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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE 15307

APPLICATION OF OASIS WATER SOLUTIONS, LLC, FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

EXHIBITS

August 6, 2015

Santa Fe, New Mexico

BEFORE: MICHAEL McMILLAN, CHIEF EXAMINER
PHILLIP GOETZE, EXAMINER
GABRIEL WADE, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Michael McMillan, Chief Examiner, Phillip Goetze, Examiner, and Gabriel Wade, Legal Examiner, on August 6, 2015, at the New Mexico Energy, Minerals, and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

REPORTED BY: ELLEN H. ALLANIC
NEW MEXICO CCR 100
CALIFORNIA CSR 8670
PAUL BACA COURT REPORTERS
500 Fourth Street, NW
Suite 105
Albuquerque, New Mexico 87102

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance __X__Disposal _____Storage
Application qualifies for administrative approval? __X__Yes _____No

II. OPERATOR: Oasis Water Solutions, LLC

ADDRESS: P.O. Box 36 Monument, NM 88265

CONTACT PARTY: Jimmy Cooper PHONE: 575-369-7108

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes __X__No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

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

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

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

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

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Eddie W. Seay TITLE: Agent

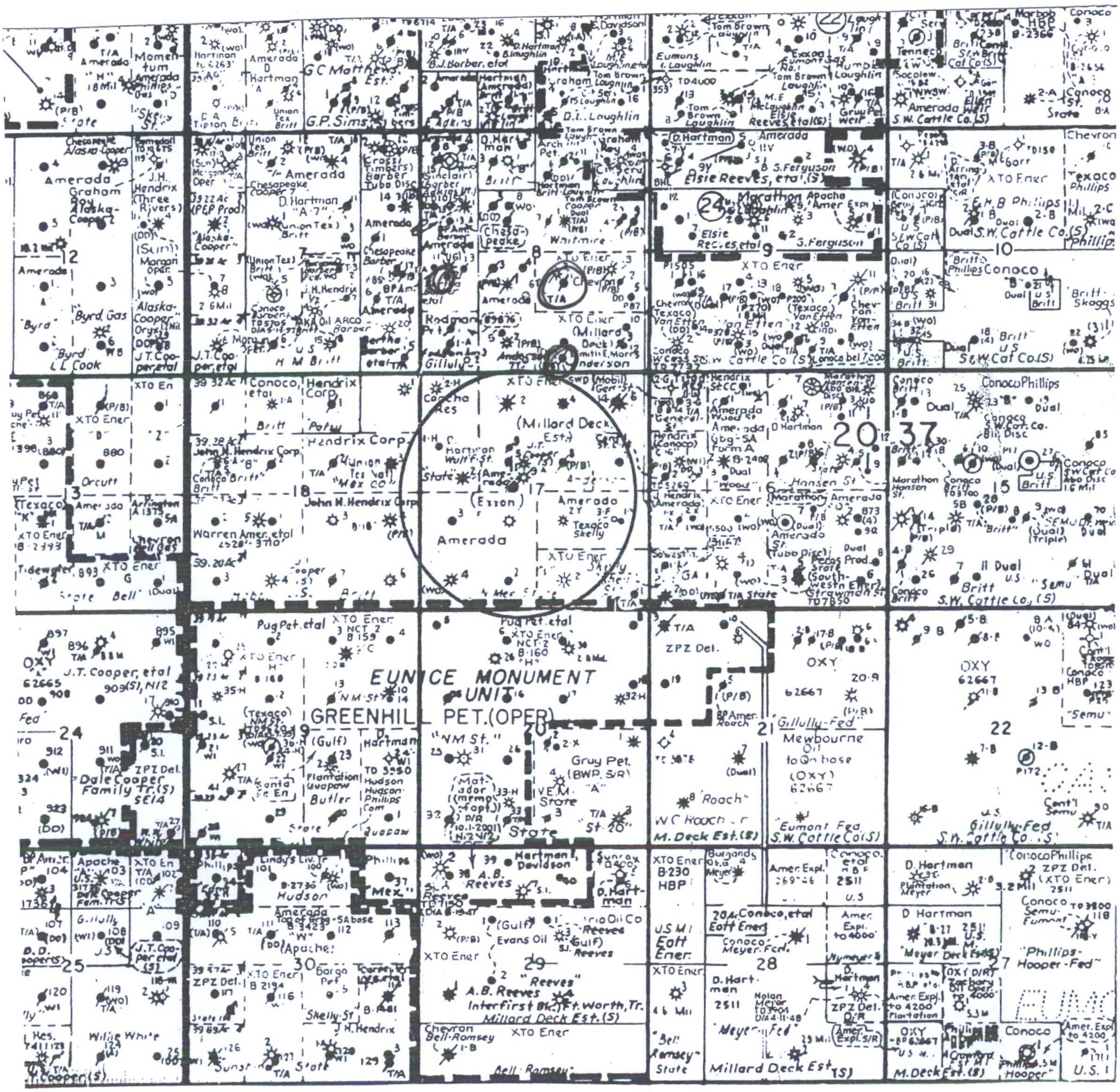
SIGNATURE: Eddie W Seay DATE: 1/12/2015

E-MAIL ADDRESS: seay04@leaco.net

* If the information required under Sections VI, VIII, X, and XI above has been previously s
Please show the date and circumstances of the earlier submittal: logs will be submitted afte

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Of

OCD Case# 15307
Oasis Water Solutions, LLC
August 6, 2015
Ex# 1



½ Mile radius

ATTACHMENT TO APPLICATION C-108

Cooper 17 well #1
Unit F, Sect. 17, Tws. 20 S., Rng. 37 E.
Lea Co., NM

III. WELL DATA

A.
1) See injection well data sheets and attached schematics.
2) See injection well data sheets and attached schematics.
3) 4 1/2" coated tubing.
4) Arrow Stainless Steel - Lock Set.

B.
1) Injection formation is the Lower San Andres
2) Injection interval 4170′ to 4900′.
3) This is a new drill for SWD.
4) The next higher producing zone is the Upper SA at approximately 3750′. The next lower producing zone is the Glorieta at approximately 5100′.

IV. NO.

V. MAP ATTACHED.

VI. LIST OF WELLS AND DATA ATTACHED.

VII. Oasis Water Solutions, LLC plans to drill a new well for SWD. Run and circulate (3) three strings of casing with TD at 4900′. With open hole from 4170′ to 4900′, go in hole with 4 ½" tubing and packer and set at approximately 4100±′ within 100 feet of top open hole section. Load hole with packer fluid, run MIT as OCD requires, put on injection.

1) Plan to inject approximately 20,000 bpd of produced water from various sources of production.
2) Closed system, commercial.
3) Average injection pressure should be approximately 800# to 1200# or whatever limit OCD allows.
4) Analysis attached, only produced water.
5) Produced water from various sources..

VIII. The proposed disposal formation is interbedded shale and limestone. The primary geologic formation is the Lower San Andres from 4170′ to 4900′.

The fresh water formation in the area is the Alluviam which ranges in thickness from 20′ to 30′. Analysis of water well attached.

IX. ACID AS NEEDED.

X. PREVIOUSLY SUBMITTED TO OCD.

XI. ATTACHED.

XII. I, Eddie W. Seay, have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zones and any underground source of drinking water pertaining to this well.

XIII. ATTACHED.

Side 1

INJECTION WELL DATA SHEET

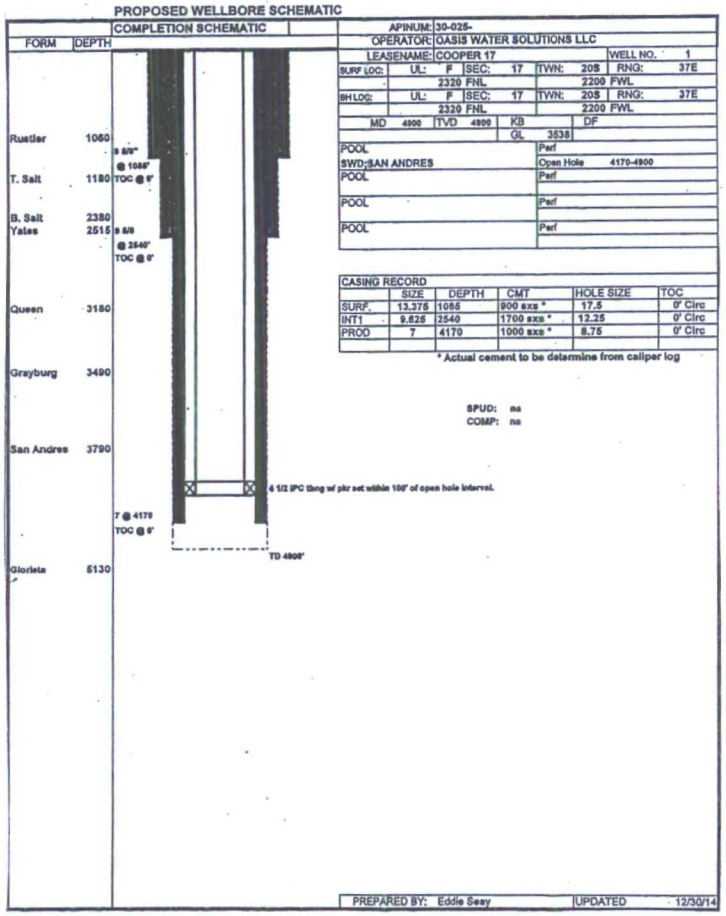
OPERATOR: Oasis Water Solutions LLC

WELL NAME & NUMBER: Cooper 17 # 1

WELL LOCATION: 2310/N 2200/W F 17 20 37 E

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17.5 Casing Size: 13.375

Cemented with: 900 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circ

Intermediate Casing

Hole Size: 12.25 Casing Size: 9.625

Cemented with: 1700 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circ

Production Casing

Hole Size: 8.75 Casing Size: 7

Cemented with: 1000 sx. *or* _____ ft³

Top of Cement: Surface Method Determined: Circ

Total Depth: 4900

Injection Interval

4170 feet to 4900

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 4½ Lining Material: IPC

Type of Packer: Stainless Steel Arrow set

Packer Setting Depth: Approx 4100 or within 100 ft. of open hole

Other Type of Tubing/Casing Seal (if applicable): NONE

Additional Data

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

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

2. Name of the Injection Formation: lower San Andres

3. Name of Field or Pool (if applicable): Monument

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:

   Upper SA at 3750

   Glorieta at 5100

DISPOSAL WELL

30-025-	COOPER 17	1	OASIS WATER SOLUTIONS LLC		S	P	Lea	P		17	20	S	37	E	2320	N	2200	W

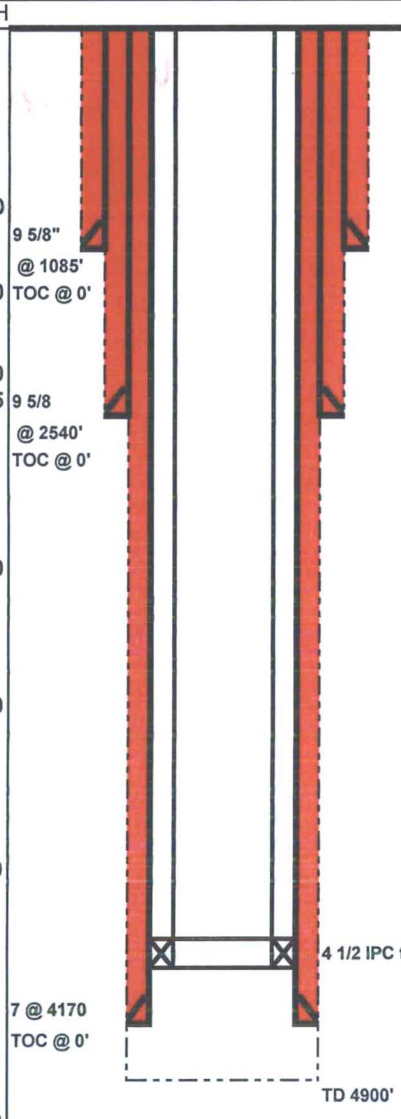
Wells within 1/2 mile of the proposed disposal well. No wells penatrate the proposed disposal interval.

API #	PROPERTY NAME	#	OPERATOR	TD	TYPE	STAT	CO	LAND	U/L	SEC	TWN		RNG		N/S		E/W		Dist
30-025-06140	THEODORE ANDERSON	4	CONOCOPHILLIPS COMPANY	3870	G	A	Lea	P	B	17	20	S	37	E	660	N	1980	E	1965
30-025-06139	THEODORE ANDERSON	2	CHEVRON U S A INC	3865	O	P	Lea	P	C	17	20	S	37	E	660	N	1980	W	1974
30-025-06138	WULFF STATE	2	ENERVEST OPERATING L.L.C.	3860	G	A	Lea	S	E	17	20	S	37	E	2310	N	990	W	1210
30-025-20100	STATE H 17	1	OIL & GAS OPERATIONS	3800	O	A	Lea	S	E	17	20	S	37	E	1650	N	330	W	1986
30-025-06141	THEODORE ANDERSON	5	GULF OIL CORP	3865	O	P	Lea	S	F	17	20	S	37	E	1980	N	1980	W	404
30-025-22600	ANDERSON A	9	HESS CORPORATION	3780	G	P	Lea	P	F	17	20	S	37	E	1650	N	1980	W	705
30-025-25928	ANDERSON A	9	HESS CORPORATION	3844	G	P	Lea	S	F	17	20	S	37	E	2310	N	2310	W	110
30-025-33891	THEODORE ANDERSON	11	CONOCOPHILLIPS COMPANY	3500	G	P	Lea	S	F	17	20	S	37	E	1980	N	2310	W	357
30-025-06144	THEODORE ANDERSON	8	CHEVRON U S A INC	3868	O	P	Lea	P	G	17	20	S	37	E	1980	N	1980	E	1105
30-025-06143	THEODORE ANDERSON	7	CONOCOPHILLIPS COMPANY	3868	G	A	Lea	P	H	17	20	S	37	E	1980	N	660	E	2396
30-025-06135	STATE Y BATTERY 2	1	APACHE CORP	3835	G	P	Lea	S	I	17	20	S	37	E	1980	S	660	E	2566
30-025-32992	SKELLY F STATE COM	3	XTO ENERGY, INC	3550	G	A	Lea	S	I	17	20	S	37	E	1980	S	800	E	2437
30-025-06136	STATE Y BATTERY 2	2	APACHE CORP	3854	G	A	Lea	S	J	17	20	S	37	E	1980	S	1980	E	1437
30-025-06145	NEW MEXICO F STATE	1	APACHE CORP	3860	O	A	Lea	S	K	17	20	S	37	E	1980	S	1987	W	1002
30-025-06147	NEW MEXICO F STATE	3	APACHE CORP	3860	O	A	Lea	S	L	17	20	S	37	E	1980	S	660	W	1825
30-025-06146	NEW MEXICO F STATE	2	APACHE CORP	3855	G	A	Lea	S	N	17	20	S	37	E	660	S	1980	W	2310
30-025-06150	SKELLY F STATE COM	2	XTO ENERGY, INC	3878	G	A	Lea	S	O	17	20	S	37	E	660	S	1980	E	2529

PROPOSED WELLBORE SCHEMATIC

COMPLETION SCHEMATIC

FORM	DEPTH
Rustler	1060
T. Salt	1180
B. Salt	2380
Yates	2515
Queen	3180
Grayburg	3490
San Andres	3790
Glorieta	5130



APINUM:	30-025-				
OPERATOR:	OASIS WATER SOLUTIONS LLC				
LEASENAME:	COOPER 17			WELL NO.	1
SURF LOC:	UL: F	SEC: 17	TWN: 20S	RNG:	37E
	2320 FNL		2200 FWL		
BH LOC:	UL: F	SEC: 17	TWN: 20S	RNG:	37E
	2320 FNL		2200 FWL		
MD 4900	TVD 4900	KB	DF		
		GL 3538			

POOL	Perf
SWD;SAN ANDRES	Open Hole 4170-4900
POOL	Perf
POOL	Perf
POOL	Perf

CASING RECORD

	SIZE	DEPTH	CMT	HOLE SIZE	TOC
SURF.	13.375	1085	900 sxs *	17.5	0' Circ
INT1	9.625	2540	1700 sxs *	12.25	0' Circ
PROD	7	4170	1000 sxs *	8.75	0' Circ

* Actual cement to be determine from caliper log

SPUD: na
COMP: na

PREPARED BY:	Eddie Seay	UPDATED	12/30/14

List of possible waters

Water Sample Analysis

Pool	Location Section	Township	Range	Chlorides
North Justis Montoya	2	25S	37E	45440
North Justis McKee	2	25S	37E	58220
North Justis Fusselman	2	25S	37E	68533
North Justis Ellenburger	2	25S	37E	34151
Fowler Blinebry	22	24S	37E	116085
Skaggs Grayburg	18	20S	38E	84845
Warren McKee	18	20S	38E	85910
Warren Abo	19	20S	39E	91600
DK Drinkard	30	20S	39E	106855
Littman San Andres	8	21S	38E	38695
East Hobbs grayburg	29	18S	39E	6461
Halfway Yates	16	20S	32E	14768
Arkansas Junction San Andres	12	18S	36E	7171
Pearl Queen	28	19S	35E	114310
Midway Abo	17	17S	37E	36494
Lovinton Abo	31	16S	37E	22933
Lovington San Andres	3	16S	37E	4899
Lovington Paddock	31	16S	37E	93720
Mesa Queen	17	16S	32E	172530
Kemnitz Wolfcamp	27	16S	34E	49345
Hume Queen	9	16S	34E	124960
Anderson Ranch Wolfcamp	2	16S	32E	11040
Anderson Ranch Devonian	11	16S	32E	25702
Anderson Ranch Unit	11	16S	32E	23786
Caudill Devonian	9	15S	36E	20874
Townsend Wolfcamp	6	16S	36E	38695
Dean Permo Penn	5	16S	37E	44730
Dean Devonian	35	15S	36E	19525
South Denton Wolfcamp	26	15S	37E	54315
South Denton Devonian	36	15S	37E	34080
Medicine Rock Devonian	15	15S	38E	39760
Little Lucky Lake Devonian	29	15S	30E	23288
Wantz Abo	26	21S	37E	132770
Crosby Devonian	18	25S	37E	58220
Scarborough Yates Seven Rivers	7	26S	37E	3443(Reef)
Teague Simpson	34	23S	37E	114665
Teague Ellenburger	34	23S	37E	120345
Rhodes Yates 7 Rivers	27	26S	37E	144485
House SA	11	20S	38E	93365
House Drinkard	12	20S	38E	49700
South Leonard Queen	24	26S	37E	115375
Elliot Abo	2	21S	38E	55380
Scharb Bone Springs	5	19S	35E	30601
EK Queen	13	18S	34E	41890
East EK Queen	22	18S	34E	179630
Maljamar Grayburg SA	22	17S	32E	46079
Maljamar Paddock	27	17S	32E	115375
Maljamar Devonian	22	17S	32E	25418

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

Eddie Seay Consulting 601 W. Illinois Hobbs NM, 88242	Project: COOPER SWD FACILITY Project Number: COOPER SWD Project Manager: Eddie Seay Fax To: (505) 392-6949	Reported: 06-Oct-14 13:41

JC - WW #1

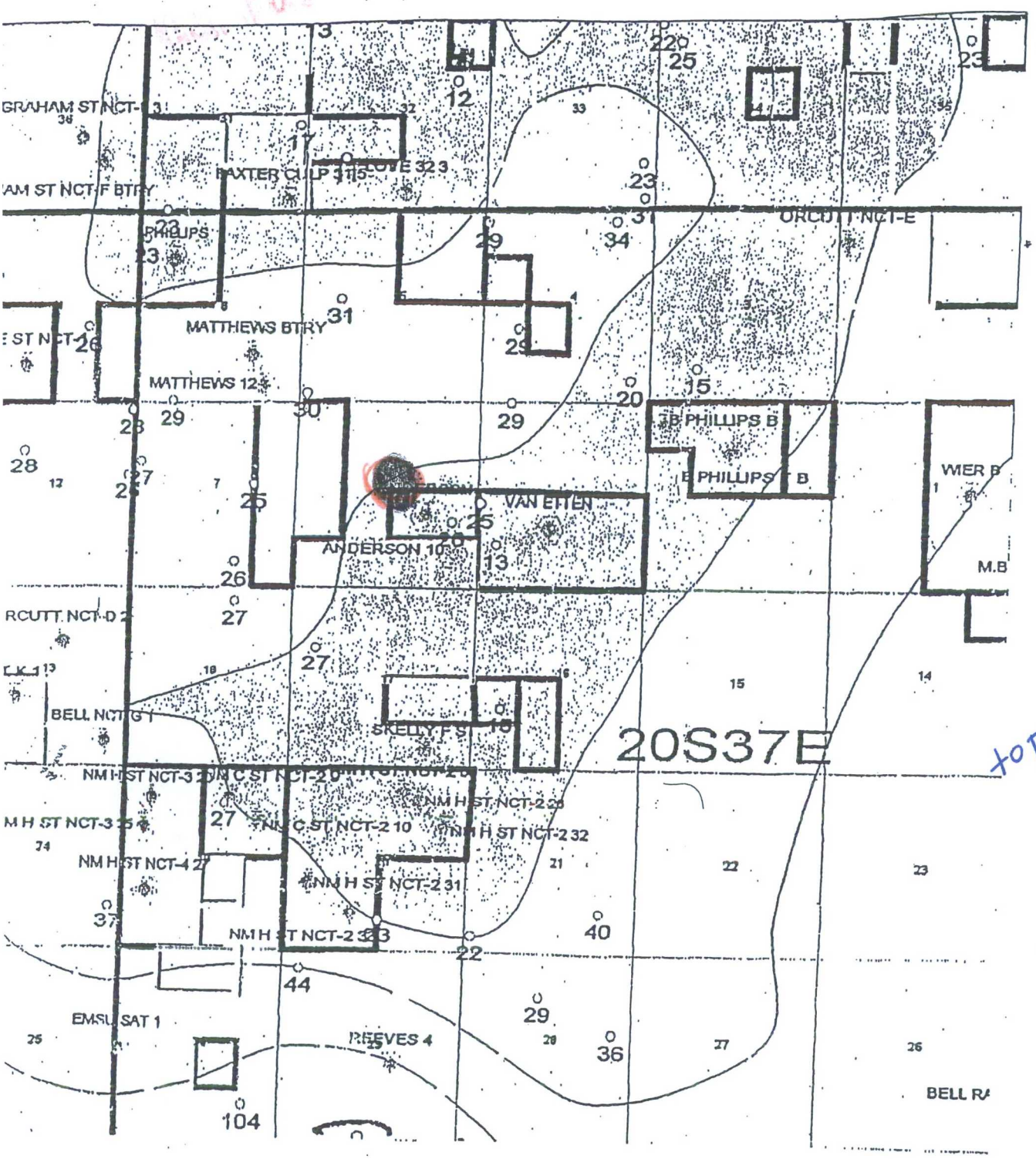
H402961-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Alkalinity, Bicarbonate	464		5.00	mg/L	1	4090813	AP	30-Sep-14	310.1	
Alkalinity, Carbonate	ND		0.00	mg/L	1	4090813	AP	30-Sep-14	310.1	
Chloride*	920		4.00	mg/L	1	4092905	AP	30-Sep-14	4500-Cl-B	
Conductivity*	3670		1.00	uS/cm	1	4100104	AP	01-Oct-14	120.1	
pH*	7.16		0.100	pH Units	1	4100103	AP	01-Oct-14	150.1	
Sulfate*	250		50.0	mg/L	5	4093005	AP	30-Sep-14	375.4	
TDS*	2330		5.00	mg/L	1	4091810	AP	30-Sep-14	160.1	
Alkalinity, Total*	380		4.00	mg/L	1	4090813	AP	30-Sep-14	310.1	
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Calcium*	227		1.00	mg/L	1	B410009	JGS	02-Oct-14	EPA200.7	
Magnesium*	88.2		1.00	mg/L	1	B410009	JGS	02-Oct-14	EPA200.7	
Potassium*	5.39		1.00	mg/L	1	B410009	JGS	02-Oct-14	EPA200.7	
Sodium*	445		1.00	mg/L	1	B410009	JGS	02-Oct-14	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager



top of groundH2O

Groundwater Map

OASIS WATER SOLUTIONS, LLC

January 2015

RE: Cooper 17 well #1
Unit F, Sect. 17, T. 20 S., R. 37 E.

Dear Sir:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108, Application for Authorization to Inject into the above captioned well to be drilled.

Any questions about the permit can be directed to Eddie W. Seay, (575)392-2236. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. Saint Francis Drive, Santa Fe, NM 87504, (505)476-3440.

Thank you,

Eddie W Seay

Eddie W. Seay, Agent
Eddie Seay Consulting
601 W. Illinois
Hobbs, NM 88242
(575)392-2236
seay04@leaco.net

NOTICES

LAND OWNER - DEEDED

Jimmie T. Cooper
Box 55
Monument, NM 88265

OFFSET AND MINERAL OWNERS

Oxy USA Inc.
Box 4294
Houston, TX 77210

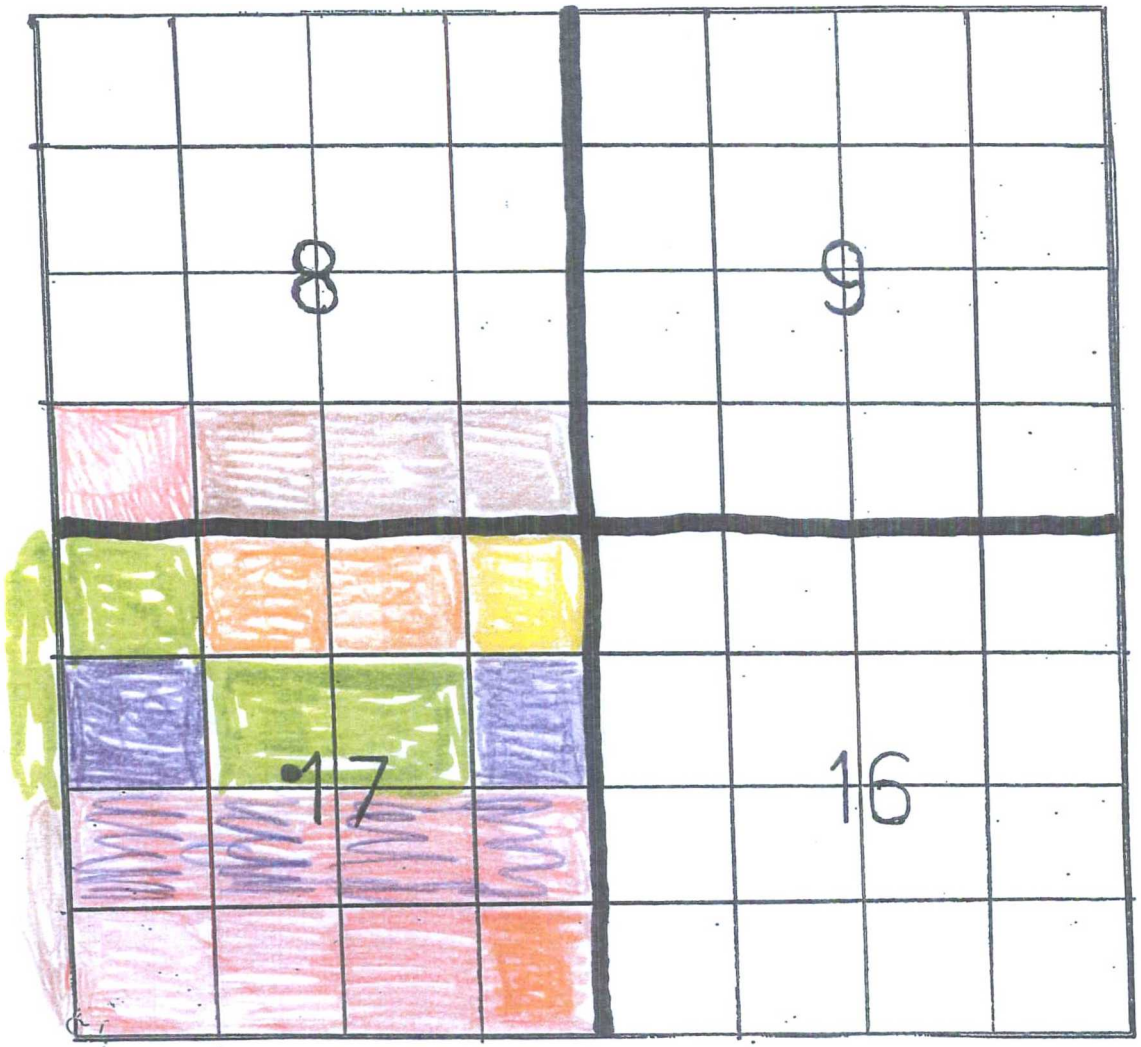
Apache Corp.
303 Veterans Airpark Lane, Ste. 3000
Midland, TX 79705

XTO Energy Inc.
382 RR 3100
Aztec, NM 87410

Amerada Hess Corp.
Box 840
Seminole, TX 79360

State of New Mexico
310 Old Santa Fe Trail
Box 1148
Santa Fe, NM 87504-1148

Mineral Interest



- Cooper
- Amerada
- XTO
- chevron
- State Land Office
- Apache

7013 1710 0000 1865 1645

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Postmark Here: HOBBS, NM 88240 JAN 14 2015

Sent To: Apache Corp.
Street, Apt. No.; or PO Box No.: 303 Veterans Airpark Lane, Ste.3000
City, State, ZIP+4: Midland, TX 79705

PS Form 3800, August 2006 — See Reverse for Instructions

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Sent To: Oxy USA, Inc.
Street, Apt. No.; or PO Box No.: Box 4294
City, State, ZIP+4: Houston, TX 77210

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Street, Apt. No.; or PO Box No.: Box 840
City, State, ZIP+4: Seminole, TX 79360

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Sent To: XTO Energy Inc.
Street, Apt. No.; or PO Box No.: 382 RR 3100
City, State, ZIP+4: Aztec, NM 87410

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 8.50

Postmark Here: HOBBS, NM 88240 JAN 14 2015

Sent To: Jimmy T. Cooper
Street, Apt. No.; or PO Box No.: Box 55
City, State, ZIP+4: Monument, NM 88265

PS Form 3800, August 2006 — See Reverse for Instructions

7013 1710 0000 1865 1676

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Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 8.50

Postmark Here: HOBBS, NM 88240 JAN 14 2015

Sent To: State of New Mexico
Street, Apt. No.; or PO Box No.: 310 Old Santa Fe Trail, Box 1148
City, State, ZIP+4: Santa Fe, NM 87504-1148

PS Form 3800, August 2006 — See Reverse for Instructions

LEGAL NOTICE

Pursuant to the rules and regulations of the Oil Conservation Division of the State of New Mexico, Oasis Water Solutions, LLC, Box 36, Monument, NM 88265, is filing a C-108 and an APD to drill a new Salt Water Disposal. The well being applied for is the Cooper 17 well #1, located in Unit F, 2310/N 2200/W Section 17, Township 20 South, Range 37 East, Lea Co., NM. The injection formation is the Lower San Andres from 4170′ to 4900′ below surface. Expected maximum injection rate is 20,000 bpd., and the expected maximum injection pressure is 800 psi or what the OCD allows. Any questions about the application can be directed to Eddie W. Seay, (575)392-2236, or any objection or request for hearing must be directed to the Oil Conservation Division, (505)476-3440, 1220 South Saint Francis Drive, Santa Fe, NM 87504, within fifteen (15) days.

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that she is Advertising Manager of THE LOVINGTON LEADER, a thrice a week newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled Legal Notice was published in a regular and entire issue of THE LOVINGTON LEADER and not in any supplement thereof, for one (1) day(s), beginning with the issue of January 15 , 2015 and ending with the issue of January 15 , 2015.

And that the cost of publishing said notice is the sum of $ 27.03 which sum has been (Paid) as Court Costs.

Joyce Clemens

Joyce Clemens, Advertising Manager
Subscribed and sworn to before me this 19th day of January , 2015.

Gina Fort

Gina Fort
Notary Public, Lea County, New Mexico
My Commission Expires June 30, 2018

OFFICIAL SEAL
GINA FORT
Notary Public
State of New Mexico
My Comm. Expires 6/30/18

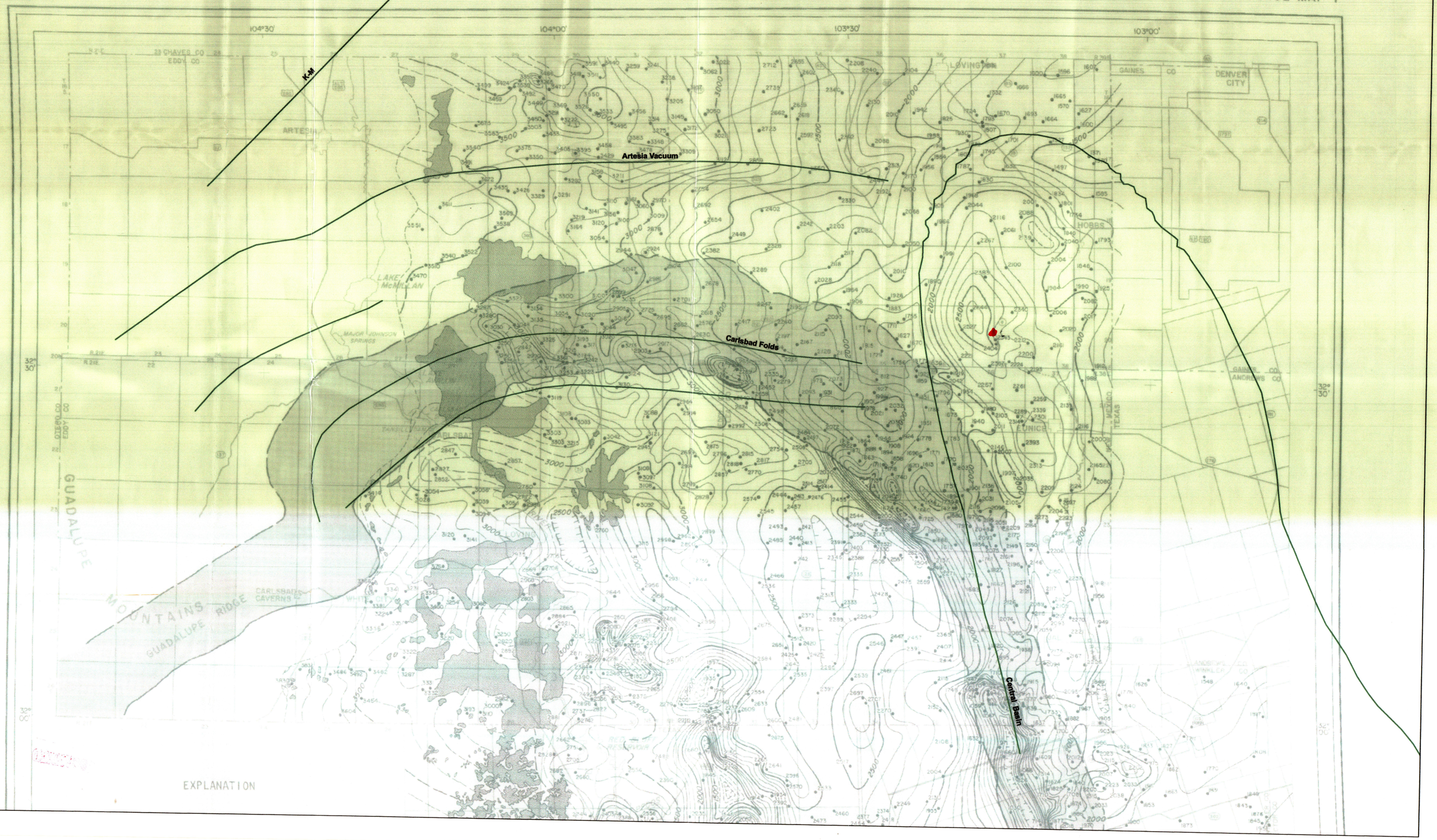
LEGAL NOTICE

Pursuant to the rules and regulations of the Oil Conservation Division of the State of New Mexico, Oasis Water Solutions, LLC, Box 36, Monument, NM 88265, is filing a C-108 and an APD to drill a new Salt Water Disposal. The well being applied for is the Cooper 17 well #1, located in Unit F, 2310/N 2220/W , Section 17, Township 20 South, Range 37 East, Lea Co., NM. The injection formation is the Lower San Andres from 4170' to 4900' below surface. Expected maximum injection rate is 20,000 bpd., and the expected maximum injection pressure is 800 psi or what the OCD allows. Any questions about the application can be directed to Eddie W. Seay, (575)392-2236, or any objections or request for hearing must be directed to the Oil Conservation Division, (505)476-3440, 1220 South Saint Francis Drive, Santa Fe, NM 87504, within fifteen (15) days.
Published in the Lovington Leader January 15, 2015.

Published by
NEW MEXICO BUREAU OF MINES & MINERAL RESOURCES
A DIVISION OF NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY
1976

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
In cooperation with
NEW MEXICO STATE ENGINEER

RESOURCE MAP 7



District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-101
June 16, 2008

Submit to appropriate District Office

☐ AMENDED REPORT

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

[1] Operator Name and Address	[2] OGRID Number
OASIS WATER SOLUTIONS LLC PO BOX 36, MONUMENT, NM 88265	310761
	[3] API Number 30 -

[3] Property Code	[5] Property Name	[6] Well No.
	COOPER 17	1

[9] Proposed Pool 1	[10] Proposed Pool 2
SWD;SAN ANDRES (96121)	

[7] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	17	20S	37E		2320	North	2200	West	Lea

[8] Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Additional Well Information

[11] Work Type Code	[12] Well Type Code	[13] Cable/Rotary	[14] Lease Type Code	[15] Ground Level Elevation
N	S	Rotary	P	3538
[16] Multiple	**[17] Proposed Depth**	**[18] Formation**	**[19] Contractor**	**[20] Spud Date**
No	4900	Lower San Andres		

[21] Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17.5	13.375	48 #	1085	900	0
12.25	9.625	32 #	2540	1700	0
8.75	7	17 #	4170	1000	0

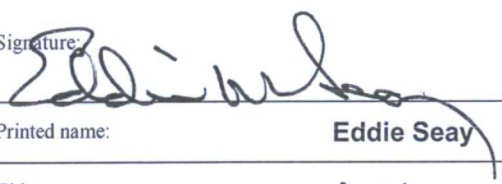
[22] Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drill 17.5" hole to 1085' and set 13.375" surface casing, cement to surface. Drill out with 12.25 bit to 2540' (+/-) and set 9.625 intermediate casing, cement to surface. Drill 8.75" hole to 4170' (+/-), set 7" casing, cement to surface. Drill 6.124 hole to 4900. Set packer with plastic lined tubing within 100' of open hole interval.

SWD application submitted to Santa Fe. After SWD application is approved notify NMOCD Hobbs office at least 24 hours prior to conducting MIT test. MIT test will be performed prior to any injection.

BOP - once rig type is determined will notify NMOCD of BOP to be used by form C-103

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: 

Printed name:	Eddie Seay	OIL CONSERVATION DIVISION	
		Approved by:	
Title:	Agent	Title:	
		Approval Date:	Expiration Date:
E-mail Address:	seay04@leaco.net		
Date: 11/2/15	Phone: 575-390-2454	Conditions of Approval Attached ☐	

OCD Case# 15307
Oasis Water Solutions, LLC
August 6, 2015
Ex# 3

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name

Property Code	Property Name	Well Number
	COOPER "17"	1

OGRID No.	Operator Name	Elevation
	OASIS WATER SOLUTIONS LLC.	3537.5'

Surface Location

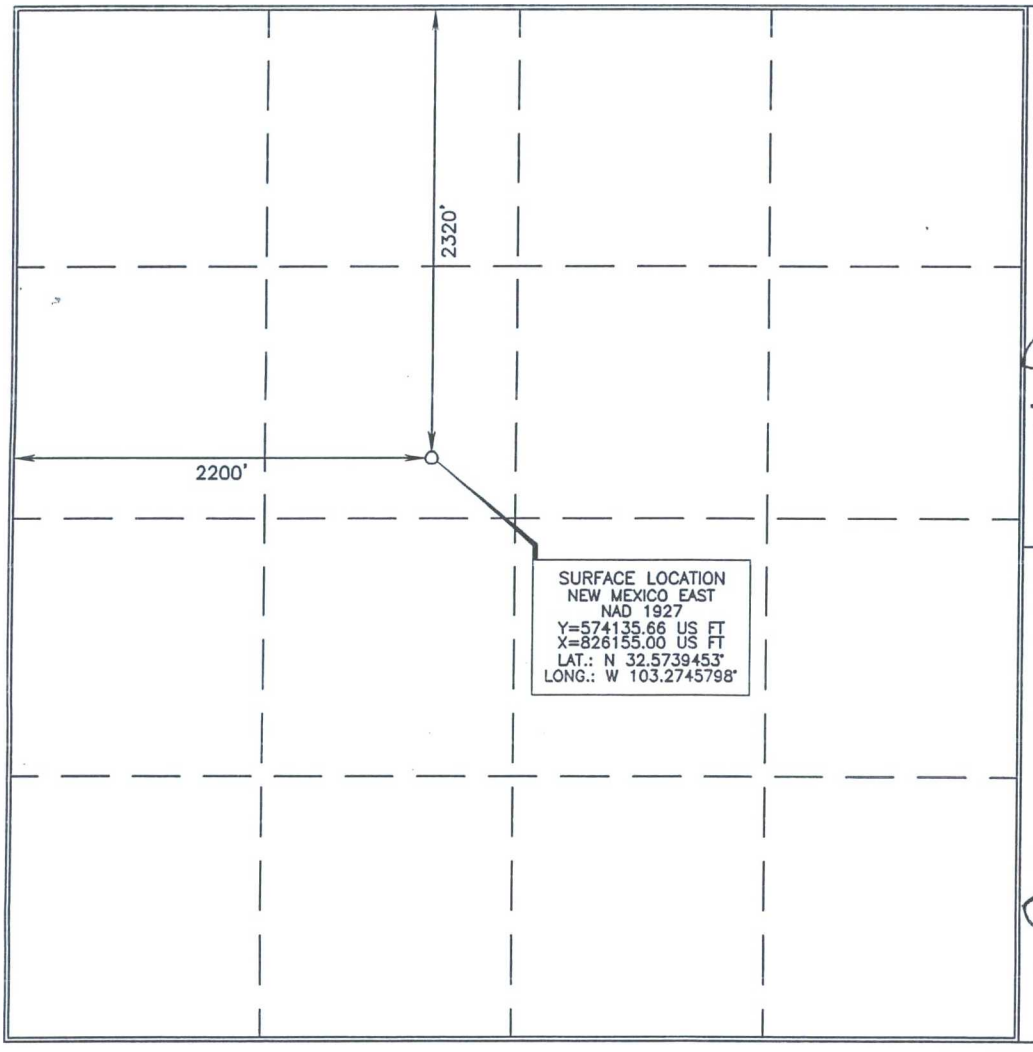
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	17	20 SOUTH	37 EAST, N.M.P.M.		2320'	NORTH	2200'	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Jimmie Cooper 12/28/14
Signature Date

Jimmie Cooper
Printed Name

[illegible]@leaco.net
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

NOVEMBER 28, 2014
Date of Survey

Signature and Seal of Professional Surveyor:

Terry J. Asel 12/8/2014
Certificate Number 15079

WO# 141128WL (KA)

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

IN THE MATTER OF THE APPLICATION OF OASIS WATER SOLUTIONS, LLC FOR A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

CASE NO. 15307

AFFIDAVIT

STATE OF NEW MEXICO }
}ss
COUNTY OF SANTA FE }

AFFIANT, ERNEST L. PADILLA, first being duly sworn on oath states:

Ernest L. Padilla, attorney for Oasis Water Solutions, LLC, the Applicant herein, states that notice of the above-referenced Application was mailed to the interested parties shown on Exhibit "A" attached hereto in accordance with Oil Conservation Division Rules, and that true and correct copies of the notice letter and proof of notice are attached hereto.

ERNEST L. PADILLA

SWORN TO AND SUBCRIBED to before me this 5th day of August 2015, by ERNEST L. PADILLA.

Notary Public

My Commission Expires:
April 9, 2017

JoAnn B. Gallegos NOTARY PUBLIC STATE OF NEW MEXICO

Ex 4
Oasis Water Solution

EXHIBIT A

Amerada Hess Corp.

Box 840

Seminole, TX 79360

Apache Corp.

303 Veterans Airpark Lane, Ste. 3000

Midland, TX 79705

Oxy USA Inc.

Box 4294

Houston, TX 77210

State of New Mexico

310 Old Santa Fe Trail

Box 1148

Santa Fe, NM 87504-1148

XTO Energy Inc.

382 RR 3100

Aztec, NM 87410

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Amerada Hess Corp., Box 840
Seminole, TX 79360

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Tim Loewen ☐ Agent ☐ Address

B. Received by (Printed Name) Tim Loewen | C. Date of Delive

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandi
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7013 0600 0001 8704 2104

PS Form 3811, July 2013 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
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1. Article Addressed to:

Apache Corp., 303 Veterans Airpark Ln, Ste 3000
Midland, TX 79705

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Robert Force ☑ Agent ☐ Addresse

B. Received by (Printed Name) R-Force | C. Date of Delive 5-4-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandis
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service lab 7013 0600 0001 8704 2111

PS Form 3811, July 2013 Domestic Return Receipt

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1. Article Addressed to:

State of New Mexico, 310 Old Santa Fe Trail
Santa Fe, NM 87504

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addresse

B. Received by (Printed Name) | C. Date of Delive

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandis
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7013 0600 0001 8704 2159

PS Form 3811, July 2013 Domestic Return Receipt

SENDER: *COMPLETE THIS SECTION*

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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Oxy US/ Inc., Box 4294
Houston, TX 77210

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

BARBARA ... HOUSTON, TX 77201 USPS

3. Service Type
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label)
7013 0600 0001 8704 2142

PS Form 3811, July 2013 Domestic Return Receipt

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1. Article Addressed to:

XTO Energy, Inc., 382 RR 3100
Aztec, NM 87410

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☐ Addressee

B. Received by *(Printed Name)*
Lonnie Anderson

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label)
7013 0600 0001 8704 2128

PS Form 3811, July 2013 Domestic Return Receipt

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Seminole, TX 79360

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X Tim Loewen ☐ Agent ☐ Addressee

B. Received by (Printed Name) Tim Loewen | C. Date of Delive

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If YES, enter delivery address below: ☐ No

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☐ Registered ☐ Return Receipt for Merchandi
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Midland, TX 79705

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State of New Mexico, 310 Old Santa Fe Trail
Santa Fe, NM 87504

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X ☐ Agent ☐ Addressee

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Houston, TX 77210

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☐ Agent
☐ Addressee

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PS Form 3811, July 2013 Domestic Return Receipt

PADILLA LAW FIRM, P.A.
STREET ADDRESS
1512 S. ST. FRANCIS DRIVE
SANTA FE, NM 87505
MAILING ADDRESS
P.O. BOX 2523
SANTA FE, NEW MEXICO 87504-2523
EMAIL ADDRESS
padillalaw@qwestoffice.net

TELEPHONE
505-988-7577

FACSIMILE
505-988-7592

April 30, 2015

CERTIFIED MAIL/RETURN RECEIPT REQUESTED

Amerada Hess Corp.
Box 840
Seminole, TX 79360

Re: NMOCD Case# 15307; In the Matter of the Application of Oasis Water Solutions, LLC for Salt Water Disposal Well, Lea County, New Mexico

Ladies and Gentlemen:

This letter will advise that Oasis Water Solutions, Inc. has filed an Application with the New Mexico Oil Conservation Division seeking an order for salt water disposal well. A copy of the application is enclosed.

This application will be set for hearing before a Division Examiner on May 28, 2015 at 8:15 a.m. at the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico. You are not required to attend this hearing, but as an owner of an interest that may be affected, you may appear and present testimony. Failure to appear at the time and become a party of record will preclude you from challenging these applications at a later time. If you intend to attend the hearing and present testimony or evidence, you must enter your appearance and serve the Division, counsel for the Applicant, and other parties with a pre-hearing statement at least four business days before the scheduled hearing date in accordance with Division Rule 1211.

Very truly yours,

ERNEST L. PADILLA

ELP:jbg

cc: Oasis Water Solutions, LLC

PADILLA LAW FIRM, P.A.
STREET ADDRESS
1512 S. ST. FRANCIS DRIVE
SANTA FE, NM 87505

TELEPHONE
505-988-7577

MAILING ADDRESS
P.O. BOX 2523
SANTA FE, NEW MEXICO 87504-2523

FACSIMILE
505-988-7592

EMAIL ADDRESS
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April 30, 2015

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ERNEST L. PADILLA

ELP:jbg

cc: Oasis Water Solutions, LLC

PADILLA LAW FIRM, P.A.
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MAILING ADDRESS
P.O. BOX 2523
SANTA FE, NEW MEXICO 87504-2523
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padillalaw@qwestoffice.net

April 30, 2015

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State of New Mexico
310 Old Santa Fe Trail
Box 1148
Santa Fe, NM 87504-1148

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ERNEST L. PADILLA

ELP:jbg

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SANTA FE, NM 87505
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XTO Energy Inc.
382 RR 3100
Aztec, NM 87410

Re: NMOCD Case# 15307; In the Matter of the Application of Oasis Water Solutions, LLC for Salt Water Disposal Well, Lea County, New Mexico

Ladies and Gentlemen:

This letter will advise that Oasis Water Solutions, Inc. has filed an Application with the New Mexico Oil Conservation Division seeking an order for salt water disposal well. A copy of the application is enclosed.

This application will be set for hearing before a Division Examiner on May 28, 2015 at 8:15 a.m. at the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico. You are not required to attend this hearing, but as an owner of an interest that may be affected, you may appear and present testimony. Failure to appear at the time and become a party of record will preclude you from challenging these applications at a later time. If you intend to attend the hearing and present testimony or evidence, you must enter your appearance and serve the Division, counsel for the Applicant, and other parties with a pre-hearing statement at least four business days before the scheduled hearing date in accordance with Division Rule 1211.

Very truly yours,

ERNEST L. PADILLA

ELP:jbg

cc: Oasis Water Solutions, LLC

ANCHOR E. HOLM
Geoscientist / Petroleum Engineering Specialist
New Mexico State Land Office, Oil Gas & Mineral Division
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CREDENTIALS/REGISTRATION:

- B.S. Geological Engineering, College of Mines, University of Arizona, 1967 (dual major – Geology & Civil Engineering with minor in Ground Water Hydrology)
- Graduate Studies, Environmental Engineering, University of Texas at El Paso, 34 hours 1976-1981
- Registered Professional Engineer, State of Texas #40079

FIELDS OF SPECIALIZATION:

- Groundwater Contamination Investigation, Aquifer & Site Geology Characterization, & Remediation
- Oil and Gas Properties: Environmental & Petroleum Engineering – Primary, Secondary & E.O.R.
- Geological Engineering for Deep Well Injection, Class I and II
- Permitting, Regulatory Testimony, and Project Management
- Uranium Mill Tailings Remedial Engineering & Technical Management
- Expert Witness Testimony / Litigation Support: Environmental, Groundwater, Geology & Petroleum Engineering

PROFESSIONAL AFFILIATIONS

- Society of Petroleum Engineers- Member 1962, Past Officer in 3 Sections.
- American Association of Petroleum Geologists - Member
- Rocky Mountain Association of Geologists – Member
- Albuquerque Geological Society – Member
- Association of Environmental & Engineering Geologists – Past Member
- American Society of Civil Engineers – Past Member &West Texas Branch Chairman
- National Ground Water Association – Past Member
- Society of American Military Engineers, Houston Post – Past Member

EXPERIENCE SUMMARY

Mr. Holm has over 45 years of engineering experience in designing, conducting and managing environmental, petroleum, geological, groundwater, acid mine and milling, civil, natural gas and oil projects and investigations. Mr. Holm joined the New Mexico State Land Office, Oil Gas & Minerals Division (OGMD) as a geoscientist/petroleum engineering specialist in September 2012. He is responsible for overseeing reservoir drainage, review of leases and unit plans of development, commercial well determinations, as well as the oil well royalty rate reduction program and other duties, such as business lease mineral evaluations for oil, natural gas, carbon dioxide and helium. Mr. Holm also taught at Santa Fe Community College during the summer and fall terms of 2013, field geology and historical geology lab. His experience has included expert testimony on petroleum engineering, groundwater contamination and protection and stormwater flooding; CERCLA, RCRA and RCRA-exempt and UMTRA environmental assessment and remediation of gas and oil production operations, uranium mill sites, facilities, plants, and service facilities with soil and groundwater impacts; groundwater management of water well drilling, testing and field development for municipalities, water districts and industrial users; solid waste landfill and transfer station design and permitting, civil design for subdivisions, apartment complexes and assisted living facilities, and technical management of uranium mill tailings remedial action (UMTRA) Department of Energy (DOE) project for surface and groundwater characterization and remediation with design review, design and groundwater construction responsibilities. His prior 18 years of oil and gas engineering experience included 3 years in oil field waterflood operations; 4 years in drilling oil and gas wells; 6 years in reservoir evaluation engineering for oil and gas companies; and 7 years in evaluating oil and gas wells, leases, drilling equipment and processing facilities for banks and industrial clients. As a result, his effective leadership and development of the big picture, combined technical approach to problem solving with teams of multiple disciplines resulted in timely and effective site closures and project success.

Expert witness testimony and support provided by Mr. Holm includes oil and gas as well as groundwater, petroleum engineering, civil engineering and environmental matters before U.S. District Courts, Texas District courts, New Mexico State Court, the Texas Natural Resources Conservation Commission (TNRCC), Texas Railroad Commission (TRC), Federal bankruptcy court, the oil conservation commissions, or the equivalent, of the states of Texas, Colorado, New Mexico, North Dakota and Wyoming, plus agency/client negotiations with Texas Department of Health (TDH), Texas

Water Commission (now, TCEQ), Department of Energy (DOE), Nuclear Regulatory Commission (NRC), Colorado Dept. of Public Health and Environment (CDPHE), and the New Mexico Environmental Department (NMED).

SELECTEDPUBLICATIONS AND PRESENTATIONS

- Presenter: Oil and Gas Petroleum Engineering Application of Science, Math and Physics, Energy Institute, Houston Community College NE, Houston, TX 2011.
- Presentation and White Paper: "Analysis of Natural and Man-Made Groundwater Recharge Conditions and Protection Needs, Southeaster Val Verde County Region including the City of Del Rio, Texas", 2009.
- Presentation entitled "Use of Math and Science for the Design, Permitting, Construction and Closure of Various Sites of the DOE-Uranium Mill Tailings Remedial Action (UMTRA) Project – Surface and Ground Water Programs," Math and Physics Classes, San Jacinto College South, Houston, Texas, 2005.
- Presentation entitled "Design of New Concept for Control of Shallow Ground Water Flows in Deep Offshore Wells," for selected clients, 2002.
- Presented "Discussion of the Design, Permitting, Construction and Closure of the Falls City, Texas DOE-Uranium Mill Tailings Remedial Action (UMTRA) Disposal Cell, Tailings Piles Consolidation and Ground Water Closure," at S.A.M.E., Environmental Committee Meeting, Houston, Texas, August 4, 1998.
- Authored: "Shallow Water Flows in Deep-Water Can Be Controlled," Offshore Magazine, May, 1998, p. 76+.
- Presented: "UMTRA Disposal Cell Designs for Closure & Minimum Maintenance," "UMTRA Disposal Cell Cover & Subgrade Design for Stabilization," and "UMTRA Long-Term Performance Monitoring Lessons-Learned," at Multilateral Exchange - Decommissioning Uranium Mine/Mill Facilities, Vancouver, British Columbia, Canada, June, 1997
- Presented: "Review of Ground Water Investigations - UMTRA Surface Project," and "Site Characterization, Selection & Design of Disposal Cells," Lessons Learned Workshop, DOE-ERD, Albuquerque, NM, May, 1997
- CE-691 Seminar lecturer, "Engineering Overview of Uranium Mill Tailings Remedial Action Program," University of New Mexico, 1995.
- Environmental short course co-instructor, "Ground Water Hydrology and Possible Contamination from Oil and Gas Production," Texas Natural Resources Conservation Commission, District Training, Lubbock, TX, 1992 & 1993.
- Environmental lecture, "Introduction to Hydrogeologic Evaluation of Groundwater Contamination Related to Oil and Gas Production," Odessa Junior College, Odessa, TX, 1991 & 1992.
- Petroleum Engineering lecture, "Evaluation of Oil & Gas Properties by Bankers", Colorado School of Mines, Golden, CO, 1984.
- Coordinator & Lecturer: Introduction to Oil & Gas Well Drilling and Completion, Permian Basin Graduate Center, Midland, Texas 1979-1982.
- Coordinator & Lecturer: Introduction to Oil & Gas Reservoir Engineering, Permian Basin Graduate Center, Midland, Texas 1979-1982.
- Paper Presentation - "Oriented Density Evaluation of Multi-String Gas Well Completions, Rio Arriba County, NM," 50th Fall Meeting, SPE, Dallas, TX, Oct. 1975. (SPE 5519).
- Paper Presentation - "Perforation & Fracture Treatment Results, San Juan Basin, NM," Drilling & Production Operations, SPE Regional Meeting, Oklahoma City, OK, March 1975. (SPE 5412)

EXPERT WITNESS PROJECTS

Litigation Testimony & Support

- Served as an Expert Witness petroleum and hydrogeological engineer for the New Mexico State Land Office (NM SLO) by preparing testimony and exhibits to have been used before the NM Oil Conservation Division Hearing of Case No 15060. Due to lack of a complete Application being submitted by the applicant to the OCD and some questions of the applicant's expert, Dr. Kay Havenor, by the attorneys representing the State Land Office, Yates Petroleum and Endurance Resources, the OCD Hearing Officer denied the application without prejudice. The Proposed reentry of the Myrtle Myra SWD#3 sought to inject salt water containing over 100,000 mg/L of chlorides into the Capitan Aquifer containing brackish water with less than 10,000 mg/L of total dissolved solids (protectable water of the State of New Mexico and USA EPA). The Capitan Aquifer extends from Lake McMillan on the Pecos River south to the southern edge of the Capitan Reef, located just to the East of the City of Carlsbad. The proposed SWD likely would have impacted the shallow water users north of the Pecos River opposite Carlsbad.

- Served as an Expert Witness petroleum and hydrogeological engineer before a State Court jury trial for an independent oil & gas produced with salt water disposal operations. The lawsuit alleged that the salt water spill from an inactive produced water injection line had done damage to the landowners property and included crude oil in the spill. Investigations revealed that the site had spilled produced saltwater (31,000 mg/L chloride) with very minor amounts of crude oil carryover from the tank battery. Less than half of the salt water produced from the oil operations was capable of being released from the spill which appears to have lasted up to one year, beginning as a small leak and expanding as corrosion of the old steel pipeline accelerated the release. After the initial soil remediation treatment of clearing and application of gypsum, the site soils were sampled and all but one sampling site had been successfully remediated for chloride and three sampling sites for TPH. Jury found largely in favor ot the client. Final remedial action is underway following the plan developed by ABEngineering LLC.
- Served as an Expert Witness petroleum and ground water engineer before a State Court jury trial for a large independent oil company in a lawsuit where an offsetting operator claimed damages from their adjoining waterflood operations in Eddy County, New Mexico. No direct evidence of leakage of injection water out of the waterflood intervals was found. No indirect evidence of past waterflooding leakage in the region of the natural solution depression was found. Flow from the plaintiff bradenhead was very low pressure and corrosion of the shallow surface casing indicated historically high water levels of the brine aquifer inside the surface casing from a natural source. Jury decision pending.
- Served as an Expert Witness petroleum engineer and engineering geologist for a major oil company in a lawsuit where ground water contamination was alledgedly caused by the oil and gas operations in the Gulf Coast Aquifer. Evaluated data in oil well histories on leases nearby the contaminated water well. Discovered that the wellhead pressure data did not support the geologic model of the plaintiffs. Correlated the sand intervals and discovered a channel system rather than a widespread sand system. Provided the input to a ground water model of the channel system that confirmed that the pressure observed could only have been from such a limited channel sand system. Discovered surface expressions of recent movement of geologic faults in the vicinity of the contaminated water well. Case currently under appeal.
- Served as an Expert Witness for stormwater runoff and subsequent flooding of a property in Bacliff, Texas for an insurance company. Defined the rainfall event(s) which lead up to the flooding and the stormwater drainage changes and development over time, including diversion of the natural drainage system through a single drainpipe. Subsequent to the storm event, the drainpipe was expanded to two pipes. Examined photos of all first floor water damages and indicated those consistent with a short-term flood event. Case was settled.
- Served as an Expert Witness for geological engineering evaluation of a leaking underground storage tank site for a defendant major oil company. Two gasoline stations were accused of causing the hydrocarbon (BTEX) dissolved contamination of shallow ground water. Through careful field examination and location of a significant fault in the Austin Chalk formation, the client company station was found not to be a contributor to the offsite contamination. Case appears to have been dropped by the plaintiff.
- Served as Project Director for a major oil pipeline company in west Texas on a crude oil spill from a low-pressure pipeline with groundwater at depths of 3 to 8 feet and within a flood plain in preparation for litigation support. Protected natural springs were located downstream. Developed storm water control recommendation leading to construction of surface water diversion works and closure of open recovery trenches at the site just prior to rainy season. Provided ongoing advice for free product recovery, remediation and negotiations / reporting to the TRC.
- Served as Project Director on litigation for major oil pipeline company in west Texas at a crude oil spill from a pressurized interstate pipeline, with groundwater over 60 feet below the sandy ground surface and a caliche deposit at a depth of 3 to 5 feet. Performed a site assessment of the 2,000+ foot long spill with installation of 7 monitor wells, several soil borings and shallow trenches, developed a remediation work plan, negotiated with plaintiff landowner's attorney and expert. Evaluated excavation, bioremediation in-situ and partial excavation, vapor recovery with enhanced bioremediation in-situ, and no action along the multiple pipeline right-of-way. Client chose excavation of shallow impacted soils with surface disposal under the regulation of the TRC with concurrence of landowner.
- Served as an expert witness for First Interstate Bank of Denver before Federal District Court of Bankruptcy in Eldorado, Ark. Evaluated oil & gas properties of owner and their related collateral value dedicated to the bank. Judgment found in favor of the Bank, then assisted bank to negotiate title to the properties with minimum oil & gas production liabilities to the bank and environment.
- Served as professional engineering support for expert testimony for plaintiffs in a Wyoming lawsuit concerning coalbed methane escaping upwards into the shallow aquifer and vadose zone in the Powder River Basin near Rawhide Village. Methane levels had reached the LEL for ignition in some home basements. Methane evolved in response to activities related to the mining of coal. Suit was settled out of court favorably to our clients.
- Served as professional engineering support and Project Manager retained by a major oil company for expert testimony and engineering design for a Colorado lawsuit concerning coalbed methane escaping upwards into the shallow aquifer and water wells. Methane levels were below the LEL for ignition, but the odor from related chemical changes in the water affected the end users. Provided information regarding the migration of the gas as

well as designing a low cost, very effective, individual-well water treatment system for removal of the natural gas and other ions of concern.

- Served as professional engineering support for expert witness testimony for a large oil company on an Oklahoma lawsuit regarding the brine contamination of the shallow aquifer by oil and gas well drilling, completions and production activities. The oil company client successfully delineated and defended their activities, reducing their liabilities significantly.
- Served as professional engineer and Project Manager retained by a major oil company for expert witness testimony and site investigation on an Oklahoma lawsuit regarding natural gas seepage into the shallow aquifer and vadose zone near the client's abandoned gas well. The seepage had affected a water well nearby and was affecting crops in the adjacent field. Analysis concluded the gas well was currently abandoned properly, but loss of natural gas likely occurred during the period prior to abandonment. The site is being remediated with minimum of additional costs.

Regulatory Testimony & Support

- Served as an expert witness for a Texas independent oil operator before the TRRC for the engineering and hydrologic evaluation of alleged contamination of the shallow alluvial aquifer potentially resulting from the accidental sinking of an oil field drilling rig as a result of fluidization of the saturated alluvial sands beneath the rig during a blowout of a shallow, naturally occurring nitrogen gas pocket. Depth to groundwater was about 10 feet with base of alluvium below 80 feet. The well location was near an ephemeral streambed and had a variable water table. Rapid recovery of the lubrication skid and disconnection of the fuel tanks mitigated potential impacts to the aquifer. Monitoring of the site for possible diesel fuel contamination continues since the small day tank was lost with the rig. Landowner concerns focused upon the irrigation well located in the edge of the alluvium slightly down river from the blowout site. Litigation support in related lawsuit was minimized by the effective coverage of the situation in testimony before the TRRC. No additional testimony was needed in court beyond the record from the TRRC testimony, saving the client time and money.
- Served as Project Engineer and expert witness for an oil company's protest of an application by a Texas firm for a Class I hazardous waste deep well injection permit from the TWC for two proposed wells to be located on a 20 acre tract adjacent to their producing oil wells. Investigation included permit review of the subsurface portion with a focus on known occurrences of natural fractures in nearby wellbores, review of producing oil well performance in response to disposal of produced oil field waters into the client's Class II disposal well located within 1.5 miles of the proposed site, presentation of known information on deep faulted structures beneath the area and their potential effects upon the proposed injection interval, and presentation of analogous seismic information of microseismic events in the interval correlative to the proposed injection and related to oilfield production from overpressured zones above nearby deep faulted structures. The objective was to ensure protection of the oil and gas rights of the client as well as to minimize any surface impacts. Following testimony, the applicant was given additional information needs from the TWC for the application to proceed.
- Served as Project Engineer for the City of Fort Stockton with potential expert testimony for the City's protest of the application of a Texas venture to obtain a permit for a class I hazardous waste deep injection utilizing an existing deep gas well which had been abandoned. Location of the site was approximately 1.5 mile upgradient from the municipal ground water supply of the City's Blue Ridge farm, which are planned to be developed for future use by the City. Protests and questions have led to the applicant's failure to respond to the TWC and it's return of the application to the applicant.
- Served as Project Advisor and expert witness for underground injection of hazardous wastewater effluent from a west Texas petrochemical facility, convincing the TWC of the reasonableness to continue underground injection in the aquifer which has shown bottomhole pressure increases. This resulted in the continuation of current injection with consideration for an injection permit for a limited number of years with increased bottomhole pressure and injection testing requirements. Evaluated other effluent disposal options for the client including deeper well injection, surface disposal in naturally occurring salt lakes, delivery to oilfield waterfloods nearby, and surface disposal in ephemeral streambeds or playas. Provided oversight, analysis and expert testimony concerning the falloff testing of the injection wells including analyses for fracturing.
- Served as Project Advisor for the groundwater modeling at a large pesticide facility with extensive arsenic contamination of the groundwater, surface waters and soils located in Texas. Two affected shallow aquifers merge in the man-made reservoir built on a surface drainage going through the site. The MODFLOW modeling program was used to demonstrate individual aquifer performance prior to initiation of recovery in shallow and middle aquifers, then to demonstrate containment of the plumes by the groundwater recovery 6 wells. Provided expert testimony support for negotiation of the Consent Order that has been signed between the client and the TWC, including ongoing modeling of observed drawdown and effective containment of contamination.
- Served as Project Advisor for the hydrogeologic assessment of the new and old municipal landfill sites for the Town of Pecos City, Texas. Assisted with negotiations by the City with the Texas Department of Health to obtain the permit for the new 40-acre landfill, as well as for closure planning of the nearby old landfill. Project included

installation and sampling of five and nine monitor wells at the old and new landfills respectively. The shallow perched aquifer near 25 feet of depth contained poor quality water (4,000 to 8,000 TDS) with some nitrates not related to the landfills. The deep aquifer near 120 feet of depth is a regional aquifer utilized primarily for irrigation and limited drinking supply by livestock and area residents, containing water not meeting the recommended municipal drinking water standards of the state of Texas.

- Served as Project Director for the evaluation of a solvent supplier and waste handling facility in the panhandle of Texas by delineating the underground storage tanks, drilling shallow soil borings, and documenting site facilities and usage. Report was prepared for the client to submit to the TWC for ongoing expert witness support.
- Serving as Technical Director for the DOE - Uranium Mill Tailings Remedial Action (UMTRA) ground water and surface project to remediate acid milling activities. Project has included design oversight and construction of the ground water initial action for the Tuba City site, as well as, additional soil and water characterization activities at 23 sites. The project includes surface remedial actions and closure of 24 Title I sites under NRC Regulations and EPA clean up standards for UMTRA, with the teaming partners of Jacobs Engineering Group, Weston and AGRA. Primary responsibilities include staff utilization for engineering and scientific work in support of the project and its negotiations requiring expert testimony as needed before the NRC, states (CO, UT, NM, TX & WY) and tribes (Navajo, Hopi, Shoshone).
- Served as chairman of the technical committee for the unitization of the Sooner Waterflood Unit, Weld County, Colorado, including expert testimony before the Colorado Oil Conservation Commission and negotiations with the working interest owners for the independent oil operator. Identified the deepest U.S.D.W. used in the area and its need for additional protection efforts. Utilized two reservoir engineering models to evaluate the proposed waterflood primary and secondary recoveries, as well as participation acreage.
- Served as Senior Reservoir Engineer and expert witness for oil company to obtain a new field discovery classification of an oil field in Wyoming. Provided testimony before the Wyoming Oil and Gas Commission for the oil operator, obtained new field discovery status for the wells.
- Provided expert testimony for an oil company before the TRRC to obtain a new gas field discovery classification, including two deep, overpressured gas well in a field with multiple sand channels and gas/water contacts. Included reservoir pressure testing and modeling to delineate the channels and their isolation from other productive zones, as well as optimization of producing rates.

OTHER SELECTED PROJECTS

CERCLA Program/State Superfund

- Served as Inspection Engineer for a west Texas landowner during the closure of a sour natural gas processing plant with arsenic contamination of soils within the vadose zone of an alluvium-filled karst structure above deep, excellent quality groundwater. Project included construction of a Class I hazardous waste landfill onsite, filling it with contaminated soils and old plant debris, and capping under the guidance of the TWC, plus capping of four areas to immobilize contamination in old pits, process areas and lagoons. Oversight of shallow and deep monitor wells completed at the base of the alluvium (top of limestone) and within the fresh water aquifer below 470 ft. Final closure transferred to the TRRC.
- Provided engineering design support and field oversight for the west Texas landowner during the gas company cleaning out and plugging of a deep monitor well containing a malfunctioning West Bay multiport system, which was allowing arsenic-containing waters to percolate down the wellbore toward the aquifer. The well was successfully plugged in five cement stages within the vadose zone and fractured limestone of a karst, effectively protecting the aquifer at a minimum of cost to the plant owner. Assisted in the development of a stormwater plan to control site erosion as well as prevent standing of rainwater on the site near any capped areas. Following site closure under the TRRC, ongoing site monitoring is underway.

Engineering Planning, Analysis and Design

- Served as Project Engineer for the civil design of assisted living facilities on three separate tracts of land in Harris County (Pasadena-1 and Houston-2). One required a water line extension along the opposite side of the street as well as a stormwater line extension along the near side of the street. One site required detention of stormwater. All required design of streets and parking, drainage and utilities. All have obtained the construction permits and are proceeding with construction.
- Served as Lead Engineer for the development of Subdivision Regulations and Specifications for Chambers County, Texas. Reviewed all standard design specifications and drawings and ensured linkage to current ASCE, ASTM and other appropriate State and Federal standards.
- Served as Project Engineer for the design of all civil works for a 12.9 acre tract development for the Regatta Bay Apartments, Seabrook, Texas. Conducted a Phase I Environmental Site Assessment prior to civil design. Design

included all streets, parking, paving, stormwater and utilities. Project was permitted and constructed in a timely manner.

- Served as Project Engineer and Advisor for a RCRA facility in west Texas including the design, construction, and operation and maintenance of an on-site bioremediation cell of excavated soil using an electric blower to pull air through the soils with intermittent application of untreated well water and nutrients as needed. Remediation of soils was completed in less than one year resulting in significant disposal savings for the client and early application to the TNRCC for closure.

Exploration and Production - Oil and Gas

- Served as Project Advisor for major oil company at a closed natural gas plant site with chromium contamination from cooling waters in the perched groundwater and the deeper water table aquifer in west Texas. Remediation includes pumping of groundwater from shallow and deep recovery wells with disposal of the waters into a pipeline for reuse at a sister active natural gas plant. Subsequent to cooling tower reuse, the waters are injected into a deep aquifer Class II injection well under the regulation of the TRRC. Innovative techniques to increase chromium recovery volumes and rates from the vadose zone/perched aquifer are being evaluated, while operation and maintenance of the 50+ monitor and recovery wells accomplishes recovery and plume containment.
- Served as Project Advisor for a major oil company during investigation of shallow oil and gas seeps in an oil field located upgradient from natural springs in west Texas. Multiple casing leaks from oil wells were the potential sources of the hydrocarbons, but no effect has been detected to date at the springs. Investigation of wells showed only minor losses of oil or gas. Natural attenuation appears to be containing any contaminants of concern.
- Served as Project Director for a major oil company operator of a waterflood unit in west Texas, which has extensive brine contamination within the shallow fresh water aquifer. Evaluation using surface geophysical methods with limited monitor well installation was done and determined the optimum strategy to contain the multiple source plumes and effect long-term remediation cost effectively.
- Supervised the drilling and completion as a drilling engineer of over 300 gas and oil wells within the San Juan Basin of northwest New Mexico and southern Colorado, including expert testimony before the New Mexico Oil Conservation Division for El Paso Natural Gas Co. Evaluated hydraulic fracturing completions utilizing cased hole geophysical tools (density, neutron, electric resistivity, temperature, gamma ray, and geophones), surface geophones and pressure/production bottom hole tests. Presented a technical paper (SPE) with the observed results showing upward migration of the induced fractures.
- Served as Project Advisor for a major oil company in Texas during conceptual design, final design, excavation and encapsulation of brine drilling fluid contaminated soils from a site used to drill two oil wells and hauling of the soils to site owned by the company where the encapsulation landfill was authorized by a minor permit from the TRRC. The excavation was backfilled with clean fill and covered with top soil allowing use of the surface by the landowner, resulting in closure of litigation.
- Served as Project Director for a Texas bank trust department for the closure under the regulation of the TRRC of a oilfield brine evaporation pond, which had been lined with asphalt. Salt contamination beneath the pond was identified by angle borings and resulted in the design of a partial removal and closure of the pond utilizing a cap, since no groundwater was detected. The regulators approved closure plan with landowner concurrence.
- Served as Project Engineer for a major oil company on the design and installation of a 5,400 foot class II water injection well in the Aneth Unit, San Juan County, Utah for waterflood secondary recovery project, injecting alternately produced water followed by fresh water from the water well field in the San Juan River alluvium.
- Conducted reservoir engineering design, interpretation and field supervision of bottom hole pressure testing of an over pressured natural gas well with water production problems located in Loving County, Texas for an oil company. Identified the complex channel reservoir geometry and likely gas/water contact allowing optimization of gas production.
- Conducted for a major oil company a reservoir engineering analysis and evaluation of openhole geophysical well logs, with correlation of waterflood response at the Aneth Unit, San Juan County, Utah, resulting in the identification of bypassed oil within the carbonate oil reservoir. Recommended and obtained approval from management for the subsequent successful infill drilling of the unit (the first well flowed over 100 barrels of oil per day without any injection water production and paid out within 6 months).
- As a Drilling Engineer for El Paso Natural Gas Co., performed borehole geophysical surveys in gas wells with multiple casing production strings utilizing an oriented density tool calibrated to field conditions. Subsequently remediated successfully several wells and presented a technical paper before the annual national meeting of the Society of Petroleum Engineers (SPE).
- As an Evaluation Engineer for oil and gas companies as well as banks, prepared evaluations of natural gas plants and storage facilities including material balance calculations for production of natural gas liquids and residue gas volumes, sales and loan values in Texas, New Mexico, Oklahoma, North Dakota, Kentucky and Colorado.

Federal Facilities (DOE, DOD, Other)

- Served as Project Director for a DOE funded hydrogeologic study of seven oil and gas producing basins within the U.S.A. for a patent owner of an oil field downhole gas/water separator with capabilities to inject separated waters directly into underlying strata. Assisted the patent owner to obtain the DOE funding by submitting a proposal with the application documents. Individual basin studies have been developed and a compendium prepared for the patent owner to utilize to market his device.
- Served as Geraghty & Miller Support Manager and Technical Director for the Technical Assistance Contract on the DOE Uranium Mill Tailings Remedial Action (UMTRA) project with the associated SAFE Program. Project includes closure of 22 Title I sites under NRC regulations within the continental U.S.A., with contract partners of Jacobs Engineering, Weston, and A.G.R.A. under the teaming agreement.
- Served as Senior Project Engineer and Technical Representative(TR) on the design and construction of groundwater remediation ponds with erosion protection system at a DOE UMTRA uranium mill tailings disposal cell site in northern Arizona. New construction included 21 monitoring wells, 4 extraction wells, one water source well, three lined ponds, potable and contaminated water piping systems, electrical distribution systems with two segments, potable water tank storage, water and electrical support to a greenhouse, mobile water treatment system, and general maintenance within the disposal cell site.

Hydrocarbon Investigation/Remediation

- Served as Project Advisor for the installation, operation and maintenance of a vapor recovery system at a southeast New Mexico oil refinery truck wash-water pit utilizing four vapor recovery wells with one explosion proof blower to recover volatile and semi-volatile organic compounds from the vadose zone. Depth to groundwater exceeded 80 feet at this successfully operated system which was monitored for organic vapors plus biorespiration to measure both recovery and biodegradation rates. Interaction with the new refinery owner was required to stop reoccurring spills. Site is approaching RCRA closure under the NMED.
- Served as Project Advisor for a major oil marketing company in Texas for a gasoline UST spill site including vapor extraction pilot testing, installation of vapor recovery wells with a vapor remediation modular system built by GMEE. The gasoline station was closed and converted to an alternate retail use while operation and maintenance of the system continued. Closure of the site was received from the TWC within one year of the installation of the GMEE equipment and the equipment moved to another site for the client.
- Served as Project Director for a major oil marketing company for the investigation of a product bulk plant located in New Mexico to assess potential impacts to the soils in the vadose zone above the deep groundwater. Report was prepared for the client for submittal to the NMED, with a separate letter of additional recommendations to the client. Conducted a quality assurance (QA) visit to the site with very positive results for the bulk plant operator and the client. Additional work on the site is planned.
- Served as Project Director for a major oil company in New Mexico of a product bulk plant assessment including shallow soil borings. Site was adjacent to a railroad with an oil refinery across the tracks, and an ephemeral stream passing nearby. Report was prepared for the client to submit to the NMED.

International Projects

- Served as Project Engineer for a mining company to develop a sulfur ore body hydrologic investigation plan using groundwater modeling of two aquifers at a site located near the Mediterranean Sea in the Sinai Peninsula. The shallow water table aquifer was in contact with the sea waters, and the deeper ore body aquifer appeared to be artesian. The aquifer pump testing plan is on hold due to their discovery of a significant ore body in the Gulf of Mexico.
- Served as Project Engineer while a 1st Lieutenant, U.S. Army, Corps of Engineers, for a rock quarry design and development at a site adjacent to a fire support base in the Republic of Vietnam including crusher site preparation, crusher installation, quarry access and working face development utilizing heavy equipment, drilling and blasting of granite for the 24-inch feedstock to the crusher, clearing of the area for security and removal of military ordinance, Development of a site safety plan including the local Vietnamese resulted in only one lost time (24-hours) accident and no hostile damage to equipment, quarry or personnel.

RCRA Pre-RFA/RFI/Permitting/Underground Injection

- Served as Project Director for the removal of chromium contaminated soils beneath an active cooling tower at a New Mexico oil refinery utilizing angle hollow stem augers for delineation and a soil vacuum extraction system in an excavation requiring shoring for wall support and foundation stabilization. Site was taken to closure under the NMED regulation.

- Served as Project Advisor for a Texas facility for the preparation of RCRA part A and B application with subsequent revisions. Site had the permit issued including consolidation of the lagoon closure begun several years earlier with the UST closure.

Site Characterization/Assessment/Remediation

- Served as Project Engineer/Advisor for RCRA facility in a Texas city for the offsite characterization, assessment, delineation of groundwater plumes containing TCE and carbon tetrachloride and their daughter products in an area with individual water supply for small industry and residents both within the city and the county. Installed carbon filtration systems on about 20 water wells to isolate water users from the contaminants, and continue operation and maintenance of the systems while working with the residents and well owners for the client. Interaction with the TWC and residents has been favorable for the client during initial disclosure resulting in a good relationship with the regulators and area residents. Preparation and provision of litigation support and regulatory assistance with the TWC.
- Served as Project Engineer for ground water pumping test, Diqla project, North Sinai, Egypt evaluation of a sulphur mine for development of shallow mining. Evaluated the natural ground water flow toward the Mediteranian Sea from the ore deposit several kilometers inland within an undocumented mine field. Water supply well was located just inland of the beach, and water truck lost a wheel when it swung wide off the road and hit a mine. All test design, mapping and cross-sections were done from his office in Midland, Texas in 1988-89.

Solid and Hazardous Waste Management

- Served as Project Advisor on the hydrogeologic assessment of the new landfill site for the City of Stanton, Texas, including an area water well inventory and aquifer delineation. A baseline geophysical (resistivity - Price array) survey was conducted along with installation of 8 piezometers in the Triassic shales of the site. No groundwater aquifers were found within 45 feet of depth below the site, correlation of oil well openhole logs indicate potential groundwater near 150 feet of depth, which appears to contain water quality containing greater than 4,000 mg/L total dissolved solids (TDS). The TDH issued the new permit without monitor well installation and allowed overfilling of the old landfill during the permitting period. An arid exemption application for the new landfill has been prepared and the city has submitted it to the agency for approval.
- Served as Project Director for the hydrogeologic support to the Town of Pecos City, Texas for the permitting and construction a new municipal landfill located just south of their city airport. Obtained Federal Aviation Authority for installation of monitoring wells near the end of a runway. Worked closely with the City Engineer and made presentations to the City on progress and at decision points.
- Served as Project Advisor of the Red Bluff (irrigation) dam for the Red Bluff Water and Power Control District, Texas during routine monthly review of seepage monitoring of volumes, quality, solutioning and turbidity as a function of time and reservoir water level elevation. Prepared and presented the proposed regrouting of the dam (third program) in response to the volumes of gypsum salts dissolved from the foundation rocks, proposal included installation of installation of piezometer wells within the dam, foundation rocks and downstream toe. Prior studies by Ed Reed & Associates had demonstrated the error in trying to control the gypsum solution seepages by applying downstream covers at the toe of the dam slope. All grouting had to be done on the upstream side of the dam in order to prevent excess pore pressures within the dam. We regularly monitored the seepages along the toe of the dam by measuring the flow rates with weirs, measuring the turbidity, and analyzing the water quality of the seeps. Seep water quality was compared to reservoir water quality to estimate the gypsum solution rates in the area of each major seep. Solution cavities were located by drilling along the reservoir shoreline on the dam, then pumped full with cement grout. Site topography was monitored to determine any changes in the known solution collapse structures and to watch for any new surface collapses.

Storm-Water/Surface-Water Management

- Served as Project Advisor on the stormwater evaluation of a closed RCRA facility in west Texas utilizing automatic sampling equipment at the surface water outfall point of the old agricultural chemical storage and repackaging plant. Successfully sampled the required storm event allowing the facility to proceed with obtainment of a stormwater permit after approximately 3 months.
- Served as Project Director on the development of SPCC plans for several Texas gas plants and oil storage facilities. These included limited runoff modeling and sampling requirements following engineering inspection of the site.

Water Supply

- Served as Project Engineer for the evaluation of groundwater resources beneath two tracts containing about 18 sections of land by conducting a test well drilling, irrigation well logging and pump testing, water quality and reserve evaluation; the study resulted in the acquisition of the surface and water rights of the tracts by the City of Fort Stockton, Texas for their municipal water supply.
- Served as Project Director for a west Texas city to evaluate their groundwater municipal water resources, prepared a presentation to the City Council about their water supply needs, developed a plan to focus groundwater exploration efforts, developed a plan to explore two areas for groundwater resources, and initiation of efforts to obtain needed water supplies with the City, City Manager and City Engineer under the regulation of Texas Department of Health (now, Texas Natural Resources Conservation Commission).
- Served as Project Director for a hydrologic investigation of groundwater resources for municipal water supply to a Texas city with waters contained varying amounts of nitrates from natural and agricultural sources. Water rights ownership were limited at most water supply fields to wellbore ownership with the right of capture which limited the city's ability to own the groundwater and to provide wellhead protection. Prepared report for submittal to the Texas Water Commission by the city.
- Served as Project Advisor to the City of Fort Stockton for the evaluation of options for planned disposal of effluent from a proposed reverse osmosis plant to be installed on the city's water supply, options included deep well injection, surface application of diluted effluent, discharge into the Pecos River, and the chosen recombination of effluent with the POTW effluent.
- Served as Project Director for the development of the Water Information Management System (WIMS) by Geraghty & Miller's Midland hydrologic staff and Los Angeles programmers for the City of Lubbock, Texas, to improve their management and reporting of the groundwater well fields in conjunction with use of surface water supplies from Lake Meredith for their municipal water supplies. Developed on Dbase, WIMS is supported by the Midland hydrologic staff with a local contract programmer. The system is performing well since the initial development and startup time. Further enhancements are contemplated as additional municipalities are showing interest in obtaining the program with associated hydrologic support.
- Served as Project Advisor of the Red Bluff (irrigation) dam for the Red Bluff Water and Power Control District, Texas during routine monthly review of seepage monitoring of volumes, quality, solutioning and turbidity as a function of time and reservoir water level elevation. Prepared and presented the proposed regrouting of the dam (third program) in response to the volumes of gypsum salts dissolved from the foundation rocks, proposal included installation of installation of piezometer wells within the dam, foundation rocks and downstream toe. Prior studies by Ed Reed & Associates had demonstrated the error in trying to control the gypsum solution seepages by applying downstream covers at the toe of the dam slope. All grouting had to be done on the upstream side of the dam in order to prevent excess pore pressures within the dam. We regularly monitored the seepages along the toe of the dam by measuring the flow rates with wiers, measuring the turbidity, and analyzing the water quality of the seeps. Seep water quality was compared to reservoir water quality to estimate the gypsum solution rates in the area of each major seep. Solution cavities were located by drilling along the reservoir shoreline on the dam, then pumped full with cement grout. Site topography was monitored to determine any changes in the known solution collapse structures and to watch for any new surface collapses.

SEMINARS AND TRAINING COURSES

Santa Fe Community College: Assisted Joseph R. Mraz in field teaching (volunteer) "Geology of Northern New Mexico," summer, 2013; and taught the "Historical Geology Laboratory GEOL-112L" (1 credit hour) in tandem with Joseph R. Mraz teaching the Historical Geology GEOL-112, fall semester, 2013.

"PHDWin," short course to renew proficiency in oil and gas reserves and economic modeling for oil and gas companies and energy lending, PHDWin, Houston, Texas, May 2008.

"EOR/IOR & Future of Global Oil Supply," PennWell Publishing Webinar, April 2008.

"Houston Area Active Faults – What Makes Them Move," Dr. Carl Norman, Engineering & Environmental Gp. HGS, February 2008.

"IS-100 Introduction to Incident Command System (ICS 100)," Dr. Cortez Lawrence, FEMA Emergency Mgmt Inst., January 2008.

"Horizontal Well Remediation and Brownfields," by Darren DeFabo, Engineering & Environmental Gp. HGS, September, 2007.

"Dam Safety Workshop - Design and Operation Training," Texas Commission on Environmental Quality (TCEQ), Temple, Texas, August, 2007.

"Coastal Erosion Control Conference" Texas General Land Office (TGLO), Clear Lake, Texas, September 2005

"Environmental & Engineering Geology of Houston Ship Channel," Association of Engineering Geologists, Houston, TX, 2005

"Coastal Erosion Control Conference" Texas General Land Office, Galveston, Texas, September 2003

"Geologic Fault Seminar," Association of Engineering Geologists, Houston, Texas, 2003

"Hurricane Allison Update," Harris County Flood Control, ASCE, Houston, Texas, 2002

"Hurricane Preparedness Exercise," Galveston County, Texas, 2001

"Hurricane Preparedness Exercise," Houston County, Texas, 2000

"Readiness Committee Annual Banquet – Hurricane Preparedness," SAME-Houston, Texas, 2000 & 2001

"Bridge Design and Historic Bridge Restoration", TxDOT, Austin, Texas 2001

"S.A.M.E. '99, National Training Conference," Attendee & Volunteer with Houston Post, Houston, TX, 1999.

"Fault and Fault Seal Forum," Houston Geological Society, Houston, TX, 1999.

"Readiness Workshop," Houston Post, Society of American Military Engineers, Houston, TX, 1998.

"Communicating for Project Success," UMTRA Project Seminar, Albuquerque, NM, January, 1995.

"Exploration and Production Environmental Conference - 95," Society of Petroleum Engineers (SPE/EPA), Houston, TX, March, 1995.

"Total Quality Management," UMTRA Project Seminar, Albuquerque, NM, April, 1994.

"Office Managers Training Course, II," Geraghty & Miller, Inc., Denver, CO, May, 1993.

"Team Building," American Management Association, Denver, CO, May, 1993

"Exploration & Production Environment Conference," Society of Petro. Engrs (SPE/EPA), San Antonio, TX, March, 1993.

"RCRA Training Program," Geraghty & Miller, Inc., Midland, TX, July, 1992.

"Office Managers Training Course," Geraghty & Miller, Inc., Tampa, FL, February, 1992

"Winter Meeting," Underground Injection Practices Council, Corpus Christi, TX, January, 1992.

"Bioremediation of Petroleum Hydrocarbons Seminar", Geraghty & Miller, Austin, TX, January, 1991.

"Expert Testimony Seminar", Geraghty & Miller, Inc., Austin, TX, October, 1990.

"Project Management Training Seminar", Geraghty & Miller, Inc., Denver, CO, August 2, 1990.

"SPE Hydrocarbon Economics and Evaluation Symposium", Soc. of Petro. Engrs., Dallas, TX, March, 1983.

"Reservoir Engineering: Applied", H.K. VanPoollen & Associates, Denver, CO, May, 1981.

"1981 Deep Drilling and Production Symposium", Soc. of Petroleum Engrs., Amarillo, TX, 1981.

"Permian Basin Oil & Gas Recovery Conference", Soc. of Petroleum Engrs., Midland, TX, 1981.

"Pressure Transient Analysis in Tight Rocks", Oil & Gas Consultants Int'l, Colo. Springs, CO 1980.

"Petroleum Industry Seminar", Purvin & Gertz, Inc., Dallas, TX, 1978.

"Cased Hole Client Seminar, Schlumberger Well Services", Midland, TX, 1978.

"Applied Reservoir Engineering", Oil & Gas Consultants International, Inc., Tulsa, OK, 1977.

"Symposium on Stratigraphy & Structure of Franklin Mountains", El Paso Geol. Soc., El Paso, TX 1976.

"Well Control School", Univ. of Southwestern Louisiana, Lafayette, LA, 1975.

"Exploration from the Mountains to the Basin", Jt. Mtg, Southwestern Section of A.A.P.G. and Permian Basin Section of the S.E.P.M., El Paso, TX, 1975.

"Production Operations School", Oil & Gas Consultant Int'l, Inc., Newport Beach, CA, 1973.

"Drilling Practices School", Preston L. Moore, Norman, OK, 1972.

Exhibit 2

Movement of ground water in Permian Guadalupian aquifer systems, southeastern New Mexico and western Texas

William L. Hiss, 1980, pp. 289-294

in:

Trans Pecos Region (West Texas), Dickerson, P. W.; Hoffer, J. M.; Callender, J. F.; [eds.], New Mexico Geological Society 31st Annual Fall Field Conference Guidebook, 308 p.

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MOVEMENT OF GROUND WATER IN PERMIAN GUADALUPIAN AQUIFER SYSTEMS, SOUTHEASTERN NEW MEXICO AND WESTERN TEXAS

W. L. HISS
Conservation Division
U.S. Geological Survey
Menlo Park, California 94025

AQUIFER SYSTEMS

Permian Guadalupian-age strata can be divided into three aquifer systems. Hiss (1975a, p. 132) described and named them the Capitan, shelf, and basin aquifers (fig. 1). In most areas, they are readily distinguished by differences in lithology, geographic position, stratigraphic relationships, hydraulic characteristics, and quality of the contained water (Hiss, 1975b and c; 1976a).

Capitan Aquifer

The Capitan aquifer is a lithosome that includes the Capitan and Goat Seep Limestones and most or all of the Carlsbad facies of Meissner (1972). Shelf-margin carbonate banks or stratigraphic reefs in the upper part of the San Andres Limestone are included within the Capitan aquifer where they cannot be readily distinguished from the Goat Seep Limestone and Carlsbad facies (Silver and Todd, 1969, figs. 12 and 13).

Shelf Aquifers

Saturated strata yielding significant quantities of water from the San Andres Limestone and the Bernal and Chalk Bluff facies of Meissner (1972) constitute the shelf aquifers. The lithologic contact between the Capitan and shelf aquifers is gradational and is difficult to discern with accuracy in some areas. Observations of the geometry and lithologic relationships of the shelf-margin rocks in the field suggest that the width of the Capitan Limestone (reef) is considerably less than is shown in many geologic reports (Dunham, 1972, fig. I-1).

The present-day ground water regimen is strongly influenced by the Pecos River in New Mexico. As a result, the hydraulic conductivity of the shelf aquifers west of the Pecos River has been greatly enhanced by the leaching of soluble beds from the Chalk Bluff facies (Meissner, 1972; Motts, 1968). Locally and west of the Pecos River valley between Carlsbad and Roswell, the hydraulic conductivities of the shelf aquifers are quite large and may be similar to that of the Capitan aquifer. The hydraulic conductivity of the shelf aquifers in the Carlsbad and Roswell underground water basins is several orders of magnitude higher than that generally encountered in the shelf aquifers east of the Pecos River at Carlsbad. The water contained in the shelf aquifers is also much better in the shallow zones exploited in these basins than elsewhere in the same aquifers within the area studied. East of the Pecos River near Carlsbad the hydraulic conductivity of the shelf aquifers is generally one to two orders of magnitude less than that of the Capitan aquifer.

Basin Aquifers

Saturated strata yielding significant quantities of water from the Brushy Canyon, Cherry Canyon and Bell Canyon Formations of the Delaware Mountain Group are referred to as the basin aquifers. Although the Capitan aquifer abuts and overlies the Delaware Mountain Group along the margin of the Delaware Basin, the lithologic and hydrologic characteristics of the basin and Capitan aquifers are quite different. The average hydraulic conductivity of the basin aquifer ranges from one to two orders of magnitude less than that of the Capitan. Therefore, only a relatively small amount of water can be expected to move from the basin aquifers to the Capitan aquifer, or vice versa. The difference in quality of water contained in the two aquifers—relatively good in the Capitan, bad in the basin—is also a distinguishing characteristic (Hiss, 1975b).

CONSTRUCTION OF POTENTIOMETRIC SURFACES

Reliable pressure-head and water-level data were adjusted to freshwater heads to construct generalized potentiometric surfaces representative of two conditions in the three aquifer systems. Figure 2 is a map representing conditions in the aquifer systems prior to both development of water supplies for irrigation and discovery and production of oil and gas and associated waste water. Figure 3 is a similar map representing the shelf and basin aquifer for the period 1960 to 1969 and of the Capitan aquifer for the latter part of 1972.

A potentiometric surface represents hydraulic head in an aquifer; the general direction of ground-water movement is inferred to be normal to the illustrated head contours. Hiss (1975, p. 220-255) discusses the computation of ground-water head and the procedures followed in determining the heads used in these maps. The potentiometric maps support the inferred movement of water shown in figure 4.

MOVEMENT OF GROUND WATER

During the latter part of the Cenozoic Era, the movement of ground water through the rocks of Permian Guadalupian age in southeastern New Mexico and western Texas has been controlled or influenced by the following: (1) the regional and local tectonics; (2) the evolution of the landscape; (3) the relative transmissivities of the various aquifers; (4) the amount of recharge; and (5) the exploitation of the petroleum and ground-water resources in the last five decades (fig. 4).

Control by Regional Tectonics

The flow of ground water through the shelf, basin and Capitan aquifers after the uplift of the Guadalupe and Glass Mountains but prior to the excavation of the Pecos River valley at Carlsbad is shown diagrammatically in figure 4A. The three aquifer systems were recharged by water originating as rain or snowfall on the outcrops along the western margin of the Delaware Basin. Evidence of major surface drainage within the Trans-Pecos area of southeastern New Mexico and western Texas has not been reported.

Ground water moved generally eastward and southeastward through the shelf and basin aquifers under a gradient of probably only a few feet per mile toward natural discharge areas along

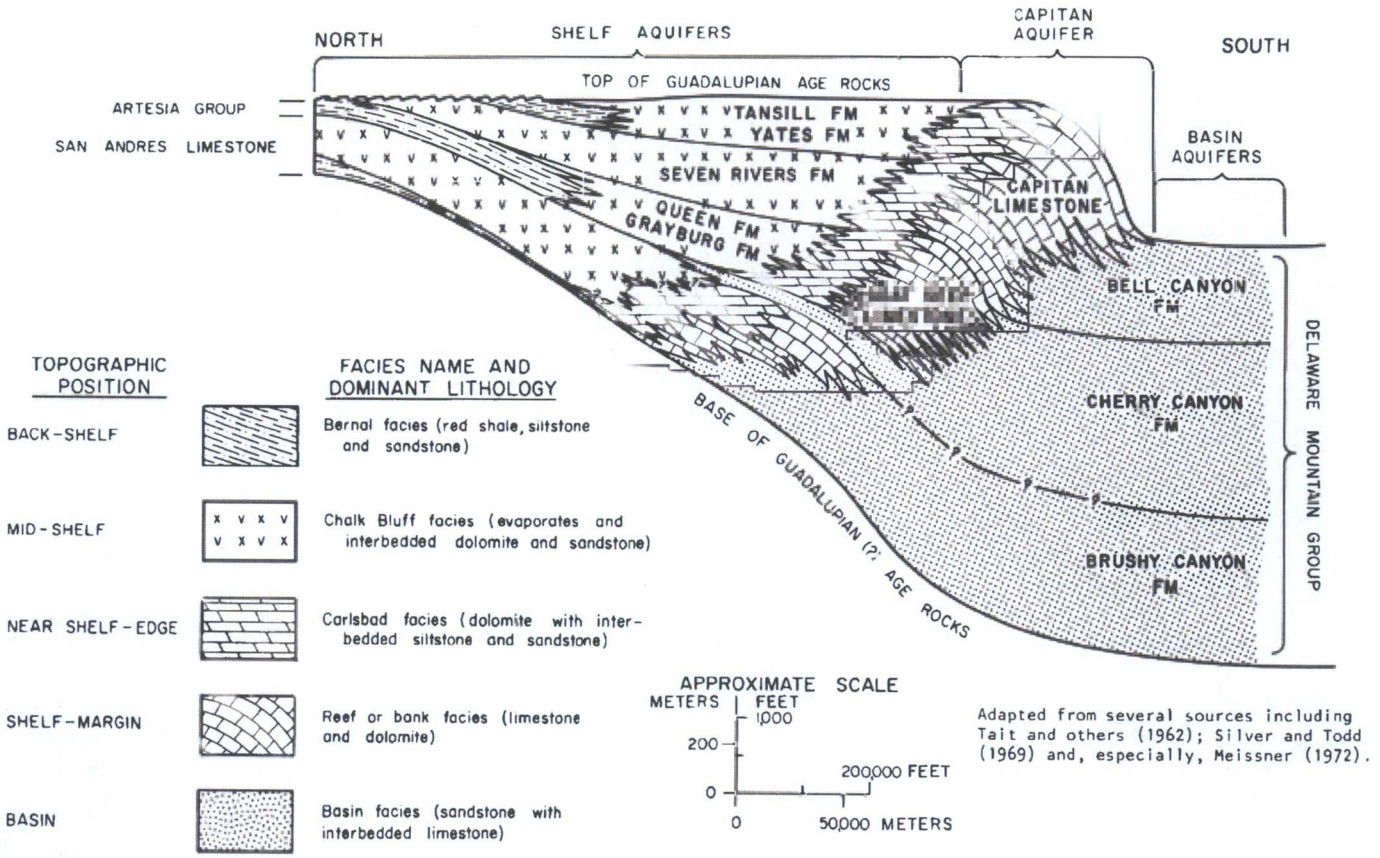

Figure 1. Highly diagrammatic north-south stratigraphic section showing the positions and relationships of the major lithofacies in the rocks of Guadalupian age, eastern New Mexico.

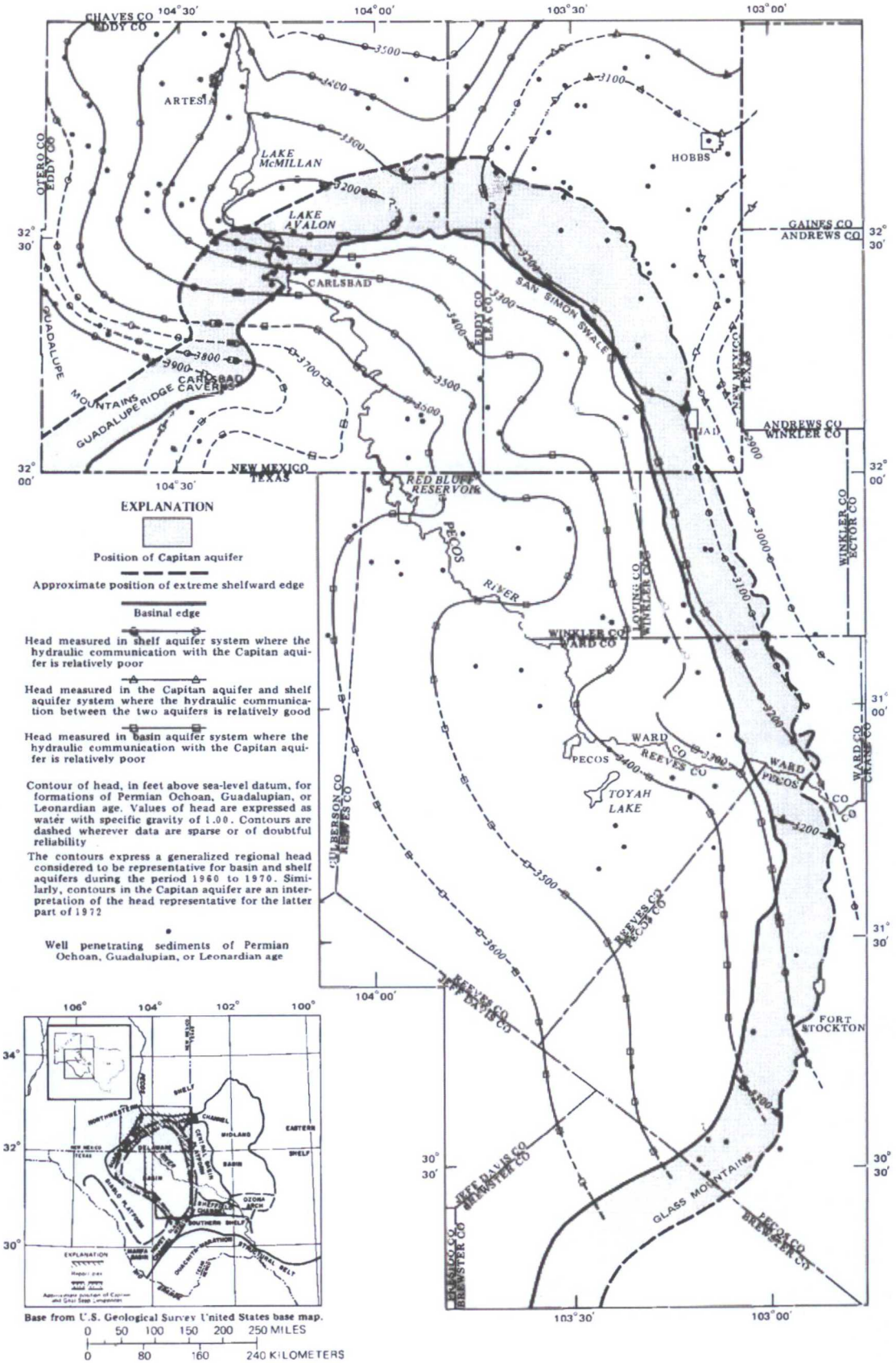

Figure 2. Pre-development potentiometric surface.

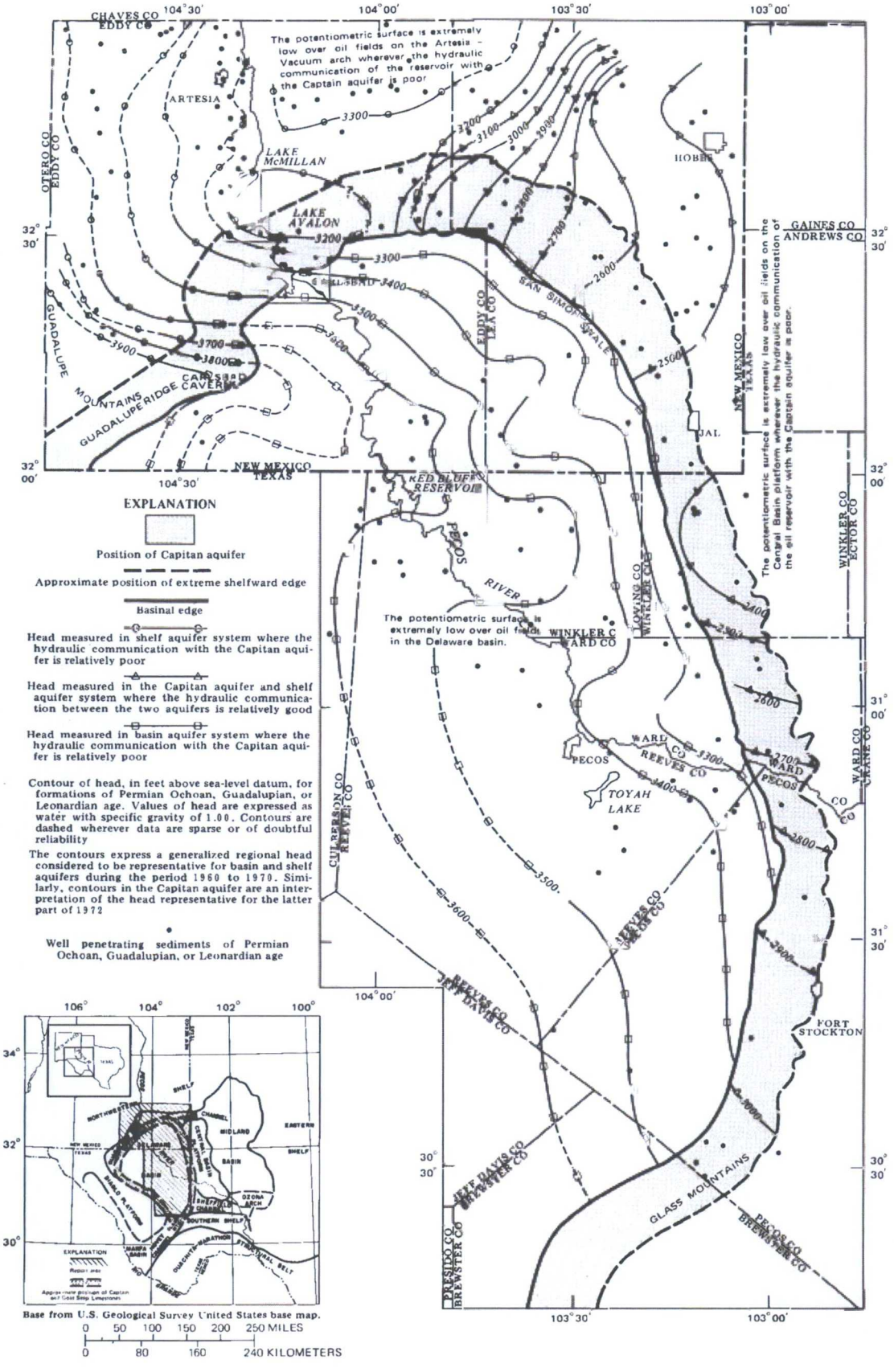

Figure 3. Post-development potentiometric surface.

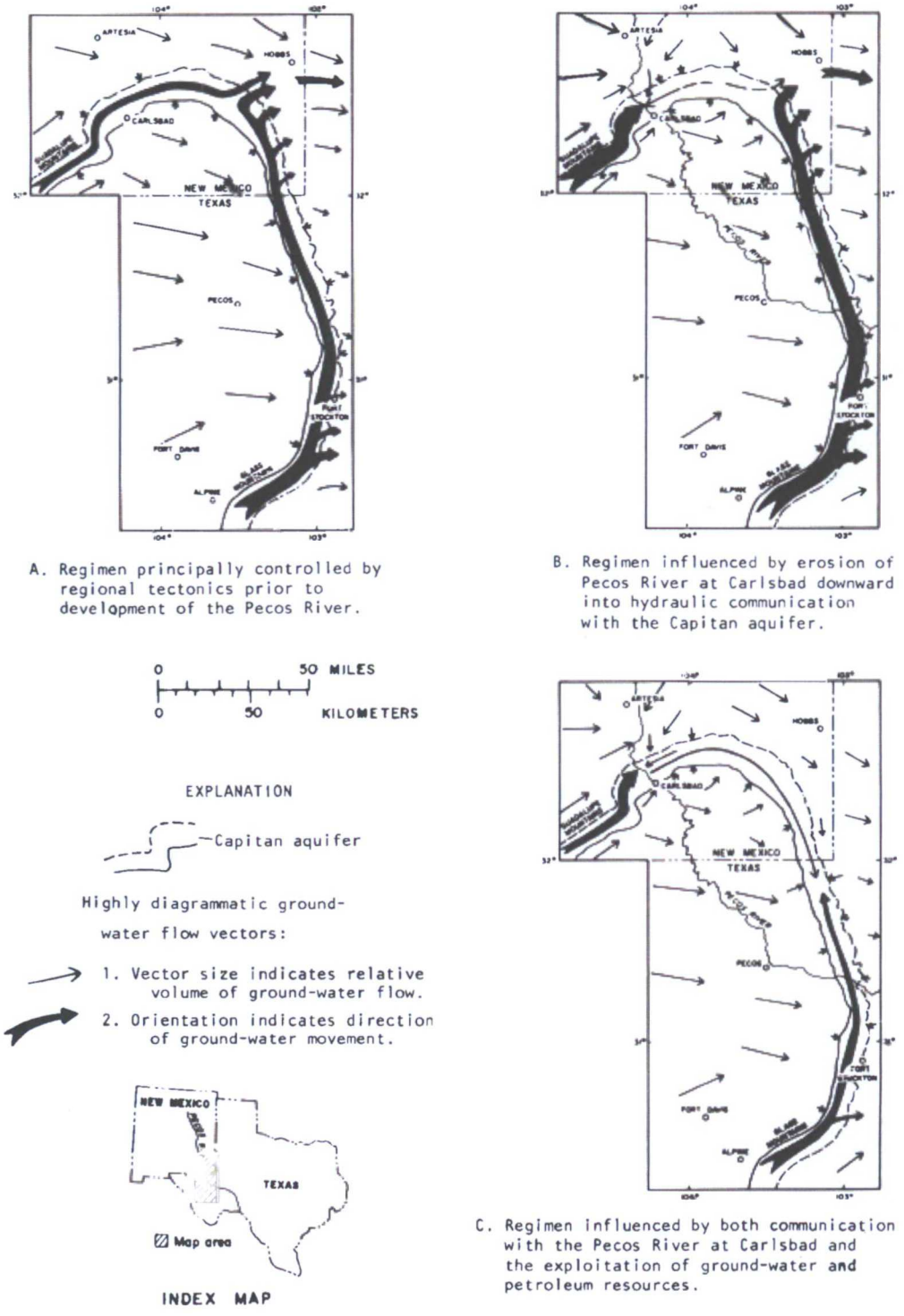

Figure 4. Diagrammatic maps depicting the evolution of ground water regimens in strata of Permian Guadalupian age in southeastern New Mexico and western Texas.

streams draining to the ancestral Gulf of Mexico. Water entering the Capitan aquifer in the Guadalupe Mountains moved slowly northeastward and then eastward along the northern margin of the Delaware Basin to a point southwest of present-day Hobbs. Here it joined and comingled with a relatively larger volume of ground water moving northward from the Glass Mountains along the eastern margin of the Delaware Basin. From this confluence, the ground water was discharged from the Capitan aquifer into the San Andres Limestone, where it then moved eastward across the Central Basin Platform and Midland Basin, eventually to discharge into streams draining to the Gulf of Mexico.

Influence of Erosion of Pecos River at Carlsbad

Some time after deposition of the Ogallala Formation, perhaps early in Pleistocene time, the headward-cutting Pecos River extended westward across the Delaware Basin to the exposed soluble Ochoan beds. It then turned northward following this natural weakness in the sedimentary rocks to pirate the streams draining to the east from the Sacramento and Guadalupe Mountains (Plummer, 1932; Bretz and Horberg, 1949b; Thornbury, 1965). As the excavation of the Pecos River valley progressed, the hydraulic communication with formations of Guadalupian age gradually increased until the Pecos River functioned as an upgradient drain. Eventually, the hydraulic gradients in the shelf, basin and Capitan aquifer were reversed along the eastern side of the Pecos River valley, and ground water that formerly flowed eastward was diverted westward as spring flow into the Pecos River (fig. 4B). Water recharged to the same aquifers in the Guadalupe Mountains began to follow the shorter path to springs in the Pecos River. Many of the solution features observed in the Guadalupian sedimentary rocks west of the Pecos River near Carlsbad probably were initiated during this period.

Movement of water eastward toward Hobbs from the Guadalupe Mountains into the Capitan aquifer was decreased by the lowering of the hydraulic head along the Pecos River. At the same time, a trough in the potentiometric surface of the shelf and basin aquifers began to develop east of Carlsbad, and water began to drain into the Capitan aquifer from the surrounding sedimentary rocks. Meanwhile, ground water continued to move northward from the Glass Mountains in the Capitan aquifer toward a point of discharge into the San Andres Limestone southwest of Hobbs. This part of the aquifer was unaffected by the cutting of the Pecos River valley across the Delaware Basin and the Central Basin Platform.

Influence of Exploitation of Ground Water and Petroleum Resources

Regionally, the movement of ground water in the shelf and basin aquifers east of the Pecos River at Carlsbad has changed very little as a result of the exploitation of ground water and petroleum during a period of approximately 50 years (fig. 4C). Locally, however, the movement of ground water within these same aquifers is controlled by the effects of the numerous producing oil fields.

The shape of the regional potentiometric surface representative of the hydraulic head in the Capitan aquifer east of the Pecos River at Carlsbad has been changed significantly in response to withdrawal of both ground water and petroleum during the past 50 years. The westward movement of saline water from the Capitan aquifer in Eddy County east of Carlsbad into the Pecos River has been greatly diminished or eliminated by a reduction in hydraulic head.

Similarly, the movement of water in the San Andres Limestone and Artesia Group eastward across the northern part of the Central Basin Platform from New Mexico into Texas has been decreased. Eventually, the movement of water probably will be reversed. Water may be diverted from the San Andres Limestone and Artesia Group westward from Texas back toward Hobbs and then into the Capitan aquifer along the western margin of the Central Basin Platform. The effects of exploitation of the ground water and petroleum resources will continue to be the dominant factor influencing the movement of ground water in the Capitan aquifer for many years into the future.

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———, 1975b, Chloride-ion concentration in ground water in Permian Guadalupian rocks, southeast New Mexico and west Texas: New Mexico Bureau of Mines and Mineral Resources, Resource Map 4.

———, 1975c, Thickness of the Permian Guadalupian Capitan aquifer, southeast New Mexico and West Texas: New Mexico Bureau of Mines and Mineral Resources, Resource Map 5.

———, 1976a, Structural position of the Capitan aquifer, southeast New Mexico and West Texas: New Mexico Bureau of Mines and Mineral Resources, Resource Map 6.

———, 1976b, Structural position of the Rustler Formation, southeast New Mexico and West Texas: New Mexico Bureau of Mines and Mineral Resources, Resource Map 7.

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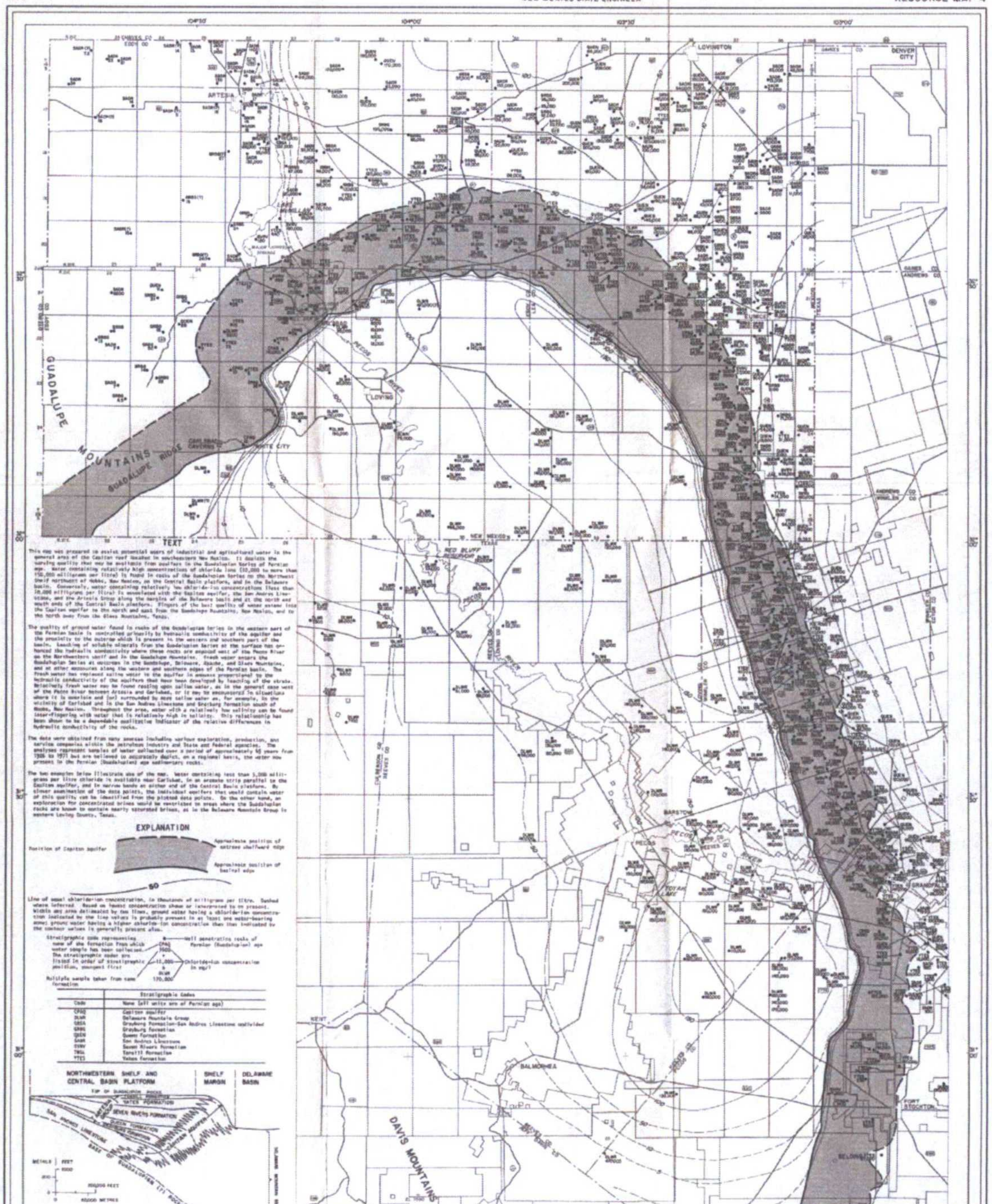
1975

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
In cooperation with
NEW MEXICO STATE ENGINEER

RESOURCE MAP 4

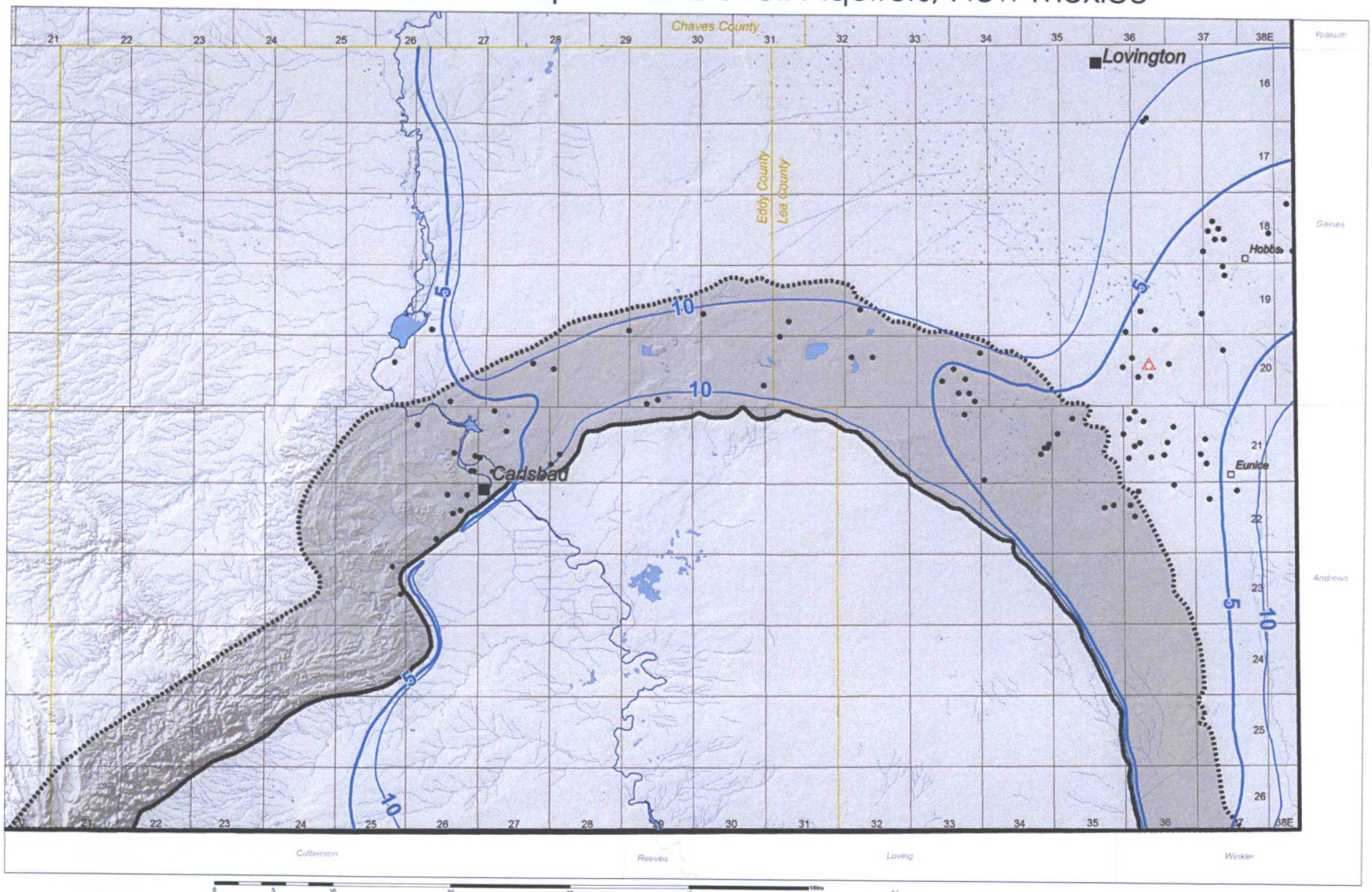


CHLORIDE-ION CONCENTRATION IN GROUND WATER IN PERMIAN GUADALUPIAN ROCKS, SOUTHEAST NEW MEXICO AND WEST TEXAS

by W. L. HISS

NM OCD Case No. 15307
NM SLO Exhibit 3

Low Chlorides in Capitan and Shelf Aquifers, New Mexico



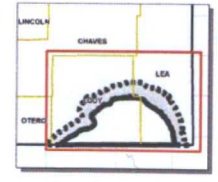
Aubrey Dunn
Commissioner of Public Lands
505-827-5760

Capitan Reef Boundaries
- Aquifer Boundary
- Leaky Boundary
- Wellbores with Chloride Data
- Proposed SWD - Oasis/Cooper 17 #1
- County Lines

Chloride Contours
- 5,000
- 10,000

Water Bodies
- LAKE/POND; RESERVOIR

Drainage
- Canal/Ditch
- Pipeline/Aqueduct
- Pipeline/Siphon
- River or Stream/Intermittent
- River or Stream/Perennial



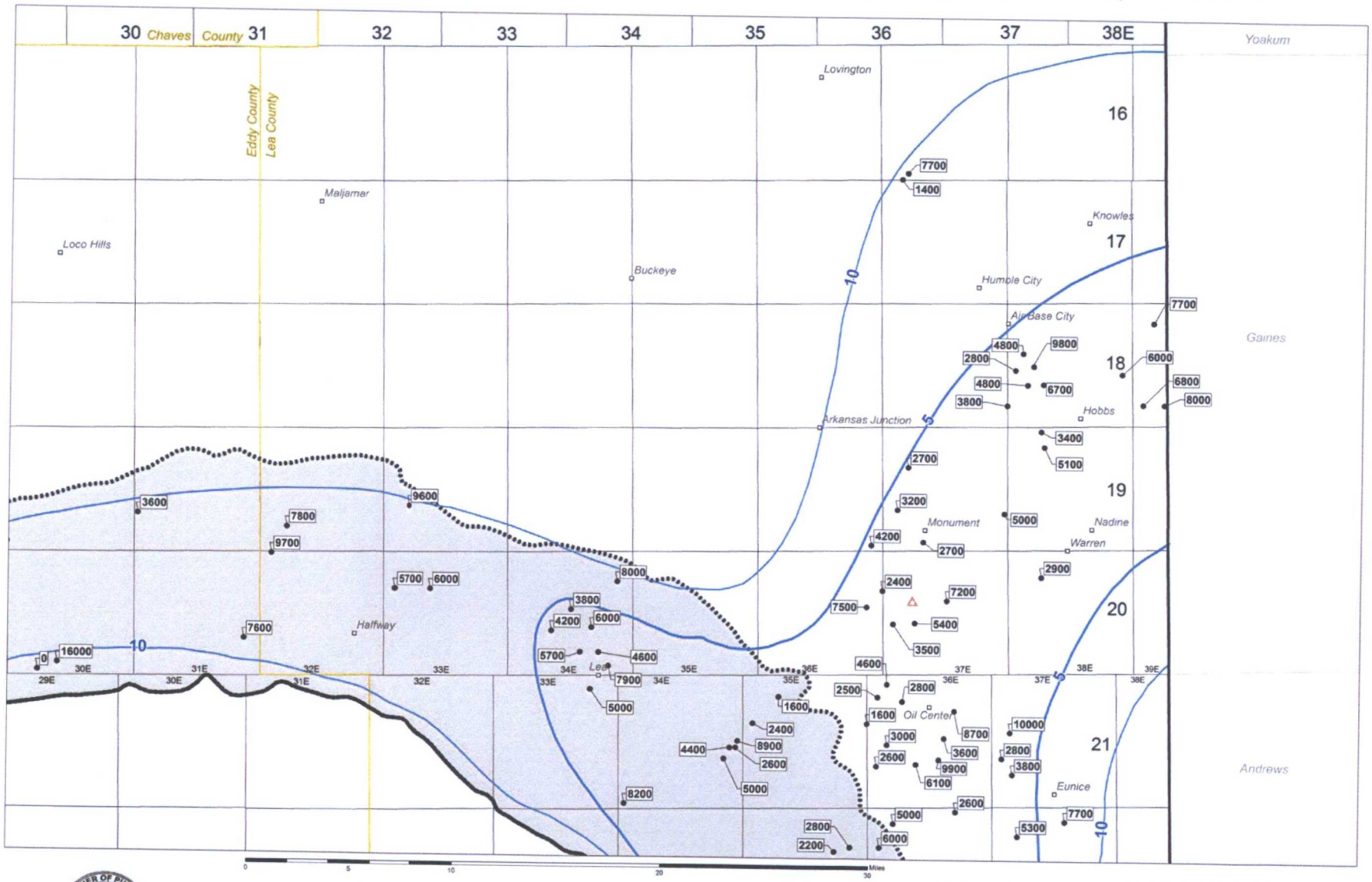
NMSLO Exhibit ____

NMOCD CASE No. 15307

Map Based on Resource Map 4, "Chloride-Ion Concentration in Ground Water in Permian Guadalupian Rocks, Southeast New Mexico and West Texas", New Mexico Bureau of Mines and Mineral Resources, W.L. Hiss, 1975

Pg 2.

Flushed Zone - Capitan and Shelf Aquifers, Area of Oasis/Cooper 17 #1 Proposed SWD



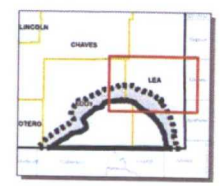
Aubrey Dunn
Commissioner of Public Lands
505-827-5760

Capitan Reef Boundaries

- Aquifer Boundary
- Leaky Boundary
- Wellbores with Chloride Data
- Proposed SWD - Oasis/Cooper 17 #1

Chloride Contours

- 5,000
- 10,000
- County Lines
- Cities and Towns



NMSLO Exhibit ____

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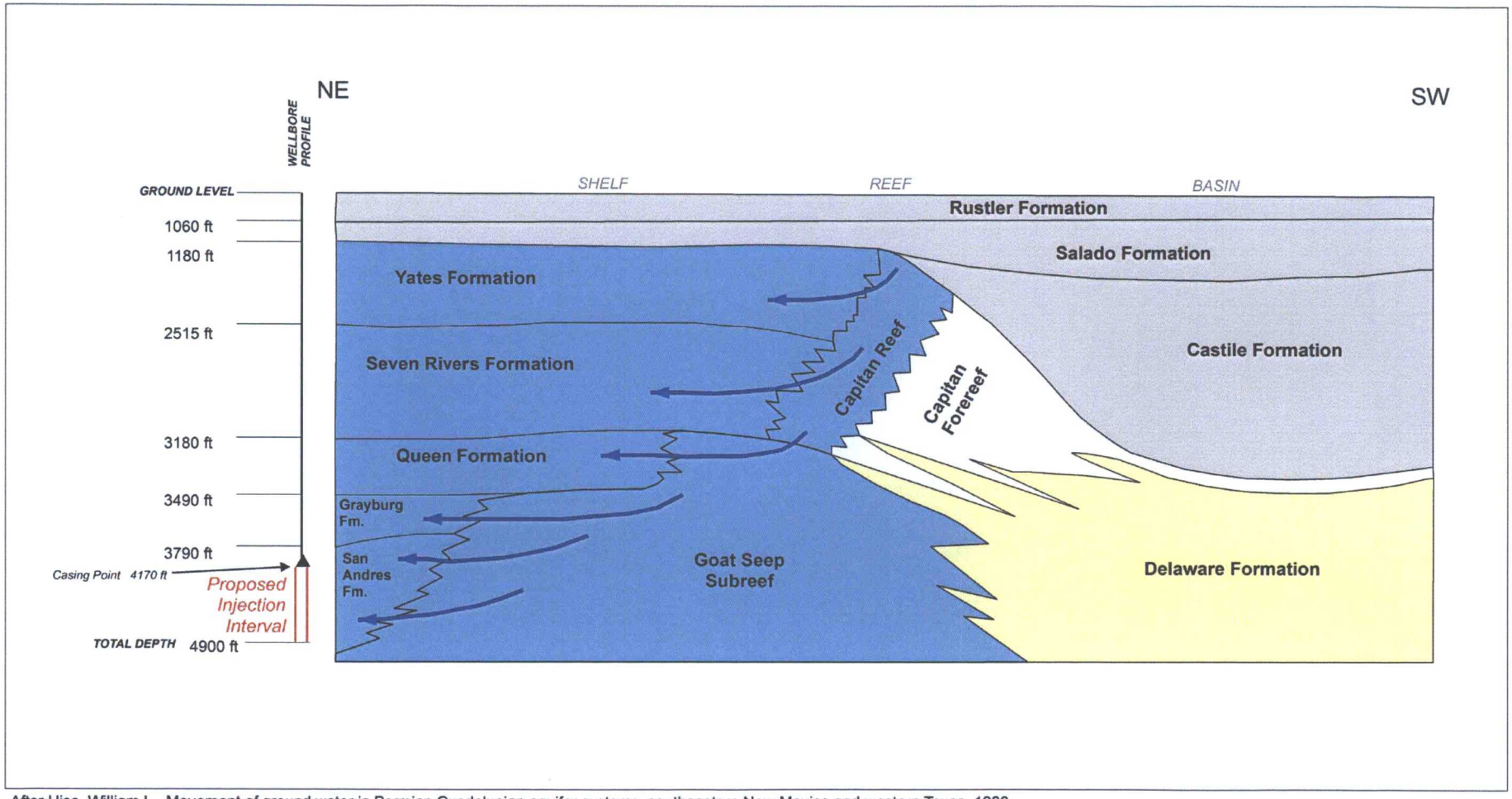
Map Based on Resource Map 4, "Chloride-Ion Concentration in Ground Water in Permian Guadalupian Rocks, Southeast New Mexico and West Texas", New Mexico Bureau of Mines and Mineral Resources, W.L. Hiss, 1975

Land Office Geographic Information Center

pg. 3.



After Hiss, William L., Movement of ground water in Permian Guadalupian aquifer systems, southeastern New Mexico and western Texas, 1980, pp. 289-294 of New Mexico Geological Society Fall Field Conference Guidebook - 31, Trans Pecos Region (Southeastern New Mexico and West Texas)

NMOCD Case No. 15307

NM SLO Exhibit ____

PS 4

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BDANOFF@MICHAELDANOFF.COM
RDANOFF@MICHAELDANOFF.COM

OUR FILE NO.

4661-A26

July 29, 2015

VIA EMAIL ONLY
Ernest L. Padilla, Esq.
PO Box 2523
Santa Fe, NM 87504-2523

VIA EMAIL ONLY
Mr. Phillip Goetze
1220 South St. Francis Drive
Santa Fe, NM 87505

VIA EMAIL ONLY
Mr. Michael McMillan
1220 South St. Francis Drive
Santa Fe, NM 87505

VIA EMAIL ONLY
Mr. William V. Jones
1220 South St. Francis Drive
Santa Fe, NM 87505

VIA EMAIL ONLY
Mr. Florene Davidson
1220 South St. Francis Drive
Santa Fe, NM 87505

VIA EMAIL ONLY
Mr. Katherine Moss, Esq.
PO Box 1148
Santa Fe, NM 87504-1148

Re: Protest of Drilling of New Salt Water Disposal; Cooper 17 Well #1

Dear Ladies and Gentlemen:

I am writing on behalf of my client Randy Briggs in regard to the above captioned matter. I previously sent a letter on February 16, 2015 and in anticipation of the hearing on August 6, 2015, I am providing a revised copy of the letter. My client is providing this notice of protest in response to Oasis Water Solutions, LLC's public notice of application to the NMOCD to drill and complete a salt water disposal well (the Cooper 17 well #1) for the following reasons;

1. You should be advised that notice of intent was not published in the Hobbs NM newspaper, which is the appropriate newspaper for where subject well is to be located.

2. A form was submitted by Horizon Oil and Gas reports the original drilling, casing, and cementing operations. It indicates 13 3/8 inch surface casing set at 250 feet, cemented to surface, 8 5/8 inch casing set at 1215 feet, also with cemented circulated to surface. Please see the Oil Conservation Division report dated July 9, 1987 attached hereto as Exhibit 1.

OCD Case# 15307
Oasis Water Solutions, LLC
August 6, 2015
Ex#

3. A form submitted by Horizon Oil and Gas reports five and a half inch (5 1/2") casing ran to 6539 feet, and cemented with 820 sacks cement. Of important note is that this cement job was evidently done in one operation without the use of a DV tool. There is no report of circulation, no report of waiting on cement after first stage cementing, and no verification of cement top by bond log or temperature survey. The only TOC notes is an estimation by calculation. Please see the Oil Conservation Division report dated August 13, 1987 attached hereto as Exhibit 2.

4. Attached hereto as Exhibit 3 is a portion of the original drilling report in which formation tops were noted.

5. A form submitted by Smith & Marr, Inc. details the steps taken to convert this well from a producing well to a salt water disposal well. The top and bottom perforations permitted for SWD service are in "the lower San Andres". The well was put into SWD service in February 2006. Please see Oil Conservation Division Report dated February 20, 2006 attached hereto as Exhibit 4.

6. On or about July 1, 2014 subsequent to the well being transferred to J. Cooper enterprises, notice was given to the NMOCD that a pressurized water flow had been discovered at surface (in the 5 1/2" x 8 5/8" annulus), the well had been shut in, and disposal activities were ceased. Please see Oil Conservation Division Reported dated July 1, 2014 attached hereto as Exhibit 5.

7. A form dated October 1, 2014 was submitted to NMOCD on October 1, 2014 reporting the remedial work that had been done to the well during the months of July 2014, and August 2014. Please see Oil Conservation Division Reported dated October 1, 2014 attached hereto as Exhibit 6.

8. On or about July 2014, work was done on the well to attempt down hole repairs. On July 7, 2014, twelve (12) joints of three and a half inch (3 1/2") injection tubing were being pulled and laid down. Three (3) of those joints had holes due to corrosion. On July 8, 2014 thirty-five (35) joints were pulled and laid down that had holes, and one hundred seven (107) joints were pulled and laid down that did not have holes. On July 11, 2014 a retrievable bridge plug was ran to 4,253 feet and set in the five and a half inch (5 1/2") casing. A packer was then set immediately above the bridge plug, and there was an unsuccessful attempt to pressure test the bridge plug. The bridge plug was subsequently moved to 4,237 feet and reset. Again a successful pressure test could not be achieved on the bridge plug. During the day, the plug was moved a total of nine (9) times and retested, all testing events resulting in failed pressure tests. The bridge plug was then ran back down to 4,188 feet and reset in the five and a half (5 ½) casing. Fourteen (14) subsequent pressure tests with the packer set at depths ranging from 1,159 feet to 3,517 feet resulted in

failed tests. On July 14, 2014 the compression type packer was pulled and a tension type packer was ran. Good casing was subsequently proven by pressure testing only ABOVE the packer when set at 1,159 feet. Please see the daily log attached hereto as Exhibit 7.

9. There is no record of the bridge plug that had been set at 4,188 feet ever having been pulled. However, on this day a cast iron bridge plug was ran and set on wire line at 4,300 feet in the five and a half (5 ½) casing. Also on this date a gamma ray log was pulled "to 3,200 feet". It is not reported from what depth the log was pulled. If the log was run to discover top of cement no TOC was subsequently reported.

10. On July 18, 2014 it was reported that the casing was squeezed with twenty (20) BBLS water glass, and seven hundred (700) sacks cement. The method used to squeeze was not reported.

11. On July 21, 2014 a drill bit was run, and cement was tagged at 1325 feet. However, the hole could not be circulated for drilling.

12. On July 22, 2014 the well was squeezed with twenty (20) BBLS water glass and 200 sacks cement. This was accomplished by displacement down casing behind a wiper plug.

13. On August 8, 2014 a cement retainer was run to 1105 feet and set.

14. On August 19, 2014 one hundred fifty (150) sacks cement were pumped through the retainer at 1105 feet. No pump pressures were reported.

15. Exhibit 8 is a graphic of assumed current well conditions.

Because of the above reported activities and indicated well conditions at the T. Anderson well # 1, my client objects to the permitting of the Cooper 17 well #1 for disposal use. During the course of all work done to the Anderson #1, no successful casing test was ever accomplished between the packer and bridge plug. The only successful pressure was above the packer and only identified the upper extent of bag casing, not the lower extent. Also, the CIPB currently set at 4300' was not tested, and there is no verification whatsoever that the plug is properly set or is holding properly. There is also no report of the CIBP being capped with the cement, as is common practice. Because the casing is obviously has breeches to the salt, and the salt is well known in this area to be wet, there is no reason to believe that any squeeze resulted in cement staying behind the five and a half inch (5 1/2") production string as would be required to prevent brine flow from the salt. It would also be reasonable to expect that flow could be passing the untested CIBP currently set above the San Andres, potentially resulting in flow to higher productions zones. It is logical that the radioactive log that was ran was to identify TOC; however, no TOC was reported. Considering that original reports suggest this well was cemented from

6,539 feet in one stage without the use of a multi stage cementing tool, and considering the great extent of five and a half inch (5 1/2") casing that would not test, it would be very reasonable to predict a very poor TOC. Further, this well is located in an area of high pressure secondary recovery efforts (water flooding), which makes casing integrity especially important. Allowing further injection in this area might only increase the likelihood of cross flow and subsequent damage to valuable producing formations in the area, as well as potential damage to the casings in surrounding wells. For the aforementioned reasons, my client provides this notice in protest, and believes that the Cooper 17 well #1 should not be permitted.

Should you need any further information or supporting documentation, please do not hesitate to contact my office. I look forward to hearing from you with regard to this matter.

Very truly yours,

MICHAEL DANOFF & ASSOCIATES, P.C.

Michael L. Danoff
MLD/aal
Enclosures
cc: Dr. Randy Briggs

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease: State [ ] Fee [X]

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL [X] GAS WELL [ ] OTHER-

7. Unit Agreement Name

2. Name of Operator
Horizon Oil & Gas Co.

8. Farm or Lease Name
Anderson

3. Address of Operator
P.O. Box 7 Spearman, Texas 79081

9. Well No.
1

4. Location of Well
UNIT LETTER O, 1980 FEET FROM THE East LINE AND 330 FEET FROM THE South LINE, SECTION 8 TOWNSHIP 20S RANGE 37E NMPM.

10. Field and Pool, or Wildcat
Monument

15. Elevation (Show whether DF, RT, GR, etc.)
GR. 3538'

12. County
Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [X]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [X]	
OTHER [ ]		OTHER [ ]	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

A. Spudded well at 9:30 P.M., 6-30-87.

B. Ran 13 3/8", 48# Surface Casing, set at 250'. Cemented with 260 sx. of class "C" containing 2% CaCl. Cement circulated to surface. Plug down at 9 A.M., 7-1-87. Waited on cement 20 hours. Tested Casing on 7-2-87, to 600#. Held okay.

C. Ran 8 5/8", 24# Protection Casing. Set at 1215'. Cemented with 270 sx. Halliburton Lite cement and 200 sx. class "C" containing 2% CaCl. Cement circulated to surface. Plug down at 2:15 P.M., 7-3-87. Waited on cement 20 hours. Tested Casing on 7-4-87 to 1,000#. Held okay.

EXHIBIT 1

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Curtis F. Covington TITLE Engineer DATE 6-7-87

APPROVED BY ORIGINAL SIGNED BY JERRY SEXTON DISTRICT I SUPERVISOR TITLE DATE JUL 9 1987

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease: State ☐ Fee ☒
5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☒ GAS WELL ☐ OTHER:
7. Unit Agreement Name
2. Name of Operator: Horizon Oil & Gas Co.
8. Farm or Lease Name: Anderson
3. Address of Operator: P.O. Box 7 Spearman, Texas 79081
9. Well No.: #1
4. Location of Well: UNIT LETTER O, 1980 FEET FROM THE East LINE AND 330 FEET FROM THE South LINE, SECTION 8, TOWNSHIP 20S, RANGE 37E, NMPM.
10. Field and Pool, or Wildcat: Monument
15. Elevation (Show whether DF, RT, GR, etc.): GR 3538
12. County: Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☒	
OTHER ☐		OTHER ☐	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

A. Ran 5 1/2" - 15.5# casing. Set at 6539'. Cemented with 420 sx. Halliburton Lite cement containing 5#/sk. Gilsonite and 1/4#/sk Flocele, followed by 400 sx class "H" containing 5#/sk Gilsonite and 5#/sk KCL and 6/10 of 1% Halied Nine. Plug down at 3:50 P.M., 7-31-87. Pressured casing to 1800#. Held okay.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Curtis F. Covington TITLE Engineer DATE 8-6-87

Curtis F. Covington

APPROVED BY ORIGINAL SIGNED BY JERRY SEXTON DISTRICT I SUPERVISOR TITLE DATE AUG 13 1987

CONDITIONS OF APPROVAL, IF ANY:

EXHIBIT 2

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico		Northwestern New Mexico	
T. Anhy 1060	T. Canyon	T. Ojo Alamo	T. Penn. "B"
T. Salt 1220	T. Strawn	T. Kirtland-Fruitland	T. Penn. "C"
B. Salt 2295	T. Atoka	T. Pictured Cliffs	T. Penn. "D"
T. Yates 2432	T. Miss	T. Cliff House	T. Leadville
T. 7 Rivers 2742	T. Devonian	T. Menefee	T. Madison
T. Queen 3171	T. Silurian	T. Point Lookout	T. Elbert
T. Grayburg 3470	T. Montoya	T. Mancos	T. McCracken
T. San Andres 3838	T. Simpson	T. Gallup	T. Ignacio Qtzte
T. Glorieta 5105	T. McKee	Base Greenhorn	T. Granite
T. Paddock 5170	T. Ellenburger	T. Dakota	T.
T. Blinebry 5590'	T. Gr. Wash	T. Morrison	T.
T. Tubb 6305	T. Granite	T. Todilto	T.
T. Drinkard	T. Delaware Sand	T. Entrada	T.
T. Abo	T. Bone Springs	T. Wingate	T.
T. Wolfcamp	T.	T. Chinle	T.
T. Penn.	T.	T. Permian	T.
T. Cisco (Bough C)	T.	T. Penn. "A"	T.

OIL OR GAS SANDS OR ZONES

No. 1, from 5110 to 5230 | No. 4, from ______ to ______

No. 2, from 5590 to 5700 | No. 5, from ______ to ______

No. 3, from 6350 to 6470 | No. 6, from ______ to ______

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from Unknown to ______ feet. ______

No. 2, from ______ to ______ feet. ______

No. 3, from ______ to ______ feet. ______

No. 4, from ______ to ______ feet. ______

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
			NOTE: Our rights did not start until Paddock Zone. Geologist on location at 5100'.				
5100	5230	130	Limestone and Shale				
5230	5600	470	Limestone				
5600	5680	80	Limestone and Shale				
5680	5780	100	Limestone, Shale & Sandstone				
5780	6330	550	Limestone and Shale				
6330	6800	470	Limestone, Shale & Sandstone				

EXHIBIT 3

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised March 25, 1999

WELL API NO. 30-025-29962
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Anderson

1. Type of Well: Oil Well ☐ Gas Well ☐ Other SWD
2. Name of Operator Smith & Marrs Inc.
8. Well No. 1
3. Address of Operator 601 W. Illinois Hobbs NM 88240
9. Pool name or Wildcat SWD Abo San Andres-Glorieta (96127)
4. Well Location
Unit Letter O : 330 feet from the S line and 1980 feet from the E line
Section 8 Township 20 Range 37 NMPM E County Lea
10. Elevation (Show whether DR, RKB, RT, GR, etc.)

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPLETION	☐	CASING TEST AND CEMENT JOB	☐		
OTHER:	☐			OTHER: Convert to SWD & Test			☒

12. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

OCD R-12375

Received Hobbs OCD FEB 2006

Notify OCD - Gary Wink, work began 1/25/06
1) Rig up - remove production equipment
2) Set CIBP with cement at 5215' / circulate hole tst csg, OK
3) Trip in hole with Jarrells wire line and perforate at several plans 4350 to 4375, 4445 to 4595, 4710 to 4725 and 4760 to 4800
4) Run in hole with 3½" plastic coated tubing and tension Pkr set at 4271'.
5) Load backside with Packer Fluid and pressure to 500# - Held good.
6) Flush tubing with acid water, well on a vacuum.
7) Pressure tst casing to 326# for 1½ hrs (Chart Attached) Put on Injection

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Eddie W Seay TITLE Agent DATE 2/8/06

Type or print name Eddie W Seay Telephone No. 505-392-2236
(This space for State use)

APPPROVED BY Gary W. Wink TITLE FIELD REPRESENTATIVE II/STAFF MANAGER DATE FEB 20 2006
Conditions of approval, if any:

EXHIBIT 4

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO.
30-025-29962
5. Indicate Type of Lease
STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
NA

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
T. Anderson - SWD

1. Type of Well: Oil Well ☐ Gas Well ☒ Other SWD

8. Well Number 1

2. Name of Operator
J. Cooper Enterprises

9. OGRID Number 244835

3. Address of Operator
Box 55 Monument, NM 88265

10. Pool name or Wildcat Monument SA

4. Well Location
Unit Letter O : 330 feet from the S line and 1980 feet from the E line
Section 8 Township 20 Range 37 NMPM County Lea

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☒	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

JUL 01 2014
RECEIVED

1. Discovered pressure on backside of SWD, (csg) 6/28/14 Saturday.
2. Immediately shut well in.
3. Notified Silvia Dickey 6/30/14.
4. Have call in for rig to perform remedial work and repair.
5. Will notify OCD when we rig up.
6. Will evaluate as to problem and keep OCD informed, file additional C-103 after work is completed, so OCD can witness test.

The Oil Conservation Division MUST BE NOTIFIED 24 Hours Prior to the beginning of operations

Condition of Approval: notify OCD Hobbs office 24 hours prior of running MIT Test & Chart

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Eddie Scay TITLE Agent DATE 6/30/14

Type or print name Eddie Scay E-mail address: scay04@leaco.net PHONE: 575-390-2454

For State Use Only

APPROVED BY: Maley Brown TITLE Dist. Supervisor DATE 7/1/2014

Conditions of Approval (if any):

JUL 0 1 2014

EXHIBIT 5

Submit 1 Copy To Appropriate District Office

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

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO.
30-025-20962
5. Indicate Type of Lease
STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
NA

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
T. Anderson - SWD
8. Well Number 2
9. OGRID Number 211835
10. Pool name or Wildcat Monument SA

1. Type of Well: Oil Well ☐ Gas Well ☒ Other SWD
2. Name of Operator
J. Cooper Enterprises
3. Address of Operator
Box 55 Monument, NM 88265
4. Well Location
Unit Letter O 330 feet from the S line and 1980 feet from the E line
Section 8 Township 20 Range 37 NMPM Lea County
11. Elevation (Show whether DR, RKB, RT, GR, etc.)

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☒	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.)

Pressure developed on backside of SWD, well was shut in and OCD notified.

Work began to repair on 9-7-14, a complete description of work attached, with schematic.

HOBBS OCD
OCT 01 2014
RECEIVED

**Would like to keep well SI pending further work, or P & A.

SUBMIT - C103 INTENT FOR Additional Work OR P/A.

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Eddie W. Seay TITLE Agent DATE 9/29/2014

Type or print name Eddie W. Seay E-mail address: seay04@leaco.net PHONE: 575-392-2236

For State Use Only

APPROVED BY: Maley Brown TITLE Dist. Supervisor DATE 10/1/2014

Conditions of Approval (if any):

OCT 01 2014

EXHIBIT 6

J Cooper Enterprises

7-7-2014

Miru. Tyler Pulling unit nipple down well head and nipple up blow out preventer. OP release paker in 4 hours lay down 12 joints and had holes in 3 of those joints. Shut down over night

J Cooper Enterprises

7-8-2014

Continue trip out of the hole laying down 3 1/2" tubing laid down 35 joints with holes and 107 of good joints. Shut down over night

J Cooper Enterprises

7-9-2014

Unload and rack up joints of 3 1/8" EUE 8rd 9.3# J-55 tubing Pick up arrow set packer trip in hole. Picking up 3 ½" tubing to 4255' and set packer. Unable to load casing with 100 barrels packer fluid. Shut down over night

J Cooper Enterprises

7-10-2014

Stood by wireline truck from 9:00 am until 12:00 Pick up 2.313 profile plug. TIH and set plug in packer unable to lock plug in packer in 2 runs. Relief arrow set packer trip out of hold with 3 ½" tubing and packer. SDON.

J Cooper Enterprises

7-11-2014

Continue trip in hole with tubing to 4253 and set retrievable breech plug pull up hole and set packer at 4220'. Set packer test RBP to 1000# and lost 120# in 7 min. Move plug to 4237' and set RBP and packer at 4220' and test to 800# and lost 60# in 3 min. drop s.v. and test tubing to 1000# (ok) move RBP to 4220' and set packer at 4183' and test to 1000# and lost 300# in 45 min. Move RBP to 4205' and packer at 4183' and test to 940# and lost 100# in 4 min. Move RBP to 4188' and packer to 4150' and test to 950# and lost 100# in 5 min. Move RBP to 4156' and packer at 4118' and test to 950# and lost 100# in 4min. Move RBP to 4091' and packer to 4052' and test to 900# and lost 50# in 3 min. Move RBP to 4027' and packer to 3988' test to 950# and lost 100# in 5 min. Move RBP to 3707' and packer to 3668' and test to 1000# and lost 130# in 4 min. Run in hole to 4188 and set RBP pull up hole to 3517' and test to 940# and lost 120# in 5 min. Pull up hole with packer to 2549' and set packer and test to 900# lost

EXHIBIT

1100# in 5 min. PUH with packer to 1582' and test to 1000# lost 1000# in 1 min. RIH with tubing to 1870' and on vacc. At .2 bpm. Run in hole to 2003' and on vacc at .5 bpm. Run in hole to BMT 2132' and set packer test to 940# and lost 100# in 4 min. Pull up hole to 2068' and set packer and on vacc .2 bpm. RIH and set packer at BTM 2099' and set packer test to 920# lost 90# in 7 min. Pull up hole to 2068' and set packer load casing and test still had leak.

J Cooper Enterprises

7-14-2014

Andersen #1 SWD

Pull up hole to 1745 set packer and unable to load casing. Pull up hole to 1419 set packer unable to load casing. Trip out of hole with tubing and compression packer. Rig up tension packer. Trip in hole to 1419 and set packer unable to load casing. Release packer PUH to 1096' set packer test casing to 500# and lost 50# in 5 min. Release packer RIH to 1225' and set packer. Test casing to 500# lost 500# in 5 min. PUH to 1159' set packer test casing to 550# for 15 min ok. Isolate casing leak between (1159'-2099') 940.

J Cooper Enterprises

7-15-2014

Rig up cased ho e Wireline truck Gamma gun and 4 3/4" CIBP. TIH and pull correlation log to 3200' and set CIBP at 4400' TOH rig down wire line. TIH with 3.5" IPC tubing. TOH laying down 3.5" tubing. Shut down over night

J Cooper Enterprises

7-16-2014

Shut down.

J Cooper Enterprises

7-17-2014

Set frac tank and haul tank lay l ne from 8 5/8" to tank

J Cooper Enterprises

7 18 2014

RU Basic Energy Services and sqz 5 ½" casing with 20 bbl liquid glass and 200 sks. Thixotropic cmt mixed at 14.8# ppg and displace with 23.8 bbl FW. CWI and shut down over night

J Cooper Enterprises

7 21 2014

Pick up 4 ¾" bit and bit sub. TIH with tubing to 1325' and tag cmt. RUP reverse unit and unable to circulate with 100 BFW. TOH with tubing and bit CWI and shut down over night. Waiting on cmt.

J Cooper Enterprises

7 22 2014

Stood by for Basic until 11:00 am. Rig up and pump 20 bbl liquid glass and 200 sks thixotropic mixed at 13.2 ppg and 300 sks. CLS "C" neat cmt with 2% cc. Mixed at 14.8 ppg and 12 bbl FW behind wiper plug. All down 5 ½" casing CWI and SDON

J Cooper Enterprises

7-23-2014

Nipple down plug head and nipple up BOP. Pick up 4 ¾" bit. TIH with tubing to 1752' and tag top of cement. TOH with tubing and bit. Nipple down BOP and nipple up 5 ½" plug head. CWI and SDON

J Cooper Enterprises

7 24 2014

Rig up Basic Energy Services and pump 20 bbl liquid glass and 200 sks Thixotropic mixed at 13.7 ppg and 200 sks. CLS "C" neat mixed at 14.8 ppg and 100 sks. CLS "C" neat mixed at 14.8 ppg and 2% CCL and displaced with 8 BFW behind wiper plug. CWI and SDON

J Cooper Enterprises:

7-25 2014

Nipple down plug head and nipple up BOP. Pick up 4 ¾" bit. TIH with tubing to 1251' and tag top of cmt. Had 1' of fill. Rig up reverse unit. Broke circ out tubing at 3.9 bpm with ½ BPM returns. TOH with tubing and bit. CWI and SDON

J Cooper Enterprises

7-26-2014

Rig Up Basic Energy Services. Pump 20 bbl liquid glass and 200 sks Thixotropic mixed at 13.2 ppg and 200 sks Cls "C" neat mixed at 14.8 ppg and 2% CCL Displaced with 8 BFW behind wiper plug. CWI and SDON

J Cooper Enterprises

7-28-2014

Nipple down plug head and nipple up BOP. Pull up 4 ¾" bit. TIH with tubing to 1245' and tag cmt top. Rig up reverse unit and load hole with 30 BFW. Was losing 1 ½ BPM while cir. Shut tubing valve and pump into leak at 2 bpm at 300# TOH with tubing and bit. Nipple down BOP and nipple up 5 ½" plug head. CWI and SDON

J Cooper Enterprises

7-29-2014

Rig up Basic Energy Services. Pump 20 bbl liquid glass and 200 sks Cls "C" with 6% gel and 5% salt and 3 PPS kol-seal mixed at 12.5ppg and 400 sks Cls "C" neat mixed at 14.8 ppg and 100 sks cls "C" with 2% CCL mixed at 14.8 ppg 0" to 290" to 0" while pumping cmt. Displaced with 6 BFW. Rig down Basic CWI and SDON

J Cooper Enterprises

7-30-2014

Nipple down plug head and nipple up BOP, Pull up 4 ¾" bit TIH with tubing and tag top of cmt at 1225', Rig up reverse unit and load hole with 18 BW cir. Hole at 2 ½" bpm with 1 ¼" BBL. Returns shut in for 30 min and took ½ bbl to regain cir shut in 15 min and took ½ bbl to regain cir. TOH with tubing and bit. TIH with open ended tubing to 1224'. CWI and SDON

J Cooper Enterprises

7-31-2014

Rig up Basic Energy Services. Spot 75 SKS cls "C" neat mixed with 2% ccl at 1224' TOH with tubing. Load casing with 3 BFW. TIH wait 4 hr TIH with tubing and tag cmt at 455' TOH. SDON

J Cooper Enterprises

8-1-2014

Pull up 4 ¾" bit and 6- 3 ½" drill collars. TIH with tubing to rig up reverse unit. D.O. good cmt from 455' to 673' (218') clr clean. CWI and SDON

J Cooper Enterprises

8-4-2014

Continue D.O. good cmt from 73' to 897' (224') and clr clean. CWI and SDON

J Cooper Enterprises

8-5-2014

TOH with tubing and bit pull up 4 more 3 ½" drill collars (total 10) TIH with bit and tubing to 897' Rig up reverse unit. Continue D.O. good cmt to 1108' and clr clean. Test casing to 500# for 10 min (ok) CWI and SDON

J Cooper Enterprises

8-6-2014

Rig up reverse unit. Continue D.O. good cmt from 1108' to 1173' and clr clean. Test casing to 500# for 10 min (ok). Drill to 1205' clr. Clean and test to 510' for 15 min and lost 20# in 15 min. Continue D.O. cmt to 1224 and fell out to 1234' and tag lost clr. Unable to regain with 40 bfw. TOH with tubing bit. SDON

J Cooper Enterprises

8 7 2014

Waiting on cmt.

J Cooper Enterprises

8-8-2014

Stood by for Basic until 10:00 am. Rig up and pump 10 bbl liquid glass and 300 sks. Cls "C" with 6% gel and 5% salt and 3# ppg Kol-seal mixed at 12.5 ppg. 100 sks cls "C" neat mixed at 14.8ppg and 100 sks Cls "C" with 2% CCL mixed at 14.8 ppg and flushed with 10 BFW. CWI and SDON

J Cooper Enterprises

8 11 2014

Pull up 4 ¾" bit. TIH with tubing to 1228' and tag cmt. TOH with tubing and bit. Pull up 10 3 ½" drill collars and bit. TIH with tubing to 1228'. Rig up reverse unit. D.O. to 1234' and test casing to 300# and 500# (ok) D.O. to 1237' and started losing water. Test to 300# and lost to 0# in 2 min. Unable to regain cir. With 40 BFW at 4 bpm sucking .8 bpm. TOH with tubing and bit. SDON

J Cooper Enterprises

8-12-2014

Shut down waiting on cement trucks

J Cooper Enterprises

8 13-2014

Rig up Basic Energy Services and pump 10 bbl liquid glass and 300 sks with 6 % gel and 5% salt and 5# p/s. Kol Seal and ¼" Celo flakes mixed at 12.5 ppg and 200 sks Cls "C" with 2% CACL mixed at 14.8 ppg and flushed with 10 BFW. CWI and SDON

J Cooper Enterprises

8-14-2014

WOC

J Cooper Enterprises

8-15-2014

WOC

J Cooper Enterprises

8-16-2014

WOC

J Cooper Enterprises

8-17-2014

WOC

J Cooper Enterprises

8-18-2014

Pull up 4 ¾" bit, TIH with 10 drill collars and tubing to 1207' and tag cmt. Rig up reverse unit D.O. for cmt to 1235' and lost cir. Unable to load hole with 25 BW. TOH with tubing and lay down 10 drill collars. Pul up 5 ½" cmt retainer TIH with tubing to 1105' and set cmt retainer load casing.

J Cooper Enterprises

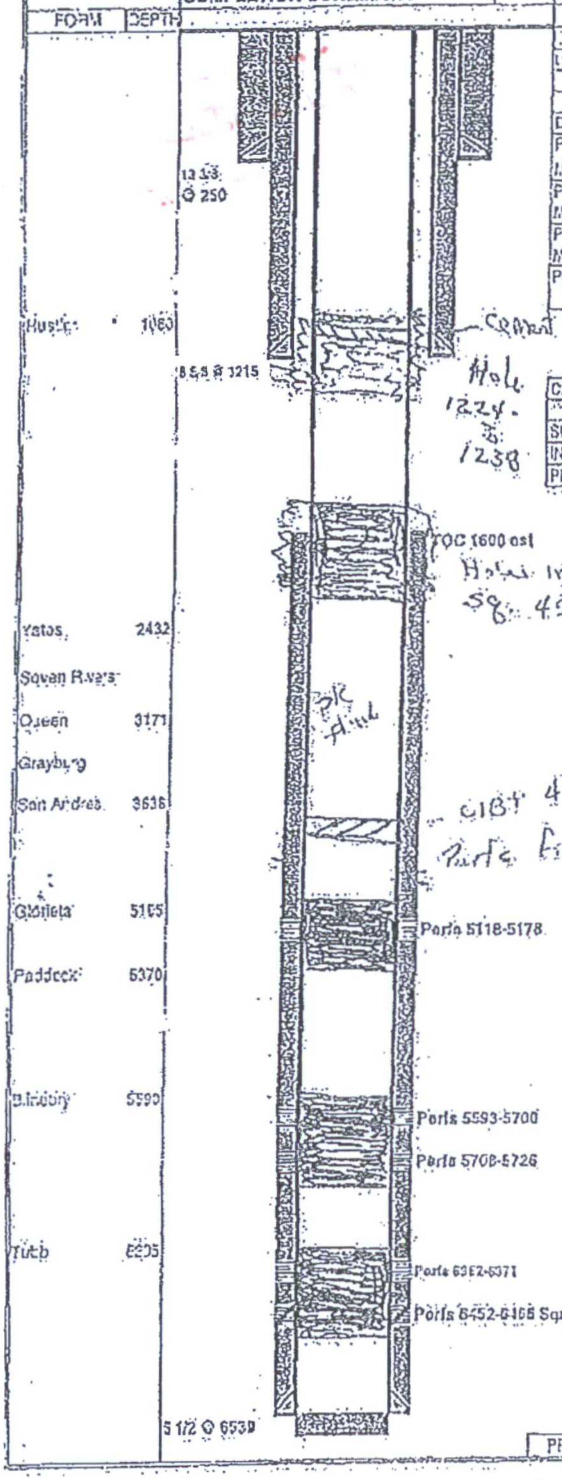
8-19-2014

Rig up Basic Energy Services. Pump 150 sks Cls "C" neat mixed at 14.8 ppg thru retainer. Pull out of retainer. Reverse out. Lay cmt. TOH laying down 2 7/8" tubing. Nipple down BOP. NUWH. CW. and rig down pull rig unit. Job Complete

WELLBORE SCHEMATIC AND HISTORY

API NUM: 30-025-20962		
OPERATOR J. Cooper Enterprises		
LEASENAME: ANDERSON		WELL NO 1
LOCATION UL: O SEC: 8	TWN: 20S	RNG: 37E
330 FSL	1980 FEL	
TD 6900 PBD	KB	DF
DHC	GL 3535	
POOL Monument Paddock	PERFS 5118-5178	OPEN HOLE
POOL Monument Blinebry	PERFS 5593-5776	OPEN HOLE
POOL Monument Tubb	PERFS 6362-6400	OPEN HOLE
POOL	PERFS	OPEN HOLE

COMPLETION SCHEMATIC



CASING RECORD

	SIZE	DEPTH	CMT	HOLE SIZE	TOC
SURF.	13 3/8	250	260 sxs	17	Circ
INTER 1.	8 5/8	1215	470 sxs	12 1/4	Circ
PROD.	5 1/2	6539	620 sxs	7 7/8	1600 est

PREPARED BY: | UPDATED

EXHIBIT 8

J. Cooper Enterprises Inc

Anderson #1 SWD

Unit O Sec. 8 TWS 20 R.37E

Lea Co. NM

API # 30-025-29962