

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Susana Martinez**  
Governor

**David Martin**  
Cabinet Secretary-Designate

**Brett F. Woods, Ph.D.**  
Deputy Cabinet Secretary

**Jami Bailey, Division Director**  
Oil Conservation Division



Administrative Order IPI-440  
September 9, 2013

Ms. Alyssa Davanzo  
Chevron U. S. A. Inc.  
15 Smith Road  
Midland, TX 79705

**RE: Injection Pressure Increase**  
Disposal Permit: SWD-578  
Pool: SWD; Bell Canyon (Upper Delaware)  
Antelope Ridge Unit SWD Well No. 5      API 30-025-24916  
Unit L, Sec 33, T23S, R34E, NMPM, Lea County, New Mexico

Dear Ms. Davanzo:

Reference is made to your request on behalf of Chevron U. S. A. Inc. (OGRID 4323) received by the Division on August 8, 2013, to increase the maximum allowed surface tubing pressure on the above named well.

This well was permitted by the Division for water disposal in the Bell Canyon formation of the Delaware Mountain Group by Division administrative Order SWD-578 approved December 21, 1994. That permit allowed disposal into the Bell Canyon formation from approximately 5167 feet to 6200 feet. The Division allowed a maximum disposal pressure of 1033 psi with administrative Order SWD-578.

It is our understanding that this well will not take a sufficient volume of fluid at the current pressure limit and a higher pressure limit is needed. It is also understood that an increase will not result in the fracturing of the formation and confining strata.

Based on a step rate test for this well run July 8, 2013, you are hereby authorized to inject at the following maximum surface tubing pressure:

**Antelope Ridge Unit SWD Well No. 5      API 30-025-24916      1228 psi**

This approval is based on the provision that the tubing size, packer setting depth and completion interval for this well does not change. Any future requested pressure increase will require resubmission of additional data and a new step-rate test. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well. This approval is subject to your

being in compliance with all other Division rules, including but not limited to Division Rule 19.15.5.9 NMAC.

The Division Director may rescind this permitted injection pressure increase if it becomes apparent that the injected fluid is not being confined to the permitted disposal interval or is endangering any fresh water aquifer.

Sincerely,



JAMI BAILEY  
Director

JB/prg

cc: Oil Conservation Division – Hobbs  
File: SWD-578

ABOVE THIS LINE FOR DIVISION USE ONLY

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



**ADMINISTRATIVE APPLICATION CHECKLIST**

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

**Application Acronyms:**

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

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

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

*Antelope Ridge #5*  
*30-025-24916*  
*East Loving SWD #1*  
*30-015-26764*

Check One Only for [B] or [C]

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

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

- [D] Other: Specify SWD-578 SWD-578 R-9509

2013 AUG - 8 A 9:59  
 RECEIVED OGD

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

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

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

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

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

Alyssa Davanzo      Alyssa Davanzo      Production Engineer      8/5/13  
 Print or Type Name      Signature      Title      Date  
Alyssa.Davanzo@Chevron.com  
 e-mail Address

August 8, 2013

**New Mexico Oil Conversations Division**

Attn: William Jones  
1200 South St. Francis Drive,  
Santa Fe, NM 87505

**RE: Injection Pressure Increase Request**

Administrative Order SWD-578, Pool: Bell Canyon (Upper Delaware)

Current allowable surface pressure: 1,033 psi

~~East Lovig SWD No. 1~~ Antelope Ridge Unit # 5

~~API: 30-015-26764~~ 30-015-24916

UNIT L, SEC 33-23S-34E, 2310 FSL & 990 FWL

Lea County, NM

Dear William Jones,

According to the step rate test performed on the Antelope Ridge #5 SWD on August 2nd, 2013, Chevron Corporation requests to increase the maximum allowable injection pressure based on your analysis of the test.

The Antelope Ridge #5 SWD was permitted to dispose of produced water in the perforated Upper Delaware zone (Bell Canyon), 5167'-6134'. According to the IPI Order approved by the NMOCD on December 21, 1994, the maximum allowable surface pressure is currently 1,033 psi. The information in this package includes: the current wellbore diagram, the graphical analysis collected by Cardinal Surveys and the step rate test procedure.

\*Note: The 2-7/8" OD tubing used to perform the step rate test is the same size as the injection tubing.

Please contact me at (432) 687-7659 if you have further questions.

Thank you for your time,

Alyssa Davanzo  
Petroleum Engineer  
Chevron Corp.  
MCBU

$$1278 \text{ psi} - 50 \text{ psi} = 1228 \text{ psi}$$
$$\frac{1228 \text{ psi}}{5167 \text{ ft}} = 0.238$$

**Antelope Ridge #5 SWD (Delaware) Step Rate Test**

**7/8/2013**

**API # 3002524916**

**State/County: NM/ Lea**

**Field: Antelope Ridge Morrow**

**SEC 33-23S-34E, 2310 FSL & 990 FWL**

**Job: Step-Rate Test**

**Well Data:**

- Currently injecting approximately 900-1500 bbls at 970 psi
- Max surface pressure is 1033 psi per NMOCD Administrative Order SWD-578 (12/21/94)
- OH Injection: 5,167'-6,134' (Bell Canyon, Upper Delaware)
- PBTD at 13,986'

**Procedure:**

1. ***This procedure is based on the most recent information regarding wellbore configuration and equipment that could be found in the Midland Office well files and computer databases as of 1/16/2013. Verify what is in the hole with the well file in the Eunice Field office. Discuss w/ WEO Engineer, Workover Rep, OS, ALS, and FS prior to rigging up on well regarding any hazards or unknown issues pertaining to the well.***
2. Ensure that the well has been shut in for 2 days prior to the test. For verification call Production Engineer, Alyssa Davanzo, at (720) 244-4417 or (432) 687-7659.
3. MIRU Cardinal Surveys. RU pump truck and frac tank.
4. NU lubricator and test to 4500 psi.
5. RIH BH pressure gauge using slickline operations to ~5651, the midpoint of the open hole interval.
6. Begin conducting step rate test. Maintain a stable rate of 100 BWIPD for 30 minutes and wait for the pressure to stabilize before continuing the test.
7. Pump each 30 minute interval at the following injection rates: 200 BPD, 400 BPD, 600 BPD, 800 BPD, 1000 BPD, 1500 BPD, 2000 BPD, and 2500 BPD. Injection rates may vary based on collected data from the previous step and the estimated frac pressure. Three data points above and below the frac pressure are required for a complete test. Pump approximately 500 bbls total of fresh water, assuming each stage is 30 minutes.
8. Record stabilized pressure and injection rate for each step and chart results.
9. POOH with BH pressure gauge.
10. ND lubricator.
11. RDMO Cardinal Surveys, pump truck and frac tank.

**Step Rate Test**



**Cardinal Surveys Company**

**2-Aug-13**

**Chevron Corporation**

**Well: Antelope Ridge No. 5 SWD ✓**

**Field;**

**County: Eddy County, New Mexico**

**SC60645**

**File No. 21381**

**Intercept @ 1060 BPD, 3,638.9 BH PSIA & Surface Intercept @ 1,278 PSIA**

**Downhole PSI Tool Ser. No. CSC2601**

**Surface PSI Gauge Ser. No. CSC 2701**

**Tool @ 5,510'**

	<b>Start</b>	<b>End</b>	<b>Rate</b>
1	8:15 AM	8:30 AM	0 5,510'
2	8:30 AM	9:00 AM	200
3	9:00 AM	9:30 AM	400
4	9:30 AM	10:00 AM	600
5	10:00 AM	10:30 AM	800
6	10:30 AM	11:00 AM	1000
7	11:00 AM	11:30 AM	1500
8	11:30 AM	12:00 PM	2000
9	12:00 PM	12:30 PM	2500
10	12:30 PM	12:45 PM	0 15 MIN. FALL OFF
11			
12			
13			
14			
15			
16			
17			
18			

**Step Rate Test  
2-Aug-13**

**Chevron Corporation**  
**Well: Antelope Ridge No. 5 SWD**  
**Field:**  
**Location: Eddy County, New Mexico**

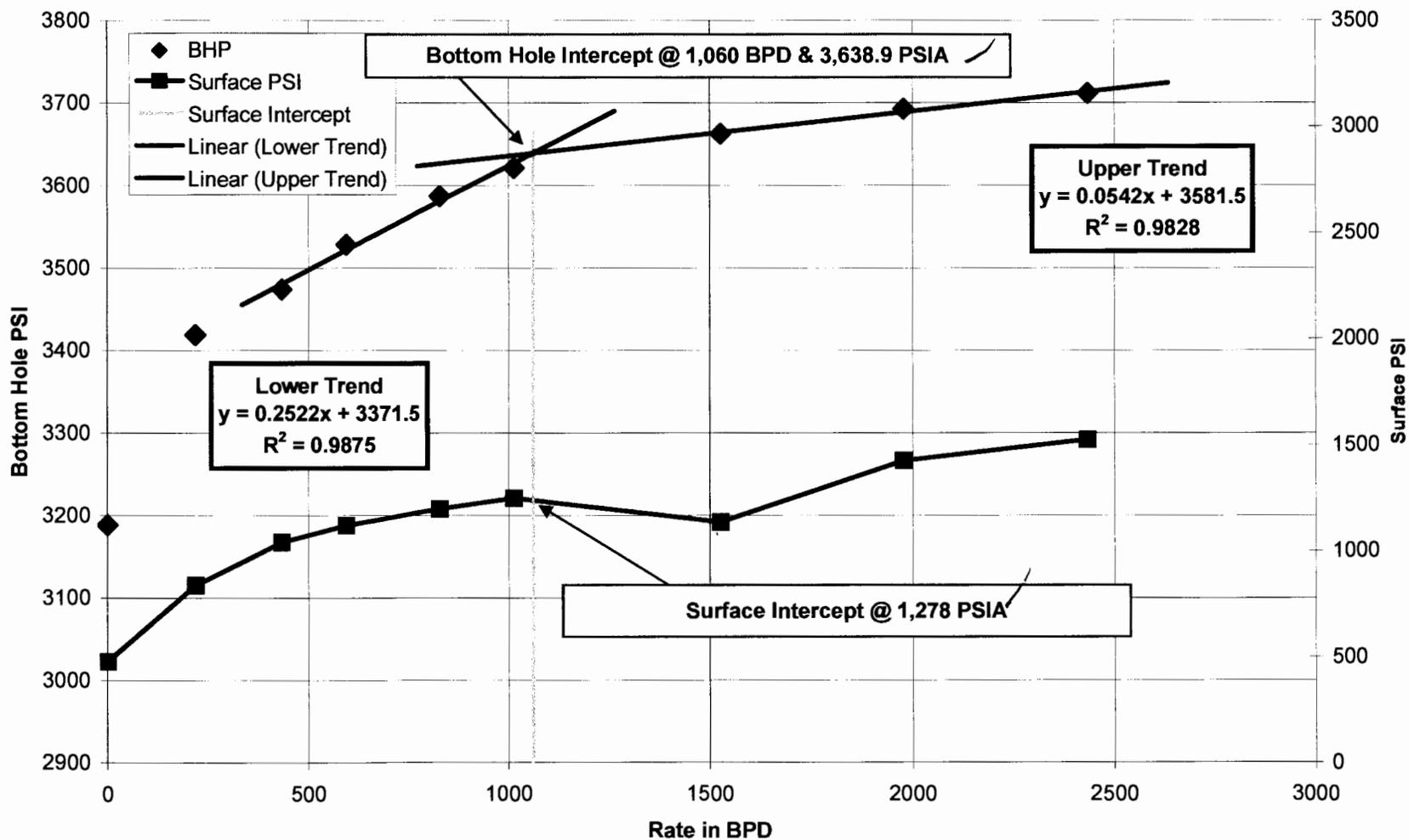


	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	BHP PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	8:15 AM	8:30 AM	15	0	0	3188.3	476.9	0	0	0		
2	8:30 AM	9:00 AM	30	200	200	3418.6	837.3	4.5	4.5	216		
3	9:00 AM	9:30 AM	30	400	200	3473.9	1039.6	13.5	9	432	3473.9	
4	9:30 AM	10:00 AM	30	600	200	3528.2	1119	25.9	12.4	595	3528.2	
5	10:00 AM	10:30 AM	30	800	200	3587	1197.9	43.2	17.3	830	3587	
6	10:30 AM	11:00 AM	30	1000	200	3621	1248.1	64.3	21.1	1013	3621	
7	11:00 AM	11:30 AM	30	1500	500	3662.4	1135	96.1	31.8	1526		3662.4
8	11:30 AM	12:00 PM	30	2000	500	3692.5	1424.4	137.3	41.2	1978		3692.5
9	12:00 PM	12:30 PM	30	2500	500	3711.6	1523.9	188	50.7	2434		3711.6
10	12:30 PM	12:45 PM	15	0		3614.7	1213.6	188	0	0		
11												
12												
13												
14												
15												
16												

**upper trend 0.2522 3371.5**  
**lower trend 0.0542 3581.5**  
**intersect 1060.60606 BPD**  
**BHP PSI 3638.98485 PSIA**

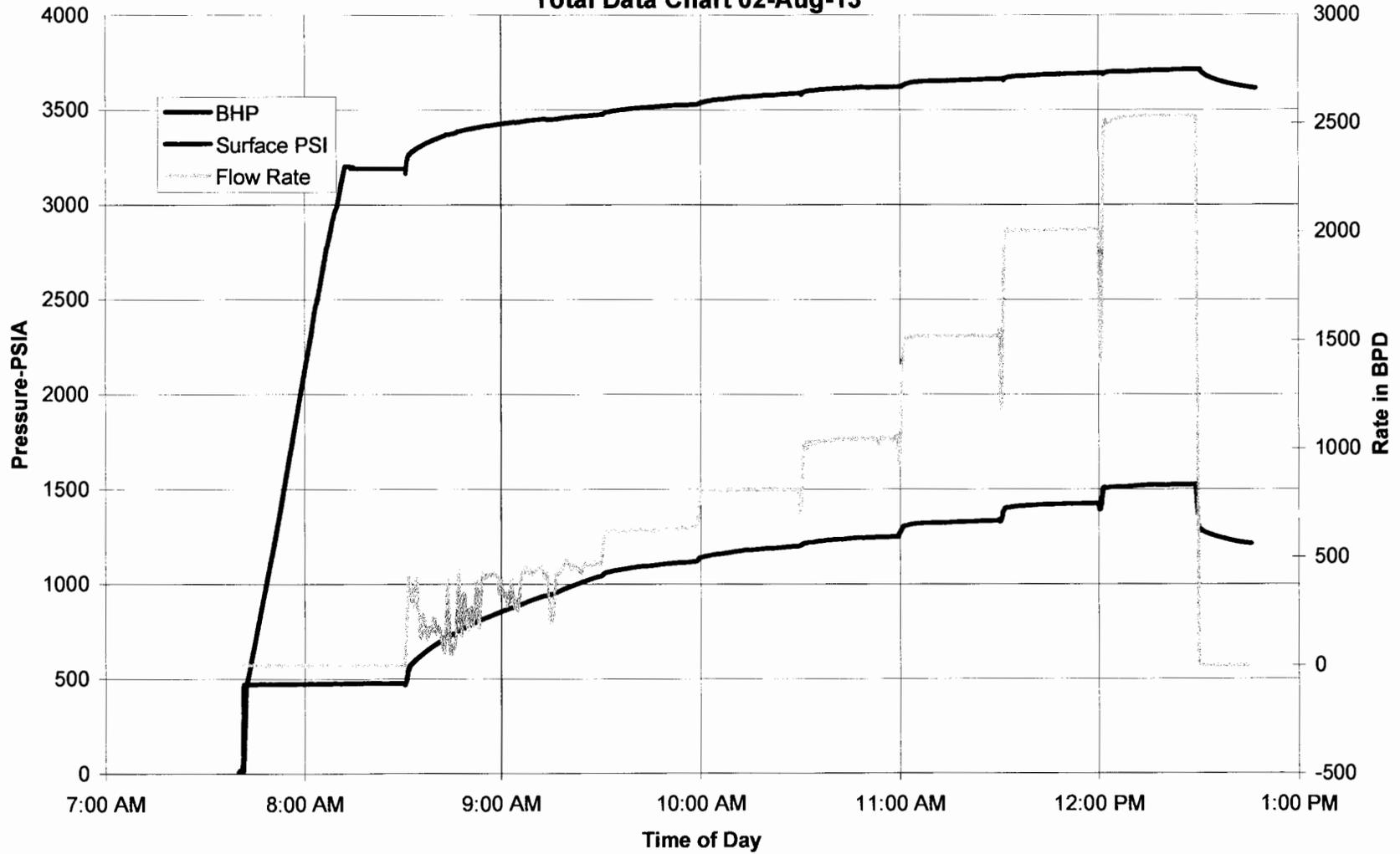


**Chevron Corporation**  
**Antelope Ridge No. 5 SWD**  
**Step Rate Chart 02-Aug-13**





**Chevron Corporation**  
**Antelope Ridge No. 5 SWD**  
**Total Data Chart 02-Aug-13**





**Current Wellbore Schematic**

**ANTELOPE RIDGE 8 SWD(CVX)**

Field: ANTELOPE RIDGE MORROW  
 County: LEA  
 State: NEW MEXICO  
 Elevation: GL 3,540.0 KB 3,540.0 KB Height: 0.0  
 Location: SEC 33-23B-34E, 2310 F8L & 990 FWL

Spud Date: 3/28/1988  
 Rig Release Date: 7/23/1988  
 Initial Compl. Date:  
 API #: 3602824816  
 CHK Property #: 730605  
 1st Sales Date:  
 PBTD: Original Hole - 6,134.0  
 TD: 14,238.0

