

DATE IN 06/10/13	SUSPENSE	ENGINEER PG	LOGGED IN 06/11/13	TYPE SWD	APP NO. 24XK 1316 231 719
------------------	----------	-------------	--------------------	----------	---------------------------

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

Apache Corp
 NFE Federal SWD 1
 30-015-41243

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners
 [B] ☒ Offset Operators, Leaseholders or Surface Owner
 [C] ☒ Application is One Which Requires Published Legal Notice
 [D] ☒ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
 [E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,
 [F] ☐ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

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

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

Brian Wood

Print or Type Name

Signature

Consultant

Title

brian@permitswest.com

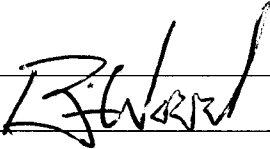
e-mail Address

6-10-13

Date

RECEIVED
 2013 JUN 10 10:30 AM

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance XXX Disposal _____ Storage
Application qualifies for administrative approval? _____ Yes _____ No
- II. OPERATOR: APACHE CORPORATION
ADDRESS: 303 VETERANS AIRPARK LANE, SUITE 3000, MIDLAND, TX 79705
CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? _____ Yes XXX No
If yes, give the Division order number authorizing the project: _____
- 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.
NFE Federal SWD 1
30-015-41243
- 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: BRIAN WOOD TITLE: CONSULTANT
SIGNATURE:  DATE: JUNE 10, 2013
E-MAIL ADDRESS: brian@permitswest.com
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

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

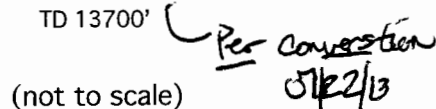
- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

WELL LOCATION:	2105' FSL & 1955' FEL	J	8	17 S	31 E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

Surface Casing



12,467' feet to 13,700'

(Perforated or Open Hole; indicate which)
 |||||

INJECTION WELL DATA SHEETTubing Size: 4-1/2" Lining Material: DUAL LINE FIBERGLASSType of Packer: ARROW AS-1XPacker Setting Depth: ≈12,367' - ≈12,417'

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

Additional Data

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

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

2. Name of the Injection Formation: DEVONIAN & ELLENBURGER

3. Name of Field or Pool (if applicable): SWD; DEVONIAN (POOL CODE 96101)
SWD; ELLENBURGER (POOL CODE 96103)

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

NO

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

OVER: SEVEN RIVERS (1910'), QUEEN (2541'), GRAYBURG (2926'),
SAN ANDRES (3914'), GLORIETA (4685'), & YESO (5,690')UNDER: none

APACHE CORPORATION
NFE FEDERAL SWD 1
2105' FSL & 1955' FEL SEC. 8, T. 17 S., R. 31 E.
EDDY COUNTY, NEW MEXICO

PAGE 1

30-015-41243

I. Purpose is to drill a 13,700' deep saltwater disposal well and dispose into the SWD; Devonian (NMOCD pool code number 96101) and SWD; Ellenburger (code 96103) from 12,467' to 13,700'.

II. Operator: Apache Corporation (OGRID #873)
Operator phone number: (432) 818-1167
Operator address: 303 Veterans Airpark Lane Suite 3000
Midland, TX 79705
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease: BLM lease NMLC-029435B
Lease Size: 1,885 acres (see Exhibit A for C-102 and map)
Closest Lease Line: 1955'
Lease Area: All of Sections 5, 6, & 8, T. 17 S., R. 31 E.

A. (2) Surface casing (13-3/8", 48#, S T & C, H-40) will be set at 425' in a 17-1/2" hole. Will cement to the surface with 580 sacks (777 cubic feet) Class C with 1% CaCl₂ mixed at 14.8 pounds per gallon and 1.34 cubic feet per sack. Excess >100%

Intermediate casing (9-5/8", 40#, L T & C, J-55) will be set at 4,500' in a 12-1/4" hole and cemented to the surface with >100% excess. Lead with 1,140 sacks (2,394 cubic feet) Class C 35/65 poz with 6% bentonite + 5% salt mixed at 12.4 pounds per gallon and 2.1 cubic feet per sack. Tail with 260 sacks (348 cubic feet) Class C with 1% CaCl₂ mixed at 14.8 pounds per gallon and 1.34 cubic feet per sack.

(Water flows are known in this area from a water flood. (There are 13 active Grayburg-Jackson water injection wells in Section 8.) If water flow is encountered, then two stage intermediate casing may be run. Cement would be circulated to the surface with 100% excess. A DV tool may be set at ≈2,200' and an ECP may be placed below the DV

tool. Assuming the DV tool is at 2,200', then each of two stages would be cemented with 1100 sacks (1463 cubic feet) Class C mixed at 14.8 pounds per gallon and 1.33 cubic feet per sack.) ✓

Production casing (7") will be set at 13,700' in an 8-3/4" hole. Seven inch 26# buttress L-80 will be run from GL to 2,100'. Seven inch 26# L T & C HCL-80 will be run from 2,100' to 13,100'. Seven inch 29# L T & C HCL-80 will be run from 13,100' to 13,700'. Will cement to 3,000' (35% excess). DV tool will be set at 10,600'. ✓

First stage of long string cement will be 500 sacks (650 cubic feet) Class H 50/50 poz with 2% bentonite +5% salt mixed at 14.2 pounds per gallon and 1.30 cubic feet per sack.

Second stage lead of long string cement will be 650 sacks (1,371 cubic feet) Class C 35/65 poz with 6% bentonite + 5% salt mixed at 12.4 pounds per gallon and 2.11 cubic feet per sack.

Third stage tail of long string cement will be 160 sacks (208 cubic feet) Class C 50/50 poz with 2% bentonite + 5% salt mixed at 14.2 pounds per gallon and 1.30 cubic feet per sack.

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

- A. (3) Tubing will be 4-1/2" dual line fiberglass. Setting depth will be approximately 12,417' to 12,442'. (Disposal interval will be 12,467' to 13,700'.)
- A. (4) An Arrow AS-1X packer will be set between 12,367' and 12,417' (50' to 100' above the highest proposed perforation of 12,417').
- B. (1) Disposal zones will be the Devonian and Ellenburger dolomites, which are in the ~~SWD; Devonian (96101)~~ and ~~SWD; Ellenburger (96103)~~ pools. Estimated fracture gradient is \approx 0.63 psi per foot.

SWD: DEV - FUS - MON - SIMP - ELL
Pool Code 97775

- B. (2) Disposal interval will be 12,467' to 13,700'. The entire well bore will be cased.
- B. (3) Well has not yet been drilled. It was be drilled and completed as a saltwater disposal well.
- B. (4) It will be perforated from 12,437' to 13,700' with 2 shots per foot. Shot diameter = 0.40".
- B. (5) Potential oil or gas zones above or below the Devonian and Ellenburger are:

Seven Rivers (in 8-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Queen (in 8-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Grayburg (in 8-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
San Andres (in 8-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Yeso (in 8-17s-31e; Cedar Lake; Glorieta-Yeso)
Abo (2 miles south in 20-17s-31; Cedar Lake; Abo Pool)
Bone Spring (3-1/2 mile SSE in 33-17s-31e; Shugart; Bone Spring, North Pool)
Wolfcamp (1/2 mile south in 17-17s-31e; Henshaw; Wolfcamp, SE (O) Pool)
Cisco (1/2 mile south in 17-17s-31e; Frisco; Cisco-Canyon (O) Pool)
Canyon (1/2 mile south in 17-17s-31e; Frisco; Cisco-Canyon (O) Pool)
Strawn (3/4 mile southwest in 17-17s-31e; Fren; Strawn Pool)
Atoka (3/4 mile southwest in 17-17s-31e; Cedar Lake; Atoka, North (Oil) Pool)
Morrow (3/4 miles southwest in 17-17s-31e; Fren; Morrow Pool)
Mississippian (3 miles southeast I 28-17s-31e; Wildcat Cedar Lake; Mississippian)
Devonian (6.26 miles NW in 21-16s-30e; Wildcat S163021I; Devonian (Gas) Pool)
Silurian (43 miles southeast in 29-21s-37e; McCormack; Silurian Pool)
Montoya (35 miles southeast in 33-21s-37; Cary; Montoya Pool)
Ellenburger (45.17 miles southeast in Hardy; Simpson-Ellenburger Pool)
Cambrian (no production within 50 miles)

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

APACHE CORPORATION**PAGE 4****NFE FEDERAL SWD 1****2105' FSL & 1955' FEL SEC. 8, T. 17 S., R. 31 E.****EDDY COUNTY, NEW MEXICO****30-015-41243**

V. Exhibit B shows all 39 existing wells (3 P & A wells + 7 water injection wells + 29 oil wells) within a half-mile radius. Exhibit C shows all 706 existing wells (487 oil or gas wells + 130 injection or disposal wells + 89 P & A wells) within a two-mile radius.

Exhibits D and E shows all leases and lessors within a half-mile radius and two-mile radius. Details on the leases within a half-mile radius are:

<u>Area (T. 17 S., R. 31 E)</u>	<u>Lessor</u>	<u>Lease Number</u>	<u>Lessee</u>
NENW, S2NW, SW4, & E2 Sec. 8	BLM	NMLC-029435B	Apache
SWNW & W2SW Sec. 9	BLM	NMLC-029426B	Apache
NENW & N2NE Sec. 17	BLM	NMLC-049998A	COG & Concho

VI. No wells within a half-mile penetrated the Devonian (top = 12,467') or Ellenburger. Deepest well is 6,527'. The 39 wells that are within a half-mile are:

OPERATOR	WELL	API # 30-015-	T. 17 S., R. 31 E.	ZONE	STATUS	TD	DISTANCE
Linn	J L Keel B 027	10372	J - Sec. 8	Grayburg-Jackson	Oil	3725	84'
Linn	J L Keel B 094	28251	P - Sec. 8	Grayburg-Jackson	Oil	4220	886'
Linn	J L Keel B 078	28296	J - Sec. 8	Grayburg-Jackson	Oil	4155	955'
Apache	NFE Fed 006	37361	J - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6430	964'
Linn	J L Keel B 091	28442	G - Sec. 8	Grayburg-Jackson	Oil	4069	970'
Linn	J L Keel B 092	28256	I - Sec. 8	Grayburg-Jackson	Oil	4265	984'
Apache	NFE Fed 009	37358	K - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6351	1112'
Arco	J.L. Keel B 028	10470	I - Sec. 8	Grayburg-Jackson	P&A	3800	1245'
Linn	J L Keel B 076	28255	G - Sec. 8	Grayburg-Jackson	WIW	3907	1286'
Linn	J L Keel B 004	5105	O - Sec. 8	Grayburg-Jackson	WIW	3279	1301'
Linn	J L Keel B 057	28079	I - Sec. 8	Grayburg-Jackson	Oil	3985	1325'
Clair	J.L. Keel B 008	5109	G - Sec. 8	Grayburg-Jackson	P&A	3080	1335'
Linn	J L Keel B 029	10471	K - Sec. 8	Grayburg-Jackson	WIW	3700	1387'
Apache	NFE Fed 007	37355	I - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6527	1614'

APACHE CORPORATION

NFE FEDERAL SWD 1

2105' FSL & 1955' FEL SEC. 8, T. 17 S., R. 31 E.

EDDY COUNTY, NEW MEXICO

PAGE 5

30-015-41243

Apache	NFE Fed 011	37359	G - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6417	1681'
Linn	J L Keel B 046	26100	P - Sec. 8	Grayburg-Jackson	Oil	3751	1799'
Clair	Keel Fed B 015	5112	H - Sec. 8	Grayburg-Jackson	P&A	3500	1823'
Linn	J L Keel B 077	28279	H - Sec. 8	Grayburg-Jackson	WIW	4000	1824'
Apache	NFE Fed 001	37137	P - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6410	1868'
Linn	J L Keel B 003	05104	N - Sec. 8	Grayburg-Jackson	WIW	3630	1899'
Linn	J L Keel B 006	05107	F - Sec. 8	Grayburg-Jackson	WIW	3800	1925'
Apache	Crow Fed 018H	40992	L - Sec. 9	Fren; Glorieta-Yeso	Oil	plan 6150	2024'
Apache	Crow Fed 017H	40991	L - Sec. 9	Fren; Glorieta-Yeso	Oil	plan 5775	2027'
Apache	Crow Fed 016H	40990	L - Sec. 9	Fren; Glorieta-Yeso	Oil	plan 5170	2030'
Linn	H E West B 089	28565	L - Sec. 9	Grayburg-Jackson	Oil	4270	2069'
Linn	J L Keel B 075	28579	B - Sec. 8	Grayburg-Jackson	Oil	4160	2115'
Linn	J L Keel B 088	28441	A - Sec. 8	Grayburg-Jackson	Oil	4240	2122'
Linn	J L Keel B 090	28248	F - Sec. 8	Grayburg-Jackson	Oil	4055	2165'
Linn	H E West B 080	28299	L - Sec. 9	Grayburg-Jackson	Oil	4305	2172'
Linn	J L Keel B 058	28077	M - Sec. 8	Grayburg-Jackson	Oil	4020	2181'
Apache	NFE Fed 010	37360	I - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6450	2291'
COG	Foster Eddy 007	26230	B - Sec. 17	Grayburg-Jackson	Oil	5540	2302'
COG	Foster Eddy 020	39120	B - Sec. 17	Cedar Lake; Glorieta-Yeso	Oil	6351	2354'
Apache	NFE Fed 002	37354	N - Sec. 8	Cedar Lake; Glorieta-Yeso	Oil	6251	2366'
COG	Foster Eddy 022	39122	A - Sec. 17	Cedar Lake; Glorieta-Yeso	Oil	6336	2453'
COG	Foster Eddy 019	39119	C - Sec. 17	Cedar Lake; Glorieta-Yeso	Oil	6275	2519'
COG	Foster Eddy 024	39124	A - Sec. 17	Cedar Lake; Glorieta-Yeso	Oil	6354	2553'

COG	Foster Eddy 005	05199	B - Sec. 17	Grayburg-Jackson	Oil	3595	2620'
Linn	J L Keel B 010	05110	B - Sec. 8	Grayburg-Jackson	WIW	3413	2654'

- VII. 1. Average injection rate will be $\approx 30,000$ bwpd.
Maximum injection rate will be $\approx 40,000$ bwpd.
2. System will be open and closed. Water will both be trucked and the well will be tied into a proposed Apache pipeline system.
3. Average injection pressure will be $\approx 2,500$ psi
Maximum injection pressure will be 2,493 psi ($= 0.2$ psi/foot $\times 12,467'$ (highest perforation)).
4. The disposal water will be produced water from Apache wells, mainly from the Yeso. Apache has 230 approved oil or gas wells in T. 17 S., R. 30 & 31 E. and T. 18 S., R. 30 & 31 E. Of those 230 wells, 226 are Yeso wells. The remaining wells are Abo, Bone Spring, Cisco, Canyon, Wolfcamp, or Morrow producers. Water from these zones may also be disposed in this well.

A summary of analyses from a Yeso well (11 miles west), Devonian well (4 miles northwest), and an Ellenburger well (43 miles southeast) follows. Analyses are contained in the WAIDS database. The abstracts are in Exhibit F.

- ✓ No compatibility problems have been reported from the closest (5 miles southeast) operating Devonian disposal well (30-025-33584). The 281,193 barrels that was disposed included Yeso water.
- ✓ The closest (52 miles southeast) Ellenburger disposal well (30-025-21476) has accepted more than 964,849 barrels of water.

	<u>Yeso</u>	<u>Devonian</u>	<u>Ellenburger</u>
Barium	0.1136		
Bicarbonate	495.296	1,260.0	122.0
Calcium	2,979.73		
Chloride	138,951.0	34,400.0	66,630.0
Hydrogen Sulfide	6.816		
Iron	5.112		

	<u>Yeso</u>	<u>Devonian</u>	<u>Ellenburger</u>
Magnesium	679.328		
Potassium	493.024		
Sodium	87,541.3		
Strontium	47.712		
Sulfate	4,749.62	3,600.0	1,692.0
Total Dissolved Solids	207,695.0	63,260	110,300.0

5. Closest (6.26 miles north in 1-18s-30e) Devonian production is Yates Petroleum Corporation's Federal FR 4 (30-015-36536). Closest (45.17 miles southeast in 36-20s-37e) Ellenburger production is ConocoPhillips' Hardy 36 State 21(30-025-33028).

VIII. The Devonian ($\approx 1,120$ thick) and Ellenburger ($\approx 113'$ thick) are dolomites. Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary deposit at the surface. No water wells are within a one-mile radius (EXHIBIT G). No underground source of drinking water is below the proposed disposal interval.

Anticipated formation tops are:

Quaternary = 0'
Rustler = 331'
Salt top = 600'
Salt base = 1,500'
Yates = 1,581'
Seven Rivers = 1,910'
Queen = 2,541'
Grayburg = 2,926'
San Andres = 3,194'
Glorieta = 4,685'
Paddock = 4,832'
Yeso = 5,690'
Tubb = 6,265'
Abo = 6,597'

Wolfcamp = 8,352'
Strawn = 10,537'
Atoka = 10,762'
Morrow = 11,162'
Mississippian = 11,457'
Devonian = 12,467'
Ellenburger = 13,587'
Total Depth: 13,700'

There are no water wells within a minimum 4,000-meter (= 2.48 mile) radius according to State Engineer records (see Exhibit G). There will be 12,136' of vertical separation and the Rustler salt interval between the bottom of the only likely underground water source (Quaternary) and the top of the Devonian.

Produced water has been injected (89 wells) or disposed (2 wells) into zones above (injection in the Grayburg-Jackson; Seven Rivers - Queen - Glorieta - San Andres; disposal in the Canyon and Upper Penn) the proposed disposal interval via 91 wells within Section 8 and the bordering 8 sections.

IX. The well will be stimulated with acid to clean out scale or fill.

X. Open hole dual laterolog, MSFL, litho-density, gamma ray, caliper, and sonic logs will be run from TD to the intermediate casing shoe (4,500'). CNL and gamma ray logs will be run from 4,500' back to surface.

XI. Based on a July 5, 2012 field inspection and a review of the State Engineer's records, there are no water wells within a one-mile radius.

XII. Apache is not aware of any geologic or engineering data that may indicate the Devonian or Ellenburger are in hydrologic connection with any underground sources of water. There are 82 active Devonian saltwater disposal wells, 11 active

APACHE CORPORATION
NFE FEDERAL SWD 1
2105' FSL & 1955' FEL SEC. 8, T. 17 S., R. 31 E.
EDDY COUNTY, NEW MEXICO

PAGE 9

30-015-41243

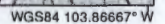
Devonian water injection wells, and 3 active Ellenburger saltwater disposal wells in New Mexico.

XIII. Notice (this application) has been sent (Exhibit H) to the surface owner (BLM), all leasehold operators (only Apache), all Devonian and Ellenburger lessees (only Apache and COG & Concho), and lessors (only BLM) within a half-mile.

A legal ad (see Exhibit I) was published on May 31, 2013.

103.88333° W

367° W



DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
311 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
1228 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, New Mexico 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 NFE FEDERAL SWD	Well Number 1
OGRID No.	Operator Name APACHE CORPORATION	Elevation 3785'

Surface Location

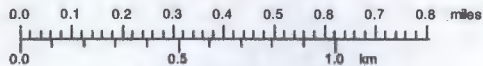
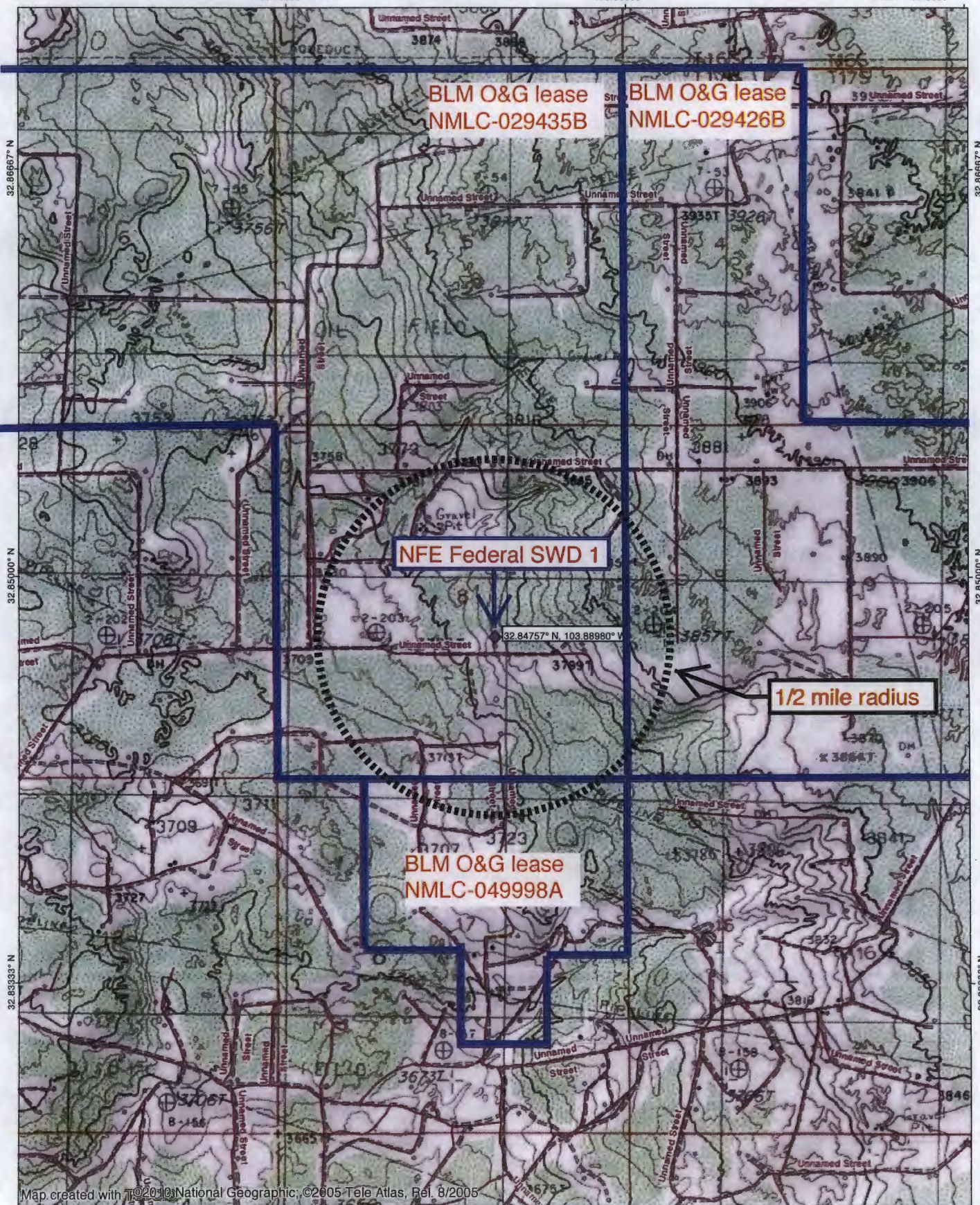
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	8	17-S	31-E		2105	SOUTH	1955	EAST	EDDY

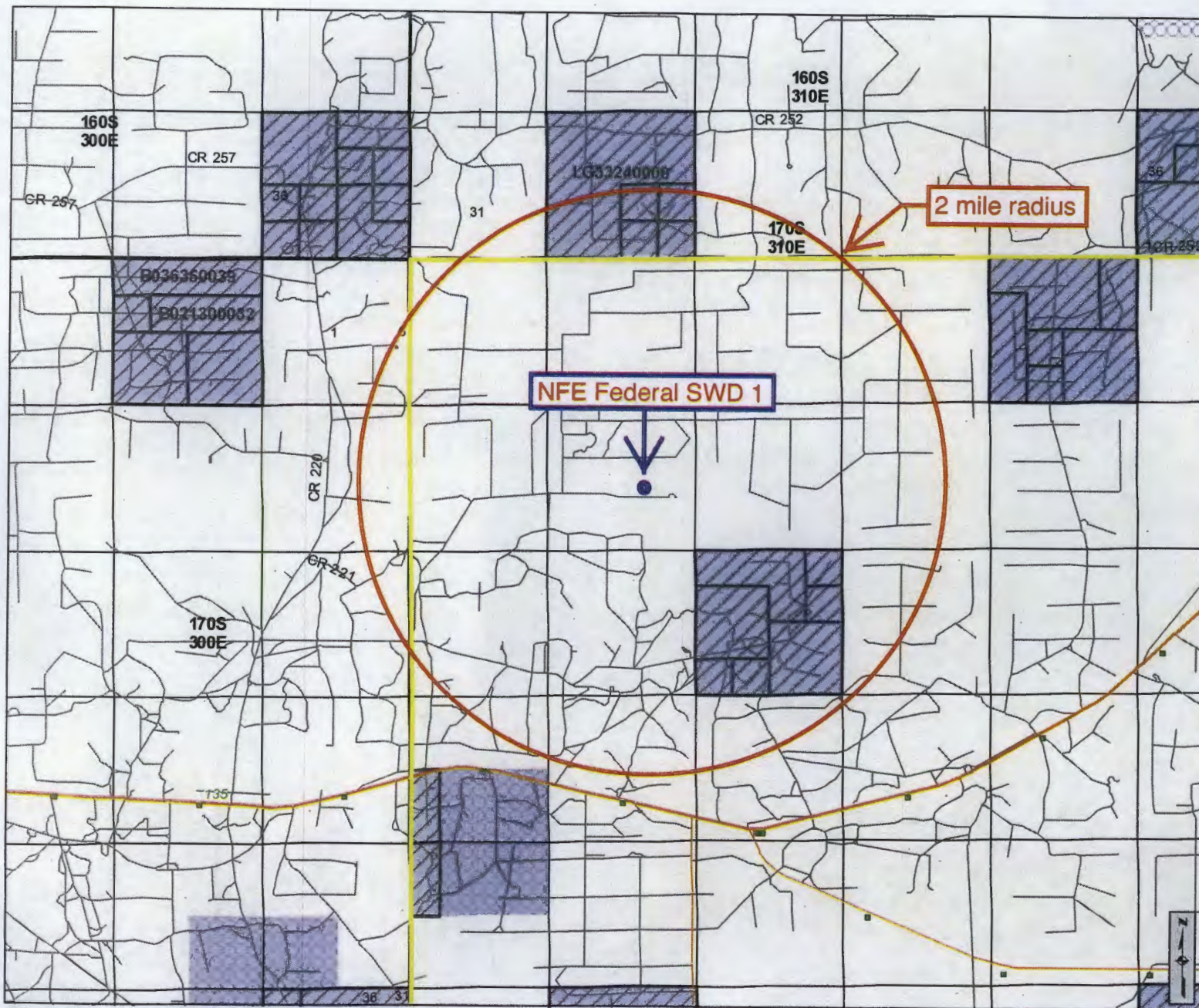
Bottom Hole Location If Different From Surface

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

<p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=672303.2 N X=636414.3 E</p> <p>LAT.=32.847458° N LONG.=103.889148° W LAT.=32° 50' 51" N LONG.=103° 53' 21" W</p> <p>SEE DETAIL</p> <p>1955'</p> <p>2105'</p> <p>DETAIL</p> <p>3773.3' 3802.5'</p> <p>600'</p> <p>3762.5' 3794.4'</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Sarah Hardin</i> 4/9/12 Signature Date</p> <p>Sarah Hardin Printed Name</p> <p>Sarah.Hardin@apachecorp.com E-mail Address</p>
	<p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>MARCH 12, 2012</p> <p>Date of Survey</p> <p>Signature & Seal of Professional Surveyor:</p> <p>RONALD J. BIDSON NEW MEXICO 3239</p> <p>EXHIBIT A</p> <p>Ronald J. Bidson 03/28/2012 Certificate Number Gary O. Bidson 12641 Ronald J. Bidson 3239</p> <p>AP JWSC W.O.: 12.11.0341</p>





Cartographic Features

- County Boundaries
- County Seats
- City, Town or Village
- SLO District Offices
- SLO District Boundary
- Hwy Mileposts
- Interstate
- NM Hwy
- Continental Divide
- US Hwy
- Local Road

Federal Minerals Ownership

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

State Trust Lands

- Surface Estate
- Subsurface Estate
- Surface and Subsurface Estate

State Leases

- Oil and Gas Leases
- Agricultural Leases
- Commercial Leases
- Minerals Leases
- Not Available for Oil and Gas Leasing
- Oil and Gas Leasing Influenced by Restriction

Oil and Gas Related Features

- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Volcanic Vents
- NMOC Order R-111-P
- Potash Enclave Outline

NMOC Oil and Gas Wells

- CO₂
- Injection
- Oil
- Water
- Gas
- Miscellaneous
- Salt Water Disposal
- DA or PA

New Mexico State Land Office Oil, Gas and Minerals

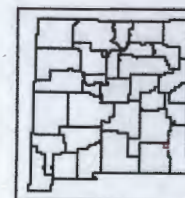
0 0.2 0.4 0.8 1.2 1.6 Miles
Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

EXHIBIT E

The New Mexico State Land Office assumes no responsibility or liability for, or in connection with, the accuracy, reliability or use of the information provided here, in State Land Office data layers or any other data layer.

Land Office Geographic Information Center
logic@slo.state.nm.us

Created On: 6/2/2013 12:54:52 PM



www.nmstatelands.org

NM WAIDS

DATA

MAPS

HOME

SCALE

CORROSION

General Information About: Sample 6073			
WHITE STAR FEDERAL 014			
API	3001530931	Sample Number	
Unit/Section/ Township/Range	A / 29 / 17 S / 29 E	Field	EMPIRE EAST
County	Eddy	Formation	YESO
State	NM	Depth	
Lat/Long	32.81153 / -104.09097	Sample Source	
TDS (mg/L)	207695	Water Type	
Sample Date(MM/DD/YYYY)	5/18/2000	Analysis Date(MM/DD/YYYY)	5/26/2000
Remarks/Description			
Cation Information (mg/L)		Anion Information (mg/L)	
Potassium (K)	493.024	Sulfate (SO)	4749.62
Sodium (Na)	87541.3	Chloride (Cl)	138951
Calcium (Ca)	2979.73	Carbonate (CO ₃)	0
Magnesium (Mg)	679.328	Bicarbonate (HCO ₃)	495.296
Barium (Ba)	0.1136	Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H ₂ S)	6.816
Strontium (Sr)	47.712	Carbon Dioxide (CO ₂)	
Iron (Fe)	5.112	Oxygen (O)	



EXHIBIT F

NM WAIDS

DATA

MAPS

HOME

SCALE

CORROSION

General Information About: Sample 5199			
SQUARE LAKE DEEP UNIT 001			
API	3001503979	Sample Number	
Unit/Section/ Township/Range	J / 33 / 16 S / 30 E	Field	
County	Eddy	Formation	DEV
State	NM	Depth	
Lat/Long	32.87982 / -103.97885	Sample Source	DST
TDS (mg/L)	63260	Water Type	
Sample Date(MM/DD/YYYY)		Analysis Date(MM/DD/YYYY)	
Remarks/Description			
Cation Information (mg/L)		Anion Information (mg/L)	
Potassium (K)		Sulfate (SO)	3600
Sodium (Na)		Chloride (Cl)	34400
Calcium (Ca)		Carbonate (CO ₃)	
Magnesium (Mg)		Bicarbonate (HCO ₃)	1260
Barium (Ba)		Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H ₂ S)	
Strontium (Sr)		Carbon Dioxide (CO ₂)	
Iron (Fe)		Oxygen (O)	



EXHIBIT F

NM WAIDS

DATA

MAPS

HOME

SCALE

CORROSION

General Information About: Sample 4500			
LIVINGSTON 006			
API	3002506517	Sample Number	
Unit/Section/ Township/Range	K / 03 / 21 S / 37 E	Field	WANTZ
County	Lea	Formation	ELBG
State	NM	Depth	
Lat/Long	32.50600 / -103.15174	Sample Source	DST
TDS (mg/L)	110300	Water Type	
Sample Date(MM/DD/YYYY)		Analysis Date(MM/DD/YYYY)	
Remarks/Description			
Cation Information (mg/L)		Anion Information (mg/L)	
Potassium (K)		Sulfate (SO)	1692
Sodium (Na)		Chloride (Cl)	66630
Calcium (Ca)		Carbonate (CO ₃)	
Magnesium (Mg)		Bicarbonate (HCO ₃)	122
Barium (Ba)		Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H ₂ S)	
Strontium (Sr)		Carbon Dioxide (CO ₂)	
Iron (Fe)		Oxygen (O)	



EXHIBIT F



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

UTMNAD83 Radius Search (in meters):

Easting (X): 603891

Northing (Y): 3634935

Radius: 4000

(4000 meters = 13,120 feet = 2.48 miles)

EXHIBIT G

June 10, 2013

COG Operating & Concho Oil & Gas LLC
600 W. Illinois Ave.
One Concho Centre
Midland, TX 79701-4882

Apache Corporation is applying (application attached) to drill its NFE Federal SWD #1 as a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: NFE Federal SWD #1 (BLM lease) ID = 13,700'
Proposed Injection Zone: Devonian & Ellenburger (from 12,467' to 13,700')
Location: 2105' FSL & 1955' FEL Sec. 8, T. 17 S., R. 31 E., Eddy County, NM
Approximate Location: ~5 air miles northeast of Loco Hills, NM
Applicant Name: Apache Corporation (432) 818-1167
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

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

Please call me if you have any questions.

Sincerely,

Brian Wood
Brian Wood

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com

OFFICIAL USE

Postage	\$ 1.22	Postmark Here
Return Receipt Fee (Endorsement Fee)	3.10	
Restricted Delivery Fee (Endorsement Fee)	2.55	
Total Postage	6.87	
Sent To		

COG Concho
Midland

7011 3500 0002 1605 1477

EXHIBIT H

June 10, 2013

BLM
620 E. Greene St.
Carlsbad, NM 88220

Apache Corporation is applying (application attached) to drill its NFE Federal SWD #1 as a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: NFE Federal SWD #1 (BLM lease) ID = 13,700'
Proposed Injection Zone: Devonian & Ellenburger (from 12,467' to 13,700')
Location: 2105' FSL & 1955' FEL Sec. 8, T. 17 S., R. 31 E., Eddy County, NM
Approximate Location: ~5 air miles northeast of Loco Hills, NM
Applicant Name: Apache Corporation (432) 818-1167
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

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

Please call me if you have any questions.

Sincerely,

Brian Wood
Brian Wood

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com

OFFICIAL USE

Postage	\$ 1.22	Postmark Here
Certifi	3.10	
Return Receipt Fee (Endorsement Fee)	2.55	
Restricted Delivery Fee (Endorsement Fee)		
Total Postage	6.87	

Sent To
Street, Apt. No., or PO Box No.
City, State, ZIP+4
Carls.

0941 5041 2000 0056 1102

Affidavit of Publication

NO. 22580

STATE OF NEW MEXICO

County of Eddy:

Danny Scott

being duly sworn, says that he is the

Publisher

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same day as follows:

First Publication

May 31, 2013

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

31st day of May 2013



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:



EXHIBIT I

Goetze, Phillip, EMNRD

From: Brian Wood <brian@permitswest.com>
Sent: Monday, July 22, 2013 2:50 PM
To: Goetze, Phillip, EMNRD
Subject: Re: Question on Well Construction: NFE Federal SWD 1

The btm of csg will have a float shoe, 1 jt of csg filled w/cmt, float collar. A wiper plug will be used to displace cmt to float collar.

Do you want me to add that to the C-108 sketch?

On Jul 22, 2013, at 11:06 AM, Goetze, Phillip, EMNRD wrote:

Brian:

I have a question concerning the well construction diagram for Apache's NFE Fed SWD 1 (30-015-41243): the proposed completion shows no bottom plug in the 7-inch production casing. Is there one? PRG

Phillip R. Goetze, P.G.

Engineering Bureau, Oil Conservation Division
1220 South St. Francis Dr., Santa Fe, NM 87505
O: 505.476.3466 F: 505.476.3462

Injection Permit Checklist: Received 06/11/13 First Email Date: — Final Reply Date: — Suspended?: —

Issued Permit: Type: WFX / PMX / SWD Number: 1432 Permit Date: 07/25/13 Legacy Permits or Orders: NA

Well No. 1 Well Name(s): NFE Federal SWD

API: 30-0 15-41243 Spud Date: NA New/Old: (N) (UIC CI II Primacy March 7, 1982)

Footages 2105 FSL/1955 FEL Lot — Unit 5 Sec 8 Tsp 17S Rge 31E County Eddy No 97775

General Location: ~5 miles NE of Loco Hills Pool: [SWD; DEV-FUS-MON-SMP-EL] Pool No.: —

Operator: Apache Corp. OGRID: 873 Contact: Brian Wood/Permits West

COMPLIANCE RULE 5.9: Inactive Wells: 3 Total Wells: 2798 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? OK

Well File Reviewed: ✓ Current Status: APD

Planned Rehab Work to Well: NA new well - new construction

Well Diagrams: Proposed ✓ Before Conversion — After Conversion — Are Elogs in Imaging?: To be submitted to District

Well Construction Details:	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Stage Tool	Cement <u>Sx</u> or Cf	Cement Top and Determination Method
Planned <u>—</u> or Existing <u>—</u> Cond	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned <u>—</u> or Existing <u>—</u> Surface	<u>17 1/2 / 13 3/8</u>	<u>0 to 425</u>	<u>—</u>	<u>580</u>	<u>Cir. to Surf.</u>
Planned <u>—</u> or Existing <u>—</u> Interm	<u>12 1/4 / 9 5/8</u>	<u>0 to 4500</u>	<u>—</u>	<u>1400</u>	<u>Cir. to Surf.</u>
Planned <u>—</u> or Existing <u>—</u> LongSt	<u>8 3/4 / 7</u>	<u>0 to 13700</u>	<u>DN 10600</u>	<u>1st 580 2nd 0.50 3rd 160</u> 31310	<u>3,000 (CBL)</u>
Planned <u>—</u> or Existing <u>—</u> Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned <u>✓</u> or Existing <u>—</u> OH / <u>PERF</u>	<u>8 3/4 / 7</u>	<u>12467 to 13700</u>	<u>—</u>	<u>—</u>	<u>—</u>

Injection Strat Column:	Depths (ft)	Injection or Confining Formations	Tops?
Above Top of Inject Formation	<u>920</u>	<u>Morrow</u>	<u>0.55 11162</u>
Above Top of Inject Formation	<u>8 1/4 Contact</u>	<u>Mississippian</u>	<u>11457</u>
Proposed Interval TOP:	<u>12467</u>	<u>Devonian</u>	<u>12467</u>
Proposed Interval BOTTOM:	<u>13700</u>	<u>Ellenburger</u>	<u>13587</u>
Below Bottom of Inject Formation	<u>—</u>	<u>Campanian / PE</u>	<u>—</u>
Below Bottom of Inject Formation	<u>—</u>	<u>—</u>	<u>—</u>

Completion/Ops Details:
Drilled TD <u>13700</u> PBTD <u>—</u>
Open Hole <u>—</u> or Perfs <u>X</u>
Tubing Size <u>4 1/2</u> Inter Coated? <u>Yes</u>
Proposed Packer Depth <u>12367-12417</u>
Min Packer Depth <u>12367</u> (100-ft limit)
Proposed Max. Surface Press <u>~2500</u>
Calc. Injt Press <u>2493</u> (0.2 psi per ft)
Calc. FPP <u>—</u> (0.65 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P No Noticed? — BLM Sec Ord No WIPP No Noticed? — SALADO: T: — B: — CLIFF HOUSE NA

Fresh Water: Max Depth: F250 FW Formation Ogallala / Base of 1st & 2nd Wells? Yes Analysis? Yes Hydrologic Affirm Statement Yes

Transition btm RA & Lea Apache Yes wells / Some BS On Lease — Only from Operator (X) or Commercial —

Disposal Fluid: Formation Source(s) Apache Yes wells / Some BS On Lease — Only from Operator (X) or Commercial —

Disposal Interval: Injection Rate (AVE/MAX): 30,000/40,000 Protectable Waters: (UNK) CAPITAN REEF: thru No adjacent No

H/C Potential: Producing Interval? No Formerly Producing? No Method: E Log / Mudlog / DST / Depleted / Other (UNK)

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: 0

Penetrating Wells: No. Active Wells 0 Num Repairs? 0 on which well(s)? 34 wells within 1/2 mi Diagrams? —

Penetrating Wells: No. P&A Wells 0 Num Repairs? 0 on which well(s)? deepest 6527 / Apache Diagrams? —

NOTICE: Newspaper Date 05/31/13 Mineral Owner Fed / BLM Surface Owner Fed / BLM Lease — N. Date —

RULE 26.7(A): Identified Tracts? Yes Affected Persons: COG & Concho / lease N. Date —

Permit Conditions: Mudlog - provide to NMCD Salinity Determination from open hole

Issues: Unknown potential H₂O - gas / unknown water quality - logs