 MIDLAND, TX 79702	BTA OIL PRODUCERS Leonard SWD #1 104 S PECOS MIDLAND, TX 79701
CENTENNIAL RESOURCE PRODUCTION, LLC Leonard SWD #1 1001 17th Street, Suite 1800 Denver, CO 80202	EDWARD R HUDSON JR Leonard SWD #1 616 TEXAS STREET FORT WORTH, TX 76102	MRC PERMIAN COMPANY Leonard SWD #1 5400 LBJ FREEWAY SUITE 1500 DALLAS, TX 75240
SIANA OIL & GAS CO. Leonard SWD #1 12012 WICKCHESTER LANE SUITE 410 HOUSTON, TX 77079	COG OPERATING LLC Leonard SWD #1 600 W Illinois Ave Midland, TX 79701	ENDEAVOR ENERGY RESOURCES, LP Leonard SWD #1 110 NORTH MARIENFELD SUITE 200 MIDLAND, TX 79701
CAZA PETROLEUM, LLC. Leonard SWD #1 4 GREENSPPOINT PLACE 16945 NORTHCHASE DR SUITE 1430 HOUSTON, TX 77060	MEWBOURNE OIL COMPANY Leonard SWD #1 P. O. BOX 7698 TYLER, TX 75711	EOG Y RESOURCES, INC. Leonard SWD #1 104 S 4TH ST ARTESIA, NM 88210
THE ALLAR COMPANY Leonard SWD #1 P. O. BOX 1567 GRAHAM, TX 76450		DEVON ENERGY PRODUCTION COMPANY, LP Leonard SWD #1 333 West Sheridan Ave. Oklahoma City, OK 73102
ESTORIL PRODUCING CORP Leonard SWD #1 400 W ILLINOIS STE 1600 MIDLAND, TX 79701	SIANA OPERATING LLC Leonard SWD #1 P.O. BOX 10303 MIDLAND, TX 79702	CHEVRON U S A INC Leonard SWD #1 6301 DEAUVILLE BLVD MIDLAND, TX 79706

OPERATORS, LEASEHOLDERS AND SURFACE OWNERS WITHIN 2 MILES -RADIUS


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

J C WILLIAMSON Leonard SWD #1 PO BOX 16 MIDLAND, TX 79702			MID-AMERICA PET INC Leonard SWD #1 401 S BOSTON TULSA, OK 74103
CAZA OPERATING, LLC Leonard SWD #1 200 N LORAIN STE 1550 MIDLAND, TX 79701		CHESAPEAKE OPERATING, INC. Leonard SWD #1 P. O. BOX 18496 OKLAHOMA CITY, OK 731540496	
		COG OPERATING LLC Leonard SWD #1 600 W Illinois Ave Midland, TX 79701	OWL SWD OPERATING, LLC Leonard SWD #1 8214 WESTCHESTER DR STE 850 DALLAS, TX 75225
CENTENNIAL RESOURCE PRODUCTION, LLC Leonard SWD #1 1001 17th Street, Suite 1800 Denver, CO 80202		CML EXPLORATION, LLC Leonard SWD #1 P.O. BOX 890 SNYDER, TX 79550	WYNN-CROSBY OPERATING, LP Leonard SWD #1 15660 DALLAS PARKWAY SUITE 1175 DALLAS, TX 75248
MARATHON OIL PERMIAN LLC Leonard SWD #1 5555 SAN FELIPE STREET HOUSTON, TX 77056		GMT EXPLORATION COMPANY LLC Leonard SWD #1 1560 BROADWAY SUITE 2000 DENVER, CO 80202	

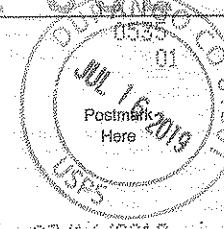
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SANTA FE, NM 87501	
Certified Mail Fee \$3.50	
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To New Mexico State Land Office Leonard SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501	
City, State, ZIP+4® Santa Fe, NM 87501	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

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Certified Mail Fee \$3.50	
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<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To MEWBOURNE OIL CO Leonard SWD #1 4801 BUSINESS PARK BLVD. PO BOX 5270 HOBBBS, NM 88240	
City, State, ZIP+4® HOBBBS, NM 88240	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

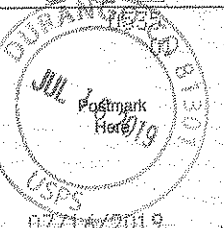
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MIDLAND, TX 79701	
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Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To ROBERT E. LANDRETH Leonard SWD #1 110 W. LOUISIANA SUITE 404 MIDLAND, TX 79701	
City, State, ZIP+4® MIDLAND, TX 79701	
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<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To CONOCOPHILLIPS COMPANY Leonard SWD #1 P. O. BOX 7500 BARTLESVILLE, OK 74005	
City, State, ZIP+4® BARTLESVILLE, OK 74005	
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DENVER, CO 80202	
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<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To CENTENNIAL RESOURCE PRODUCTION, LLC Leonard SWD #1 1001 17th Street, Suite 1800 Denver, CO 80202	
City, State, ZIP+4® Denver, CO 80202	
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<input type="checkbox"/> Return Receipt (hardcopy) \$2.80	
<input type="checkbox"/> Return Receipt (electronic) \$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery \$0.00	
<input type="checkbox"/> Adult Signature Required \$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery \$0.00	
Postage \$0.55	
Total Postage and Fees \$4.05	
Sent To SIANA OIL & GAS CO. Leonard SWD #1 12012 WICKCHESTER LANE SUITE 410 HOUSTON, TX 77079	
City, State, ZIP+4® HOUSTON, TX 77079	
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☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

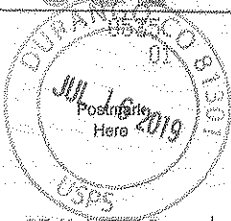
Postage \$0.55

Total Postage and Fees \$6.85

CAZA PETROLEUM, LLC.
Leonard SWD #1
4 GREENSPOINT PLACE
16945 NORTHCHASE DR SUITE 1430
HOUSTON, TX 77060

PS Form 3800, April 2015 PSN 7530-02-000-9047

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GRAHAM, TX 76450

Certified Mail Fee \$3.50

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

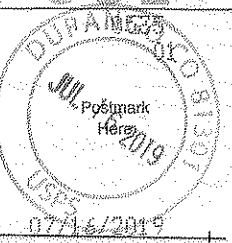
Postage \$0.55

Total Postage and Fees \$6.85

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

PS Form 3800, April 2015 PSN 7530-02-000-9047

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CARLSBAD, NM 88220

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☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

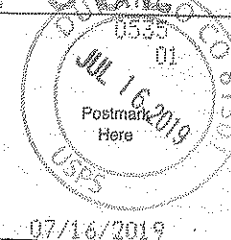
Postage \$0.55

Total Postage and Fees \$6.85

Bureau of Land Management
Leonard SWD #1
620 E. Greene Street
Carlsbad, NM 88220-6292

PS Form 3800, April 2015 PSN 7530-02-000-9047

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MIDLAND, TX 79702

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

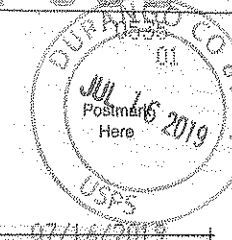
Postage \$0.55

Total Postage and Fees \$6.85

EOG RESOURCES INC
Leonard SWD #1
P.O. Box 2267
Midland, TX 79702

PS Form 3800, April 2015 PSN 7530-02-000-9047

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FORT WORTH, TX 76102

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☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$6.85

NORTEX CORP
Leonard SWD #1
100 THROCKMORTON ST STE 400
FORT WORTH, TX 76102

PS Form 3800, April 2015 PSN 7530-02-000-9047

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FORT WORTH, TX 76102

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

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☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

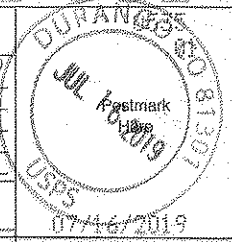
Postage \$0.55

Total Postage and Fees \$6.85

XTO ENERGY INC
Leonard SWD #1
810 HOUSTON STREET
SUITE 2000
FT. WORTH, TX 761026298

PS Form 3800, April 2015 PSN 7530-02-000-9047

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MIDLAND, TX 79702

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$4.05

V-F PETROLEUM INC

Sent To Leonard SWD #1

P.O. BOX 1889

Street and Apt. No., or PO Box No. MIDLAND, TX 79702

City, State, ZIP+4®

PS Form 3800, April 2015 PSN 7530-02-000-9047

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FORT WORTH, TX 76102

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$4.05

EDWARD R HUDSON JR

Sent To Leonard SWD #1

616 TEXAS STREET

Street and Apt. No., or PO Box No. FORT WORTH, TX 76102

City, State, ZIP+4®

PS Form 3800, April 2015 PSN 7530-02-000-9047

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TYLER, TX 75711

Certified Mail Fee \$3.50

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$4.05

MEWBORNE OIL COMPANY

Sent To Leonard SWD #1

P.O. BOX 7698

Street and Apt. No., or PO Box No. TYLER, TX 75711

City, State, ZIP+4®

PS Form 3800, April 2015 PSN 7530-02-000-9047

See Reverse for Instructions

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HOUSTON, TX 77046

Certified Mail Fee \$3.50

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$4.05

OCCIDENTAL PERMIAN, LP

Sent To Leonard SWD #1

5 GREENWAY PLAZA, SUITE 110

Street and Apt. No., or PO Box No. HOUSTON, TX 77046

City, State, ZIP+4®

PS Form 3800, April 2015 PSN 7530-02-000-9047

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7019 1120 0001 9199 8077

U.S. Postal Service™ CERTIFIED MAIL® RECEIPT

Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

MIDLAND, TX 79705

Certified Mail Fee \$3.50

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

☐ Return Receipt (hardcopy) \$2.80

☐ Return Receipt (electronic) \$0.00

☐ Certified Mail Restricted Delivery \$0.00

☐ Adult Signature Required \$0.00

☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$4.05

LIMESTONE BASIN PROP RANCH LLC

Sent To Leonard SWD #1

18 DESTA DRIVE

Street and Apt. No., or PO Box No. MIDLAND, TX 79705

City, State, ZIP+4®

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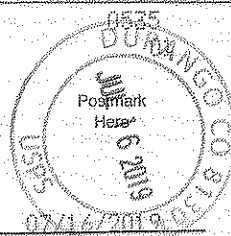
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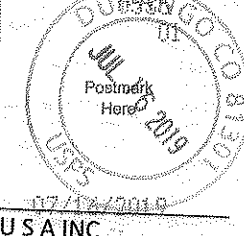
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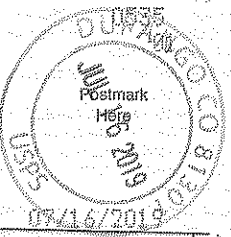
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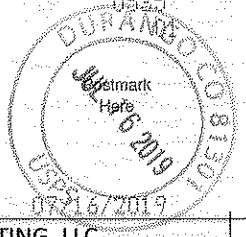
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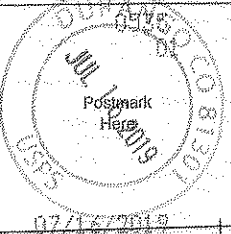
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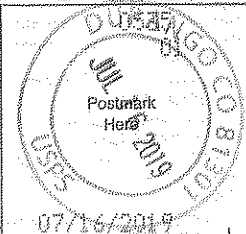
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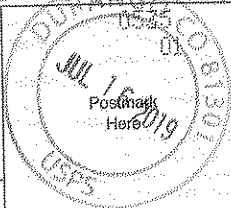
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July 12, 2019

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

RE: AWR Disposal LLC Leonard SWD#1
UL D, Section 11 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.
 - 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.
 - 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

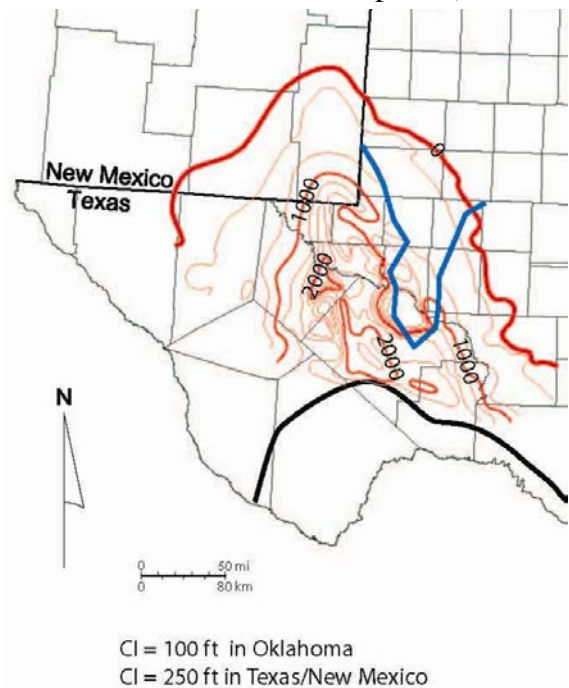
1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, such as the Dagger Draw area and a magnitude 2.0-2.9 earthquake that occurred between 1970-2004 about 12-miles southwest of the proposed Leonard SWD #1. A slightly larger magnitude and more recent seismic event is reported about 22 miles east of the Leonard 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 closet mapped fault that was activated after Woodford time is about 4 miles to the west and 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 Leonard 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 the nine townships (324 miles) around the proposed Leonard SWD #1, the OCD database shows about 6 active and 6 new/proposed Devonian SWDs, which translates into an average density of about one SWD for every 27 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 Leonard SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate 6



July 12, 2019

Page 3

permit a conclusion that faults near the Leonard 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 Leonard 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 Leonard 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 Leonard 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

A handwritten signature in black ink, appearing to read "Randall T. Hicks". The signature is stylized with a large, looped "R" and a cursive "H".

Randall T. Hicks
Principal

Copy: AWR Disposal LLC

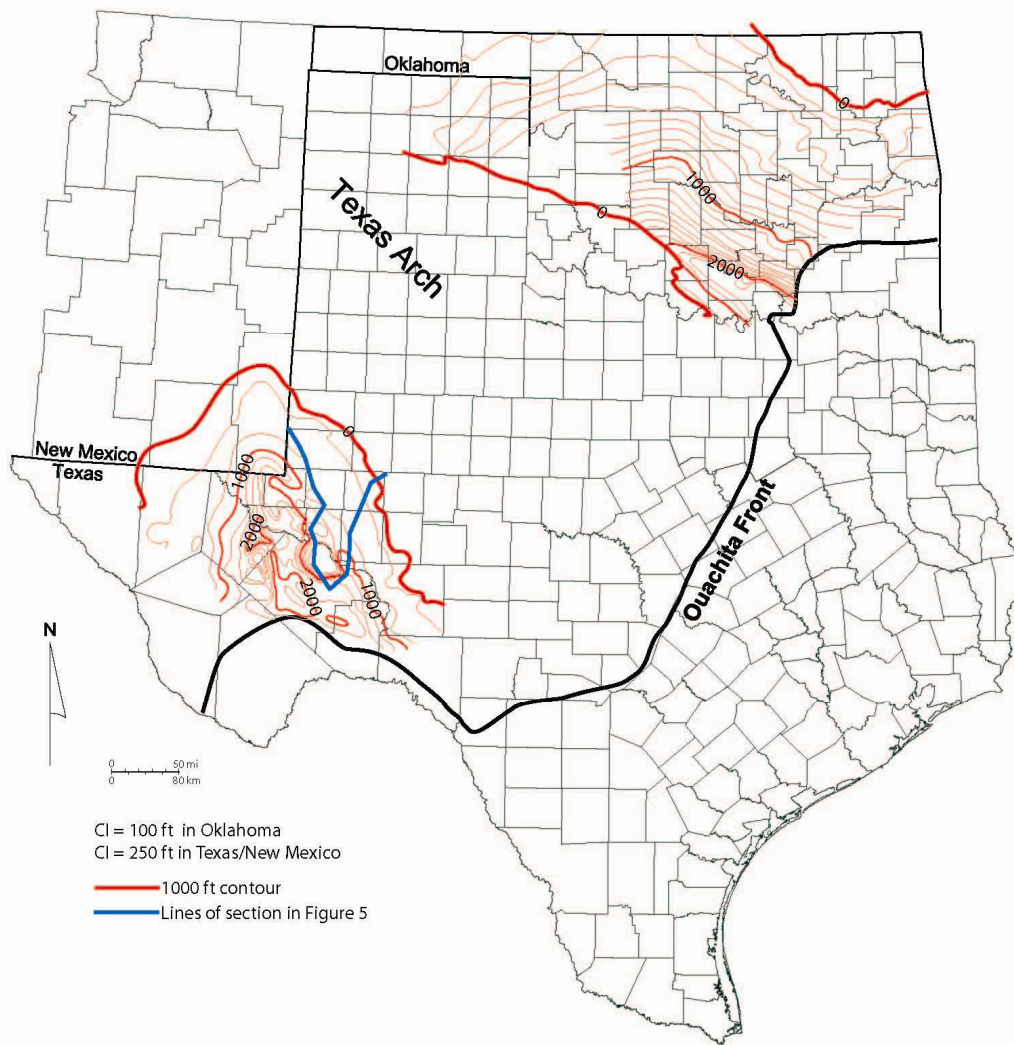
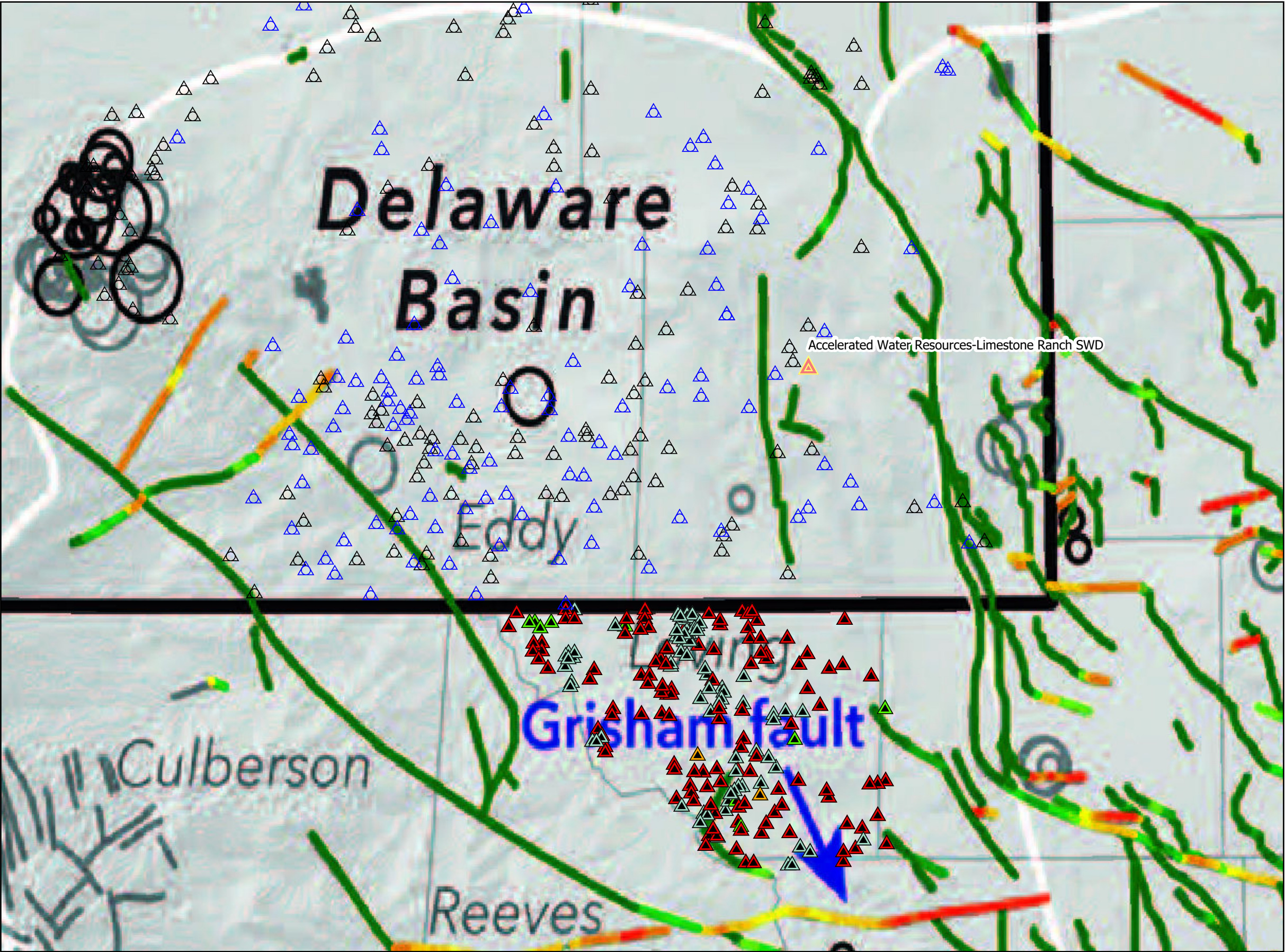


Figure 4. Thickness map of Simpson Group modified from Texas Water Development Board (1972), Frenzel and others (1988), and Northcutt and Johnson (1997). Thousand-foot contour lines and locations of figure 5 cross sections shown in heavy red and blue lines, respectively. Note that contour interval is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



Accelerated Water Resources-Limestone Ranch SWD

- ▲ SWD
- Oil and Gas (NMOCD)
- △ Salt Water Injection, Active
- △ Salt Water Injection, New
- Loving, Tx Oil and Gas Wells
- ▲ Injection/Disposal From Gas
- ▲ Injection/Disposal From Oil
- ▲ Injection/Disposal From Oil/Gas
- ▲ Injection/Disposal Well

Seismicity:

- M_w 2.0-2.9 ○ Since 2005
- M_w 3.0-3.9 ○ 1970-2004
- M_w 4.0+

Fault slip potential (%):

- 0 10 20 30 40 50+
- 0 10 20 30 40 50+

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel
et al. (2005), and the USGS Quaternary Faults and
Folds Database (Crone and Wheeler, 2000).



0 5 10
Miles

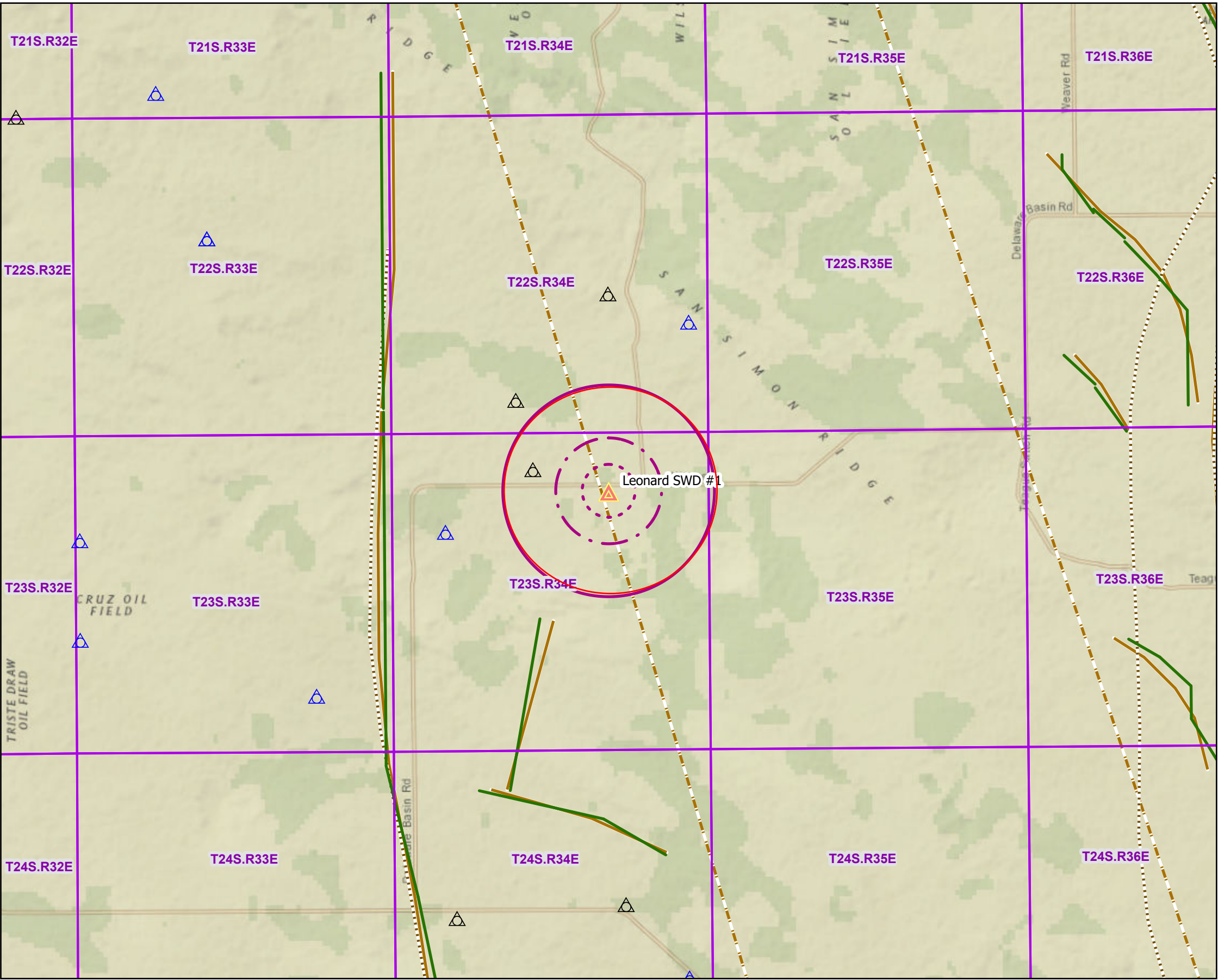
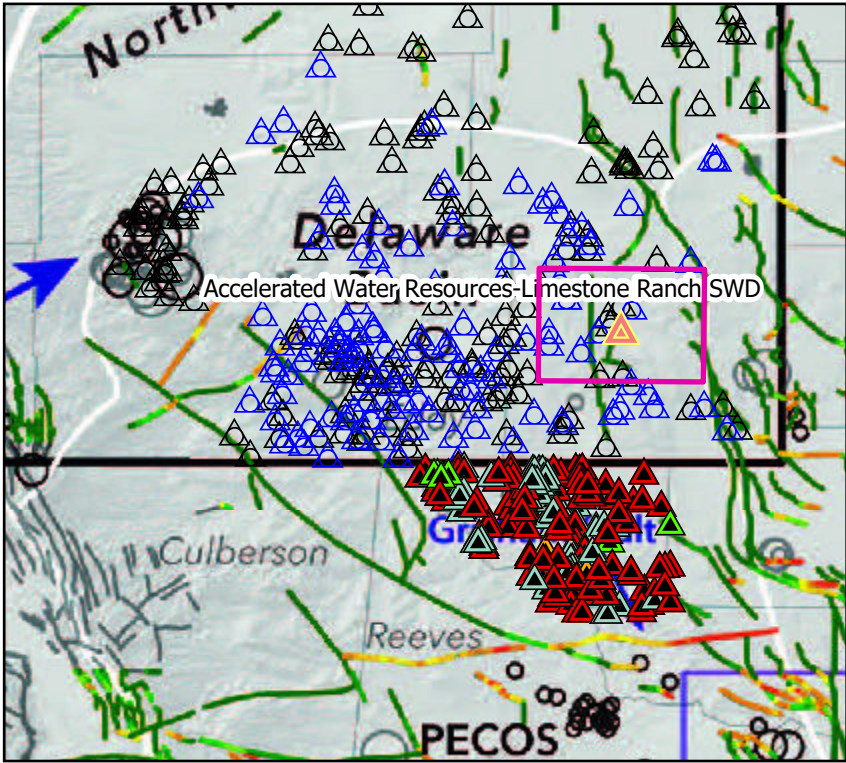
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Seismicity and Fault Slip Potential

AWR Disposal, LLC
Leonard SWD #1

Plate 5

June 2019



- SWD
- Distance (miles)
 - 0.5
 - 1
 - 2
- Faults
 - Fault - Woodford
 - Fault - Precambrian
 - Fault - Basement
- Fault Slip Potential (%)
 - <5
- Oil and Gas (NMOCD)
 - Salt Water Injection, Active
 - Salt Water Injection, New

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel
et al. (2005), and the USGS Quaternary Faults and
Folds Database (Crone and Wheeler, 2000).



0 1 2
Miles

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Albuquerque, NM 87104
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Fault Slip Potential Relative to
Active Salt Water Injection Wells

AWR Disposal, LLC
Leonard SWD #1

Plate 6

June 2019