

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 \_\_\_\_\_

- SWD - 1460-A  
 - APACHE CORP  
 873  
 Well  
 - CROW FEDERAL SWD #1  
 30-015-42469  
 Pool  
 - SWD, DEVONIAN  
 96101

[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.

DEAN Guines      see cover letter UZL coordinator      \_\_\_\_\_  
 Print or Type Name      Signature      Title      Date

\_\_\_\_\_  
 e-mail Address



January 20, 2015

Energy, Minerals & Natural Resources Department  
Oil Conservation Division  
Attention: Phillip Goetze, P.G.  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Re: Administrative Order SWD-1460  
Apache Corporation  
Crow Federal SWD  
Well# 1 (API 30-015-42469)  
Unit A, Section 9, Township 17 South, Range 31 East.  
Eddy County, New Mexico

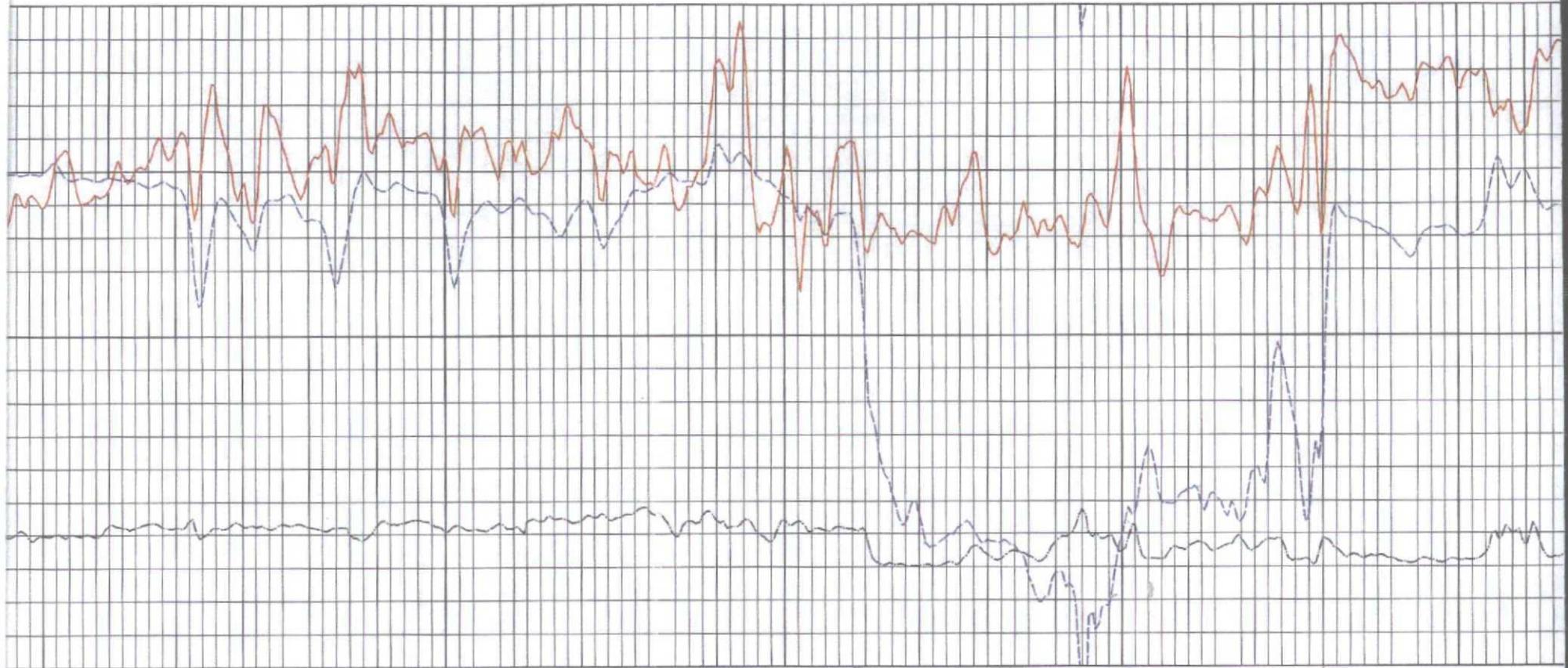
Dear Mr. Goetze,

As you requested during our meeting on December 18, 2014, this letter is to confirm of Apache Corporation's change in wellbore completion for Order SWD 1460. Originally your office approved disposal into the interval from the top of the Devonian formation to 100' below the contact with the Ellenburger formation which was estimated to occur from approximately 12,467' to 13,687' based on logs from the Turner West B #27 type well located approximately 3200' NW of the Crow Federal #1. The Woodford/Devonian in the Crow Federal #1 is actually deeper than the initial prognosis from the Turner West B #27. The actual top of the Woodford/Devonian in the Crow Federal #1 is 13,012'; therefore, Apache Corporation respectfully request Administrative Order SWD-1460 be amended to reflect a disposal zone from 13,012' to 14,000' with actual perforations at 13,080 to 13,840'. Apache Corporation didn't penetrate the Ellenburger formation as previously planned.

Thank you for your assistance, and if you need additional information please contact me via email at: [dean.gaines@apachecorp.com](mailto:dean.gaines@apachecorp.com) or direct at: (432) 818-1803.

Sincerely,

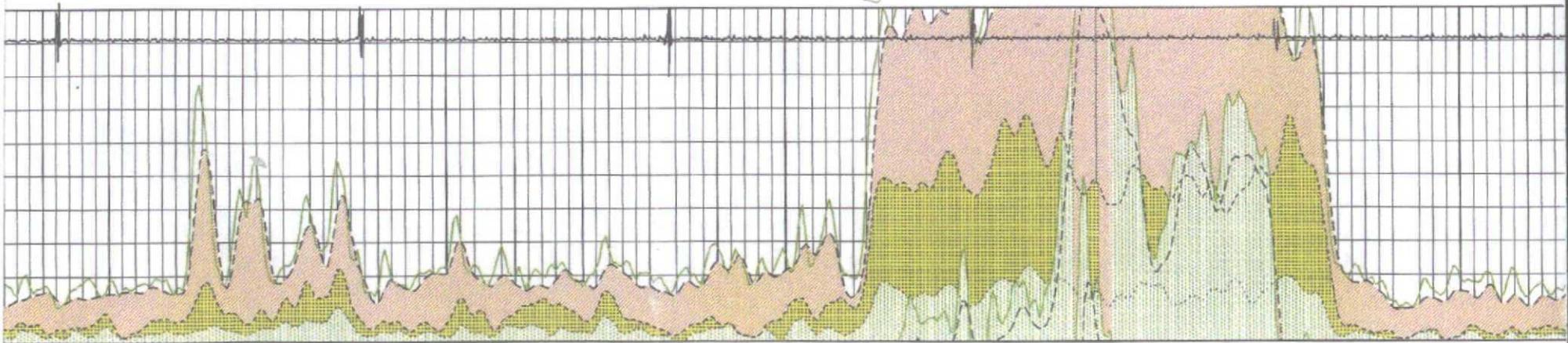
Dean Gaines  
UIC Coordinator

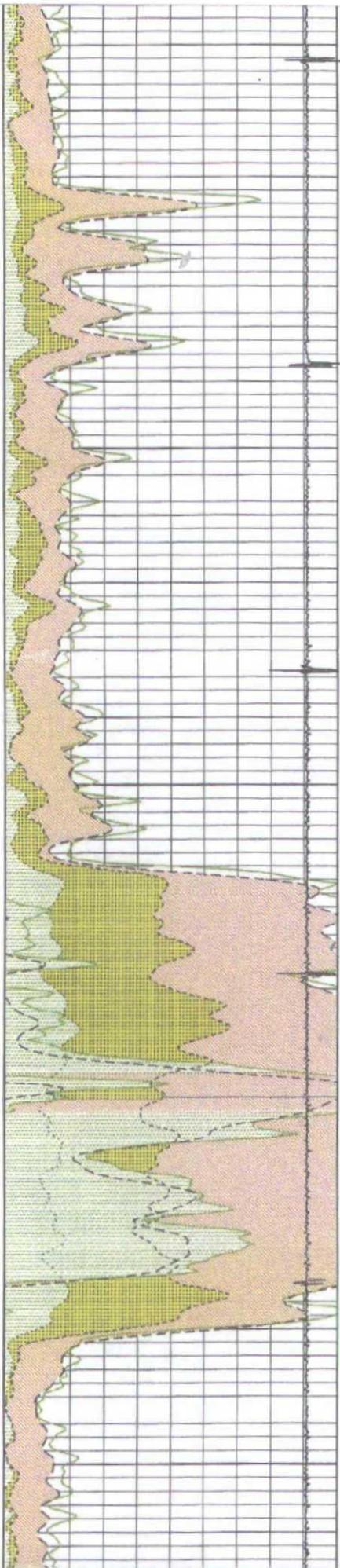


12800                      12950                      13000                      13050                      13100

Woodford  
13,012

Dev  
13,080





12900

12950

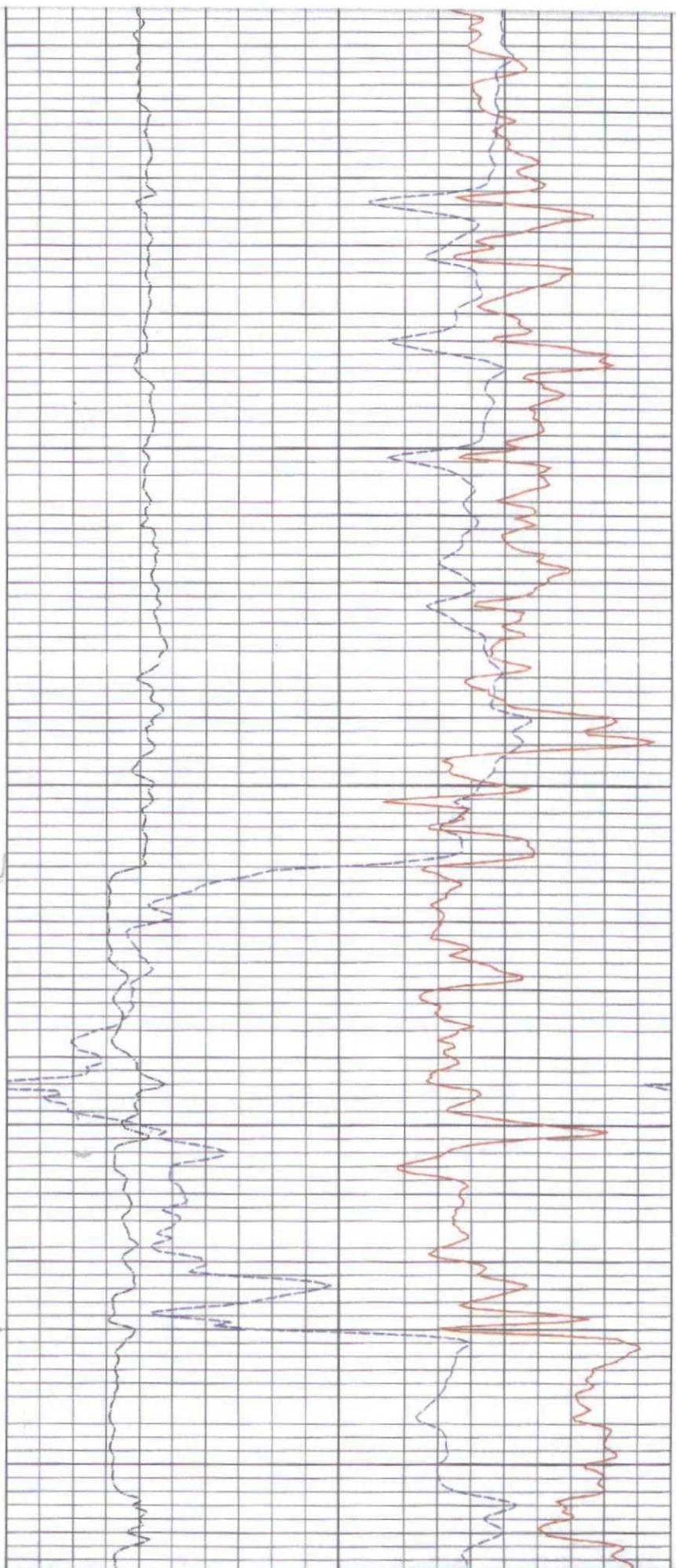
13000

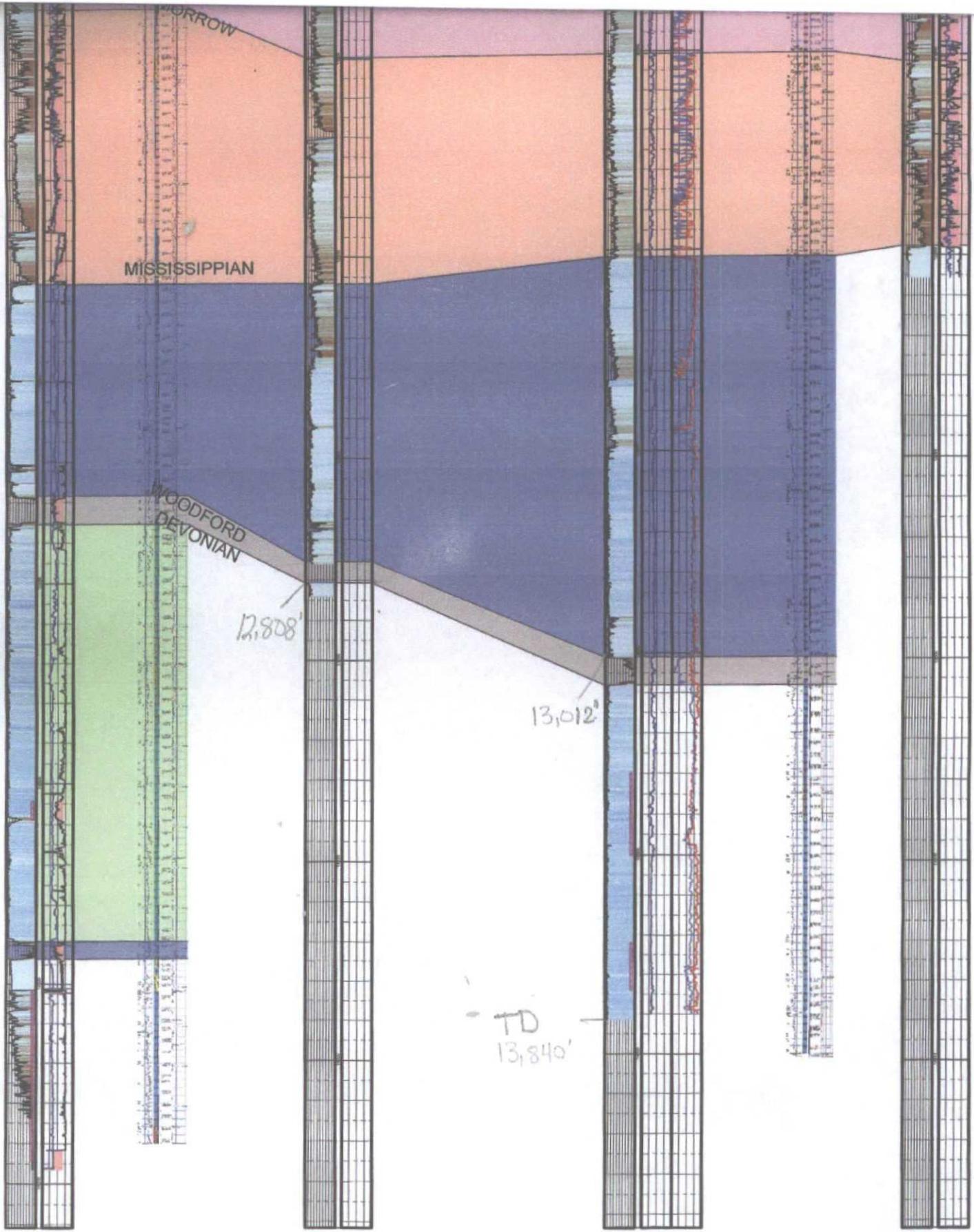
Woodford  
13,012

13050

Dev  
13,080

13100



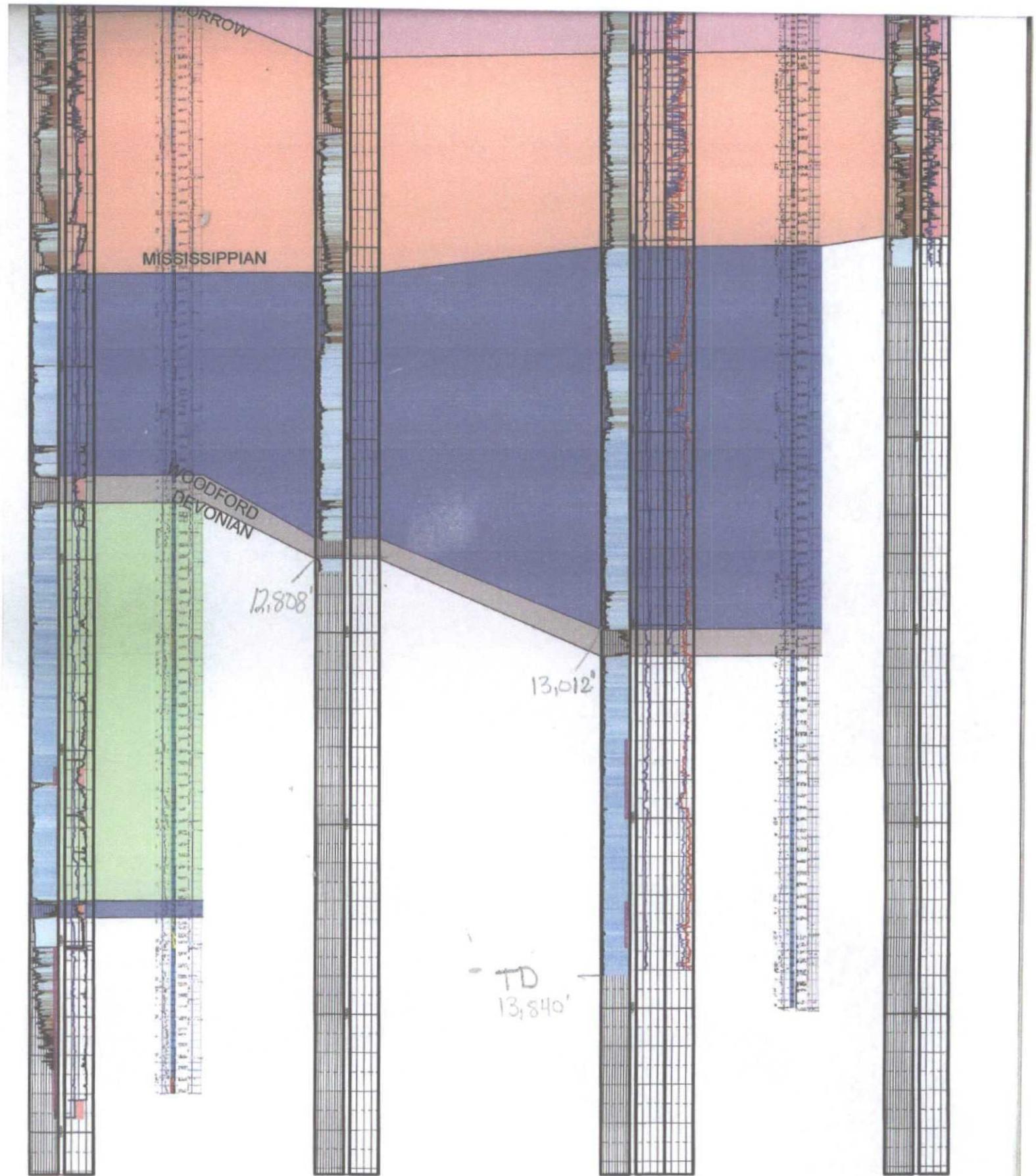


Apache Corp.  
Apache State SWD

Sinclair O&G  
West B 27  
Type Well

Apache Corp  
Crow Federal SWD

MARBOB Energy  
Crow Federal



Apache Corp.  
Apache State SWD

Sinclair Oil  
West B 27  
Type Well

Apache Corp  
Crow Federal SWD

MARBOB Energy  
Crow Federal

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 \_\_\_\_\_

- SWD-1460-A  
 - Apache Corporation

873

Amend SWD-1460  
 (change depth of approved zone)  
 Crow Federal SWD 1  
 30-015-42469

[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

Pool  
 - SWD; DEVONIAN  
 96101  
 2015 FEB 17 PM 2:02  
 RECEIVED OOD

[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

Consultant

2-17-15

Print or Type Name

Signature

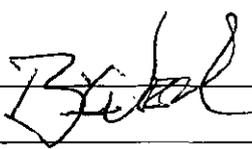
Title

Date

brian@permitswest.com

e-mail Address

**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.
- VII. Attach data on the proposed operation, including:
- Proposed average and maximum daily rate and volume of fluids to be injected;
  - Whether the system is open or closed;
  - Proposed average and maximum injection pressure;
  - Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  - If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- Crow Federal SWD 1**  
**(amend SWD-1460;**  
**Devonian was deeper**  
**than expected)**
- \*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: FEB. 14, 2015  
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.

INJECTION WELL DATA SHEET

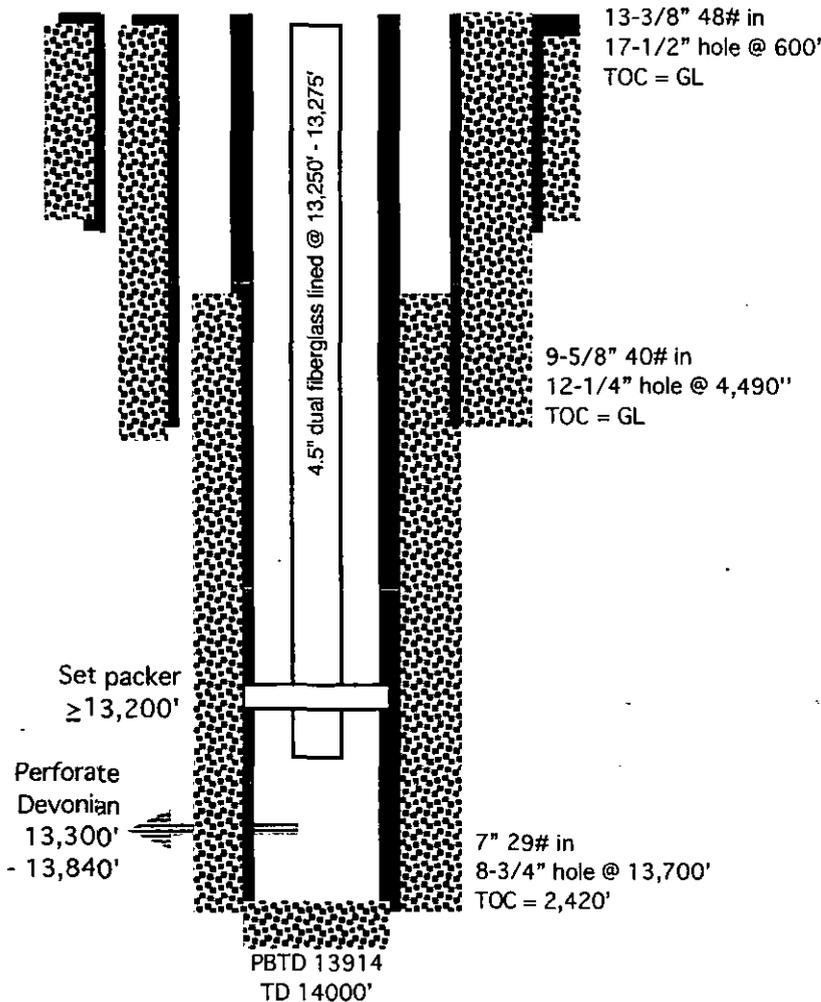
OPERATOR: APACHE CORPORATION

WELL NAME & NUMBER: CROW FEDERAL SWD 1

WELL LOCATION: 890' FNL & 625' FEL                      A                      9                      17 S                      31 E  
 FOOTAGE LOCATION                      UNIT LETTER                      SECTION                      TOWNSHIP                      RANGE

WELLBORE SCHEMATIC

(not to scale)



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17-1/2"                      Casing Size: 13-3/8"  
 Cemented with: 580 sx.                      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: SURFACE                      Method Determined: VISUAL

Intermediate Casing

Hole Size: 12-1/4"                      Casing Size: 9-5/8"  
 Cemented with: 2,350 sx.                      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: SURFACE                      Method Determined: VISUAL

Production Casing

Hole Size: 8-3/4"                      Casing Size: 7"  
 Cemented with: 1,700 sx.                      or \_\_\_\_\_ ft<sup>3</sup>  
 Top of Cement: 2,420'                      Method Determined: CBL  
 Total Depth: 14,000' (PBTD = 13,914')

Injection Interval

13,300'                      feet to                      13,840'

(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: >13,200'

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

Additional Data1. 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: DEVONIAN3. Name of Field or Pool (if applicable): SWD; DEVONIAN (POOL CODE 96101)

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 (2146'), QUEEN (2761'), GRAYBURG (2926'),  
SAN ANDRES (3495'), GLORIETA (4999'), & YESO (5,690')UNDER: none

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL &amp; 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM

AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

i. The original approval covered the Devonian and Ellenburger from 12,467' to 13,687'. Once drilled, it was discovered the Devonian was deeper than anticipated. New goal is to allow disposal into the Devonian (SWD; Devonian (NMOCD pool code 96101)) from 13,300' to 13,840'. The Ellenburger is no longer a goal and was not penetrated. TD is 14,000'. PBSD is 13,914'.

ii. Operator: Apache Corporation (OGRID #873)  
Operator phone number: (432) 818-1976  
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-029426B  
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 4, &  
all of Sections 9 & 10, T. 17 S., R. 31 E.

A. (2) Surface casing (13-3/8", 48#, H-40) was set at 600' in a 17-1/2" hole and cemented to the surface with 580 sacks (>85% excess) Class C.

Intermediate casing (9-5/8", 40#, J-55) was set at 4,490' in a 12-1/4" hole and cemented to the surface with 2,350 sacks (>100% excess) Class C.

Production casing (7", 29#, L-80) was set at 13,960' in an 8-3/4" hole and cemented to 2,420' (CBL) with 1,700 sacks Class C.

A. (3) Tubing will be 4-1/2" Duolined. Setting depth will be approximately 13,250' to 13,275'. (Disposal interval will be 13,300' to 13,840'.)

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL &amp; 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM

AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

- A. (4) An Arrow AS-1X packer will be set at 13,200' (100' above the highest proposed perforation of 13,300').
- B. (1) Disposal zone will be the Devonian dolomite (SWD; Devonian (96101) pool). Estimated fracture gradient is  $\approx 0.63$  psi per foot.
- B. (2) Disposal interval will be 13,300' to 13,840'. The top 13,960' of the 14,000' deep well is cased.
- B. (3) Spud date was September 2, 2014. It was drilled, and will be completed, as a saltwater disposal well. TD was hit November 5, 2014.
- B. (4) It will be perforated from 13,300' to 13,840' with 2 shots per foot @ 60° phasing. Shot diameter = 0.37" to 0.42".
- B. (5) Potential oil or gas zones above or below the Devonian 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 (6.4 miles SE in 21-17s-32e; Maljamar; Devonian 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)

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL & 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM  
 AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

IV. This is not an expansion of an existing injection project. It is disposal only. (The water flood that is present in the area of review is in the shallower Grayburg Jackson; Seven Rivers - Queen - Glorieta, San Andres Pool.)

V. Exhibit B shows all 36 approved wells within a half-mile radius. Seven of the 36 wells are proposed oil wells. There are 29 existing wells (18 oil + 11 water injection). Deepest (12,140') of the 36 wells is a Morrow test (30-015-34126) that was plugged back and is now a Yeso oil well. Exhibit C shows all 614 existing wells (430 oil or gas wells + 97 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 well within a half-mile penetrated the Devonian (top = 13,080'). Deepest well is 12,140'. The 36 approved wells that are within a half-mile are:

Well	API	Location	Spud Date	TVD	Pool	Well Type	feet from Crow Federal SWD 1
H E West B 028	3001510162	A-9-17s-31e	11/27/63	3850	Gray Jack; SR-Q-G-SA	I	228
Crow Federal 1	3001534126	A-9-17s-31e	8/12/05	12140	Fren; Glorieta-Yeso	O	384
H E West B 053	3001527148	H-9-17s-31e	9/20/93	4310	Gray Jack; SR-Q-G-SA	O	818
H E West B 054	3001527150	B-9-17s-31e	3/10/93	4310	Gray Jack; SR-Q-G-SA	O	1042
H E West B 036	3001525995	H-9-17s-31e	10/15/88	3883	Gray Jack; SR-Q-G-SA	I	1107
Crow Fed 028H	3001541945	D-10-17s-31e	not yet	4980	Fren; Glorieta-Yeso	O	1110
Crow Fed 031H	3001541912	D-10-17s-31e	not yet	5320	Fren; Glorieta-Yeso	O	1117
Crow Fed 029H	3001541946	D-10-17s-31e	not yet	5610	Fren; Glorieta-Yeso	O	1129

## CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL & 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM  
AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

Crow Fed 032H	3001541913	D-10-17s-31e	not yet	5850	Fren; Glorieta-Yeso	O	1138
H E West A 023	3001527128	P-4-17s-31e	9/8/93	4308	Gray Jack; SR-Q-G-SA	O	1157
Crow Fed 033H	3001542217	D-10-17s-31e	not yet	6360	Fren; Glorieta-Yeso	O	1162
H E West B 040	3001526024	D-10-17s-31e	12/22/88	4021	Gray Jack; SR-Q-G-SA	I	1292
H E West B 047	3001526203	B-9-17s-31e	12/2/89	3922	Gray Jack; SR-Q-G-SA	I	1400
H E West A 017	3001526212	P-4-17s-31e	12/12/89	3954	Gray Jack; SR-Q-G-SA	I	1537
H E West B 013	3001505122	E-10-17s-31e	8/16/57	3900	Gray Jack; SR-Q-G-SA	I	1671
H E West B 012	3001505118	G-09-17s-31e	6/29/56	3864	Gray Jack; SR-Q-G-SA	I	1782
H E West B 061	3001527401	E-10-17s-31e	11/5/94	4350	Gray Jack; SR-Q-G-SA	O	1851
H E West B 062	3001527564	J-09-17s-31e	9/5/94	4350	Gray Jack; SR-Q-G-SA	O	1925
H E West B 016	3001505056	M-3-17s-31e	7/8/58	3978	Gray Jack; SR-Q-G-SA	I	1981
H E West B 051	3001527110	G-10-17s-31e	3/16/93	4372	Gray Jack; SR-Q-G-SA	O	2013
H E West B 063	3001527480	G-09-17s-31e	9/15/94	4280	Gray Jack; SR-Q-G-SA	O	2030
H E West B 052	3001527149	D-10-17s-31e	3/21/93	4335	Gray Jack; SR-Q-G-SA	O	2031
H E West A 014	3001525999	O-04-17s-31e	11/22/88	3935	Gray Jack; SR-Q-G-SA	I	2123
Crow Fed Com 34H	3001542139	M-3-17s-31e	6/27/14	5228	Fren; Glorieta-Yeso	O	2126
Crow Fed 035H	3001542140	M-3-17s-31e	5/22/14	5358	Fren; Glorieta-Yeso	O	2140
Crow Fed 036H	3001542141	M-3-17s-31e	7/14/14	5700	Fren; Glorieta-Yeso	O	2163
Crow Fed 037H	3001542142	M-3-17s-31e	6/7/14	5871	Fren; Glorieta-Yeso	O	2178
H E West B 050	3001527109	N-3-17s-31e	3/4/93	4356	Gray Jack; SR-Q-G-SA	O	2200
Crow Fed 038H	3001542143	M-3-17s-31e	not yet	6115	Fren; Glorieta-Yeso	O	2203
Crow Fed 039H	3001542144	M-3-17s-31e	not yet	6316	Fren; Glorieta-Yeso	O	2218
H E West B 064	3001527402	B-9-17s-31e	11/8/94	4265	Gray Jack; SR-Q-G-SA	O	2222
H E West A 019	3001526790	P-4-17s-31e	7/19/94	4360	Gray Jack; SR-Q-G-SA	O	2226
H E West A 022	3001527127	I-4-17s-31e	2/3/93	5022	Gray Jack; SR-Q-G-SA	O	2288
H E West B 017	3001505119	I-9-17s-31e	9/2/58	3930	Gray Jack; SR-Q-G-SA	I	2419
H E West B 060	3001527561	E-10-17s-31e	9/13/94	4335	Gray Jack; SR-Q-G-SA	O	2584
H E West B 019	3001505125	C-10-17s-31e	12/21/58	3955	Gray Jack; SR-Q-G-SA	I	2588
H E West B 029	3001510376	C-9-17s-31e	12/11/63	3810	Gray Jack; SR-Q-G-SA	I	2717

- 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

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL & 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM

AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

Maximum injection pressure will be 2,660 psi (= 0.2 psi/foot x 13,300' (highest perforation)).

4. The disposal water will be produced water from Apache wells, mainly from the Yeso. Apache has 315 approved oil or gas wells in T. 17 S., R. 30 & 31 E. and T. 18 S., R. 31 E. Of those 315 wells, 303 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 713,609 barrels that was disposed included Yeso water.

	<u>Yeso</u>	<u>Devonian</u>
Barium	0.1136	
Bicarbonate	495.296	1,260.0
Calcium	2,979.73	
Chloride	138,951.0	34,400.0
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
Total Dissolved Solids	207,695.0	63,260

5. Closest (6.4 miles southeast in 21-17s-32e) Devonian producer is COG's MC Federal 6 (30-025-35252).

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL &amp; 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM

AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

VIII. The Devonian ( $\geq 920$  thick) is a dolomite. 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.

Formation tops are:

Quaternary = 0'  
Rustler = 532'  
Tansill salt = 680'  
Bottom salt = 1306'  
Yates = 1,868'  
Seven Rivers = 2,146'  
Queen = 2,761'  
San Andres = 3,495'  
Glorieta = 4,999'  
Paddock = 5,049'  
Blinbry = 5,687'  
Tubb = 6,455'  
Abo = 7,136'  
Wolfcamp = 8,746'  
Strawn = 11,012'  
Atoka = 11,259'  
Morrow = 11,507'  
Mississippian = 12,017'  
Devonian = 13,080'  
PBSD = 13,914'  
Total Depth: 14,000'

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 12,548' 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 is being injected (83 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 Devonian via 86 wells within Section 9 and the bordering 8 sections.

CROW FEDERAL SWD 1 (API# 30-015-42469)

890' FNL & 625' FEL SEC. 9, T. 17 S., R. 31 E. EDDY COUNTY, NM

AMENDMENT TO ADMINISTRATIVE ORDER SWD-1460

- IX. The well will be stimulated with 15% HCl NEFE acid to clean out scale or fill.
- X. A CBL log has been run.
- XI. Based on a January 28, 2015 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 is in hydrologic connection with any underground sources of water. There are 115 active Devonian saltwater disposal wells, and 12 active Devonian water injection wells in New Mexico. Closest Quaternary fault is >75 miles west (Exhibit H).
- XIII. A legal ad (see Exhibit I) was published on December 30, 2014. Notice (this application) has been sent (Exhibit J) 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.

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

DISTRICT II  
811 S First St., Artesian, 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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
Property Code	Property Name <b>CROW FEDERAL SWD</b>	Well Number <b>1</b>
OGRID No	Operator Name <b>APACHE CORPORATION</b>	Elevation <b>3909'</b>

Surface Location

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

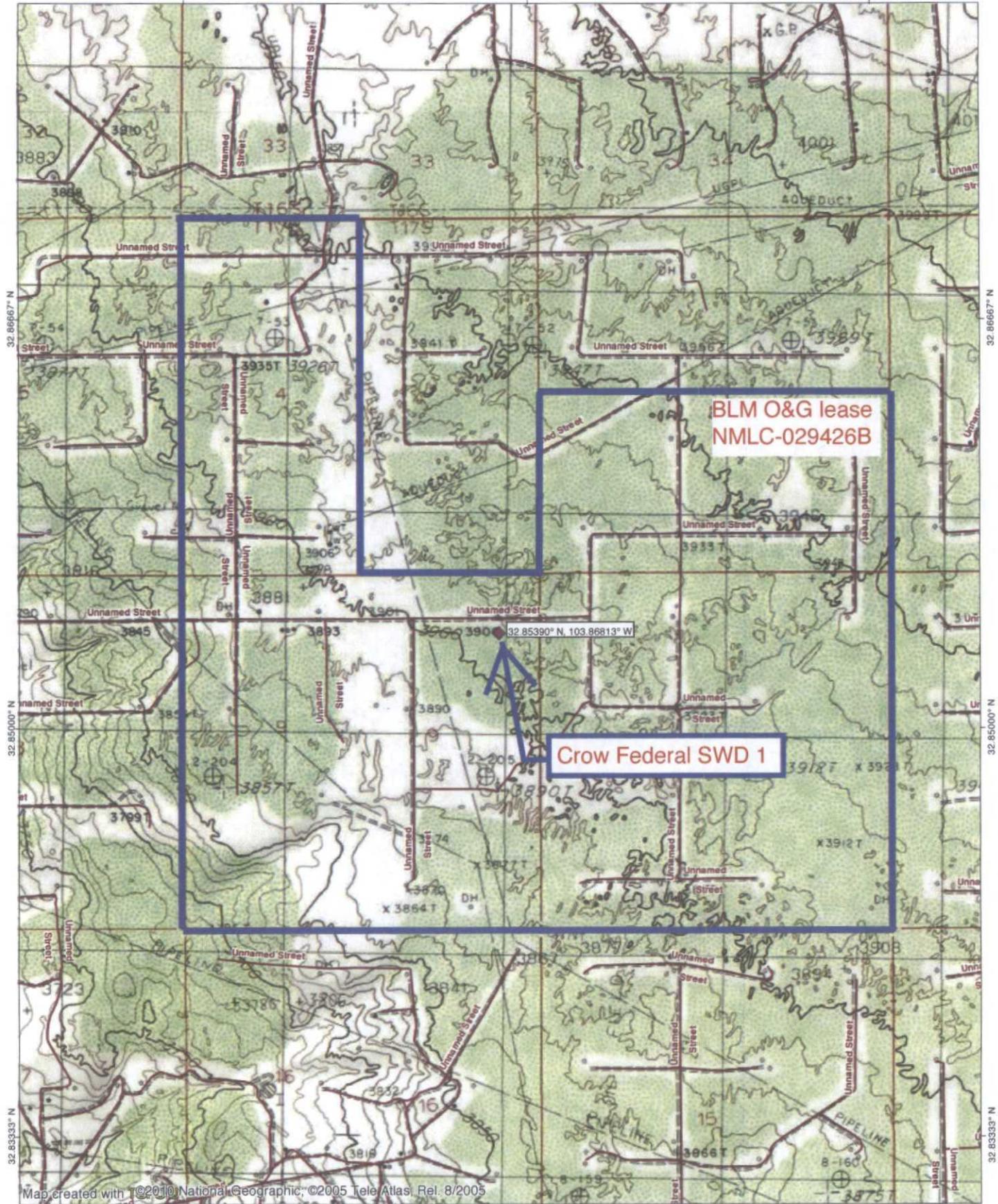
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

			<p><b>OPERATOR CERTIFICATION</b></p> <p><i>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.</i></p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p>	
	<p><b>GEODETTIC COORDINATES</b> NAD 27 NME</p> <p><b>SURFACE LOCATION</b> Y=674636.1 N X=643012.3 E</p>			<p><b>SURVEYOR CERTIFICATION</b></p> <p><i>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.</i></p> <p>SEPTEMBER 20, 2013</p> <p>Date of Survey _____ Signature of Registered Professional Surveyor _____</p>
	<p>LAT. = 32.853792° N LONG. = 103.867630° W</p> <p>LAT. = 32° 51' 14" N LONG. = 103° 52' 03" W</p>			
	<p>ACK</p>			<p>JWSC W O 13 11 1000</p>

103.88333° W

103.86667° W

WGS84 103.85000° W



32.86667° N

32.86667° N

32.85000° N

32.85000° N

32.83333° N

32.83333° N

Map created with ©2010 National Geographic, ©2005 Tele Atlas, Rel. 8/2005

103.88333° W

103.86667° W

WGS84 103.85000° W

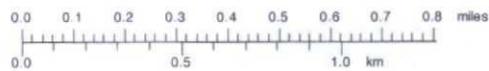
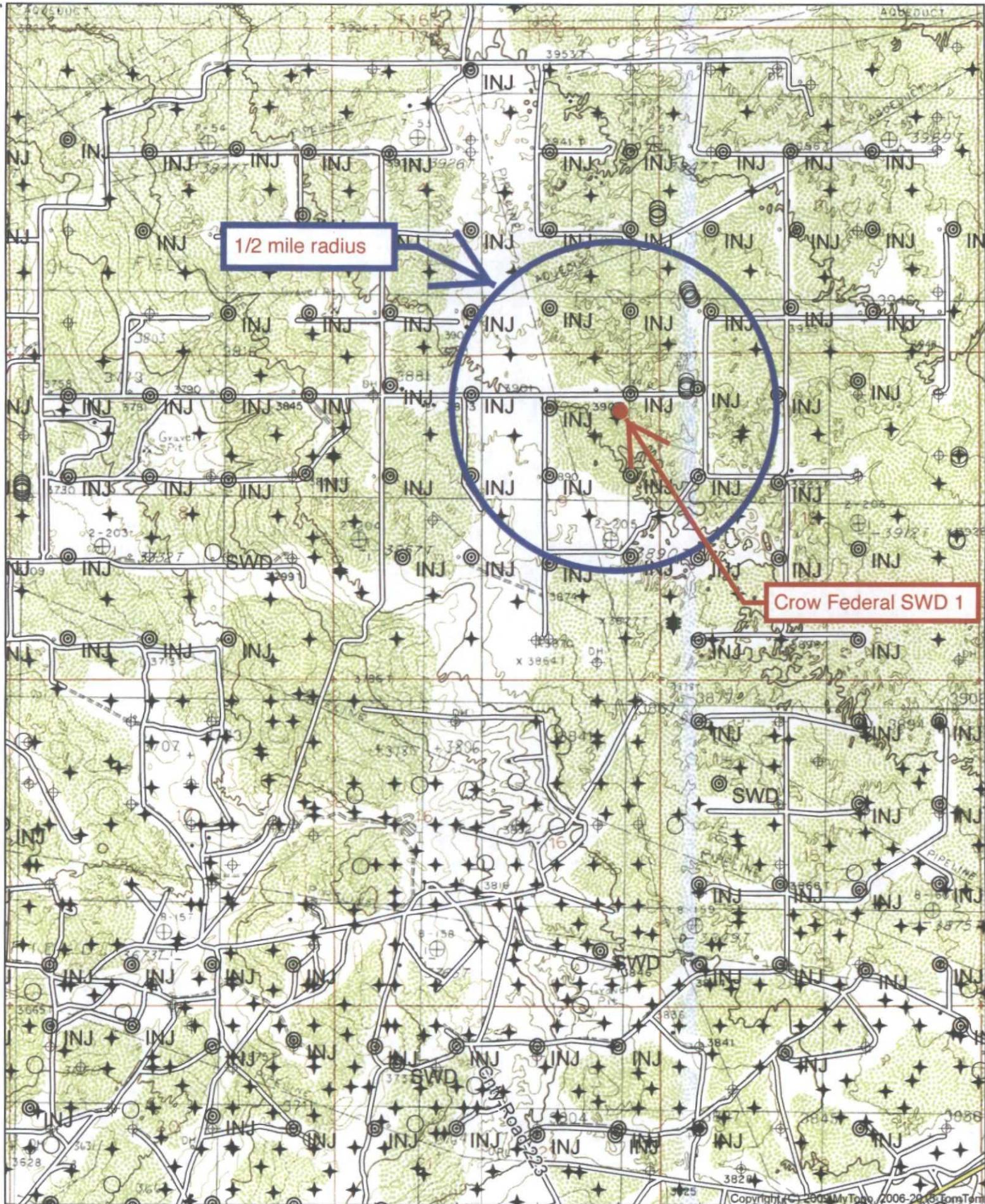


EXHIBIT A

TN#MN

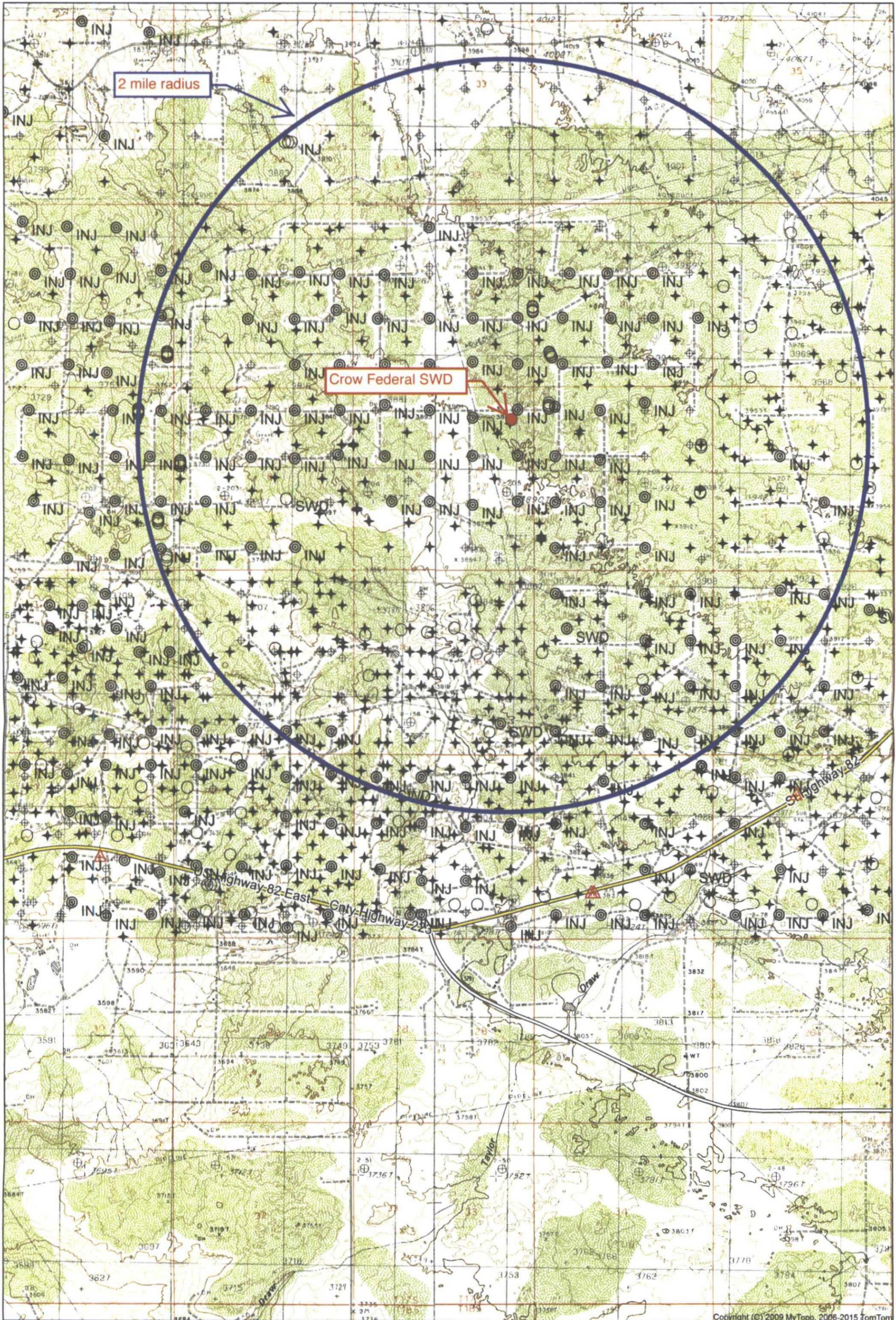
7.5°

10/14/13



Quad: MALJAMAR  
Scale: 1 inch = 2,000 ft.

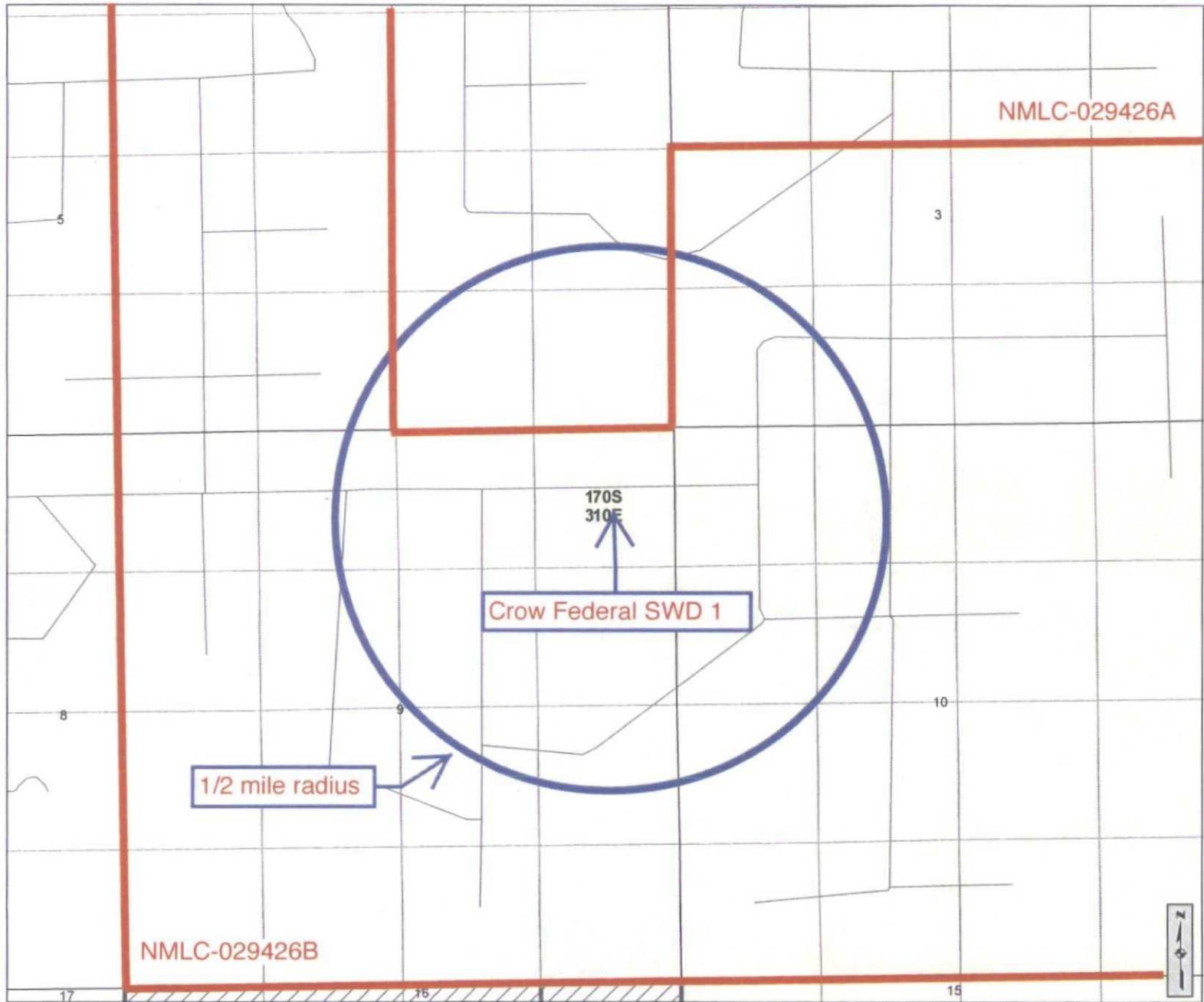
EXHIBIT B



Copyright (C) 2009 MyTopo, 2006-2015 TomTom

Quad: MALJAMAR  
Scale: 1 inch = 2,531 ft.

EXHIBIT C



**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 D Order R-111-P
- Potash Enclave Outline

**NMOC D Oil and Gas Wells**

- CO<sub>2</sub>
- Injection
- Oil
- Water
- Gas
- Miscellaneous
- Salt Water Disposal
- DA or PA

**New Mexico State Land Office  
Oil, Gas and Minerals**

0 0.05 0.1 0.2 0.3 0.4 Miles

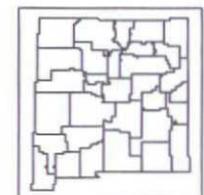
Universal Transverse Mercator Projection, Zone 13  
1983 North American Datum

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.

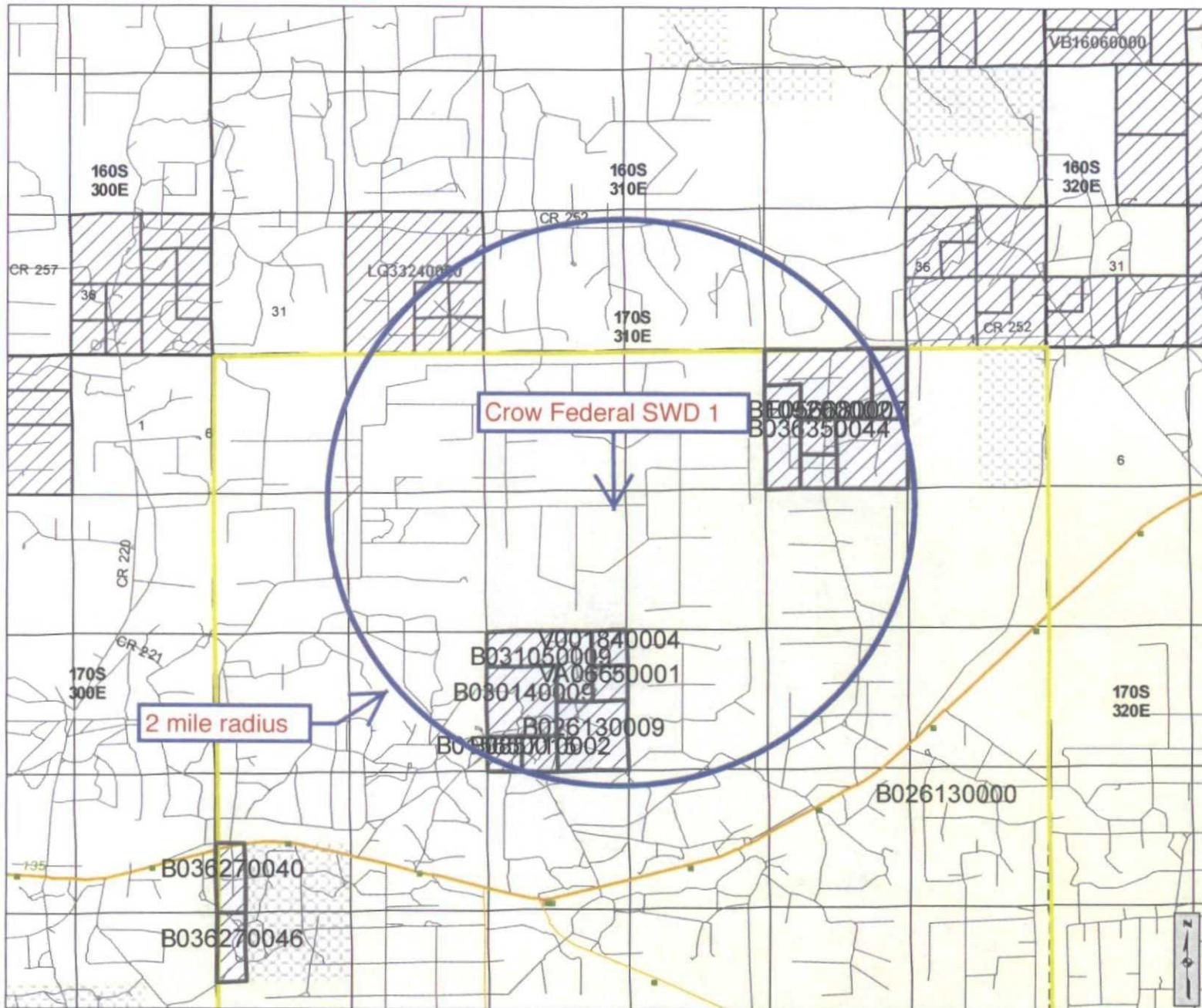
Land Office Geographic Information Center  
logc@slo.state.nm.us

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

**EXHIBIT D**



www.nmstatelands.org



**Cartographic Features**

- County Boundaries
- County Seats
- City, Town or Village
- SLO District Offices
- SLO District Boundary
- Hwy Mileposts
- Interstate
- 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
- NMOCD Order R-111-P
- Potash Enclave Outline

**NMOCD Oil and Gas Wells**

- CO<sub>2</sub>
- Gas
- Injection
- Miscellaneous
- Oil
- Salt Water Disposal
- Water
- DA or PA

**New Mexico State Land Office  
Oil, Gas and Minerals**

0 0.2 0.4 0.8 1.2 1.6  
Miles

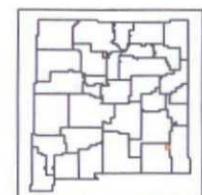
Universal Transverse Mercator Projection, Zone 13  
1983 North American Datum

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  
logc@slo.state.nm.us

Created On: 11/27/2013 10:07:27 AM

**EXHIBIT E**



www.nmstatelands.org

# NM WAIDS



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 <sub>3</sub> )	
Magnesium (Mg)		Bicarbonate (HCO <sub>3</sub> )	1260
Barium (Ba)		Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H <sub>2</sub> S)	
Strontium (Sr)		Carbon Dioxide (CO <sub>2</sub> )	
Iron (Fe)		Oxygen (O)	



EXHIBIT F

# 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 <sub>3</sub> )	0
Magnesium (Mg)	679.328	Bicarbonate (HCO <sub>3</sub> )	495.296
Barium (Ba)	0.1136	Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H <sub>2</sub> S)	6.816
Strontium (Sr)	47.712	Carbon Dioxide (CO <sub>2</sub> )	
Iron (Fe)	5.112	Oxygen (O)	



EXHIBIT F



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

No records found.

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 605911

**Northing (Y):** 3635658

**Radius:** 3220

3220 meters =

10,561.6' =

2.00 miles

**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.



---

*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

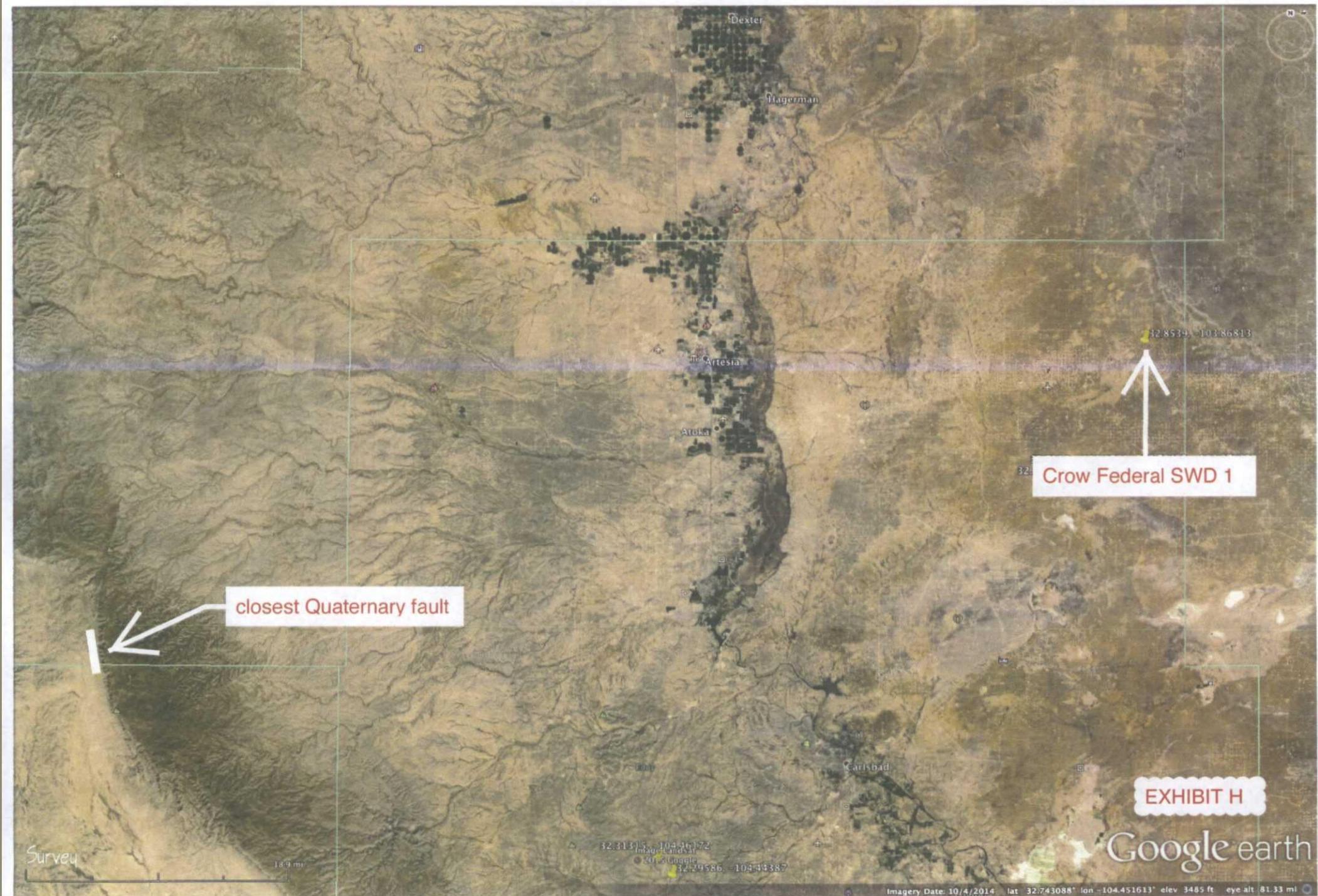
---

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.

1/18/15 9:44 AM

Page 1 of 1

ACTIVE & INACTIVE POINTS OF DIVERSION



closest Quaternary fault

Crow Federal SWD 1

EXHIBIT H

Google earth

Survey

13.9 mi

32.31315, -104.46172

32.29586, -104.44387

Imagery Date: 10/4/2014 lat 32.743088° lon -104.451613° elev 3485 ft eye alt 81.33 mi

# Affidavit of Publication

No. 23305

State of New Mexico

County of Eddy

Danny Scott *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/day on the same

day as follows:

First Publication December 30, 2014

Second Publication \_\_\_\_\_

Third Publication \_\_\_\_\_

Fourth Publication \_\_\_\_\_

Fifth Publication \_\_\_\_\_

Sixth Publication \_\_\_\_\_

Subscribed and sworn before me this

30th day of December 2014



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 modification amendment to NMOCD Order SWD-1460. The Crow Federal SWD #1 saltwater disposal well will dispose into the Devonian from 13,300' to 13,840'. It is located 7 miles northeast of Loco Hills at 890 FNL & 625 FEL Sec. 9, T. 17 S., R. 31 E., Eddy County. Maximum disposal rate will be 40,000 bwpd. Maximum injection pressure will be 2,660 psi. Formation was found to be deeper than originally planned. 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., December 30, 2014 Legal No. 23305.

EXHIBIT I

February 14, 2015

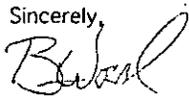
BLM  
 620 E. Greene St.  
 Carlsbad, NM 88220

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submission Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

7014 2870 0000 7676 8801

EXHIBIT J

February 14, 2015

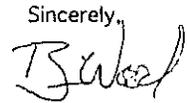
Marbob Enery Corp.  
 c/o COG Operating & Concho Oil & Gas LLC  
 600 W. Illinois Ave.  
 One Concho Centre  
 Midland, TX 79701-4882

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submission Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

7014 2870 0000 7676 8801

**U.S. Postal Service™  
 CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

Postage	\$ 1.61
Certified Fee	\$ 3.30
Return Receipt Fee (Endorsement Required)	\$ 2.78
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 7.61

Postmark: FEB 17 2015 87552

**OFFICIAL USE**

Sent to: BLM  
 Street & Apt. No.:  
 or PO Box No.:  
 City, State, ZIP+4: CARLSBAD

**U.S. Postal Service™  
 CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

Postage	\$
Certified Fee	\$
Return Receipt Fee (Endorsement Required)	\$
Restricted Delivery Fee (Endorsement Required)	\$
Total Postage & Fees	\$

REC'D MAIL  
 FEB 17 2015  
 87552

Sent to: Marbob Enery Corp.  
 Street & Apt. No.:  
 or PO Box No.:  
 City, State, ZIP+4: MIDLAND TX 79701-4882

See Reverse for Instructions

February 14, 2015

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

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submission Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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.

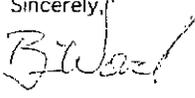
Sincerely,  
  
 Brian Wood

EXHIBIT J

February 14, 2015

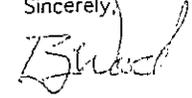
CIGNA & CIGNA Prop. & Cas. Insurance  
 900 Cottage Grove Rd.  
 Bloomfield CT 06002

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

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

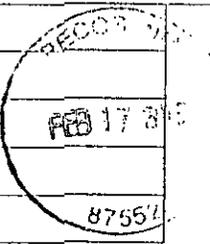
Please call me if you have any questions.

Sincerely,  
  
 Brian Wood

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

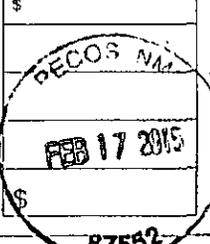
Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent To: BP AM.  
 Street & Apt. No., or PO Box No.  
 City, State, ZIP+4  
HOUSTON

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent To: CIGNA  
 Street & Apt. No., or PO Box No.  
 City, State, ZIP+4  
Bloomfield CT

PS Form 3800, July 2014 See Reverse for Instructions

February 14, 2015

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

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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.

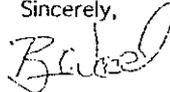
Sincerely,  
  
 Brian Wood

EXHIBIT J

**U.S. Postal Service**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$ 87552

Sent To: DEVON

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

February 14, 2015

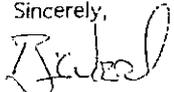
Essex Petroleum Corp.  
 11 Canal Court  
 Avon CT 06011

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

**U.S. Postal Service**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

Sent To: ESSEX

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

7014 2870 0000 7676 8764

February 14, 2015

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

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submission Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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.

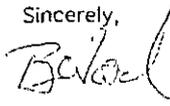
Sincerely,  
  
 Brian Wood

EXHIBIT J

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

RECOS NM  
 FEB 17 2015  
 87552

Sent To  
 Street & Apt. No., or PO Box No. McCombs  
 City, State, ZIP+4 HOUSTON

PS Form 3800, July 2014 See Reverse for Instructions

February 14, 2015

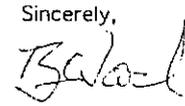
Linn Energy Holdings LLC  
 600 Travis St., Suite 5100  
 Houston TX 77002

Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submission Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

RECOS NM  
 FEB 17 2015  
 87552

Sent To  
 Street & Apt. No., or PO Box No. LINN ENERGY  
 City, State, ZIP+4 HOUSTON

7014 2870 0000 7676 8740

February 14, 2015

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

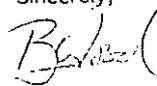
Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by NMOCD 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 = 14,000' ;  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

EXHIBIT J

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$	87552
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	<b>87552</b>

Postmark: FEB 17 2015

Sent To: OXY USA

Street & Apt. No., or PO Box No.: MIDLAND

City, State, ZIP+4: MIDLAND

7014 2870 0000 7676 8726

February 14, 2015

Pitch Energy Corp.  
 P. O. Box 400  
 Ruidoso, NM 88355

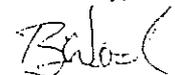
Apache Corporation is applying (application attached) to amend NM Oil Conservation Division (NMOCD) administrative order SWD-1460. The order approved saltwater disposal in the Devonian and Ellenburger from 12,467' to 13,687'. After drilling, it was discovered the Devonian was deeper. As required by NMOCD 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 = 14,000'  
Revised Proposed Disposal Zone: Devonian (from 13,300' to 13,840')  
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) 818-1976  
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a saltwater disposal well amendment will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD 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

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT**  
 Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)

**OFFICIAL USE**

Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	

Postmark: FEB 17 2015

7676 8732

Sent To: PITCH ENERGY

Street & Apt. No., or PO Box No.: RUIDOSO

City, State, ZIP+4: RUIDOSO

PS Form 3800, JULY 2014

7014 2870 0000 7676 8732



**C-108 Review Checklist:** Received 2/03/215 Add. Request: \_\_\_\_\_ Reply Date: \_\_\_\_\_ Suspended: \_\_\_\_\_ [Ver 15]  
 ORDER TYPE: WFX / PMX **(SWD)** Number: 1460-A Order Date: \_\_\_\_\_ Legacy Permits/Orders: \_\_\_\_\_

Well No. 1 Well Name(s): Crow Fedem 1

API: 30-0 15-42469 Spud Date: 8/22/2017 New or Old: N (UIC Class II Primacy 03/07/1982)

Footages 890 FNL, 62 SFBL Lot \_\_\_\_\_ or Unit A Sec 9 Tsp 17S Rge 31E County Eddy

General Location: 10 mi / East Loup Hills Pool: Sand, Devonian Pool No.: 96101

BLM 100K Map: H10 bbs Operator: Apache Comp OGRID: 873 Contact: \_\_\_\_\_

COMPLIANCE RULE 5.9: Total Wells: 3002 Inactive: 3 Fincl Assur: \_\_\_\_\_ Compl. Order? \_\_\_\_\_ IS 5.9 OK? y Date: 2/18/21

WELL FILE REVIEWED  Current Status: N

WELL DIAGRAMS: NEW: Proposed  or RE-ENTER: Before Conv.  After Conv.  Logs in Imaging: Part of Application

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 ___ or Existing ___ Surface		<u>17 1/2 / 13 3/8"</u>	<u>600</u>	<u>584</u>	<u>SURFACE</u>
Planned ___ or Existing ___ Interm/Prod					
Planned ___ or Existing ___ Interm/Prod		<u>12 1/4 / 9 5/8"</u>	<u>4490</u>	<u>2350</u>	<u>SURFACE</u>
Planned ___ or Existing ___ Prod/Liner		<u>8 3/4 / 7"</u>	<u>13700</u>		<u>2420 / CBU</u>
Planned ___ or Existing ___ Liner					
Planned ___ or Existing ___ <b>(OH) PERF</b>		<u>13300 / 13840</u>			
				Inj. Length	
<b>Injection Lithostratigraphic Units:</b>		Depths (ft)	Injection or Confining Units	Tops	<b>Completion/Operation Details:</b>
Adjacent Unit: Litho. Struc. Por.					Drilled TD <u>14000</u> PBTD <u>13914</u>
Confining Unit: Litho. Struc. Por.					NEW TD _____ NEW PBTD _____
Proposed Inj Interval TOP:	<u>13300</u>		<u>DEVONIAN</u>		NEW Open Hole <input checked="" type="radio"/> or NEW Perfs <input type="radio"/>
Proposed Inj Interval BOTTOM:	<u>13840</u>				Tubing Size <u>4 1/2</u> in. Inter Coated? <u>y</u>
Confining Unit: Litho. Struc. Por.					Proposed Packer Depth <u>13200</u> ft
Adjacent Unit: Litho. Struc. Por.					Min. Packer Depth <u>13200</u> (100-ft limit)
					Proposed Max. Surface Press. <u>2660</u> psi
					Admin. Inj. Press. <u>2660</u> (0.2 psi per ft)
<b>AOR: Hydrologic and Geologic Information</b>					
POTASH: R-111-P _____ Noticed? <u>N/A</u> BLM Sec Ord <input type="radio"/> WIPP <input type="radio"/> Noticed? _____ Salt/Salado T: _____ B: _____ NW: Cliff House fm _____					
FRESH WATER: Aquifer <u>Alluvial</u> Max Depth <u>220</u> HYDRO AFFIRM STATEMENT By Qualified Person <input type="radio"/>					
NMOSE Basin: _____ CAPITAN REEF: thru <input type="radio"/> adj <input type="radio"/> NA <input type="radio"/> No. Wells within 1-Mile Radius? _____ FW Analysis <input type="radio"/>					
Disposal Fluid: Formation Source(s) <u>YESO</u> Analysis? <u>y</u> On Lease <input type="radio"/> Operator Only <input type="radio"/> or Commercial <input checked="" type="radio"/>					
Disposal Int: Inject Rate (Avg/Max BWPD): <u>3000/4000</u> Protectable Waters? _____ Source: _____ System: Closed <input type="radio"/> or Open <input type="radio"/>					
HC Potential: Producing Interval? <u>NA</u> Formerly Producing? _____ Method: Logs/DST/P&A/Other <u>logs</u> 2-Mile Radius Pool Map <input type="radio"/>					
AOR Wells: 1/2-M Radius Map? <u>y</u> Well List? <u>y</u> Total No. Wells Penetrating Interval: <u>0</u> Horizontals? _____					
Penetrating Wells: No. Active Wells <u>0</u> Num Repairs? _____ on which well(s)? _____ Diagrams? _____					
Penetrating Wells: No. P&A Wells <u>0</u> Num Repairs? _____ on which well(s)? _____ Diagrams? _____					
NOTICE: Newspaper Date <u>10-22-20</u> Mineral Owner <u>BLM</u> Surface Owner <u>BLM</u> N. Date <u>11/27/2013</u>					
RULE 26.7(A): Identified Tracts? <u>y</u> Affected Persons: <u>MANB0613P/C FGNAL/DEVON</u> N. Date <u>11/27/2013</u>					

Order Conditions: Issues: multiple things, logs

# HALLIBURTON



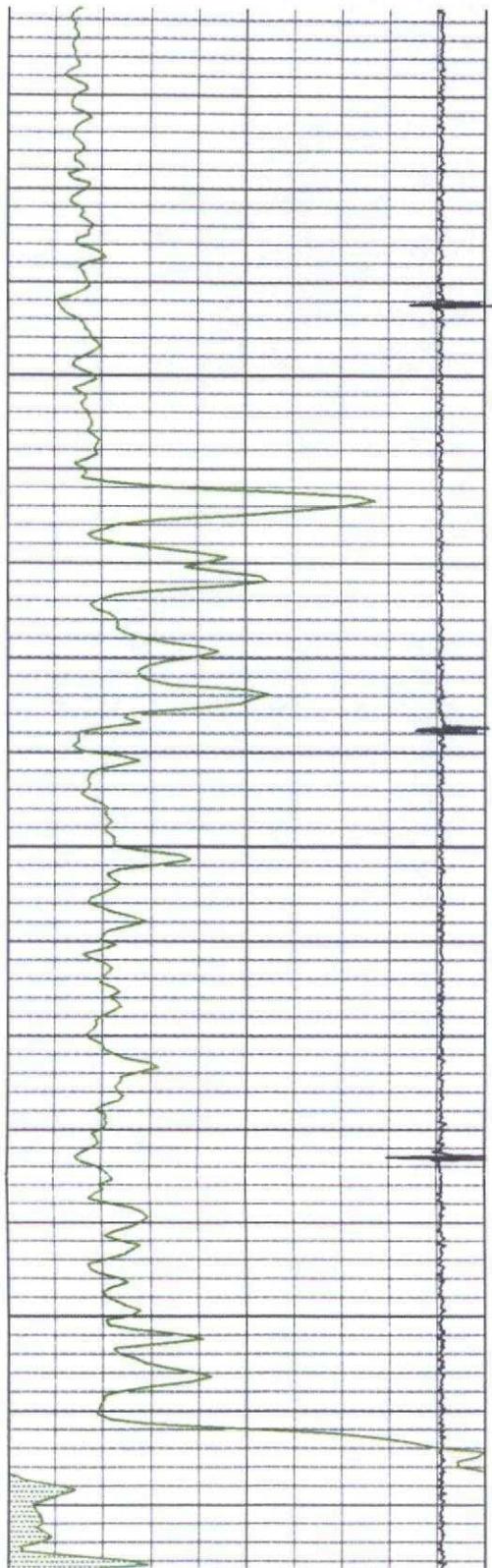
Formation &  
Reservoir  
Solutions

## CHI MODELING RESISTIVITY LOG

COMPANY	APACHE CORPORATION		
WELL	CROW FEDERAL SWD #1		
FIELD/BLOCK	DEVONIAN		
COUNTY	EDDY	STATE	NEW MEXICO
API:	30-015-42469		

Location		Elev.: K.B.	3934.00 ft
	890' FNL & 625' FEL	D.F.	3933.00 ft
	SECTION 9, TOWNSHIP 17S.	G.L.	3909.00 ft

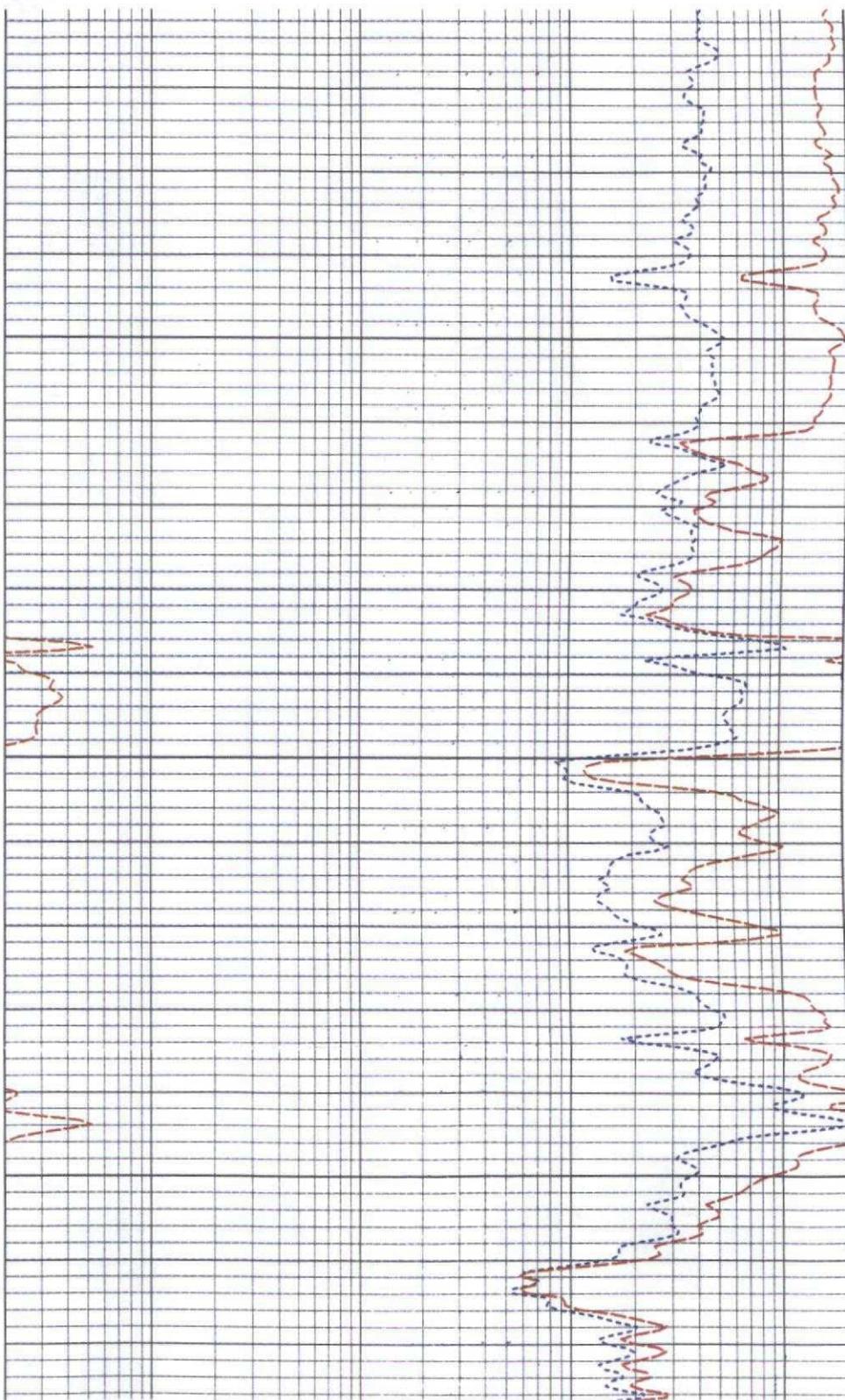
Date Processed	03-DEC-2014	Processed At	MIDLAND-FRS
Interval Processed	4000' - 13900'	Processed By	K. FUCHS

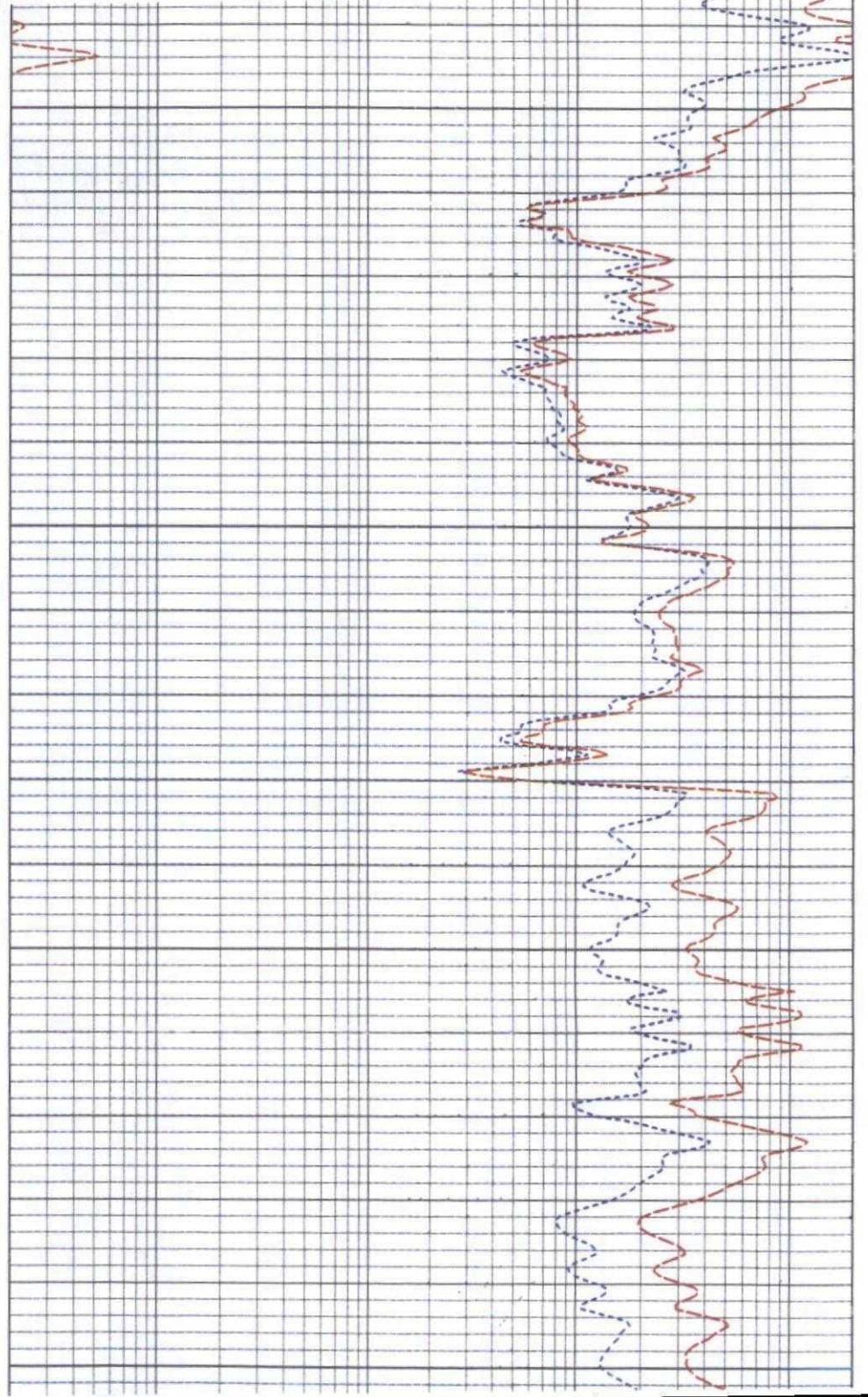
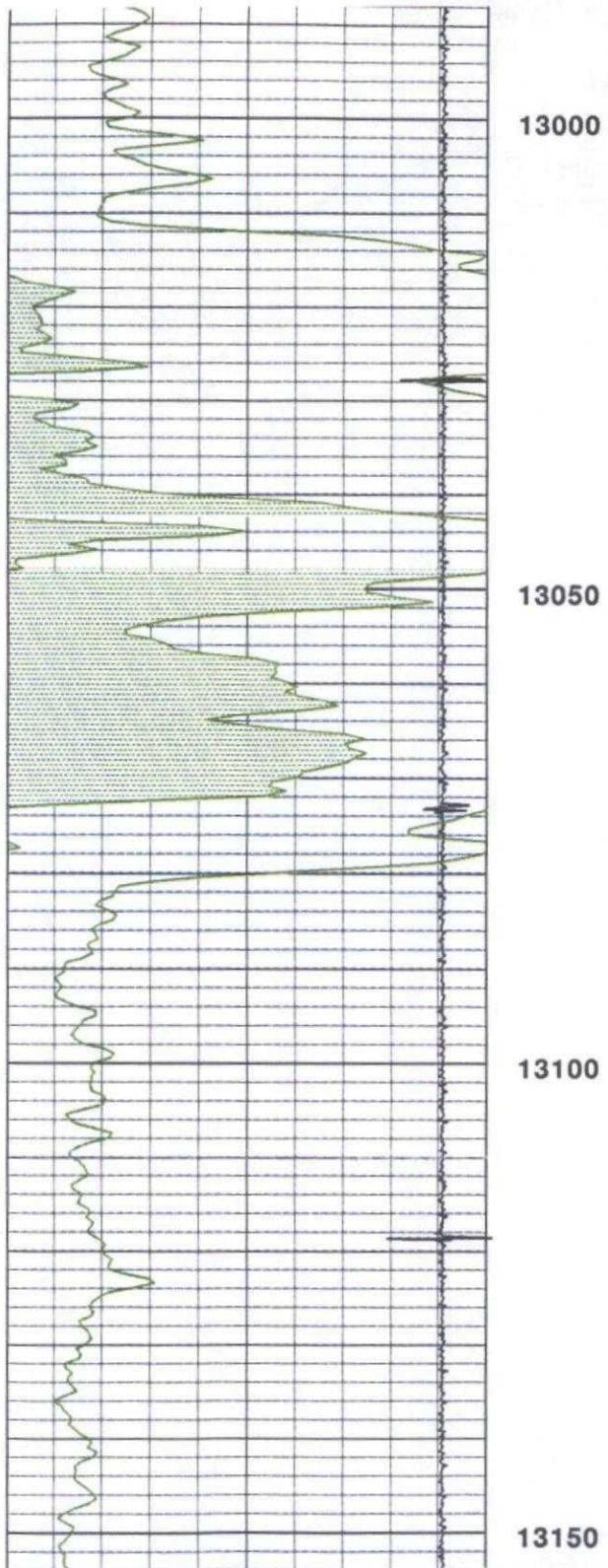


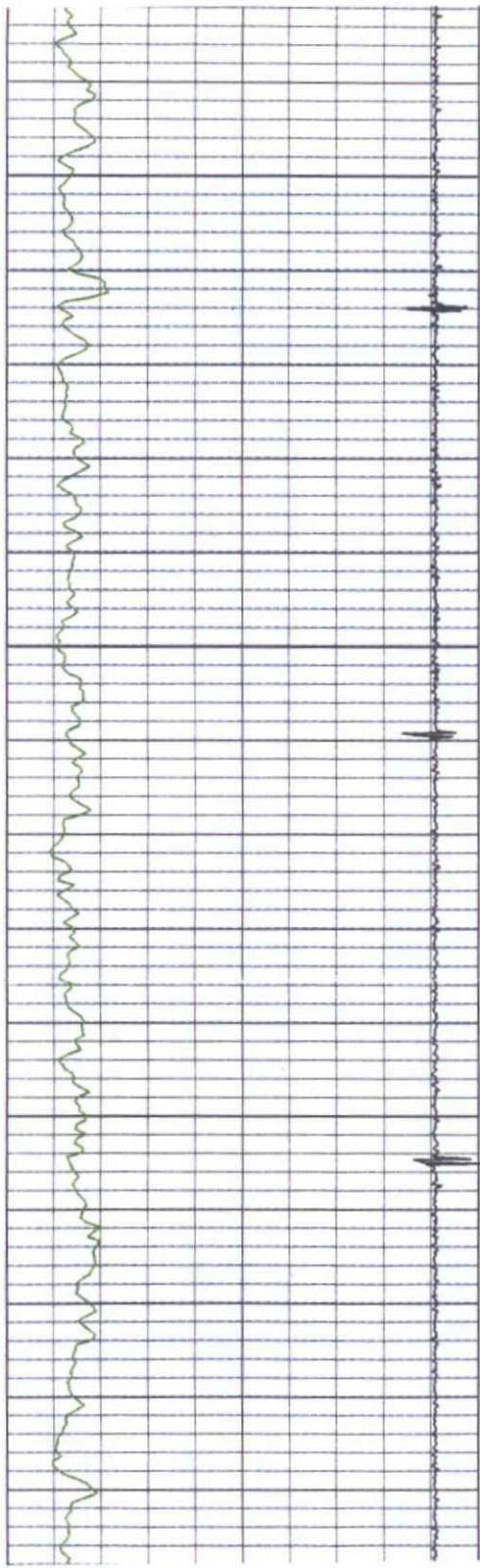
12900

12950

13000



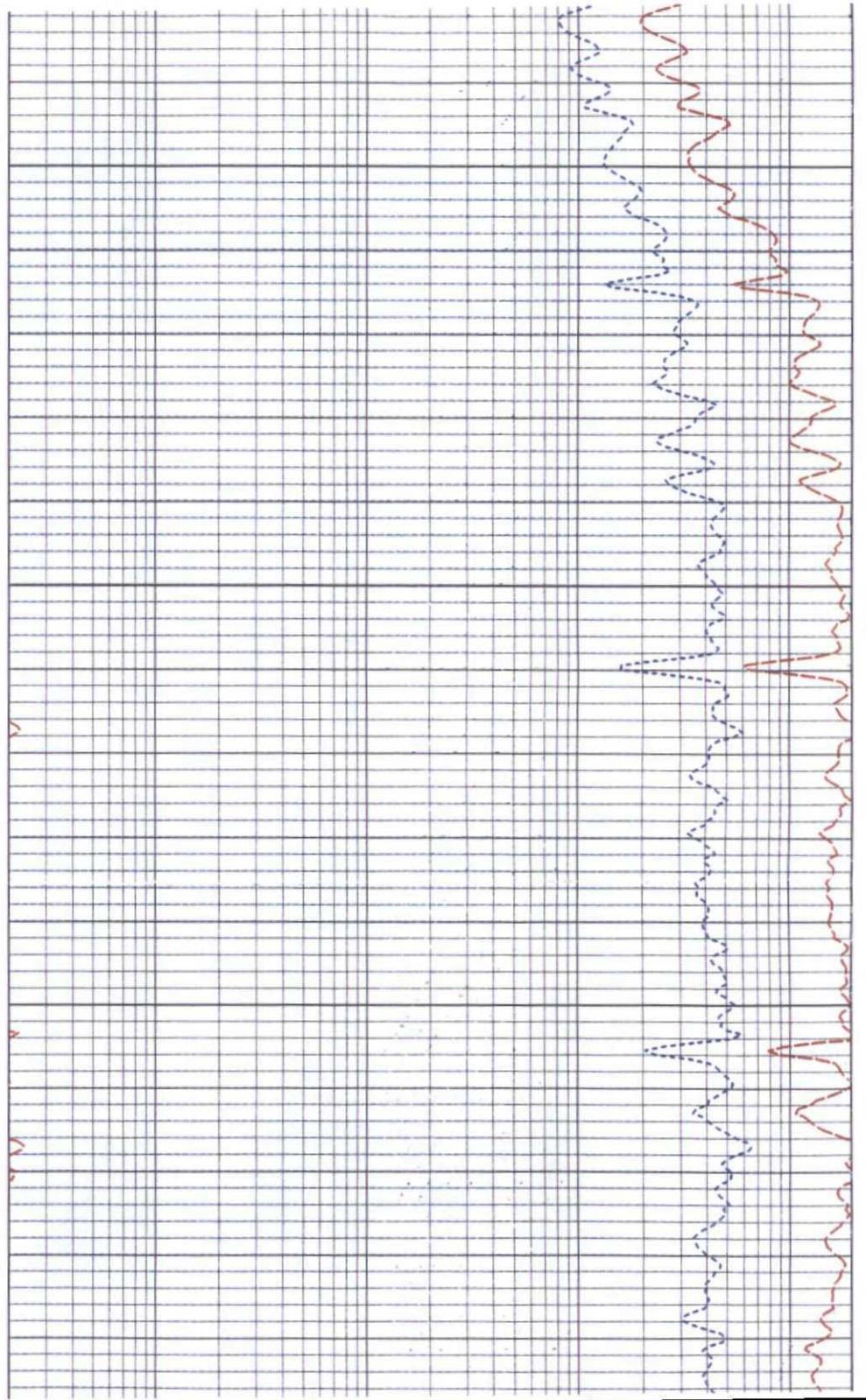


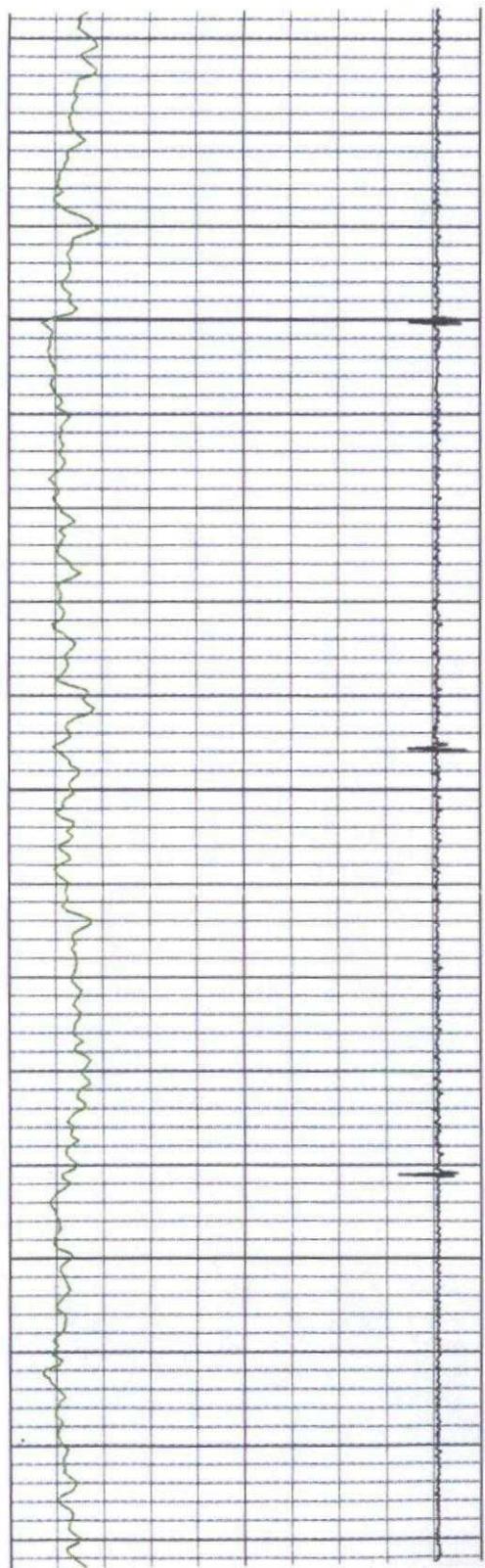


13150

13200

13250

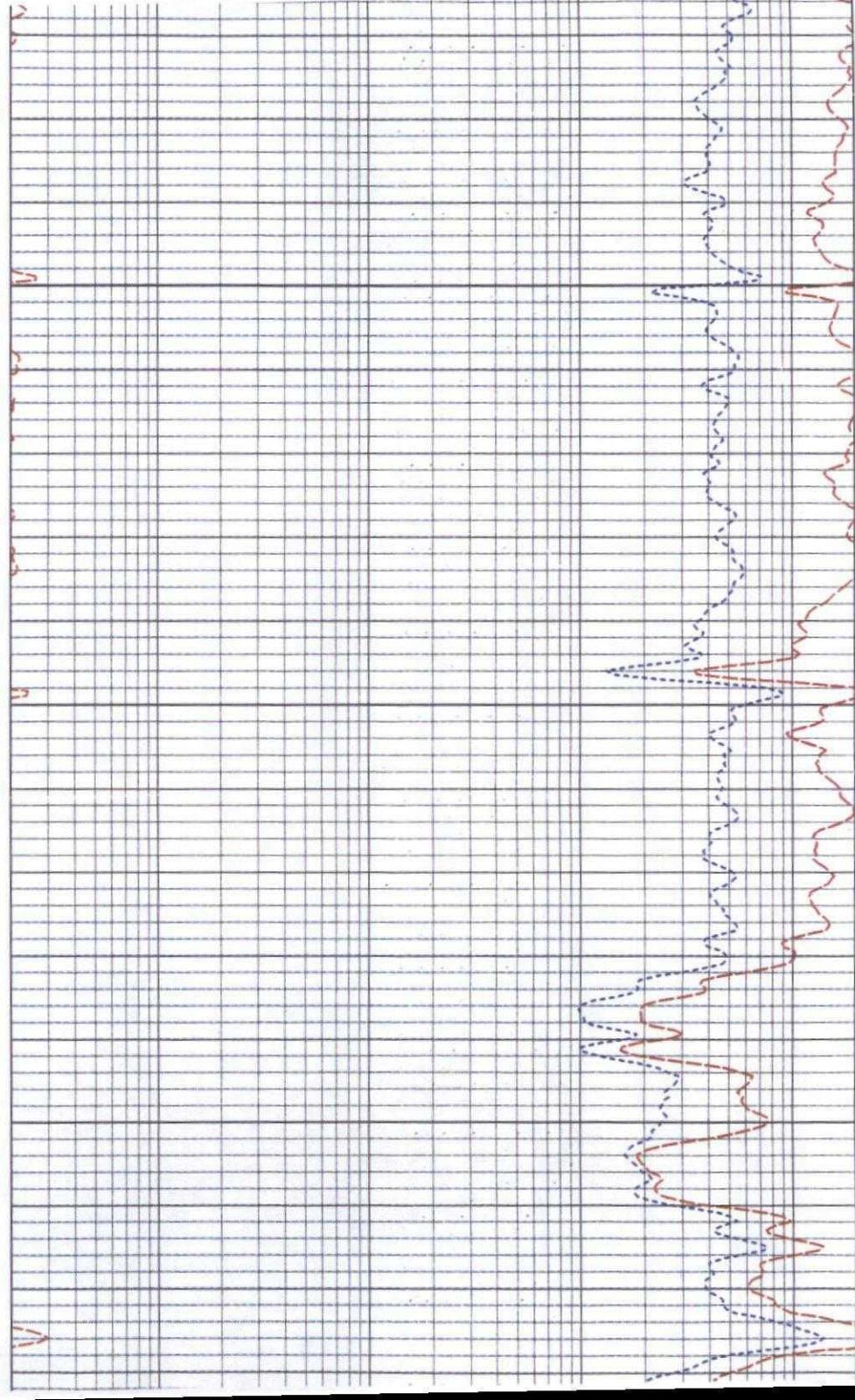


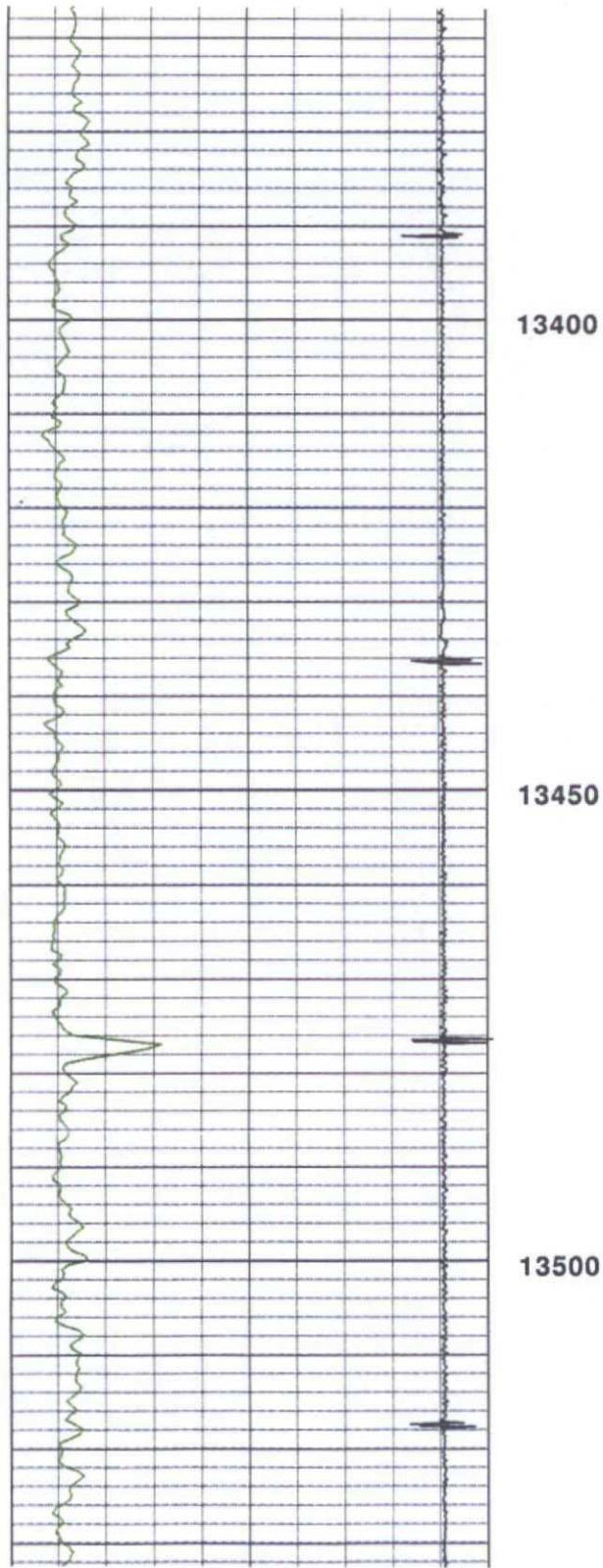


13300

13350

13400

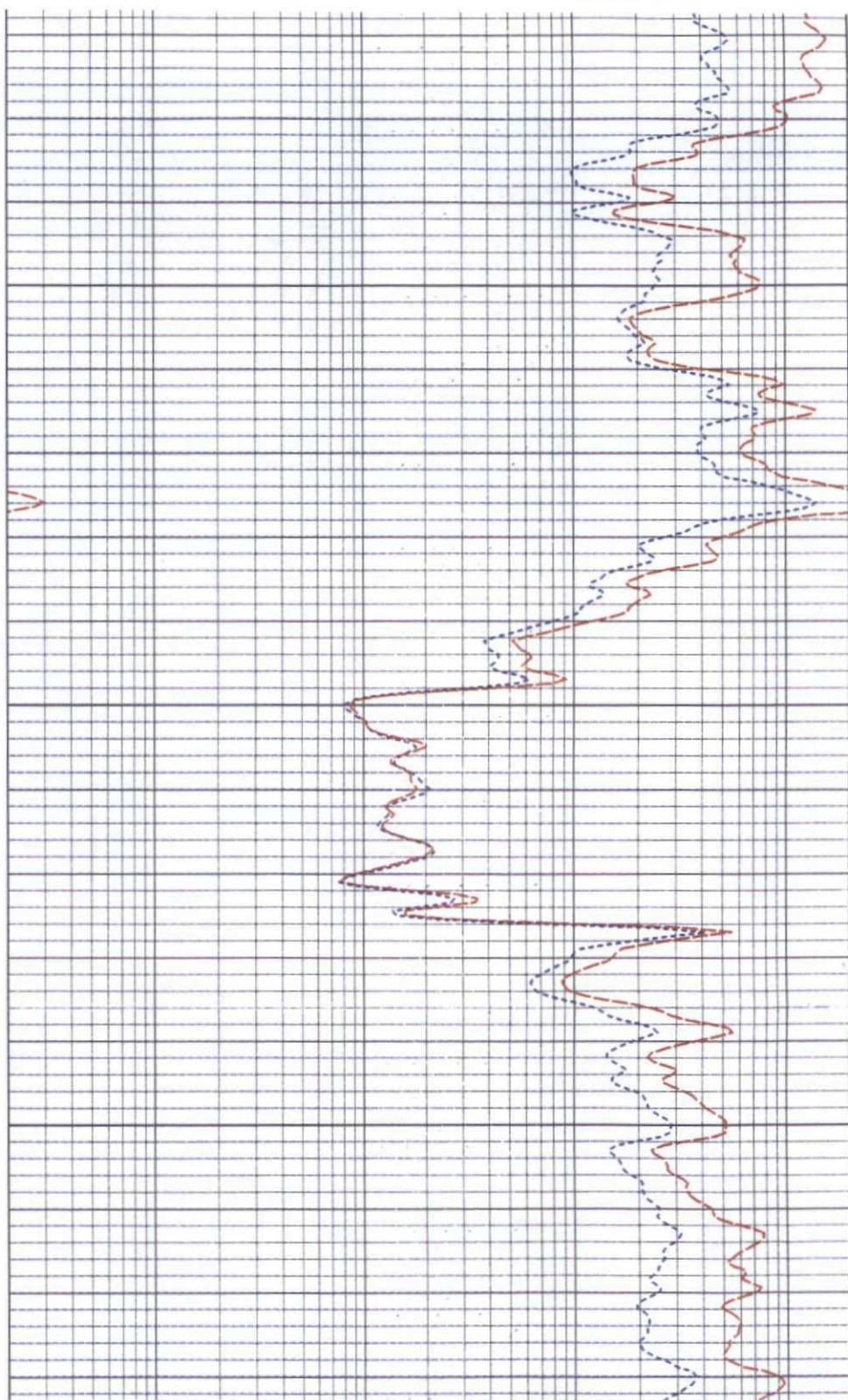


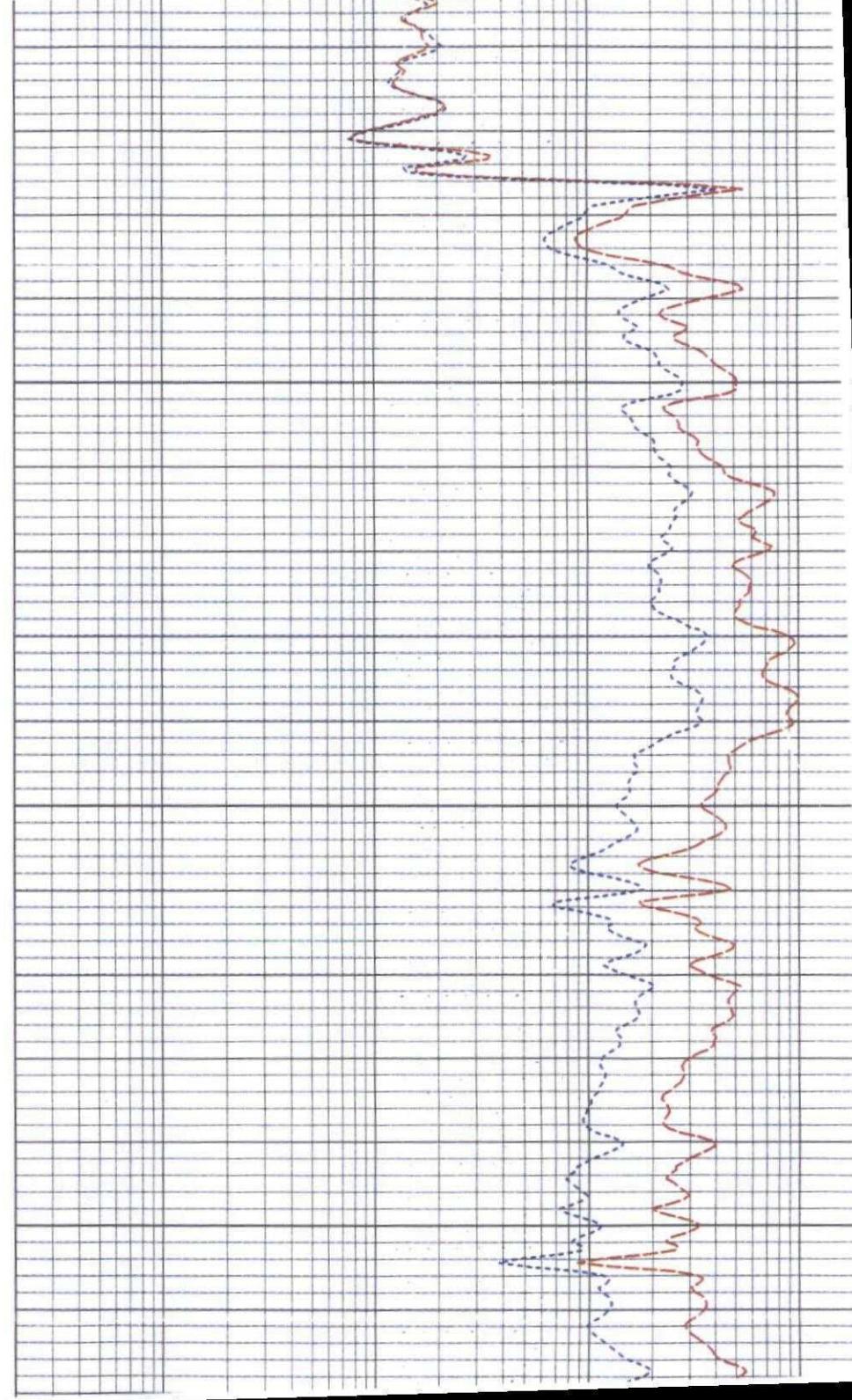
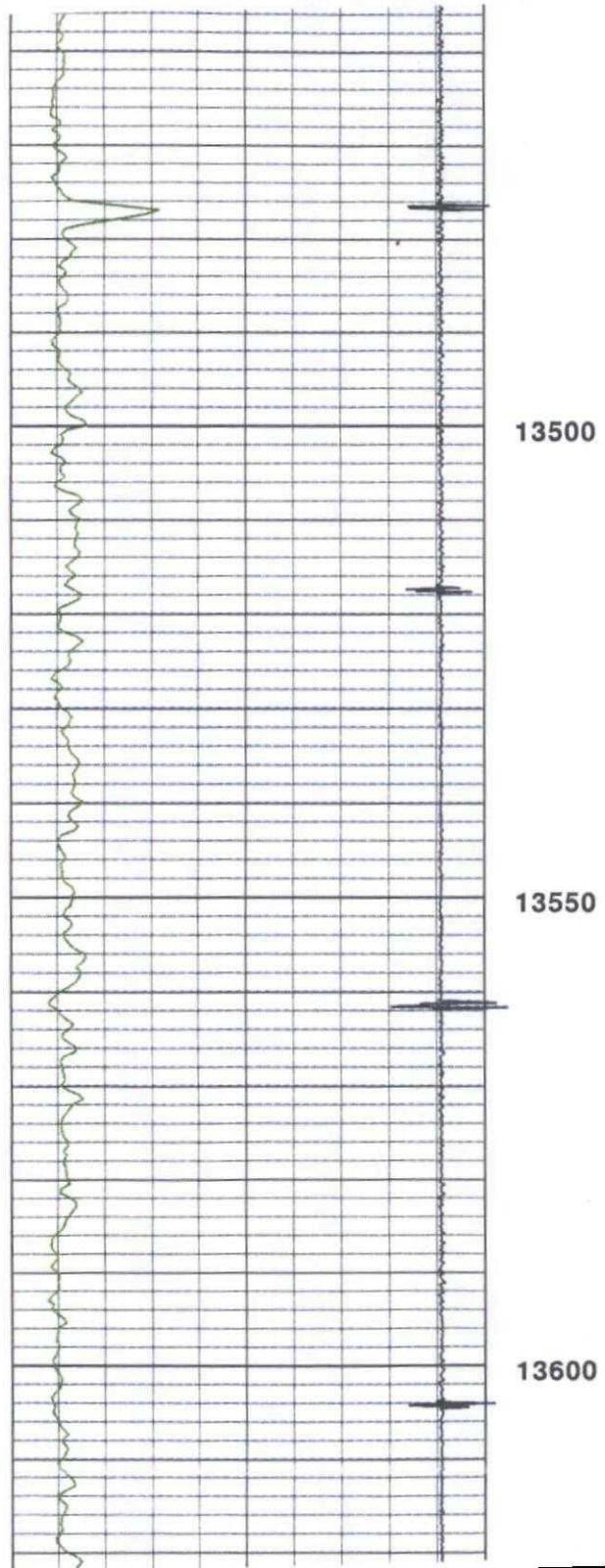


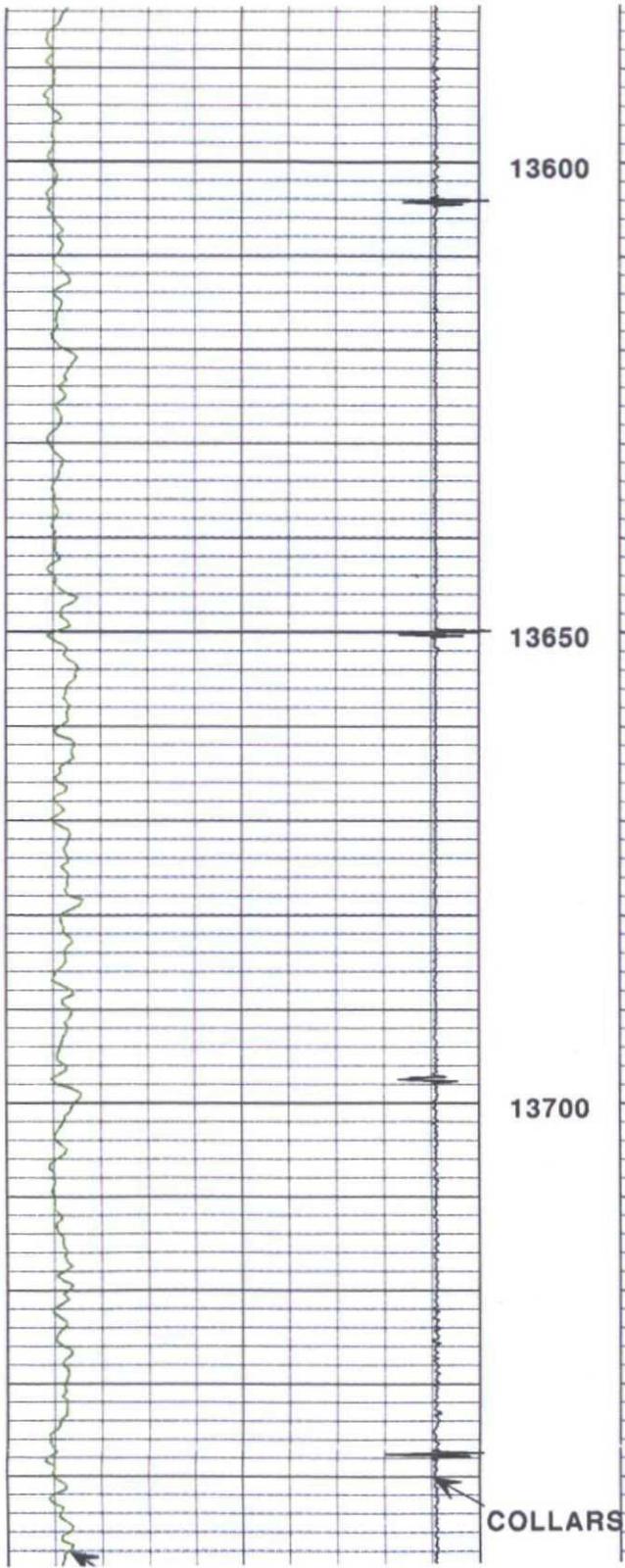
13400

13450

13500





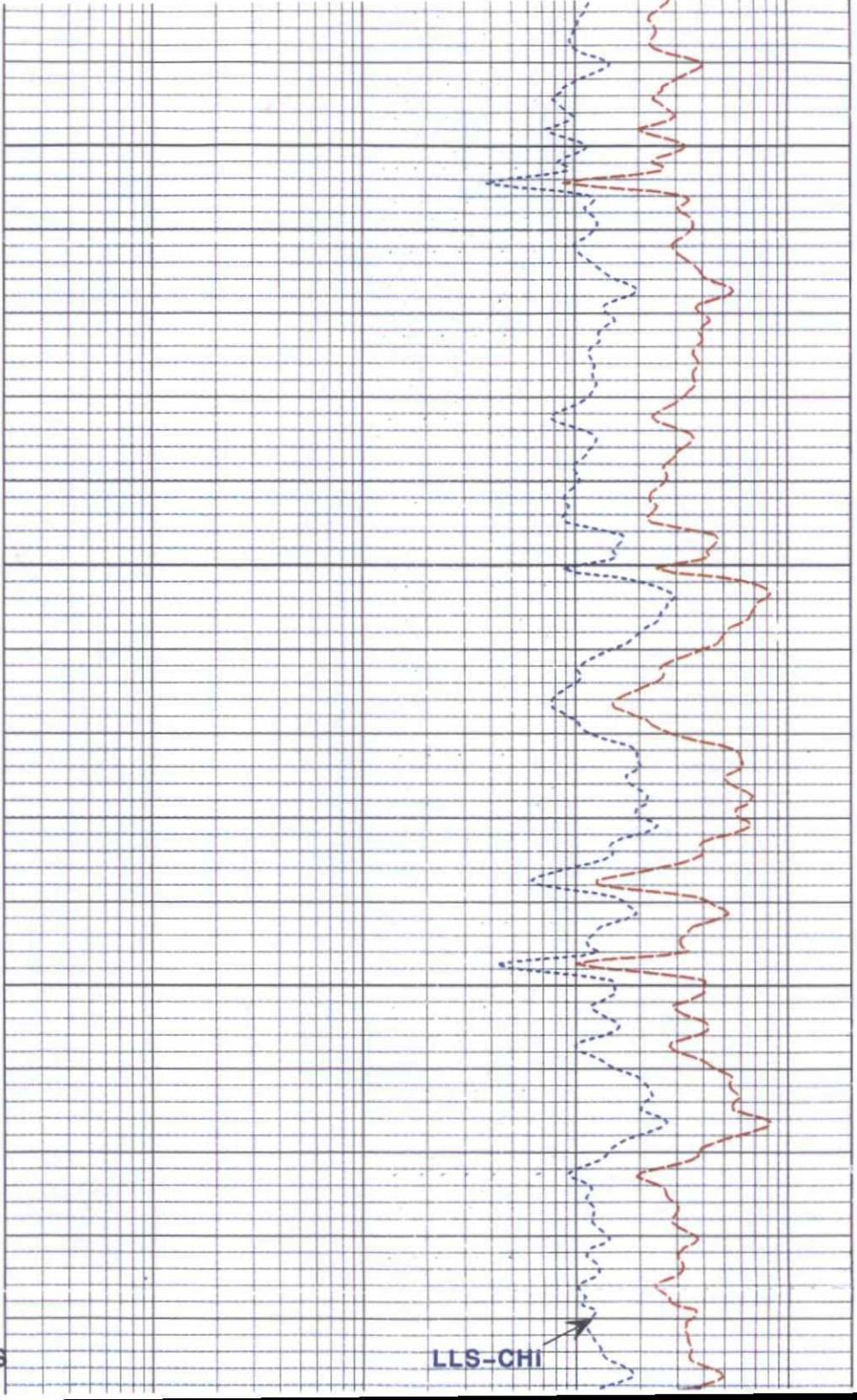


13600

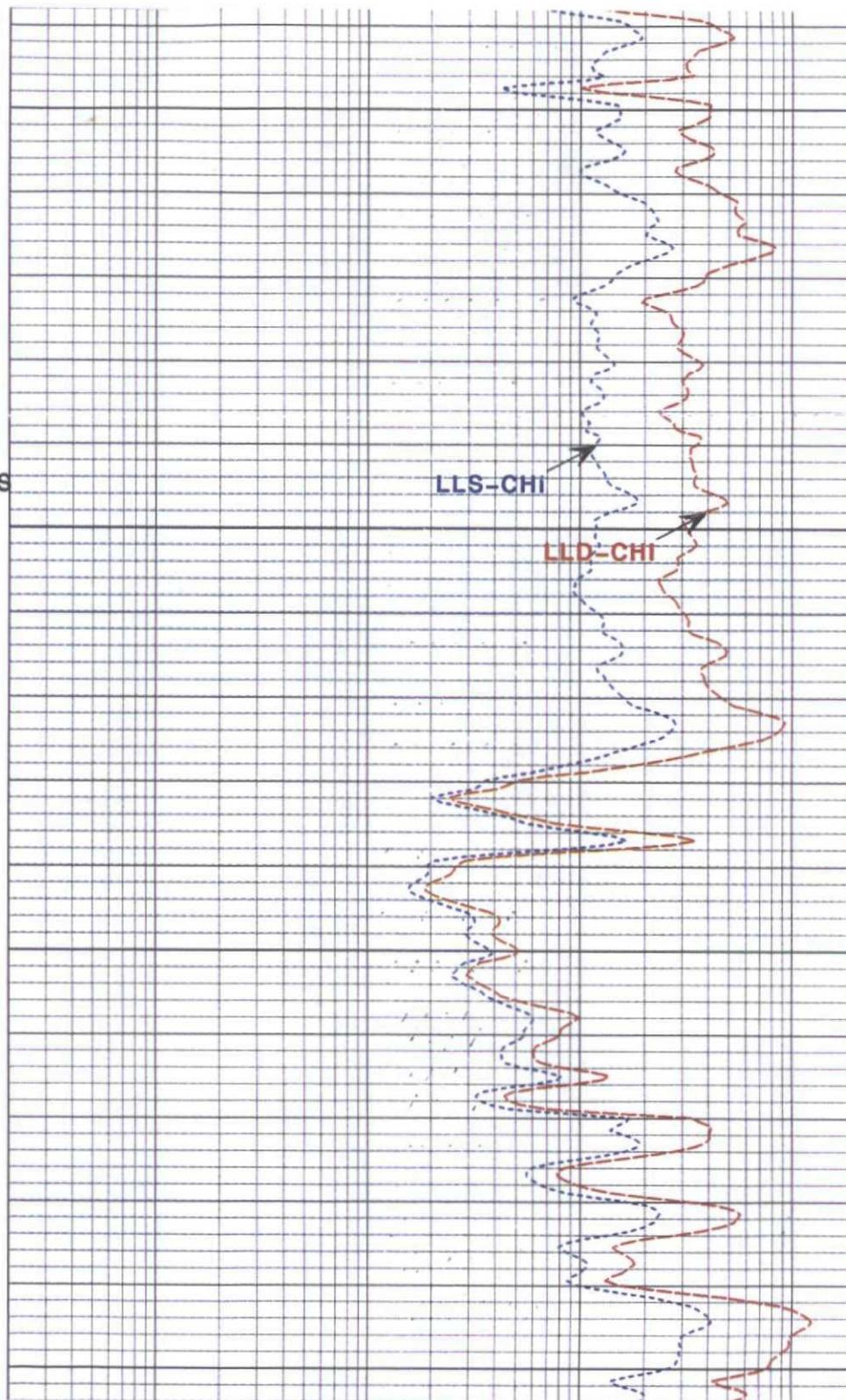
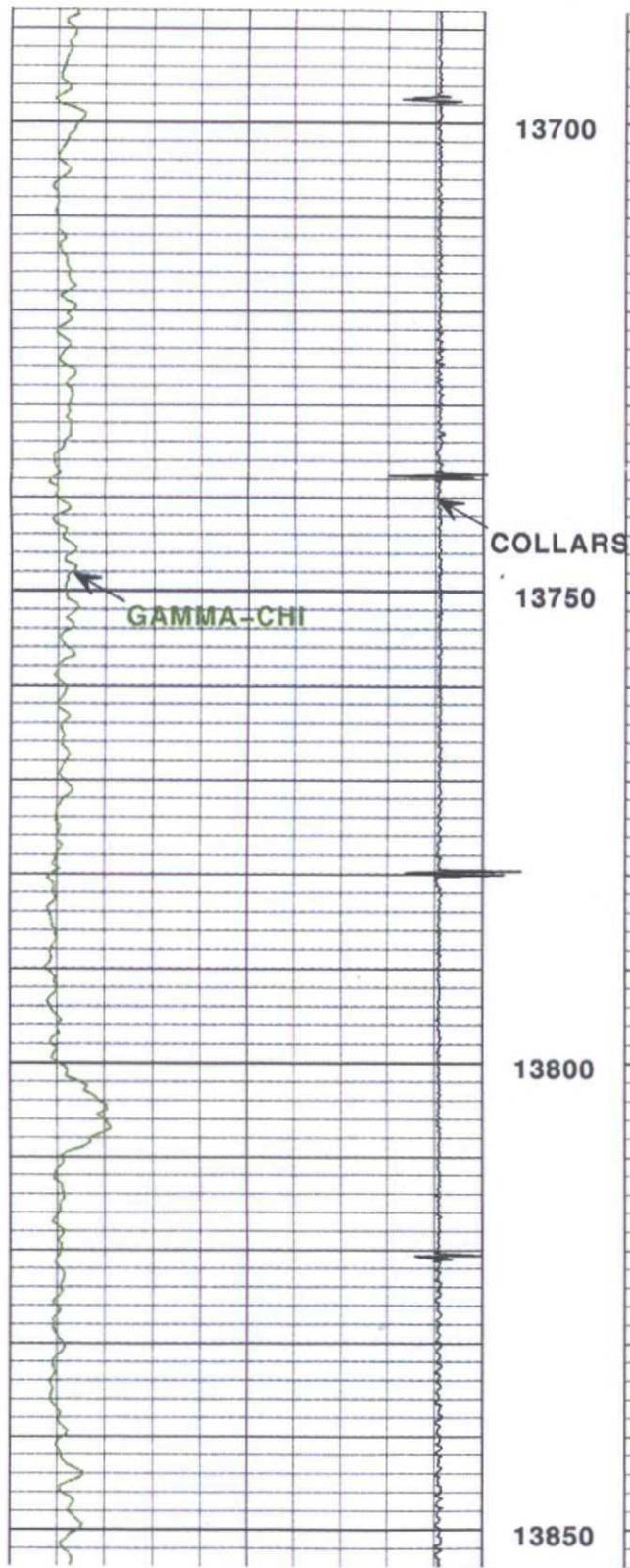
13650

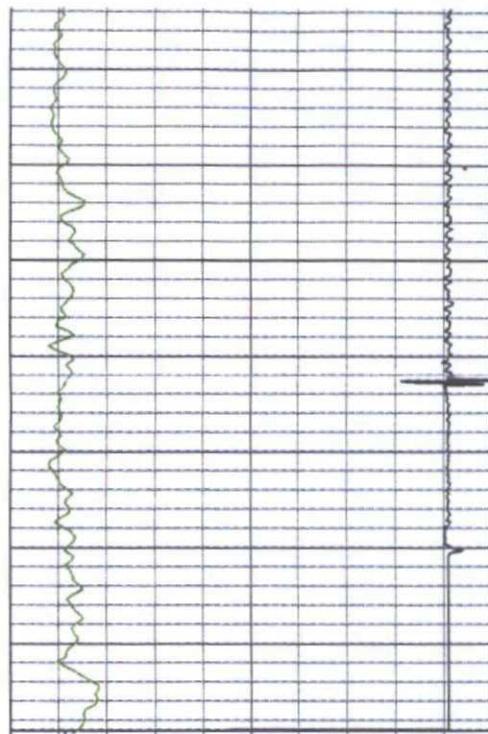
13700

COLLARS

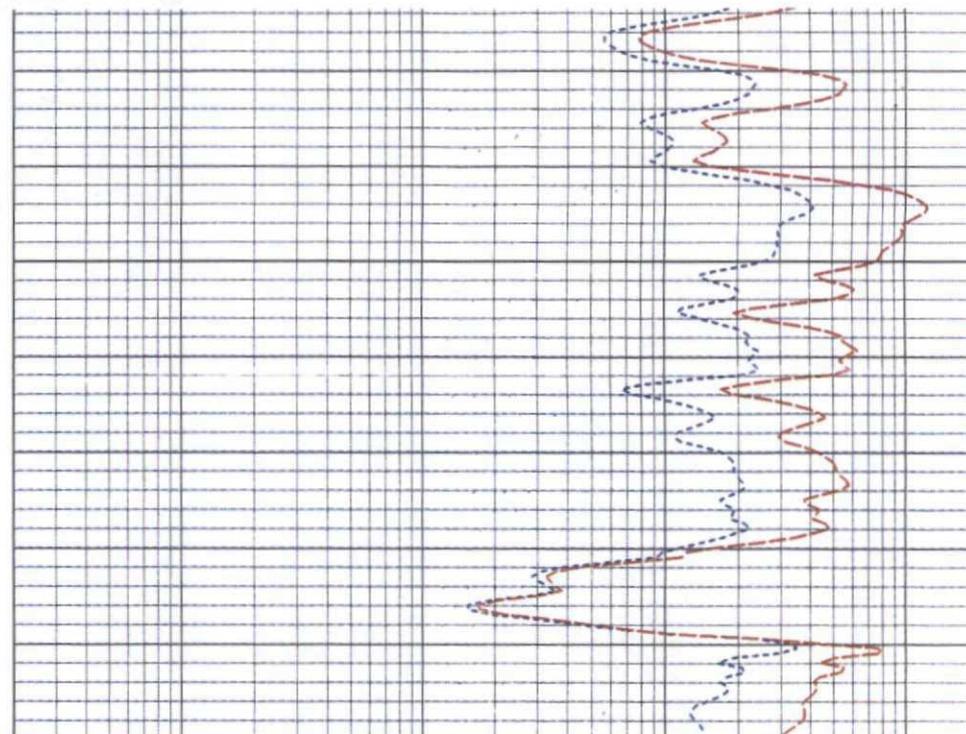


LLS-CHI





13850



GAMMA-CHI		1:240 FT.	LLD-CHI	
0	GAPI 150		0.2	OHM-M 2000
COLLARS			0.2	LLS-CHI OHM-M 2000
O/S..GAMMA				

**HALLIBURTON**

Version No: | hc:3.0  
 Data File: RMTI\_Crow\_Fed\_SWD\_1\_Train\_Merge.cls  
 Format File: chi\_dldil\_5in\_iterra.spc  
 Plot Time: 2012-07-03 15:20:16  
 Database Time: 17:27:04

Top Depth: 4000.00  
 Bottom Depth: 13900.00

MAIN PASS 1" = 100 FT.

O/S..GAMMA			
COLLARS		1:1200 FT.	LLS-CHI
0	GAPI 150		0.2 OHM-M 2000
GAMMA-CHI			0.2 LLD-CHI OHM-M 2000