

DATE IN 12/02/13	SUSPENSE	ENGINEER PG	LOGGED IN 12/02/13	TYPE SWD	PPRG 133 3660282
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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.

*Crow Federal SWD 1
 30-015- Pending
 30-015-34126*

[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

Down to Ellenburger New Well

2011 DEC -2 A 9
 RECEIVED OCT 11

[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

Brian Wood

Signature

Consultant

Title

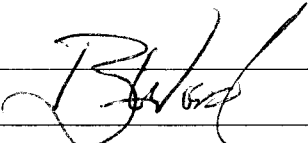
brian@permitswest.com

e-mail Address

11-27-13

Date

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.
Crow Federal SWD 1
- 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: NOV. 27, 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.

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
CROW FEDERAL SWD 1
890' FNL & 625' FEL SEC. 9, T. 17 S., R. 31 E.
EDDY COUNTY, NEW MEXICO

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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: 1,919.88 acres (see Exhibit A for C-102 and map)
Closest Lease Line: 890'
Lease Area: S2 Section 3, W2 Section, &
all of Sections 9 & 10, 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 12 active Grayburg-Jackson water injection wells in Section 9.) 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 $\approx 2,200'$ 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 ≈ 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 ≈ 0.63 psi per foot.
- 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 9-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Queen (in 9-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Grayburg (in 9-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
San Andres (in 9-17s-31e; Grayburg Jackson; SR-Q-G-SA Pool)
Yeso (in 9-17s-31e; Cedar Lake; Glorieta-Yeso)
Abo (2 miles southwest in 18-17s-31; Cedar Lake; Abo Pool)
Bone Spring (3 miles south in 33-17s-31e; Shugart; Bone Spring, North Pool)
Wolfcamp (3/4 mile SSE in 10-17s-31e; Henshaw; Wolfcamp, SE (O) Pool)
Cisco (2-1/2 miles southwest in 17-17s-31e; Frisco; Cisco-Canyon (O) Pool)
Canyon (2-1/2 miles southwest in 17-17s-31e; Frisco; Cisco-Canyon (O) Pool)
Strawn (1-3/4 miles southwest in 17-17s-31e; Fren; Strawn Pool)
Atoka (1-3/4 miles southwest in 17-17s-31e; Cedar Lake; Atoka, North (Oil) Pool)
Morrow (1-3/4 miles southwest in 17-17s-31e; Fren; Morrow Pool)
Mississippian (3-1/2 miles south in 28-17s-31e; Wildcat Cedar Lake; Mississippian)
Devonian (7.02 miles NW in 21-16s-30e; Wildcat S163021; Devonian (Gas) Pool)
Silurian (42 miles southeast in 29-21s-37e; McCormack; Silurian Pool)
Montoya (34 miles southeast in 33-21s-37; Cary; Montoya Pool)
Ellenburger (44.29 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.

V. Exhibit B shows all 25 existing wells (1 gas well + 11 water injection wells + 13 oil wells) within a half-mile radius. All are active. Exhibit C shows all 537 existing wells (362 oil or gas wells + 88 injection or disposal wells + 87 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>
W2SW4 & SESW Sec. 3	BLM	NMLC-029426B	Apache
SESW Sec. 4	BLM	NMLC-029426B	Apache
SE4 Sec. 4	BLM	NMLC-029426A	Apache
NE4, N2SE4, & E2NW4 Sec. 9	BLM	NMLC-029426B	Apache
NW4 & N2SW4 Sec. 10	BLM	NMLC-029426B	Apache

VI. No wells within a half-mile penetrated the Devonian (top = 12,467') or Ellenburger. Deepest well is 12,140'. The 25 wells that are within a half-mile are:

API	OPERATOR	WELL	TYPE	SECTION	TVD	POOL	DISTANCE
3001510162	Linn	H E West B 028	I	9	3850	Gray. Jack.;SR-Q-G-SA	227'
3001534126	Apache	Crow Fed. 1	G	9	12140	Fren; Glorieta-Yeso	383'
3001527148	Linn	H E West B 053	O	9	4310	Gray. Jack.;SR-Q-G-SA	817'
3001527150	Linn	H E West B 054	O	9	4310	Gray. Jack.;SR-Q-G-SA	1041'
3001525995	Linn	H E West B 036	I	9	3883	Gray. Jack.;SR-Q-G-SA	1106'
3001527128	Linn	H E West A 023	O	4	4308	Gray. Jack.;SR-Q-G-SA	1156'
3001526024	Linn	H E West B 040	I	10	4021	Gray. Jack.;SR-Q-G-SA	1291'
3001526203	Linn	H E West B 047	I	9	3922	Gray. Jack.;SR-Q-G-SA	1399'
3001526212	Linn	H E West A 017	I	4	3954	Gray. Jack.;SR-Q-G-SA	1537'
3001505122	Linn	H E West B 013	I	10	3900	Gray. Jack.;SR-Q-G-SA	1670'
3001505118	Linn	H E West B 012	I	9	3864	Gray. Jack.;SR-Q-G-SA	1782'
3001527401	Linn	H E West B 061	O	10	4350	Gray. Jack.;SR-Q-G-SA	1851'
3001527564	Linn	H E West B 062	O	9	4350	Gray. Jack.;SR-Q-G-SA	1924'
3001505056	Linn	H E West B 016	I	3	3978	Gray. Jack.;SR-Q-G-SA	1981'

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3001527110	Linn	H E West B 051	O	10	4372	Gray. Jack.;SR-Q-G-SA	2012'
3001527480	Linn	H E West B 063	O	9	4280	Gray. Jack.;SR-Q-G-SA	2029'
3001527149	Linn	H E West B 052	O	10	4335	Gray. Jack.;SR-Q-G-SA	2031'
3001525999	Linn	H E West A 014	I	4	3935	Gray. Jack.;SR-Q-G-SA	2123'
3001527109	Linn	H E West B 050	O	3	4356	Gray. Jack.;SR-Q-G-SA	2200'
3001527402	Linn	H E West B 064	O	9	4265	Gray. Jack.;SR-Q-G-SA	2221'
3001526790	Linn	H E West A 019	O	4	4360	Gray. Jack.;SR-Q-G-SA	2226'
3001527127	Linn	H E West A 022	O	4	5022	Gray. Jack.;SR-Q-G-SA	2288'
3001505119	Linn	H E West B 017	I	9	3930	Gray. Jack.;SR-Q-G-SA	2418'
3001527561	Linn	H E West B 060	O	10	4335	Gray. Jack.;SR-Q-G-SA	2583'
3001505125	Linn	H E West B 019	I	10	3955	Gray. Jack.;SR-Q-G-SA	2587'
3001510376	Linn	H E West B 029	I	9	3810	Gray. Jack.;SR-Q-G-SA	2716'

- 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 243 approved oil or gas wells in T. 17 S., R. 30 & 31 E. and T. 18 S., R. 30 & 31 E. Of those 243 wells, 233 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 (12 miles northwest), Devonian well (5 miles northwest), and an Ellenburger well (42 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 (3-1/2 miles southeast) operating Devonian disposal well (30-025-33584). The 291,817 barrels that was disposed included Yeso water.

The closest (53 miles southeast) Ellenburger disposal well (30-025-21476) has accepted more than 981,555 barrels of water.

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	<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		
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 (7.02 miles north in 1-18s-30e) Devonian production is Yates Petroleum Corporation's Federal FR 4 (30-015-36536). Closest (44.29 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 = 533'
Salado = 703'
Salt base = 1,622'
Yates = 1,800'
Seven Rivers = 2,100'
Bowers Sand: 2,518'

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Queen = 2,740'
Grayburg = 3,148'
San Andres = 3,490'
Lovington Sand: 3,610'
Glorieta = 4,960'
Tubb = 6,440'
Abo = 7,118'
Wolfcamp = 8,408'
Strawn = 10,972'
Atoka = 11,216'
Morrow Clastics = 11,732'
Mississippian = 11,984'
Devonian = 12,467'
Ellenburger = 13,587'—
Total Depth: 13,700'

There are no water wells within a minimum 2,000-meter (= 2.00 mile) radius according to State Engineer records (see Exhibit G). There will be 11,934' 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 (100 wells) or disposed (3 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 103 wells within Section 9 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.

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XI. Based on an October 22, 2013 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 95 active Devonian saltwater disposal wells, 11 active Devonian water injection wells, and 4 active Ellenburger saltwater disposal wells in New Mexico. Closest Quaternary fault is >75 miles west.

XIII. Notice (this application) has been sent (Exhibit H) to the surface owner (BLM), all leasehold operators (only Apache), all operating rights holders (BP, CIGNA, Devon, Essex, Linn, Marbob, McCombs, Oxy, and Pitch), and lessors (only BLM) within a half-mile.

A legal ad (see Exhibit I) was published on October 22, 2013.

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, New Mexico 87505

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

DIAMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code	Pool Name
Property Code	Property Name CROW FEDERAL SWD		Well Number 1
OGRID No.	Operator Name APACHE CORPORATION		Elevation 3909'

Surface Location

UL or lot No. A	Section 9	Township 17-S	Range 31-E	Lot Idn	Feet from the 890	North/South line NORTH	Feet from the 625	East/West line EAST	County EDDY
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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.				

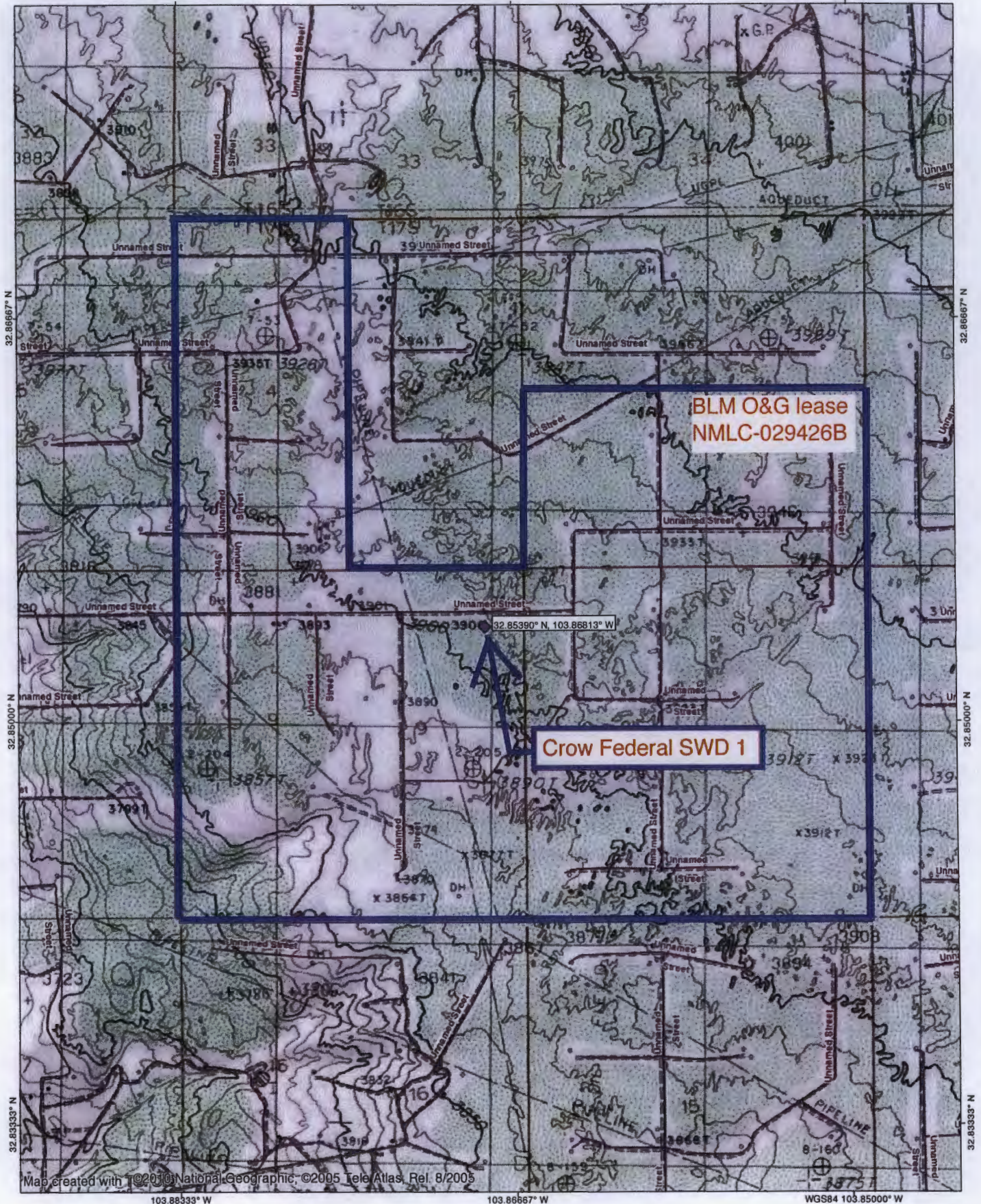
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

		<p>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>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>
<p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=674636.1 N X=643012.3 E</p> <p>LAT.=32.853792° N LONG.=103.867630° W</p> <p>LAT.=32° 51' 14" N LONG.=103° 52' 03" W</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>SEPTEMBER 20, 2013</p> <p>Date of Survey _____ Signature of Registered Professional Surveyor _____</p> <p> EXHIBIT A</p> <p>Certificate Number _____ Ronald J. Eidson 12641 Ronald J. Eidson 3239</p> <p>ACK JWSC W.O. 13 11 1000</p>

103.88333° W

103.86667° W

WGS84 103.85000° W



Map created with ©2005 National Geographic, ©2005 Tele Atlas, Rel. 8/2005

103.88333° W

103.86667° W

WGS84 103.85000° W

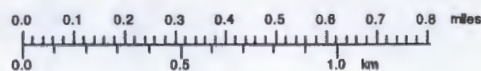
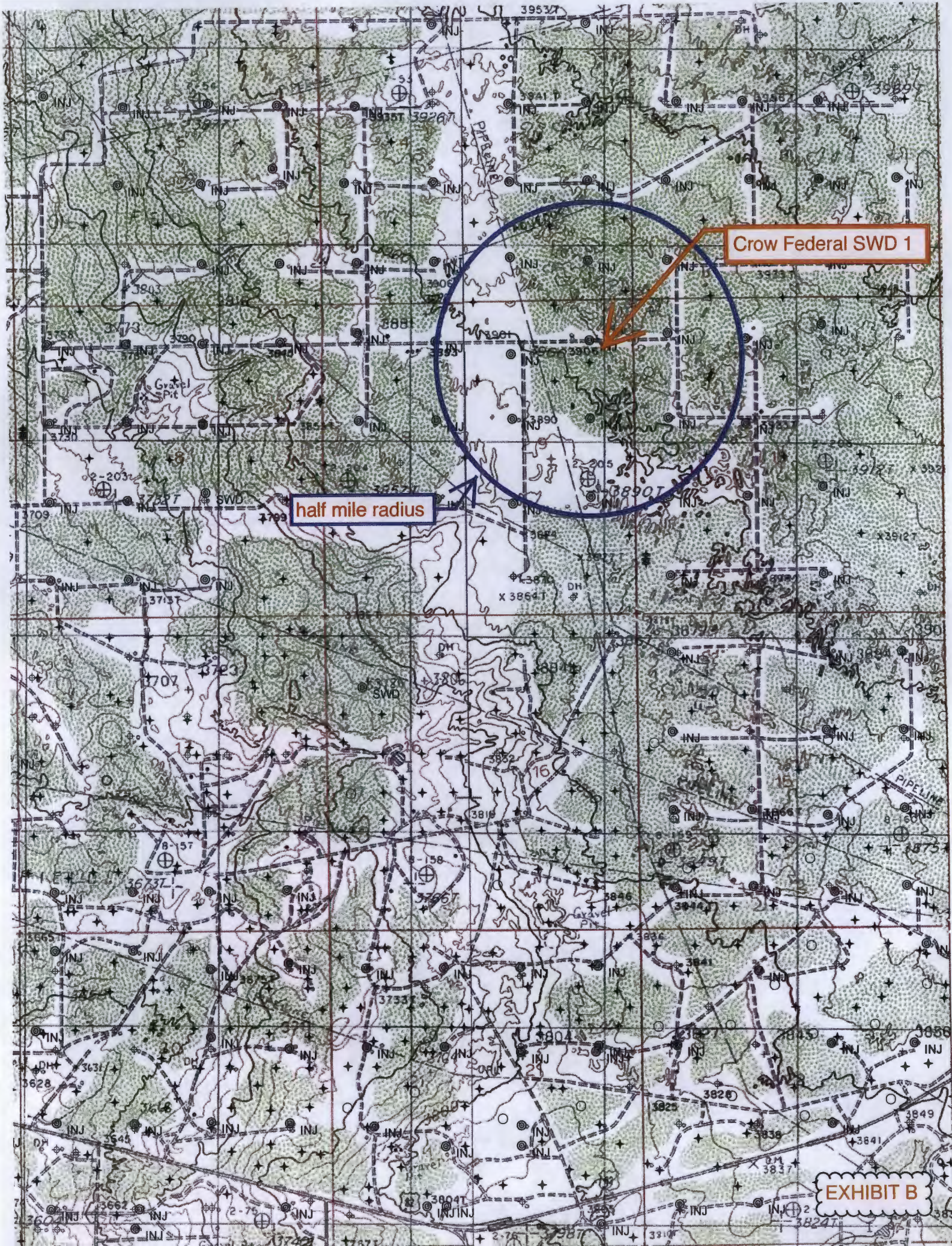


EXHIBIT A

TN/MN

7.5°

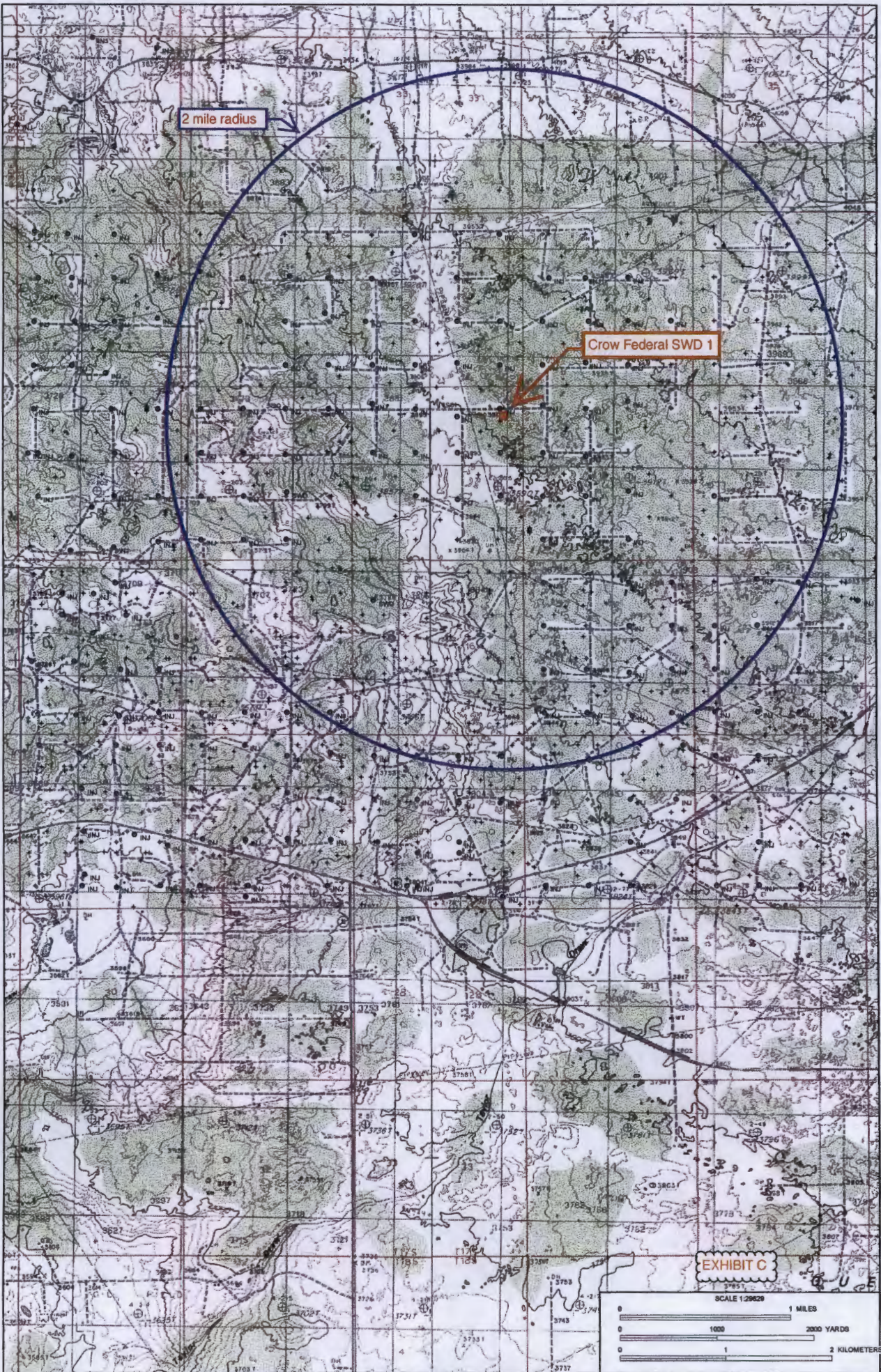
10/14/13

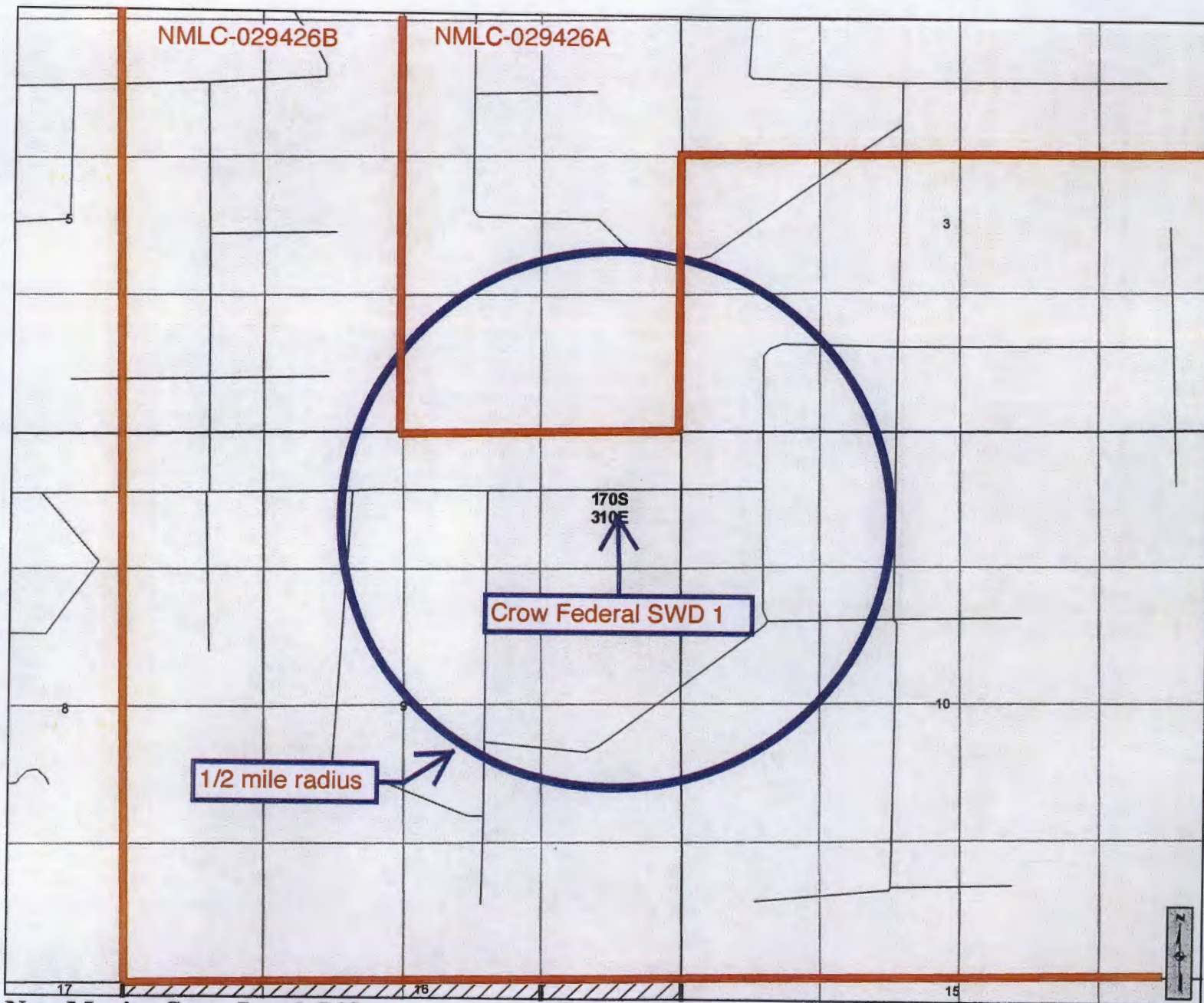


Crow Federal SWD 1

half mile radius

EXHIBIT B





New Mexico State Land Office Oil, Gas and Minerals

0 0.05 0.1 0.2 0.3 0.4
Miles

Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

EXHIBIT D

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: 11/27/2013 10:05:33 AM

Cartographic Features

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

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

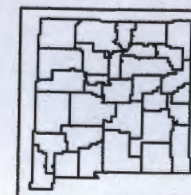
- Oil and Gas Leases
- Agricultural Leases
- Commercial Leases
- Minerals Leases
- Not Available for Oil and Gas Leasing
- Oil and Gas Leasing Influenced by Restriction

Oil and Gas Related Features

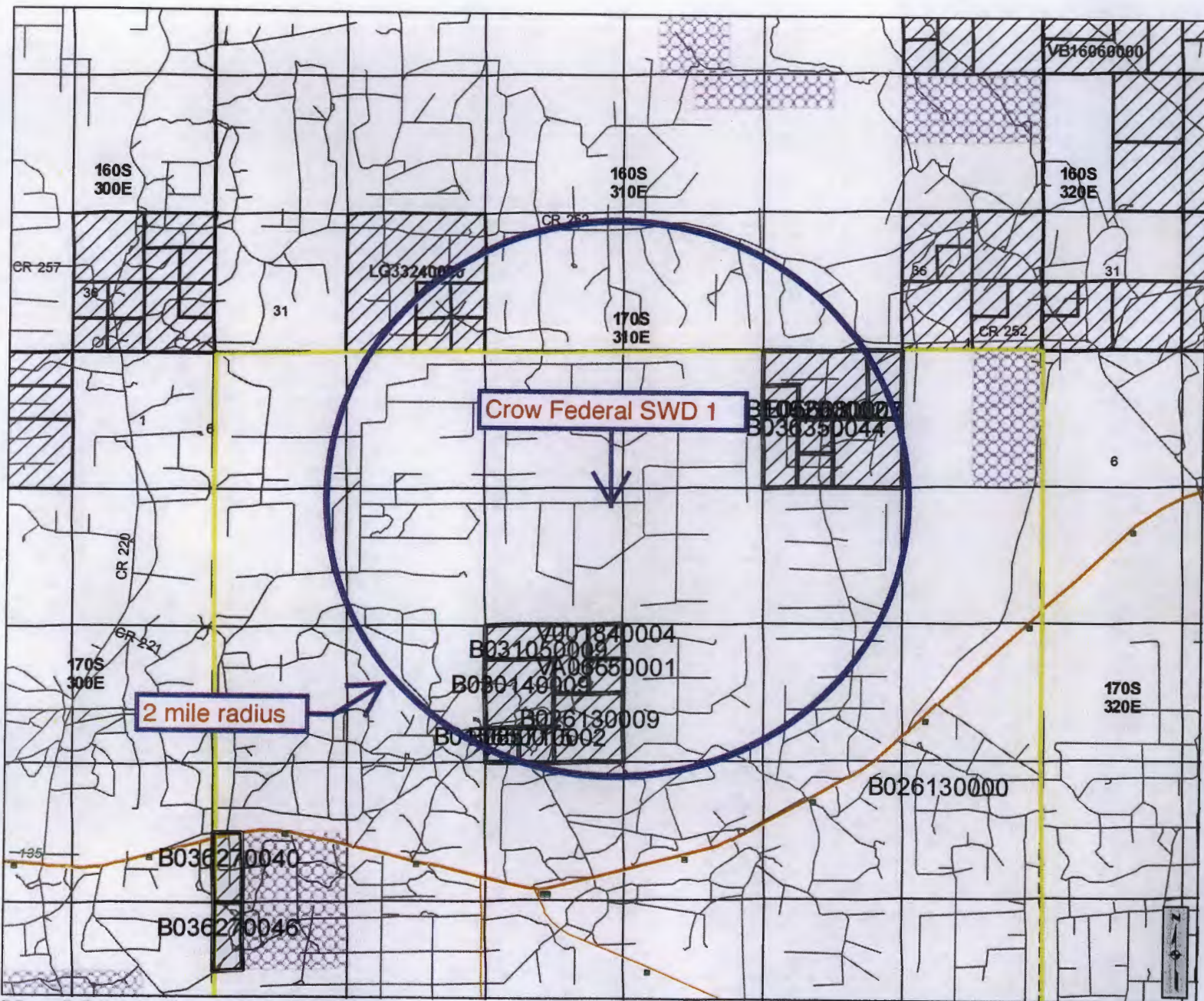
- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Volcanic Vents
- NMOC D Order R-111-P
- Potash Enclave Outline

NMOC D Oil and Gas Wells

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



www.nmstatelands.org



Cartographic Features

- County Boundaries
- County Seats
- City, Town or Village
- SLO District Offices
- SLO District Boundary
- Hwy Mileposts
- Interstate
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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

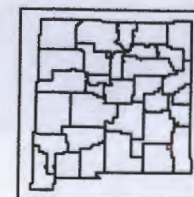
Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

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

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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): 605911

Northing (Y): 3635658

Radius: 3220

EXHIBIT G



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

UTMNA83 Radius Search (in meters):

Easting (X): 605911

Northing (Y): 3635658

Radius: 3220

EXHIBIT G

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

November 27, 2013

BLM
 620 E. Greene St.
 Carlsbad, NM 88220

Apache Corporation is applying (application attached) to drill its Crow 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: Crow Federal SWD #1 (BLM lease) ID = 13,700'
Proposed Injection Zone: Devonian & Ellenburger (from 12,467' to 13,700')
Location: 890' FNL & 625' FEL Sec. 9, T. 17 S., R. 31 E., Eddy County, NM
Approximate Location: ~7 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 NMOCD 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

November 27, 2013

Marbob Enery Corp.
 c/o COG Operating & Concho Oil & Gas LLC
 600 W. Illinois Ave.
 One Concho Centre
 Midland, TX 79701-4882

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Sincerely,

Brian Wood
 Brian Wood

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City, State, ZIP+4	

EXHIBIT H

2013 0600 0001 8656 0197

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

PERMITS WEST, INC.

PROVIDING PERMITS for LAND USERS

37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

November 27, 2013

BP America Production Co.
P. O. Box 3092
Houston TX 77253-3092

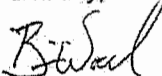
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Please call me if you have any questions.

Sincerely,



Brian Wood

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Total Postage & Fees	\$

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87552

Sent To: **BP**
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or PO Box No.
City, State, ZIP+4
PS Form 3800, August 2006 See Reverse for Instructions

EXHIBIT H

PERMITS WEST, INC.

PROVIDING PERMITS for LAND USERS

37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

November 27, 2013

CIGNA & CIGNA Prop. & Cas. Insurance
900 Cottage Grove Rd.
Bloomfield CT 06002

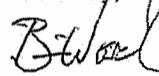
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Sincerely,



Brian Wood

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Postmark: NOV 27 2013
87552

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or PO Box No.
City, State, ZIP+4
PS Form 3800, August 2006 See Reverse for Instructions

0120 9598 1000 0090 E102

November 27, 2013

Devon Energy Prod. Co. LP
333 W. Sheridan Ave.
Oklahoma City OK 73102

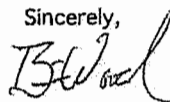
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Brian Wood

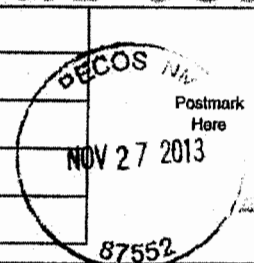
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EXHIBIT H

November 27, 2013

Essex Petroleum Corp.
11 Canal Court
Avon CT 06011

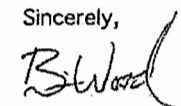
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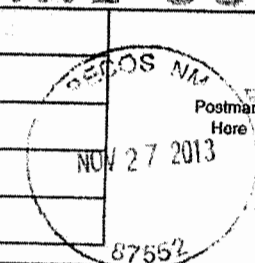
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Please call me if you have any questions.

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Brian Wood

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November 27, 2013

Linn Energy Holdings LLC
600 Travis St., Suite 5100
Houston TX 77002

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Brian Wood

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City, State, ZIP+4	
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EXHIBIT H

November 27, 2013

McCombs Energy Ltd.
5599 San Felipe St., Suite 1220
Houston TX 77056

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Please call me if you have any questions.

Sincerely,

Brian Wood

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City, State, ZIP+4	
PS Form 3800, August 2006 See Reverse for Instructions	

November 27, 2013

Oxy USA WTP LP
P. O. Box 50250
Midland TX 79710

Apache Corporation is applying (application attached) to drill its Crow 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: Crow Federal SWD #1 (BLM lease) ID = 13,700'
Proposed Injection Zone: Devonian & Ellenburger (from 12,467' to 13,700')
Location: 890' FNL & 625' FEL Sec. 9, T. 17 S., R. 31 E., Eddy County, NM
Approximate Location: ~7 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 NMOCD 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™	
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Total Postage & Fees \$	
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> <p>NOV 27 2013</p> <p>87552</p> </div>	
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PS Form 3800, August 2006 See Reverse for Instructions	

EXHIBIT H

November 27, 2013

Pitch Energy corp.
P. O. Box 304
Artesia, NM 88211

Apache Corporation is applying (application attached) to drill its Crow 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: Crow Federal SWD #1 (BLM lease) ID = 13,700'
Proposed Injection Zone: Devonian & Ellenburger (from 12,467' to 13,700')
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Please call me if you have any questions.

Sincerely,

Brian Wood

Brian Wood

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Postage \$	1.52
Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees \$	7.17
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> <p>NOV 27 2013</p> <p>87552</p> </div>	
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City, State, ZIP+4	
PS Form 3800, August 2006 See Reverse for Instructions	

Affidavit of Publication

NO.

22764

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

October 22, 2013

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

22nd

day of

October

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:

LEGAL NOTICE

Apache Corporation is applying for a saltwater disposal well. The Crow Federal SWD #1 will dispose into the Devonian and Ellenberger from 12,467' to 13,700'. It will be located 7 miles northeast of Loco Hills at 890 FNL & 825 FEL Sec. 9, T. 17 S., R. 31 E., Eddy County. Maximum disposal rate will be 40,000 bwpd. Maximum injection pressure will be 2,493 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.

Published in the Artesia Daily Press, Artesia, N.M., Oct. 22, 2013. Legal No 22764.

EXHIBIT I



C-108 Review Checklist: Received 12/02/13 Add. Request: — Reply Date: — Suspended: — [Ver 12]

PERMIT TYPE: WFX / PMX / SWD Number: 1460 Permit Date: 04/04/14 Legacy Permits/Orders: NA

Well No. 1 Well Name(s): Crow Federal SWD [not gas well at 1063 FNL/920 FEL]

API: 30-0 15-Pending Spud Date: TBD New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 890 FNL / 625 FEL Lot — or Unit A Sec 9 Tsp 17S Rge 31E County Eddy

General Location: North of Talley Draw / 10m. E of Locot Hills Pool: SWD: Devonian / SWD: Ellenburger Pool No.: —

BLM 100K Map: Holbrooks Operator: Apache Corporation OGRID: 873 Contact: Permits West / Ueda

COMPLIANCE RULE 5.9: Inactive Wells: 4 Total Wells: 2849 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Date: 02/04/14

WELL FILE REVIEWED ☐ Current Status: NA - no API / no file

WELL DIAGRAMS: NEW: Proposed ☒ or RE-ENTER: Before Conv. ☐ After Conv. ☐ Logs in Imaging: Log suite described in Application for new well

Planned Rehab Work to Well: None

Well Construction Details:		Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned <input type="checkbox"/> or Existing <input type="checkbox"/> Conductor	—	—	—	—	—
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Surface	17 1/2 / 13 3/8	0 to 425	Stage Tool	580	Cir. to Surf
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Interm/Prod	12 1/4 / 9 5/8	0 to 4500	No	1400	Cir. to Surf
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Prod/Interm	8 3/4 / 7	0 to 13700	No	3000	CBL / 3000 ft
Planned <input type="checkbox"/> or Existing <input type="checkbox"/> Liner/Prod	—	—	—	—	—
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> OH / PERP	8 3/4 / 7	12,467 to 13,687	Inj Length 1233	1210'	Completion/Operation Details:
Injection Stratigraphic Units:		Depths (ft)	Injection or Confining Units		
Adjacent Unit: Litho. Struc. Por.	—	—	Morrow	11732	Drilled TD <u>—</u> PBSD <u>—</u>
Confining Unit: Litho. Struc. Por.	—	—	Mississippian	11984	NEW TD <u>13700</u> NEW PBSD <u>—</u>
Proposed Inj Interval TOP:	12467	—	Devonian	12467	NEW Open Hole <input type="checkbox"/> or NEW Perfs <input checked="" type="checkbox"/>
Proposed Inj Interval BOTTOM:	13687	—	Ellenburger	13587	Tubing Size <u>4 1/2</u> in. Inter Coated? <u>Yes</u>
Confining Unit: Litho. Struc. Por.	—	—	Cambrion wash	7	Proposed Packer Depth <u>12367-12411</u>
Adjacent Unit: Litho. Struc. Por.	—	—	PE	7	Min. Packer Depth <u>12367</u> (100-ft limit)
AOR: Hydrologic and Geologic Information				Proposed Max. Surface Press. <u>2493</u> psi	
POTASH: R-111-P <u>Noticed?</u> <u>NA</u>	BLM Sec Ord <u>16</u>	WIPP <u>Noticed?</u> <u>NA</u>	SALADO: T: <u>703</u> B: <u>1622</u>	CLIFF HOUSE <u>—</u>	
FRESH WATER: Aquifer <u>Artesian</u>	Max Depth <u>120</u>	1-Mile Wells? <u>No</u>	FW Analysis <input type="radio"/>	HYDRO AFFIRM STAT By <u>Qualified Person</u> <input checked="" type="checkbox"/>	
Disposal Fluid: Formation <u>poor quality</u>	Source(s) <u>Yes</u>	Horizontals <u>Yes</u>	Analysis? <u>Yes</u>	On Lease <input type="radio"/> Operator Only <input checked="" type="radio"/> or Commercial <input type="radio"/>	
Disposal Interval: Inject Rate (Avg/Max BWPD): <u>3000/4000</u>	Protectable Waters? <u>UNK Calc</u>	CAPITAN REEF: thn <input type="radio"/> adj <input type="radio"/> NA <input checked="" type="checkbox"/>			
HC Potential: Producing Interval? <u>No</u>	Formerly Producing? <u>No</u>	Method: Logs/DST/P&A/Other <u>mudlog</u> 2-Mile Radius Pool Map <input type="radio"/>			
AOR Wells: 1/2-M Radius Map? <u>Yes</u> Well List? <u>Yes</u> Total No. Wells Penetrating Interval: <u>0</u> Horizontals? <u>NA</u>					
Penetrating Wells: No. Active Wells <u>0</u> Num Repairs? <u>—</u> on which well(s)? <u>—</u> Diagrams? <u>—</u>					
Penetrating Wells: No. P&A Wells <u>0</u> Num Repairs? <u>—</u> on which well(s)? <u>—</u> Diagrams? <u>—</u>					
NOTICE: Newspaper Date <u>Oct. 22/2013</u> Mineral Owner <u>BLM</u> Surface Owner <u>BLM</u> N. Date <u>11/27/13</u>					
RULE 26.7(A): Identified Tracts? <u>Yes</u> Affected Persons: <u>AGNA/Dawn/Linn/Essex/Martab/McCombs/OK</u> N. Date <u>11/27/13</u>					

Permit Conditions: Issues: Top 100' of Ellenburger / mudlog / salinity for WQ

Add Permit Cond: Mudlog for injection interval / salinity calculation