**STATE OF NEW MEXICO**
**ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT**
**OIL CONSERVATION COMMISSION**

**APPLICATION OF TARGA NORTHERN DELAWARE, LLC FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO.** **CASE NO. 23463**

**TARGA NORTHERN DELAWARE, LLC'S**
**NOTICE OF AMENDED C-108 APPLICATION**

Targa Northern Delaware, LLC ("Targa") is submitting to the New Mexico Oil Conservation Commission ("Commission") an Amended C-108 Application for Authorization to Inject, which has been updated with respect to the well location. Specifically, Targa proposes to move the well from a location 1338 feet from the north line and 354 feet from the east line (Unit H), Section 13, Township 24 South, Range 33 East to a location 652 feet from the south line and 307 feet from the east line (Unit P), Section 13, Township 24 South, Range 33 East. Targa's proposal to relocate the well does not impact any new Affected Parties, and Targa is providing notice of the amended application to the parties who were notified of its original application for authorization to inject, which was filed on February 20, 2023. A copy of the Amended C-108 is attached as Exhibit A.

Respectfully submitted,

HINKLE SHANOR LLP

*/s/ Dana S. Hardy*
Dana S. Hardy
Jaclyn M. McLean
Yarithza Peña
P.O. Box 2068
Santa Fe, NM 87504-2068
Phone: (505) 982-4554
dhardy@hinklelawfirm.com
jmclean@hinklelawfirm.com
ypena@hinklelawfirm.com
*Counsel for Targa Northern Delaware, LLC*

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing notice was served on the following counsel by electronic mail on this 19th day of May, 2023:

Jesse Tremaine
Chris Moander
Assistant General Counsel
New Mexico Energy, Minerals, and
Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
(505) 741-1231
(505) 231-9312
jessek.tremaine@emnrd.nm.gov
chris.moander@emnrd.nm.gov
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*Matador Production Company*

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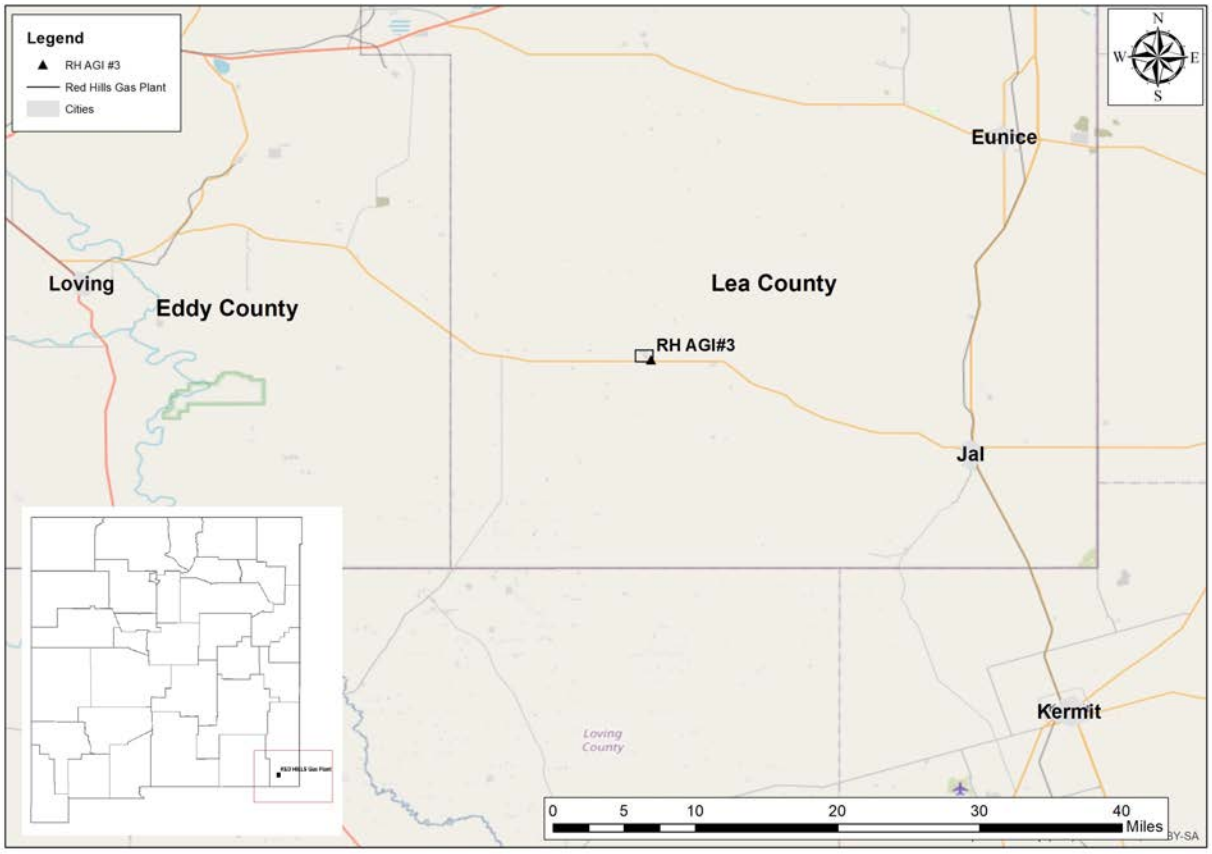
*Attorneys for ConocoPhillips Company*

*/s/ Dana S. Hardy*
Dana S. Hardy

# Amended Application for a Class II AGI Well Targa Northern Delaware LLC

## Red Hills AGI #3

## Well Location: Section 13 T24S,




May 18, 2023

***Prepared for:***
Targa Northern Delaware LLC
811 Louisiana Street
Houston, TX 77002

***Prepared by:***
New Mexico Tech
Petroleum Recovery Research Center
801 Leroy Place
Socorro, NM 87832

Exhibit A

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 ____X____Disposal _____Storage
Application qualifies for administrative approval. _____Yes __X_____No

II. OPERATOR: __**Targa Northern Delaware LLC**_____
ADDRESS: __**811 Louisiana Street Houston, Texas 77002**_____
CONTACT PARTY: __**Clark White Executive VP of Operations** _____PHONE: _ **(713)584-1525**_____

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? ____X_____Yes _____No
If yes, give the Division order number authorizing the project: **Orders R-13507-13507F** _____

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. **Section 9**

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. **Section 5**

VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected. **Section 3.3**
2. Whether the system is open or closed. **Section 3.1**
3. Proposed average and maximum injection pressure. **Section 3.1 Table**
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and **Section 3.3**
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.). **N/A**

*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. **Section 4.3**

IX. Describe the proposed stimulation program, if any. **N/A**

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
**WELLS ARE NOT YET DRILLED**

*XI. Attach a chemical analysis of fresh water from two or more freshwater wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken. **Section 10**

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. **Section 7**

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
**WE WILL NOTIFY OPERATORS AND LEASEHOLD OWNERS AND SURFACE OWNERS WITHIN THE AREA OF REVIEW PURSUANT TO NMOCD REGULATIONS AND WE WILL SUBMIT AFFIDAVITS OF PUBLICATION OF NOTICE AND CERTIFIED MAIL RETURN RECEIPTS AT HEARING**

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: ___ **Clark White** TITLE: ___ **Executive VP of Operations** _____
SIGNATURE: _____ DATE: __May 18, 2023_____
E-MAIL ADDRESS: ___ **cwhite@targaresources.com** _____

XV. 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,

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

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

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

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used, or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

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

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open hole.

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

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant.

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells.

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED

OPERATOR: TARGA NORTHERN DELAWARE LLC

WELL NAME & NUMBER: RED HILLS AGI #3

WELL LOCATION: 652' FSL & 307' FEL UNIT P, SECTION 13 T 24S R33E LEA COUNTY, NEW MEXICO

**WELL CONSTRUCTION DATA**

**SURFACE CASING**

HOLE SIZE: 24" CASING SIZE: 20" BTC 106.5 LB/FT, J-55 set at 1,143'

Cemented with: 2500 sx Cement @ 2.0 & 1.32 cu. Ft/sk

Top of Cement: Circulate to Surface

**1ST INTERMEDIATE CASING**

HOLE SIZE: 17 1/2" CASING SIZE: 13 3/8" BTC 72 LB/FT, L-80 set at 5,277'

Cemented with: 2000 sx Cement @ 2.0 & 1.32 cu. Ft/sk

Top of Cement: Circulate to Surface

**2nd INTERMEDIATE CASING**

HOLE SIZE: 12 1/4" CASING SIZE: 9 5/8" BTC 47 LB/FT, L-80 0-6200'
9 5/8" BTC 47 LB/FT, G3 CRA 6200'-6700'
9 5/8" BTC 47 LB/FT, L-80 6700-12282'

Cemented with: 2000 sx Cement @ 2.2 & 1.50 cu. Ft/sk in 3 stages with DV tools at 6200' and 6700'

Top of Cement: Circulate to Surface

**PRODUCTION CASING**

HOLE SIZE: 8 1/2" CASING SIZE: 7" BTC 32 LB/FT, P-110 0-15,770'
7" BTC 32 LB/FT, G-3 CRA 15,770'-16,090'

Cemented with: 1000 sx Cement @ 2.4 & 1.4 cu. Ft/sk

Top of Cement: Circulate to Surface

**OPEN HOLE INJECTION ZONE**

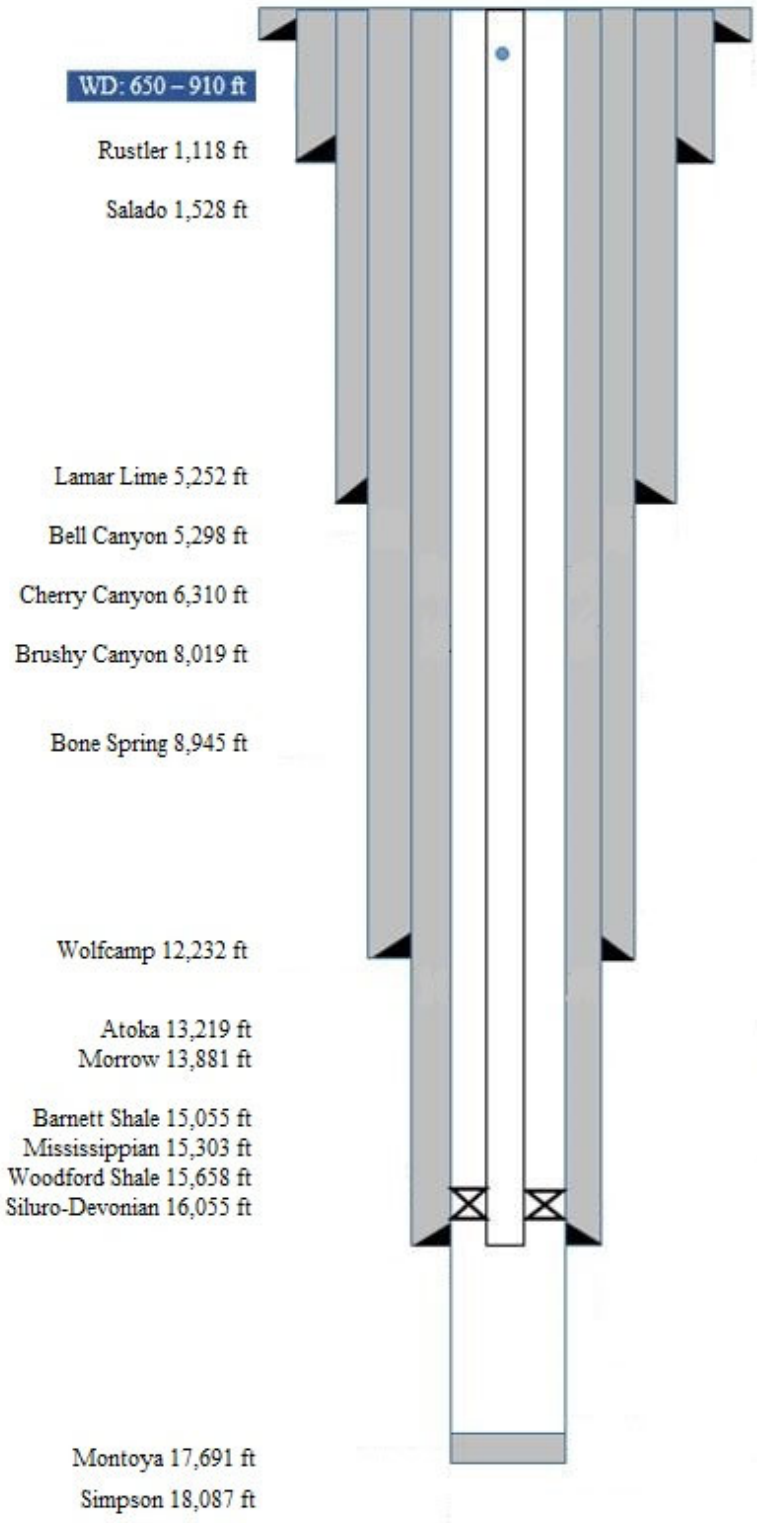
HOLE SIZE: 5 7/8" FROM 16,090' to 17,600'

**INJECTION TUBING**

3 1/2" 7.7 & 9. LB/FT G3 CRA Tubing set at 16,040'

HOWCO Permanent CRA Packer set at 16,040'

# Red Hills AGI#3 Wellbore Diagram




**Conductor:**
30-in, 157 lb/ft
42-in OH at 100 ft
SSSV at 175 ft

**Surface Casing:**
20-in, 106.5 lb/ft, J55, BTC
26-in OH at 1,143 ft
Cement to surface

**Intermediate Casing #1:**
13 3/8-in, 72 lb/ft, L80, BTC
17 1/2-in OH at 5,277 ft
Cement to surface

**Intermediate Casing #2:**
9 5/8-in, 47 lb/ft, L80, BTC, 0 ft-6,200 ft
9 5/8-in, 47 lb/ft, G3 CRA, VAM, 6,200 ft-6,700 ft
9 5/8-in, 47 lb/ft, L80, BTC, 6,700 ft-12,282 ft
12 1/4-in OH at 12,282 ft
Cement to surface

**Production Casing:**
7-in, 32 lb/ft, P110, BTC 0 ft-15,770 ft
7-in, 32 lb/ft, G3 CRA, BTC 15,770 ft-16,090 ft
8 1/2-in OH at 16,090 ft
Cement to surface

**Tubing:**
3 1/2-in, 9.2 lb/ft, G3 CRA, 0 ft-16,040 ft
Permanent packer, CRA, 16,040 ft

**Open Hole:**
5 7/8-in, 16,090 ft-17,600 ft

# Contents

## 1 Executive Summary

On behalf of Targa Northern Delaware LLC (Targa), the Petroleum Recovery Research Center at New Mexico Institute of Mining and Technology (NMT) has prepared a complete C-108 application for approval to drill, complete and operate a redundant acid gas injection well (Red Hills AGI #3) at the Targa Red Hills Gas Plant in Section 13 T24S, R33E approximately 20 miles west of Jal in Lea County, New Mexico (Figure 1).

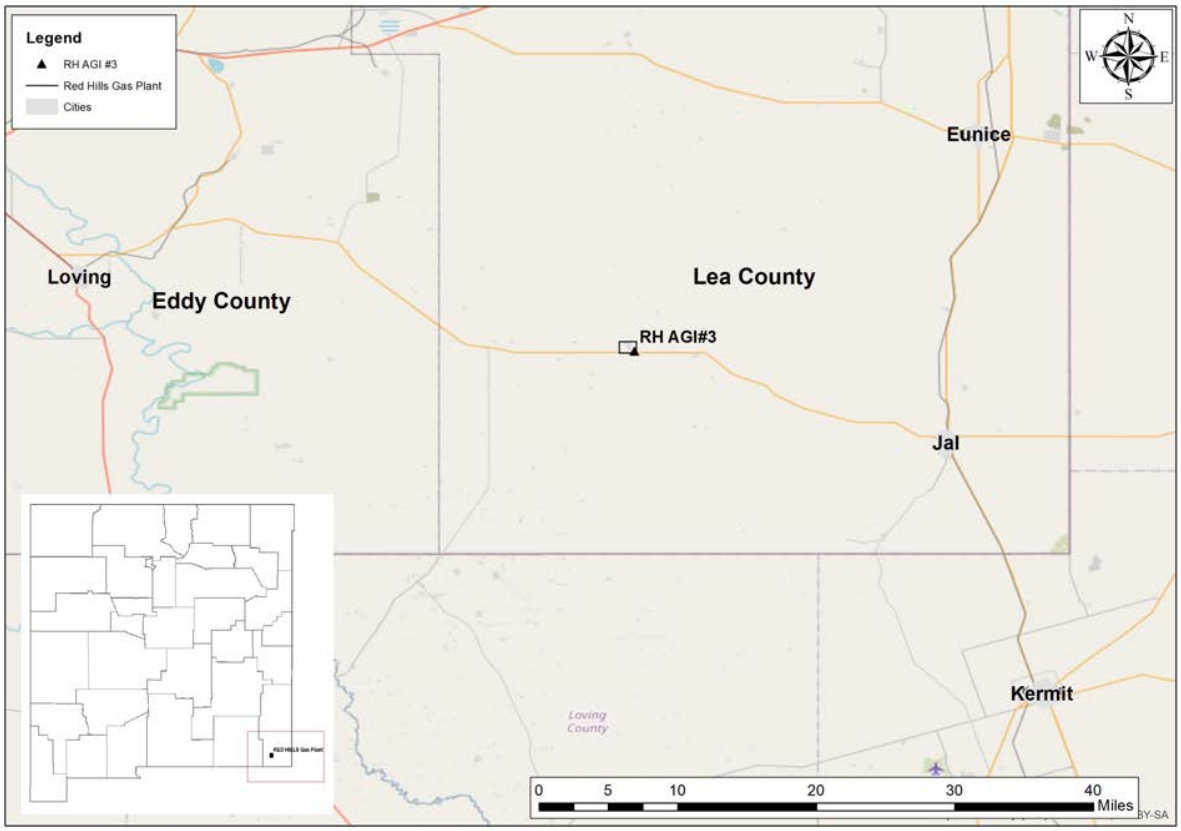
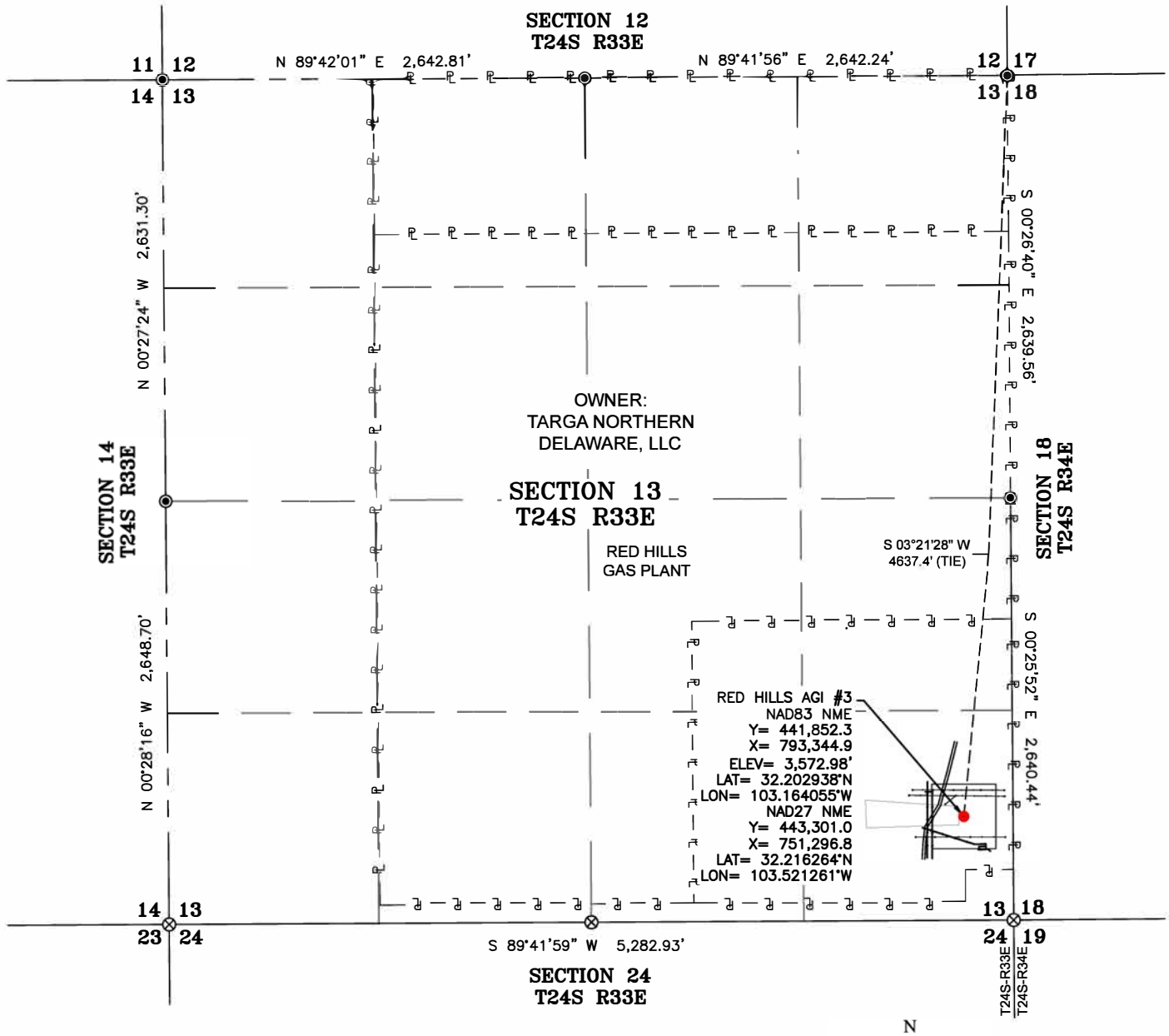



*Figure 1 Location of Targa Red Hills Gas Plant and proposed Red Hills AGI #3.*

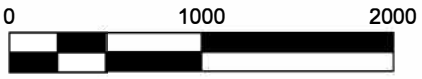
The Red Hills AGI #3 well will be drilled as a vertical well with the surface location at approximately 652 feet from the south line (SNL) and 307 feet from the east line (FEL) of Section 13. The proposed injection zones for this well are the Devonian and Upper Silurian Wristen and Fusselman Formations, at depths of approximately 16,000 to 17,600 feet. Analysis of the reservoir characteristics of these units confirms that they act as excellent closed-system reservoirs that will accommodate the future needs of Targa for disposal of acid gas ($H_2S$ and $CO_2$) from the Red Hills Plant.

# SECTION 13, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
## LEA COUNTY, NEW MEXICO




RED HILLS SE WELL
SECTION LINE DISTANCE
SHL 652' FSL & 307' FEL






1" = 1,000 FEET

- BEGIN, END OR ANGLE POINT
- FOUND USGLO BRASS CAP
- CALCULATED CORNER
- PROPERTY LINE
- SECTION LINE

I, Stanley W. Drannon, New Mexico PLS No. 23002, hereby certify this survey made on the ground under my supervision. This survey meet the minimum standards for surveying in New Mexico.

5/9/23
STANLEY W. DRANNON Date
NEW MEXICO R.P.L.S. NO. 23002

NOTES:
1. BEARINGS AND DISTANCES CONFORM TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD83, IN U.S. SURVEY FEET.

| | |
|---|---|
| DRAWN BY: ALT | SCALE: 1" = 1000' |
| CHECKED: JS | W.O. No.: TAR-028 |
| DATE: 5/9/23 | |
| AFE: | |
| REV: | |

WELL LOCATION PLAT
RED HILLS AGI #3

PROSPECT SURVEYING
9231 BOAT CLUB ROAD, FORT WORTH TX 76179
PH: 817-999-7385 FIRM NO. 10194267

TARGA

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| | 97885 | ACID GAS INJECTION: DEVONIAN |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| | RED HILLS AGI | 3 |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| | TARGA NORTHERN DELAWARE, LLC | 3572.98' |

## [10] Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| P | 13 | 24 S | 33 E | | 652 | SOUTH | 307 | EAST | LEA |

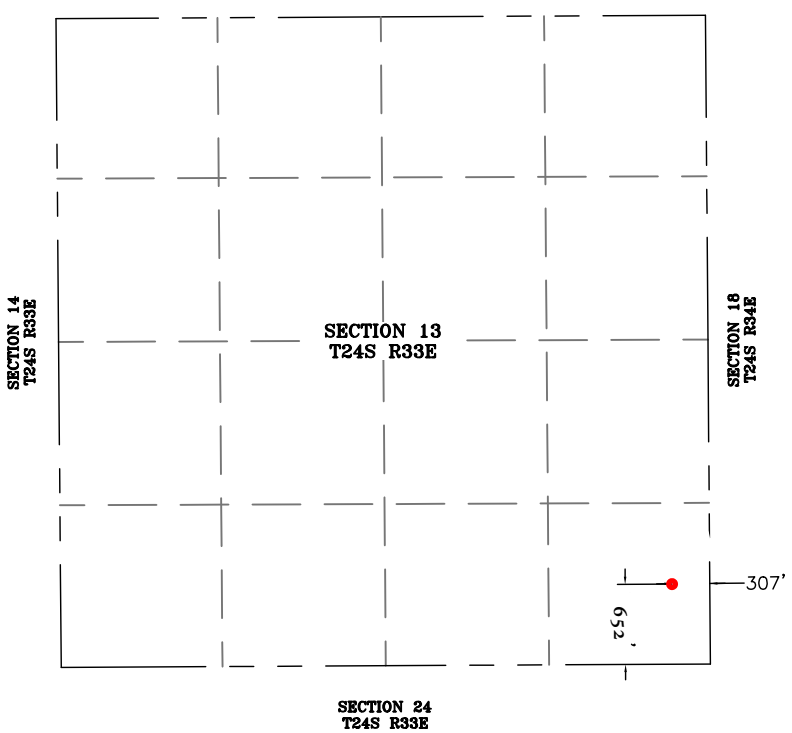
## [11] Bottom Hole Location If Different From Surface

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

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] 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.

[16]




NAD 83 NME
SUFACE HOLE LOCATION
Y= 441,852.3
X= 793,344.9
ELEV= 3,572.98'
LAT= 32.202 38°N
LON= 103.164055°W

NAD 27 NME
SUFACE HOLE LOCATION
Y= 443,301.0
X= 751,296.8
ELEV= 3,572.98'
LAT= 32.216264°N
LON= 103.521261°W

## [17] 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.*

Signature Date

Printed Name

E-mail Address

## [18] 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.*

5/9/23
Date of Survey
Signature and Seal of Professional Surveyor:


STANLEY W. DRANNON 23002
Certificate Number ALT TAR-028

Targa is requesting an injection volume of up to 26 million standard cubic feet per day (MMSCFD) treated acid gas (TAG) for the Red Hills AGI #3. Targa is currently authorized to inject up to 13 MMSCFD each of treated acid gas (TAG) in the Red Hills AGI #1 (30-025-40448) and Red Hills AGI #2 (30-025-49474) under NMOCC Orders R-13507-13707F and Order R-20916-H, respectively. AGI #1 injects TAG into the Cherry Canyon Formation of the Delaware Mountain Group at a depth of ~6,120 feet; AGI #2, not yet completed, will inject into porous and permeable carbonate units of the Devonian, Upper Silurian Wristen, and Fusselman formations at depths of ~16,000-17,500 ft. Although approved at 13 MMSCFD, AGI #1 is physically only capable of taking ~5 MMSCFD due to formation and surface pressure limitations.

The New Mexico Oil Conservation Division (NMOCD) has previously approved maximum injection rates for TAG injection of 13 MMSCFD, based on requests of permittees. Data and interpretations from advanced reservoir simulations of the Red Hills AGI #3 location indicate that the targeted Siluro-Devonian injection zones could easily accept more than 26 MMSCFD of TAG. Because AGI #1 and #2 do not have complete redundancy, having a greater permitted disposal volume could also increase operational reliability.

In preparing this C-108 application, NMT conducted a detailed examination of all of the elements required to be evaluated in order to prepare and obtain approval for this application for injection. The elements of this evaluation include:

- Identification and characterization of all hydrocarbon-producing zones of wells that surround and are present on the proposed plant site.
- The depths of perforated pay intervals in those wells relative to the depth of the target injection zones (Devonian, Wristen and Fusselman).
- The past and current uses of the proposed injection interval.
- Total feet of net porosity in the proposed Devonian, Wristen and Fusselman injection intervals.
- The stratigraphic and structural setting of the targeted injection zone relative to any nearby active or plugged wells, and other wells penetrating the interval.
- The identification of and sample notification letter that will be sent to all surface owners, lessees, and operators within a one-mile radius of the proposed injection wells.
- The identification of all wells within a two-mile radius and of all operators, lessees and surface owners within a one-mile area of review of the proposed injection well.
- Identification and characterization of all active and plugged wells within the one-mile area of review of the proposed injection well.
- The details of the proposed injection operation, including general well design and average and maximum daily rates of injection and injection pressures.
- Sources and predicted composition of injection fluid and compatibility with the formation fluid of the injection zone.
- Location and identification of any fresh water bearing zones in the area; the depth and quality of available groundwater in the vicinity of the proposed well, including a determination that there are no structures which could possibly communicate the disposal zone with any known sources of drinking water.

A Rule 11 Plan has been approved for the facility. Once approval has been granted for the Red Hills AGI #3, the Rule 11 Plan will be amended to reflect the changes in operations. If it is anticipated that a change may occur in the amount or concentrations of $H_2S$ in the TAG stream, an update to the approved Rule 11 $H_2S$ Contingency Plan may be required. At a minimum even if $H_2S$ volumes remain the same and the proposed well is successfully completed in the Devonian, Wristen, and Fusselman interval, the Rule 11 plan will be amended to reflect this change. The revised Rule 11 Plan will be submitted to NMOCD for the file prior to the commencement of TAG injection into the Red Hills AGI #3 well.

Based upon the detailed evaluation summarized in this application, Targa has determined that the proposed Red Hills AGI #3 is a safe and environmentally-sound project for the disposal of acid gas.

Our research has identified porous and permeable caSrbonate units within this proposed injection zone including the Siluro-Devonian Thirtyone Formation, Wristen Group, and Fusselman Formation, located approximately 16,000 to 17,700 feet below the plant. These formations are sufficiently isolated from active pay zones above by hundreds of feet of tight Mississippian limestones and shales, and the immediately overlying Upper Devonian Woodford Shale. Reservoir simulations have demonstrated that if Red Hills AGI #3 is operated at maximum capacity for 30 years, TAG would remain within a radius of approximately 0.865 miles from the well location. This evaluation was conducted while maintaining Red Hills AGI #2 well operating at its maximum permitted injection simultaneously.

All recorded wells were identified in the two-mile radius of the proposed AGI location (see Appendix A for details). Of the 176 wells in the two-mile radius, 115 are active, 21 are plugged and abandoned, 4 are inactive or temporarily abandoned, 25 are permitted and are pending drilling, and 7 are drilled, while 4 are active drilling. (Appendix A).

Within one mile of the proposed AGI#3 well, there are 40 recorded well locations, of which 24 are active, 5 are plugged and abandoned, 2 are inactive or temporarily abandoned, 7 are permitted and pending drilling, and 1 is drilled awaiting completion, while 1 is active drilling. No wells within one mile of the proposed Red Hills AGI #3 pose any risk to act as potential conduits that would allow the escape of injection fluids from the proposed injection zone. Nor will they be affected by the injection of TAG into the proposed injection zones of AGI #3.

The closest well penetrating the proposed injection zone (GOVERNMENT L COM #001 well,
30-025-25604) is 17,635 feet deep and located approximately 0.86 miles from the proposed AGI well. The well was plugged and abandoned in December 2004. During the initial drilling and completion of the well in May of 1978, the well was plugged back to 14,590 feet, isolating the deeper Devonian zone (top Devonian at 15,853).

The next closest well (BELL LAKE 7 UNIT #001 well, 30-025-33815) is 16,085 feet deep and is 1.5 miles from the proposed AGI well. This well was a dry hole and was plugged and abandoned in September 1997, approximately three months after its spud date. Records show that the deeper Devonian zone was properly plugged and isolated.

The INACTIVE disposal well (Striker 6 SWD #002, 30-025-44291) was spudded in January 2018. It is 1.27 miles from the proposed AGI and is 17,705 feet deep. The distance of this well from
the proposed AGI #3 is over twice the calculated plume radius of injection..

Active leases in the one-mile area are operated by ConocoPhillips LLC, Devon Energy Production Company, LP., EOG Resources, Inc., Kaiser-Francis Oil Company, Targa Northern Delaware, LLC, and Matador Production Company.

Oil and gas mineral rights in this area are owned by private parties and the United States (managed by the Bureau of Land Management). Surface owners within a one-mile radius include the United States (managed by the BLM), Targa, and 22 other entities. All surface and mineral owners, operators, and leasehold owners within a one-mile radius of the proposed injection well will be notified and provided with a copy of this application at least 20 days prior to the NMOCC hearing pursuant to the requirements of NMOCC. Details on all operators, lessees, and surface and mineral owners are included in Appendix B.

There is no permanent body of surface water within several miles of the plant. A search of the New Mexico State Engineer's files shows 15 water wells within two miles of the proposed AGI. Data from these wells show that groundwater occurs at a depth of approximately 100-650 feet within alluvium and the Triassic red beds. Groundwater from the Permian Rustler Formation (1,245 to 1,600-foot depth) has total dissolved solids generally exceeding 9,000 mg/L in many parts of southeastern New Mexico (Lambert, 1992). The Targa water well was sampled, and the analysis was done in-house at New Mexico Tech. The calculated TDS from this well (water depth 390 ft) is 650 mg/L.

The approved Rule 11 $H_2S$ Contingency Plan for the facility will be revised to accommodate the permitted Red Hills AGI #2 well and will be submitted to NMOCD when complete to obtain approval prior to operating the proposed well. This same procedure will be followed for Red Hills AGI #3.

## 2 Introduction and Organization of C-108 Application

The completed NMOCD Form C-108 is included before the Table of Contents of this document and references appropriate sections where data required to be submitted are included herein.

This application organizes and details all the information required by NMOCD and NMOCC to evaluate and approve the submitted Form C-108 – Application for Authorization to Inject. This information is presented in the following categories:

A detailed description of the construction and operation of the proposed injection well (Section 3.0)

A summary of the regional and local geology, the hydro-geology, and the location of drinking water wells within the area of review (Section 4.0)

The identification, location, status, production zones, and other relevant information on oil and gas wells within the area of review (Section 5.0)

The identification and required notification for operators and surface land owners that are located within the area of review (Section 6.0)

An affirmative statement, based on the analysis of geological conditions at the site, that there is no hydraulic connection between the proposed injection zone and any known sources of drinking water (Section 7.0)

In addition, this application includes the following supporting information:

Appendix A: Table showing all active, temporarily abandoned, abandoned and plugged oil and gas wells included within a two-mile radius.

Appendix B: Tables summarizing the operators, lessees, and surface owners in the one-mile radius area of review; an example of the notification letter that will be sent out to them at least 20 days prior to the NMOCC hearing; and a draft public notice.

## 3 Proposed Construction and Operation of Red Hills AGI #3

The Red Hills AGI #3 will be drilled at 625 feet from the south line (FSL) and 307 feet from the east line (FEL) of Section 13 T24S, R33E. The Red Hills AGI #3 well will be drilled vertically to an approximate depth of 17,700' as a Class II acid gas injection well. The well will be completed open hole. Zones of interest are the Devonian Thirtyone Formation, Upper Silurian Wristen Group and the Lower Silurian Fusselman Formation, at a depth of ~16,000 – 17,600 feet. Data to be gathered from the wellbore will include open-hole and cased hole logs, continuous core samples from the target reservoir intervals and seals, fluid samples from the injection zone and known USDW's. A long-term injection test will be performed in the Thirtyone Formation. Further, continuous monitoring Distributed Acoustic Sensing (DAS) fiberoptic cable and Distributed Temperature Sensing (DTS) cable behind the casing will be installed behind the casing to detect seismic activity and temperature/pressure differences.

### 3.1 Calculated Maximum Injection Pressure

The well will be designed and constructed such that it will serve as the injection conduit for a mixed stream of treated acid gas. Based on current data, the TAG stream used for the following calculations will be approximately:

80% $CO_2$

20% $H_2S$

The maximum total volume of TAG to be injected daily will be approximately 26 MMSCFD, although this volume will not be reached for a number of years based on market conditions. Pressure reduction valves and controls will be incorporated to assure that maximum surface injection pressure allowed by NMOCD will not be exceeded.

The specific gravity of TAG is dependent on the temperature and pressure conditions and the composition of the fluid mixture. It is most accurately calculated using a modification of the Peng-Robinson (PR) equation of state (EOS) model (Boyle and Carroll, 2002). We have calculated the specific gravity of the supercritical TAG phase for the proposed Targa injection stream using the AQUAlibrium 3.1 software which employs the modified PR EOS model (Table 1).

We have modeled the proposed maximum daily injection 26 MMSCFD TAG composed of 80 mol % $CO_2$ and 20 mole % $H_2S$. Specific gravities of TAG were determined for the conditions at the well head (pressure = 1,800 psi, temperature = 90°F) and the bottom of the well (pressure = 7,500 psi, temperature = 225°F). The specific gravity of TAG at equilibrium with the reservoir (pressure = 7,500 psi, temperature = 225°F) was also determined to evaluate the area expected to be affected by injection in the reservoir (see Table 1).

The calculated maximum allowable injection pressure (MAOP) would be approximately 4,829 psi (depending on specific gravity of final TAG stream). We have used the following method approved by NMOCD to calculate the proposed MAOP. The final maximum permitted surface injection pressure should be based on the final specific gravity of the injection stream according to the following formula:

$IP_{max} = PG\ (D_{top})$ where: $IP_{max}$= maximum surface injection pressure (psi)

PG = pressure gradient of injection fluid (psi/ft)

$D_{top}$ = depth at top of perforated interval of injection zone (ft)

and $PG = 0.2 + 0.433\ (1.04 - SG_{tag})$ where:

$SG_{tag}$ = average specific gravity of treated acid gas in the tubing ($SG_{tag}$ at top = 0.79 and $SG_{tag}$ at bottom hole = 0.82; see Table 1)

For the maximum requested injection volume case, it is assumed that:

$SG_{tag}$ = 0.805 (Average of 0.79 and 0.82)

$D_{top}$ = 16,000 ft

Therefore:

$PG = 0.2 + 0.433\ (1.04 - 0.805) = 0.3018$ psi/ft

$IP_{max} = PG\ (D_{top}) = 0.3018 * 16{,}000 = 4{,}829$ psi

For this reason, Targa requests approval for a MAOP of 4,829 psig for Red Hills AGI #3.

## 3.2 Injection Volume Calculation

Table 1 below summarizes the calculated injection volumes, the areas impacted by the TAG plume, and the proposed MAOP.

The calculated TAG plume, after 30 years of continuous injection at 26 MMSCFD, will occupy an area of approximately 200.9 acres, with a radius of 1,669 feet or 0.32 miles. The values of porosity and residual water (Swr) have been calculated from analysis of geophysical logs from nearby wells with data from the proposed injection zone.

*Table 1. Reservoir Injection Pressure and Volume Calculations*

Proposed Injection Stream Characteristics

| TAG | $H_2S$ | $CO_2$ | $H_2S$ | $CO_2$ | TAG |
|---|---|---|---|---|---|
| Gas Vol MMSCFD | Conc. mol% | Conc. mol% | Inject Rate, lb/day | Inject Rate, lb/day | Inject Rate, lb/day |
| 26 | 20 | 80 | 594,898 | 2,379,590 | 2,974,488 |

| Wellhead Conditions | | TAG | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Temp, F | Pressure, psi | Gas Vol MMSCFD | Comp, $CO_2$:$H_2S$ | Injection Rate, lb/day | Density, $kg/m^3$ | SG | Density lb/gal | Volume, $ft^3$ | Volume, bbl |
| 90 | 1800 | 26 | 80:20 | 2,974,488 | 787 | 0.79 | 6.53 | 60874 | 10841 |

| Injection Zone Condition | | | | | TAG | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Temp, F | Pressure, psi | Depth_top, ft | Depth_bottom, ft | Thickness, ft | Density, $kg/m^3$ | SG | Density lb/gal | Volume, $ft^3$ | Volume, bbl |
| 225 | 7,500 | 16,000 | 17,600 | 1,600 | 822 | 0.82 | 6.82 | 58282 | 10379.63885 |

| Injection Reservior Conditions | | | | | TAG | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Temp, F | Pressure, psi | Ave. Porosity, % | Swr | Porosity, ft | Density, $kg/m^3$ | SG | Density lb/gal | Volume, $ft^3$ | Volume, bbl |
| 225 | 7,500 | 5.49 | 0.17 | 72.91 | 822 | 0.82 | 6.82 | 58282 | 10379.63885 |

Constants

| | SCF/mol | |
|---|---|---|
| Molar Volume at STD | 0.7915 | |
| | g/mol | lb/mol |
| Molar Weight of $H_2S$ | 34.0809 | 0.0751 |
| Molar Weight of $CO_2$ | 44.0096 | 0.097 |
| Molar Weight of $H_2O$ | 18.015 | 0.0397 |

| Calculation of Maximum Injection Pressure Limitation | | |
|---|---|---|
| $SG_{TAG}$ | 0.805 | |
| $PG= 0.2+0.433(1.04-SG_{TAG})$ | 0.3018 | psi/ft |
| $IP_{max} = PG*Depth$ | 4,829 | psi |

| Calculation of 30 Years Area of Injection | | |
|---|---|---|
| Cubic Feet/day (5.6146 $ft^3$/bbl | 58,282 | $ft^3$/day |
| Cubic Feet/30 years | 638,184,310 | $ft^3$/30 years |
| Area | 200.9 | acres/30 years |
| Radius | 1,669 | ft |
| Radius | 0.32 | miles |

## 3.3 Well Design

The well will be drilled vertically to its anticipated total depth of approximately 17,600 feet. The injection zone (16,000 to 17,600 feet) will be completed as an open hole interval. Table 2 lists the anticipated geological formations, depths, and potential for water or hydrocarbons.

*Table 2. Formations expected within the Red Hills AGI #3 well*

| . | Measured Depth (ft) | Identification |
|---|---|---|
| Cenozoic alluvium | Surface | USDW |
| Santa Rosa Sandstone | ~650-910 | USDW, Gas |
| Rustler | 1,118 | USDW |
| Salado | 1,528 | |
| Castile | 3,541 | |

| | | |
|---|---|---|
| Lamar | 5,252 | |
| Bell Canyon | 5,298 | Oil & Gas |
| Cherry Canyon | 6,310 | Oil & Gas |
| Brushy Canyon | 8,019 | Oil & Gas |
| Bone Spring | 8,945 | Oil & Gas |
| Wolfcamp | 12,232 | Oil & Gas |
| Strawn | 12,908 | Oil & Gas |
| Atoka | 13,219 | Oil & Gas |
| Morrow | 13,881 | Oil & Gas |
| Mississippian | 15,303 | |
| Woodford Shale | 15,658 | Confining Zone |
| Siluro-Devonian fms. | 16,055 | Oil & Gas (Injection Zone) |
| Montoya | 17,691 | Oil & Gas (Injection Zone) |
| Simpson | 18,087 | Oil & Gas (Base) |
| Ellenburger | 18,706 | Oil & Gas |
| Precambrian | 19,322 | |

A preliminary wellbore design for Red Hills AGI #3 is shown in Figure 3 and described more completely in Sections 4.3.1 and 4.3.2. Because the subsurface mineral rights are owned by the United States, all well designs and drilling operations and testing will be conducted in accordance with the regulations and guidance provided by the governing agency. The BLM will be notified of project through submittal of related APD and C-108. The proposed casing and cementing programs are designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.

Design and material considerations include Placement of Subsurface Safety Valve (SSSV) and the packer; triple casing through freshwater resources (Ogallala and Santa Rosa Formations – groundwater, Rustler – saline groundwater); characterization of the zone of injection; and a total depth (TD) ensuring identification of the reservoir. Radial cement bond logs will be run for all casing strings except the 20" surface casing.

A suitable drilling rig will be chosen for the job that will include an appropriate blowout preventer and choke manifold for any unforeseen pressures encountered. Visual inspections of cement return to the surface will be noted in both the conductor and surface pipe casing jobs. Casing and cement integrity will be demonstrated by pressure-testing and radial cement bond logging after each cement job.

### 3.3.1 Casing

The preliminary casing design is presented in Table 3, and the specification of the casing strings is presented in Table 4. The well will have four strings of the telescoping casing, and all four strings will be cemented to the surface. The injection tubing will include a subsurface safety valve on the production tubing to assure that fluid cannot flow back out of the well in the event of a failure of the injection equipment. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

In addition, the annular space between the production tubing and the well bore will be filled with an inert fluid (corrosion-inhibited diesel fuel) as a further safety measure which is consistent with injection well designs which have been previously approved by NMOCD for acid gas injection.

*Table 3. Casing design*

| Casing/ Tubing String | Casing /Tubing Depth, TVD[1], ft | Borehole Diameter, in. | Casing /Tubing Outside Diameter, in | Coupling/ Connection | Casing/Tubing Material (Weight /Grade) | String Weight in Air, lb |
|---|---|---|---|---|---|---|
| Conductor | 0-100 | 42 | 30 | Welded | 157 lb/ft, J-55 | 15,700 |
| Surface | 0-1,143 | 26 | 20 | BTC | 106.5 lb/ft, J-55 | 121,730 |
| Intermediate #1 | 0-5,277 | 17 1/2 | 13 3/8 | BTC | 72 lb/ft, L-80 | 379,944 |
| Intermediate #2 | 0-12,282 | 12 1/4 | 9 5/8 | BTC/VAM | 47 lb/ft, CRA-G3-L-80 | 577,254 |
| Long String | 0-16,090 | 8 1/2 | 7 | BTC | 32 lb/ft, CRA-G3-P110 | 514,880 |
| Open hole | 16,090-17,600 | 5 7/8 | N/A | N/A | N/A | N/A |
| Tubing | 0-16,040 | N/A | 3 1/2 | VAM ACE | 9.2 lb/ft, CRA-G3 | 147,568 |

*Table 4. Casing specifications*

| Casing/ Tubing String | Casing/ Tubing Material (Weight /Grade /Connection) | Casing/ Tubing Diameters (OD/ID/ Drift), in. | Yield, ksi | Tensile, ksi | Internal (Burst) Yield, psi | Collapse, psi | Body Yield, 1,000 lbs | Joint Strength, 1,000 lbs |
|---|---|---|---|---|---|---|---|---|
| Surface | 106.5 lb/ft, J-55, BTC | 20/19/ 18.812 | 55 | 75 | 2,410 | 770 | 1,685 | 1,595 |
| Intermediate #1 | 72 lb/ft, L-80, BTC | 13.375/12. 347/12.191 | 80 | 95 | 5,380 | 2,670 | 1,661 | 1,650 |
| Intermediate #2 | 47 lb/ft, L-80, BTC/VAM | 9.625/ 8.681/ 8.525 | 80 | 95 | 6,870 | 4,760 | 1,086 | 1,122 |
| Long String | 32 lb/ft, CRA-G3-P110, BTC | 7.000/ 6.094/ 5.969 | 110 | 125 | 11,640 | 10,780 | 1,025 | 1,053 |
| Tubing | 9.2 lb/ft, CRA-G3, VAM ACE | .500/ .992/ 2.867 | 138 | 14 | 15,880 | 14,8 0 | 324 | 327 |

### 3.3.2 Cement

Table 5 summarizes cement design specifications. Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

Cement shall be allowed adequate curing time to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

*Table 5. Cement design*

| Casing | Depth, ft | Cement Volume, sacks | Cement Type & Yield | Designed TOC | Centralizers |
|---|---|---|---|---|---|
| Conductor | 100 | 82 | Type I Neat 14.8 ppg | Surface | None |
| Surface | 1,143 | 100% open hole excess 1772 sks | Type III Cement + 2% CaCI2 + 0.25Ibl/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38 cuft/sk | Surface | 1 per joint on bottom 3 joints |
| Intermediate #1 | 5,277 | 75% open hole excess Lead: 1,481 sks Tail: 2,006 sks | Lead: Type III Cmt + 3% CaCI + 0.25Ib/sk CelloFlake + 5Ib/sk LCM, 12.8 ppg 2.13 cuft/sk Tail: Type III Cmt, 14.5ppg 1.38 cuft/sk | Surface | 1 per joint for bottom 3 joints, 1 on every 3 joints for remaining joints |
| Intermediate #2 | 12,282 | 75% open hole excess Lead: 1,555 sks Tail: 2,024 sks | Lead: Type III Cmt,12.8 ppg, 2.16 cuft/sk Tail:Type III Cmt 14.8ppg, 1.16 cuft/sk | Surface | 1 per joint for bottom 3 joints, 1 on every 3 joints for remaining joints |
| Production | 16,090 | 75% open hole excess Lead: 1492 sks Tail: 123 sks | Lead: Class G Cement, 12.8 ppg, 1.89 cuft/sk Tail: Evercrete cement, 16.1ppg, 1.07 cuft/sk | Surface | 1 every 3 joints for remaining joints |

* Cement program may change based on cement engineer recommendation and caliper log result.

### 3.3.3 Drilling Fluids

Table 6 presents the drilling fluids plan. The anticipated bottom hole pressure is +/-9,000 psi. No abnormal pressure or temperatures are anticipated; however, there will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH. The mud program may be revised at the recommendation of the field engineer.

A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility.

Fresh water cuttings will be disposed by the service from the company. The location will be lined in accordance with the Surface Use Plan of Operations.

*Table 6. Drilling fluids plan*

| Hole Size, in | Drilling Fluid System | Measured Depth, ft | Mud Weight, ppg | Viscosity, sec/quart | Drill Solids, % volume | pH | Circulation Rate, GPM |
|---|---|---|---|---|---|---|---|
| 26 | Water-based Mud | 0–1,143 | 9.5 | 28-34 | <5 | 9-10 | 1,000 |
| 17 1/2 | Water-based Mud | 1,143 - 5,277 | 10 | 36-40 | <5 | 9-10 | 750 |
| 12 1/4 | Water-based Mud | 5,277 - 12,282 | 11 | 36-40 | <5 | 9-10 | 700 |
| 8 1/2 | Water-based Mud | 12,282 - 16,090 | 13.5 | 40-45 | <5 | 9-10 | 600 |
| 5 7/8 | Water-based Mud | 16,090 - 17,600 | 11 | 36-40 | <5 | 9-10 | 600 |

### 3.3.4 Logging and Testing

The proposed logging plan is shown below in Table 7. Mud loggers will be on location from kickoff point to total depth.

*Table 7. Logging program*

| Well Logging | Logging Program | Depth Intervals |
|---|---|---|
| **Surface Casing** | | |
| Open Hole | Platform Express 150 Array Induction Imager, GR, 4-Arm Caliper | 1,143'-0' |
| **Intermediate Casing #1** | | |
| Open Hole | Platform Express 150 Array Induction Imager, GR, 4-Arm Caliper | 5,277'-1,143' |
| Cased Hole | Array Sonic Logging Tool, Cement Bond & Variable Density Log (13 3/8" casing), Gamma Ray | 5,277'-0' |
| | **Intermediate Casing #2** | |
| Open Hole | Platform Express 150 Array Induction Imager, GR, 4-Arm Caliper | 12,282'-5,277' |
| Cased Hole | Array Sonic Logging Tool, Cement Bond & Variable Density Log (9 5/8" casing), Gamma Ray | 12,282'-0' |
| **Production Casing** | | |
| Open Hole | Platform Express (AIT, LDT, CNL, GR), 4-Arm Caliper, FMI | 16,090'-12,282' |
| | ThruBit Triple Combo (AIT, LDT,CNL, GR), ThruBit FMI | 17,600'-16,090' |
| Cased Hole | Array Sonic Logging Tool, Cement Bond & Variable Density Log (7" casing), Gamma Ray, Zero Offset Vertical Seismic Profile | 16,090'-0' |

# 4 Geology and Hydrogeology

## 4.1 Surface Geology

The Red Hills Gas Processing Plant is located in Section 13, T 24 S, R 33 E, in Lea County, New Mexico, about 35 miles west of Hobbs (Figure 4). The plant location and proposed well are within a portion of the Pecos River basin referred to as the Querecho Plains reach (Nicholson & Clebsch, 1961). This area is relatively flat and largely covered by sand dunes underlain by a hard caliche surface. The dune sands are locally stabilized with shin oak, mesquite, and some burr-grass. There are no natural surface bodies of water or groundwater discharge sites within one mile of the plant and where drainages exist in interdunal areas, they are ephemeral, discontinuous, dry washes. The site is underlain by Quaternary alluvium overlying the Triassic redbeds of the Santa Rosa Formation (Dockum Group), both of which are local sources of groundwater. The thick sequences of Permian through Ordovician rocks that underlie these deposits are described generally below.

## 4.2 Subsurface Geology

The well is in the Delaware Basin portion of the broader Permian Basin. The subsurface geology is composed of a very thick sequence of sedimentary rocks including carbonates, sandstones and shales representing a variety of depositional environments, underlain by Precambrian bedrock. Figure 4 presents a stratigraphic column for the region.

Siluro-Devonian formations consist of the Fusselman Formation, the Wristen Group, and the Thirtyone Formation. The proposed injection interval includes a number of intervals of dolomites and dolomitic limestones with moderate to high primary porosity, and secondary, solution-enlarged porosity that is related to karst events that periodically occurred throughout the section, most notably in the Fusselman Formation. These karst events produced solution cavities and enlarged fractures throughout the section, which can be substantial enough to provide additional permeability that is not readily apparent on well logs. The porous zones are separated by tight limestones and dolomites. The Siluro-Devonian formations are also injection zones for several nearby saltwater disposal wells.

The Siluro-Devonian interval has excellent cap rocks above, below and between the individual porous carbonate units. There are no producing zones within or below the Siluro-Devonian in the area of the proposed well, and the injection interval is separated from the nearest producing zone (Morrow) by over 200 feet of Woodford shale, 550 feet of tight Osagean limestones, and nearly 350 feet of tight Chesterian shales and deepwater limestones. It lies a minimum of 1,200 feet above the Precambrian basement.

The Devonian Woodford Shale, an un-named Mississippian limestone, and the Upper Mississippian Barnett Shale are seals in the area for the underlying Siluro-Devonian carbonates. While the recrystallized limestones have minor, locally developed porosity and permeability, the Woodford and Barnett shales have extremely low porosity and permeability and would be effective barriers to upward migration of acid gas out of the injection zone. These overlying formations provide over 1,000 feet of shale and intervening tight limestones, that serve as an effective seal on the top of the injection zone. Overlying Pennsylvanian units including Morrow, Atoka, Strawn, Cisco, and Canyon formations have been targets of oil and gas production in previous years. Most of these wells are now plugged. Currently the most active plays are in the Wolfcamp and Bone Spring formations, well above the proposed injection interval. The proposed injection interval is located more than 1,000 feet below the Morrow Formation, which is the deepest potential pay zone in the area. There are no pay zones below the injection zone in the area.

| AGE | | CENTRAL BASIN PLATFORM-NORTHWEST SHELF | DELAWARE BASIN |
|---|---|---|---|
| Cenozoic | | Alluvium | Alluvium |
| Triassic | | Chinle Formation | Chinle Formation |
| | | Santa Rosa Sandstone | Santa Rosa Sandstone |
| Permian | Lopingian (Ochoan) | Dewey Lake Formation | Dewey Lake Formation |
| | | Rustler Formation | Rustler Formation |
| | | Salado Formation | Salado Formation |
| | | | Castile Formation |
| | Guadalupian | Artesia Group: Tansill Formation | Delaware Mountain Group: Lamar Limestone |
| | | Artesia Group: Yates Formation | Delaware Mountain Group: Bell Canyon Formation |
| | | Artesia Group: Seven Rivers Formation | Delaware Mountain Group: Bell Canyon Formation |
| | | Artesia Group: Queen Formation | Delaware Mountain Group: Cherry Canyon Formation |
| | | Artesia Group: Grayburg Formation | Delaware Mountain Group: Cherry Canyon Formation |
| | | San Andres Formation | Delaware Mountain Group: Brushy Canyon Formation |
| | Cisuralian (Leonardian) | Glorieta Formation | Delaware Mountain Group: Brushy Canyon Formation |
| | | Yeso: Paddock Mbr. | Bone Spring Formation |
| | | Yeso: Blinebry Mbr | Bone Spring Formation |
| | | Yeso: Tubb Sandstone Mbr. | Bone Spring Formation |
| | | Yeso: Drinkard Mbr. | Bone Spring Formation |
| | Wolfcampian | Abo Formation | Bone Spring Formation |
| | | Hueco ("Wolfcamp") Fm. | Hueco ("Wolfcamp") Fm. |
| Pennsylvanian | Virgilian | Cisco Formation | Cisco |
| | Missourian | Canyon Formation | Canyon |
| | Des Moinesian | Strawn Formation | Strawn |
| | Atokan | Atoka Formation | Atoka |
| | Morrowan | Morrow Formation | Morrow |
| Mississippian | *Upper* | Barnett Shale | Barnett Shale |
| | *Lower* | "Mississippian limestone" | "Mississippian limestone" |
| Devonian | *Upper* | Woodford Shale | Woodford Shale |
| | *Middle* | | |
| | *Lower* | Thirtyone Formation | Thirtyone Formation |
| Silurian | *Upper* | Wristen Group | Wristen Group |
| | *Middle* | | |
| | *Lower* | Fusselman Formation | Fusselman Formation |
| Ordovician | *Upper* | Montoya Formation | Montoya Formation |
| | *Middle* | Simpson Group | Simpson Group |
| | *Lower* | Ellenburger Formation | Ellenburger Formation |
| Cambrian | | Bliss Ss. | Bliss Ss. |
| | | | |
| Precambrian | | Miscellaneous igneous, metamorphic, volcanic rocks | Miscellaneous igneous, metamorphic, volcanic rocks |

*Figure 2. Stratigraphic column for the Delaware basin, the Northwest Shelf and Central Basin Platform (modified from Broadhead, 2017).*

## 4.3 Groundwater in the Vicinity of the Proposed injection Well

Table 8 shows the identified U.S. Drinking Water (USDW) formations in the area. The main aquifers in the northern Delaware Basin of New Mexico are the Permian Capitan Formation, Permian Rustler Formation, Triassic Santa Rosa Sandstone and Cenozoic alluvium (Ritchey et al. 1985). The Capitan aquifer is not present in the area (Hiss, 1980), but the Rustler and shallower units are. Water from the Rustler aquifer is usually not suitable for domestic use due to its high salinity but is utilized for irrigation and livestock in the region. TDS values range from ~10,000 to 300,000 mg/l (Ritchey et al., 1985). The Santa Rosa Sandstone is the principal aquifer in western Lea County (Ritchey et al., 1985) and has an average TDS of approximately 1,000 mg/l (500 – 2000 mg/l; Ritchey et al., 1985). Cenozoic alluvium is also another possible source of groundwater in the area, but can be impacted by deeper, more saline aquifers (like the Rustler Formation), therefore the TDS is highly variable, but averages 2,300 mg/l (Ritchey et al., 1985). The shallow freshwater aquifers in review will be protected by the surface and intermediate casings in the proposed Red Hills AGI #3.

*Table 8 USDW formations in the area*

| Formations/Groups | Measured Depth (MD), ft | Identification |
|---|---|---|
| Cenozoic alluvium | Surface | USDW |
| Santa Rosa Sandstone | ~650-910 | USDW, Gas |
| Rustler | 1,118 | USDW |

## 4.4 Formation Fluid Chemistry

A review of formation waters from the U.S. Geological Survey National Produced Waters Geochemical Database v2.1 (10/16/2014) identified 10 wells with analyses from drill stem test fluids collected from the Devonian, Silurian-Devonian or Fusselman Formations, in wells within approximately 12 miles of the proposed Red Hills AGI #3 (Table 9, Townships 18 to 20 South and Ranges 30 to 33 East).

These analyses showed total dissolved solids (TDS) ranging from 20,669 to 40,731 milligrams per liter (mg/l) with an average of 28,942 mg/l. The primary anion is chloride, and the concentrations range from 11,176 to 23,530 mg/l with an average of 16,170 mg/l.

*Table 9. Active water wells identified by the New Mexico State Engineer files within two miles of the proposed Red Hills AGI #3 Well*

| POD Number | County | Rng | Sec | Depth | easting | northing | Distance, mi |
|---|---|---|---|---|---|---|---|
| C-03666-POD1 | 24S | 33E | 13 | 650 | 639132.5 | 3565078.2 | 0.32 |
| C-03917-POD1 | 24S | 33E | 13 | 600 | 638373.9 | 3565212.6 | 0.79 |
| C-03601-POD1 | 24S | 33E | 23 | 0 | 638124.2 | 3563937.1 | 1.09 |
| C-02309 | 24S | 33E | 25 | 60 | 639708.5 | 3562997.8 | 1.18 |
| C-03601-POD3 | 24S | 33E | 24 | 0 | 638141.8 | 3563413.7 | 1.29 |
| C-03601-POD2 | 24S | 33E | 23 | 0 | 637846.1 | 3563588.3 | 1.36 |
| C-03601-POD5 | 24S | 33E | 23 | 0 | 637988.4 | 3563334.6 | 1.39 |
| C-03662-POD1 | 24S | 33E | 23 | 550 | 637342.1 | 3564428.5 | 1.43 |
| C-03601-POD6 | 24S | 33E | 23 | 0 | 637833.8 | 3563338.7 | 1.46 |
| C-03601-POD7 | 24S | 33E | 23 | 0 | 637946.1 | 3563170.8 | 1.48 |
| C-03932-POD8 | 24S | 34E | 7 | 72 | 641120 | 3566769.9 | 1.50 |
| C-03600-POD2 | 24S | 33E | 25 | 0 | 638824.5 | 3562329.6 | 1.66 |
| C-03602-POD2 | 24S | 33E | 25 | 0 | 638824.5 | 3562329.6 | 1.66 |
| C-03600-POD1 | 24S | 33E | 26 | 0 | 637275 | 3563023.1 | 1.85 |
| C-03600-POD3 | 24S | 33E | 26 | 0 | 637784.5 | 3562340.1 | 1.95 |
| C-03565-POD9 | 24S | 33E | 15 | 0 | 636429.9 | 3565005.4 | 1.97 |

*Two water wells have been identified within one mile of the Red Hills AGI #3 well, (New Mexico Office of State Engineer's reporting system (Table 10, Fig 7). The wells do not penetrate Permian strata and are completed in Cenozoic alluvium or Triassic redbeds. One of these wells, C 03666 POD1 was sampled. Water is basic, with a pH of 9.55, and has a calculated TDS of 650 mg/l.*

*Table 10. Water wells within one mile of proposed Red Hills AGI #3*

| Display Name | Use | Use of well | status | Pod status | Owner* | Well depth | Water Depth | UTM easting | UTM northing | Start date | Finish date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C 03666 POD1 | SAN | DRINK/ SANITARY | PMT | ACT | Targa Northern Delaware LLC | 650 | 390 | 639132.5 | 3565078 | Oct 17 2013 | Oct 25 2013 |
| C 03917 POD1 | DOM | null | PMT | ACT | NGL WATER SOLUTIONS PERMIAN | 600 | 420 | 638373.9 | 3565213 | Feb 29 2016 | Mar 03 2016 |

***Note that Targa has purchased both of these wells and the change of ownership (COO) has been recognized, however the change has not yet been reflected in the online OSE database**

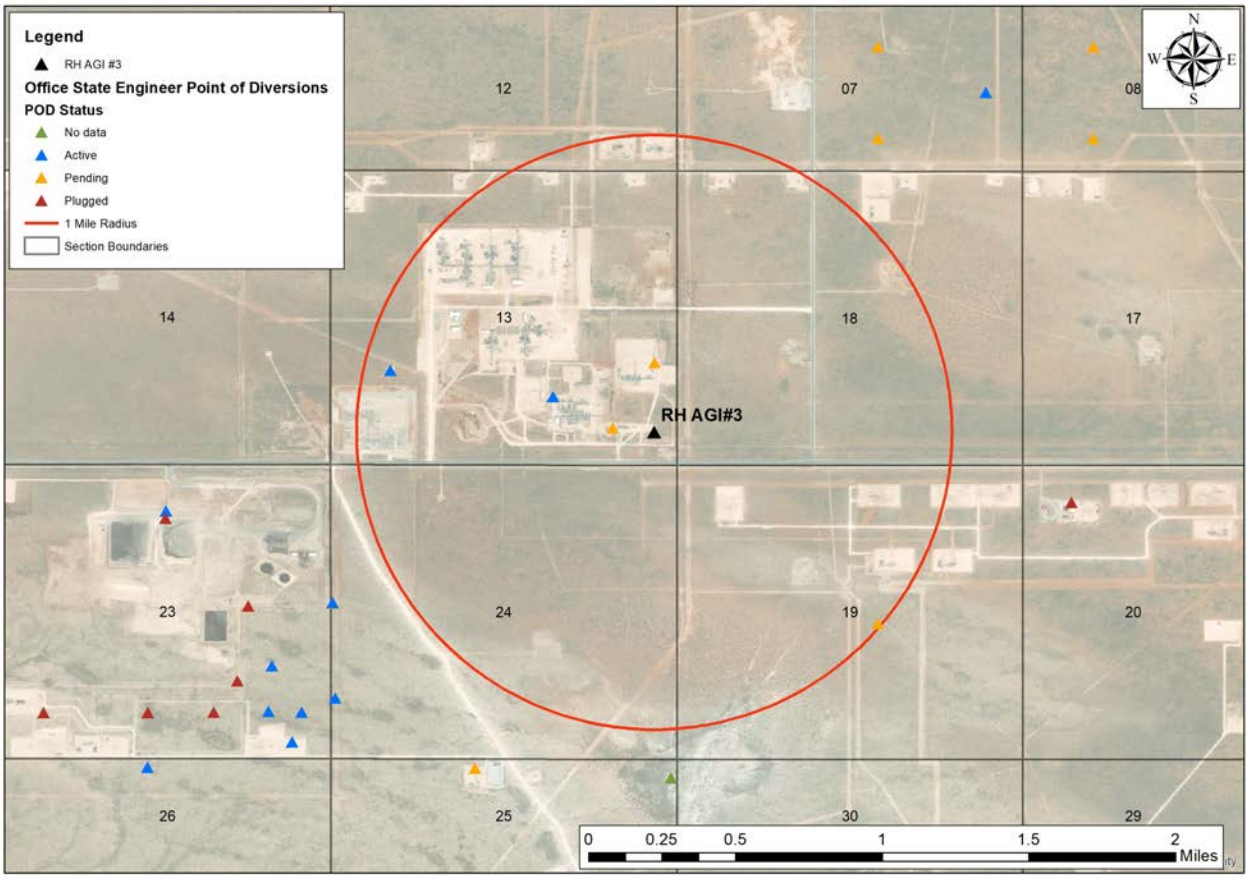



*Figure 3. Water wells within a one mile distance of Red Hills AGI #3.*

## 5 Oil and Gas Wells in the Area of Review and Vicinity

Tables 11 and 12 and Figures 6 and 7 provide a summary and maps of wells within the vicinity and area of review of Red Hills AGI #3.

*Table 11. Summary of oil and gas wells in the vicinity of the proposed Red Hills AGI #3 well*

| | PPermitted | Drilling/ Drilled/DUC | Injecting | producing | Inactive | Temporary Abandon | P&A | Total |
|---|---|---|---|---|---|---|---|---|
| Wells w/in 2 miles | 2255 | 11 | 1 | 1144 | 22 | 2 | 21 | 1767 |
| Wells w/in 1 mile | 27 | 22 | 1 | 234 | 20 | 2 | 5 | 4040 |

Four (4) wells within the 2-mile radius penetrate the injection zone (deeper than 16,000 feet TVD):

1. EOG Resources Government Com 001 (P&A), API 3002525604, TVD = 17,625', 0.866 miles from proposed AGI #3
2. NGL Water Solutions Striker 6 SWD #002, (Active), API 3002544291, TVD = 17,765', 1.27 miles from proposed AGI #3
3. EOG Resources Bell Lake 7 Unit 001 (P&A), API 3002533815, TVD = 16,085', 1.5 miles from proposed AGI #3
4. Targa Northern Delaware, LLC Red Hills AGI #2, API 3002549474 (Permitted), TVD = 17,600', 0.23 miles from proposed AGI #3

None of these wells, except the Targa's nearby sister well Red Hills AGI #2, may impact the injection zones calculated 30-year radius of 0.72 miles. NGL Water Solutions Striker 6 SWD #002 has temporarily abandoned.

All the wells identified are listed in Table A-1 in Appendix A, which includes the locations, depths, status, operators, and distances of the wells from the AGI well locations.

One of these wells (EOG Resources Government Com #001 (P&A, API 3002525604) penetrated the Devonian zone during initial completion in May 1978. Testing showed that there were no economical hydrocarbons in this zone, and the well's liner and production casing were cemented and plugged back to 14,590' (over 1,000 feet above the 16,000' top of the proposed injection zone) in May of 1978. The well was completely plugged and abandoned in December of 2003. The plugging conditions and the distance of this well from the injection point indicate that this well poses no hazard for TAG migration to shallower zones.

*Table 12. Offset well information for wells within one mile of the Red Hills AGI #3 well location*

| API | Well Name | Operator | Well Status | Formation | TVD, ft | Distance, ft |
|---|---|---|---|---|---|---|
| 30-025-25604 | GOVERNMENT L COM 001 | EOG | P & A | MORROW SOUTH GAS | 17625 | 4,549 |
| 30-025-49474 | RED HILLS AGI 002 | TARGA RESOURCES | DRILLING | | 17600 | 1,227 |
| 30-025-29008 | MADERA RIDGE 24 001 | EOG | TA | BONE SPRING NORTH | 15600 | 4,200 |
| 30-025-29008 | MADERA RIDGE 24 001 | EOG | TA | BONE SPRING NORTH | 15600 | 4,200 |
| 30-025-27491 | SMITH FEDERAL 001 | PRE-ONGARD WELL OPERATOR | P & A | | 15120 | 3,468 |
| 30-025-26958 | SIMS 001 | EXXON | P & A | MORROW SOUTH GAS | 15007 | 2,753 |
| 30-025-26369 | GOVERNMENT L COM 002 | EOG | P & A | ATOKA WEST GAS | 14698 | 2,579 |
| 30-025-49263 | BROADSIDE 13 24 FEDERAL COM 015H | DEVON | PRODUCING | WOLFCAMP UPPER | 12746 | 5,052 |
| 30-025-49262 | BROADSIDE 13 24 FEDERAL COM 004H | DEVON | PRODUCING | WOLFCAMP UPPER | 12531 | 5,048 |
| 30-025-47912 | JUPITER 19 FEDERAL COM 707H | EOG | PERMITTED | WOLFCAMP UPPER | 12515 | 4,193 |
| 30-025-47913 | JUPITER 19 FEDERAL COM 708H | EOG | PERMITTED | WOLFCAMP UPPER | 12477 | 4,183 |
| 30-025-46519 | BROADSIDE 13 24 FEDERAL COM 003H | DEVON | PRODUCING | WOLFCAMP UPPER | 12320 | 5,088 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-47911 | JUPITER 19 FEDERAL COM 705H | EOG | PERMITTED | WOLFCAMP UPPER | 12290 | 3,655 |
| 30-025-49264 | BROADSIDE 13 24 FEDERAL COM 025H | DEVON | PRODUCING | WOLFCAMP UPPER | 11210 | 5,030 |
| 30-025-47869 | JUPITER 19 FEDERAL COM 501H | EOG | PRODUCING | BONE SPRING NORTH | 11175 | 1,799 |
| 30-025-41383 | DECKARD FEDERAL COM 003H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11162 | 4,789 |
| 30-025-47877 | JUPITER 19 FEDERAL COM 509H | EOG | PRODUCING | BONE SPRING NORTH | 11156 | 4,644 |
| 30-025-47875 | JUPITER 19 FEDERAL COM 507H | EOG | PRODUCING | BONE SPRING NORTH | 11150 | 4,580 |
| 30-025-47875 | JUPITER 19 FEDERAL COM 507H | EOG | PRODUCING | BONE SPRING NORTH | 11150 | 4,580 |
| 30-025-47876 | JUPITER 19 FEDERAL COM 508H | EOG | PRODUCING | BONE SPRING NORTH | 11143 | 4,613 |
| 30-025-47876 | JUPITER 19 FEDERAL COM 508H | EOG | PRODUCING | BONE SPRING NORTH | 11143 | 4,613 |
| 30-025-47870 | JUPITER 19 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 11141 | 1,774 |
| 30-025-47870 | JUPITER 19 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 11141 | 1,774 |
| 30-025-41384 | DECKARD FEDERAL COM 004H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11103 | 4,511 |
| 30-025-47878 | JUPITER 19 FEDERAL COM 510H | EOG | PRODUCING | BONE SPRING NORTH | 11102 | 4,676 |
| 30-025-47874 | JUPITER 19 FEDERAL COM 506H | EOG | PRODUCING | BONE SPRING NORTH | 10950 | 3,581 |
| 30-025-41687 | SEBASTIAN FEDERAL COM 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10944 | 4,612 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-41666 | SEBASTIAN FEDERAL COM 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10927 | 5,001 |
| 30-025-47872 | JUPITER 19 FEDERAL COM 403H | EOG | PRODUCING | BONE SPRING NORTH | 10584 | 3,519 |
| 30-025-47872 | JUPITER 19 FEDERAL COM 403H | EOG | PRODUCING | BONE SPRING NORTH | 10584 | 3,519 |
| 30-025-48239 | JUPITER 19 FEDERAL COM 306H | EOG | PRODUCING | BONE SPRING NORTH | 10270 | 3,475 |
| 30-025-47873 | JUPITER 19 FEDERAL COM 309H | EOG | PRODUCING | BONE SPRING NORTH | 10250 | 3,550 |
| 30-025-47873 | JUPITER 19 FEDERAL COM 309H | EOG | PRODUCING | BONE SPRING NORTH | 10250 | 3,550 |
| 30-025-40448 | RED HILLS AGI 001 | TARGA RESOURCES | INJECTING | CHERRY CANYON | 6650 | 1,041 |
| 30-025-08371 | COSSATOT E 002 | PRE-ONGARD WELL OPERATOR | P & A | | 5425 | 2,733 |
| 30-025-48890 | JUPITER 19 FEDERAL COM 703H | EOG | PERMITTED | WOLFCAMP UPPER | 0 | 1,608 |
| 30-025-48889 | JUPITER 19 FEDERAL COM 701H | EOG | PERMITTED | WOLFCAMP UPPER | 0 | 1,657 |
| 30-025-47908 | JUPITER 19 FEDERAL COM 601H | EOG | PERMITTED | BONE SPRING, NORTH | 0 | 1,971 |
| 30-025-46518 | BROADSIDE 13 24 FEDERAL COM 002H | DEVON | PERMITTED | WOLFCAMP UPPER | 0 | 5,248 |
| 30-025-47910 | JUPITER 19 FEDERAL COM 702H | EOG | DUC | WOLFCAMP UPPER | 0 | 1,632 |

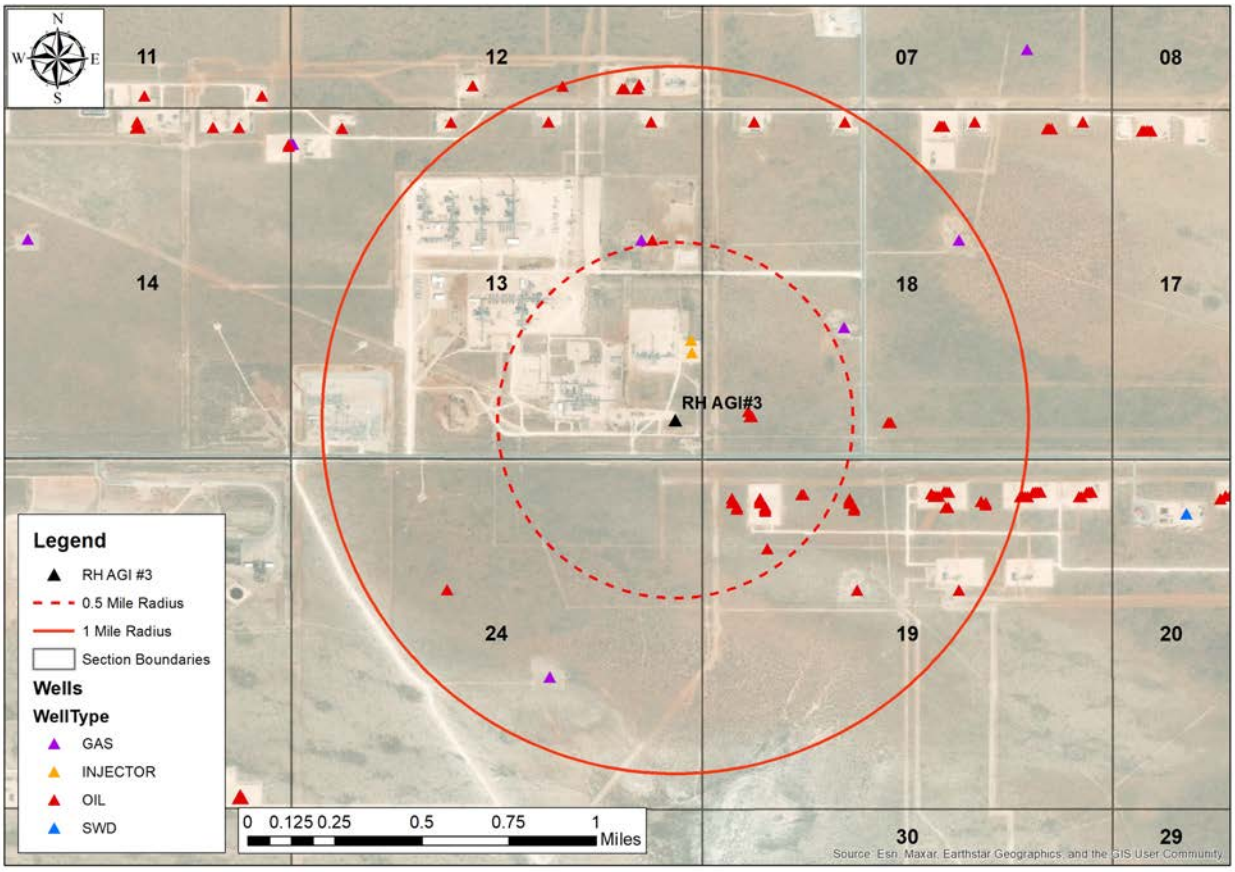



*Figure 4. Wells within 1 mile (the red circle) and half mile (red dash circle) of the proposed well.*

A two-mile radius review was conducted of the offset wells of public record as demonstrated in the 2-mile radius map (Figure 5). The well details are presented in Appendix A. There are 176 wells located within two miles of the proposed AGI #3 well.

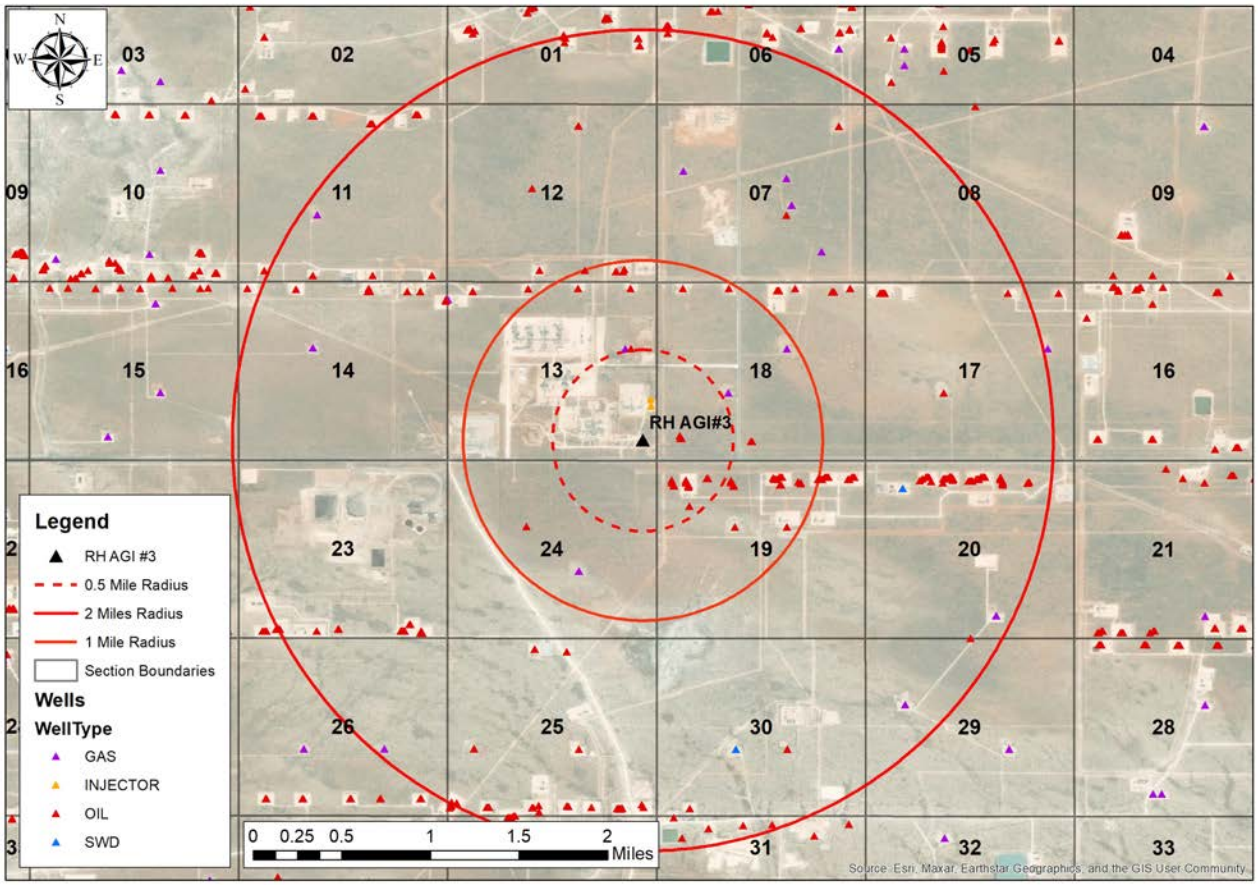



*Figure 5. Wells within 2 miles (the outer red circle) of the proposed well. Smaller circles represent ½ mile radius (dashed) and 2 mile radius (solid).*

## 6 Identification and Required Notification of Operators, Subsurface Lessees and Surface Owners within the Area of Review

Targa researched land records in Lea and Eddy Counties to obtain a listing of all operators, oil, gas and mineral lessees, and surface owners within a one mile radius of the proposed AGI well. Appendix B includes the results of that search.

Appendix B also contains a draft notice letter which will accompany the application when the individual letters are sent. These notices will be sent out as soon as the NMOCC assigns a case number and sets a date for the hearing. A draft public notice for the Commission secretary is also included in Appendix B.

## 7 Affirmative Statement Covering Hydraulic Connectivity

Based on the available geological data we find no evidence of open faults and/or other hydrologic connection between the **target** injection zone for the Red Hills AGI #3 and underground sources of drinking water.

Name: Dana Ulmer-Scholle Title: Research Scientist

Signature: Dana Ulmer-Scholle Date: 07/13/2022

Name: George El-kaseeh Title: Section Head – Industry Service Outreach

Signature: George El-kaseeh Date: 7/13/2022

## 8 References

Broadhead, R. F., 2017, Energy and Mineral Resources of New Mexico: Petroleum Geology: Socorro, New Mexico Bureau of Geology and Mineral Resources, v. A, 104 p.

Hiss, W.L., 1980, Movement of ground water in Permian Guadalupian aquifer systems, southeastern New Mexico, and western Texas, in Dickerson, P.W., and Hoffer, J.M., eds., Trans-Pecos Region, Southeastern New Mexico and West Texas: 31st Field Conference Guidebook: Albuquerque, New Mexico Geological Society, p. 289-294.

## 9 Appendix A: Information on Oil and Gas Wells within Two Miles of Proposed Red Hills AGI#3

*Table A-1 Locations of oil and gas wells in the vicinity of the proposed Red Hills AGI #3*

| API | Well Name | Operator | Well Status | Formation | TVD,ft | Distance, ft |
|---|---|---|---|---|---|---|
| 30-025-44291 | STRIKER 6 SWD 002 | NGL ENERGY PARTNERS | INACTIVE INJECTOR | DEVONIAN-SILURIAN | 17692 | 6,719 |
| 30-025-25604 | GOVERNMENT L COM 001 | EOG | P & A | MORROW SOUTH GAS | 17625 | 4,549 |
| 30-025-49474 | RED HILLS AGI 002 | TARGA RESOURCES | DRILLING | | 17600 | 1,227 |
| 30-025-33815 | BELL LAKE 7 UNIT 001 | EOG | P & A | MORROW | 16085 | 7,923 |
| 30-025-28533 | MADERA RIDGE 25 FEDERAL 001 | EOG | P & A | BONE SPRING NORTH | 15750 | 10,097 |
| 30-025-28533 | MADERA RIDGE 25 FEDERAL 001 | EOG | P & A | BONE SPRING NORTH | 15750 | 10,097 |
| 30-025-28533 | MADERA RIDGE 25 FEDERAL 001 | EOG | P & A | BONE SPRING NORTH | 15750 | 10,097 |
| 30-025-29008 | MADERA RIDGE 24 001 | EOG | TA | BONE SPRING NORTH | 15600 | 4,200 |
| 30-025-29008 | MADERA RIDGE 24 001 | EOG | TA | BONE SPRING NORTH | 15600 | 4,200 |
| 30-025-28873 | VACA RIDGE 30 FEDERAL 001 | EOG | P & A | DELAWARE | 15505 | 9,458 |
| 30-025-29210 | DIAMOND 30 FEDERAL 001 | PRE-ONGARD WELL OPERATOR | P & A | | 15480 | 9,866 |
| 30-025-29141 | RED RAIDER BKS STATE 001 | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 15360 | 9,300 |
| 30-025-28196 | MARSHALL 29 FEDERAL 001 | EOG | INACTIVE PRODUCER | MORROW GAS | 15300 | 10,270 |
| 30-025-34246 | STEVENS 11 001 | DEVON | P & A | WOLFCAMP | 15250 | 10,601 |
| 30-025-28534 | VACA RIDGE 20 FEDERAL 001 | EOG | PRODUCING | BONE SPRING NORTH | 15136 | 10,334 |
| 30-025-28534 | VACA RIDGE 20 FEDERAL 001 | EOG | PRODUCING | BONE SPRING NORTH | 15136 | 10,334 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-28534 | VACA RIDGE 20 FEDERAL 001 | EOG | PRODUCING | BONE SPRING NORTH | 15136 | 10,334 |
| 30-025-27491 | SMITH FEDERAL 001 | PRE-ONGARD WELL OPERATOR | P & A | | 15120 | 3,468 |
| 30-025-26958 | SIMS 001 | EXXON | P & A | MORROW SOUTH GAS | 15007 | 2,753 |
| 30-025-27267 | GOVERNMENT M 000002 | PRE-ONGARD WELL OPERATOR | P & A | MORROW, SOUTH (GAS) | 14942 | 10,591 |
| 30-025-27052 | GOVERNMENT M 001 | PRE-ONGARD WELL OPERATOR | P & A | | 14905 | 7,738 |
| 30-025-26257 | BELL LAKE UNIT 019 | GBK CORP | P & A | BONE SPRING | 14760 | 9,464 |
| 30-025-26257 | BELL LAKE UNIT 019 | GBK CORP | P & A | BONE SPRING | 14760 | 9,464 |
| 30-025-26257 | BELL LAKE UNIT 019 | GBK CORP | P & A | BONE SPRING | 14760 | 9,464 |
| 30-025-26369 | GOVERNMENT L COM 002 | EOG | P & A | ATOKA WEST GAS | 14698 | 2,579 |
| 30-025-35504 | BELL LAKE UNIT 008 | EOG | P & A | MORROW | 14500 | 8,061 |
| 30-025-34050 | LELA MAE STEVENS FEDERAL COM 001 | EOG | P & A | WOLFCAMP | 13840 | 8,760 |
| 30-025-46154 | LEO THORSNESS 13 24 33 221H | MATADOR RESOURCES | PRODUCING | WOLFCAMP UPPER | 12868 | 6,480 |
| 30-025-49263 | BROADSIDE 13 24 FEDERAL COM 015H | DEVON | PRODUCING | WOLFCAMP UPPER | 12746 | 5,052 |
| 30-025-46833 | BLUE KRAIT 23 14 FEDERAL 032H | DEVON | PRODUCING | WOLFCAMP UPPER | 12614 | 10,742 |
| 30-025-46430 | BLUE KRAIT 23 14 FEDERAL 031H | DEVON | PRODUCING | WOLFCAMP UPPER | 12586 | 10,794 |
| 30-025-46540 | BLUE KRAIT 23 FEDERAL 033H | DEVON | PRODUCING | WOLFCAMP UPPER | 12582 | 8,295 |
| 30-025-49262 | BROADSIDE 13 24 FEDERAL COM 004H | DEVON | PRODUCING | WOLFCAMP UPPER | 12531 | 5,048 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-47912 | JUPITER 19 FEDERAL COM 707H | EOG | PERMITTED | WOLFCAMP UPPER | 12515 | 4,193 |
| 30-025-44442 | STRONG 14 24 33 AR 214H | MATADOR RESOURCES | PRODUCING | WOLFCAMP UPPER | 12500 | 6,457 |
| 30-025-47913 | JUPITER 19 FEDERAL COM 708H | EOG | PERMITTED | WOLFCAMP UPPER | 12477 | 4,183 |
| 30-025-46465 | BLUE KRAIT 23 14 FEDERAL 036H | DEVON | PRODUCING | WOLFCAMP UPPER | 12452 | 10,768 |
| 30-025-46832 | BLUE KRAIT 23 FEDERAL 038H | DEVON | PRODUCING | WOLFCAMP UPPER | 12429 | 8,273 |
| 30-025-46832 | BLUE KRAIT 23 FEDERAL 038H | DEVON | PRODUCING | WOLFCAMP UPPER | 12429 | 8,273 |
| 30-025-46834 | BLUE KRAIT 23 14 FEDERAL 035H | DEVON | PRODUCING | WOLFCAMP UPPER | 12421 | 10,819 |
| 30-025-44446 | RED RAIDER 25 STATE 701H | EOG | PRODUCING | WOLFCAMP UPPER | 12404 | 10,932 |
| 30-025-46466 | BLUE KRAIT 23 14 FEDERAL 037H | DEVON | PRODUCING | WOLFCAMP UPPER | 12397 | 8,316 |
| 30-025-46466 | BLUE KRAIT 23 14 FEDERAL 037H | DEVON | PRODUCING | WOLFCAMP UPPER | 12397 | 8,316 |
| 30-025-43532 | LEO THORSNESS 13 24 33 211H | MATADOR RESOURCES | PRODUCING | WOLFCAMP UPPER | 12371 | 6,438 |
| 30-025-46465 | BLUE KRAIT 23 14 FEDERAL 036H | DEVON | PRODUCING | WOLFCAMP UPPER | 12344 | 10,768 |
| 30-025-46519 | BROADSIDE 13 24 FEDERAL COM 003H | DEVON | PRODUCING | WOLFCAMP UPPER | 12320 | 5,088 |
| 30-025-47911 | JUPITER 19 FEDERAL COM 705H | EOG | PERMITTED | WOLFCAMP UPPER | 12290 | 3,655 |
| 30-025-44918 | CARL MOTTEK FEDERAL 211H | MATADOR RESOURCES | PRODUCING | WOLFCAMP | 12289 | 7,419 |
| 30-025-46517 | BROADSIDE 13 W FEDERAL COM 001H | DEVON | PRODUCING | WOLFCAMP UPPER | 12213 | 5,679 |
| 30-025-46988 | SEBASTIAN FEDERAL COM 704H | CONOCOPHILLIPS | PRODUCING | WOLFCAMP UPPER | 12142 | 5,589 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-46985 | SEBASTIAN FEDERAL COM 703H | CONOCOPHILLIPS | PRODUCING | WOLFCAMP UPPER | 12123 | 5,607 |
| 30-025-46282 | LEO THORSNESS 13 24 33 AR 135H | MATADOR RESOURCES | PRODUCING | BONE SPRING NORTH | 12103 | 6,461 |
| 30-025-48206 | BELL LAKE UNIT SOUTH 404H | GBK CORP | COMPLETED | WOLFCAMP \| SOUTH | 12085 | 7,980 |
| 30-025-41689 | SEBASTIAN FEDERAL COM 004H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 12073 | 6,906 |
| 30-025-42933 | BOOMSLANG 14 23 FEDERAL 004H | DEVON | PRODUCING | BONE SPRING NORTH | 11283 | 8,173 |
| 30-025-43236 | BLUE KRAIT 23 14 FEDERAL 002H | DEVON | PRODUCING | BONE SPRING NORTH | 11229 | 9,978 |
| 30-025-49264 | BROADSIDE 13 24 FEDERAL COM 025H | DEVON | PRODUCING | WOLFCAMP UPPER | 11210 | 5,030 |
| 30-025-43238 | BLUE KRAIT 23 FEDERAL 004H | DEVON | PRODUCING | BONE SPRING NORTH | 11190 | 7,968 |
| 30-025-47869 | JUPITER 19 FEDERAL COM 501H | EOG | PRODUCING | BONE SPRING NORTH | 11175 | 1,799 |
| 30-025-41383 | DECKARD FEDERAL COM 003H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11162 | 4,789 |
| 30-025-41333 | ROY BATTY FEDERAL COM 003H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11157 | 8,394 |
| 30-025-47877 | JUPITER 19 FEDERAL COM 509H | EOG | PRODUCING | BONE SPRING NORTH | 11156 | 4,644 |
| 30-025-47875 | JUPITER 19 FEDERAL COM 507H | EOG | PRODUCING | BONE SPRING NORTH | 11150 | 4,580 |
| 30-025-47875 | JUPITER 19 FEDERAL COM 507H | EOG | PRODUCING | BONE SPRING NORTH | 11150 | 4,580 |
| 30-025-46970 | YUKON 20 FEDERAL COM 504H | EOG | PRODUCING | BONE SPRING NORTH | 11149 | 7,873 |
| 30-025-46970 | YUKON 20 FEDERAL COM 504H | EOG | PRODUCING | BONE SPRING NORTH | 11149 | 7,873 |
| 30-025-47876 | JUPITER 19 FEDERAL COM 508H | EOG | PRODUCING | BONE SPRING NORTH | 11143 | 4,613 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-47876 | JUPITER 19 FEDERAL COM 508H | EOG | PRODUCING | BONE SPRING NORTH | 11143 | 4,613 |
| 30-025-47870 | JUPITER 19 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 11141 | 1,774 |
| 30-025-47870 | JUPITER 19 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 11141 | 1,774 |
| 30-025-41332 | ROY BATTY FEDERAL COM 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11109 | 9,654 |
| 30-025-41384 | DECKARD FEDERAL COM 004H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11103 | 4,511 |
| 30-025-47878 | JUPITER 19 FEDERAL COM 510H | EOG | PRODUCING | BONE SPRING NORTH | 11102 | 4,676 |
| 30-025-41099 | ROY BATTY FEDERAL COM 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11101 | 10,794 |
| 30-025-41382 | DECKARD FEDERAL COM 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11067 | 5,341 |
| 30-025-41688 | SEBASTIAN FEDERAL COM 003H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11055 | 5,921 |
| 30-025-41334 | ROY BATTY FEDERAL COM 004H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11051 | 7,221 |
| 30-025-40914 | DECKARD FEE 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 11034 | 6,147 |
| 30-025-41099 | ROY BATTY FEDERAL COM 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10998 | 10,794 |
| 30-025-40914 | DECKARD FEE 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10997 | 6,147 |
| 30-025-41026 | TYRELL FEE 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10951 | 7,137 |
| 30-025-47874 | JUPITER 19 FEDERAL COM 506H | EOG | PRODUCING | BONE SPRING NORTH | 10950 | 3,581 |
| 30-025-41687 | SEBASTIAN FEDERAL COM 001H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10944 | 4,612 |
| 30-025-41666 | SEBASTIAN FEDERAL COM 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10927 | 5,001 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-025-39560 | FALCON 25 FEDERAL 001 | EOG | PRODUCING | BONE SPRING NORTH | 10889 | 6,758 |
| 30-025-41689 | SEBASTIAN FEDERAL COM 004H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 10877 | 6,906 |
| 30-025-41957 | PRODIGAL SUN 17 24 34 001H | CHEVRON | PRODUCING | BONE SPRING NORTH | 10866 | 10,207 |
| 30-025-44937 | CARL MOTTEK FEDERAL 125H | MATADOR RESOURCES | PRODUCING | BONE SPRING NORTH | 10831 | 7,467 |
| 30-025-49632 | YUKON 20 FEDERAL COM 506H | EOG | PRODUCING | BONE SPRING NORTH | 10830 | 8,502 |
| 30-025-49632 | YUKON 20 FEDERAL COM 506H | EOG | PRODUCING | BONE SPRING NORTH | 10830 | 8,502 |
| 30-025-43032 | BOOMSLANG 14 23 FEDERAL 009H | DEVON | PRODUCING | BONE SPRING NORTH | 10658 | 8,250 |
| 30-025-47872 | JUPITER 19 FEDERAL COM 403H | EOG | PRODUCING | BONE SPRING NORTH | 10584 | 3,519 |
| 30-025-47872 | JUPITER 19 FEDERAL COM 403H | EOG | PRODUCING | BONE SPRING NORTH | 10584 | 3,519 |
| 30-025-46971 | YUKON 20 FEDERAL COM 305H | EOG | PRODUCING | BONE SPRING NORTH | 10446 | 8,649 |
| 30-025-47194 | YUKON 20 FEDERAL COM 310H | EOG | PRODUCING | BONE SPRING NORTH | 10437 | 7,278 |
| 30-025-47194 | YUKON 20 FEDERAL COM 310H | EOG | PRODUCING | BONE SPRING NORTH | 10433 | 7,278 |
| 30-025-47170 | YUKON 20 FEDERAL COM 303H | EOG | PRODUCING | BONE SPRING NORTH | 10428 | 8,715 |
| 30-025-47170 | YUKON 20 FEDERAL COM 303H | EOG | PRODUCING | BONE SPRING NORTH | 10428 | 8,715 |
| 30-025-47187 | YUKON 20 FEDERAL COM 311H | EOG | PRODUCING | BONE SPRING NORTH | 10313 | 7,245 |
| 30-025-47111 | YUKON 20 FEDERAL COM 304H | EOG | PRODUCING | BONE SPRING NORTH | 10290 | 8,682 |
| 30-025-46972 | YUKON 20 FEDERAL COM 306H | EOG | PRODUCING | BONE SPRING NORTH | 10277 | 8,619 |

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| 30-025-46972 | YUKON 20 FEDERAL COM 306H | EOG | PRODUCING | BONE SPRING NORTH | 10277 | 8,619 |
| 30-025-48239 | JUPITER 19 FEDERAL COM 306H | EOG | PRODUCING | BONE SPRING NORTH | 10270 | 3,475 |
| 30-025-48241 | JUPITER 19 FEDERAL COM 308H | EOG | PRODUCING | BONE SPRING NORTH | 10270 | 5,347 |
| 30-025-48240 | JUPITER 19 FEDERAL COM 307H | EOG | PRODUCING | BONE SPRING NORTH | 10262 | 5,316 |
| 30-025-47873 | JUPITER 19 FEDERAL COM 309H | EOG | PRODUCING | BONE SPRING NORTH | 10250 | 3,550 |
| 30-025-47873 | JUPITER 19 FEDERAL COM 309H | EOG | PRODUCING | BONE SPRING NORTH | 10250 | 3,550 |
| 30-025-46974 | YUKON 20 FEDERAL COM 501H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,824 |
| 30-025-46974 | YUKON 20 FEDERAL COM 501H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,824 |
| 30-025-46930 | YUKON 20 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,841 |
| 30-025-46930 | YUKON 20 FEDERAL COM 502H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,841 |
| 30-025-46973 | YUKON 20 FEDERAL COM 503H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,857 |
| 30-025-46973 | YUKON 20 FEDERAL COM 503H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 7,857 |
| 30-025-46975 | YUKON 20 FEDERAL COM 505H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 8,551 |
| 30-025-46975 | YUKON 20 FEDERAL COM 505H | EOG | PRODUCING | BONE SPRING NORTH | 10150 | 8,551 |
| 30-025-44936 | CARL MOTTEK FEDERAL 121H | MATADOR RESOURCES | PRODUCING | BONE SPRING NORTH | 10102 | 7,443 |
| 30-025-43308 | BOOMSLANG 14 23 FEDERAL 002H | DEVON | PRODUCING | BONE SPRING NORTH | 9519 | 9,837 |
| 30-025-42920 | BOOMSLANG 14 23 FEDERAL 001H | DEVON | PRODUCING | BONE SPRING NORTH | 9518 | 8,216 |

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| 30-025-39716 | RED RAIDER BKS STATE 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 9472 | 6,557 |
| 30-025-39560 | FALCON 25 FEDERAL 001 | EOG | PRODUCING | BONE SPRING NORTH | 9468 | 6,758 |
| 30-025-43239 | BLUE KRAIT 23 FEDERAL 006H | DEVON | PRODUCING | BONE SPRING NORTH | 9456 | 7,948 |
| 30-025-43237 | BLUE KRAIT 23 FEDERAL 003H | DEVON | PRODUCING | BONE SPRING NORTH | 9452 | 8,010 |
| 30-025-42758 | RED RAIDER BKS STATE 005H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 9438 | 10,893 |
| 30-025-42789 | TYRELL FEE 002H | CONOCOPHILLIPS | PRODUCING | BONE SPRING NORTH | 9361 | 7,400 |
| 30-025-50396 | YUKON 20 FEDERAL COM 102Y | EOG | P & A | | 9198 | 7,708 |
| 30-025-50396 | YUKON 20 FEDERAL COM 102Y | EOG | P & A | | 9198 | 7,708 |
| 30-025-24910 | BELL LAKE UNIT 016 | GBK CORP | PRODUCING | DELAWARE SOUTH | 9005 | 10,554 |
| 30-025-24910 | BELL LAKE UNIT 016 | GBK CORP | PRODUCING | DELAWARE SOUTH | 9005 | 10,554 |
| 30-025-40448 | RED HILLS AGI 001 | TARGA RESOURCES | INJECTING | CHERRY CANYON | 6650 | 1,041 |
| 30-025-08371 | COSSATOT E 002 | PRE-ONGARD WELL OPERATOR | P & A | | 5425 | 2,733 |
| 30-025-48890 | JUPITER 19 FEDERAL COM 703H | EOG | PERMITTED | WOLFCAMP UPPER | 0 | 1,608 |
| 30-025-48889 | JUPITER 19 FEDERAL COM 701H | EOG | PERMITTED | WOLFCAMP UPPER | 0 | 1,657 |
| 30-025-47908 | JUPITER 19 FEDERAL COM 601H | EOG | PERMITTED | BONE SPRING, NORTH | 0 | 1,971 |
| 30-025-46518 | BROADSIDE 13 24 FEDERAL COM 002H | DEVON | PERMITTED | WOLFCAMP UPPER | 0 | 5,248 |
| 30-025-47909 | JUPITER 19 FEDERAL COM 605H | EOG | PERMITTED | BONE SPRING, NORTH | 0 | 5,461 |

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| 30-025-50484 | YUKON 20 FEDERAL COM 746H | EOG | PERMITTED | | 0 | 7,104 |
| 30-025-50502 | YUKON 20 FEDERAL COM 710H | EOG | PERMITTED | | 0 | 7,161 |
| 30-025-50503 | YUKON 20 FEDERAL COM 711H | EOG | PERMITTED | | 0 | 7,242 |
| 30-025-50480 | YUKON 20 FEDERAL COM 709H | EOG | PERMITTED | | 0 | 7,310 |
| 30-025-50421 | YUKON 20 FEDERAL COM 406H | EOG | PERMITTED | | 0 | 7,389 |
| 30-025-50516 | YUKON 20 FEDERAL COM 205H | EOG | PERMITTED | | 0 | 7,929 |
| 30-025-50464 | YUKON 20 FEDERAL COM 704H | EOG | PERMITTED | | 0 | 8,535 |
| 30-025-50465 | YUKON 20 FEDERAL COM 743H | EOG | PERMITTED | | 0 | 8,567 |
| 30-025-50483 | YUKON 20 FEDERAL COM 742H | EOG | PERMITTED | | 0 | 9,104 |
| 30-025-50482 | YUKON 20 FEDERAL COM 741H | EOG | PERMITTED | | 0 | 9,108 |
| 30-025-50481 | YUKON 20 FEDERAL COM 740H | EOG | PERMITTED | | 0 | 9,112 |
| 30-025-50350 | YUKON 20 FEDERAL COM 402H | EOG | PERMITTED | | 0 | 9,189 |
| 30-025-50349 | YUKON 20 FEDERAL COM 401H | EOG | PERMITTED | | 0 | 9,193 |
| 30-025-50378 | YUKON 20 FEDERAL COM 703H | EOG | PERMITTED | | 0 | 9,799 |
| 30-025-50377 | YUKON 20 FEDERAL COM 702H | EOG | PERMITTED | | 0 | 9,820 |
| 30-025-47910 | JUPITER 19 FEDERAL COM 702H | EOG | DUC | WOLFCAMP UPPER | 0 | 1,632 |

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| 30-025-50376 | YUKON 20 FEDERAL COM 701H | EOG | PERMITTED | | 0 | 9,841 |
| 30-025-50397 | YUKON 20 FEDERAL COM 101H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,676 |
| 30-025-50397 | YUKON 20 FEDERAL COM 101H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,676 |
| 30-025-50469 | YUKON 20 FEDERAL COM 102H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,682 |
| 30-025-49635 | YUKON 20 FEDERAL COM 103H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,741 |
| 30-025-49635 | YUKON 20 FEDERAL COM 103H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,741 |
| 30-025-49633 | YUKON 20 FEDERAL COM 706H | EOG | PERMITTED | | 0 | 10,147 |
| 30-025-49634 | YUKON 20 FEDERAL COM 104H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,774 |
| 30-025-49634 | YUKON 20 FEDERAL COM 104H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 7,774 |
| 30-025-50420 | YUKON 20 FEDERAL COM 405H | EOG | DUC | | 0 | 7,925 |
| 30-025-46857 | BLUE KRAIT 23 FEDERAL 021H | DEVON | DUC | BONE SPRING, NORTH | 0 | 8,006 |
| 30-025-46857 | BLUE KRAIT 23 FEDERAL 021H | DEVON | DUC | BONE SPRING, NORTH | 0 | 8,006 |
| 30-025-49690 | BLUE KRAIT 23 FEDERAL 034H | DEVON | DRILLING | | 0 | 8,028 |
| 30-025-49690 | BLUE KRAIT 23 FEDERAL 034H | DEVON | DRILLING | | 0 | 8,028 |
| 30-025-47030 | BLUE KRAIT 23 FEDERAL 034Y | DEVON | DRILLED | WOLFCAMP UPPER | 0 | 8,251 |
| 30-025-50352 | YUKON 20 FEDERAL COM 507H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,320 |
| 30-025-50351 | YUKON 20 FEDERAL COM 508H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,353 |

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| 30-025-50348 | YUKON 20 FEDERAL COM 509H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,386 |
| 30-025-50348 | YUKON 20 FEDERAL COM 509H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,386 |
| 30-025-50347 | YUKON 20 FEDERAL COM 510H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,418 |
| 30-025-50347 | YUKON 20 FEDERAL COM 510H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 8,418 |
| 30-025-50346 | YUKON 20 FEDERAL COM 511H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 9,180 |
| 30-025-50345 | YUKON 20 FEDERAL COM 512H | EOG | PRODUCING | BONE SPRING NORTH | 0 | 9,184 |
| 30-025-46464 | BLUE KRAIT 23 14 FEDERAL 028H | DEVON | DRILLING | BONE SPRING, NORTH | 0 | 9,496 |
| 30-025-46463 | BLUE KRAIT 23 14 FEDERAL 027H | DEVON | DUC | BONE SPRING, NORTH | 0 | 9,520 |

## 10 Water Analyses

There are two Targa water wells located in this region. The water samples were from C03666 POD1 water well (sample depth <500ft) within one mile of the proposed Red Hills AGI #3 well site. The sampling and analyses provided were all done in-house at New Mexico Tech.

For this **Targa** water well, two 1-L washed Nalgene bottles were triple-rinsed with well water and filled. One 1-L bottle was reserved for general chemistry analysis. The pH of the sample is basic, around 9.98. The conductivity is 1777 Us/cm.

**GENERALCHEMISTRY ANALYSES**

| | |
|---|---|
| Customer name | Tianguang Fan |
| Company | New Mexico Institute of Mining and Technology |
| Address | 801 Leroy Place |
| City, State, Zip code | Socorro NM 87801 |
| Phone | (575) 835-5542 |
| Email | Tianguang.Fan@nmt.edu |
| Date sampled | 6/20/2022 |
| Date received | 6/22/2022 |
| Date completed | 6/29/2022 |

| **Customer ID** | **NGO Targa Well (POD 0397) RH** |
|---|---|
| pH | 9.55 |
| Conductivity (uS/cm) | 1,777.0 |
| Alkalinity as $CO_3^{-2}$ (mg/L) | |
| Alkalinity as $HCO_3^-$ (mg/L) | 68.3 |
| Chloride (mg/L) | 236.06 |
| Fluoride ($F^-$) (mg/L) | 0.43 |

| | |
|---|---|
| Bromide (mg/L) | 1.61 |
| Nitrate ($NO_3^-$) (mg/L) | ND |
| Phosphate (mg/L) | ND |
| Sulfate ($SO_4^{2-}$) (mg/L) | 447.06 |
| Lithium(Li) (mg/L) | 0.18 |
| Sodium (Na) (mg/L) | 365.64 |
| Potassium (K) (mg/L) | 6.45 |
| Magnesium (Mg) (mg/L) | 8.26 |
| Calcium (Ca) (mg/L) | 12.11 |
| | |
| TDS Calculation (mg/L) | 650.0 |
| Total cations (meq/L) | 16.77 |
| Total anions (meq/L) | -17.09 |
| Percent difference (%) | -0.96 |

| | |
|---|---|
| ORP (mV) | 473.8 |
| IC (ppm) | 11.0 |
| NPOC (ppm) | 4.48 |

ND, non-detectable.

## 11 Appendix B: Land Information on Tracts within One Mile of Proposed Red Hills AGI #3

COG Operating, LLC
600 West Illinois Avenue
Midland, Texas 79701
(432) 683-7 443

Devon Energy Production Company, LP,
333 W. Sheridan Ave.,
Oklahoma City, OK 73102

EOG Resources, Inc.
5509 Champions Drive
Midland, TX 79706
(432) 686- 3689

Kaiser-Francis Oil Company
6733 Yale A venue
Tulsa, OK 74136
(918) 491-4685

Targa Northern Delaware LLC
3100 McKinnon Street, Suite 800 Dallas, TX 75201
(214) 420-4949

Matador Production Company 5400
LBJ Freeway, Suite 1500 Dallas, TX 75240
(972) 371-5200

WPX Energy Permian, LLC
3500 One Williams Center Tulsa, OK 74172
(405) 996-5760

**ATTACHMENT B – SAMPLE NOTICE LETTER**

February XX, 2023

Sample Notice Letter VIA CERTIFIED MAIL

Party to be notified RETURN RECEIPT REQUESTED

Address

RE: TARGA NORTHERN DELAWARE LLC PROPOSED RED HILLS AGI #3

This letter is to advise you that Targa Northern Delaware LLC ("Targa") has filed the enclosed C-108 application (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking authorization to drill and operate a class II acid gas injection (AGI) well, the Red Hills AGI #3 well, at Targa's gas processing facility ("Facility") in Lea County, New Mexico. The proposed Red Hills AGI #3 is intended to provide a redundant well option for existing acid gas injection operations and increase the total sour gas treatment capacity at the Facility. In accordance with the requirements of the New Mexico Oil Conservation Division, you are being provided this notice and a copy of the complete application as you are an interested party within one (1) mile of the proposed AGI well location.

The proposed redundant well (Red Hills AGI #3) will be a vertical well with a surface location of approximately 625 feet from the south line (FSL) and 307 feet from the east line (FEL) in Section 13, Township 24 South, Range 33 East, Lea County, New Mexico. As proposed, the Red Hills AGI #3 well will inject waste carbon dioxide and hydrogen sulfide into the Silurio-Devonian Thirtyone formation, Wristen Group and the Fusselman formation from approximately 16,000 feet to 17,600 feet. The maximum surface pressure will not exceed 5,000 psi with a maximum daily injection volume of twenty-six (26) million standard cubic feet (MMSCF).

This application (Case Number XXXXX) has been set for hearing before the New Mexico Oil Conservation Commission at XX:XX am on XX, 2023. You are not required to attend this hearing, but as an owner of an interest that may be affected by this application, you may appear and present testimony. Failure to appear at that time and become a party of record will preclude you from challenging the application at a later date. Hearings are currently conducted remotely. To participate in the electronic hearing, see the instructions posted on the OCC Hearings website: https://www.emnrd.nm.gov/ocd/occ-info/.

Pursuant to Division Rule 19.15.4.13.B, a party who intends to present evidence at the hearing shall file a pre-hearing statement and serve copies on other parties, or the attorneys of parties who are represented by counsel, at least four business days in advance of a scheduled hearing, but in no event later than 5:00 p.m. Mountain Time, on the Thursday preceding the scheduled hearing date. The statement must be submitted through the OCD E-Permitting system (https://wwwapps.emnrd.nm.gov/ocd/ocdpermitting/) or via e-mail to occ.hearings@emnrd.nm.gov and should include: the names of the parties and their attorneys, a concise statement of the case, the names of all witnesses the party will call to testify at the hearing,

the approximate time the party will need to present its case, and identification of any procedural matters that are to be resolved prior to the hearing.

If you have any questions concerning this application, you may contact Clark White Executive VP of Operations at cwhite@targaresources.com; (713) 584-1525.

Sincerely,

Targa Northern Delaware LLC

Enclosure: C-108 Application for Authority to Inject

**PROPOSED PUBLIC NOTICE**

Targa Northern Delaware LLC ("Targa") filed an application on February 20, 2023 with the New Mexico Oil Conservation Commission ("NMOCC") seeking authorization to drill and operate a class II acid gas injection (AGI) well, the Red Hills AGI #3 well, at Targa's gas processing facility ("Facility") in Lea County, New Mexico. The proposed redundant well (Red Hills AGI #3) will be a vertical well with a surface location of approximately 625 feet from the south line and 307 feet from the east line in Section 13, Township 24 South, Range 33 East, Lea County, New Mexico. The Red Hills AGI #3 well will inject waste carbon dioxide and hydrogen sulfide into the Silurio-Devonian Thirtyone formation, Wristen Group and the Fusselman formation from approximately 16,000 feet to 17,600 feet.. The maximum surface pressure will not exceed 5,000 psi with a maximum daily injection volume of twenty-six (26) million standard cubic feet (MMSCF). The poposed well will serve as a disposal well for treated acid gas at the Facility.

This application (Case Number XXXXX) has been set for hearing before the New Mexico Oil Conservation Commission at XX:XX am on XX, 2023. You are not required to attend this hearing, but as an owner of an interest that may be affected by this application, you may appear and present testimony. Failure to appear at that time and become a party of record will preclude you from challenging the application at a later date. Hearings are currently conducted remotely. To participate in the electronic hearing, see the instructions posted on the OCC Hearings website: https://www.emnrd.nm.gov/ocd/occ-info/.

Pursuant to Division Rule 19.15.4.13.B, a party who intends to present evidence at the hearing shall file a pre-hearing statement and serve copies on other parties, or the attorneys of parties who are represented by counsel, at least four business days in advance of a scheduled hearing, but in no event later than 5:00 p.m. Mountain Time, on the Thursday preceding the scheduled hearing date. The statement must be submitted through the E-Permitting system (https://wwwapps.emnrd.nm.gov/ocd/ocdpermitting/) or via e-mail to occ.hearings@emnrd.nm.gov and should include: the names of the parties and their attorneys, a concise statement of the case, the names of all witnesses the party will call to testify at the hearing, the approximate time the party will need to present its case, and identification of any procedural matters that are to be resolved prior to the hearing.