Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
1/10/2019	Mam	SWD	pMAM1901055513

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: Rosehill Operating Company, LLC **OGRID Number:** 372320
Well Name: Nkatata Federal SWD 001 **API:** 30-025-44863
Pool: Devonian-Silurian **Pool Code:** 97865

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

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

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

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.

Alma Franco
Print or Type Name

Alma Franco
Signature

1/10/2019
Date

281/675-3420
Phone Number

afranco@rosehillres.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___✓___Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: Rosehill Operating Company, LLC

ADDRESS: 16200 Park Row, Suite 300, Houston TX 77084

CONTACT PARTY: Alva Franco PHONE: 281-675-3420

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 ___✓___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).

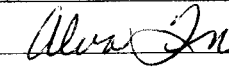
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

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: Alva Franco TITLE: Regulatory Advisor

SIGNATURE:  DATE: 9/13/2018

E-MAIL ADDRESS: afranco@rosehillres.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: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 1

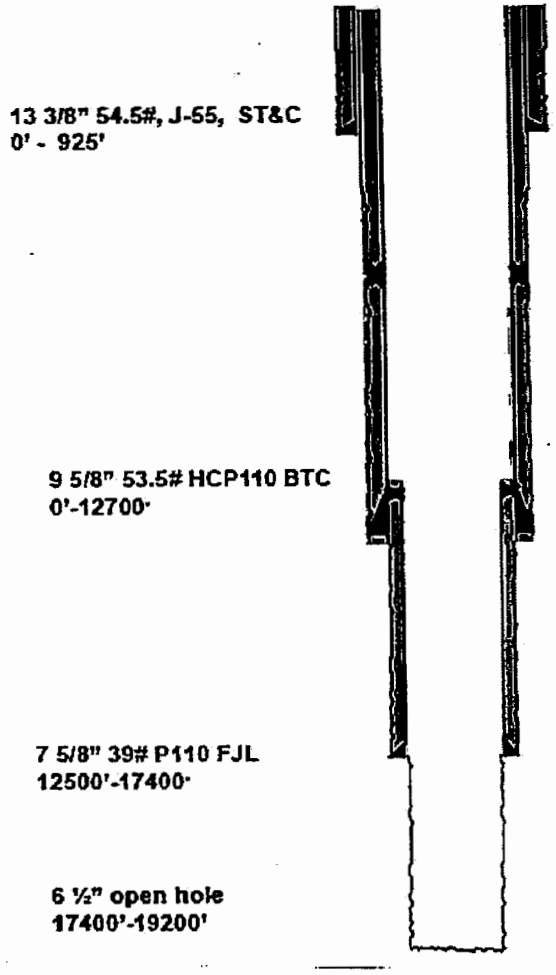
INJECTION WELL DATA SHEET

OPERATOR: Rosehill Operating Company, LLC
Nkatata Federal SWD 001

WELL NAME & NUMBER: Nkatata Federal SWD 001

WELL LOCATION:	H	11	26S	35E
2,006 FNL 1,156 FEL				
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 17.5" Casing Size: 13.375"

Cemented with: 700 sx. *or* 1100 ft³

Top of Cement: 0' Method Determined: Visual

Intermediate Casing

Hole Size: 12.25" Casing Size: 9.625"

Cemented with: 2175 sx. *or* 4800 ft³

Top of Cement: 0' Method Determined: Visual

Production Casing

Hole Size: 8.5" Casing Size: 7 5/8"

Cemented with: 350 sx. *or* 440 ft³

Top of Cement: 12,500 Method Determined: CBL

Total Depth: 19,200

Injection Interval

17,400 feet to 19,200

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 4.5" Lining Material: Fiberglass

Type of Packer: Arrowset

Packer Setting Depth: 17,200

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

Additional Data

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

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

2. Name of the Injection Formation: Devonian Silurian

3. Name of Field or Pool (if applicable): _____

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. _____

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

Additional Questions on C-108

VII.

1. **Proposed average and maximum daily rate and volume of fluids to be injected;** Average 20,000 BWPD, Max 30,000

2. **Whether the system is open or closed;** Closed System

3. **Proposed average and maximum injection pressure;** Average 1,800 PSI, Max 3,400

4. **Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and**, - Bone Spring, Delaware, and Wolfcamp produced water there is no known incompatibility exists with injected water is compatible with Devonian formation and is used as a disposal interval though the Delaware Basin for Wolfcamp, Bone Springs, and Delaware produced water. See attached water analysis from Bone Spring, Wolfcamp, and Delaware produced water.

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.).** See attached Lea County Devonian water samples.

***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.** The proposed disposal interval is in the Devonian-Silurian Formations 17,400 to 19,200. There are no fresh water zones underlying the proposed injection zone. Devonian is an impermeable Shale at the very top (Woodford Shale) followed by permeable dolomite and lime. Mud logs and Electric logs will be used to confirm the estimate depths of Woodford and Devonian Dolomite along with other significant tops. Usable water depth is from surface to a max of +/-300ft based on data from state Engineers office. No water wells are present in section 11, one well is present in section 30 of T24S, R35E, to a depth of 175". Source rock for a fresh water in this area is Santa Rosa.

IX. **Describe the proposed stimulation program, if any.** 6,300 gallons 20% HCL acid job with packer

*X. **Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).** A mud log and Gamma/Neutron log will be run to confirm the estimated depths of the Woodford shale and Devonian Dolomite. These logs and cased hole logs will be filed with the omission following drilling operations.

*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.** No access to producing wells

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.** Rosehill Operating Company, LLC has reviewed and examined available geologic and engineering data in the area of interest for the Nkatata SWD #001 and have found no evidence of faults or other hydrologic connections between Devonian disposal zones and the underground sources of drinking water

Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Alva Franco TITLE: Regulatory Advisor DATE: 9/13/2018

III. WELL DATA

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section. Nkatata SWD #001, Sec. 11, T26S, R35E, 2006 FNL & 1156' FEL, UL H, Lea County, NM
(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. Please see attachment
(3) A description of the tubing to be used including its size, lining material, and setting depth.
(4) The name, model, model, and setting depth of the packer used or a description of any other seal system or assembly used. 4-1/2" FG Lined set at 17,350' with a 4-1/2" AS1-X Packer @ 17,350'

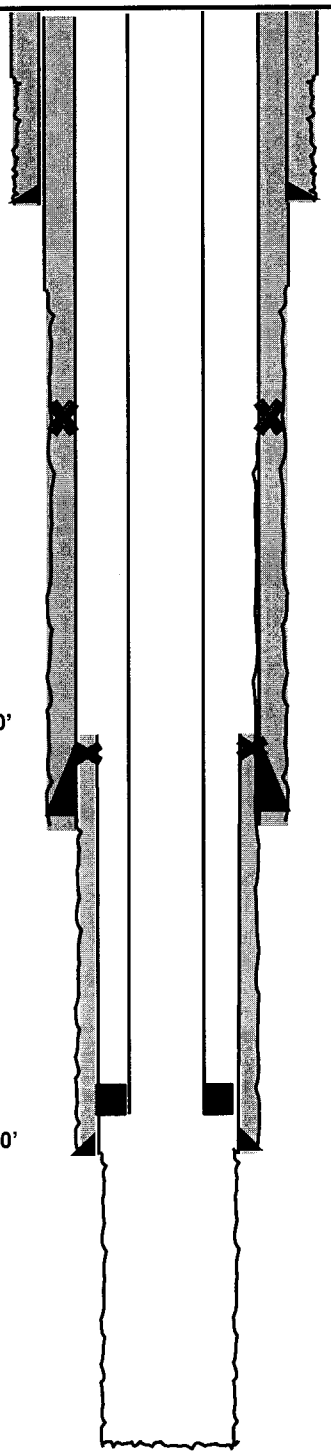
B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.
Devonian-Silurian Formations
Pool Name: SWD (Devonian-Silurian)
(2) The injection interval and whether it is perforated or open-hole.
17,400' to 19,200' OH
(3) State if the well was drilled for injection or, if not, the original purpose of the well.
New well to drill for injection
(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. N/A
(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. Next Higher: **Example** -Wolfcamp 12,000'-12,500, Morrow 13,500'-13,700', Bone Spring/Avalon 10,800'-12,000', Delaware 9,000'-9,500'

Next Lower: None

Nkatata Federal SWD
#001
Lea County, New Mexico
Proposed Wellbore
API: 30-025-*****

2083' FNL
1753' FEL
Section 11
T-26-S, R-35-E



Bit Size: 17 1/2"

13 3/8" 54.5#, J-55, ST&C 0' - 925'

TOC on 13 3/8" - surface

Bit Size: 12 1/4"

DL packer stage collar w/ ECP @ 5000'

TOC on 9 5/8" - surface

9 5/8" 53.5# HCP110 BTC 0'-12700'

TOC on 7 5/8" – 12500'

Bit Size: 8 1/2"

4-1/2", 11.6#, P110 to 17,350'

7-5/8" x 4-1/2" AS1-X Packer @ 17,350'

7 5/8" 39# P110 FJL 12500'-17400'

6 ½" open hole 17400'-19200'

Multi-Chem Analytical Laboratory
1122 S. FM1788
Midland, TX 76706

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**Rosehill**	Sales Rep:	**Ti Zhao**
Well Name:	**Tatanka Well H1**	Lab Tech:	**Julio Garcia**
Sample Point:	**Tester Water Leg**		
Sample Date:	**8/9/2018**		
Sample ID:	**WA-373143**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	**8/10/2018**
System Temperature 1 (°F):	**119**
System Pressure 1 (psig):	**750**
System Temperature 2 (°F):	**60**
System Pressure 2 (psig):	**120**
Calculated Density (g/ml):	**1.0678**
pH:	**7.00**
Calculated TDS (mg/L):	**106175.65**
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	**200.00**
H_2S in Gas (%):	
H2S in Water (mg/L):	**4.20**
Tot. SuspendedSolids(mg/L):	
Corrosivity(LangSat.Indx)	**0.00**
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	**37383.86**	Chloride (Cl):	**63000.00**
Potassium (K):	**0.01**	Sulfate (SO_4):	**1730.00**
Magnesium (Mg):	**403.55**	Bicarbonate (HCO_3):	**360.00**
Calcium (Ca):	**3103.55**	Carbonate (CO_3):	
Strontium (Sr):	**169.05**	Hydroxide(HO):	
Barium (Ba):	**0.01**	Acetic Acid (CH_3COO)	
Iron (Fe):	**23.16**	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	**0.01**	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	**1.78**	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	**0.65**	Bromine (Br):	
Aluminum (Al):	**0.01**	Silica (SiO_2):	**0.02**
Lithium (Li):	**0.01**	Calcium Carbonate ($CaCO_3$):	
Boron (B):	**43.70**	Phosphates (PO_4):	**0.03**
Silicon (Si):	**0.01**	Oxygen (O_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	**PSI**	**SI**	**PTB**	SI	**PTB**	SI	**PTB**	SI	**PTB**	SI	**PTB**	SI	**PTB**	SI	**PTB**	SI	**PTB**
60.00	120.00	0.92	44.44	0.00	0.00	2.39	4.58	0.39	7.37	0.00	0.00	0.23	48.48	0.00	0.00	7.09	0.00
67.00	190.00	0.95	46.12	0.00	0.00	2.36	4.58	0.45	8.23	0.00	0.00	0.22	46.23	0.00	0.00	6.97	0.00
73.00	260.00	0.98	47.70	0.00	0.00	2.33	4.58	0.50	9.00	0.00	0.00	0.21	44.11	0.00	0.00	6.86	0.00
80.00	330.00	1.01	49.20	0.00	0.00	2.30	4.57	0.55	9.69	0.00	0.00	0.20	42.13	0.00	0.00	6.76	0.00
86.00	400.00	1.04	50.64	0.00	0.00	2.28	4.57	0.60	10.32	0.00	0.00	0.19	40.30	0.00	0.00	6.65	0.00
93.00	470.00	1.07	52.02	0.00	0.00	2.25	4.57	0.65	10.88	0.00	0.00	0.18	38.60	0.00	0.00	6.55	0.00
99.00	540.00	1.10	53.37	0.00	0.00	2.23	4.57	0.70	11.37	0.00	0.00	0.17	37.06	0.00	0.00	6.45	0.00
106.00	610.00	1.13	54.68	0.00	0.00	2.21	4.57	0.74	11.82	0.00	0.00	0.16	35.68	0.00	0.00	6.36	0.00
112.00	680.00	1.16	55.95	0.00	0.00	2.19	4.56	0.78	12.22	0.00	0.00	0.15	34.45	0.00	0.00	6.27	0.00
119.00	750.00	1.18	57.20	0.00	0.00	2.18	4.56	0.82	12.58	0.00	0.00	0.15	33.39	0.00	0.00	6.18	0.00

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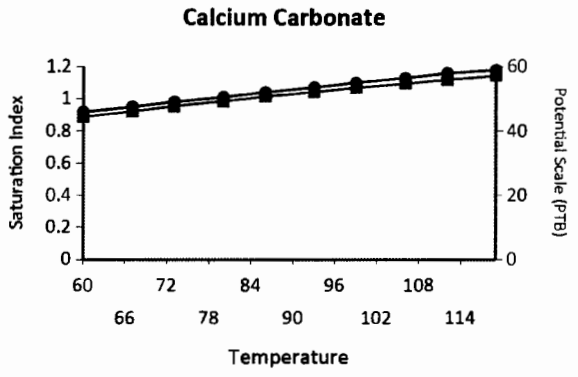
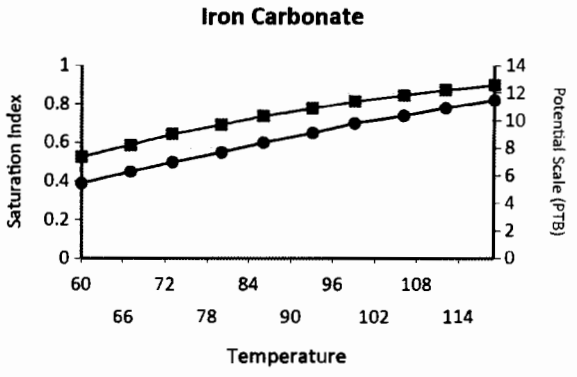
Water Analysis Report

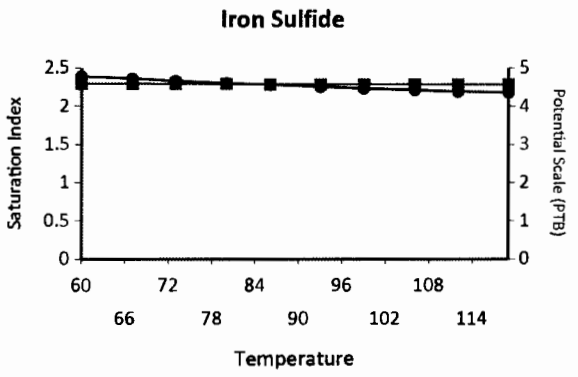
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.88	0.72	0.00	0.00	0.00	0.00	0.00	0.00
67.00	190.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.67	0.72	0.00	0.00	0.00	0.00	0.00	0.00
73.00	260.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.47	0.72	0.00	0.00	0.00	0.00	0.00	0.00
80.00	330.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.28	0.72	0.00	0.00	0.00	0.00	0.00	0.00
86.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.09	0.72	0.00	0.00	0.00	0.00	0.00	0.00
93.00	470.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.91	0.72	0.00	0.00	0.00	0.00	0.00	0.00
99.00	540.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.74	0.72	0.00	0.00	0.00	0.00	0.00	0.00
106.00	610.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.57	0.72	0.00	0.00	0.00	0.00	0.00	0.00
112.00	680.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.41	0.72	0.00	0.00	0.00	0.00	0.00	0.00
119.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.25	0.72	0.00	0.00	0.00	0.00	0.00	0.00

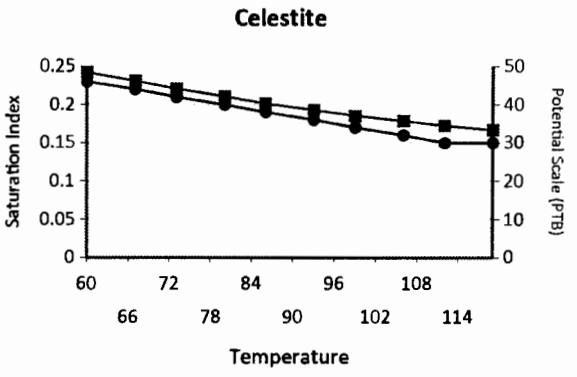
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Celestite Zinc Sulfide Lead Sulfide

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Celestite Zinc Sulfide Lead Sulfide









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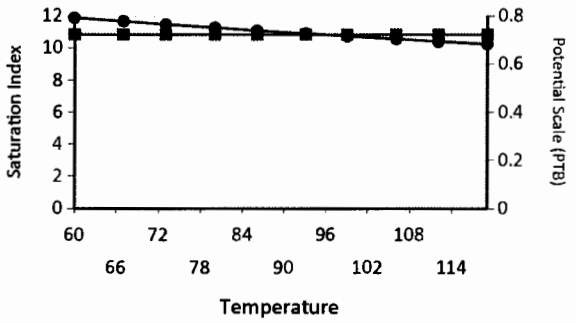
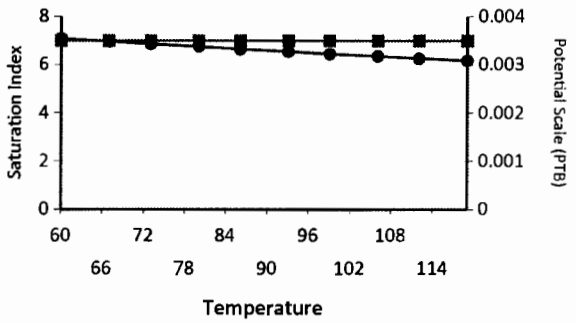
Water Analysis Report



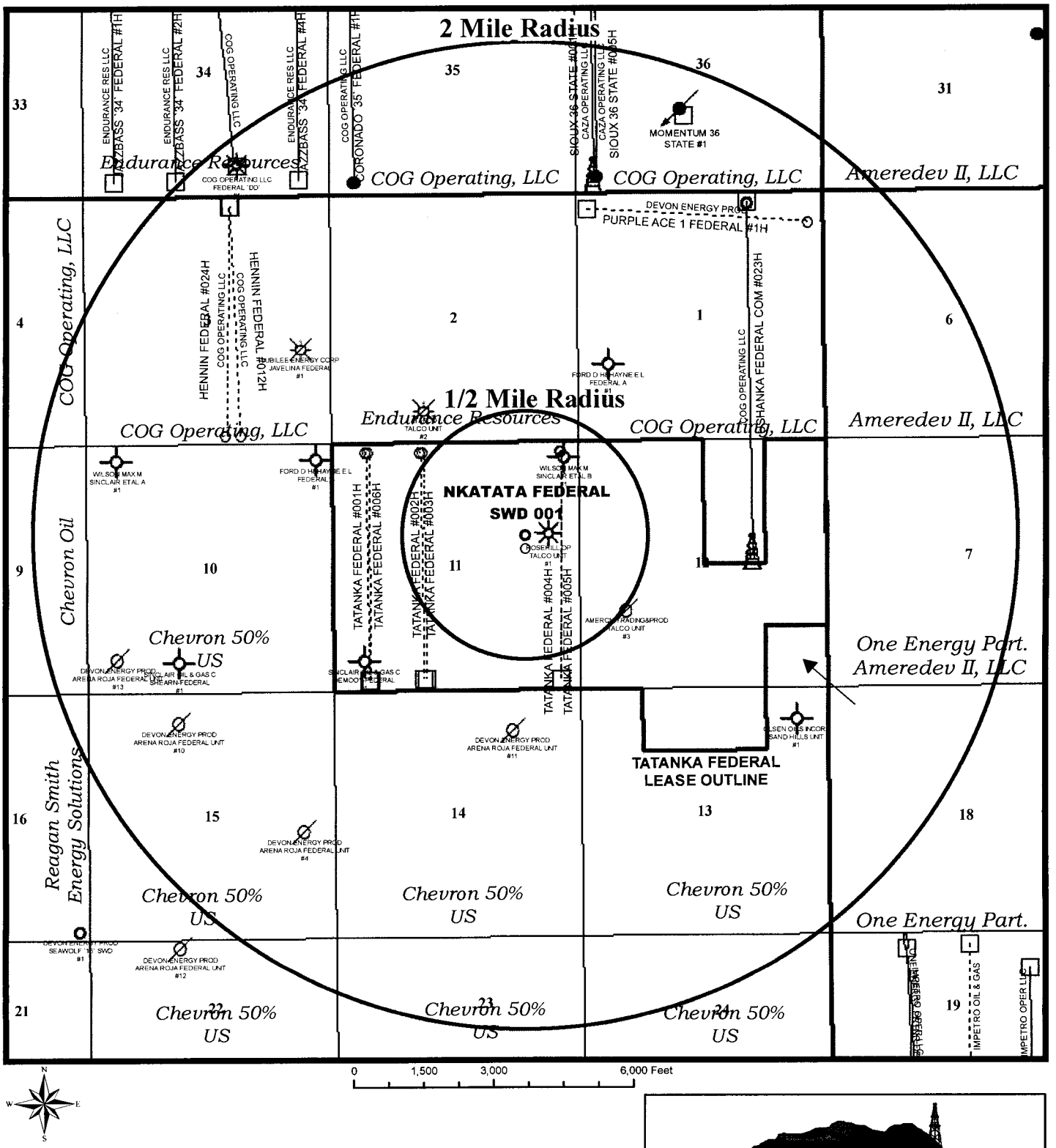


Nkatata Federal SWD Well No. 001

Location: Sec 11, T26S, R35E, Lea County, NM

Estimated Pre-Drill Formation Tops

Rustler:	757'
Lamar:	5094'
Bell Canyon:	5151'
Cherry Canyon:	6362'
Brushy Canyon:	7604'
Bonespring Lime:	8862'
Avalon:	8876'
1st Bonespring:	10066'
2nd Bonespring:	10448'
3rd Bonespring:	11857'
Wolfcamp A:	12108'
Wolfcamp B:	12446'
Wolfcamp C:	12917'
Strawn:	13575'
Atoka:	14254'
Morrow:	14920'
Barnett:	15435'
Mississippian:	16760'
Woodford:	17224'
Devonian:	17585'
Silurain	17950'
Simpson:	19771'
Ellen:	20514'



ROSEHILL OPERATING

Sec. 11, 12 & 13 - T26S - R36E
Lea County, New Mexico

Tatanka Federal Lease
Nkatata Federal SWD 001
Injection Application

BAK	1" = 3,000'	May 30, 2018

Rosehill Operating Company LLC
16200 Park Row, Suite 300
Houston, TX 77084

July 9, 2018

VIA CERTIFIED RETURN RECEIPT

ATTACHED LIST OF INTERESTED PARTIES

SUBJECT: APPLICATION FOR AUTHORIZATION TO INJECT INTO TALCO UNIT WELL (API 30-025-44863)

Dear Sir or Madam:

Rosehill Operating Company is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water into a new vertical well in the Talco Unit, in the Devonian-Silurian formation. You are receiving this package because you have been identified as having past or current interest in acreage near the vicinity of our proposed activity.

The well is located in Section 11, Township 26S, Range 35E of Lea County, NM at 2006' FNL & 1156' FEL.

According to Rule 701C the State of New Mexico, Oil Conservation Division, Engineering Bureau (1220 South St. Francis Drive, Santa Fe, NM 87505) can make a decision on our application after 15 days, if no objection is received.

If you have any questions regarding the enclosed application, I can be reached at the address above, phone (281-675-3420), or email (afranco@rosehillres.com).

Sincerely,

Alva Franco

Alva Franco
Regulatory and Production Advisor
Rosehill Operating Company LLC

Enclosures

List Interested of Parties:

Endurance Resources
203 W Wall St #1000
Midland, TX 79701

COG Operating LLC
One Concho Center
600 West Illinois Avenue
Midland, TX 79701

Chevron Corporation
1400 Smith St.
Houston, TX 77002

Ameredev II, LLC
5707 Southwest Pkwy Bldg. 1, Ste. 275
Austin, TX 78735

One Energy Partners, LLC
2929 Allen Parkway, Suite 200
Houston, TX 77019

Sinclair Oil Corporation
CT Corp System
811 Dallas Ave
Houston, TX

Crown Oil Partners LP
303 Veterans Airpark Lane #6101
Midland, TX 79705

Caza Operating LLC
200 N Loraine St
Midland, TX 79701

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103

Devon Energy Production
333 West Sheridan Avenue
Oklahoma City, OK 73102

Olsen Energy Inc
3512 Paesanos Parkway # 102
San Antonio, TX 78231

Jubilee Energy Corps
Thomas B Garber
3100 North A St, Bldg 3, Ste 103
Midland, TX 79701

Max M. Wilson, Sinclair et al.
Address Not Found

Ford, D. H. and Hayne, E. L.
Address Not Found

Legal Notice

Rosehill Operating Company, is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water in the Nkatata Federal SWD 001, in the Devonian-Silurian formation.

Nkatata Federal SWD 001 well is located in Township 26S, Range 35E, Sec. 11, 2006' FNL & 1156' FEL Lea County, NM. Injection interval will be 17,400' to 19,200' TVD.

Affected parties were notified via certified letter. Addresses for parties listed below could not be located: Max M. Wilson, Sinclair et al., D.H. Ford, and E.L. Hayne.

Interested parties must file objections or requests for hearing with the New Mexico Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting Alva Franco, Rosehill Operating Company, 16200 Park Row, Ste 300, Houston, TX 77084. Phone number (281) 365-3420.

Rosehill Operating
Nkatata SWD #1

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Formation	TVD	MD
Rustler	760'	760'
Top salt	1140'	1140'
Lamar	5,096'	5096'
Top Delaware	5,967'	5967'
Top Bone Spring	9980'	9980'
Top Wolfcamp	12109'	12109'

3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Upper Permian Sands 0- 400' Fresh Water

No other Formations are expected to give up oil, gas or fresh water in measurable quantities. Surface fresh water sands will be protected by setting 13.375" casing at 925' and circulating cement back to surface.

Rosehill Operating Well Control Plan

A. Component and Preventer Compatibility Table

The tables below outline the tubulars and compatible well control devices used in each hole section. A minimum of two barriers for well control will be in place at all times during the drilling of each hole section.

1st Intermediate Hole Section (12 ¼"): (<5M MASP)

Component	OD	Preventer	RWP
Drillpipe	5"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
HWDP	5"	Upper 4.5-7" VBR Upper 4.5-7" VBR	10M
Drill collars	6.5"	Upper 4.5-7" VBR Upper 4.5-7" VBR	10M
Drill collars	8"	Annular	5M
Mud Motor/NMDC	8"	Annular	5M
Intermediate Casing	9.625"	Annular	5M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

2nd Intermediate Hole Section (8 1/2"): (<10M MASP)

Component	OD	Preventer	RWP
Drillpipe	5"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
HWDP	5"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
Drill collars	6.5"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
Mud Motor/NMDC	6 3/4"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
Drilling Liner	7 5/8"	Annular	5M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

Production Hole Section (6 ½"): (<10M MASP)

Component	OD	Preventer	RWP
Drillpipe	4 1/2"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
HWDP	4 1/2"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
Drill collars	4 3/4"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
Mud Motor/NMDC	4 3/4"	Upper 4.5-7" VBR Lower 4.5-7" VBR	10M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram. Compatible range listed in chart.
HWDP = Heavy Weight Drill Pipe
NMDC = Non magnetic drill collar

B. Well Control Procedures

These steps outline the proper method for shutting the well in during a well control event, based on the current activity.

General Procedure While Drilling

1. Space out drill string.
2. Shut down pumps and rotary.
3. Open HCR.
4. Close annular preventer. (choke already closed)
5. Confirm shut-in.
6. Notify tool pusher/company representative.
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan.
9. If pressure has built or is anticipated during the kill to reach 3500 psi, confirm spacing and swap to the upper pipe ram.

General Procedure While Tripping

1. Space out (get closest available tool joint to floor).
2. Stab full opening safety valve and close same.

3. Open HCR.
4. Close annular preventer. (choke already closed.)
5. Confirm shut-in.
6. Notify tool pusher/company representative.
7. Read and record the following
    a. SIDPP and SICP
    b. Pit gain
    c. Time
    d. Regroup and identify forward plan.
    e. If pressure has built or is anticipated during the kill to reach 3500 psi, confirm spacing and swap to the upper pipe ram.

General Procedure While Running Casing

1. Space out (get closest available tool joint to floor).
2. Stab crossover and safety valve and close same.
3. Open HCR
4. Close annular preventer. (choke already closed)
5. Confirm shut-in.
6. Notify tool pusher/company representative.
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
    d. Regroup and identify forward plan.

General Procedure With No Pipe In Hole (Open Hole)

1. Open HCR
2. Shut-in with blind rams. (choke already closed)
3. Confirm shut-in
4. Notify tool pusher/company representative
5. Read and record the following:
    a. SICP
    b. Pit gain
    c. Time
6. Regroup and identify forward plan

General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drill pipe thru the stack.
    a. Perform flow check, if flowing:
    b. Stab full opening safety valve and close same.
    c. Open HCR.
    d. Space out drill string with tool joint just beneath the upper pipe ram.
    e. Shut-in using upper pipe ram. (choke already closed)
    f. Confirm shut-in.
    g. Notify tool pusher/company representative.
    h. Read and record the following:
        i. SIDPP and SICP

ii. Pit gain
iii. Time
iv. Regroup and identify forward plan

2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
    a. Stab crossover and full opening safety valve and close
    b. Space out drill string with upset just beneath the compatible pipe ram.
    c. Open HCR
    d. Shut-in using compatible pipe ram. (choke already closed)
    e. Confirm shut-in.
    f. Notify tool pusher/company representative
    g. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
        iv. Regroup and identify forward plan

3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
    a. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
    b. If impossible to pick up high enough to pull the string clear of the stack.
    c. Stab crossover, make up one joint/stand of drill pipe, and full opening safety valve and close.
    d. Space out drill string with tool joint just beneath the upper pipe ram.
    e. Open HCR
    f. Shut-in using upper pipe ram. (choke already closed).
    g. Confirm shut-in.
    h. Notify tool pusher/company representative.
    i. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
j. Regroup and identify forward plan

Casing Assumptions Worksheet

The below table illustrates the proposed casing design, as well as the minimum acceptable design factors for casing loads per Rosehill Operating Standards.

Csg Type	Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension	DF_{min} Coupling
Surface	17.5"	0 – 925'	13.375"	54.5#	J55	STC	1.125	1.25	1.6	1.6
Inter	12.25"	0 – 12700'	9.625"	53.5#	HCP110	BTC	1.125	1.25	1.6	1.6
Liner	8.5"	12500'-17400'	7.625"	39#	P110	FJL	1.125	1.25	1.6	1.6

The actual safety factors specific to the Nkatata #1 well are listed in the table below.

Csg Type	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension	DF_{min} Coupling
Surface	2.8	1.8	9.2	5.5
Intermediate	1.3	1.25	2.5	2.5
Liner	1.16	1.25	4.7	4.7

These design factors are derived based on the following assumptions:

Surface:

Collapse – full evacuation
Burst – 1500 psi casing test
Tension – buoyant weight of casing at depth + 50,000 lb allowable overpull
Coupling– buoyant weight of casing at depth + 50,000 lb allowable overpull

Intermediate(0-12700'):

Collapse – half evacuation with minimum mud weight of 10#
Burst – max expected pore pressure minus gas column to surface
Tension – buoyant weight of casing at depth + 100,000 lb allowable overpull
Coupling– buoyant weight of casing at depth + 100,000 lb allowable overpull

Liner (12500'-17400'):

Collapse – half evacuation with minimum mud weight of 8.4#
Burst – max expected pore pressure minus gas column to surface
Tension – buoyant weight of casing at depth + 100,000 lb allowable overpull
Coupling - buoyant weight of casing at depth + 100,000 lb allowable overpull

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

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Frances Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		Devonian-Silurian

Property Code	Property Name	Well Number
319944	NKATATA FEDERAL SWD	001

OGRID No.	Operator Name	Elevation
372320	ROSEHILL OPERATING COMPANY, LLC	3052'

Surface Location

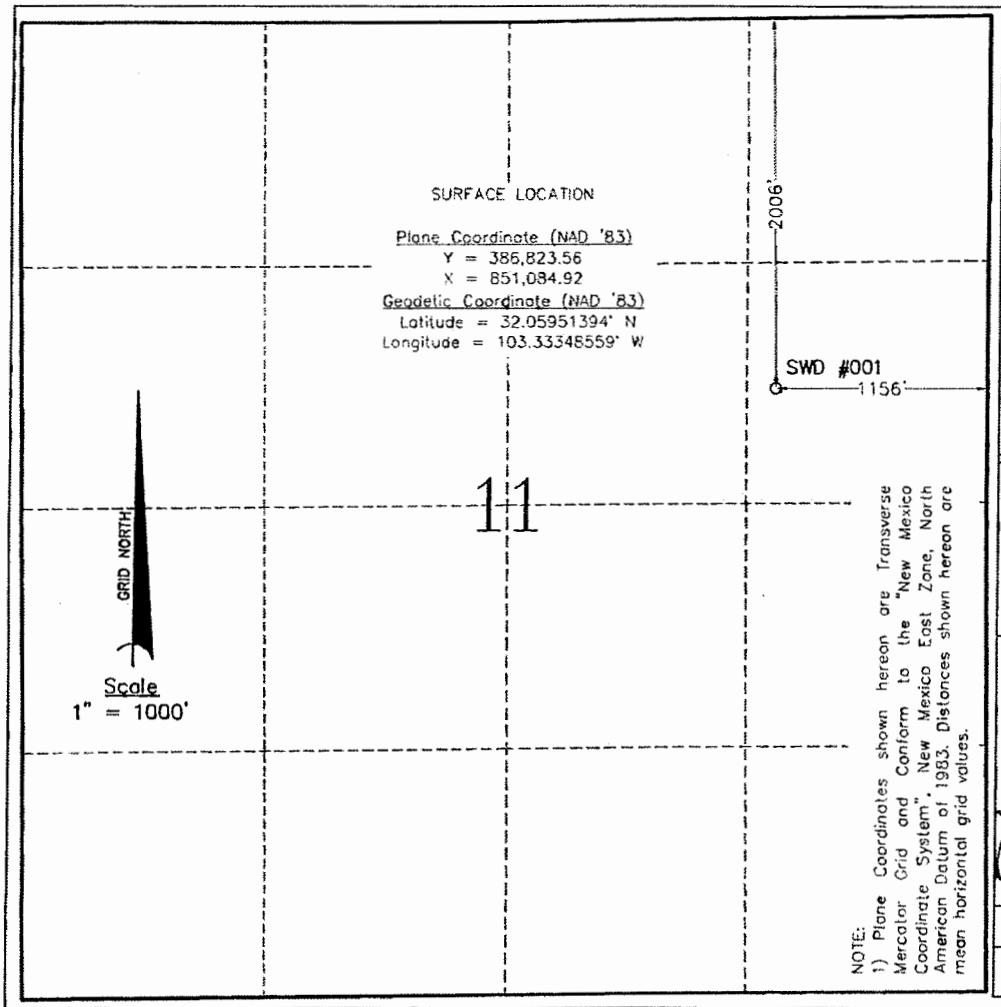
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	11	26 S	35 E		2,006	NORTH	1,156	EAST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

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



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Alva Franco 5/10/2018
Signature Date

Alva Franco
Printed Name

afranco@rosehillres.com
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

November 16, 2017
Date of Survey

SC
Signature & Seal of Professional Surveyor

11-16-17

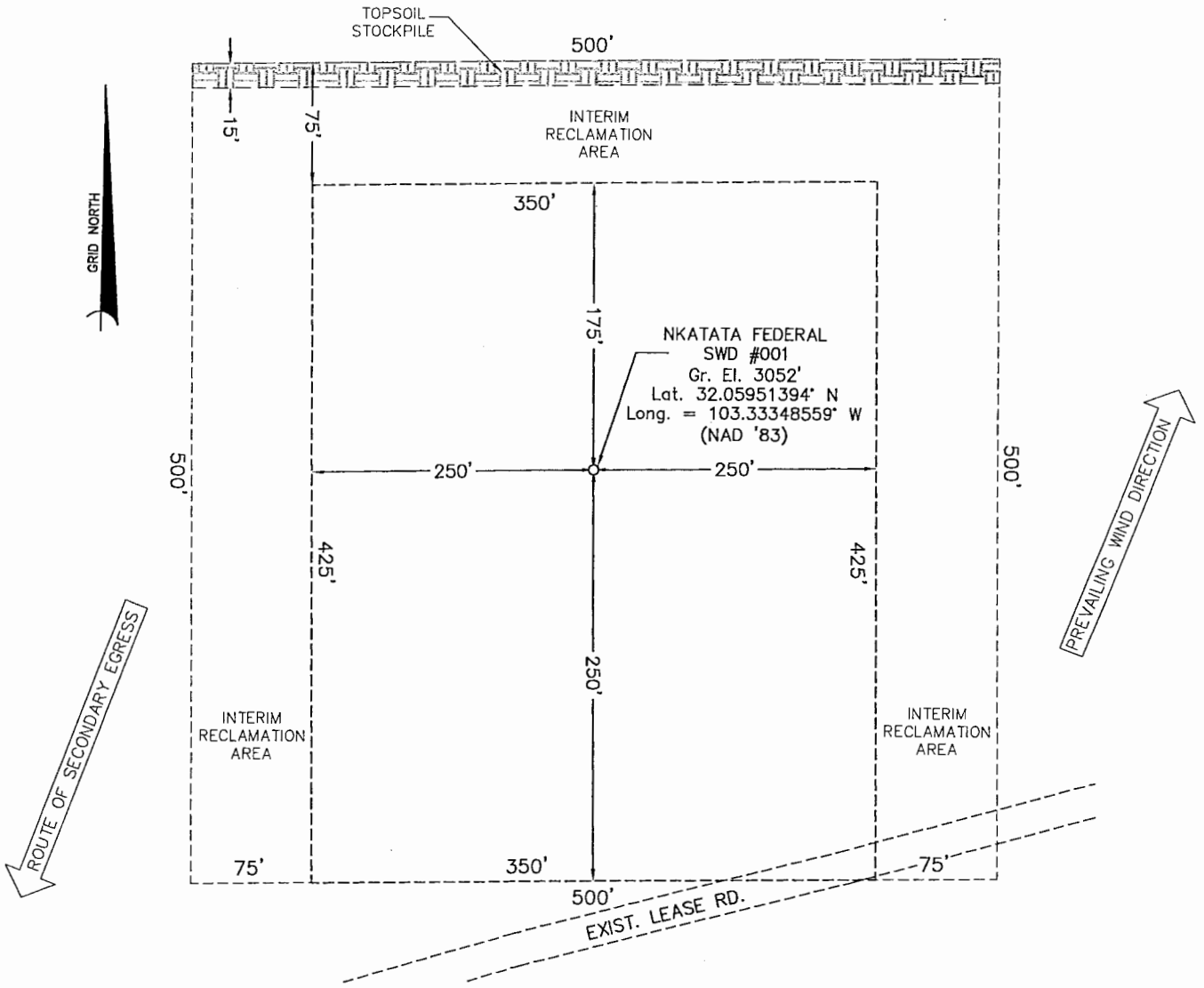
LINDSAY GYGAX
NEW MEXICO
23263
PROFESSIONAL SURVEYOR

W.O. Num. 20[illegible]

Certificate No. Lindsay Gygax 23263

SECTION 11, TOWNSHIP 26 SOUTH, RANGE 35 EAST, N.M.P.M.
LEA COUNTY NEW MEXICO

2017-0805



— Denotes 15' Topsoil Stockpile

100 0 100 200

Graphic Scale in Feet

DRIVING DIRECTIONS

FROM THE INTERSECTION OF NM-205 S AND ANTHONY RD., GO WEST ON ANTHONY RD. 1.7 MILES, STAY LEFT ONTO ANTHONY RD./J-3 RD AND CONTINUE 2.6 MILES, STAY LEFT ONTO ANTHONY RD./J-3 RD AND CONTINUE 2.4 MILES, TURN LEFT AND CONTINUE SOUTH ON A LEASE ROAD 0.5 MILES, TURN LEFT AND CONTINUE EAST AN A LEASE ROAD 0.2 MILES DO A POINT 250 FEET SOUTH OF THE PROPOSED LOCATION.

ROSEHILL OPERATING COMPANY, LLC

WELL SITE LAYOUT DIAGRAM
NKATATA FEDERAL SWD #1

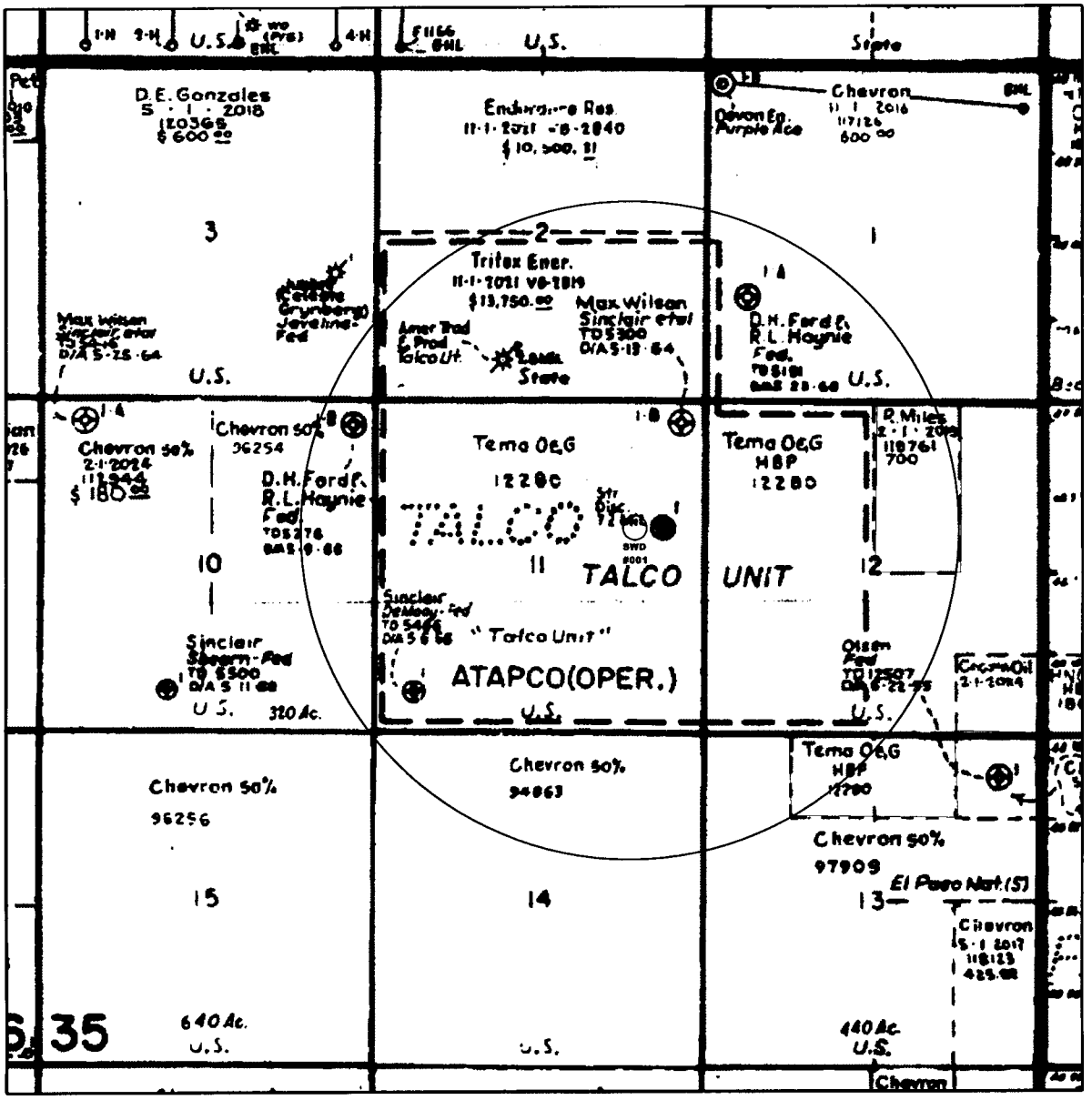
Located 2006' FNL & 1156' FEL, Section 11
Township 26 South, Range 35 East, N.M.P.M.
Lea County, New Mexico

Drawn By: SC/LRG	Date: Nov. 14, 2017
Scale: 1" = 100'	Surveyed: Nov. 13, 2017
Revision Date:	Quadrangle: Lea
W.O. No: 2017-0805	Dwg. No.: 2017-0805

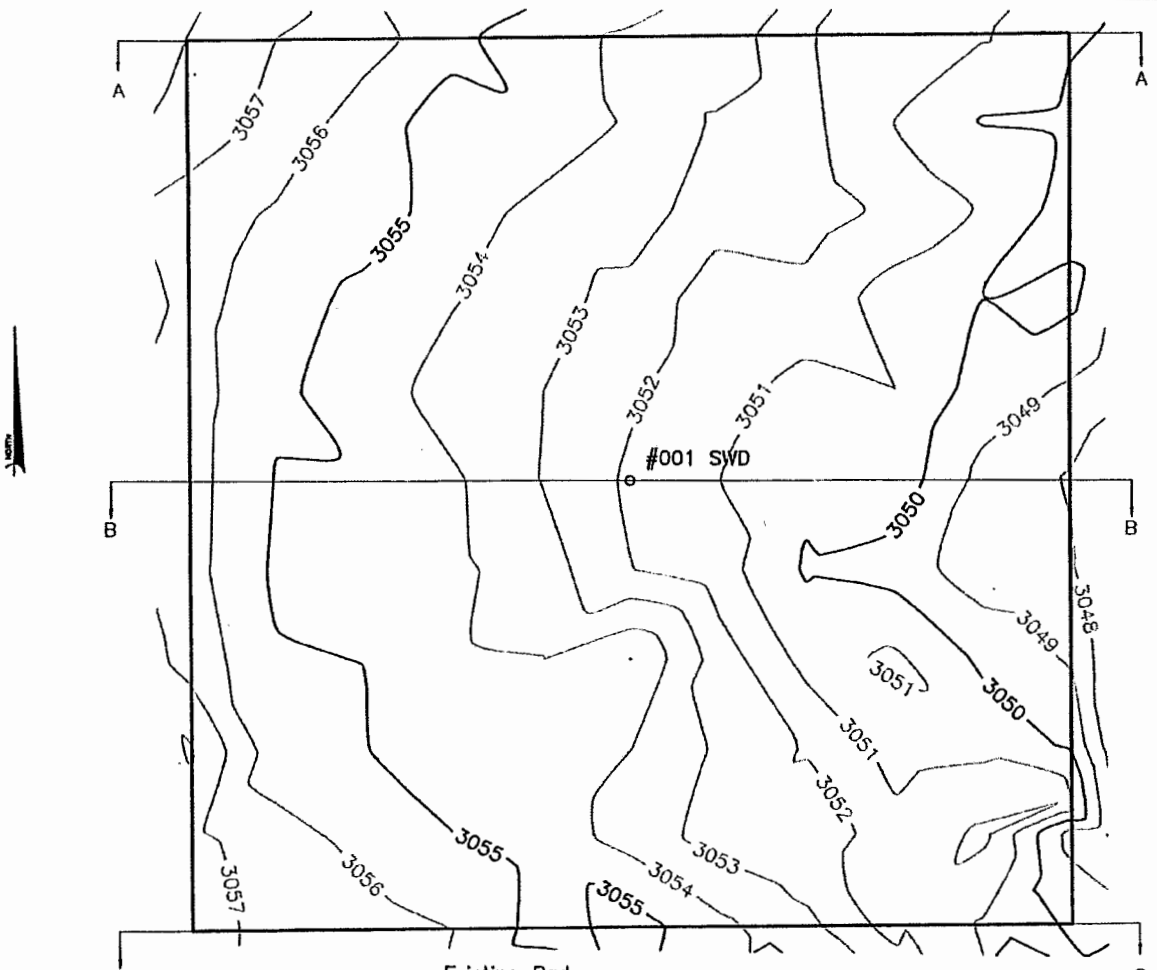
WEST COMPANY
Land Surveyors ■ Civil Engineers

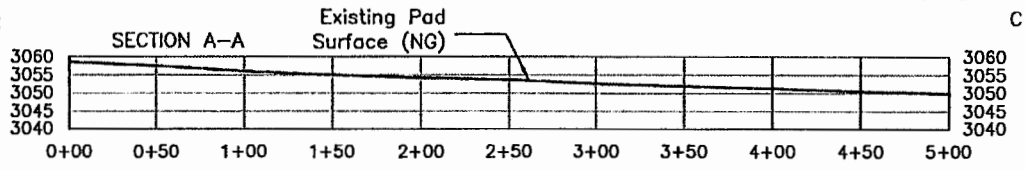
SURVEYORS - ENGINEERS - PLANNERS
110 W. LOUISIANA AVE., SUITE 110
MIDLAND, TEXAS 79701
(432) 687-0865 - FAX (432)687-0868

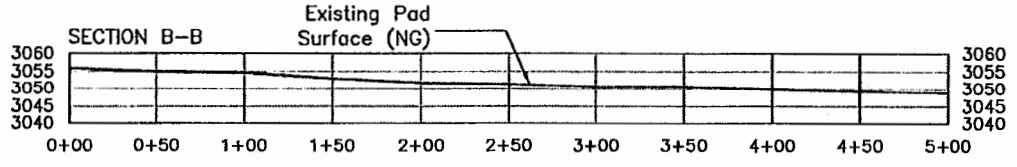
1 MILE RADIUS MAP
Tatanka Federal SWD #001

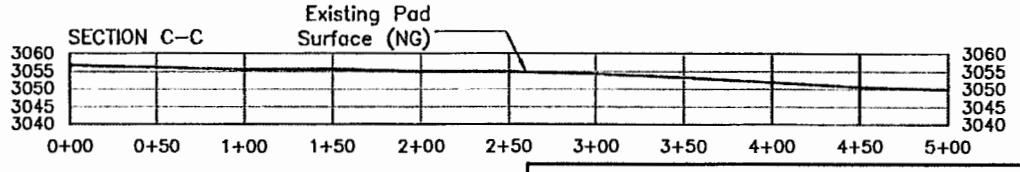


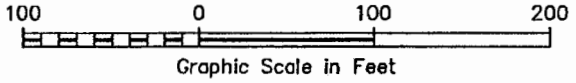
Rosehill Operating, LLC
Tatanka Federal Lease
Sec. 11, 12, 13-26S-35E
Tatanka Federal SWD #001
Surf Lat: 32.05951394 N
Surf Long: 103.33348559 W
NAD 83











ROSEHILL OPERATING COMPANY, LLC

NKATATA FEDERAL #1 SWD PAD

Located 2,006' FNL & 1,156' FEL, Section 11, Township 26 South, Range 35 East, N.M.P.M. Lea County, New Mexico

Scale: 1" = 100'	Date: December 12, 2017

TATANKA FEDERAL -

*a Frederal SWD 0011 Application for Injection

for Wells Within the Area of Review (1/2 Mi. Radius)

May 2018

ıg	Surf Lat	BH Long	BH Lat	CO	ELEV_KB_	ELEV_GR_	SPUD_DATE_	PLUG_DATE	TD_	SURF CSG-SIZE	SURF CSG-DEPTH	INTER CSG-SIZE	INTER CSG-DEPTH	INTER CSG-TOC
305	32.064034			LEA	3016	3005	4/30/1964	5/13/1964	5300	8 5/8"	340'			
437	32.059503			LEA	3074	3047	4/15/1980		19600					
169	32.051063	-103.340325	32.064369	LEA		3066	TBD							
972	32.051063	-103.340128	32.06437	LEA		3066	TBD							
715	32.051025	-103.330654	32.064363	LEA		3030	TBD							
634	32.051025	-103.330573	32.064363	LEA		3030	TBD							

*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.** No access to producing wells

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.** Rosehill Operating Company, LLC has reviewed and examined available geologic and engineering data in the area of interest for the Nkatata SWD #001 and have found no evidence of faults or other hydrologic connections between Devonian disposal zones and the underground sources of drinking water

Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: _____ TITLE: VP of Operations DATE: 12/05/2018

III. WELL DATA

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section. Nkatata SWD #001, Sec. 11, T26S, R35E, 2006 FNL & 1156' FEL, UL H, Lea County, NM

(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. Please see attachment

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, model, and setting depth of the packer used or a description of any other seal system or assembly used. 4-1/2" FG Lined set at 17,350' with a 4-1/2" AS1-X Packer @ 17,350'

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.
Devonian-Silurian Formations
Pool Name: SWD (Devonian-Silurian)

(2) The injection interval and whether it is perforated or open-hole.
17,400' to 19,200' OH

(3) State if the well was drilled for injection or, if not, the original purpose of the well.
New well to drill for injection

(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. N/A

(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. Next Higher: **Example** -Wolfcamp 12,000'-12,500, Morrow 13,500'-13,700', Bone Spring/Avalon 10,800'-12,000', Delaware 9,000'-9,500'

Next Lower: None

Additional Questions on C-108

VII.

1. **Proposed average and maximum daily rate and volume of fluids to be injected;** Average 20,000 BWPD, Max 30,000

2. **Whether the system is open or closed;** Closed System

3. **Proposed average and maximum injection pressure;** Average 1,800 PSI, Max 3,400

4. **Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than re-injected produced water; and,** - Wolfcamp produced water there is no known incompatibility exists with injected water is compatible with Devonian formation and is used as a disposal interval though the Delaware Basin for Wolfcamp produced water. See attached water analysis from Wolfcamp produced water.

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.).** See attached Lea County Devonian water samples.

***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.** The proposed disposal interval is in the Devonian-Silurian Formations 17,400 to 19,200. There are no fresh water zones underlying the proposed injection zone. Devonian is an impermeable Shale at the very top (Woodford Shale) followed by permeable dolomite and lime. Mud logs and Electric logs will be used to confirm the estimate depths of Woodford and Devonian Dolomite along with other significant tops. Usable water depth is from surface to a max of +/-300ft based on data from state Engineers office. No water wells are present in section 11, one well is present in section 30 of T24S, R35E, to a depth of 175". Source rock for a fresh water in this area is Santa Rosa.

6. **Describe the proposed stimulation program, if any.** 6,300 gallons 20% HCL acid job with packer

*X. **Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).** A mud log and Gamma/Neutron log will be run to confirm the estimated depths of the Woodford shale and Devonian Dolomite. These logs and cased hole logs will be filed with the omission following drilling operations.

Oilfield Labs of America
3302 Pilot Ave.
Midland, Texas 79706
432-789-1860

Report Date: 12/4/2018

Complete Water Analysis

Customer:	Multi-chem	Account Rep:	Ti Zhao
Operator:	Rosehill Resources	Sample ID:	01181130157
Lease:	Tatanka Fed Fresh Water	Sample Date:	11/29/2018
Sample Point:	NP	Received Date:	11/30/2018
Region:	Pecos	Log Out Date:	12/4/2018

Multi-chem, Rosehill Resources, Tatanka Fed Fresh Water,NP

Initial Temperature (°F):	190
Final Temperature (°F):	80
Initial Pressure (psi):	1250
Final Pressure (psi):	15

Dissolved Gases	
Dissolved CO_2 (ppm):	ND
Dissolved H_2S (ppm):	0.7

Sample Parameters	
pH:	8.2
Calculated TDS (mg/L):	1188
Calculated Density (g/cm³):	0.9979
Total Hardness (mg/L $CaCO_3$):	454
Total Alkalinity (mg/L $CaCO_3$):	192

Anions:	mg/L	meq/L
Chloride (Cl^-):	150	4.2
Sulfate (SO_4^{2-}):	250	5.2
Bicarbonate (HCO_3^-):	234	3.8
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	
Phosphate (PO_4^{3-}):	0.3	0.0
Borate (H_3BO_3):	12.3	0.2
Silica (SiO_2):	46.9	0.8
Anion EPM Total:		14

Cations:	mg/L	meq/L
Sodium (Na^+):	155	6.8
Potassium (K^+):	8.6	0.2
Magnesium (Mg^{2+}):	41.8	3.4
Calcium (Ca^{2+}):	112	5.6
Strontium (Sr^{2+}):	2.4	0.1
Barium (Ba^{2+}):	ND	
Iron (Fe, Total):	ND	
Manganese (Mn^{2+}):	ND	
Lead (Pb^{2+}):	0.2	0.0
Zinc (Zn^{2+}):	0.3	0.0
Lithium (Li^+):	0.1	0.0
Aluminum (Al^{3+}):	ND	
Cation EPM Total:		16

N/A - Not Analyzed | % RPD of Cations/Anions: 12.0% | ND = Not Detected

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.00	0.000	0.98	11.946	-1.18	0.000	-1.54	0.000
92°F	152 psi	0.00	0.000	1.00	12.709	-1.18	0.000	-1.46	0.000
104°F	289 psi	0.00	0.000	1.02	13.630	-1.18	0.000	-1.37	0.000
117°F	427 psi	0.00	0.000	1.05	14.715	-1.17	0.000	-1.29	0.000
129°F	564 psi	0.00	0.000	1.08	15.966	-1.15	0.000	-1.21	0.000
141°F	701 psi	0.00	0.000	1.11	17.386	-1.14	0.000	-1.13	0.000
153°F	838 psi	0.00	0.000	1.15	18.972	-1.12	0.000	-1.05	0.000
166°F	976 psi	0.00	0.000	1.19	20.719	-1.11	0.000	-0.97	0.000
178°F	1113 psi	0.00	0.000	1.24	22.616	-1.09	0.000	-0.88	0.000
190°F	1250 psi	0.00	0.000	1.29	24.648	-1.08	0.000	-0.80	0.000

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-1.11	0.000	-6.25	0.000	0.00	0.000	0.00	0.000
92°F	152 psi	-1.12	0.000	-6.27	0.000	0.00	0.000	0.00	0.000
104°F	289 psi	-1.12	0.000	-6.28	0.000	0.00	0.000	0.00	0.000
117°F	427 psi	-1.12	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
129°F	564 psi	-1.10	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
141°F	701 psi	-1.09	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
153°F	838 psi	-1.06	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
166°F	976 psi	-1.03	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
178°F	1113 psi	-1.00	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
190°F	1250 psi	-0.96	0.000	-6.29	0.000	0.00	0.000	0.00	0.000

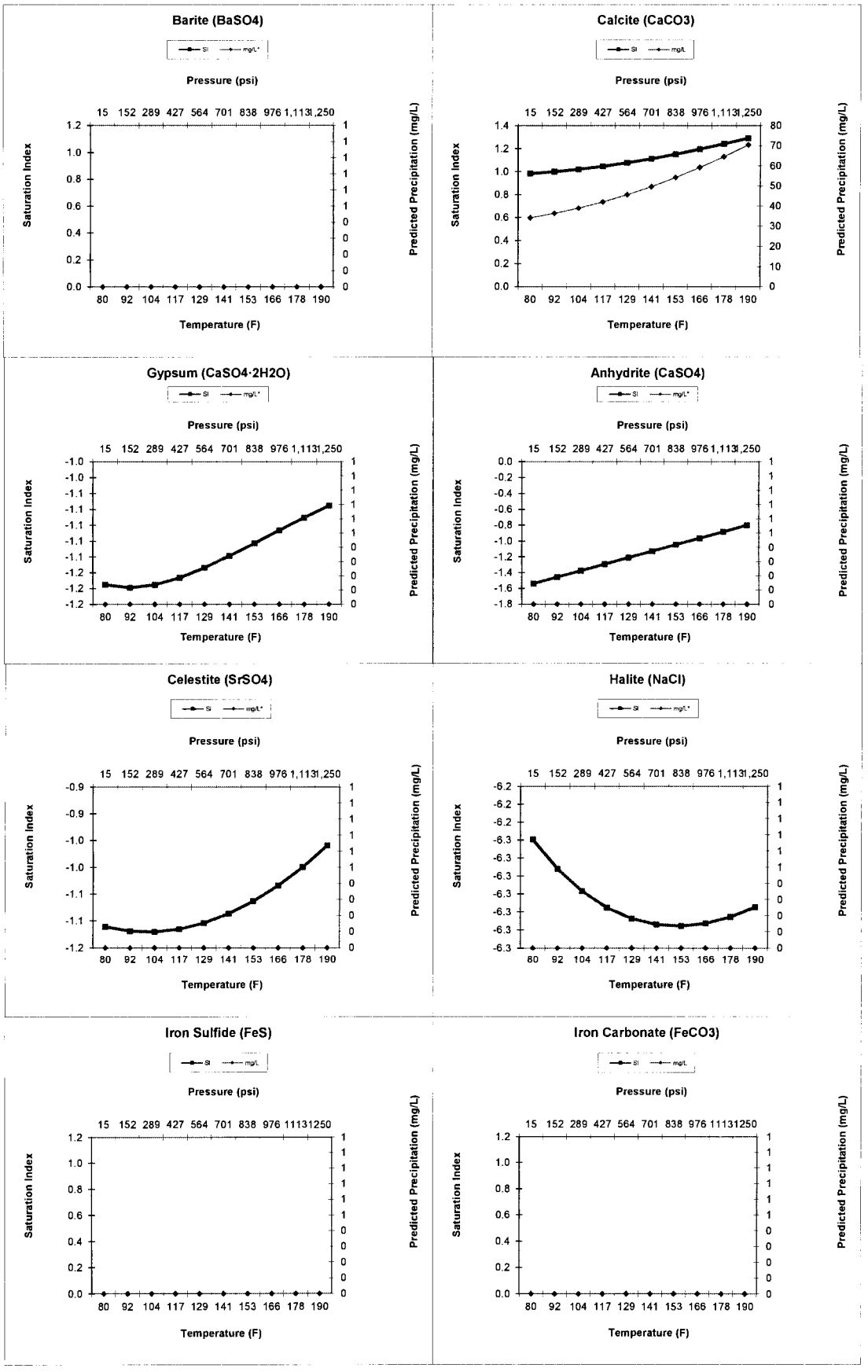
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

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; $\%CO_2$ is not included in the calculations.

Comments: _____

Sample ID: 01181130157 Multi-chem, Rosehill Resources, Tatanka Fed Fresh Water,NP



McMillan, Michael, EMNRD

From: Alva Franco <afranco@rosehillres.com>
Sent: Wednesday, January 9, 2019 12:40 PM
To: McMillan, Michael, EMNRD
Subject: [EXT] FW: Nkatata Federal SWD Well 30-025-44863
Attachments: Form 3160-5. Final Report. 9-6-2018.pdf; 201808141600.pdf; Nkatata Fed SWD 001 WBS.PDF

Good afternoon,

Please see attached WBD attached with the 3160 form filed and approved.
Also, the updated Nkatata WBD.
Still waiting on the newspaper ad, and green cards.

Thank you!
Alva

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Wednesday, December 5, 2018 5:37 PM
To: Alva Franco <afranco@rosehillres.com>
Subject: RE: Nkatata Federal SWD Well 30-025-44863

Your WBD diagram shows an open-hole interval from the Straw through the Devonian
Your application is for the Devonian only
The Talco Well has been Plugged and Abandoned. You will need a wellbore diagram for this well

Mike

From: Alva Franco <afranco@rosehillres.com>
Sent: Wednesday, December 5, 2018 1:35 PM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Subject: [EXT] FW: Nkatata Federal SWD Well 30-025-44863

Mike,

Please see attachments:

Water analysis for the fresh water.

Revised ½ mile radius tabulation including the Tatanka Federal 001H well (producing).

Produced water from Halliburton.

Signed statement from C-108 questions by an Engineer.

After running the ad for the offset operators I will forward you green cards and published newspaper ad.
Yes, the surface owner was notified and it will be with the green cards when I submit them to you.

Thank you,

ROSEHILL OPERATING

16200 Park Row Ste 300
Houston, TX 77084

October 02, 2018

Mr. Phillip Goetze
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Nkatata Federal SWD 001
Newspaper Ad for C-108 Form
Lea County, NM

Mr. Goetz,

Please see attached original newspaper ads for the above referenced well to attach to the C-108 form submitted on September 13, 2018.

Should you have any questions please feel free to contact me @281/675-3420 or you can email me at afranco@rosehillres.com.

Sincerely,

Alva Franco

Alva Franco,
Regulatory Advisor

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 09, 2018
and ending with the issue dated
December 09, 2018.

Publisher

Sworn and subscribed to before me this
9th day of December 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

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 NOTICE
DECEMBER 9, 2018

Rosehill Operating Company (16200 Park Row, Ste 300, Houston, TX 77084 Contact: Alva Franco at 281-365-3420) is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water in the Nkatata Federal SWD 001, in the Devonian-Silurian formation.

The well is located in Township 26S, Range 35E, Sec. 11, Lea County, NM. Nkatata SWD well will be located 2006' FNL and 1156' FEL, with an injection interval 17,400' to 19,200' TVD. The maximum injection rate will be 30,000 barrels of produced water per day. Maximum injection pressure will be 3400 psi for produced water at the surface for the well.

Lease holders within a one-mile radius of the injection well were sent letters notifying them of the proposed project. Rosehill was unable to contact the following operators: Chisen Energy Inc., Jubilee Energy Corps, Sinclair Energy Corporation and One Energy Partners. Interested parties must file objections or request for hearing with the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, New Mexico 87504 within 15 days of this notice.
#33520

67113387 00222081

SHANNON MANFREDI
SWCA ENVIRONMENTAL CONSULTANTS
130 ROCK POINT DRIVE, STE A
DURANGO, CO 81301

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Todd Bailey, Editor 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
June 30, 2018
and ending with the issue dated
June 30, 2018.

Editor

Sworn and subscribed to before me this 30th day of June 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

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 NOTICE
June 30, 2018

Rosehill Operating Company, 16200 Park Row, Ste 300, Houston, TX 77084, Contact: Alva Franco (281) 365-3420 is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water in the Nkatata Federal SWD 001, in the Devonian-Silurian formation.

The well is located in Township 26S, Range 35E, Lea County, NM:

Nkatata Federal SWD 001, Sec. 11, 2006' FNL & 1156' FEL injection interval 17,400' to 19,200' TVD.

The maximum injection rate will be 30,000 barrels of produced water per day. Maximum injection pressure will be 3400 psi for produced water at the surface for the well mentioned above. Interested parties must file objections or request for hearing with the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive; Santa Fe, New Mexico 87504 within 15 days of this notice.
#32967

67113387 00214441

SHANNON MANFREDI
SWCA ENVIRONMENTAL CONSULTANTS
130 ROCK POINT DRIVE, STE A
DURANGO, CO 81301

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Todd Bailey, Editor 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
July 13, 2018
and ending with the issue dated
July 13, 2018.

Editor

Sworn and subscribed to before me this
13th day of July 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

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 NOTICE
July 13, 2018

Rosehill Operating Company, is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water in the Nkatata Federal SWD 001, in the Devonian-Silurian formation.

Nkatata Federal SWD 001 well is located in Township 26S, Range 35E, Sec. 11, 2006' FNL & 1156' FEL Lea County, NM. Injection interval will be 17,400' to 19,200' TVD.

Affected parties were notified via certified letter. Addresses for parties listed below could not be located: Max M. Wilson, Sinclair et al., D.H. Ford, and E.L. Hayne.

Interested parties must file objections or requests for hearing with the New Mexico Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting Alva Franco, Rosehill Operating Company, 16200 Park Row, Ste 300, Houston, TX 77084. Phone number (281) 365-3420.
#33017

67113387 00214968

SHANNON MANFREDI
SWCA ENVIRONMENTAL CONSULTANTS
130 ROCK POINT DRIVE, STE A
DURANGO, CO 81301

Alva Franco
281/675-3420

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Monday, October 15, 2018 5:17 PM
To: Alva Franco <afranco@rosehillres.com>
Subject: Nkatata Federal SWD Well 30-025-44863

Alva:

The OCD cannot process your application, because of the excessive number of unlocatables.

Get an updated mailing addresses for the affected parties (At least 2 of them have send administrative proposals to the OCD) or publish their names in a newspaper of general circulation in the county of the proposed SWD. You published a few of them; however, there were other unlocatables.

The OCD requires the green cards that shows proof of mailing to the affected parties

Further, I cannot determine who the surface owner is-Did you notice them-was it the BLM?

Get either a geologist or engineer to sign a statement about no connection to the injection interval and underground sources of drinking water. Regulatory Advisors lack technical expertise to sign the statement.

What is the status of the 19,600 foot well? You will be required to have a Well Bore Diagram before the application is recommended for signature.

You will need produced water samples for the different formations.

When you get the required information then the OCD will put your application into the system.

Mike

Michael McMillan
1220 South St. Francis
Santa Fe, New Mexico
505-476-3448
Michael.mcmillan@state.nm.us

Notice: The information transmitted by this email is intended only for the person or entity to which it is addressed. This email may contain proprietary, business-confidential and/or privileged material. If you are not the intended recipient of this message, be aware that any use, review, retransmission, distribution, reproduction or any action taken in reliance upon this message is strictly prohibited. If you received this in error, please contact the sender and delete the material from all computers. Further, any contract terms proposed or

purportedly accepted in this email are not binding and are subject to management's final approval as memorialized in a separate written instrument.

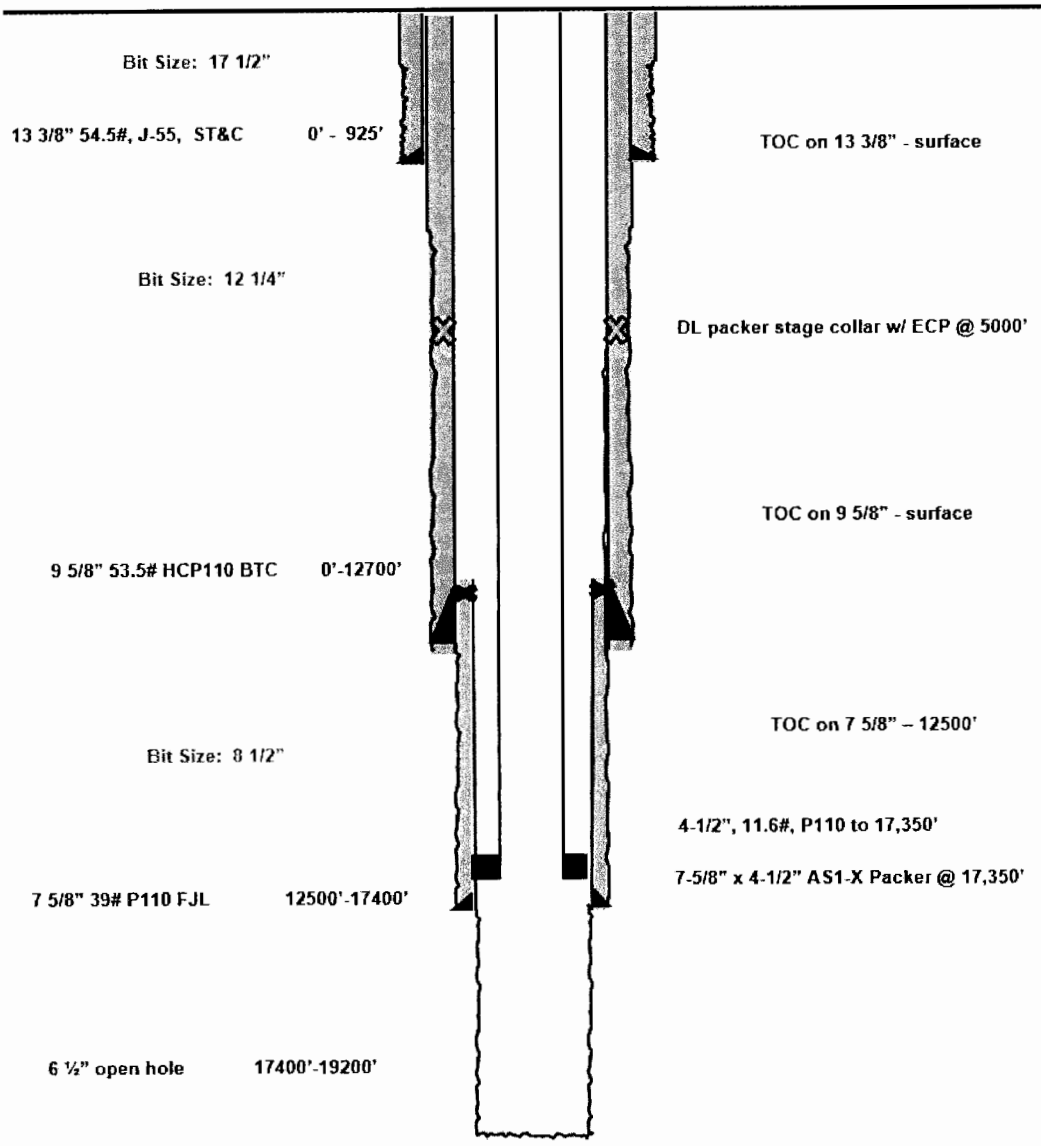
Notice: The information transmitted by this email is intended only for the person or entity to which it is addressed. This email may contain proprietary, business-confidential and/or privileged material. If you are not the intended recipient of this message, be aware that any use, review, retransmission, distribution, reproduction or any action taken in reliance upon this message is strictly prohibited. If you received this in error, please contact the sender and delete the material from all computers. Further, any contract terms proposed or purportedly accepted in this email are not binding and are subject to management's final approval as memorialized in a separate written instrument.

Nkatata Federal SWD #001

Lea County, New Mexico
Proposed Wellbore

API: 30-025-***

2083' FNL
1753' FEL
Section 11
T-26-S, R-35-E



TATANKA FEDERAL-
Nkatata #SWD 1 Application for Injection
Tabulation of Well Data for Wells Within the Area of Review (1/2 Mi. Radius)
May 2018

API	STATUS	DIR	LEASE NAME	WELL#	OPERATOR	SEC	TWP	RNG	NSFTG	EWFTG	Surf Long	Surf Lat	BH Long	BH Lat	CO	ELEV KB	ELEV GR	SPUD DATE	PLUG DATE	TD	SURF CSG-SIZE
300252100000	DRY	V	SINCLAIR ETAL B	1	WILSON MAX M	11	26S	35E	330 FNL	330 FEL	-103.330305	32.064034			LEA	3016	3005	4/30/1964	5/13/1964	5300	5/8"
300252674700	GAS	V	TALCO UNIT	1	ROSEHILL OPER. CO, LLC	11	26S	35E	1980 FNL	660 FEL	-103.331437	32.059503			LEA	3074	3047	4/15/1980	3/14/2018	19600	
300254456900	Oil	H	TATANKA FEDERAL	001H	ROSEHILL OPER. CO, LLC	11	26S	35E	230 FSL	790 FWL	-103.344890	32.051159	-103.344303	32.064489	LEA	3064	3047	5/28/2018-producing		17163	
300254458200	PERMIT	H	TATANKA FEDERAL	002H	ROSEHILL OPER. CO, LLC	11	26S	35E	230 FSL	1923FWL	-103.340169	32.051063	-103.340564	32.064466	LEA		3064				
300254458300	PERMIT	H	TATANKA FEDERAL	003H	ROSEHILL OPER . CO, LLC	11	26S	35E	230 FSL	1984 FWL	-103.339972	32.051063	-103.340128	32.06447	LEA		3066				
300254457000	PERMIT	H	TATANKA FEDERAL	004H	ROSEHILL OPER. CO, LLC	11	26S	35E	230 FSL	436 FEL	-10 3.330715	32.051025	-103.330654	32.064363	LEA		3030				
300254457100	PERMIT	H	TATANKA FEDERAL	005H	ROSEHILL OPER. CO, LLC	11	26S	35E	230 FSL	411 FEL	-103.330634	32.051025	-103.330573	32.064363	LEA		3030				

Multi-Chem Analytical Laboratory
1122 S. FM1788
Midland, TX 76706

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**Rosehill**	Sales Rep:	**Ti Zhao**
Well Name:	**Tatanka Well H1**	Lab Tech:	**Julio Garcia**
Sample Point:	**Tester Water Leg**		
Sample Date:	**8/9/2018**		
Sample ID:	**WA-373143**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	**8/10/2018**
System Temperature 1 (°F):	**119**
System Pressure 1 (psig):	**750**
System Temperature 2 (°F):	**60**
System Pressure 2 (psig):	**120**
Calculated Density (g/ml):	**1.0678**
pH:	**7.00**
Calculated TDS (mg/L):	**106175.65**
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	**200.00**
H_2S in Gas (%):	
H2S in Water (mg/L):	**4.20**
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	**0.00**
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	**37383.86**	Chloride (Cl):	**63000.00**
Potassium (K):	**0.01**	Sulfate (SO_4):	**1730.00**
Magnesium (Mg):	**403.55**	Bicarbonate (HCO_3):	**360.00**
Calcium (Ca):	**3103.55**	Carbonate (CO_3):	
Strontium (Sr):	**169.05**	Hydroxide(HO):	
Barium (Ba):	**0.01**	Acetic Acid (CH_3COO)	
Iron (Fe):	**23.16**	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	**0.01**	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	**1.78**	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	**0.65**	Bromine (Br):	
Aluminum (Al):	**0.01**	Silica (SiO_2):	**0.02**
Lithium (Li):	**0.01**	Calcium Carbonate ($CaCO_3$):	
Boron (B):	**43.70**	Phosphates (PO_4):	**0.03**
Silicon (Si):	**0.01**	Oxygen (O_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	**PSI**	**SI**	**PTB**	SI	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**
60.00	120.00	0.92	44.44	0.00	0.00	2.39	4.58	0.39	7.37	0.00	0.00	0.23	48.48	0.00	0.00	7.09	0.00
67.00	190.00	0.95	46.12	0.00	0.00	2.36	4.58	0.45	8.23	0.00	0.00	0.22	46.23	0.00	0.00	6.97	0.00
73.00	260.00	0.98	47.70	0.00	0.00	2.33	4.58	0.50	9.00	0.00	0.00	0.21	44.11	0.00	0.00	6.86	0.00
80.00	330.00	1.01	49.20	0.00	0.00	2.30	4.57	0.55	9.69	0.00	0.00	0.20	42.13	0.00	0.00	6.76	0.00
86.00	400.00	1.04	50.64	0.00	0.00	2.28	4.57	0.60	10.32	0.00	0.00	0.19	40.30	0.00	0.00	6.65	0.00
93.00	470.00	1.07	52.02	0.00	0.00	2.25	4.57	0.65	10.88	0.00	0.00	0.18	38.60	0.00	0.00	6.55	0.00
99.00	540.00	1.10	53.37	0.00	0.00	2.23	4.57	0.70	11.37	0.00	0.00	0.17	37.06	0.00	0.00	6.45	0.00
106.00	610.00	1.13	54.68	0.00	0.00	2.21	4.57	0.74	11.82	0.00	0.00	0.16	35.68	0.00	0.00	6.36	0.00
112.00	680.00	1.16	55.95	0.00	0.00	2.19	4.56	0.78	12.22	0.00	0.00	0.15	34.45	0.00	0.00	6.27	0.00
119.00	750.00	1.18	57.20	0.00	0.00	2.18	4.56	0.82	12.58	0.00	0.00	0.15	33.39	0.00	0.00	6.18	0.00

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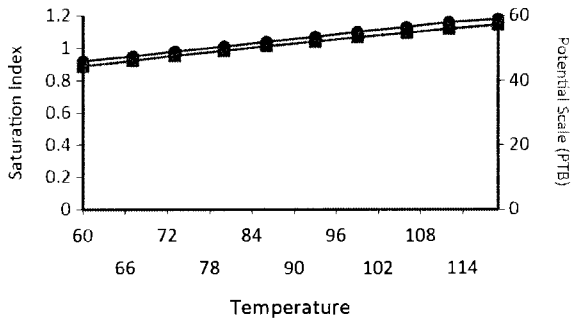
Water Analysis Report

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	**PSI**	**SI**	**PTB**	SI	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**	**SI**	**PTB**
60.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.88	0.72	0.00	0.00	0.00	0.00	0.00	0.00
67.00	190.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.67	0.72	0.00	0.00	0.00	0.00	0.00	0.00
73.00	260.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.47	0.72	0.00	0.00	0.00	0.00	0.00	0.00
80.00	330.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.28	0.72	0.00	0.00	0.00	0.00	0.00	0.00
86.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.09	0.72	0.00	0.00	0.00	0.00	0.00	0.00
93.00	470.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.91	0.72	0.00	0.00	0.00	0.00	0.00	0.00
99.00	540.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.74	0.72	0.00	0.00	0.00	0.00	0.00	0.00
106.00	610.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.57	0.72	0.00	0.00	0.00	0.00	0.00	0.00
112.00	680.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.41	0.72	0.00	0.00	0.00	0.00	0.00	0.00
119.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.25	0.72	0.00	0.00	0.00	0.00	0.00	0.00

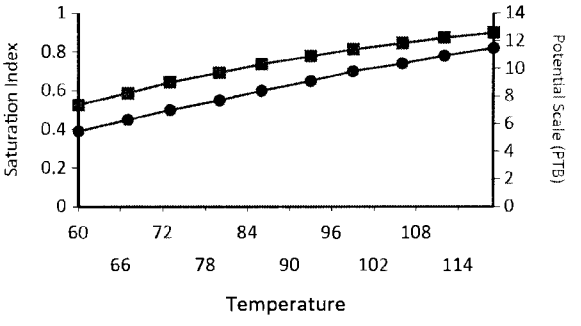
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Celestite Zinc Sulfide Lead Sulfide

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Celestite Zinc Sulfide Lead Sulfide

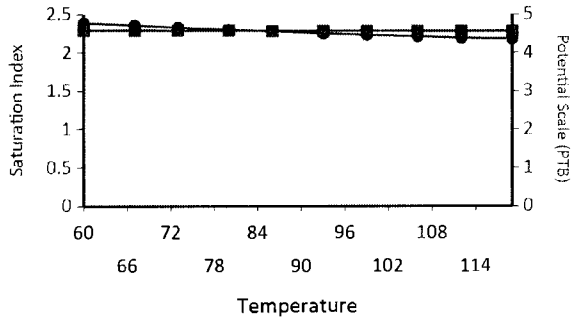
Calcium Carbonate



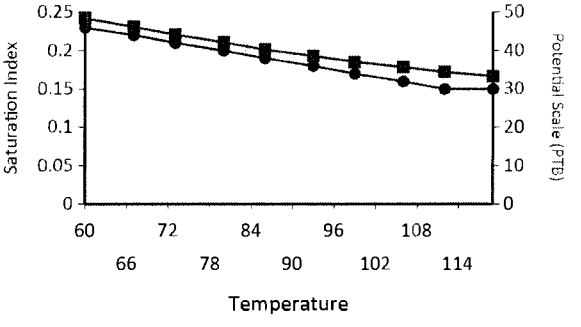
Iron Carbonate



Iron Sulfide



Celestite



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1122 S. FM1788
Midland, TX 76706

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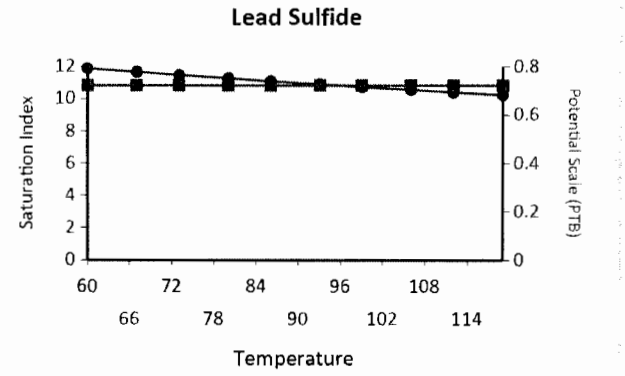
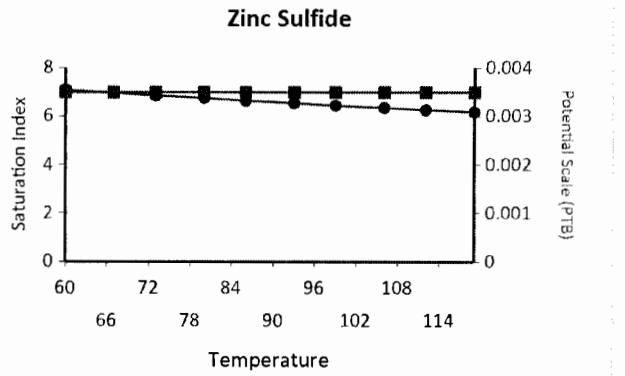
Water Analysis Report





McMillan, Michael, EMNRD

From: Alva Franco <afranco@rosehillres.com>
Sent: Thursday, January 10, 2019 3:02 PM
To: McMillan, Michael, EMNRD
Subject: [EXT] RE: Nkatata Federal SWD Well 30-025-44863
Attachments: 201901101547.pdf

Hi Mike,

Do you need the original newspaper ad for this well or will a scan copy work?

Thanks,

Alva Franco
Regulatory & Production Accounting Advisor
Phone: (281) 675-3420
Cell: (432) 352-1610
16200 Park Row, Suite 300
Houston, Texas 77084
afranco@rosehillres.com

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Thursday, December 6, 2018 8:57 AM
To: Alva Franco <afranco@rosehillres.com>
Subject: RE: Nkatata Federal SWD Well 30-025-44863

So your WBD states that it is a proposed schematic-is it proposed or actual wellbore diagram.
If the WBD is not plugged and abandoned, before your application can be approved, the well must be approved subject to Hobbs District Office approval

Mike

From: Alva Franco <afranco@rosehillres.com>
Sent: Thursday, December 6, 2018 6:10 AM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Subject: [EXT] RE: Nkatata Federal SWD Well 30-025-44863

Good moring,

Please see attached Talco WBD.
I'll get you an updated Nkatata Federal SWD 1 WBD.

Thank you,
Alva

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Wednesday, December 5, 2018 5:37 PM
To: Alva Franco <afranco@rosehillres.com>
Subject: RE: Nkatata Federal SWD Well 30-025-44863

Your WBD diagram shows an open-hole interval from the Straw through the Devonian
Your application is for the Devonian only
The Talco Well has been Plugged and Abandoned. You will need a wellbore diagram for this well

Mike

From: Alva Franco <afranco@rosehillres.com>
Sent: Wednesday, December 5, 2018 1:35 PM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Subject: [EXT] FW: Nkatata Federal SWD Well 30-025-44863

Mike,

Please see attachments:

Water analysis for the fresh water.

Revised ½ mile radius tabulation including the Tatanka Federal 001H well (producing).

Produced water from Halliburton.

Signed statement from C-108 questions by an Engineer.

After running the ad for the offset operators I will forward you green cards and published newspaper ad.
Yes, the surface owner was notified and it will be with the green cards when I submit them to you.

Thank you,
Alva Franco
281/675-3420

From: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Sent: Monday, October 15, 2018 5:17 PM
To: Alva Franco <afranco@rosehillres.com>
Subject: Nkatata Federal SWD Well 30-025-44863

Alva:

The OCD cannot process your application, because of the excessive number of unlocatables.

Get an updated mailing addresses for the affected parties (At least 2 of them have send administrative proposals to the OCD) or publish their names in a newspaper of general circulation in the county of the proposed SWD. You published a few of them; however, there were other unlocatables.

The OCD requires the green cards that shows proof of mailing to the affected parties

Further, I cannot determine who the surface owner is-Did you notice them-was it the BLM?

Get either a geologist or engineer to sign a statement about no connection to the injection interval and underground sources of drinking water. Regulatory Advisors lack technical expertise to sign the statement.

What is the status of the 19,600 foot well? You will be required to have a Well Bore Diagram before the application is recommended for signature.

You will need produced water samples for the different formations.

When you get the required information then the OCD will put your application into the system.

Mike

Michael McMillan
1220 South St. Francis
Santa Fe, New Mexico
505-476-3448
Michael.mcmillan@state.nm.us

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Notice: The information transmitted by this email is intended only for the person or entity to which it is addressed. This email may contain proprietary, business-confidential and/or privileged material. If you are not the intended recipient of this message, be aware that any use, review, retransmission, distribution, reproduction or any action taken in reliance upon this message is strictly prohibited. If you received this in error, please contact the sender and delete the material from all computers. Further, any contract terms proposed or purportedly accepted in this email are not binding and are subject to management's final approval as memorialized in a separate written instrument.

Additional Questions on C-108

VII.

1. **Proposed average and maximum daily rate and volume of fluids to be injected;** Average 20,000 BWPD, Max 30,000

2. **Whether the system is open or closed;** Closed System

3. **Proposed average and maximum injection pressure;** Average 1,800 PSI, Max 3,400

4. **Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than re-injected produced water; and,** - Wolfcamp produced water there is no known incompatibility exists with injected water is compatible with Devonian formation and is used as a disposal interval though the Delaware Basin for Wolfcamp produced water. See attached water analysis from Wolfcamp produced water.

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.).** See attached Lea County Devonian water samples.

***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.** The proposed disposal interval is in the Devonian-Silurian Formations 17,400 to 19,200. There are no fresh water zones underlying the proposed injection zone. Devonian is an impermeable Shale at the very top (Woodford Shale) followed by permeable dolomite and lime. Mud logs and Electric logs will be used to confirm the estimate depths of Woodford and Devonian Dolomite along with other significant tops. Usable water depth is from surface to a max of +/-300ft based on data from state Engineers office. No water wells are present in section 11, one well is present in section 30 of T24S, R35E, to a depth of 175". Source rock for a fresh water in this area is Santa Rosa.

6. **Describe the proposed stimulation program, if any.** 6,300 gallons 20% HCL acid job with packer

*X. **Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).** A mud log and Gamma/Neutron log will be run to confirm the estimated depths of the Woodford shale and Devonian Dolomite. These logs and cased hole logs will be filed with the omission following drilling operations.

*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.** No access to producing wells

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.** Rosehill Operating Company, LLC has reviewed and examined available geologic and engineering data in the area of interest for the Nkatata SWD #001 and have found no evidence of faults or other hydrologic connections between Devonian disposal zones and the underground sources of drinking water

Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: _____ TITLE: VP of Operations_ DATE: 12/05/2018

III. WELL DATA

(1) **Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.** Nkatata SWD #001, Sec. 11, T26S, R35E, 2006 FNL & 1156' FEL, UL H, Lea County, NM
(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.** Please see attachment
(3) **A description of the tubing to be used including its size, lining material, and setting depth.**
(4) **The name, model, model, and setting depth of the packer used or a description of any other seal system or assembly used.** 4-1/2" FG Lined set at 17,350' with a 4-1/2" AS1-X Packer @ 17,350'

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.
Devonian-Silurian Formations
Pool Name: SWD (Devonian-Silurian)
(2) The injection interval and whether it is perforated or open-hole.
17,400' to 19,200' OH
(3) State if the well was drilled for injection or, if not, the original purpose of the well.
New well to drill for injection
(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. N/A
(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. Next Higher: **Example** -Wolfcamp 12,000'-12,500, Morrow 13,500'-13,700', Bone Spring/Avalon 10,800'-12,000', Delaware 9,000'-9,500'

Next Lower: None

ROSEHILL OPERATING

16200 Park Row Ste 300
Houston, TX 77084

January 22, 2019

Mr. Mike McMillan
Oil Conservation Division
1220 South St. Francis
Santa Fe, New Mexico 87505

RE: Nkatata Federal SWD 001
Request for Additional Information

Mr. McMillan,

Per you're request listed below are the listed and attached.

1. Newspaper ad
2. Certified mail (green cards)
3. Updated wellbore diagram
4. Talco #1 well status (well data)
5. Water analysis
6. Talco wellbore diagram

Should you have any questions please feel free to contact me @281/675-3420 or you can email me at afranco@rosehillres.com.

Sincerely,

Alva Franco,
Regulatory Advisor

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Postage	$ $3.45	
Certified Fee	$2.75	
Return Receipt Fee (Endorsement Required)	$0.00	
Restricted Delivery Fee (Endorsement Required)	$0.00	
	$0.00	
	$0.50	
Total Postage & Fees	$ $6.70	

Postmark Here — OCT 2 2018 — ALBUQUERQUE — 10/23/2018 — 0109 — 05

Sent To: Crown Oil Partners LP

Street, Apt. No., or PO Box No.: 4000 North Big Springs St., Suite 310

City, State, ZIP+4: Midland, TX 79705

PS Form 3800

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Crown Oil Partners LP
4000 North Big Springs St., Suite 310
Midland, TX 79705

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☐ Agent ☐ Addressee

B. Received by (Printed Name) Tina L. Nelson

C. Date of Delivery 10/24/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

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Certified Mail Fee $ $3.45

Extra Services & Fees (check box, add fee as appropriate) $2.75

☐ Return Receipt (hardcopy)	$	$0.00
☐ Return Receipt (electronic)	$	$0.00
☐ Certified Mail Restricted Delivery	$	$0.00
☐ Adult Signature Required	$	$0.00
☐ Adult Signature Restricted Delivery	$	

Postage $ $0.50

Total Postage and Fees $ $6.70

Postmark Here — OCT 23 2018 — ALBUQUERQUE — 10/23/2018 — 0109 — 05

Sent To: COG Operating LLC

Street and Apt. No.: One Concho Center, 600 West Illinois Avenue

City, State, ZIP+4®: Midland, TX 79701

PS Form 3800, April

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1. Article Addressed to:

COG Operating LLC
One Concho Center
600 West Illinois Avenue
Midland, TX 79701

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☐ Agent ☐ Addressee

B. Received by (Printed Name) E.R

C. Date of Delivery 10-26

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

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Return Receipt Fee (Endorsement Required)	$0.00 / $0.00
Restricted Delivery Fee (Endorsement Required)	$0.00 / $0.00
Total Postage & Fees	$6.70

0109 05

Postmark Here

OCT 23 2018

Sent To
One Energy Partners, LLC
Street, Apt. No., or PO Box No. 2929 Allen Parkway, Suite 200
City, State, ZIP+4 Houston, TX 77019

PS Form 3800,

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1. Article Addressed to:

One Energy Partners, LLC
2929 Allen Parkway, Suite 200
Houston, TX 77019

2. Ar
(Tr

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☒ Agent
☐ Addressee

B. Received by *(Printed Name)* B White
C. Date of Delivery 11/7/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

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Certified Fee	$0.00
Return Receipt Fee (Endorsement Required)	$0.00 / $0.00
Restricted Delivery Fee (Endorsement Required)	$0.00
Total Postage & Fees	$6.70

0109 05

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OCT 23 2018

Sent To
Endurance Resources
Street, Apt. No., or PO Box 15455 Dallas Parkway, Suite 1050
City, State, ZIP+4 Addison, TX 75001

PS Form 3

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1. Article Addressed to:

Endurance Resources
15455 Dallas Parkway, Suite 1050
Addison, TX 75001

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☐ Addressee

B. Received by *(Printed Name)* Brad Bost
C. Date of Delivery 10-26-18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

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Certified Fee	$0.00
Return Receipt Fee (Endorsement Required)	$0.00
Restricted Delivery Fee (Endorsement Required)	$0.00
Total Postage & Fees	$6.70

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ALBUQUERQUE NM 87109 USPS
10/23/2018

Sent To
Ameredev II, LLC
Street, Apt. or PO Box
5707 Southwest Pkwy Bldg. 1, Ste. 275
City, State,
Austin, TX 78735

PS Form 38

7004 2510 0006 5140 9185

SENDER: COMPLETE THIS SECTION

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ameredev II, LLC
5707 Southwest Pkwy Bldg. 1, Ste. 275
Austin, TX 78735

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) K. Adams
C. Date of Delivery 10/26/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
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Certified Fee	$2.75
Return Receipt Fee (Endorsement Required)	$0.00
Restricted Delivery Fee (Endorsement Required)	$0.00
Total Postage & Fees	$6.70

Postmark Here
NOV 5 2018
ALBUQUERQUE NM 87109 USPS
11/05/2018

Sent To
NGL Energy Partners LP
Street, Apt. or PO Box
2900 North Loop West, Suite 1250
City, State,
Houston, TX 77092

PS Form 38

7004 2510 0006 5140 9208

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

NGL Energy Partners LP
2900 North Loop West, Suite 1250
Houston, TX 77092

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Monica Ramirez
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7004 2510 0006 5140 9208

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Chevron Corporation
1400 Smith St.
Houston, TX 77002

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
11-6-18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Deliver? (Extra Fee) ☐ Yes

2. A
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7016 3560 0000 1220 4593

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HOUSTON TX 77002

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Certified Mail Fee	$3.45
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.50
Total Postage and	$6.70

0109 05
Postmark Here
OCT 23 2018

Sent To
Street and Apt. No.
City, State, ZIP+4

Chevron Corporation
1400 Smith St.
Houston, TX 77002

PS Form 3800,

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7016 3560 0000 1220 4586

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7016 3560 0000 1220 4586

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Total Postage and	$6.70

0109 05
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OCT 23 2018

10/23/2018

Sent To
Street and Apt.
City, State, ZIP+

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103

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ALBUQUERQUE USPS OCT 2 2018 0109 05

10/23/2018

Sent To: Devon Energy Production

Street, Apt. No.; or PO Box No.: 333 West Sheridan Avenue

City, State, ZIP+4: Oklahoma City, OK 73102

PS Form 3800, Ju

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Devon Energy Production
333 West Sheridan Avenue
Oklahoma City, OK 73102

COMPLETE THIS SECTION ON DELIVERY

A. Signature X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

CENTER CITY, OK 73102 OCT 26 2018 USPS

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 2510 0006 5140 9161

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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MIDLAND, TX 79701

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Postage	$ $3.45
Certified Fee	$2.75
Return Receipt Fee (Endorsement Required)	$0.00
Restricted Delivery Fee (Endorsement Required)	$0.00
	$0.50
Total Postage	$ $6.70

Postmark Here

ALBUQUERQUE USPS OCT 2 2018 0109 05

10/23/2018

Sent To: Caza Operating LLC

Street, Apt. No. or PO Box No.: 200 N Loraine St

City, State, ZIP: Midland, TX 79701

PS Form 3800,

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Caza Operating LLC
200 N Loraine St
Midland, TX 79701

COMPLETE THIS SECTION ON DELIVERY

A. Signature X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 10/29/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 2510 0006 5140 9130

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7016 3560 0000 1220 4609

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IRVING, TX 75060

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Certified Mail Fee $3.45

Extra Services & Fees (check box, add fee as appropriate)
- ☐ Return Receipt (hardcopy) $0.00
- ☐ Return Receipt (electronic) $0.00
- ☐ Certified Mail Restricted Delivery $0.00
- ☐ Adult Signature Required $0.00
- ☐ Adult Signature Restricted Delivery $

Postage $0.50

Total Postage ar $6.70

Sent To Sinclair Energy Corporation

Street and Apt. N 1224 Parkrow Place

City, State, ZIP+ Irving, TX 75060

PS Form 3800, April

Postmark Here

10/23/2018

Street, NE
New Mexico 87109

CERTIFIED MAIL

7016 3560 0000 1220 4609

RETURN RECEIPT REQUESTED

U.S. POSTAGE PAID
FCM LETTER
ALBUQUERQUE, NM
87109
OCT 23, 18
AMOUNT
$6.70
09180-05

Sinclair Energy Corporation
1224 Parkrow Place
Irving, TX 75060

NIXIE 759 DE 1 0012/03/18

RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

UNC BC: 87109341247 *0968-01791-23-40

87109>3417
75060>4900 C

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SAN ANTONIO, TX 78231

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	$0.00
Return Receipt Fee (Endorsement Required)	$0.00
	$0.00
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$6.70

Postmark Here
OCT 23 2018

Sent To
Olsen Energy Inc
Street, Apt. No. or PO Box No. 3512 Paesanos Parkway # 102
City, State, ZIP San Antonio, TX 78231

PS Form 3800,

Street, NE
New Mexico 87109

CERTIFIED MAIL™

7004 2510 0006 5140 9147

B/C

Olsen Energy Inc
3512 Paesanos Parkway # 102
San Antonio, TX 78231

U.S. POSTAGE PAID
FCM LETTER
ALBUQUERQUE, NM
87109
OCT 23 18
AMOUNT $6.70

NIXIE 782 EE 1 0111/01/18
RETURN TO SENDER

78231$1247 CO

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CORPUS CHRISTI, TX 78410

OFFICIAL USE

Postage	$2.75
Certified Fee	$0.00
	$0.00
Return Receipt Fee (Endorsement Required)	$0.00
	$0.00
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$6.70

Postmark Here
OCT 23 2018

Sent To
Jubilee Energy Corps
Street, Apt. No. or PO Box No. 12129 Up River Road
City, State, ZIP Corpus Christi, TX 78410

PS Form 3800,

7004 2510 0006 5140 9154

reet, NE
w Mexico 87109

CERTIFIED MAIL™

7004 2510 0006 5140 9154

bilee Energy Corps
129 Up River Road
ous Christi, TX 7841C

U.S. POSTAGE PAID
FCM LETTER
ALBUQUERQUE, NM
87109
OCT 23 18
AMOUNT $6.70

NIXIE 782 EE 1 0110/30/18
RETURN TO SENDER
NOT DELIVERABLE AS ADDRESSED
UNABLE TO FORWARD

78410$3326 CO

BC: 87109541247 *0968-01796-23-40

Rosehill Operating Company LLC
16200 Park Row, Suite 300
Houston, TX 77084

October 23, 2018

VIA CERTIFIED RETURN RECEIPT

ATTACHED LIST OF INTERESTED PARTIES

SUBJECT: APPLICATION FOR AUTHORIZATION TO INJECT INTO NKATATA UNIT WELL (API 30-025-44863)

Dear Sir or Madam:

Rosehill Operating Company,LLC is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water into Nkatata Federal SWD 001, in the Devonian-Silurian formation. You are receiving this package because you have been identified as having past or current interest in acreage near the vicinity of our proposed activity.

The well is located in Section 11, Township 26S, Range 35E of Lea County, NM at 2006' FNL & 1156' FEL.

According to Rule 701C the State of New Mexico, Oil Conservation Division, Engineering Bureau (1220 South St. Francis Drive, Santa Fe, NM 87505) can make a decision on our application after 15 days, if no objection is received.

If you have any questions regarding the enclosed application, I can be reached at the address above, phone (281-675-3420), or email (afranco@rosehillres.com).

Sincerely,

Alva Franco

Alva Franco
Regulatory and Production Advisor
Rosehill Operating Company LLC

Enclosures

List Interested of Parties:

Endurance Resources
15455 Dallas Parkway, Ste. 1050
Midland, TX 79701

COG Operating LLC
One Concho Center
600 West Illinois Avenue
Midland, TX 79701

Chevron Corporation
1400 Smith St.
Houston, TX 77002

Ameredev II, LLC
5707 Southwest Pkwy Bldg. 1, Ste. 275
Austin, TX 78735

One Energy Partners, LLC
2929 Allen Parkway, Suite 200
Houston, TX 77019

Sinclair Energy Corporation
1224 Parkrow Place
Irving, TX 75060

Crown Oil Partners LP
4000 North Big Springs St., Ste.310
Midland, TX 79705

Caza Operating LLC
200 N Loraine St
Midland, TX 79701

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103

Devon Energy Production
333 West Sheridan Avenue
Oklahoma City, OK 73102

Olsen Energy Inc
3512 Paesanos Parkway # 102
San Antonio, TX 78231

Jubilee Energy Corps
12129 Up River Road
Corpus Christi, TX 78410

Max M. Wilson, Sinclair et al.
Address Not Found

Ford, D. H. and Hayne, E. L.
Address Not Found

Nkatata Federal SWD Well No. 001

Location: Sec 11, T26S, R35E, Lea County, NM

Estimated Pre-Drill Formation Tops

Rustler:	757'
Lamar:	5094'
Bell Canyon:	5151'
Cherry Canyon:	6362'
Brushy Canyon:	7604'
Bonespring Lime:	8862'
Avalon:	8876'
1st Bonespring:	10066'
2nd Bonespring:	10448'
3rd Bonespring:	11857'
Wolfcamp A:	12108'
Wolfcamp B:	12446'
Wolfcamp C:	12917'
Strawn:	13575'
Atoka:	14254'
Morrow:	14920'
Barnett:	15435'
Mississippian:	16760'
Woodford:	17224'
Devonian:	17585'
Silurain	17950'
Simpson:	19771'
Ellen:	20514'

Oilfield Labs of America
3302 Pilot Ave.
Midland, Texas 79706
432-789-1860

Report Date: 12/4/2018

Complete Water Analysis

Customer:	Multi-chem	**Account Rep:**	Ti Zhao
Operator:	Rosehill Resources	**Sample ID:**	01181130157
Lease:	Tatanka Fed Fresh Water	**Sample Date:**	11/29/2018
Sample Point:	NP	**Received Date:**	11/30/2018
Region:	Pecos	**Log Out Date:**	12/4/2018

Multi-chem, Rosehill Resources, Tatanka Fed Fresh Water,NP

Field Data	
Initial Temperature (°F):	190
Final Temperature (°F):	80
Initial Pressure (psi):	1250
Final Pressure (psi):	15

Dissolved Gases	
Dissolved CO_2 (ppm):	ND
Dissolved H_2S (ppm):	0.7

Sample Parameters	
pH:	8.2
Calculated TDS (mg/L):	1188
Calculated Density (g/cm³):	0.9979
Total Hardness (mg/L $CaCO_3$):	454
Total Alkalinity (mg/L $CaCO_3$):	192

Analysis of Sample					
Anions:	**mg/L**	**meq/L**	**Cations:**	**mg/L**	**meq/L**
Chloride (Cl^-):	150	4.2	Sodium (Na^+):	155	6.8
Sulfate (SO_4^{2-}):	250	5.2	Potassium (K^+):	8.6	0.2
Bicarbonate (HCO_3^-):	234	3.8	Magnesium (Mg^{2+}):	41.8	3.4
Carbonate (CO_3^{2-}):	ND		Calcium (Ca^{2+}):	112	5.6
Hydroxide (OH^-):	ND		Strontium (Sr^{2+}):	2.4	0.1
			Barium (Ba^{2+}):	ND	
Phosphate (PO_4^{3-}):	0.3	0.0	Iron (Fe, Total):	ND	
Borate (H_3BO_3):	12.3	0.2	Manganese (Mn^{2+}):	ND	
Silica (SiO_2):	46.9	0.8	Lead (Pb^{2+}):	0.2	0.0
			Zinc (Zn^{2+}):	0.3	0.0
			Lithium (Li^+):	0.1	0.0
			Aluminum (Al^{3+}):	ND	
Anion EPM Total:		14	Cation EPM Total:		16
% RPD of Cations/Anions:		12.0%			

N/A - Not Analyzed

ND = Not Detected

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.00	0.000	0.98	11.946	-1.18	0.000	-1.54	0.000
92°F	152 psi	0.00	0.000	1.00	12.709	-1.18	0.000	-1.46	0.000
104°F	289 psi	0.00	0.000	1.02	13.630	-1.18	0.000	-1.37	0.000
117°F	427 psi	0.00	0.000	1.05	14.715	-1.17	0.000	-1.29	0.000
129°F	564 psi	0.00	0.000	1.08	15.966	-1.15	0.000	-1.21	0.000
141°F	701 psi	0.00	0.000	1.11	17.386	-1.14	0.000	-1.13	0.000
153°F	838 psi	0.00	0.000	1.15	18.972	-1.12	0.000	-1.05	0.000
166°F	976 psi	0.00	0.000	1.19	20.719	-1.11	0.000	-0.97	0.000
178°F	1113 psi	0.00	0.000	1.24	22.616	-1.09	0.000	-0.88	0.000
190°F	1250 psi	0.00	0.000	1.29	24.648	-1.08	0.000	-0.80	0.000

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-1.11	0.000	-6.25	0.000	0.00	0.000	0.00	0.000
92°F	152 psi	-1.12	0.000	-6.27	0.000	0.00	0.000	0.00	0.000
104°F	289 psi	-1.12	0.000	-6.28	0.000	0.00	0.000	0.00	0.000
117°F	427 psi	-1.12	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
129°F	564 psi	-1.10	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
141°F	701 psi	-1.09	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
153°F	838 psi	-1.06	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
166°F	976 psi	-1.03	0.000	-6.30	0.000	0.00	0.000	0.00	0.000
178°F	1113 psi	-1.00	0.000	-6.29	0.000	0.00	0.000	0.00	0.000
190°F	1250 psi	-0.96	0.000	-6.29	0.000	0.00	0.000	0.00	0.000

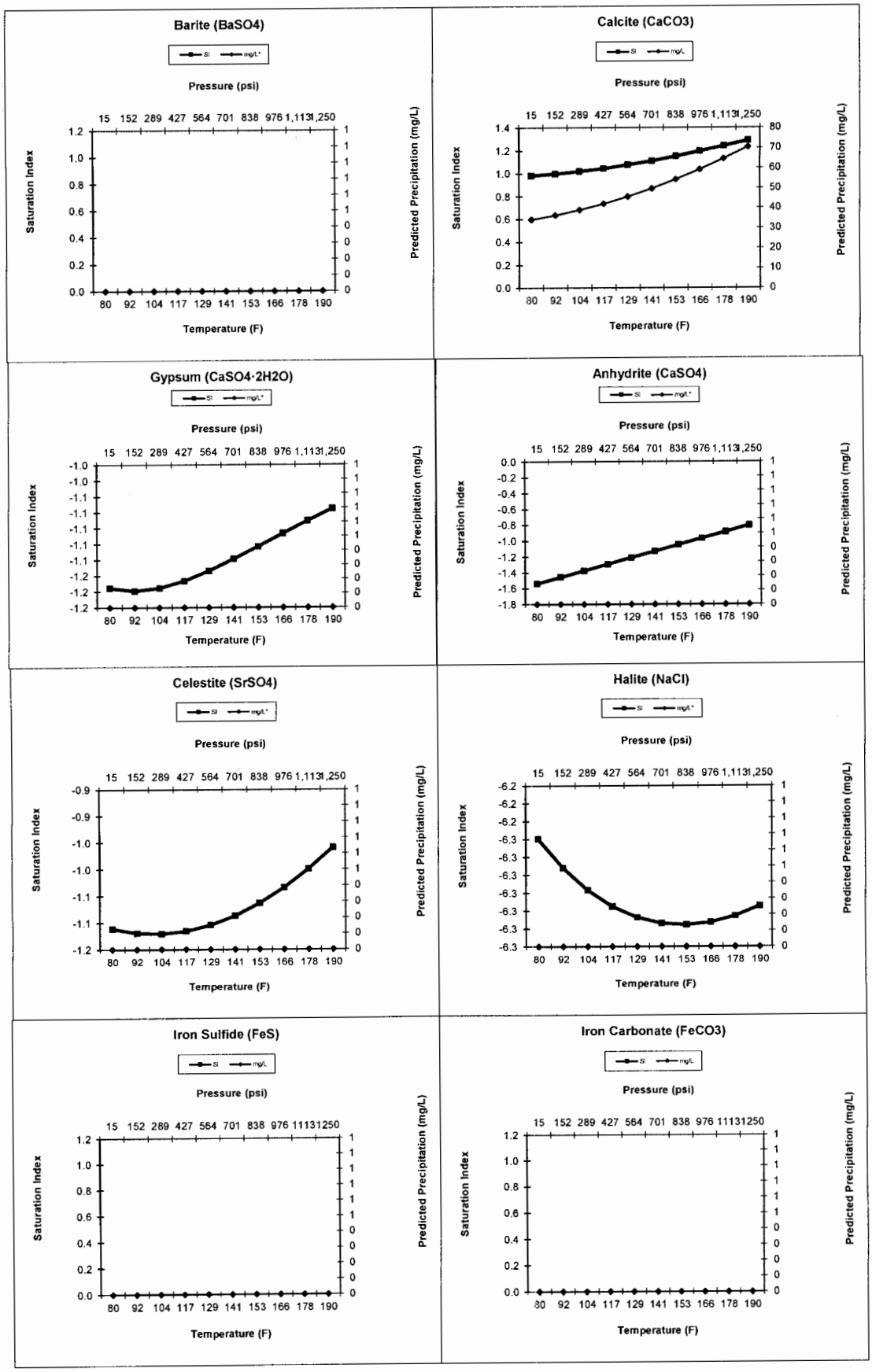
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

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; $\%CO_2$ is not included in the calculations.

Comments: _____

Sample ID: 01181130157 Multi-chem, Rosehill Resources, Tatanka Fed Fresh Water,NP



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 09, 2018
and ending with the issue dated
December 09, 2018.

Publisher

Sworn and subscribed to before me this
9th day of December 2018.

Business Manager

My commission expires
January 29, 2019
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-19

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 NOTICE
DECEMBER 9, 2018

Rosehill Operating Company (16200 Park Row, Ste 300, Houston, TX 77084, Contact: Alva Franco at 281-365-3420) is seeking administrative approval from the New Mexico Oil Conservation Division to inject produced water in the Nkatata Federal SWD 001, in the Devonian-Silurian formation.

The well is located in Township 26S, Range 35E, Sec. 11, Lea County, NM. Nkatata SWD well will be located 2006' FNL and 1156' FEL, with an injection interval 17,400' to 19,200' TVD. The maximum injection rate will be 30,000 barrels of produced water per day. Maximum injection pressure will be 3400 psi for produced water at the surface for the well.

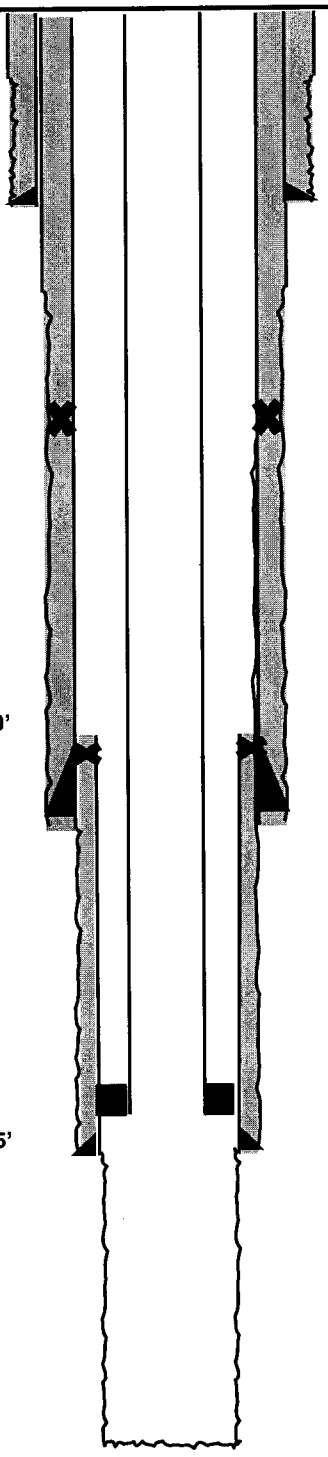
Lease holders within a one-mile radius of the injection well were sent letters notifying them of the proposed project. Rosehill was unable to contact the following operators: Olsen Energy Inc., Jubilee Energy Corps, Sinclair Energy Corporation and One Energy Partners. Interested parties must file objections or request for hearing with the New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, New Mexico 87504 within 15 days of this notice.
#33520

67113387 00222081

SHANNON MANFREDI
SWCA ENVIRONMENTAL CONSULTANTS
130 ROCK POINT DRIVE, STE A
DURANGO, CO 81301

Nkatata Federal SWD
#001
Lea County, New Mexico
Proposed Wellbore API:
30-025-44863

2083' FNL
1753' FEL
Section 11
T-26-S, R-35-E



Bit Size: 17 1/2"

13 3/8" 54.5#, J-55, ST&C 0' - 925'

TOC on 13 3/8" - surface

Bit Size: 12 1/4"

DL packer stage collar w/ ECP @ 5000'

TOC on 9 5/8" - surface

9 5/8" 53.5# HCP110 BTC 0'-12700'

TOC on 7 5/8" – 12500'

Bit Size: 8 1/2"

4-1/2", 11.6#, P110 to 17,535'

7-5/8" x 4-1/2" AS1-X Packer @ 17,535'

7 5/8" 39# P110 FJL 12500'-17585'

6 ½" open hole 17585'-19200'

TATANKA FEDERAL-
Nkatata #SWD 1 Application for Injection
of Well Data for Wells Within the Area of Review (1/2 Mi. Radius)
May 2018

C	TWP	RNG	NSFTG	EWFTG	Surf Long	Surf Lat	BH Long	BH Lat	CO	ELEV KB	ELEV GR	SPUD DATE	PLUG DATE	TD	SURF CSG-SIZE
	26S	35E	330 FNL	330 FEL	-103.330305	32.064034			LEA	3016	3005	4/30/1964	5/13/1964	5300	
	26S	35E	1980 FNL	660 FEL	-103.331437	32.059503			LEA	3074	3047	4/15/1980	3/14/2018	19600	
	26S	35E	230 FSL	790 FWL	-103.344890	32.051159	-103.344303	32.064489	LEA	3064	3047	5/28/2018-producing		17163	
	26S	35E	230 FSL	1923FWL	-103.340169	32.051063	-103.340564	32.064466	LEA		3064	TBD			
	26S	35E	230 FSL	1984 FWL	-103.339972	32.051063	-103.340128	32.06447	LEA		3066	TBD			
	26S	35E	230 FSL	436 FEL	-10 3.330715	32.051025	-103.330654	32.064363	LEA		3030	TBD			
	26S	35E	230 FSL	411 FEL	-103.330634	32.051025	-103.330573	32.064363	LEA		3030	TBD			
	26S	35E	230 FSL	765 FWL	-103.344370	32.051159	-103.344837	32.064132	LEA		3064	TBD			

ROSEHILL OPERATING COMPANY, LLC
Talco Unit Well No. 1
Talco Strawn
NM 12280
API No. 30-025-26747
Final Wellbore Schematic

Prepared By: Tim McGilvray