

# Initial Application Part I

Received: 02/25/2019

*This application is placed in file for record. It MAY or MAY NOT have been reviewed to be determined Administratively Complete*

SWD 1978

Revised March 23, 2017

RECEIVED: 2/25/2019	REVIEWER:	TYPE: SWD	APP NO: PMAM19054 31295
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
 - Geological & Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505

**ADMINISTRATIVE APPLICATION CHECKLIST**

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

**Applicant:** COG Operating, LLC **OGRID Number:** 229137  
**Well Name:** Columbus Fee SWD #1 **API:** 30-025-Pending  
**Pool:** **Pool Code:** 97869

**SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION  
 INDICATED BELOW**

- 1) **TYPE OF APPLICATION:** Check those which apply for [A]  
 A. Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD
- B. Check one only for [I] or [II]  
 [I] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM  
 [II] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

FEB 25 2019 PM03:01

- 2) **NOTIFICATION REQUIRED TO:** Check those which apply.  
 A. ☒ Offset operators or lease holders  
 B. ☐ Royalty, overriding royalty owners, revenue owners  
 C. ☒ Application requires published notice  
 D. ☒ Notification and/or concurrent approval by SLO  
 E. ☐ Notification and/or concurrent approval by BLM  
 F. ☒ Surface owner  
 G. ☒ For all of the above, proof of notification or publication is attached, and/or,  
 H. ☐ No notice required

**FOR OCD ONLY**

- ☐ Notice Complete  
☐ Application  
 Content  
 Complete

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

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

Brian Collins

Print or Type Name

Signature

Date

19 Feb 2019

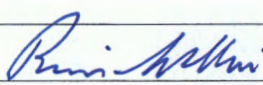
575-748-6940

Phone Number

bcollins@concho.com

e-mail Address

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_ X \_\_\_\_\_ Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval? \_\_\_\_\_ X \_\_\_\_\_ Yes \_\_\_\_\_ No
- II. OPERATOR: COG Operating, LLC \_\_\_\_\_  
ADDRESS: One Concho Center, 600 W. Illinois Ave., Midland, TX 79701 \_\_\_\_\_  
CONTACT PARTY: Brian Collins \_\_\_\_\_ PHONE: 575-748-6940 \_\_\_\_\_
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? \_\_\_\_\_ Yes \_\_\_\_\_ X \_\_\_\_\_ No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Brian Collins TITLE: Facilities Engineering Advisor \_\_\_\_\_  
SIGNATURE:  DATE: 19 Feb 2019  
E-MAIL ADDRESS: bcollins@concho.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.

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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.

C-108 Application for Authorization to Inject  
Columbus Fee SWD 1  
1165' FNL, 1895' FWL  
Unit C, Section 3, T26S, R33E  
Lea County, NM

COG Operating, LLC, proposes to drill the captioned well to 19,450' for salt water disposal service into the Devonian/Silurian from approximately 17,450' to 19,450'. A drilling permit will be submitted upon approval of this C-108.

Should this well undergo a mechanical integrity issue while in service in the future, it will be taken out of service immediately per UIC rules and repaired as quickly as possible. The water going to this well will be diverted to other SWD wells via pipeline if applicable; otherwise it will be trucked to other SWD wells. If necessary, producing wells serviced by this SWD well will be curtailed and/or shut-in until this well is repaired.

III. Well data is attached. A fishing risk assessment is attached.

IV. This is not an expansion of an existing project.

V. Map is attached.

VI. No wells within the 1mile radius area of review penetrate the proposed injection zone.

VII. 1. Proposed average daily injection rate = 25,000 BWPD  
Proposed maximum daily injection rate = 40,000 BWPD

2. Closed system

3. Proposed maximum injection pressure = 3490 psi  
(0.2 psi/ft. x 17,450' ft.)

4. Source of injected water will be Delaware, Bone Spring and Wolfcamp produced water. No compatibility problems are expected. Analyses of Delaware, Bone Spring and Wolfcamp waters from analogous source wells are attached. An appropriate chemical treatment program will be put in place should scale formation become apparent.

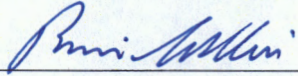
VIII. The injection zone is the Devonian/Silurian, a mixture of non-hydrocarbon bearing limestone and dolomite from 17,450' to 19,450'. Any underground water sources will be shallower than 931', the estimated top of the Rustler Anhydrite. The estimated top of the Devonian is 17,715' and the Fusselman is 18,581'. The proposed permitted injection interval has been expanded upwards and downwards to account for geologic uncertainty.

IX. The Devonian/Silurian injection interval will be acidized with approximately 40,000 gals of 20 % HCl acid.

X. Well logs will be filed with the Division. A section of open hole log across the Devonian/Silurian from the Mesquite SWD Vaca Draw Federal SWD 1 located about 2.4 miles north in Unit P, Section 21, T25S, R33E is attached.

XI. There are POD's on the OSE website for five fresh water wells within a mile of the proposed SWD well, all located in the SE/4 SE/4 Section 3 T26S R33E. Water analysis is attached.

XII. After examining the available geologic and engineering data, no evidence was found of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.



, Facilities Engineering Advisor,

19 Feb 2019

A seismicity assessment is attached.

XIII. Proof of Notice is attached.

COG Operating LLC  
Columbus Fee SWD #1  
C-108 Attachment  
December 17, 2018

**Statement Regarding Seismicity and Disposal Well Location**

COG Operating LLC interpreted faults based on licensed 3D seismic data in the area around our proposed SWD. Our investigation of the deep formations does not indicate nearby faults or structures in the immediate area that would increase the chances of induced seismicity.

A recent paper by Snee and Zoback titled, "State of Stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity", was published in the February 2018 edition of The Leading Edge. The authors evaluated the strike-slip probability of known Permian Basin faults. The nearest fault is located approximately 4.5 miles E-NE of our proposed SWD (see map). The study predicts that this fault has a less than 10% probability of being critically stressed as to create an induced seismicity event. The primary reason for the low probability is the relationship of the strike of the fault to the regional maximum stress orientation (N 75 degrees E).

The proposed Columbus Fee SWD #1 is located 2.4 miles away from the nearest active Devonian SWD well (see map) and no active, permitted or pending Devonian SWD applications within the one mile radius.

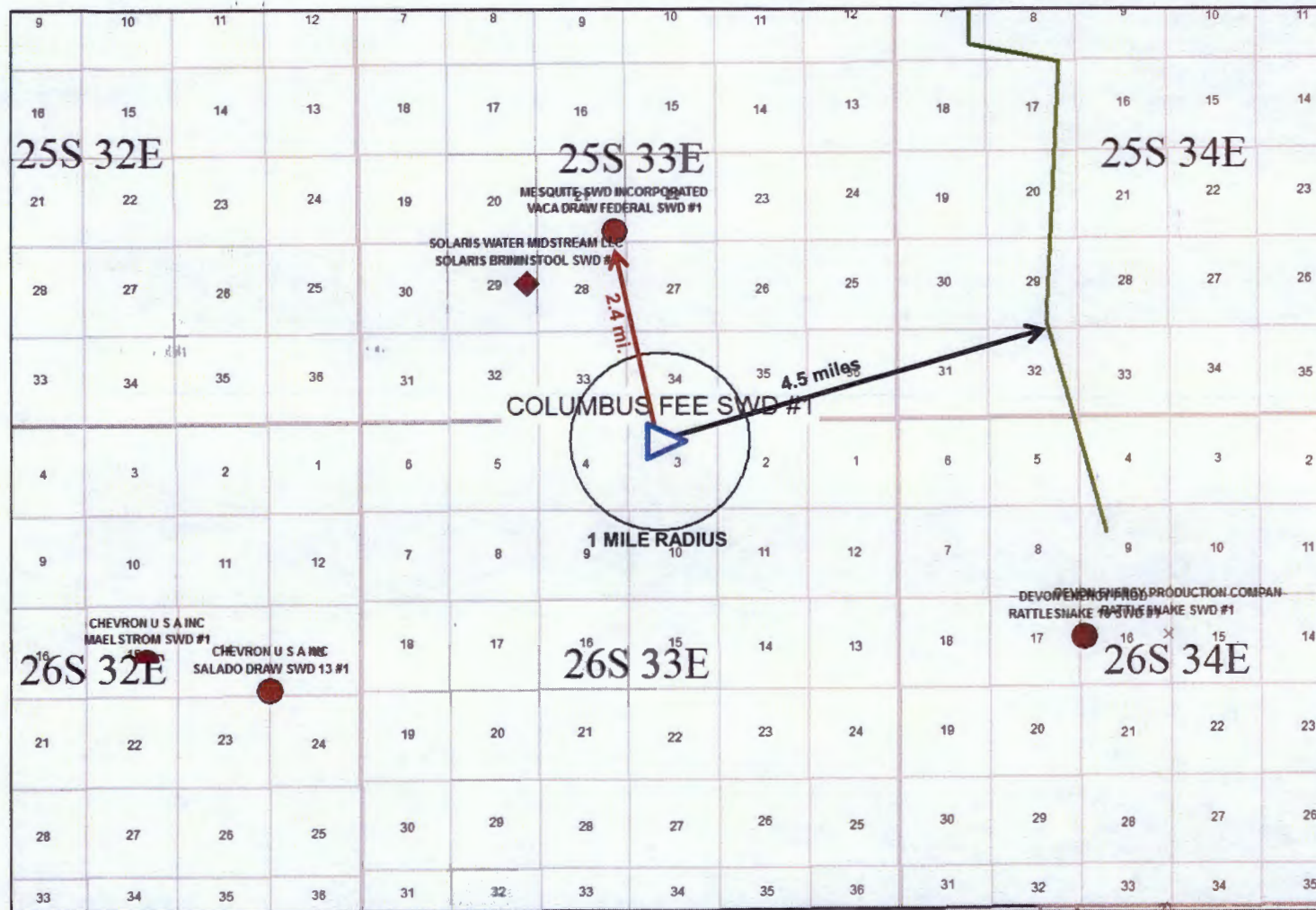
Regards,

Carrie M. Martin

Staff Geologist  
COG Operating LLC  
[cmartin@concho.com](mailto:cmartin@concho.com)  
432-221-0479



# COLUMBUS FEE SWD #1



## LEGEND

### Devonian SWD Status

- SWD
- PLUGGED
- × ABANDONED
- ◐ DRILLING
- ◆ LOC
- TA
- ▶ PROPOSED SWD
- Snee, Zoback Faults (Low Fault Slip Potential)



# **III.**

## **WELL DATA**

## INJECTION WELL DATA SHEET

Operator: COG Operating, LLC  
Well Name & Number: Columbus Fee SWD 1  
Well Location: 1165' FNL, 1895' FWL, Unit C, Section 3, T26S, R33E

Wellbore Schematic: See attached schematic

### Surface Casing:

Hole Size: 26"  
Casing Size: 20" @ 1000'  
Cemented with: 3000 cubic feet  
Top of Cement: Surface by design

### Intermediate Casing:

Hole Size: 17-1/2"  
Casing Size: 13-3/8" @ 4970'  
Cemented with: 5175 cubic feet  
Top of Cement: Surface by design

### Intermediate Casing:

Hole Size: 12-1/4"  
Casing Size: 9-5/8" @ 12300'  
Cemented with: 5775 cubic feet  
Top of Cement: Surface by design

### Production Casing:

Hole Size: 8-1/2"  
Casing Size: 7-5/8" flush joint liner @ 12100-17450'  
Cemented with: 625 cubic feet  
Top of Cement: Liner top by design

### Injection Interval:

17450' to 19450' (6-1/2" open hole)

### Injection Tubing/Packer:

Tubing Size: 5-1/2" 0-12000' inside 9-5/8" casing, 5" from 12000-17400' inside 7-5/8" casing  
Lining Material: Internally fiberglass lined  
Type of Packer: Nickel plated or CRA 10K permanent packer  
Packer Setting Depth: 17400'  
Other Type of Tubing/Casing Seal: Not Applicable

Additional Data:

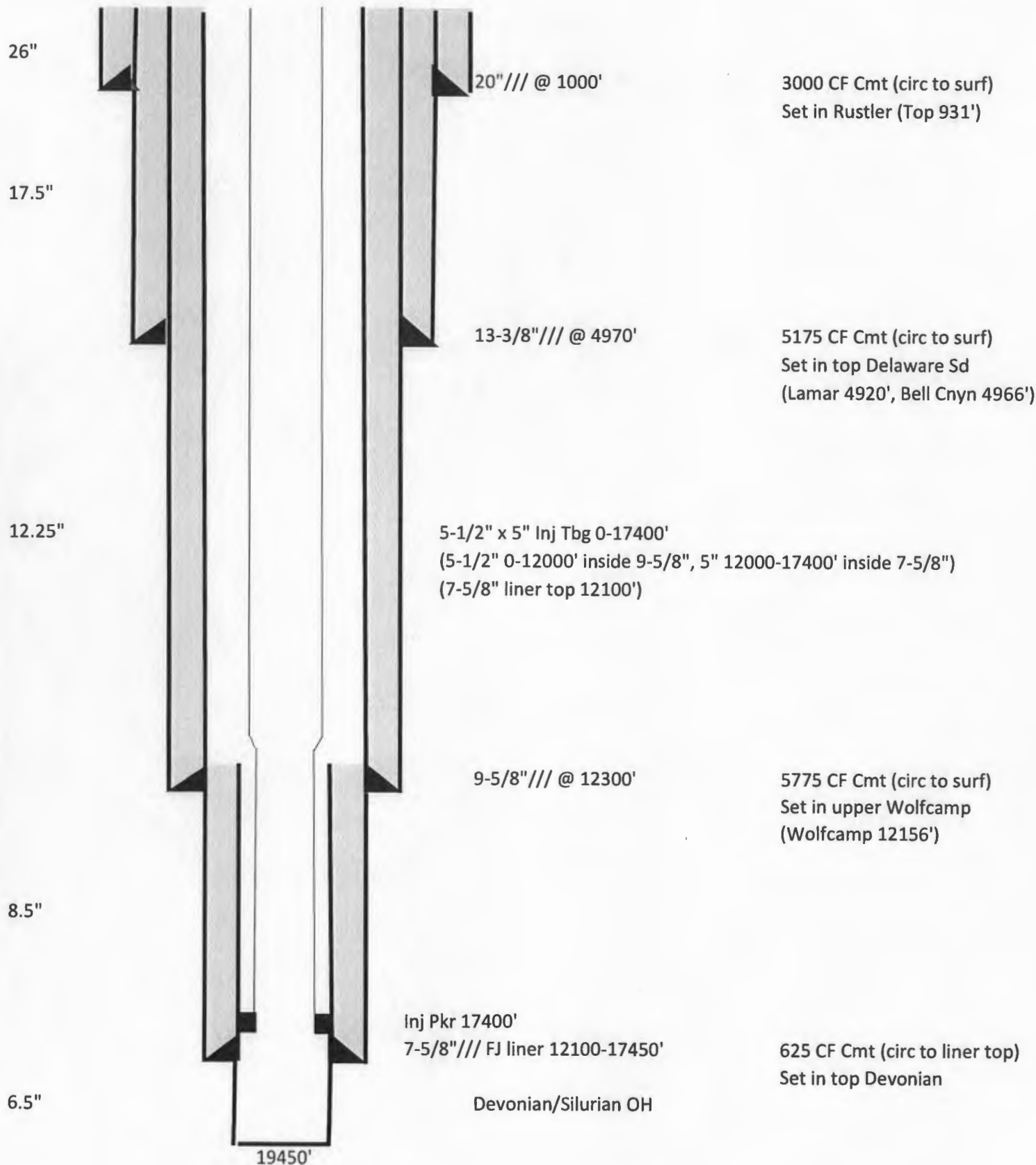
1. Is this a new well drilled for injection? Yes  
If no, for what purpose was well originally drilled? N/A
2. Name of Injection Formation: Devonian/Silurian
3. Name of Field or Pool (if applicable): SWD: Devonian
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals 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:

Overlying: Possible Delaware 4970-9050', Bone Spring 9050-12150', Wolfcamp 12150-14000', possible Strawn 14300'+, possible Atoka 14475'+, possible Morrow 15025'+

Underlying: None

Columbus Fee SWD 1  
1165' FNL, 1895' FWL  
C-3-26s-33e  
Lea, NM  
30-025-xxxxx

Zero:  
KB elev:  
GL elev: 3321'





**Fishing Risk Assessment  
Columbus Fee SWD 1**

**Note: All fishing procedures are subject to well conditions. Expert judgement and experience are required and there are too many combinations of possible fishing operations options to list below. Fishing techniques are determined on a case-by-case, day-by-day basis.**

**5" Injection Tubing Inside of 7-5/8" Casing**

7-5/8"/39ppf casing: ID = 6.625", Drift ID = 6.500"

5"/18ppf/L80/TCPC FG-lined injection tubing: Tube/body OD = 5.000", Cplg OD = 5.700"

**Clearance between body OD of tubing and drift ID of casing = 1.500"**

The proposed downhole configuration allows for effective, straightforward tubing fishing operations.

Tubing will have a floating seal assembly landed in seal bore extensions below the packer which will allow a simple straight pull to separate the tubing from the packer.

**For washover operations:**

- 6-3/8" washpipe: OD = 6.375", ID = 5.625", Drift ID = 5.500"
- OD of washpipe is less than drift ID of casing (6.500" drift ID vs 6.375" washpipe OD)
- Drift ID of washpipe is greater than OD of 5" tubing (5.500" drift ID vs 5.000" Tubing OD)
- Drift ID of washpipe is slightly less than coupling OD of 5" tubing (washpipe 5.500" drift ID vs 5.700" tubing coupling OD---0.200" difference). If necessary to wash over the coupling, would use a mill on the end of the washpipe to mill off the 0.200" dimensional difference in such a way:
  1. To allow a 6.625" Series 150 spiral grapple overshot turned down from 6.625" OD to 6.5" OD to catch the milled down coupling (mill coupling to 5.5" or less OD).
  2. To allow a 5.875" OD Series 150 spiral grapple overshot to catch the 5" body of the tubing (mill coupling to 5" tube OD).

**For fishing operations with overshot:**

- 5" tube/body can be fished with 5.875" OD Series 150 spiral grapple overshot (5.875" overshot OD vs 6.5" casing drift ID).
- 5.700" OD TCPC coupling can be milled down and fished as described above in "washover operations."

**For fishing operations with spear:**

- Fiberglass liner can be milled out, or torn out with a spear, to allow a releasable spear assembly to grasp the ID of the injection tubing.

## **Fishing Risk Assessment Columbus Fee SWD 1**

**Note: All fishing procedures are subject to well conditions. Expert judgement and experience are required and there are too many combinations of possible fishing operations options to list below. Fishing techniques are determined on a case-by-case, day-by-day basis.**

### **5-1/2" Injection Tubing Inside of 9-5/8" Casing**

9-5/8"/53.5 ppf casing: ID = 8.535", Drift ID = 8.379"

5-1/2"/20ppf/P110/TCPC FG-lined injection tubing: Tube/body OD = 5.500", Cplg OD = 6.250"

Clearance between body OD of tubing and drift ID of casing = 2.879"

The proposed downhole configuration allows for effective, straightforward tubing fishing operations.

Tubing will have a floating seal assembly landed in seal bore extensions below the packer which will allow a simple straight pull to separate the tubing from the packer.

#### **For washover operations:**

- 7-3/8" washpipe: OD = 7.375", ID = 6.625", Drift ID = 6.500"
- OD of washpipe is less than drift ID of casing (8.379" drift ID vs 7.375" washpipe OD)
- Drift ID of washpipe is greater than OD of 5-1/2" tubing (6.500" drift ID vs 5.500" Tubing OD)
- Drift ID of washpipe greater than OD of 5-1/2" tubing coupling (6.500" drift ID vs 6.250" Tubing Coupling OD)

#### **For fishing operations with overshot:**

- 5-1/2" tube/body can be fished with 6.625" OD Series 150 spiral grapple overshot (6.625" overshot OD vs 8.379" casing drift ID).
- 6.250" OD TCPC coupling can be fished with 7.375" OD Series 150 spiral grapple overshot (7.375" overshot OD vs 8.379" casing drift ID).

#### **For fishing operations with spear:**

- Fiberglass liner can be milled out, or torn out with a spear, to allow a releasable spear assembly to grasp the ID of the injection tubing.

**V.**

**MAP**





CONCHO

Project: NDB GLOBAL  
NORTHERN DELAWARE BASIN EAST TEAM  
COLUMBUS FEE SWD #1  
1165 FNL 1895 FWL  
Sec. 3, T26S, R33E  
Lea Co., New Mexico

K STEVENS

Date: 12 February 2019

File Path: G:\NDB\Global\NDB Global\NDB Global\T26S R33E\1165 FNL 1895 FWL\1165 FNL 1895 FWL.dwg

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COLUMBUS 3 FEE SWD #1

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26S 33E

Affected Person List For  
Each Tract Attached



C-108 Application for Authorization to Inject  
Columbus Fee SWD 1  
1165' FNL, 1895' FWL  
Unit C, Section 3, T26S, R33E  
Lea County, NM

List of Affected Persons Within 1 Mile Radius Area of Review By Tract

**Surface Owner:**

Dinwiddie Cattle Co., LLC  
Intrepid Potash

**Affected Persons Tract 1:**

Magnum Hunter Production Inc.

**Affected Persons Tract 2:**

BTA Oil Producers  
COG Operating, LLC  
Concho Oil & Gas, LLC  
MECO IV, LLC  
Muleshoe Crude, LP  
Sagebrush Interests, LLC  
RSC Resources, LP

**Affected Persons Tract 3:**

BTA Oil Producers  
COG Operating, LLC  
Concho Oil & Gas, LLC  
MECO IV, LLC  
Muleshoe Crude, LP  
Sagebrush Interests, LLC  
RSC Resources, LP

**Affected Persons Tract 4:**

Castello Enterprises, Inc.  
COG Operating LLC  
Concho Oil & Gas, LLC  
Muleshoe Crude, LP  
MECO IV, LLC  
RGH Land, Inc.  
Michael T. Hooper GST Trust, Michael T. Hooper, Trustee  
Deborah H. Wachsmuth GST Trust, Deborah H. Wachsmuth, Trustee  
Jack P. Hooper GST Trust, Jack P. Hooper, Trustee  
RSC Resources, L.P.  
Sagebrush Interest, LLC

**Affected Persons Tract 5:**

RSC Resources, LP  
Peregrine Production, LLC

REX Resources, L.P.  
COG Operating, LLC  
Concho Oil & Gas, LLC, a Texas limited liability company  
Muleshoe Crude, L.P., a Texas limited partnership  
Cowhouse Crude, L.P., a Texas limited partnership  
Magnum Producing, LP  
MRC Permian Company  
MECO IV, LLC  
Endeavor Energy Resources, L.P.  
Bradley S. Bates  
WBA Resources, Ltd  
Newkumet Exploration, Inc.  
Sagebrush Interests, LLC  
Featherstone Development Corporation  
MHM Resources, L.P.

**Affected Persons Tract 6:**

COG Operating LLC  
Concho Oil & Gas, LLC  
Sagebrush Interests, LLC  
RSC Resources, L.P.  
Muleshoe Crude, L.P.  
Meco IV, LLC

**Affected Persons Tract 7:**

COG Operating, LLC  
Concho Oil & Gas, LLC  
MECO IV, LLC  
Muleshoe Crude, LP  
Sagebrush Interests, LLC  
RSC Resources, LP

**Affected Persons Tract 8:**

Sagebrush Interests, LLC  
RSC Resources, L.P.  
WBA Resources, Ltd.  
Muleshoe Crude, L.P.  
Meco IV, LLC  
Endeavor Energy Resources, L.P.  
Petras Energy L.P.

**Affected Persons Tract 9:**

Sagebrush Interests, LLC  
RSC Resources, L.P.  
WBA Resources, Ltd.  
Muleshoe Crude, L.P.  
Meco IV, LLC  
Petras Energy L.P.

**Affected Persons Tract 10:**

EOG Resources Inc.

**Affected Persons Tract 11:**

Concho Operating, LLC

WBA Resources, Ltd.

Endeavor Energy Resources, L.P.

Petras Energy, LP

Newkumet Exploration, Inc.

Bradley S. Bates

Muleshoe Crude, LP

RSC Resources, LP

R&R Royalty, Ltd.

Sagebrush Interests, LLC

**Affected Persons Tract 12:**

COG Operating LLC

Concho Oil & Gas, LLC

Muleshoe Crude, LP

MECO IV, LLC

RSC Resources, L.P.

Sagebrush Interests, LLC

Maven Royalty Fund, LP

Norman C. Case, a married individual as his separate estate

Tonkin Mineral Interest, LLC, a New Mexico limited liability company

MHM Resources, LP

Pheasant Energy, LLC

J. Hiram Moore, Ltd., a Texas limited partnership

RGH Land Inc.

Michael T. Hooper GST Trust, Michael T. Hooper, Trustee

Deborah H. Wachsmuth GST Trust, Deborah H. Wachsmuth, Trustee

Jack P. Hooper GST Trust, Jack P. Hooper, Trustee

Norma Markham Berman Valente, aka Norma Berman Valente, a married person dealing with her sole and separate property

Sandra Rudy Brown, Attorney-in-fact for Moses M. Rudy and Mildred S. Rudy, Co-Trustees of the M. M. & M. S. Rudy Trust

Houston Arts Combined Endowment Foundation, a non- profit organization

Wells Fargo Bank, N.A., Agent

Stephen D. Susman

Thomas Susman

Tara Susman-Pena

Micah Susman

Daily Lacy Lambert

Stacy S. Kuhn

Shana BatSheva Vaknin

Harry Susman c/o Susman Godfrey, LLP

Carolyn A. Taylor, Marilyn S. Taylor As tenants in common with rights of survivorship

Jack A. Taylor, dealing in his sol and separate property

R&R Royalty, Ltd

Bradley S. Bates

**Affected Persons Tract 13:**

R&R Royalty, Ltd.

**Affected Persons Tract 14:**

Matador E&P Company, Inc.

**Affected Persons Tract 15:**

Magnum Hunter Production Inc.

**Affected Persons Tract 16:**

Mewbourne Oil Company  
Mewbourne Energy Partners 13-A LP  
CWM 2000-B Ltd  
CWM 2000-B II Ltd  
3MG Corporation  
Mewbourne Development Corporation

**Affected Persons Tract 17:**

Mewbourne Oil Company  
Petras Energy LP  
Endeavor Energy Resources LP  
Muleshoe Crude LP  
WBA Resources Ltd.  
Peregrine Production LLC  
Newkumet Exploration Inc.  
RSC Resources LP  
Sagebrush Interest LLC

**Affected Persons Tract 18:**

EOG Resources, Inc.



C-108 Application for Authorization to Inject  
Columbus Fee SWD 1  
1165' FNL, 1895' FWL  
Unit C, Section 3, T26S, R33E  
Lea County, NM

List of Affected Persons Within 1 Mile Radius Area of Review

Surface Owner:

Dinwiddie Cattle Co., LLC  
Attn: Tommy Dinwiddie  
P.O. Box 963  
Capitan, NM 88316

Intrepid Potash  
Attn: Alex Wagner  
1001 17<sup>th</sup> St., Suite 1050  
Denver, CO 80202

Affected Persons:

EOG Resources, Inc.  
5509 Champions Drive  
Midland, TX 79706

COG Operating, LLC  
One Concho Center  
600 W Illinois Ave.  
Midland, TX 79701

Sagebrush Interests, LLC  
10260 Westheimer Road, Suite 400  
Houston, TX 77042

RSC Resources, L.P.  
6824 Island Circle  
Midland, TX 79707

WBA Resources, Ltd.  
110 West Louisiana Avenue, Suite 300  
Midland, TX 79701

Muleshoe Crude, L.P.  
101 Blackberry Court  
Midland, TX 79705

Meco IV, LLC  
1200 17th Street, Suite 975  
Denver, CO 80202

Endeavor Energy Resources, L.P.  
110 North Marienfeld Street, Suite 200  
Midland, TX 79701

Petras Energy L.P.  
P.O. Box 4127  
Midland, TX 79704

Petras Energy, LP  
6 Desta Drive  
Midland, TX 79705

Newkumet Exploration, Inc.  
500 West Texas Avenue #1410  
Midland, TX 79701

Newkumet Exploration Inc.  
P. O. Box 11330  
Midland, TX 79702

Bradley S. Bates  
101 Blackberry Court  
Midland, TX 79705

R&R Royalty, Ltd.  
500 North Shoreline Boulevard, Suite 322  
Corpus Christy, TX 78401

Concho Oil & Gas, LLC  
600 West Illinois Avenue Midland, TX 79701

Maven Royalty Fund, LP  
620 Texas Street, Suite 300  
Shreveport, LA 71101

Norman C. Case, a married individual as his separate estate  
26828 Maple Valley Highway, #259  
Maple Valley, WA 98038

Tonkin Mineral Interest, LLC, a New Mexico limited liability company  
1524 Park Avenue, SW  
Albuquerque, NM 87104

MHM Resources, LP  
P. O. Box 51570  
Midland, TX 79710-1570

Pheasant Energy, LLC  
1204 West 7th Street, #200  
Fort Worth, TX 76102

J. Hiram Moore, Ltd., a Texas limited partnership  
1204 West 7th Street, #200  
Fort Worth, TX 76102

RGH Land Inc.  
3212 Chelsea Place  
Midland, TX 79705

Michael T. Hooper GST Trust, Michael T. Hooper, Trustee  
P. O. Box 221950  
El Paso, TX 79913

Deborah H. Wachsmuth GST Trust, Deborah H. Wachsmuth, Trustee  
P. O. Box 17006  
San Antonio, TX 78217-0006

Jack P. Hooper GST Trust, Jack P. Hooper, Trustee  
5511 East 89th Court  
Tulsa, OK 74137

Norma Markham Berman Valente, aka Norma Berman Valente, a married person dealing with her sole and separate property  
3505 Bohannon Drive  
Glen Allen, VA 23060-7213

Sandra Rudy Brown, Attorney-in-fact for Moses M. Rudy and Mildred S. Rudy, Co-Trustees of the M. M. & M. S. Rudy Trust  
c/o Ms. Sandra Rudy Brown  
7970 Fredericksburg Road, Suite 101-367  
San Antonio, TX 78229

Houston Arts Combined Endowment Foundation, a non-profit organization  
Wells Fargo Bank, N.A., Agent  
750 East Mulberry Avenue, Suite 402  
San Antonio, TX 78212

Stephen D. Susman  
2121 Kirby Drive, Unit #85  
Houston, TX 77019

Thomas Susman  
3901 Argyle Terrace, NW  
Washington, DC 20011

Tara Susman-Pena  
6106 42nd Place  
Hyattsville, MD 20781

Micah Susman  
5206 Meadow Creek Drive  
Austin, TX 78745

Daily Lacy Lambert  
115 Central Park West, Apartment 2G  
New York, NY 10023

Stacy S. Kuhn  
410 East 57th Street, Apartment 10A  
New York, NY 10022

Shana BatSheva Vaknin  
1127 South Alfred Street  
Los Angeles, CA 90035

Harry Susman  
c/o Susman Godfrey, LLP  
2 Woods Edge Lane  
Houston, TX 77024

Carolyn A. Taylor  
Marilyn S. Taylor  
As tenants in common with rights of survivorship  
1702 Curry Road  
Carlsbad, NM 88220

Jack A. Taylor, dealing in his sol and separate property  
2001 McKinley Street  
Carlsbad, NM 88220

Magnum Hunter Production Inc.  
600 East Los Colinas Boulevard, Suite 1100  
Irving, TX 75039

Magnum Hunter Production Inc.  
600 N. Marienfeld Ave., Suite 600  
Midland, TX 79701



Matador E&P Company, Inc.  
5400 LBJ Fwy., Suite 1500  
Dallas, TX 75240

Mewbourne Oil Company  
3620 Old Bullard Road  
Tyler, TX 75701

Mewbourne Oil Company  
P.O. Box 7698  
Tyler, TX 75711

Mewbourne Energy Partners 13-A LP  
P.O. Box 7698  
Tyler, TX 75711

CWM 2000-B Ltd  
P.O. Box 7698  
Tyler, TX 75711

CWM 2000-B II Ltd  
P.O. Box 7698  
Tyler, TX 75711

3MG Corporation  
P.O. Box 7698  
Tyler, TX 75711

Mewbourne Development Corporation  
P.O. Box 7698  
Tyler, TX 75711

Peregrine Production LLC  
3201 North Pecos Street, Suite 202  
Midland, TX 79702

BTA Oil Producers  
104 S Pecos Street  
Midland, TX 79701

Castello Enterprises, Inc.  
P.O. Box 8426  
Midland, TX 79708

REX Resources, L.P.  
6824 Island Circle  
Midland, TX 79707

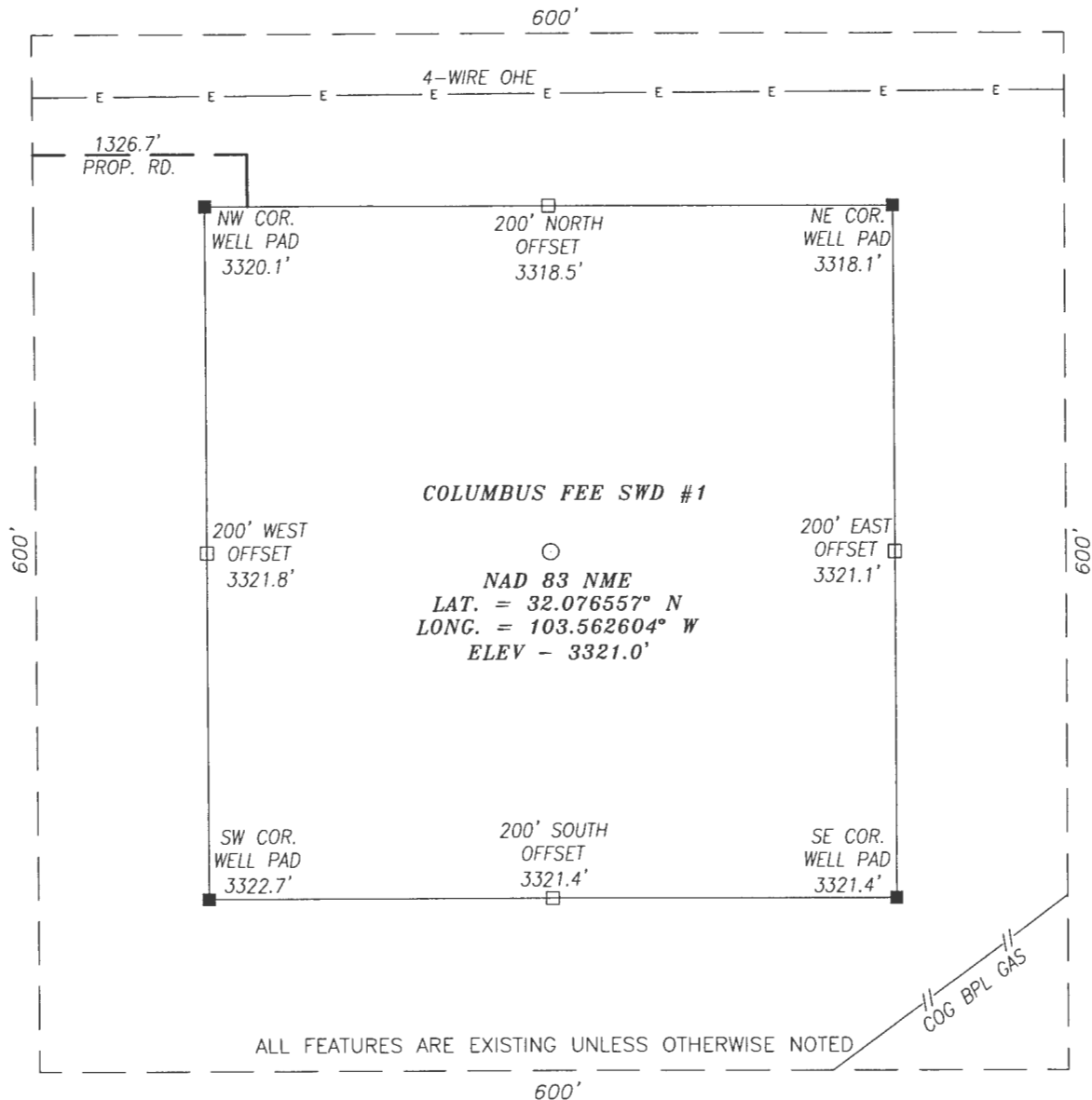
Cowhouse Crude, L.P., a Texas limited partnership  
101 Blackberry Court  
Midland, TX 79705

Magnum Producing, LP  
500 N. Shoreline Ste. 322  
Corpus Christi, TX 78471

MRC Permian Company  
5400 LBJ Freeway, Ste. 1500  
Dallas, TX 75240

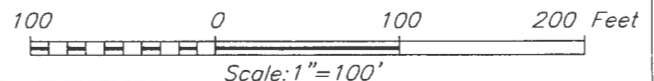
Featherstone Development Corporation  
400 N Pennsylvania Ave. suite 850  
Roswell, NM 88201

SECTION 3, TOWNSHIP 26 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY NEW MEXICO



DIRECTIONS TO LOCATION:

BEGINNING AT THE INTERSECTION OF BATTLEAXE RD. AND PIPELINE RD. GO WESTERLY ON PIPELINE RD. FOR APPROX. 1.2 MI.; THEN GO RIGHT (NORTHERLY) ON A CALICHE RD. FOR APPROX. 0.8 MI. TO THE BEGINNING OF THE PROPOSED ROAD; THE PROPOSED WELL LIES APPROX. 1,500 FEET TO THE EAST.



HARCROW SURVEYING, LLC  
2314 W. MAIN ST, ARTESIA, N.M. 88210  
PH: (575) 746-2158 FAX: (575) 746-2158  
Texas Firm No. 10194089  
c.harcrow@harcrowsurveying.com



COG OPERATING, LLC

COLUMBUS FEE SWD #1  
LOCATED 1165 FEET FROM THE NORTH LINE  
AND 1895 FEET FROM THE WEST LINE OF SECTION 3,  
TOWNSHIP 26 SOUTH, RANGE 33 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO

SURVEY DATE: OCTOBER 10, 2016	PAGE: 1 OF 1
DRAFTING DATE: OCTOBER 25, 2018	
APPROVED BY: CH	DRAWN BY: JH FILE: 18 1226

# **VI.**

**No Wells Penetrate  
Proposed Disposal  
Interval Within One  
Mile Area of Review**

# **VII.**

## **Water Analysis Produced and Receiving Formation Water**





Permian Basin Area Laboratory  
2101 Market Street,  
Midland, Texas 79703

# Delaware Sand

Upstream Chemicals

REPORT DATE: 5/11/2018

## COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER: COG OPERATING LLC  
DISTRICT: NEW MEXICO  
AREA/LEASE: KING TUT  
SAMPLE POINT NAME: KING TUT FED 3H BTRY  
SITE TYPE: FACILITY  
SAMPLE POINT DESCRIPTION: TRANSFER PUMP

ACCOUNT REP: KENNETH MORGAN  
SAMPLE ID: 201701012804  
SAMPLE DATE: 3/21/2017  
ANALYSIS DATE: 3/24/2017  
ANALYST: SVP

### COG OPERATING LLC, KING TUT, KING TUT FED 3H BTRY

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:		mg/L		meq/L	
Initial Temperature (°F):	250	Chloride (Cl <sup>-</sup> ):	152606.2	4304.8	Sodium (Na <sup>+</sup> ):	74498.5	3241.9	
Final Temperature (°F):	80	Sulfate (SO <sub>4</sub> <sup>2-</sup> ):	461.4	9.6	Potassium (K <sup>+</sup> ):	1381.8	35.3	
Initial Pressure (psi):	100	Borate (H <sub>3</sub> BO <sub>3</sub> ):	170.9	2.8	Magnesium (Mg <sup>2+</sup> ):	2495.8	205.4	
Final Pressure (psi):	15	Fluoride (F <sup>-</sup> ):	ND		Calcium (Ca <sup>2+</sup> ):	15329.6	765.0	
		Bromide (Br <sup>-</sup> ):	ND		Strontium (Sr <sup>2+</sup> ):	724.2	16.5	
pH:		Nitrite (NO <sub>2</sub> <sup>-</sup> ):	ND		Barium (Ba <sup>2+</sup> ):	1.8	0.0	
pH at time of sampling:	6.8	Nitrate (NO <sub>3</sub> <sup>-</sup> ):	ND		Iron (Fe <sup>2+</sup> ):	43.2	1.5	
		Phosphate (PO <sub>4</sub> <sup>3-</sup> ):	ND		Manganese (Mn <sup>2+</sup> ):	2.6	0.1	
		Silica (SiO <sub>2</sub> ):	ND		Lead (Pb <sup>2+</sup> ):	0.0	0.0	
					Zinc (Zn <sup>2+</sup> ):	0.0	0.0	
ALKALINITY BY TITRATION:								
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> ):	36.6	meq/L	0.6		Aluminum (Al <sup>3+</sup> ):	0.0	0.0	
Carbonate (CO <sub>3</sub> <sup>2-</sup> ):	ND				Chromium (Cr <sup>3+</sup> ):	ND		
Hydroxide (OH <sup>-</sup> ):	ND				Cobalt (Co <sup>2+</sup> ):	ND		
					Copper (Cu <sup>2+</sup> ):	0.0	0.0	
aqueous CO <sub>2</sub> (ppm):	1050.0	Formic Acid:	ND		Molybdenum (Mo <sup>3+</sup> ):	0.0	0.0	
aqueous H <sub>2</sub> S (ppm):	0.0	Acetic Acid:	ND		Nickel (Ni <sup>2+</sup> ):	ND		
aqueous O <sub>2</sub> (ppb):	ND	Propionic Acid:	ND		Tin (Sn <sup>2+</sup> ):	ND		
		Butyric Acid:	ND		Titanium (Ti <sup>2+</sup> ):	ND		
Calculated TDS (mg/L):	247582	Valeric Acid:	ND		Vanadium (V <sup>2+</sup> ):	ND		
Density/Specific Gravity (g/cm <sup>3</sup> ):	1.1573				Zirconium (Zr <sup>2+</sup> ):	ND		
Measured Specific Gravity	1.1683				Lithium (Li):	ND		
Conductivity (mmhos):	ND				Total Hardness:	49434	N/A	
Resistivity:	ND							
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data	Anion/Cation Ratio:	1.01		ND = Not Determined			

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FURTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO <sub>4</sub> )		Calcite (CaCO <sub>3</sub> )		Gypsum (CaSO <sub>4</sub> ·2H <sub>2</sub> O)		Anhydrite (CaSO <sub>4</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.40	0.646	1.16	7.579	-0.15	0.000	-0.23	0.000
99°F	24 psi	0.28	0.509	1.18	7.675	-0.14	0.000	-0.14	0.000
118°F	34 psi	0.16	0.334	1.20	7.774	-0.14	0.000	-0.06	0.000
137°F	43 psi	0.05	0.115	1.22	7.857	-0.15	0.000	0.03	13.651
156°F	53 psi	-0.06	0.000	1.23	7.925	-0.15	0.000	0.11	51.143
174°F	62 psi	-0.16	0.000	1.24	7.980	-0.16	0.000	0.20	82.865
193°F	72 psi	-0.25	0.000	1.25	8.022	-0.17	0.000	0.28	109.409
212°F	81 psi	-0.34	0.000	1.25	8.058	-0.19	0.000	0.37	131.297
231°F	91 psi	-0.42	0.000	1.26	8.083	-0.20	0.000	0.46	149.069
250°F	100 psi	-0.50	0.000	1.26	8.095	-0.22	0.000	0.55	163.281

Conditions		Celestite (SrSO <sub>4</sub> )		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO <sub>3</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.34	123.094	-0.45	0.000	-7.90	0.000	0.19	1.935
99°F	24 psi	0.34	125.716	-0.46	0.000	-8.04	0.000	0.27	2.698
118°F	34 psi	0.35	126.379	-0.48	0.000	-8.15	0.000	0.34	3.330
137°F	43 psi	0.35	126.223	-0.49	0.000	-8.24	0.000	0.39	3.801
156°F	53 psi	0.35	126.022	-0.50	0.000	-8.32	0.000	0.43	4.122
174°F	62 psi	0.35	126.264	-0.51	0.000	-8.38	0.000	0.45	4.307
193°F	72 psi	0.35	127.203	-0.53	0.000	-8.43	0.000	0.45	4.367
212°F	81 psi	0.36	128.885	-0.54	0.000	-8.47	0.000	0.44	4.316
231°F	91 psi	0.36	131.186	-0.55	0.000	-8.51	0.000	0.42	4.148
250°F	100 psi	0.37	133.846	-0.56	0.000	-8.54	0.000	0.38	3.848

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity. %CO<sub>2</sub> is not included in the calculations.

ScaleSoft Pitzer™  
SSP2010

Comments:



# Bone Spring



Permian Basin Area Laboratory  
2101 Market Street,  
Midland, Texas 79703

Upstream Chemicals

REPORT DATE: 5/16/2018

## COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER: COG OPERATING LLC  
DISTRICT: NEW MEXICO  
AREA/LEASE: WINDWARD  
SAMPLE POINT NAME: WINDWARD FED 2H  
SITE TYPE: WELL SITES  
SAMPLE POINT DESCRIPTION: WELL HEAD

ACCOUNT REP: KENNETH MORGAN  
SAMPLE ID: 201501048297  
SAMPLE DATE: 12/11/2015  
ANALYSIS DATE: 12/16/2015  
ANALYST: SAMUEL NEWMAN

### COG OPERATING LLC, WINDWARD, WINDWARD FED 2H

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:		mg/L		meq/L	
Initial Temperature (°F):	250	Chloride (Cl <sup>-</sup> ):	89914.5		2536.4	Sodium (Na <sup>+</sup> ):	46148.7	2008.2
Final Temperature (°F):	82	Sulfate (SO <sub>4</sub> <sup>2-</sup> ):	1031.7		21.5	Potassium (K <sup>+</sup> ):	902.9	23.1
Initial Pressure (psi):	100	Borate (H <sub>3</sub> BO <sub>3</sub> ):	187.2		3.0	Magnesium (Mg <sup>2+</sup> ):	855.0	70.4
Final Pressure (psi):	15	Fluoride (F <sup>-</sup> ):	ND			Calcium (Ca <sup>2+</sup> ):	6890.6	343.8
		Bromide (Br <sup>-</sup> ):	ND			Strontium (Sr <sup>2+</sup> ):	278.9	6.4
pH:		Nitrite (NO <sub>2</sub> <sup>-</sup> ):	ND			Barium (Ba <sup>2+</sup> ):	0.0	0.0
pH at time of sampling:	7.1	Nitrate (NO <sub>3</sub> <sup>-</sup> ):	ND			Iron (Fe <sup>2+</sup> ):	89.1	3.2
		Phosphate (PO <sub>4</sub> <sup>3-</sup> ):	ND			Manganese (Mn <sup>2+</sup> ):	1.8	0.1
		Silica (SiO <sub>2</sub> ):	ND			Lead (Pb <sup>2+</sup> ):	ND	
						Zinc (Zn <sup>2+</sup> ):	0.0	0.0
ALKALINITY BY TITRATION:	mg/L	meq/L						
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> ):	170.0	2.8				Aluminum (Al <sup>3+</sup> ):	ND	
Carbonate (CO <sub>3</sub> <sup>2-</sup> ):	ND					Chromium (Cr <sup>3+</sup> ):	ND	
Hydroxide (OH <sup>-</sup> ):	ND					Cobalt (Co <sup>2+</sup> ):	ND	
						Copper (Cu <sup>2+</sup> ):	ND	
aqueous CO <sub>2</sub> (ppm):	240.0	Formic Acid:	ND			Molybdenum (Mo <sup>2+</sup> ):	ND	
aqueous H <sub>2</sub> S (ppm):	0.0	Acetic Acid:	ND			Nickel (Ni <sup>2+</sup> ):	ND	
aqueous O <sub>2</sub> (ppb):	ND	Propionic Acid:	ND			Tin (Sn <sup>2+</sup> ):	ND	
		Butyric Acid:	ND			Titanium (Ti <sup>2+</sup> ):	ND	
Calculated TDS (mg/L):	146283	Valeric Acid:	ND			Vanadium (V <sup>2+</sup> ):	ND	
Density/Specific Gravity (g/cm <sup>3</sup> ):	1.0934					Zirconium (Zr <sup>2+</sup> ):	ND	
Measured Specific Gravity	1.1045					Lithium (Li):	ND	
Conductivity (mmhos):	ND							
Resistivity:	ND					Total Hardness:	21067	N/A
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data	Anion/Cation Ratio:			1.04			ND = Not Determined

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FURTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO <sub>4</sub> )		Calcite (CaCO <sub>3</sub> )		Gypsum (CaSO <sub>4</sub> ·2H <sub>2</sub> O)		Anhydrite (CaSO <sub>4</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
82°F	15 psi		0.000	1.43	35.518	-0.18	0.000	-0.34	0.000
101°F	24 psi		0.000	1.48	36.271	-0.17	0.000	-0.25	0.000
119°F	34 psi		0.000	1.54	37.269	-0.16	0.000	-0.16	0.000
138°F	43 psi		0.000	1.60	38.261	-0.15	0.000	-0.06	0.000
157°F	53 psi		0.000	1.66	39.182	-0.15	0.000	0.04	39.216
175°F	62 psi		0.000	1.72	40.019	-0.14	0.000	0.14	133.848
194°F	72 psi		0.000	1.78	40.776	-0.13	0.000	0.24	211.707
213°F	81 psi		0.000	1.84	41.510	-0.13	0.000	0.35	274.678
231°F	91 psi		0.000	1.90	42.195	-0.13	0.000	0.45	324.816
250°F	100 psi		0.000	1.96	42.808	-0.12	0.000	0.56	364.191

Conditions		Celestite (SrSO <sub>4</sub> )		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO <sub>3</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
82°F	15 psi	0.16	51.545	-1.13	0.000	-7.50	0.000	1.18	30.476
101°F	24 psi	0.17	54.187	-1.14	0.000	-7.61	0.000	1.28	32.451
119°F	34 psi	0.18	56.250	-1.15	0.000	-7.69	0.000	1.38	34.487
138°F	43 psi	0.18	58.374	-1.16	0.000	-7.75	0.000	1.47	36.277
157°F	53 psi	0.19	60.980	-1.17	0.000	-7.79	0.000	1.55	37.770
175°F	62 psi	0.21	64.301	-1.17	0.000	-7.81	0.000	1.61	38.985
194°F	72 psi	0.22	68.407	-1.18	0.000	-7.83	0.000	1.66	39.950
213°F	81 psi	0.24	73.238	-1.18	0.000	-7.84	0.000	1.70	40.777
231°F	91 psi	0.26	78.634	-1.18	0.000	-7.83	0.000	1.73	41.446
250°F	100 psi	0.29	84.362	-1.18	0.000	-7.82	0.000	1.75	41.931

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; %CO<sub>2</sub> is not included in the calculations.

ScaleSoft Pitzer™  
SSP2010

Comments:





Permian Basin Area Laboratory  
2101 Market Street,  
Midland, Texas 79703

Wolfcamp

Upstream Chemicals

REPORT DATE: 5/11/2018

## COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	COG OPERATING LLC	ACCOUNT REP:	LARRY G HINES
DISTRICT:	WATER MANAGEMENT - PERMIAN	SAMPLE ID:	201801021234
AREA/LEASE:	VIKING HELMET STATE	SAMPLE DATE:	4/11/2018
SAMPLE POINT NAME:	VIKING HELMET STATE COM 24H	ANALYSIS DATE:	4/16/2018
SITE TYPE:	WELL SITES	ANALYST:	SP
SAMPLE POINT DESCRIPTION:	WELL HEAD		

### COG OPERATING LLC, VIKING HELMET STATE, VIKING HELMET STATE COM 24H

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:		mg/L		meq/L	
Initial Temperature (°F):	250	Chloride (Cl <sup>-</sup> ):	80548.2	2272.2	Sodium (Na <sup>+</sup> ):	46716.0	2032.9	
Final Temperature (°F):	88	Sulfate (SO <sub>4</sub> <sup>2-</sup> ):	1551.7	32.3	Potassium (K <sup>+</sup> ):	887.5	22.7	
Initial Pressure (psi):	100	Borate (H <sub>3</sub> BO <sub>3</sub> ):	170.8	2.8	Magnesium (Mg <sup>2+</sup> ):	684.8	56.4	
Final Pressure (psi):	15	Fluoride (F <sup>-</sup> ):	ND		Calcium (Ca <sup>2+</sup> ):	5224.8	260.7	
		Bromide (Br <sup>-</sup> ):	ND		Strontium (Sr <sup>2+</sup> ):	209.4	4.8	
pH:		Nitrite (NO <sub>2</sub> <sup>-</sup> ):	ND		Barium (Ba <sup>2+</sup> ):	0.0	0.0	
pH at time of sampling:	6.8	Nitrate (NO <sub>3</sub> <sup>-</sup> ):	ND		Iron (Fe <sup>2+</sup> ):	126.5	4.5	
		Phosphate (PO <sub>4</sub> <sup>3-</sup> ):	ND		Manganese (Mn <sup>2+</sup> ):	3.4	0.1	
		Silica (SiO <sub>2</sub> ):	ND		Lead (Pb <sup>2+</sup> ):	0.0	0.0	
					Zinc (Zn <sup>2+</sup> ):	0.0	0.0	
ALKALINITY BY TITRATION:	mg/L	meq/L			Aluminum (Al <sup>3+</sup> ):	0.0	0.0	
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> ):	342.0	5.6			Chromium (Cr <sup>3+</sup> ):	ND		
Carbonate (CO <sub>3</sub> <sup>2-</sup> ):	ND				Cobalt (Co <sup>2+</sup> ):	ND		
Hydroxide (OH <sup>-</sup> ):	ND				Copper (Cu <sup>2+</sup> ):	0.0	0.0	
aqueous CO <sub>2</sub> (ppm):	220.0	Formic Acid:	ND		Molybdenum (Mo <sup>3+</sup> ):	0.0	0.0	
aqueous H <sub>2</sub> S (ppm):	0.0	Acetic Acid:	ND		Nickel (Ni <sup>2+</sup> ):	ND		
aqueous O <sub>2</sub> (ppb):	ND	Propionic Acid:	ND		Tin (Sn <sup>2+</sup> ):	ND		
		Butyric Acid:	ND		Titanium (Ti <sup>2+</sup> ):	ND		
Calculated TDS (mg/L):	136294	Valeric Acid:	ND		Vanadium (V <sup>2+</sup> ):	ND		
Density/Specific Gravity (g/cm <sup>3</sup> ):	1.0879				Zirconium (Zr <sup>2+</sup> ):	ND		
Measured Specific Gravity	1.0961				Lithium (Li):	ND		
Conductivity (mmhos):	ND				Total Hardness:	16122	N/A	
Resistivity:	ND							
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data	Anion/Cation Ratio:	0.97					

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FURTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO <sub>4</sub> )		Calcite (CaCO <sub>3</sub> )		Gypsum (CaSO <sub>4</sub> ·2H <sub>2</sub> O)		Anhydrite (CaSO <sub>4</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
88°F	15 psi		0.000	1.26	69.277	-0.13	0.000	-0.27	0.000
106°F	24 psi		0.000	1.31	70.705	-0.12	0.000	-0.18	0.000
124°F	34 psi		0.000	1.38	72.857	-0.11	0.000	-0.09	0.000
142°F	43 psi		0.000	1.46	75.061	-0.10	0.000	0.00	4.176
160°F	53 psi		0.000	1.54	77.135	-0.10	0.000	0.10	142.433
178°F	62 psi		0.000	1.62	79.035	-0.09	0.000	0.20	260.388
196°F	72 psi		0.000	1.70	80.758	-0.08	0.000	0.30	359.322
214°F	81 psi		0.000	1.78	82.441	-0.08	0.000	0.40	440.907
232°F	91 psi		0.000	1.87	84.028	-0.07	0.000	0.50	507.127
250°F	100 psi		0.000	1.95	85.448	-0.07	0.000	0.61	560.114

Conditions		Celestite (SrSO <sub>4</sub> )		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO <sub>3</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
88°F	15 psi	0.19	50.203	-1.20	0.000	-7.79	0.000	1.31	61.325
106°F	24 psi	0.20	52.071	-1.21	0.000	-7.88	0.000	1.40	64.099
124°F	34 psi	0.21	53.663	-1.22	0.000	-7.92	0.000	1.51	67.134
142°F	43 psi	0.22	55.383	-1.22	0.000	-7.94	0.000	1.61	69.838
160°F	53 psi	0.23	57.491	-1.23	0.000	-7.95	0.000	1.71	72.110
178°F	62 psi	0.24	60.125	-1.23	0.000	-7.94	0.000	1.79	73.969
196°F	72 psi	0.26	63.318	-1.24	0.000	-7.93	0.000	1.85	75.466
214°F	81 psi	0.28	67.017	-1.24	0.000	-7.91	0.000	1.91	76.785
232°F	91 psi	0.30	71.103	-1.24	0.000	-7.88	0.000	1.97	77.898
250°F	100 psi	0.33	75.415	-1.24	0.000	-7.84	0.000	2.01	78.761

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation index predictions on this sheet use pH and alkalinity; %CO<sub>2</sub> is not included in the calculations.

ScaleSoft Pitzer™  
SSP2010

Comments:



# Devonian (Receiving Formation)

## Sec 19-19s-32e

February, 2017

### 8.0 RESERVOIR CHARACTERISTICS

#### 8.1 FORMATION FLUID CHEMISTRY

Following the drilling of the 6-inch open-hole section the injection zone was swabbed and 10 samples were sent to Cardinal Laboratories in Hobbs, NM. The laboratory report and analysis, along with a summary table of the results that depict the concentrations of all analytes is included in Appendix D. The average concentrations for major constituents within the formation water in the entire injection interval are as follows:

Chloride: 23,700 mg/L  
TDS: 42,750 mg/L  
Diesel Range Organics: 5.7 mg/L  
Extended Range Organics: 2.7 mg/L  
pH: 6.5  
Total Alkalinity: 613 mg/L

The maximum concentrations for major constituents within the formation water in the entire injection interval are as follows:

Chloride: 27,000 mg/L  
TDS: 44,700 mg/L  
Diesel Range Organics: 20.5 mg/L  
Extended Range Organics: 5.6 mg/L  
pH: 6.7  
Total Alkalinity: 670 mg/L

The results of the formation water analysis support and confirm the conclusions presented from the geophysical logs, mud log, and sidewall cores that the injection zone clearly does not contain recoverable hydrocarbons. Included in Appendix D is Geolex's No Recoverable Hydrocarbon Summary report, which was required by the BLMs COA, and submitted to the BLM and NMOCD.

**X.**

**Log Section Across  
Proposed Devonian  
Injection Interval**



**Weatherford®****COMPOSITE LOG  
SPECTRAL GAMMA RAY**

COMPANY MESQUITE SWD, INC.  
 WELL VACA DRAW FEDERAL SWD #1  
 FIELD SWD DEVONIAN  
 PROVINCE/COUNTY LEA COUNTY  
 COUNTRY/STATE U.S.A./ NEW MEXICO  
 LOCATION 658' FSL & 662' FEL  
 PERMIT NUMBER SEC 21, T-25S RGE 33E

**HOBBS OCD**

MAR 13 2017

**RECEIVED**

SEC 21	TWP 25S	RGE 33E	Other Services
Latitude	32.110473	NEUTRON	PHOTO-DENSITY
Longitude	-103.570458	FOCUSSED ELECTRIC	ARRAY INDUCTION
API Number	30-025-23895	MICRO-LOG	MICRO-IMAGER

Permanent Datum GL, Elevation 3350 feet  
 Log Measured From KB  
 Drilling Measured From KB (25')

Elevations:	feet
KB	3375
DF	3374
GL	3350

Date	28-JAN-2017	
Run Number	ONE	
Service Order	4362-172728084	
Depth Driller	19035.00	feet
Depth Logger	19041.00	feet
First Reading	19039.00	feet
Last Reading	17491.00	feet
Casing Driller	17490.00	feet
Casing Logger	17491.00	feet
Bit Size	6.500	inches
Hole Fluid Type	WBM	
Density / Viscosity	8.40 lb/USg	28.00 CP
PH / Fluid Loss	8.00	—
Sample Source	ACTIVE TANK	
Rm @ Measured Temp	0.81 @ 65.9	ohm-m
Rmf @ Measured Temp	0.61 @ 65.9	ohm-m
Rmc @ Measured Temp	1.01 @ 65.9	ohm-m
Source Rmf / Rmc	0.8019	CALC
Rm @ BHT	0.208 @ 270.0	ohm-m
Time Since Circulation	4 HOURS	
Max Recorded Temp	270.00	deg F
Equipment / Base	13242	4352
Recorded By	MICHAEL RATHS	RUSHAT SHANGAREEV
Witnessed By	—	

**BOREHOLE RECORD**

Last Edited: 29-JAN-2017 22:20

Bit Size Inches	Depth From feet		Shoe Depth feet	Weight pounds/ft
	Depth To feet			
8.750	0.00	17491.00	17491.00	39.00
6.500	17491.00	19042.00		

**CASING RECORD**

Type	Size Inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	7.625	0.00	17491.00	39.00

**REMARKS**

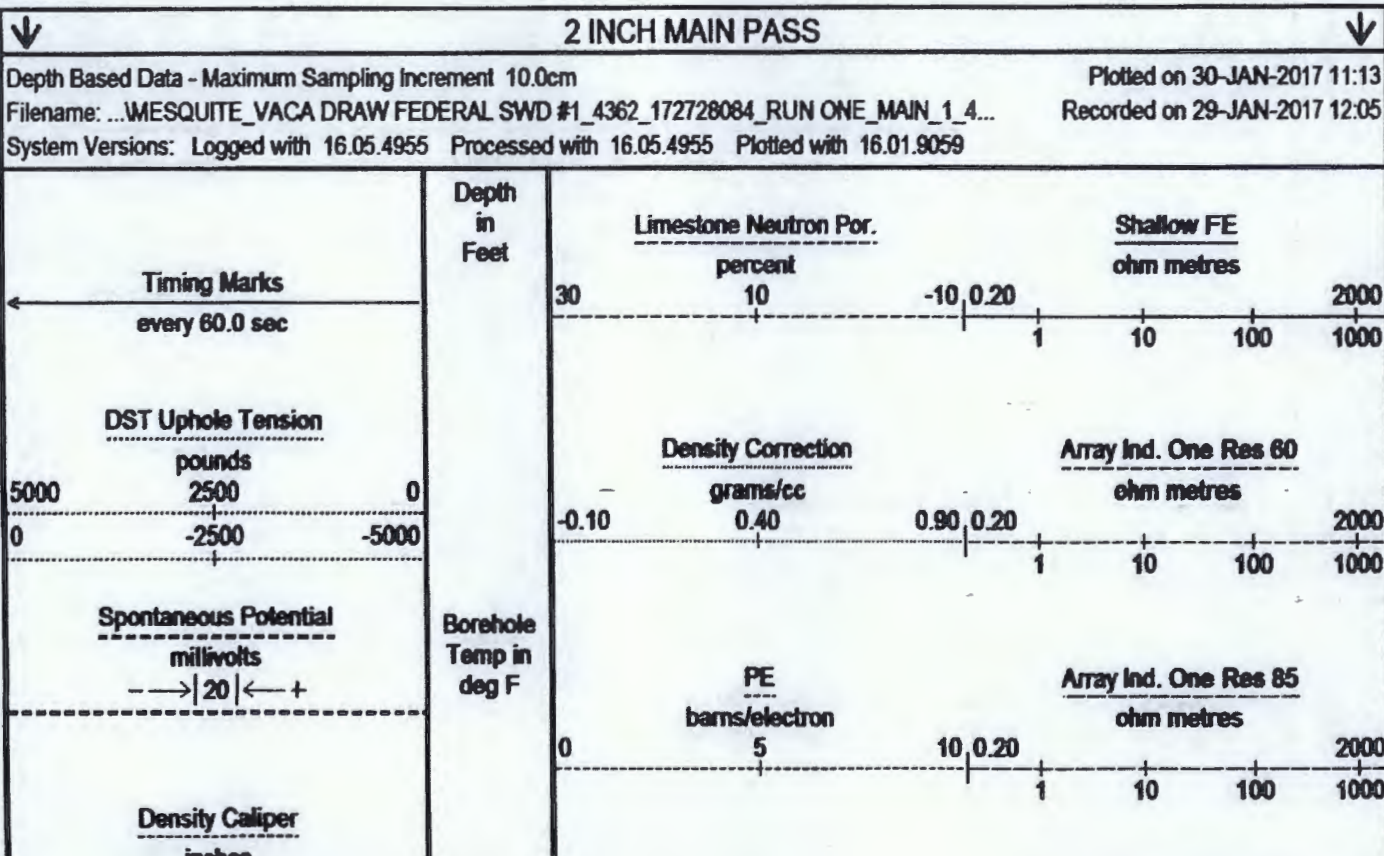
- 1) ALL WEATHERFORD DEPTH CONTROL PROCEDURES WERE FOLLOWED.
- 2) TOOLS RAN: MAL-MFE-MIE-MIM-SKJ-MPD-MVC-MDN-MML-SGS-MCG-SHA-CBH
- 3) HARDWARE : CENTRALIZER MANDREL ON BOTTOM OF MAJ  
OVERBODY CENTRALIZERS ON MIM AND MIE
- 4) 2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.
- 5) SPECTRAL GAMMA AND NEUTRON LOGGED TO SURFACE. ALL OTHER TOOLS LOGGED TO CASING SHOE



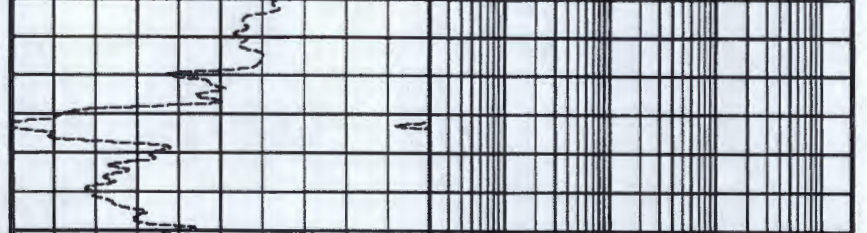
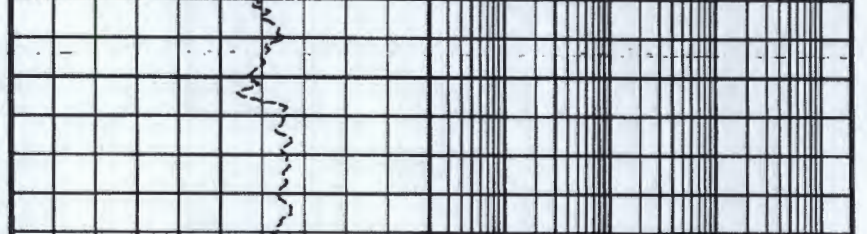
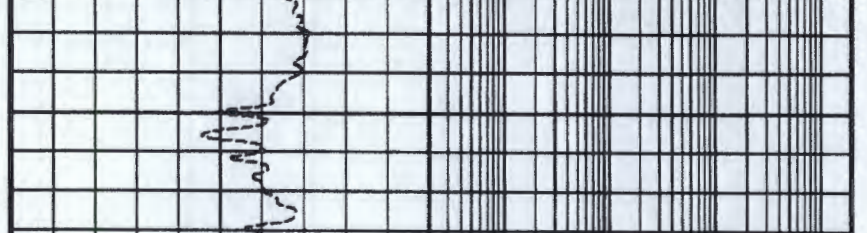
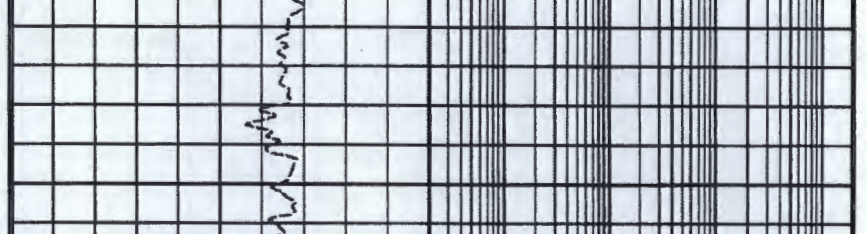
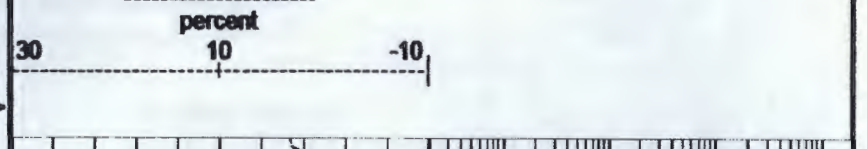
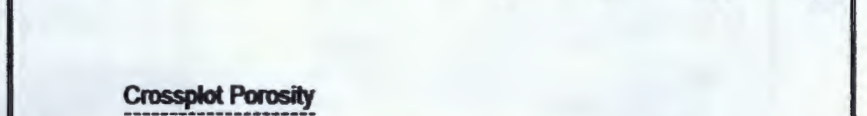
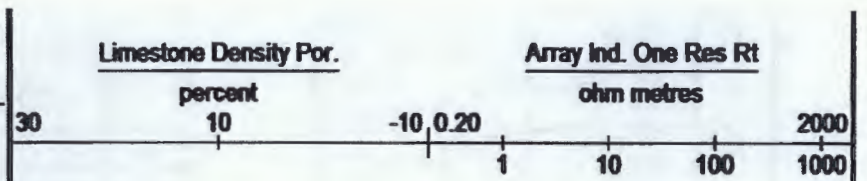
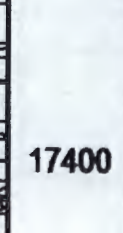
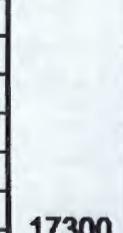
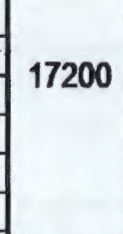
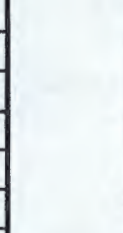
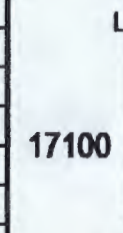
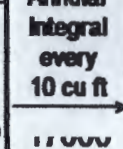
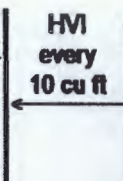
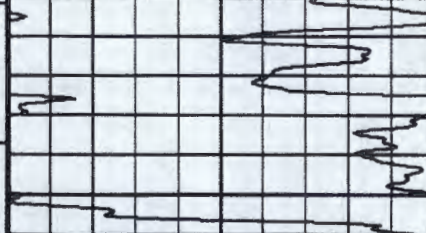
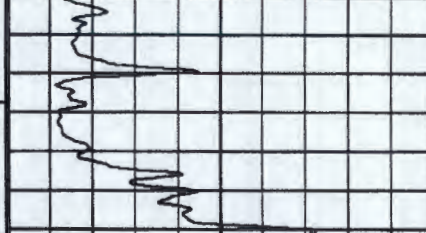
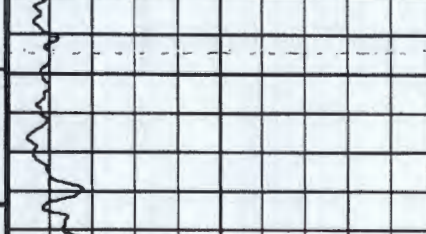
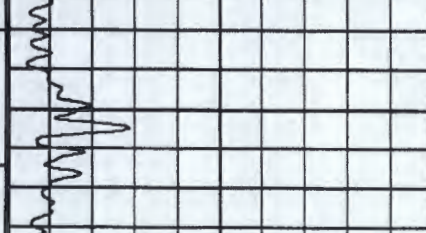
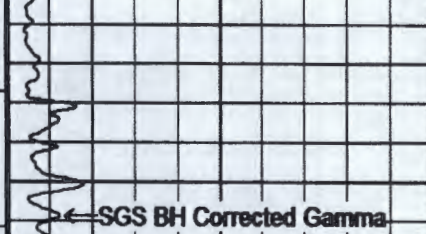
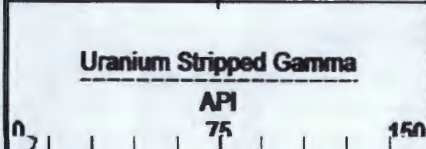
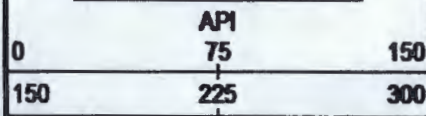
AS PER CLIENT'S REQUEST.

- 6) BOREHOLE SIZE AND RUGOSITY AFFECTING LOG QUALITY.
- 7) LCM WILL AFFECT TOOL READINGS.
- 8) TWO RUNS WERE NEEDED TO BECAUSE OF CMI TOOL FAILURE
- 8) ANNULAR HOLE VOLUME CALCULATED WITH A 5.5 IN. FUTURE CASING DIAMETER FROM TD TO CASING SHOE  
ANNULAR HOLE VOLUME: 71 CU. FT.  
HOLE VOLUME: 325 CU. FT
- 9) SERVICE ORDER # 4362-172728084
- 10) RIG: PRECISION #590
- 11) CREW AT YOUR SERVICE  
ENGINEERS: MICHAEL RATHS  
RUSHAT SHANGAREEV  
OPERATORS: BRIAN GRAHMANN  
HECTOR CARRILLO  
  
SALES ENGINEER: JEFF ANDERSON

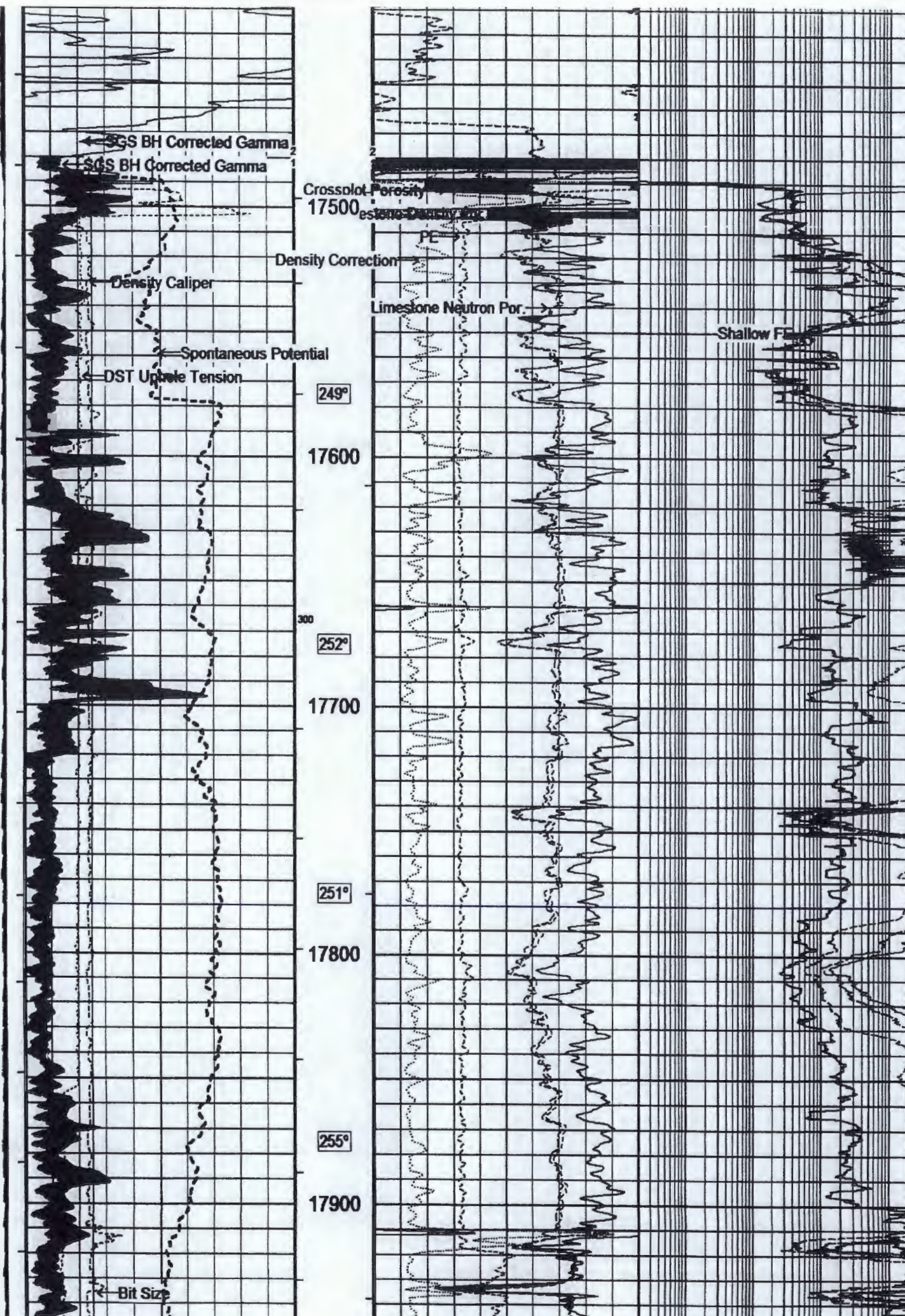
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.



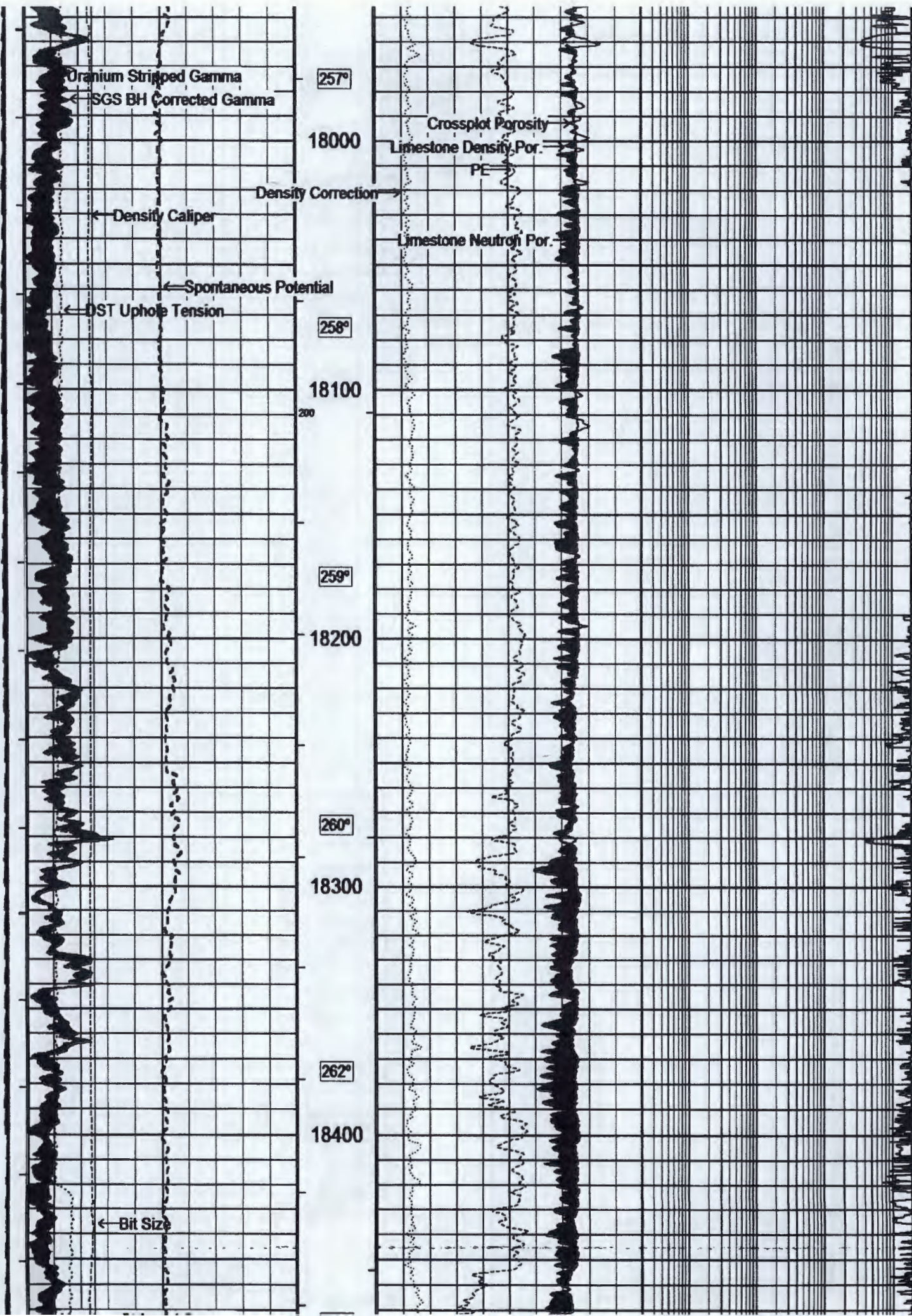




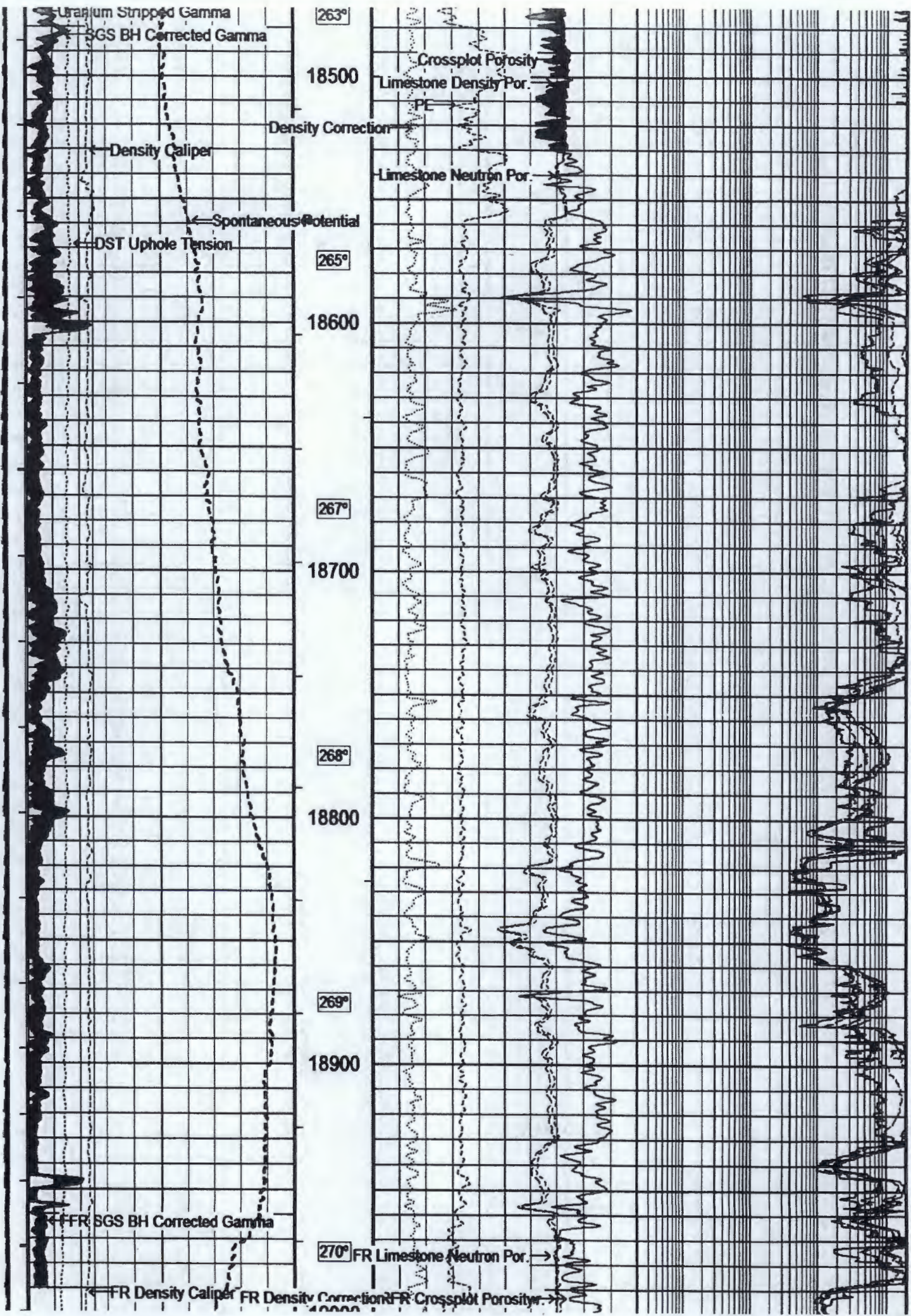




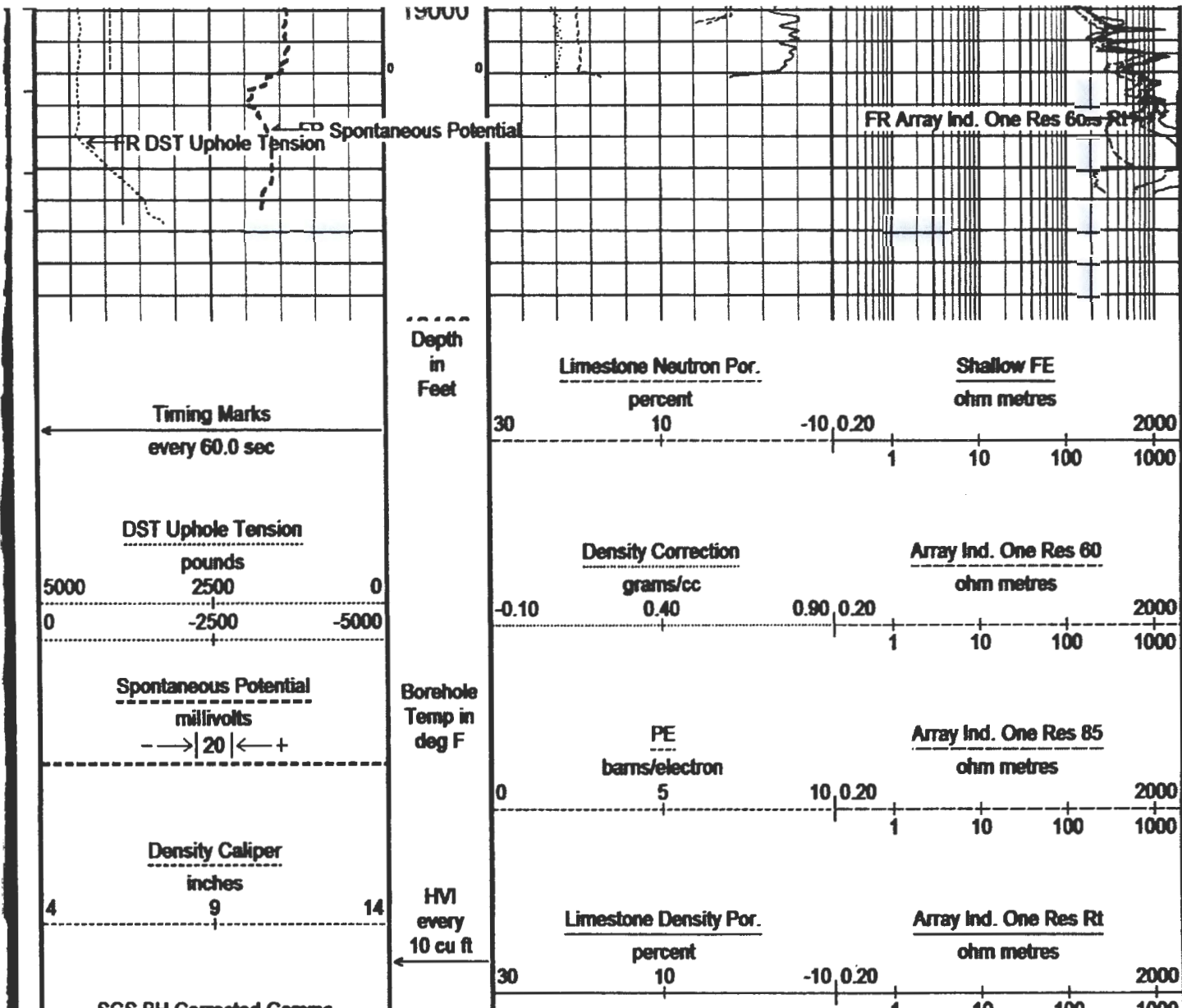














# **XI.**

## **Fresh Water Sample Analyses**

# Fresh Water Well SE/4 SE/4 Sec 3-26s-33e



Permian Basin Area Laboratory  
2101 Market Street,  
Midland, Texas 79703

Upstream Chemicals

REPORT DATE: 12/19/2018

## COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	COG OPERATING LLC	ACCOUNT REP:	LARRY G HINES
DISTRICT:	WATER MANAGEMENT - PERMIAN	SAMPLE ID:	201801082545
AREA/LEASE:	COLUMBUS	SAMPLE DATE:	12/12/2018
SAMPLE POINT NAME:	COLUMBUS SWD	ANALYSIS DATE:	12/19/2018
SITE TYPE:	FACILITY	ANALYST:	JL
SAMPLE POINT DESCRIPTION:	NOT PROVIDED		

### COG OPERATING LLC, COLUMBUS, COLUMBUS SWD

FIELD DATA			ANALYSIS OF SAMPLE					
			ANIONS:		mg/L		meq/L	
Initial Temperature (°F):	250	Chloride (Cl):	55.5	1.6	Sodium (Na <sup>+</sup> ):	107.3	4.7	
Final Temperature (°F):	80	Sulfate (SO <sub>4</sub> <sup>2-</sup> ):	192.4	4.0	Potassium (K <sup>+</sup> ):	9.2	0.2	
Initial Pressure (psi):	100	Borate (H <sub>2</sub> BO <sub>3</sub> ):	2.4	0.0	Magnesium (Mg <sup>2+</sup> ):	42.1	3.5	
Final Pressure (psi):	15	Fluoride (F):	ND		Calcium (Ca <sup>2+</sup> ):	86.4	4.3	
pH:		Bromide (Br):	ND		Strontium (Sr <sup>2+</sup> ):	2.0	0.0	
pH at time of sampling:	7.9	Nitrite (NO <sub>2</sub> ):	ND		Barium (Ba <sup>2+</sup> ):	0.0	0.0	
		Nitrate (NO <sub>3</sub> ):	ND		Iron (Fe <sup>2+</sup> ):	0.3	0.0	
		Phosphate (PO <sub>4</sub> <sup>3-</sup> ):	ND		Manganese (Mn <sup>2+</sup> ):	0.0	0.0	
		Silica (SiO <sub>2</sub> ):	ND		Lead (Pb <sup>2+</sup> ):	0.0	0.0	
					Zinc (Zn <sup>2+</sup> ):	0.0	0.0	
ALKALINITY BY TITRATION:			mg/L		meq/L			
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> ):	220.0				Aluminum (Al <sup>3+</sup> ):	0.0	0.0	
Carbonate (CO <sub>3</sub> <sup>2-</sup> ):	ND				Chromium (Cr <sup>3+</sup> ):	ND		
Hydroxide (OH):	ND				Cobalt (Co <sup>2+</sup> ):	ND		
					Copper (Cu <sup>2+</sup> ):	0.0	0.0	
			ORGANIC ACIDS:		mg/L		meq/L	
aqueous CO <sub>2</sub> (ppm):	0.0	Formic Acid:	ND		Molybdenum (Mo <sup>2+</sup> ):	0.0	0.0	
aqueous H <sub>2</sub> S (ppm):	0.0	Acetic Acid:	ND		Nickel (Ni <sup>2+</sup> ):	ND		
aqueous O <sub>2</sub> (ppb):	ND	Propionic Acid:	ND		Tin (Sn <sup>2+</sup> ):	ND		
		Butyric Acid:	ND		Titanium (Ti <sup>2+</sup> ):	ND		
Calculated TDS (mg/L):	715	Valeric Acid:	ND		Vanadium (V <sup>2+</sup> ):	ND		
Density/Specific Gravity (g/cm <sup>3</sup> ):	0.9977				Zirconium (Zr <sup>2+</sup> ):	ND		
Measured Specific Gravity	1.0008				Lithium (Li):	ND		
Conductivity (mmhos):	ND				Total Hardness:	392	N/A	
Resistivity:	ND							
MCF/D:	No Data							
BOPD:	No Data							
BWPD:	No Data	Anion/Cation Ratio:	0.72					

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite (BaSO <sub>4</sub> )		Calcite (CaCO <sub>3</sub> )		Gypsum (CaSO <sub>4</sub> ·2H <sub>2</sub> O)		Anhydrite (CaSO <sub>4</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi		0.000	0.63	14.353	-1.22	0.000	-1.47	0.000
99°F	24 psi		0.000	0.71	16.196	-1.22	0.000	-1.39	0.000
118°F	34 psi		0.000	0.81	18.911	-1.20	0.000	-1.28	0.000
137°F	43 psi		0.000	0.93	21.995	-1.17	0.000	-1.17	0.000
156°F	53 psi		0.000	1.06	25.241	-1.13	0.000	-1.04	0.000
174°F	62 psi		0.000	1.19	28.527	-1.08	0.000	-0.89	0.000
193°F	72 psi		0.000	1.33	31.772	-1.03	0.000	-0.74	0.000
212°F	81 psi		0.000	1.47	35.097	-0.97	0.000	-0.58	0.000
231°F	91 psi		0.000	1.61	38.286	-0.91	0.000	-0.41	0.000
250°F	100 psi		0.000	1.74	41.266	-0.84	0.000	-0.24	0.000

Conditions		Celestite (SrSO <sub>4</sub> )		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO <sub>3</sub> )	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-1.17	0.000	-6.83	0.000	-8.76	0.000	-0.10	0.000
99°F	24 psi	-1.16	0.000	-6.86	0.000	-8.84	0.000	0.04	0.018
118°F	34 psi	-1.13	0.000	-6.87	0.000	-8.86	0.000	0.21	0.073
137°F	43 psi	-1.09	0.000	-6.87	0.000	-8.85	0.000	0.38	0.112
156°F	53 psi	-1.03	0.000	-6.87	0.000	-8.82	0.000	0.54	0.138
174°F	62 psi	-0.96	0.000	-6.87	0.000	-8.76	0.000	0.70	0.155
193°F	72 psi	-0.87	0.000	-6.86	0.000	-8.69	0.000	0.85	0.167
212°F	81 psi	-0.77	0.000	-6.84	0.000	-8.60	0.000	1.00	0.175
231°F	91 psi	-0.66	0.000	-6.82	0.000	-8.51	0.000	1.14	0.180
250°F	100 psi	-0.54	0.000	-6.80	0.000	-8.40	0.000	1.27	0.183

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered  
 Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.  
 Note 3: Saturation Index predictions on this sheet use pH and alkalinity; %CO<sub>2</sub> is not included in the calculations.

ScaleSoft Pitzer™  
SSP2010

Comments:





# New Mexico Office of the State Engineer

## Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)																		
WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q	q	q	Sec	Tws	Rng	X	Y
<a href="#">C 02285</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02285 POD1</a>				Shallow	1	4	4	03	26S	33E	636612	3548855
<a href="#">C 02286</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02286</a>					3	4	4	03	26S	33E	636469	3548714
<a href="#">C 02287</a>	C	STK	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02287</a>					3	4	4	03	26S	33E	636427	3548708
					LE	<a href="#">C 02287 POD2</a>					4	4	4	03	26S	33E	636612	3548675*
<a href="#">C 02288</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02288</a>					4	4	4	03	26S	33E	636645	3548758
<a href="#">C 02289</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02289</a>					4	4	4	03	26S	33E	636612	3548675*
<a href="#">C 02290</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02290</a>					4	4	4	03	26S	33E	636538	3548770
<a href="#">C 02294</a>	CUB	PLS	3	DINWIDDLE CATTLE CO.	LE	<a href="#">C 02294</a>					4	4	3	11	26S	33E	637465	3547003
<a href="#">C 03494</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02285 POD1</a>				Shallow	1	4	4	03	26S	33E	636612	3548855
<a href="#">C 03495</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02286</a>					3	4	4	03	26S	33E	636469	3548714
<a href="#">C 03496</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02287</a>					3	4	4	03	26S	33E	636427	3548708
<a href="#">C 03497</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02288</a>					4	4	4	03	26S	33E	636645	3548758
<a href="#">C 03498</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02290</a>					4	4	4	03	26S	33E	636538	3548770
<a href="#">C 03500</a>	C	PRO	0	EOG RESOURCES, INC.	LE	<a href="#">C 02294</a>					4	4	3	11	26S	33E	637465	3547003

Record Count: 14

## PLSS Search:

Section(s): 2, 3, 4, 9, 10, 11 Township: 26S Range: 33E

Sorted by: File Number

\*UTM location was derived from PLSS - see Help

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

12/4/18 10:45 AM

ACTIVE &amp; INACTIVE POINTS OF DIVERSION



# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)		
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64 Q16 Q4 Sec Tws Rng</b>	<b>X</b>	<b>Y</b>				
C 02285 POD1		1 4 4 03 26S 33E	636613	3548855				

---

<b>Driller License:</b>	<b>Driller Company:</b>	
<b>Driller Name:</b>		
<b>Drill Start Date:</b>	<b>Drill Finish Date:</b>	12/31/1982
<b>Log File Date:</b>	<b>PCW Rcv Date:</b>	<b>Plug Date:</b>
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Source:</b> Shallow
<b>Casing Size:</b> 8.00	<b>Depth Well:</b> 220 feet	<b>Estimated Yield:</b> 18 GPM
		<b>Depth Water:</b> 220 feet

---

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12/4/18 10:51 AM

POINT OF DIVERSION SUMMARY





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)	
		(quarters are smallest to largest)					
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64 Q16 Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
C 02286		3 4 4	03	26S	33E	636470	3548714

---

<b>Driller License:</b>	<b>Driller Company:</b>
<b>Driller Name:</b>	
<b>Drill Start Date:</b>	<b>Drill Finish Date:</b> 12/31/1974
<b>Log File Date:</b>	<b>PCW Rcv Date:</b>
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>
<b>Casing Size:</b> 8.00	<b>Depth Well:</b> 220 feet
	<b>Plug Date:</b>
	<b>Source:</b>
	<b>Estimated Yield:</b> 18 GPM
	<b>Depth Water:</b> 175 feet

---

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12/4/18 10:51 AM

POINT OF DIVERSION SUMMARY





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)			
		(quarters are smallest to largest)							
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
C	02287	3	4	4	03	26S	33E	636427	3548708

Driller License:

Driller Company:

Driller Name:

Drill Start Date:

Drill Finish Date:

Plug Date:

Log File Date:

PCW Rcv Date:

Source:

Pump Type:

Pipe Discharge Size:

Estimated Yield:

Casing Size: 8.00

Depth Well: 220 feet

Depth Water:

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12/4/18 10:51 AM

POINT OF DIVERSION SUMMARY







# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)					(NAD83 UTM in meters)	
		(quarters are smallest to largest)					X	Y
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	
C	02289	4	4	4	03	26S	33E	636612 3548675*

---

**Driller License:** \_\_\_\_\_ **Driller Company:** \_\_\_\_\_

**Driller Name:** \_\_\_\_\_

**Drill Start Date:** \_\_\_\_\_ **Drill Finish Date:** 12/31/1949 **Plug Date:** \_\_\_\_\_

**Log File Date:** \_\_\_\_\_ **PCW Rcv Date:** \_\_\_\_\_ **Source:** \_\_\_\_\_

**Pump Type:** \_\_\_\_\_ **Pipe Discharge Size:** \_\_\_\_\_ **Estimated Yield:** 18 GPM

**Casing Size:** 8.00 **Depth Well:** 200 feet **Depth Water:** 160 feet

\*UTM location was derived from PLSS - see Help

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12/4/18 10:52 AM

POINT OF DIVERSION SUMMARY

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)						(NAD83 UTM in meters)	
		Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02290	4	4	4	03	26S	33E	636538	3548770

**Depth Water:** 160 feet

<http://nmwrrs.ose.state.nm.us/nmwrrs/ReportDispatcher?type=PODGHTML&name=PodGroundSummaryH...> 12/4/2018





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)			
		(quarters are smallest to largest)							
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
C	02294	4	4	3	11	26S	33E	637465	3547003

---

<b>Driller License:</b>	122	<b>Driller Company:</b>	UNKNOWN
<b>Driller Name:</b>	UNKNOWN		
<b>Drill Start Date:</b>		<b>Drill Finish Date:</b>	12/31/1949
<b>Log File Date:</b>		<b>PCW Rcv Date:</b>	
<b>Pump Type:</b>		<b>Pipe Discharge Size:</b>	
<b>Casing Size:</b>	6.00	<b>Depth Well:</b>	200 feet
		<b>Plug Date:</b>	
		<b>Source:</b>	
		<b>Estimated Yield:</b>	15 GPM
		<b>Depth Water:</b>	145 feet

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

12/4/18 10:48 AM

POINT OF DIVERSION SUMMARY



*New Mexico Office of the State Engineer*  
**Active & Inactive Points of Diversion**  
 (with Ownership Information)

No PODs found.

**PLSS Search:**

**Section(s):** 33, 34, 35

**Township:** 25S

**Range:** 33E

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

12/4/18 10:44 AM

ACTIVE & INACTIVE POINTS OF DIVERSION



**HOBBS NEWS-SUN**  
**LEGAL NOTICES**

COG Operating LLC, 2208 W. Main Street, Artesia, New Mexico, 88210, has filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Columbus Fee SWD No. 1, is located 1165' FNL and 1895' FWL, Section 3, Township 26 South, Range 33 East, Lea County, New Mexico. Disposal water will be sourced from area wells producing from the Delaware, Bone Spring and Wolfcamp formations. The disposal water will be injected into the Devonian/Silurian formation at an estimated depth of 17,450' to 19,450' at a maximum surface pressure of 3490 psi and a maximum rate of 40,000 BWPD. The proposed SWD well is located approximately 22 miles west of Jal. Any interested party who has an objection to this must give notice in writing to the Oil Conservation Division, 1220 South Saint Francis Street, Santa Fe, New Mexico, 87505, within fifteen (15) days of this notice. Any interested party with questions or comments may contact Brian Collins at COG Operating LLC, 2208 W. Main Street, Artesia, New Mexico 88210, or call 575-748-6940.

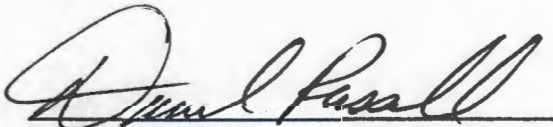
Published in the Hobbs News-Sun Hobbs, New Mexico  
\_\_\_\_\_, 2018.

# Affidavit of Publication

STATE OF NEW MEXICO  
COUNTY OF LEA

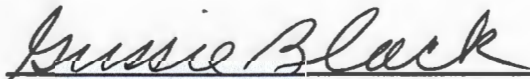
I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated  
December 08, 2018  
and ending with the issue dated  
December 08, 2018.



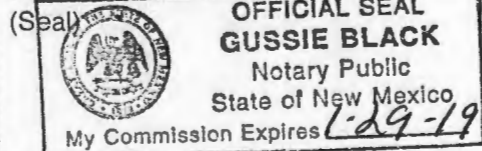
Publisher

Sworn and subscribed to before me this  
8th day of December 2018.



Business Manager

My commission expires  
January 29, 2019



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

## LEGALS

### LEGAL NOTICES DECEMBER 8, 2018

COG Operating LLC, 2208 W. Main Street, Artesia, New Mexico, 88210, has filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Columbus Fee SWD No. 1, is located 1165' FNL and 1895' FWL, Section 3, Township 26 South, Range 33 East, Lea County, New Mexico. Disposal water will be sourced from area wells producing from the Delaware, Bone Spring and Wolfcamp formations. The disposal water will be injected into the Devonian/Silurian formation at an estimated depth of 17,450' to 19,450' at a maximum surface pressure of 3490 psi and a maximum rate of 40,000 BWPD. The proposed SWD well is located approximately 22 miles west of Jal. Any interested party who has an objection to this must give notice in writing to the Oil Conservation Division, 1220 South Saint Francis Street, Santa Fe, New Mexico, 87505, within fifteen (15) days of this notice. Any interested party with questions or comments may contact Brian Collins at COG Operating LLC, 2208 W. Main Street, Artesia, New Mexico 88210, or call 575-748-6940.

Published in the Hobbs News-Sun-Hobbs, New Mexico, 2018.  
#33509

67112034

00221961

COG OPERATING LLC - ARTESIA  
2208 W. MAIN ST.  
ARTESIA, NM 88210



February 20, 2019

BTA Oil Producers  
104 S Pecos Street  
Midland, TX 79701

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

Enclosed for your review is a copy of COG Operating LLC's C-108 Application to Inject for the above referenced well. We plan to drill this well for SWD service if our C-108 is approved. As a requirement of the New Mexico Oil Conservation Division, we are notifying you because you have been identified as the surface owner or an affected person within a one mile radius area of review. Any objections must be submitted in writing to NMOCD, 1220 S. St. Francis Drive, Santa Fe, New Mexico 87505. Objections must be received within fifteen (15) days of receipt of this letter.

Please do not hesitate to contact us at 575-748-6940 should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Collins".

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures

---

CORPORATE ADDRESS

ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

Dinwiddie Cattle Co., LLC  
Attn: Tommy Dinwiddie  
P.O. Box 963  
Capitan, NM 88316

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

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Sincerely,

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures

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ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096





February 20, 2019

Intrepid Potash  
Attn: Alex Wagner  
1001 17<sup>th</sup> St., Suite 1050  
Denver, CO 80202

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

Enclosed for your review is a copy of COG Operating LLC's C-108 Application to Inject for the above referenced well. We plan to drill this well for SWD service if our C-108 is approved. As a requirement of the New Mexico Oil Conservation Division, we are notifying you because you have been identified as the surface owner or an affected person within a one mile radius area of review. Any objections must be submitted in writing to NMOCD, 1220 S. St. Francis Drive, Santa Fe, New Mexico 87505. Objections must be received within fifteen (15) days of receipt of this letter.

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ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

EOG Resources, Inc.  
5509 Champions Drive  
Midland, TX 79706

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

Sagebrush Interests, LLC  
10260 Westheimer Road, Suite 400  
Houston, TX 77042

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096





February 20, 2019

RSC Resources, L.P.  
6824 Island Circle  
Midland, TX 79707

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

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Facilities Engineering Advisor

BC/mv  
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ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096





February 20, 2019

WBA Resources, Ltd.  
110 West Louisiana Avenue, Suite 300  
Midland, TX 79701

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

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Sincerely,

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures

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CORPORATE ADDRESS

ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

Muleshoe Crude, L.P.  
101 Blackberry Court  
Midland, TX 79705

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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Enclosures

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P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

MHM Resources, LP  
P. O. Box 51570  
Midland, TX 79710-1570

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

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Please do not hesitate to contact us at 575-748-6940 should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Collins".

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures

---

CORPORATE ADDRESS

ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096





February 20, 2019

Pheasant Energy, LLC  
1204 West 7th Street, #200  
Fort Worth, TX 76102

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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February 20, 2019

J. Hiram Moore, Ltd  
1204 West 7th Street, #200  
Fort Worth, TX 76102

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

RGH Land Inc.  
3212 Chelsea Place  
Midland, TX 79705

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Michael T. Hooper GST Trust  
P. O. Box 221950  
El Paso, TX 79913

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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P 575.748.6940 | F 575.746.2096



February 20, 2019

Deborah H. Wachsmuth GST Trust,  
P. O. Box 17006  
San Antonio, TX 78217-0006

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Jack P. Hooper GST Trust  
5511 East 89th Court  
Tulsa, OK 74137

RE: Application For Authorization To Inject  
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February 20, 2019

Norma Markham Berman Valente  
3505 Bohannon Drive  
Glen Allen, VA 23060-7213

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Sandra Rudy Brown  
7970 Fredericksburg Road, Suite 101-367  
San Antonio, TX 78229

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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February 20, 2019

Houston Arts Combined Endowment Foundation  
750 East Mulberry Avenue, Suite 402  
San Antonio, TX 78212

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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February 20, 2019

Stephen D. Susman  
2121 Kirby Drive, Unit #85  
Houston, TX 77019

RE: Application For Authorization To Inject  
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February 20, 2019

Matador E&P Company, Inc.  
5400 LBJ Fwy., Suite 1500  
Dallas, TX 75240

RE: Application For Authorization To Inject  
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Facilities Engineering Advisor

BC/mv  
Enclosures



February 20, 2019

Mewbourne Oil Company  
3620 Old Bullard Road  
Tyler, TX 75701

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Mewbourne Oil Company  
P.O. Box 7698  
Tyler, TX 75711

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Mewbourne Energy Partners 13-A LP  
P.O. Box 7698  
Tyler, TX 75711

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February 20, 2019

CWM 2000-B Ltd  
P.O. Box 7698  
Tyler, TX 75711

RE: Application For Authorization To Inject  
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February 20, 2019

CWM 2000-B II Ltd  
P.O. Box 7698  
Tyler, TX 75711

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February 20, 2019

3MG Corporation  
P.O. Box 7698  
Tyler, TX 75711

RE: Application For Authorization To Inject  
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February 20, 2019

Mewbourne Development Corporation  
P.O. Box 7698  
Tyler, TX 75711

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February 20, 2019

Peregrine Production LLC  
3201 North Pecos Street, Suite 202  
Midland, TX 79702

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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February 20, 2019

Castello Enterprises, Inc.  
P.O. Box 8426  
Midland, TX 79708

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

To Whom It May Concern:

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Please do not hesitate to contact us at 575-748-6940 should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Collins".

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures



February 20, 2019

REX Resources, L.P.  
6824 Island Circle  
Midland, TX 79707

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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BC/mv  
Enclosures

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CORPORATE ADDRESS

ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096





February 20, 2019

Meco IV, LLC  
1200 17th Street, Suite 975  
Denver, CO 80202

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures



February 20, 2019

Endeavor Energy Resources, L.P.  
110 North Marienfeld Street, Suite 200  
Midland, TX 79701

RE: Application For Authorization To Inject  
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February 20, 2019

Petras Energy L.P.  
P.O. Box 4127  
Midland, TX 79704

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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February 20, 2019

Petras Energy, LP  
6 Desta Drive  
Midland, TX 79705

RE: Application For Authorization To Inject  
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February 20, 2019

Newkumet Exploration, Inc.  
500 West Texas Avenue #1410  
Midland, TX 79701

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

Newkumet Exploration Inc.  
P. O. Box 11330  
Midland, TX 79702

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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February 20, 2019

Bradley S. Bates  
101 Blackberry Court  
Midland, TX 79705

RE: Application For Authorization To Inject  
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February 20, 2019

R&R Royalty, Ltd.  
500 North Shoreline Boulevard, Suite 322  
Corpus Christy, TX 78401

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Maven Royalty Fund, LP  
620 Texas Street, Suite 300  
Shreveport, LA 71101

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Norman C. Case  
26828 Maple Valley Highway, #259  
Maple Valley, WA 98038

RE: Application For Authorization To Inject  
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P 575.748.6940 | F 575.746.2096



February 20, 2019

Tonkin Mineral Interest, LLC  
1524 Park Avenue, SW  
Albuquerque, NM 87104

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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ARTESIA WEST OFFICE

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February 20, 2019

Thomas Susman  
3901 Argyle Terrace, NW  
Washington, DC 20011

RE: Application For Authorization To Inject  
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1165' FNL, 1895' FWL  
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February 20, 2019

Tara Susman-Pena  
6106 42nd Place  
Hyattsville, MD 20781

RE: Application For Authorization To Inject  
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February 20, 2019

Micah Susman  
5206 Meadow Creek Drive  
Austin, TX 78745

RE: Application For Authorization To Inject  
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February 20, 2019

Daily Lacy Lambert  
115 Central Park West, Apartment 2G  
New York, NY 10023

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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P 575.748.6940 | F 575.746.2096





February 20, 2019

Stacy S. Kuhn  
410 East 57th Street, Apartment 10A  
New York, NY 10022

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Shana BatSheva Vaknin  
1127 South Alfred Street  
Los Angeles, CA 90035

RE: Application For Authorization To Inject  
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February 20, 2019

Harry Susman  
c/o Susman Godfrey, LLP  
2 Woods Edge Lane  
Houston, TX 77024

RE: Application For Authorization To Inject  
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February 20, 2019

Carolyn A. Taylor  
1702 Curry Road  
Carlsbad, NM 88220

RE: Application For Authorization To Inject  
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Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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Please do not hesitate to contact us at 575-748-6940 should you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Collins".

Brian Collins  
Facilities Engineering Advisor

BC/mv  
Enclosures

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CORPORATE ADDRESS

ONE CONCHO CENTER | 600 WEST ILLINOIS AVENUE | MIDLAND, TEXAS 79701  
P 432.683.7443 | F 432.683.7441

ARTESIA WEST OFFICE

2208 MAIN STREET | ARTESIA, NEW MEXICO 88210  
P 575.748.6940 | F 575.746.2096



February 20, 2019

Marilyn S. Taylor  
1702 Curry Road  
Carlsbad, NM 88220

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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February 20, 2019

Jack A. Taylor  
2001 McKinley Street  
Carlsbad, NM 88220

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
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February 20, 2019

Magnum Hunter Production Inc.  
600 East Los Colinas Boulevard, Suite 1100  
Irving, TX 75039

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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February 20, 2019

Magnum Hunter Production Inc.  
600 N. Marienfeld Ave., Suite 600  
Midland, TX 79701

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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Facilities Engineering Advisor

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February 20, 2019

Cowhouse Crude, L.P.  
101 Blackberry Court  
Midland, TX 79705

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
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February 20, 2019

Magnum Producing, LP  
500 N. Shoreline Ste. 322  
Corpus Christi, TX 78471

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
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February 20, 2019

MRC Permian Company  
5400 LBJ Freeway, Ste. 1500  
Dallas, TX 75240

RE: Application For Authorization To Inject  
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1165' FNL, 1895' FWL  
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February 20, 2019

Featherstone Development Corporation  
400 N Pennsylvania Ave. suite 850  
Roswell, NM 88201

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

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February 20, 2019

Oil Conservation Division  
Attn: Paul Kautz  
1625 North French Dr.  
Hobbs, NM 88240

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

Dear Mr. Kautz:

COG Operating LLC respectfully requests administrative approval for authorization to inject for the referenced well. Attached, for your review, is a copy of the C-108 application. Once we receive all the certified return receipts, we will send you a copy.

Our geologic prognosis has the top of the Devonian at 17715' and Fusselman at 18581'. We're permitting the injection interval shallower and deeper than the prognosis just in case the formation tops are different than expected due to the lack of deep well control in this area.

Please do not hesitate to contact me at (575) 748-6940 should you have any questions.

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February 20, 2019

New Mexico Oil Conservation Division  
Attn: Phillip Goetze  
1220 South St. Francis Drive  
Santa Fe, NM 87505

RE: Application For Authorization To Inject  
Columbus Fee SWD #1  
1165' FNL, 1895' FWL  
Unit C, Section 3, Township 26 South, Range 33 East, N.M.P.M.  
Lea County, New Mexico

Dear Mr. Goetze:

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