

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
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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: Apache Corporation **OGRID Number:** 873
Well Name: North Monument G/SA Unit 008 **API:** 30-025-05737
Pool: Eunice - Monument; Grayburg - San Andres **Pool Code:** 23000

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

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

FOR OCD ONLY

☐ Notice Complete
☐ Application Content Complete

- 3) CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Brian Wood

Print or Type Name

Signature

1-5-23

Date

505 466-8120

Phone Number

brian@permitswest.com

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. OPERATOR: APACHE CORPORATION
ADDRESS: 303 VETERANS AIRPARK LANE, SUITE 3000, MIDLAND, TX 79705
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: R-9596

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: **NORTH MONUMENT G/SA UNIT 008**
30-025-05737

 - Proposed average and maximum daily rate and volume of fluids to be injected;
 - Whether the system is open or closed;
 - Proposed average and maximum injection pressure;
 - Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 - 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.

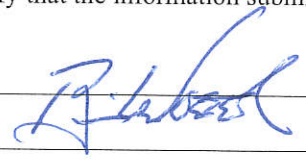
*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*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: JAN. 3, 2023
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.

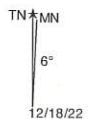
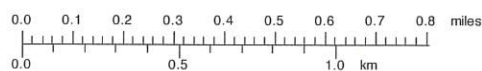
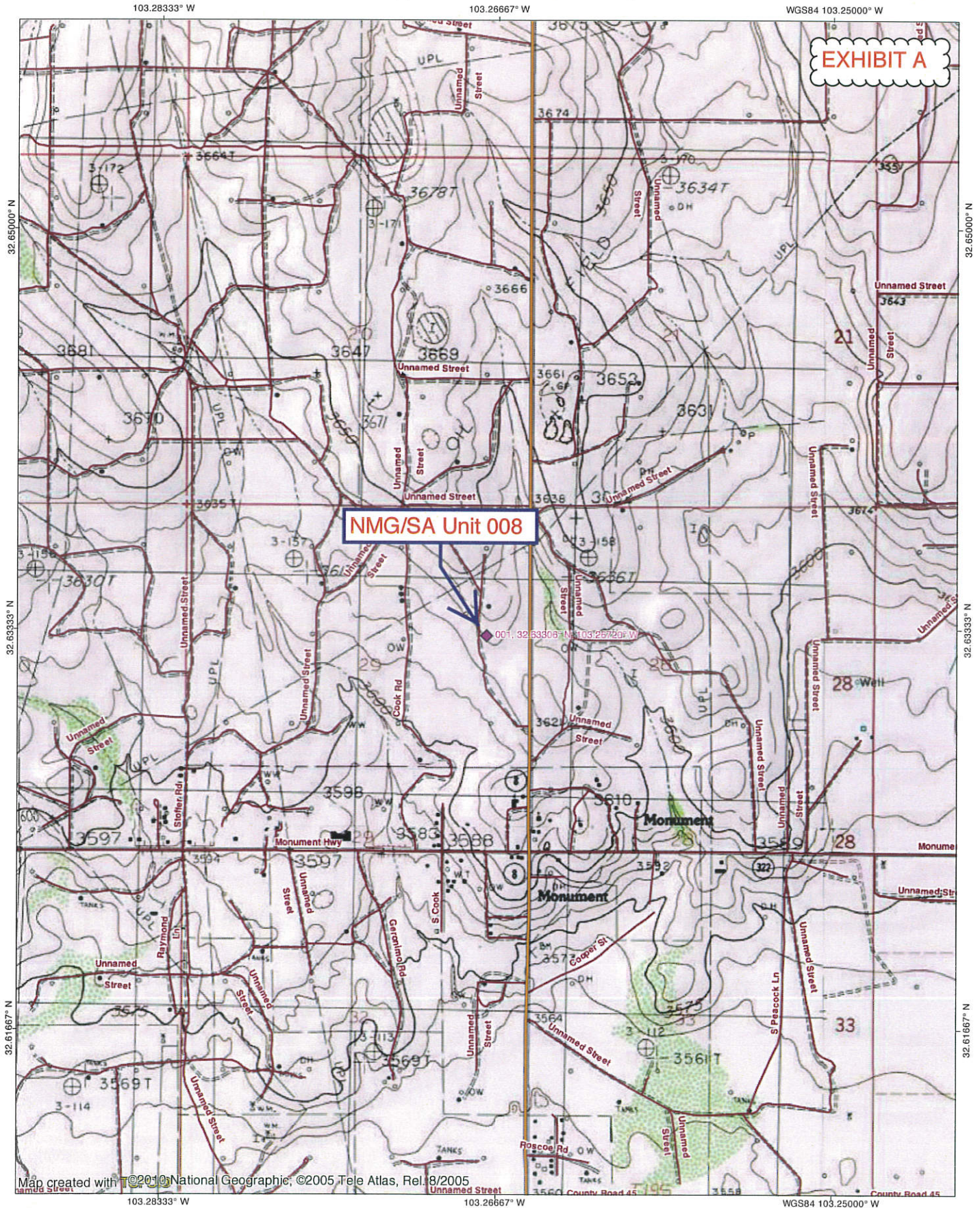
Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (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.

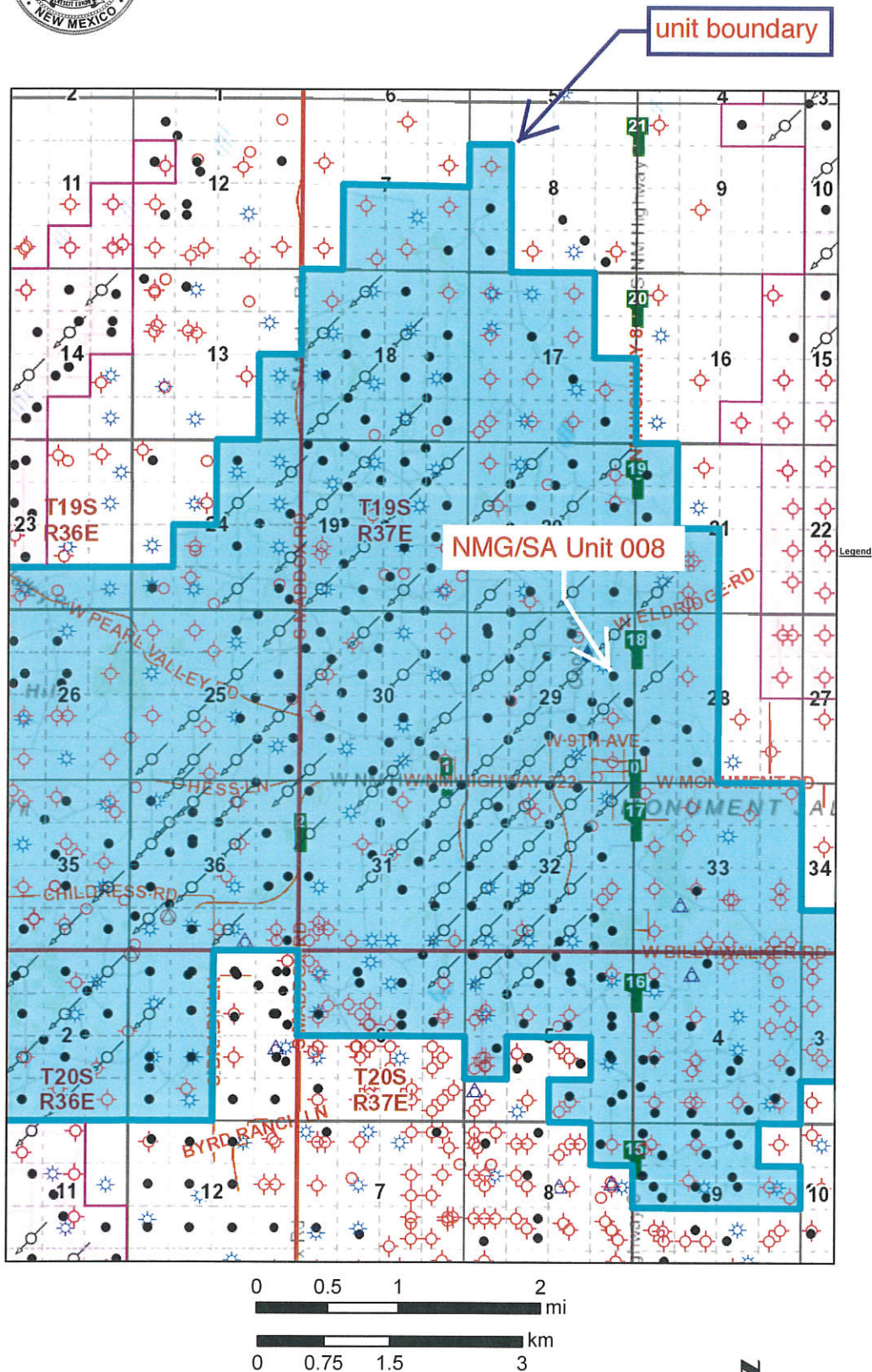
TOPO! map printed on 12/18/22 from "Untitled.tpo"





New Mexico State Land Office

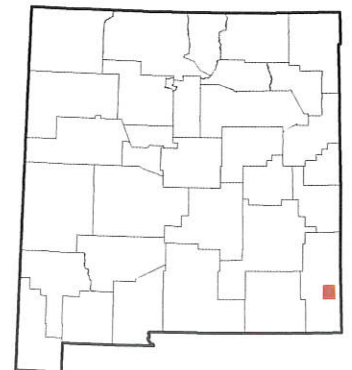
EXHIBIT A



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.



INJECTION WELL DATA SHEETTubing Size: 2.875" J-55 6.4# Lining Material: INTERNAL PLASTIC COATType of Packer: LOCK SET INJECTIONPacker Setting Depth: 3780'

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

Additional Data

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

If no, for what purpose was the well originally drilled? GRAYBURG - SAN ANDRES OIL WELL

2. Name of the Injection Formation: GRAYBURG & SAN ANDRES
3. Name of Field or Pool (if applicable): EUNICE-MONUMENT; GRAYBURG-SAN ANDRES (POOL #23000)
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: YATES (2521'), SEVEN RIVERS (2890'), & QUEEN (3403')
- UNDER: ABO (\approx 7065')

Affidavit of Publication

EXHIBIT K

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
December 21, 2022
and ending with the issue dated
December 21, 2022.



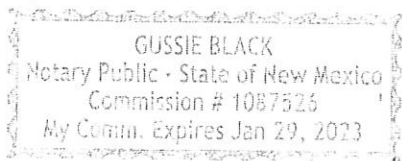
Publisher

Sworn and subscribed to before me this
21st day of December 2022.



Business Manager

My commission expires
January 29, 2023
(Seal)



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

LEGAL NOTICE December 21, 2022

Apache Corporation is applying to convert the North Monument G/SA Unit 008 oil well to a water injection well. The well, API 30-025-05737, is at 1980 FNL & 660 FEL, Sec. 29, T. 19 S., R. 37 E., Lea County, NM. This is 2/3 mile north of the Monument, NM Post Office. Water will be injected at a maximum pressure of 766 psi into the Grayburg and San Andres formations from 3830' to 3960'. Maximum injection rate will be 700 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 or ocd.engineer@state.nm.us within 15 days. NMOCD Engineering Bureau phone is 505 476-3441. 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.

#00274076

02108485

00274076

BRIAN WOOD
PERMITS WEST
37 VERANO LOOP
SANTA FE, NM 87508



January 3, 2023

NM State Land Office
P. O. Box 1148
Santa Fe NM 87504

TYPICAL NOTICE

Apache Corporation is planning (see attached application) to convert its North Monument G/SA Unit 008 oil well (30-025-05737) to a water injection well. As required by NM Oil Conservation Division (NMOCD) Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: North Monument G/SA Unit 008 (NMSLO lease) ID: 3960'
Proposed Injection Zones: Grayburg & San Andres from 3830' to 3960'
Where: 1980' FNL & 660' FEL Sec. 29, T. 19 S., R. 37 E., Lea County, NM
Approximate Location: 2/3 mile north of the Monument, NM Post Office
Applicant Name: Apache Corporation (432) 818-1088
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a water injection 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. The NMOCD Engineering Bureau address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Phone number is (505) 476-3441. E-mail address is: ocd.engineer@state.nm.us

Please call me if you have any questions.

Sincerely,

Brian Wood

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 Sent To 620 E. Greene
 Carlsbad NM 88220
 Street and Apt. No., or P.O. Box, or POA
 Apache NMGSA Unit 1108
 City, State, ZIP+4®
 PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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 Suite 150
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 Houston TX 77002
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 Hobbs NM 88241
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 Postage \$
 Total Postage and Fees Oil Well Drilling Co.
 Sent To 110 Ghils Tower East
 Midland TX 79702
 Apache NMGSA Unit 1108
 City, State, ZIP+4®
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 Waco TX 76702
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 707 17th St.
 Suite 3600
 Denver CO 80202
 Street and Apt. No., or P.O. Box
 City, State, ZIP+4® Apache NMGSA Unit 1108

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 303 E. 17th Ave.
 Suite 1100
 Denver CO 80203
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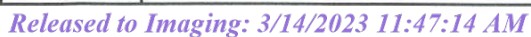
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Postage
\$

Total Postage and Fees **Wiser c/o Forest c/o Sabine**
 1415 Louisiana St.
 Suite 1600
 Houston TX 77002
 Street and Apt. No., or P.O. Box
 City, State, ZIP+4® Apache NMGSA Unit 1108

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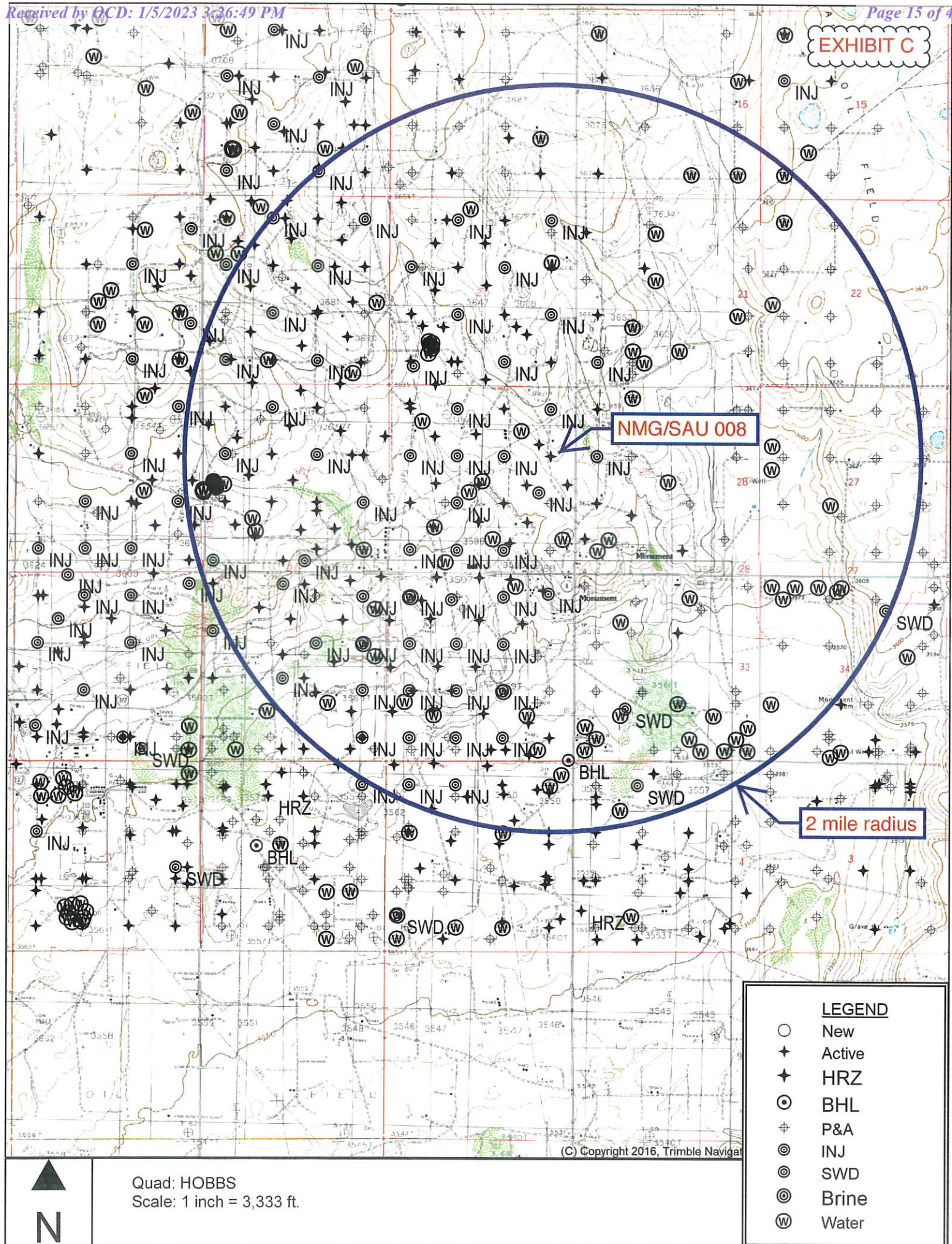
EXHIBIT L



SORTED BY DISTANCE FROM NMG/SAU 008

API	OPERATOR	WELL	TYPE	UNIT- SECTION- T19S-R37E	TVD	ZONE @ TD	FEET FROM NMGSAU 008/1108
3002505736	Wagner	Mexico X Com 001	G	H-29	3660	Queen	468
3002541751	Apache	N Monument GSA Unit 435	O	I-29	3966	Grayburg	934
3002535601	Apache	N Monument GSA Unit 318	O	J-29	3960	Grayburg	1050
3002505735	Apache	N Monument GSA Unit 009Y	I	I-29	3950	Grayburg	1069
3002531505	Apache	N Monument GSA Unit 018	WSW	B-29	5150	San Andres	1111
3002505734	Mewbourne	State F Com 001	P&A	I-29	3943	Grayburg	1317
3002505738	Apache	N Monument GSA Unit 001	I	A-29	3970	Grayburg	1320
3002505713	Apache	N Monument GSA Unit 005	I	E-28	3946	San Andres	1326
3002505732	Apache	N Monument GSA Unit 007	I	G-29	3952	Grayburg	1326
3002505729	Apache	N Monument GSA Unit 010	O	J-29	3935	Grayburg	1867
3002505710	Apache	N Monument GSA Unit 012	O	L-28	3952	Grayburg	1870
3002505714	Apache	N Monument GSA Unit 288	O	D-28	3978	Grayburg	1871
3002505733	Apache	N Monument GSA Unit 002	O	B-29	3960	Grayburg	1873
3002535619	Apache	N Monument GSA Unit 321	O	I-29	3937	Grayburg	1958
3002535617	Apache	N Monument GSA Unit 317	O	K-29	3960	Grayburg	2164
3002538147	Apache	N Monument GSA Unit 345	O	F-29	3990	Grayburg	2190
3002505715	Chevron	F W Kutter NCT-B 004	P&A	F-28	3977	Grayburg	2321
3002505718	Apache	N Monument GSA Unit 013	O	M-28	3930	Grayburg	2513
3002505721	Apache	N Monument GSA Unit 006	I	F-29	3945	Grayburg	2632
3002505731	Gulf	Williams 003	P&A	P-29	3943	San Andres	2637
3002505663	Apache	N Monument GSA Unit 016	O	P-20	3984	Grayburg	2640
3002533226	Mewbourne	State F Com 002	G	O-29	3808	Grayburg	2691

EXHIBIT B



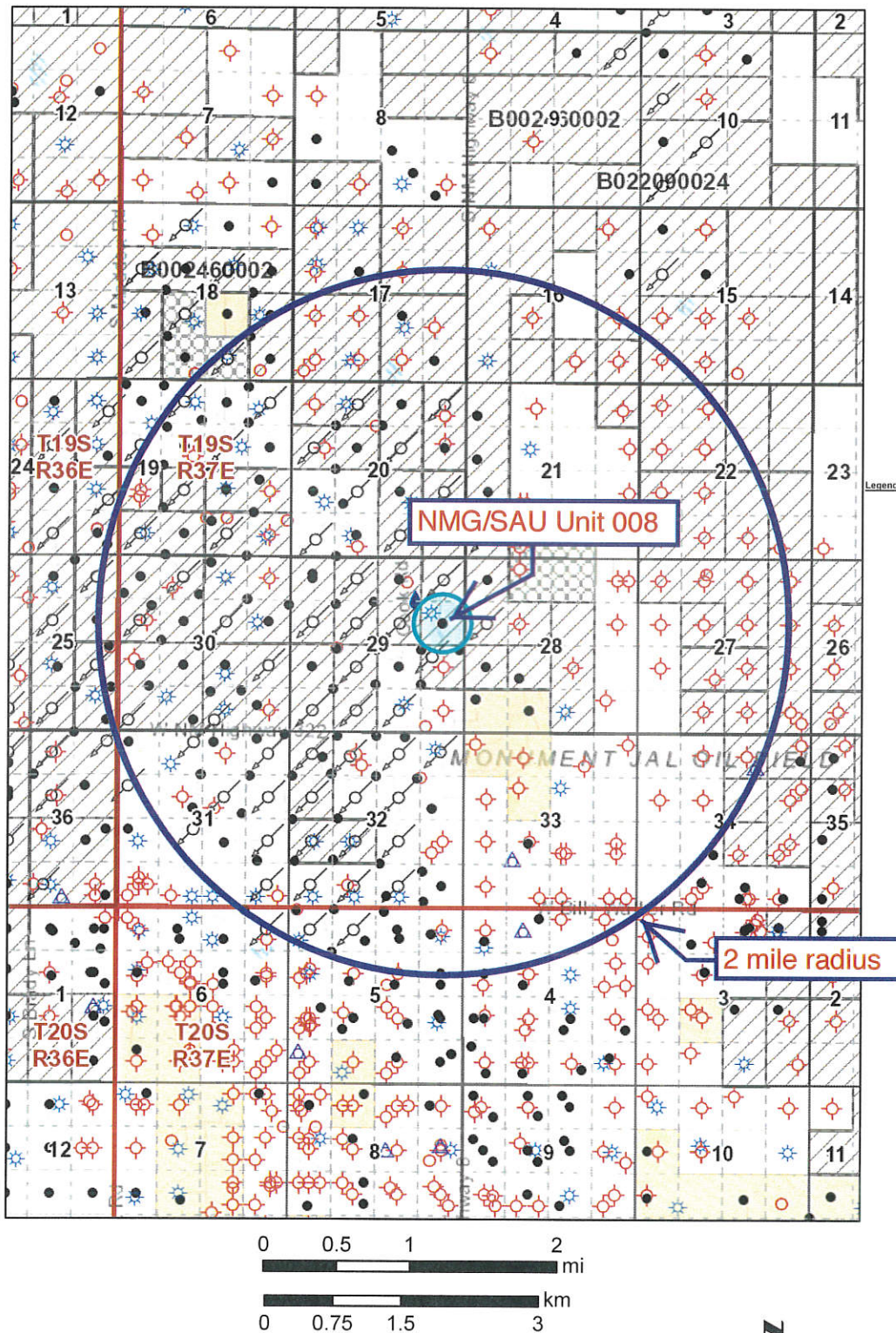
NORTH MONUMENT G/SA UNIT 008 AREA OF REVIEW LEASES

Aliquot Parts in Area of Review (T. 19 S., R. 37 E.)	Lessor	Lease	Lessee(s) of Record	Well Operators (all zones)
SWSE Sec. 20	NMSLO	B0-0246-0002	Southwest Royalties	Apache, Empire NM
SESE Sec. 20	NMSLO	B0-2268-0008	Apache	Apache, Empire NM
SWSW Sec. 21	NMSLO	B0-0246-0002	Southwest Royalties	Apache
NENW Sec. 28	BLM	NMLC-0030678A	ZPZ Delaware, aka Apache	none
W2NW & SENW Sec. 28	NMSLO	B0-0246-0002	Southwest Royalties	Apache
NESW Sec. 28	NMSLO	B0-1431-0016	Graham Royalties	Apache
NWSW Sec. 28	NMSLO	B0-1431-0028	Leaco NM E&P, aka, Apache	Apache
SWSW Sec. 28	BLM	NMLC-0030678A	ZPZ Delaware, aka Apache	Apache
E2NE4 Sec. 29	NMSLO	B0-1330-0008	Southwest Royalties	Apache, Wagner
W2NE4 Sec. 29	NMSLO	B0-6114-0000	Oil Well Drilling & Wiser Oil	Apache, Wagner
E2NW4 Sec. 29	NMSLO	A0-4096-0022	Leaco NM E&P, aka, Apache	Apache
NESE Sec. 29	NMSLO	B0-1167-0048	Shell Western	Apache
NESW Sec. 29	NMSLO	B0-1962-0002	Leaco NM E&P, aka, Apache	Apache
W2SE4 & SESE Sec. 29	fee	D A Williams	Apache	Apache, Mewbourne



New Mexico State Land Office

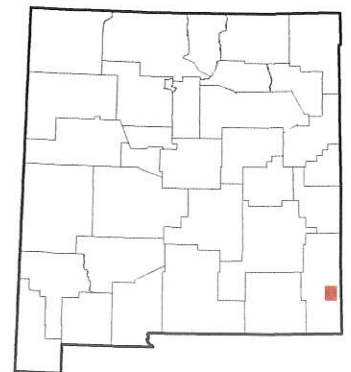
EXHIBIT E



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.



WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
N Monument GSA Unit 435	7/14/14	3966	Eunice Monument; Grayburg-SA	O	11	8.625	1335	450 sx	GL	Circ 25 sx
3002541751					7.875	5.5	3966	950 sx	GL	CBL
I-29-19S-37E										
N Monument GSA Unit 318	9/16/01	3960	Eunice Monument; Grayburg-SA	O	11	8.625	1329	450 sx	GL	Circ 67 sx
3002535601					7.875	5.5	3960	950 sx	GL	CBL
J-29-19S-37E										
N Monument GSA Unit 009Y	11/5/55	3950	Eunice Monument; Grayburg-SA	I	11	8.625	323	300 sx	GL	Circ 25 sx
3002505735					7.875	5.5	3948	750 sx	GL	Calc
I-29-19S-37E										
N Monument GSA Unit 018	6/23/92	5150	Eunice Monument; Grayburg-SA	W	26	20	1357	2300 sx	GL	Circ 275 sx
3002531505					17.5	13.375	2650	875 sx	1108	Estimated
B-29-19S-37E					12.25	9.625	3637	1280 sx	GL	Circ 35 sx

SORTED BY DISTANCE FROM NMG/SAU 008

WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
State F Com 001	6/12/36	3943	Eumont; Yates-7 Rvrs- Queen	P&A	17.5	12.5	151	150 sx	GL	Circ
3002505734					12.5	9.625	1363	430 sx	500	Estimated
I-29-19S-37E					8.75	7	3688	250 sx	1900	Calc
					6.75	open hole	3943	N/A	N/A	N/A
N Monument GSA Unit 001	8/20/36	3809	Eunice Monument; Grayburg-SA	I	15.5	13	223	200 sx	GL	Calc
3002505738					11	9.625	1401	300 sx	351	Calc
A-29-19S-37E					8.25	7	3809	300 sx	1889	Calc
N Monument GSA Unit 005	10/18/36	3946	Eunice Monument; Grayburg-SA	I	13.75	10.75	287	200 sx	GL	Calc
3002505713					9.875	7.625	1347	200 sx	347	Calc
E-28-19S-37E					6.75	5.5	3779	175 sx	2600	Temp survey

SORTED BY DISTANCE FROM NMG/SAU 008

WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
N Monument GSA Unit 007	3/13/36	3952	Eunice Monument; Grayburg-SA	I	16	12.5	125	200 sx	GL	Calc
3002505732					12.5	9.625	1130	400 sx	GL	Calc
G-29-19S-37E					8.75	7	3800	225 sx	2520	Calc
					6	open hole	3952	N/A	N/A	N/A
N Monument GSA Unit 010	5/15/36	3935	Eunice Monument; Grayburg-SA	O	13.38	10.75	189	200 sx	GL	Calc
3002505729					9.875	7.625	1378	500 sx	GL	Calc
J-29-19S-37E					6.75	5.5	3751	300 sx	159	Calc
N Monument GSA Unit 012	11/22/36	3952	Eunice Monument; Grayburg-SA	O	17.5	12.5	196	200 sx	GL	Circ
3002505710					11	8.625	2559	500 sx	no report	no report
L-28-19S-37E					7.875	6.625	3805	100 sx	no report	no report

WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
N Monument GSA Unit 288	1/10/37	3978	Eunice Monument; Grayburg-SA	O	OH	13.375	34	60 sx	GL	Circ
3002505714					12	9.625	1378	1000 sx	GL	Calc
D-28-19S-37E					8.25	7	3722	125 sx	2400	Calc
N Monument GSA Unit 002	5/27/36	3960	Eunice Monument; Grayburg-SA	O	16	12	114	200 sx	no report	no report
3002505733					12.5	9.625	1190	400 sx	no report	no report
B-29-19S-37E					7	4.5	3630	347	no report	no report
					9.75	7	3750	523 sx	GL	circ 130 sx
N Monument GSA Unit 321	9/24/01	3937	Eunice Monument; Grayburg-SA	O	11	8.625	1328	450 sx	GL	Circ 40 sx
3002535619					7.875	5.5	3936	950 sx	GL	Calc
I-29-19S-37E										

SORTED BY DISTANCE FROM NMG/SAU 008

WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
N Monument GSA Unit 317	8/2/01	3960	Eunice Monument; Grayburg-SA	O	11	8.625	1324	550 sx	GL	Circ 140 sx
3002535617					7.875	5.5	3960	910 sx	GL	Circ 60 sx
K-29-19S-37E										
N Monument GSA Unit 345	11/13/06	3990	Eunice Monument; Grayburg-SA	O	11	8.625	395	300 sx	GL	Circ
3002538147					7.875	5.5	3990	750 sx	125	CBL
F-29-19S-37E										
F W Kutter NCT-B 004	5/21/56	3977	Eunice Monument; Grayburg-SA	P&A	11	8.625	250	225 sx	GL	Circ
3002505715					7.875	5.5	3975	1900 sx	56	Temp survey
F-28-19S-37E										
N Monument GSA Unit 013	8/27/36	3930	Eunice Monument; Grayburg-SA	O	15	12.5	252	300 sx	GL	no report
3002505718					11	9.625	1383	400 sx	GL	Calc
M-28-19S-37E					9.25	7	3816	300 sx	1896	Calc

EXHIBIT F

SORTED BY DISTANCE FROM NMG/SAU 008

WELL	SPUD	TVD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW TOC DETERMINED
N Monument GSA Unit 006	1/24/36	3945	Eunice Monument; Grayburg-SA	I	17.5	12.5	162	150 sx	GL	Calc
3002505721					11	9.625	2510	450 sx	GL	Calc
F-29-19S-37E					8.75	7	3815	100 sx	3150	Calc
Williams 003	11/17/36	3943	Eunice Monument; Grayburg-SA	P&A	13.75	10.75	279	200 sx	GL	no report
3002505731					9.875	7.625	1330	230 sx	355	Calc
P-29-19S-37E					6.75	5.5	3720	175 sx	1507	Calc
N Monument GSA Unit 016	7/13/36	3984	Eunice Monument; Grayburg-SA	O	17	12.5	127	200 sx	no report	no report
3002505663					12.5	9.625	1120	400 sx	no report	no report
P-20-19S-37E					8.75	7	3750	200 sx	no report	no report
State F Com 002	1/27/96	3808	Eumont; Yates-7 Rvrs- Queen	G	12.25	8.625	407	350 sx	GL	Circ 44 sx
3002533226					7.875	5.5	3808	750 sx	GL	Circ 106 sx
O-29-19S-37E										

EXHIBIT F

EXHIBIT F

DF=3621'
Spud: 5/21/56

Chevron USA Inc. – F W Kutter NCT-B #004
Wellbore Diagram – Current Status - P&A'd 7/29/99

API: 30-025-05715

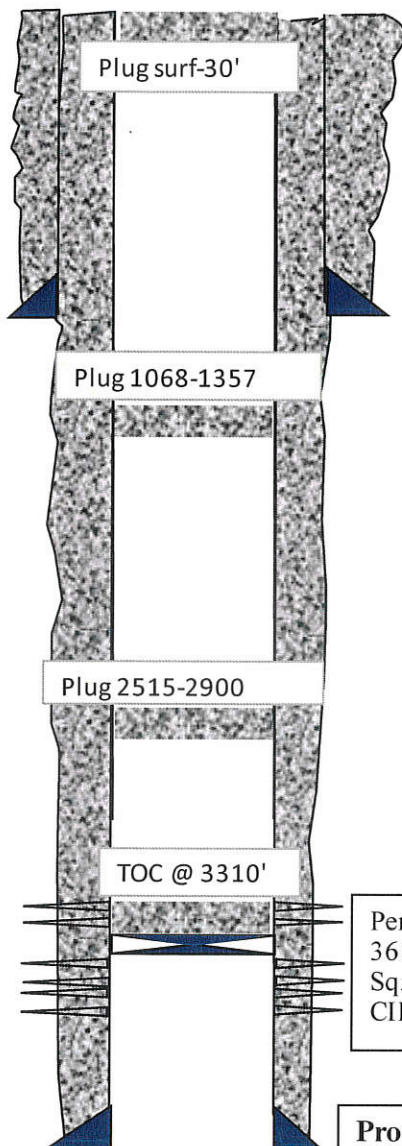
Date : 11/4/22
M. Monzon

Surface Location



1980' FNL & 1650' FWL,
Sec 28, T19S, R37E, Lea County, NM

Hole Size
=11"



Surface Casing
8-5/8" 24# @ 241' w/ 225 sxs cmt to surface

Perfs: 3448-50; 3466-68; 3488-90; 3519-21; 3534-36; 3594-3608; 3614-28;
3684-90; 3694-3702; 3712-22; 3736-40'; 3881-91'
Sqzd 2/26/92 w/ 300 sxs
CIBP @ 3550' w/ 25 sxs cmt

Hole Size
=7-7/8"

Production Casing
5-1/2" 14# @ 3975' w/ 1900 sxs cmt to surface

TD =3975'

Drawing not to scale

EXHIBIT F**Gulf Oil Corporation -- Pre-Ongard Well # 3 (D.A. Williams # 3)****Wellbore Diagram -- Current Status - P&A'd 7/27/1955**GL=3618'
Spud: 11/17/36

API: 30-025-05731

Date : 11/7/22
M. Monzon**Surface Location**660' FSL & 660' FEL,
Sec 29, T19S, R37E, Lea County, NM**Surface Casing**
10-3/4" 32# @ 279' w/ 200 sx to surface

Cmt Retainer @ 950' - sqzd 171 sxs of cmt

Perf @ 1,000' (2 circulation holes)

Intermediate Casing
7-5/8" 22# @ 1338' w/ 200 sx (Calc TOC @ 355')

Cmt Retainer @ 2200' - sqzd 250 sxs of cmt

Production Casing
5-1/2" 17# @ 3720' w/ 175 sxs
(Calc TOC @ 1507')

OH from 3720-3945'

TD =3945'

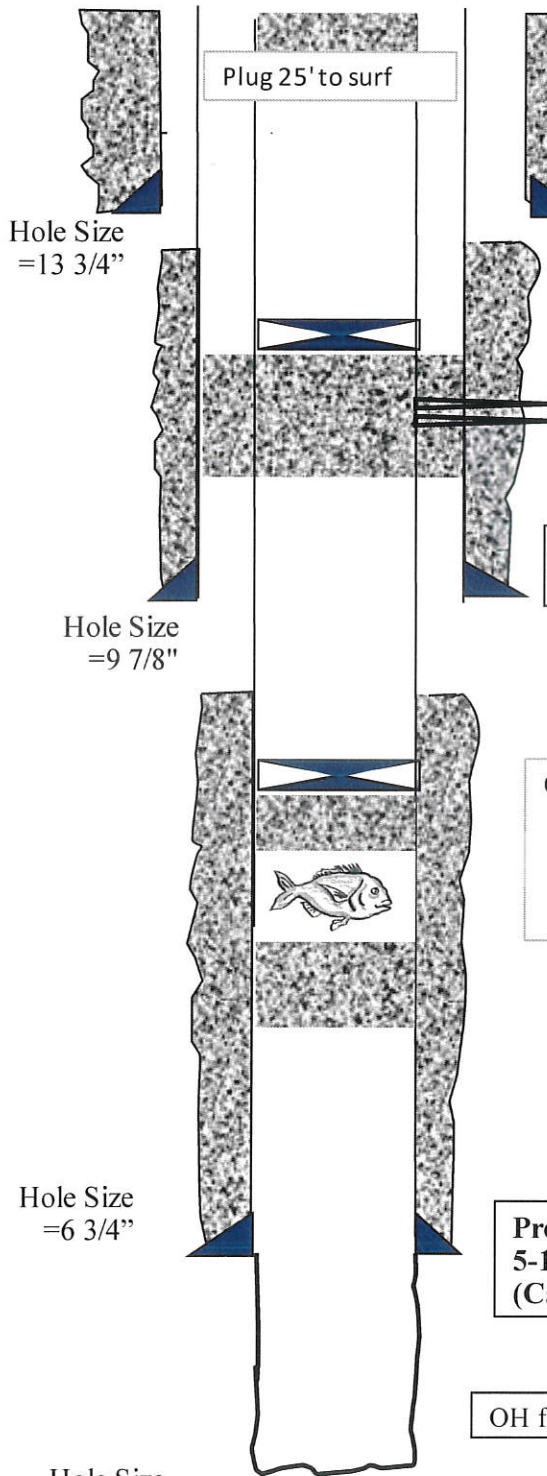


EXHIBIT F

GL=3609'
Spud:
7/11/1936

Mewbourne Oil Company - State F Com # 1

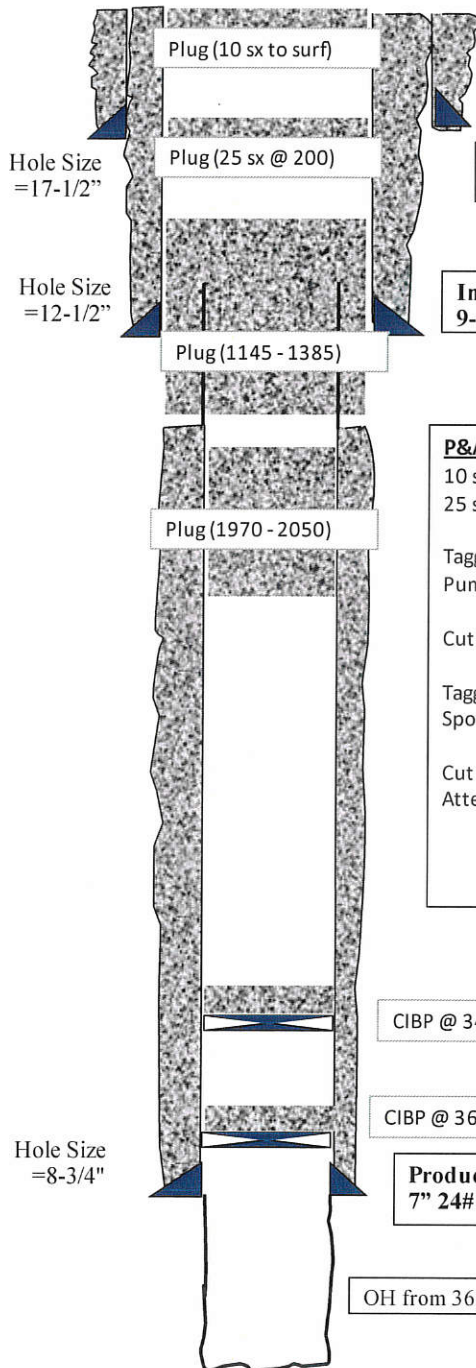
Wellbore Diagram – P&A (7/3/1996)

API: 30-025-05734

Date : 11/8/2022
M. Monzon

Surface Location

1980' FSL & 660' FEL,
Sec 29, T19S, R37E, Lea County, NM



Surface Casing
12-1/2" 50# @ 151' w/ 150 sx cmt to surface

Intermediate Casing
9-5/8" 36# @ 1363' w/ 430 sx cmt to surface

P&A Cmt Plugs:

10 sx to surface
25 sx at 200'

Tagged plug @ 1145'
Pumped 50 sxs of cmt @ 1385'

Cut 7" @ 1320' and lay down 42 jts of csg

Tagged plug @ 1970'
Spot 100' cmt plug from 1950-2050'

Cut 7" @ 2000' - pulled 10' and got stuck
Attempt to cut 7" casing @ 2,800' & 2,500' - casing did not pull free

CIBP @ 3450' w/ 35' cmt on top

CIBP @ 3638' w/ 5' cmt on top

Production Casing
7" 24# @ 3657' w/ 250 sx (Calculate TOC @ 1900')

OH from 3657'-3943'

TD =3943'

Drawing not to scale

P.O. BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 or 563-1040

Martin Water Laboratories, Inc.
WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

EXHIBIT G
709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

To: Ms. Denise Wann
P. O. Drawer "D"
Monument, NM 88265

Laboratory No. 1290205
Sample received 12-20-90
Results reported 1-2-91

Company: Amerada Hess Corporation
County: Lea, NM
Field: Eunice Monument
Lease: As Listed

Subject: To determine the amount of precipitated barium sulfate in submitted mixtures of waters.

<u>Mixture of Waters</u>	<u>Precipitated Barium Sulfate as BaSO₄, mg/l</u>
1. 90% EMSU water supply well #460 & 10% Larsen #4	0.2
2. 60% EMSU water supply well #460 & 40% Larsen #4	0.2
3. 50% EMSU water supply well #460 & 50% Larsen #4	0.0
4. 40% EMSU water supply well #460 & 60% Larsen #4	0.3
5. 90% EMSU water supply well #460 & 10% State F #3	0.4
6. 60% EMSU water supply well #460 & 40% State F #3	0.0
7. 50% EMSU water supply well #460 & 50% State F #3	0.4
8. 40% EMSU water supply well #460 & 60% State F #3	3.4
9. 90% EMSU water supply well #460 & 10% State F #4	0.0
10. 60% EMSU water supply well #460 & 40% State F #4	0.3
11. 50% EMSU water supply well #460 & 50% State F #4	0.3
12. 40% EMSU water supply well #460 & 60% State F #4	0.5
13. 90% EMSU water supply well #460 & 10% State K #1	0.2
14. 60% EMSU water supply well #460 & 40% State K #1	0.2
15. 50% EMSU water supply well #460 & 50% State K #1	*
16. 40% EMSU water supply well #460 & 60% State K #1	0.0
17. 90% EMSU water supply well #461 & 10% Larsen #4	0.4
18. 60% EMSU water supply well #461 & 40% Larsen #4	0.0
19. 50% EMSU water supply well #461 & 50% Larsen #4	0.2
20. 40% EMSU water supply well #461 & 60% Larsen #4	0.0
21. 90% EMSU water supply well #461 & 10% State F #3	0.0
22. 60% EMSU water supply well #461 & 40% State F #3	0.1
23. 50% EMSU water supply well #461 & 50% State F #3	0.2
24. 40% EMSU water supply well #461 & 60% State F #3	0.2
25. 90% EMSU water supply well #461 & 10% State F #4	0.0
26. 60% EMSU water supply well #461 & 40% State F #4	0.0
27. 50% EMSU water supply well #461 & 50% State F #4	0.0
28. 40% EMSU water supply well #461 & 60% State F #4	0.3


*No sample submitted at this mixture. We did not consider it necessary to make an extra mixture of these waters because of the absence of any detectable barium sulfate in the other combinations.

Ms. Denise Wann, Amerada Hess Corporation - Laboratory No. 1290205 (Page 2)

EXHIBIT G

<u>Mixture of Waters</u>	<u>Precipitated Barium Sulfate</u>
	<u>as BaSO₄, mg/l</u>
29. 90% EMSU water supply well #461 & 10% State K #1	0.0
30. 60% EMSU water supply well #461 & 40% State K #1	0.0
31. 50% EMSU water supply well #461 & 50% State K #1	0.0
32. 40% EMSU water supply well #461 & 60% State K #1	0.0

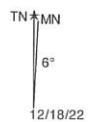
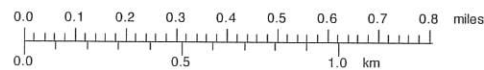
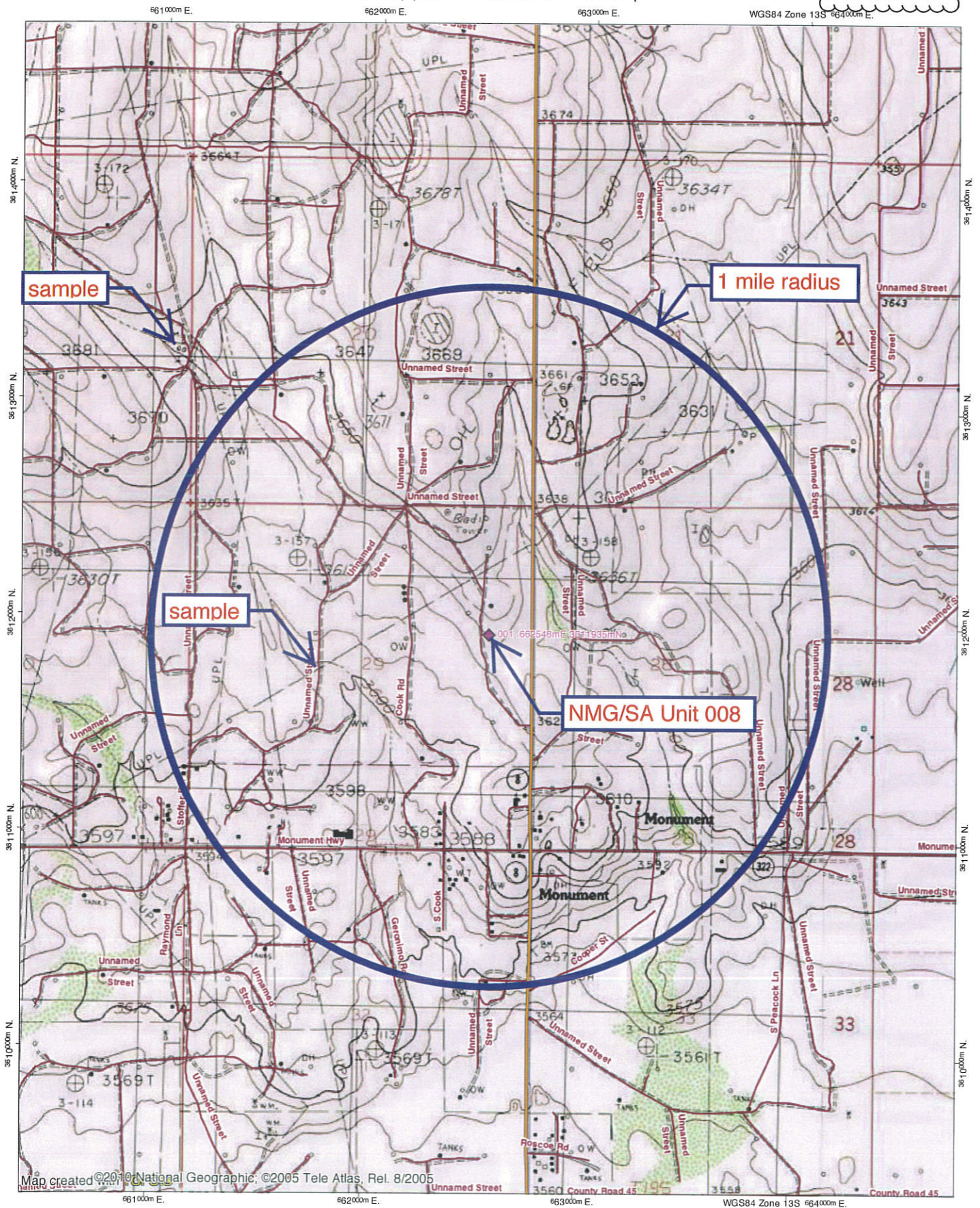
Remarks: The above results clearly need to be qualified. We have reported the results acquired, but our detectable limits are estimated to be approximately 0.5 mg/l; and when we get a reading below that level, we do not consider it conclusive evidence that any barium sulfate is present. Therefore, only a single sample herein showed what we consider to be a reasonable quantity of barium sulfate in the mixed waters. This was 3.4 mg/l that was detected in the combination of 40 percent of well #460 and 60 percent of State "F" #3. It is our carefully considered conclusion that these results do not indicate any significant incompatibility between the waters that were mixed herein. We would only consider it advisable to maintain some observation over conditions in a system handling the mixture of these waters for the possibility of any barium sulfate deposits or precipitates. We do not consider the results to indicate that any of the waters mixed herein are actually sufficiently incompatible to prevent their mixing.


Waylan C. Martin, M.A.

Martin Water Laboratories, Inc.

TOPO! map printed on 12/18/22 from "Untitled.tpo"

EXHIBIT H





New Mexico Office of the State Engineer

Water Column/Average Depth to Water

EXHIBIT H

(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	County	Q Q Q					X	Y	Distance	DepthWell	DepthWater	Water	
		Sub-basin		64	16	4	Sec	Tws						Rng	Column
L 09631		L	LE	1	4	29	19S	37E	662153	3611526*	568	35			
L 09632		L	LE	1	4	29	19S	37E	662153	3611526*	568	35			
L 09633		L	LE	1	4	29	19S	37E	662153	3611526*	568	35			
L 03922		L	LE			29	19S	37E	661958	3611717*	628	42	22	20	
L 03949		L	LE			29	19S	37E	661958	3611717*	628	36	18	18	
L 03956		L	LE			29	19S	37E	661958	3611717*	628	40	20	20	
L 04799		L	LE			29	19S	37E	661958	3611717*	628	150			
L 10498		L	LE			29	19S	37E	661958	3611717*	628	60			
L 05500		L	LE	2	4	4	29	19S	37E	662661	3611229*	714	55		
L 05611 POD3		L	LE	2	2	3	29	19S	37E	661850	3611620*	765	80	28	52
L 01252		L	LE	1	3	4	29	19S	37E	662058	3611223*	864	43		
L 05314		L	LE	1	3	4	29	19S	37E	662058	3611223*	864	34	14	20
L 11873 POD1		L	LE	1	2	1	28	19S	37E	663246	3612447*	865	71		
L 07223		L	LE	2	3	3	28	19S	37E	663063	3611234*	869	60		
L 03982		L	LE	3	3	28	19S	37E	662964	3611135*	901	43	31	12	
L 03884		L	LE			28	19S	37E	663567	3611738*	1037	47	30	17	
L 03885		L	LE			28	19S	37E	663567	3611738*	1037	47			
L 05565 POD3		L	LE			28	19S	37E	663567	3611738*	1037	70			
L 10238		L	LE	4	3	21	19S	37E	663340	3612750*	1136	60	30	30	
L 10295		L	LE	4	3	21	19S	37E	663340	3612750*	1136	70	30	40	
L 09163		L	LE	1	4	3	21	19S	37E	663239	3612849*	1145	60	47	13
L 03380		L	LE	2	1	2	32	19S	37E	662265	3610822*	1148	40	35	5
L 01251		L	LE	4	1	1	29	19S	37E	661434	3612218*	1149	51	38	13
L 02596		L	LE		3	29	19S	37E	661556	3611315*	1169	50	20	30	
L 06496		L	LE	3	4	3	29	19S	37E	661656	3611018*	1279	50	27	23
L 02621		L	LE	3	2	3	21	19S	37E	663233	3613050*	1308	83	40	43
L 14366 POD2		L	LE	2	3	3	20	19S	37E	661473	3612797	1378	32		
L 14366 POD1		L	LE	2	3	3	20	19S	37E	661500	3612840	1384	32		

12/19/22, 3:37 PM

EXHIBIT H

L 13926 POD2	L	LE	2	3	3	20	19S	37E	661495	3612857		1399	32	21	11
L 13926 POD3	L	LE	2	3	3	20	19S	37E	661485	3612865		1413	32	21	11
L 13521 POD1	L	LE	4	4	3	20	19S	37E	661504	3612887		1413	34	22	12
L 13926 POD1	L	LE	2	3	3	20	19S	37E	661484	3612874		1419	32	21	11
L 00066	L	LE	1	3	4	21	19S	37E	663641	3612855*		1428	55	20	35
L 14366 POD3	L	LE	2	3	3	20	19S	37E	661477	3612899		1441	32		
L 10397	L	LE			1	33	19S	37E	663177	3610534*		1535	34	13	21
L 00010	L	LE	4	2	32	19S	37E	662574	3610327*		1608				

Average Depth to Water: **26 feet**Minimum Depth: **13 feet**Maximum Depth: **47 feet****Record Count:** 36**UTMNAD83 Radius Search (in meters):****Easting (X):** 662548**Northing (Y):** 3611935**Radius:** 1610

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

12/19/22 3:36 PM

WATER COLUMN/ AVERAGE DEPTH TO
WATER

Analytical Report

EXHIBIT I

Lab Order 2211086

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 11/14/2022

CLIENT: Permits West

Client Sample ID: Sec 29

Project: NMGSAU

Collection Date: 11/1/2022 12:50:00 PM

Lab ID: 2211086-001

Matrix: AQUEOUS

Received Date: 11/2/2022 11:33:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B							Analyst: dms
N-Hexane Extractable Material	ND	9.46		mg/L	1	11/9/2022 4:42:00 PM	71367
EPA METHOD 300.0: ANIONS							Analyst: JTT
Chloride	210	50		mg/L	100	11/3/2022 8:38:51 AM	R92333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: SNS
Total Dissolved Solids	720	40.0	*D	mg/L	1	11/8/2022 10:21:00 AM	71300

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	Above Quantitation Range/Estimated Value
	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 standard limits. If undiluted results may be estimated.		

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Analytical Re

EXHIBIT I

Lab Order 2211086

Date Reported: 11/14/2022

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Permits West**Client Sample ID:** Sec 19**Project:** NMGSAU**Collection Date:** 11/1/2022 10:20:00 AM**Lab ID:** 2211086-003**Matrix:** AQUEOUS**Received Date:** 11/2/2022 11:33:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 1664B							Analyst: dms
N-Hexane Extractable Material	ND	9.44		mg/L	1	11/9/2022 4:42:00 PM	71367
EPA METHOD 300.0: ANIONS							Analyst: JTT
Chloride	110	5.0		mg/L	10	11/3/2022 9:16:05 AM	R92333
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: SNS
Total Dissolved Solids	515	20.0	*	mg/L	1	11/8/2022 10:21:00 AM	71300

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	Above Quantitation Range/Estimated Value
	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 standard limits. If undiluted results may be estimated.		

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

Re: Geology Statement
Apache Corporation
North Monument G/SA Unit #008
Section 29, T. 19S, R. 37E
Lea County, New Mexico

To whom it may concern:

Publicly available geologic and engineering data related to the proposed well have been thoroughly reviewed, and no evidence for open faults or any other hydrologic connection between the proposed Grayburg and San Andres injection zone and any underground sources of drinking water has been found. Please see the attached seismic risk assessment for additional information.

Sincerely,

Cory Walk
Geologist

EXHIBIT J

Seismic Risk Assessment
Apache Corporation
North Monument G/SA Unit #008
Section 29, Township 19 South, Range 37 East
Lea County, New Mexico

Cory Walk, M.S.

A handwritten signature in black ink that reads "Cory Walk". The signature is written in a cursive style with a large, stylized 'C' and 'W'.

Geologist

Permits West Inc.

December 22, 2022



Apache Corporation
North Monument G/SA Unit #008

SEISMIC RISK ASSESSMENT PAGE 1

GENERAL INFORMATION

North Monument G/SA Unit #008 is located in the NE ¼, section 29, T19S, R37E, about 0.75 miles north of Monument, NM in the Central Basin Platform of the greater Permian Basin. Apache Corporation proposes to convert this existing oil well to a water injection well. The proposed injection zone is within the Grayburg and San Andres Formations through a cased hole from 3,830'-3,960' below ground surface. The Grayburg and San Andres are primarily carbonate reservoirs with some sandstones present. This report assesses any potential concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

SEISMIC RISK ASSESSMENT

Historical Seismicity

Searching the USGS earthquake catalog resulted in no (0) earthquakes above a magnitude 2.5 within 6 miles (9.7 km) of the proposed injection site since 1970 (Fig 1). According to this dataset, the nearest historical earthquake occurred June 28, 2020 about 12.3 miles (~19.7 km) northwest and had a magnitude of 2.7.

Basement Faults and Subsurface Conditions

A structure contour map (Fig. 1) of the Precambrian basement shows the North Monument G/SA Unit #008 is approximately 5.5 miles from the nearest basement-penetrating fault inferred by Ewing et al (1990) and about 59 miles from the nearest surface fault.

Snee and Zoback (2018) state, "In the western part of Eddy County, New Mexico, S_{Hmax} is ~north-south (consistent with the state of stress in the Rio Grande Rift; Zoback and Zoback, 1980) but rotates to ~east-northeast-west-southwest in southern Lea County, New Mexico, and the northernmost parts of Culberson and Reeves counties, Texas." Around the North Monument G/SA Unit #008 site, Snee and Zoback indicate a S_{Hmax} **direction of N105°E and an A_p of 0.85, indicating a normal/strike-slip faulting stress regime.**

Induced seismicity is a growing concern of deep injection wells. Snee and Zoback (2018) show that due to its orientation, the nearest Precambrian fault has a low probability of slipping (Fig. 2). Also, the proposed injection zone is much shallower in the Grayburg and San Andres Formations and therefore would not affect the deep Precambrian faults. In addition to the existing fault orientation, the vertical (approx. 6300') and horizontal (5.5 miles) separation between the proposed water injection zone and any deep Precambrian faults is large enough to infer that there is no immediate concern or potential of induced seismicity as a result from this injection well.

GROUNDWATER SOURCES

Three principal aquifers are used for potable groundwater in southern Lea County; these geologic units include the Triassic Santa Rosa formation, Tertiary Ogallala formation, and Quaternary alluvium. Nicholson and Clebsch (1961) state, "Potable ground water is not available below the Permian and Triassic unconformity but, because this boundary is not easily defined, the top of the Rustler anhydrite



**Apache Corporation
North Monument G/SA Unit #008**

SEISMIC RISK ASSESSMENT PAGE 2

formation is regarded as the effective lower limit of 'potable' ground water." Around the North Monument G/SA Unit #008 well, the top of a thick anhydrite unit interpreted to represent the Rustler Formation lies at a depth of ~1336 feet bgs.

STRATIGRAPHY

A thick permeability barrier (Rustler Anhydrite and Salado Fm; 1100+ ft thick) exists above the targeted Grayburg and San Andres injection zone. Well data indicates ~2,500 ft of rock separating the top of the injection zone from the previously stated lower limit of potable water at the top of the Rustler anhydrite formation.

CONCLUDING STATEMENT

All available geologic and engineering data evaluated around the North Monument G/SA Unit #008 well show no potential structural or stratigraphic connection between the Grayburg and San Andres injection zone and any subsurface potable water sources. The shallow injection zone, spatial location and orientation of nearby faults also removes any major concern of inducing seismic activity.



Apache Corporation
North Monument G/SA Unit #008

SEISMIC RISK ASSESSMENT PAGE 3

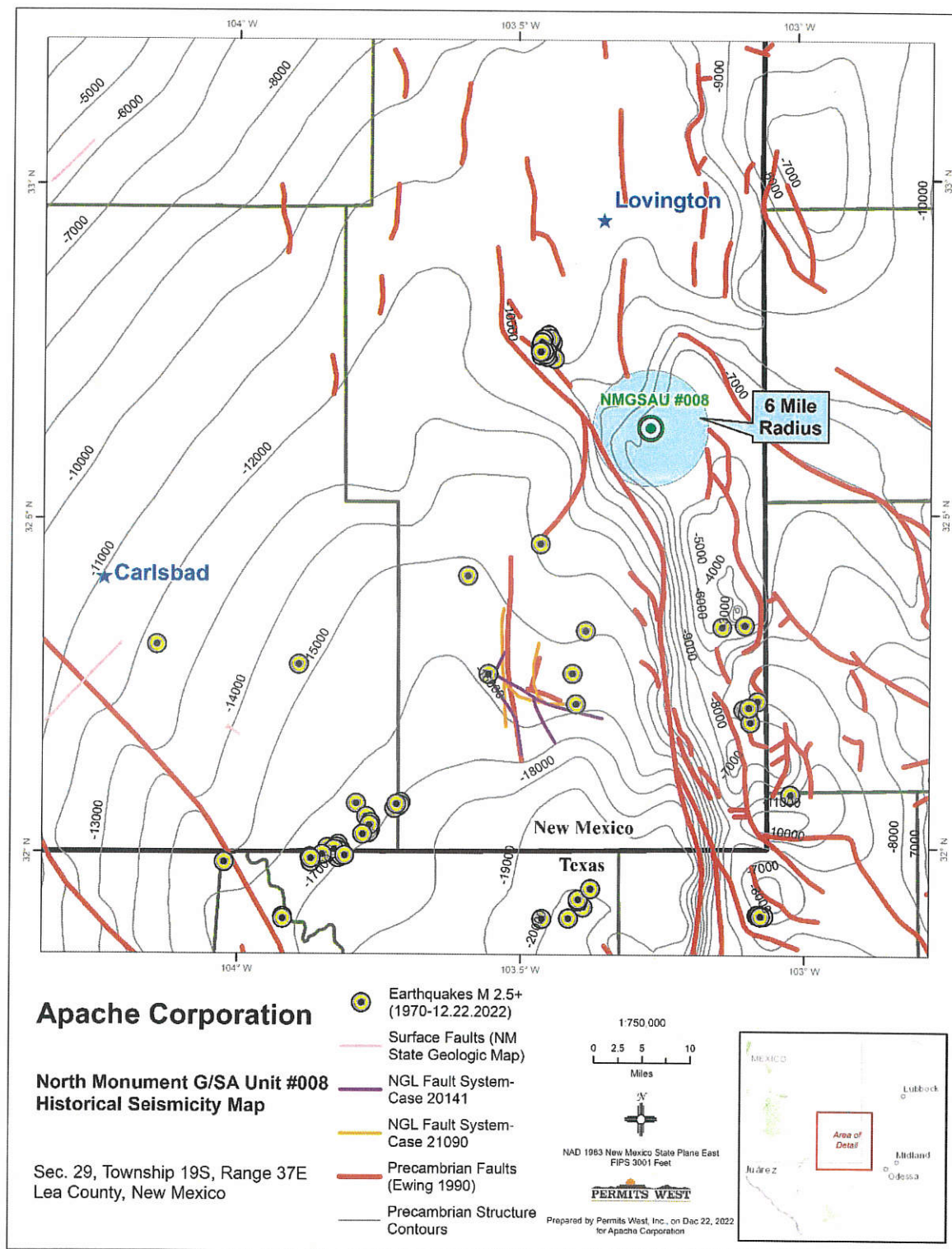


Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). The North Monument G/SA Unit #008 well lies ~5.5 miles east of the closest deeply penetrating fault, ~59 miles from the nearest surface fault and ~12.3 miles from the closest historic earthquake.

Apache Corporation
North Monument G/SA Unit #008

SEISMIC RISK ASSESSMENT PAGE 4

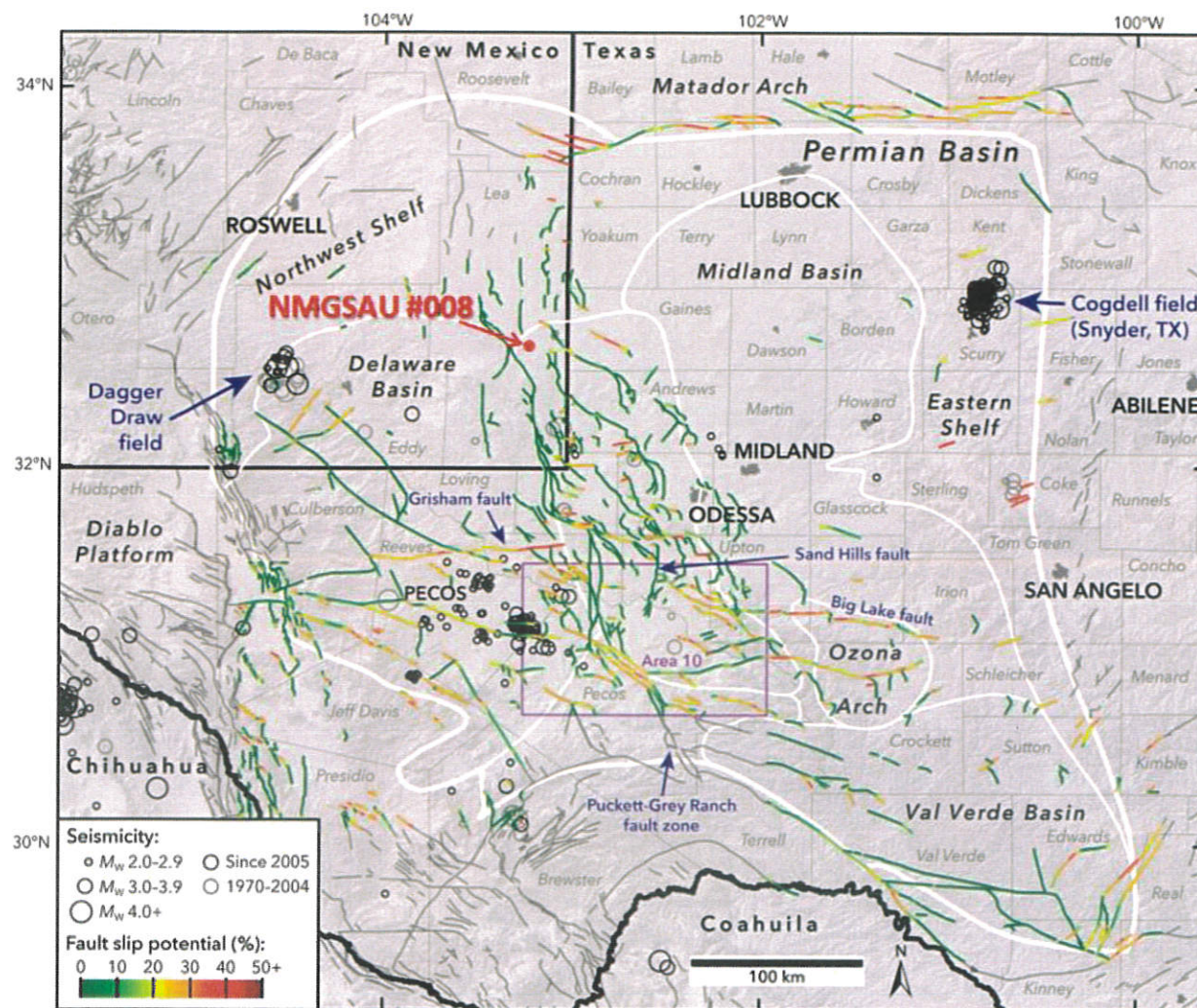


Figure 2. Modified from Snee and Zoback (2018). The nearest deep Precambrian fault lies ~5.5 miles west of the proposed injection well and has a low probability (0%) of slip. Also, the proposed injection zone is much shallower in the Grayburg and San Andres and therefore removes any major concern of inducing seismicity on any known fault.



**Apache Corporation
North Monument G/SA Unit #008**

SEISMIC RISK ASSESSMENT PAGE 5

References Cited

Ewing, T. E., 1990, The tectonic map of Texas: Austin, Bureau of Economic Geology, The University of Texas at Austin.

Geologic Map of New Mexico, New Mexico Bureau of Geology and Mineral Resources, 2003, Scale 1:500,000.

Nicholson, A., Jr., and Clebsch, A., Jr., 1961, Geology and ground-water conditions in southern Lea County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 6, 123 pp., 2 plates.

Snee, J.-E.L., Zoback, M.D., 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: Leading Edge, v. 37, p. 127–134.



APACHE CORPORATION
NORTH MONUMENT G/SA UNIT 008
1980' FNL & 660' FEL
SEC. 29, T. 19 S., R. 37 E., LEA COUNTY, NM

PAGE 1

30-025-05737

I. Goal is to convert an oil well to a water injection well. The well is 3960' deep and is producing from the Grayburg and San Andres. The well is currently open hole from 3800' to 3960'. A liner will be run, cemented, and perforated from 3830' to 3960'. The Grayburg and San Andres are part of the Eunice - Monument; Grayburg - San Andres Pool (code = 23000).

The well and zones are part of the North Monument G/SA Unit (Unit #300156, Case 10253, Order R-9494) that was established in 1991 by Amerada Hess Corp. The waterflood was approved in Case 10252, Order R-9596, also in 1991. The well was a water injector (WFX-773) from 2002 to 2004. Cumulative injection was 130,110 barrels. Apache became Unit operator in 2006.

The well was formerly known as the North Monument G/SA Unit Block 11 #8, and before that was known as the Skelly E State #1. Apache operates 13 wells with the nomenclature of "North Monument G/SA Unit 008". Apache, internally, refers to the well as NMGSAU 1108.

II. Operator: Apache Corporation (OGRID #873)
Operator phone number: (432) 818-1088
Operator address: 303 Veterans Airpark Lane, Suite 3000
Midland, TX 79705
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease: NMSLO B0-1330-0008
Lease Size: 120.00 acres (see Exhibit A for maps)
Closest Lease Line: 660'
Lease Area: E2NE4 Section 29, T. 19 S., R. 37 E. et al
Unit Size: 13,385 acres
Closest Unit Line: 3300' east

A. (2) Surface casing (13", 45#) is set at 221' in a 15.5" hole and cemented with 175 sacks to GL (calculated).

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Intermediate casing (9.625", 36#) is set at 1325' in an 11" hole and cemented with 300 sacks to GL (calculated).

Production casing (7", 24#) is set at 3800' in an 8.25" hole and cemented with 300 sacks to 914' (calculated).

The well is open hole (6.25") in the Grayburg - San Andres from 3800' to 3960'.

A 5.5", 17#, J-55 liner will be run from 3700' to 3960' and cemented to TOL.

Mechanical integrity of the casing will be assured by hydraulically pressure testing to 500 psi for 30 minutes.

- A. (3) Tubing will be IPC, 2.875", J-55, 6.4#. Setting depth will be 3780'. (Top perforation will be 3830'.)
- A. (4) A lock set injection packer will be set at 3780' (50' above the highest perforation of 3830').
- B. (1) Injection will be in the Grayburg and San Andres zones in the Eunice - Monument; Grayburg - San Andres Pool (pool code = 23000).
- B. (2) Injection interval is and will be 3830' - 3960', all to be cased (lined) after C-108 and C-103 approval. The well is now cased to 3800'.
- B. (3) Well was originally drilled in 1936 as a Grayburg - San Andres oil well.
- B. (4) The well is currently open hole from 3800' to 3960. There are no perforations above the open hole. Will run and perforate liner from 3830' to 3960'.

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- B. (5) Next higher oil or gas zone within the area of review is the Queen at 3403' – 3521'. Injection interval will be 3830' – 3960'. Next lower oil or gas zone within the area of review is the Abo. Its top is at \approx 7065'.

IV. This is not a horizontal or vertical expansion of an existing injection project. Records for the unit approval (R-9494, Case 10253) include a discussion of the Grayburg - San Andres water flood. The water flood (R-9596, Case 10252) was approved at the same time in 1991. At least three water flood expansions (WFX-739, -773, and -942) have been approved since then. Closest unit boundary is 3300' east. Five injection wells are within a half-mile radius (see Exhibit B).

V. Exhibit B shows and tabulates all 21 existing wells (12 producers + 5 injectors + 3 P&A + 1 WSW) within a half-mile (2640') radius, regardless of depth. Exhibit C shows all 459 existing wells (153 oil or gas producing wells + 58 injection or disposal wells + 112 P & A wells + 2 waterflood supply wells + 134 freshwater wells) within a two-mile radius.

Exhibit D shows and tabulates all leases (BLM, fee, and NMSLO) within a half-mile radius. Exhibit E shows all lessors (BLM, fee, and NMSLO) within a two-mile radius.

VI. Twenty-one wells are within a half-mile. Twenty of the 21 wells penetrated the Grayburg and/or San Andres. The 20 penetrators include 11 oil or gas wells, 5 water injectors, 3 P&A wells, and 1 WSW well. Exhibit F tabulates the penetrators and diagrams the P&A wells.

- VII. 1. Average injection rate will be \approx 600 bwpd. Maximum will be 700 bwpd.
2. System will be closed. The well will tie into the existing Unit pipeline system.

APACHE CORPORATION
NORTH MONUMENT G/SA UNIT 008
1980' FNL & 660' FEL
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3. Average injection pressure will be ≈ 350 psi. Maximum injection pressure would be 766 psi ($= 0.2$ psi/foot $\times 3830'$ (top perforation)).
4. Water source will be two existing $\approx 5125'$ deep lower San Andres water supply wells (#018 and #624) plus produced water from the Grayburg and San Andres. Both water streams (source and produced) are commingled before being piped to injection wells. An analysis (Exhibit G) from the hearing concluded the waters are compatible.
5. Grayburg and San Andres are productive within one mile of the well.

VIII. The Grayburg Formation is interbedded mudstone, wackestone, packstone, grainstone, and dolomite. The San Andres Formation is a massive dolomite with some siltstone and sandstone strata. There is not a clear marker between the Grayburg and San Andres in the Unit. The porous dolomites are the productive part of the formations. Notable depths are:

Quaternary = 0'
Ogallala = 60'
Rustler = 1343'
Top Salt = 1421'
Base Salt = 2450'
Yates = 2521'
Seven Rivers = 2870'
Queen = 3403'
Penrose = 3522'
Grayburg = 3704'
injection interval = 3830' – 3960'
San Andres = 3857'
TD = 3960'

State Engineer records (Exhibit H) show 33 water wells are within a 1-mile radius. Deepest of the 33 is 150'.

APACHE CORPORATION
NORTH MONUMENT G/SA UNIT 008
1980' FNL & 660' FEL
SEC. 29, T. 19 S., R. 37 E., LEA COUNTY, NM

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NMG/SA Unit 008 penetrates the Ogallala aquifer and is >9 miles northeast of the Capitan Reef. No existing underground drinking water source is below the San Andres within a mile radius. Produced water has been injected into 3 zones (Yates, Seven Rivers, Queen) above the Grayburg within T. 19 S., R. 37 E. via ten wells. Produced water has been disposed into 3 zones (San Andres, Delaware, Bone Spring) below the Grayburg within T. 19 S., R. 37 E. via five SWD wells. Over 395,075,017 barrels of water have been injected in the NMG/SA Unit to date.

- IX. The well will be stimulated with acid to clean out scale or fill.
- X. No log is on file with NMOCD. A CBL will be run after the liner is cemented.
- XI. Two windmills within a 1-1/4 mile radius were sampled during a November 1, 2022, field inspection. Analyses from both windmills are in Exhibit I. (Floyd Cody, Manager of the Monument Municipal Domestic Water Consumers Association says most well owners abandoned their wells when the utility came on-line.)
- XII. Apache (Exhibit J) is not aware of any geologic or engineering data that may indicate the Grayburg or San Andres are in hydrologic connection with any underground source of water. There are 1,622 Grayburg injectors and 1,181 San Andres injectors in New Mexico. Previously approved Unit water flood expansions include WFX-739, -773, and -942.
- XIII. A legal ad (see Exhibit K) was published on December 21, 2022. Notice (this application) has been sent (Exhibit L) to the surface owner (NM State Land Office), lessees of record (Graham Royalty, Oil Well Drilling, Shell Western, Southwest Royalties, and Wiser Oil), government lessors (BLM & NMSLO), and all other well operators (Empire NM, Mewbourne, and Wagner) within the 1/2 mile area of review.

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 173219

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 173219
	Action Type: [C-108] Fluid Injection Well (C-108)

CONDITIONS

Created By	Condition	Condition Date
mgebremichael	None	3/14/2023