District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
Revised April 3, 2017

For temporary pits, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office.
For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

TP-1

Pit, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action:
- ☐ Below grade tank registration
- ☐ Permit of a pit or proposed alternative method
- ☒ Closure of a pit, below-grade tank, or proposed alternative method
- ☐ Modification to an existing permit/or registration
- ☐ Closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.
Operator: Lime Rock Resources OGRID #: 255333
Address: Heritage Plaza, 111 Bagby, Suite 4600. Houston, Texas, 77002
Facility or well name: Eagle "34M" Federal #25
API Number: 30-015-29114 OCD Permit Number:
U/L or Qtr/Qtr UL Section 34 Township 17S Range 27E County: Eddy
Center of Proposed Design: TBD
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Pit:** Subsection F, G or J of 19.15.17.11 NMAC
Temporary: ☒ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Multi-Well Fluid Management Low Chloride Drilling Fluid ☐ yes ☒ no
☐ Lined ☐ Unlined Liner type: Thickness _____mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other _Drilled in 1996_____
☐ String-Reinforced
Liner Seams: ☐ Welded ☐ Factory ☐ Other _____ Volume: Unknown Dimensions:_____

3.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: _____bbl Type of fluid: _____
Tank Construction material: _____
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other _____
Liner type: Thickness _____mil ☐ HDPE ☐ PVC ☐ Other _____

4.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

5.
Fencing: Subsection D of 19.15.17.11 NMAC *(Applies to permanent pits, temporary pits, and below-grade tanks)*
☐ Chain link, six feet in height, two strands of barbed wire at top *(Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)*
☐ Four-foot height, four strands of barbed wire evenly spaced between one and four feet
☐ Alternate. Please specify_____

6.

Netting: Subsection E of 19.15.17.11 NMAC *(Applies to permanent pits and permanent open top tanks)*

☐ Screen ☐ Netting ☐ Other_____

☐ Monthly inspections (If netting or screening is not physically feasible)

7.

Signs: Subsection C of 19.15.17.11 NMAC

☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☒ Signed in compliance with 19.15.16.8 NMAC

8.

Variances and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

☒ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

All proposed variances have been previously approved by OCD.

9.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. **Siting criteria does not apply to drying pads or above-grade tanks.**

General siting	
Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank. - ☐ NM Office of the State Engineer - iWATERS database search; ☐ USGS; ☐ Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit . NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. **(Does not apply to below grade tanks)** - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within the area overlying a subsurface mine. **(Does not apply to below grade tanks)** - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
Within an unstable area. **(Does not apply to below grade tanks)** - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☐ No
Within a 100-year floodplain. **(Does not apply to below grade tanks)** - FEMA map	☐ Yes ☐ No
Below Grade Tanks	
Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Temporary Pit using Low Chloride Drilling Fluid (maximum chloride content 15,000 mg/liter)	
Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.) - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application. NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No

Within 100 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Temporary Pit Non-low chloride drilling fluid	
Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 500 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application; - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Permanent Pit or Multi-Well Fluid Management Pit	
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No

10.

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

11.

Multi-Well Fluid Management Pit Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☐ A List of wells with approved application for permit to drill associated with the pit.
☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
☐ Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

13.
Proposed Closure: 19.15.17.13 NMAC
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

Type: ☒ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☐ Multi-well Fluid Management Pit ☐ Alternative

Proposed Closure Method:
- ☐ Waste Excavation and Removal
- ☐ Waste Removal (Closed-loop systems only)
- ☒ On-site Closure Method (Only for temporary pits and closed-loop systems)
  - ☒ In-place Burial ☒ On-site Trench Burial
- ☒ Alternative Closure Method

14.
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC
Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 25 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☒ NA
Ground water is between 25-50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☒ NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells See Figures 1 & 2	☒ Yes ☐ No ☐ NA
Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site See Figure 7a and 7b	☐ Yes ☒ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image See Figure 8	☐ Yes ☒ No
Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site See Figure 1	☐ Yes ☒ No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☒ No
Within 300 feet of a wetland US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site See Figure 9	☐ Yes ☒ No

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality See Figure 3	☐ Yes ☒ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division See Figure 4	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map See Figure 5	☐ Yes ☒ No
Within a 100-year floodplain. - FEMA map See Figure 6	☐ Yes ☒ No

16.
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☒ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC
- ☒ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.11 NMAC
- ☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Waste Material Sampling Plan - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- ☒ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

17.
Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Mike Barrett Title: Production Superintendent

Signature: Mike Barrett Date: 3-4-2020

e-mail address: mbarrett@limerockresources.com> Telephone: 575-365-9724

18.
OCD Approval: ☐ Permit Application (including closure plan) ☑ Closure Plan (only) ☑ OCD Conditions (see attachment)

OCD Representative Signature: Emily A. Hernandez **Approval Date:** 2/12/21

Title: Environmental Bureau Chief **OCD Permit Number:** TP-1

19.
Closure Report (required within 60 days of closure completion): 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ **Closure Completion Date:**

20.
Closure Method:

☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)
☐ If different from approved plan, please explain.

21.
Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Proof of Closure Notice (surface owner and division)
- ☐ Proof of Deed Notice (required for on-site closure for private land only)
- ☐ Plot Plan (for on-site closures and temporary pits)
- ☐ Confirmation Sampling Analytical Results (if applicable)
- ☐ Waste Material Sampling Analytical Results (required for on-site closure)
- ☐ Disposal Facility Name and Permit Number
- ☐ Soil Backfilling and Cover Installation
- ☐ Re-vegetation Application Rates and Seeding Technique
- ☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude Longitude NAD: ☐1927 ☐ 1983

22.

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title: _____

Signature:_____ Date: _____

e-mail address:_____ Telephone: _____

State of New Mexico
Energy, Minerals and Natural Resources Department

NEW MEXICO OIL CONSERVATION DIVISION

CONDITIONS OF APPROVAL

OPERATOR:

Redwood Operating, LLC

WELL INFORMATION:

Eagle 34M Federal #25, API# 30-015-29114

APPLICATION TYPE:

☒ Pit, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

CONDITIONS OF APPROVAL:

- As per 19.15.17.11 K. (3) and 19.15.17.13 D. (8) (b) NMAC, a liner is to be installed on the bottom and sides of the trench, in addition to over top of the containment.
- The three onsite pits are to be closed in accordance with 19.15.17.13 NMAC - Rp, 19.15.17.13 NMAC, 6/28/13, Closure and Site Reclamation Requirements.

VARIANCE(S) APPROVED:

- 19.15.17.13 E. (1),
- 19.15.17.13 for alternative test methods to analyze concentrations of TPH and Chlorides,
- 19.15.17.13 H. (1) (b) and 19.15.17.13 H. (5) (a).

NM OCD Approved by Signature

2/12/2021
Date

C-144 Closure Plan Application
Eagle 34 M Federal 25 Former Reserve Pit

- Transmittal Letter
- C-144
- Trench Burial Plan
- C102
- Siting Criteria Demonstration and Associated Figures
- Site Photographs
- Previously Approved Variances to Rule 17

Prepared for
Lime Rock Resources
Artesia, New Mexico

Prepared by
R.T. Hicks Consultants, Ltd.
901 Rio Grande NW
F-142
Albuquerque, New Mexico

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

March 4, 2020

Ms. Susan Lucas Kamat
NMOCD
1220 S. St. Francis Blvd
Santa Fe, NM
VIA EMAIL Susan.LucasKamat@state.nm.us

Ms. Meliss Horn
BLM
620 E. Green Street
Carlsbad, NM 88220
VIA EMAIL mhorn@blm.gov

RE: Lime Rock Resources II A LLP – C-144 Drilling Pit Closure Plan for Eagle 34 M Federal 25….

Dear Ms. Horn and Ms. Lucas Kamat:

On behalf of Lime Rock Resources, Hicks Consultants is pleased to submit a drilling pit closure plan application for the above-referenced well. When drilled in 1996, this well employed a reserve pit that we believe was partially above grade (a push-up pit). When closed in 1996-97, no rules adequately governed closure and the operator followed industry practices in effect at the time.

An inspection by BLM required Lime Rock Resources, the current operator of the well, to evaluate these past practices and the impacts to the environment and determine prepare this plan to cause re-vegetation of the area of the closed pit. Our work showed that excavation of the residual cuttings and some earth material either improperly mixed with cuttings or impacted by the residual cuttings must be disposed in a manner consisted with current practices. Hicks Consultants recommends on-lease burial in a trench consistent with the mandates of Rule 17.

The application contains:

- The signed C-144 as the first section.
- The trench burial closure plan.
- A C-102 for the location. The location of the trench burial will be determined by BLM but will lie less than 200 feet of the well.
- The Siting Criteria Demonstration and associated figures for the proposed trench burial.
- Photographs of the area to provide a frame of reference to reviewers. Please examine Site Photographs. These images and our site visit demonstrate that all planned locations for drilling pits meet the setback criteria of Rule 17 and includes an expanded section addressing trench burial in the High Karst Potential setting
- Previously approved variances to the Pit Rule that will be used for this permit application. These are:
    a. Allowing the use of EPA Method 8015M in lieu of 418.1 for analysis of TPH (December 18, 2014) and 8015 will be used for this closure.
    b. Allowing EPA 300.0 or SM4500 for the analysis of chloride (see Rule 29).
    c. Permit notification of the surface owner via email in lieu of US Mail

A comparison of on-lease drilling waste management v. disposal to a commercial facility will be submitted to BLM and OCD separately.

While the exact geometry of the trench may change slightly based upon site conditions, the footprint of the pit will remain within a BLM-approved area of disturbance.

The U.S. Government is the surface owner and this application is provided to the BLM via email. At present, the BLM requires that steel markers of the closed pit locations are flush with the ground surface rather than 4-feet above grade as specified by the Rule. Markers prescribed by the Rule create a permanent artificial roost for birds of prey that BLM does not desire. Obviously, ground level marker provides better protection of the environment and wildlife and provides equivalent protection of fresh water and public health. We do not believe a variance is required as the Rule states:

> **19.15.17.13H.1.(b)** The operator may propose an alternative to the re-vegetation or recontouring requirement if the operator demonstrates to the appropriate district office that the proposed alternative provides equal or better prevention of erosion, and protection of fresh water, public health and the environment. The proposed alternative shall be agreed upon by the surface owner. The operator shall submit the proposed alternative, with written documentation that the surface owner agrees to the alternative, to the division for approval.

Please contact me with any questions regarding this submittal.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Copy: Lime Rock Resources

C-144

TRENCH BURIAL CLOSURE PLAN

Trench Burial Closure For Legacy Reserve Pits

General Conditions

The trench burial must be located within the confines of the BLM-approved area within the same lease as the legacy reserve pit. The trench may be on the same pad as the reserve pit or another location approved by BLM.

The trench may be fully lined, the reserve pit materials fully encapsulated, and liner installed over the top of the containment. The top liner must be located four feet below the natural ground surface. Alternatively, BLM may approve placement of the legacy, dry cuttings in an unlined trench with a capping liner completely over the cuttings and at least 4-feet below natural grade.

Attached to the transmittal letter is a discussion of the fluid mechanics of burial of stabilized cuttings in a lined trench and unlined trench. The conclusion of this discussion is that the upper, capping liner provides 100% of the environmental efficacy of closure and the lining of the trench prior to placement of stabilized cuttings provides 0% of environmental benefit. Thus, we believe the Laws of Fluid Mechanics favor a modified "in-place closure" method, as described in Rule 17, over construction of a burial trench.

Waste Material Sampling Plan

Prior to burial of residual drilling solids and entrained earth in the trench, the material destined for the trench will be sampled in the manner described below:

1. The backhoe or excavator will collect a sample from ground surface to the total depth of the closed reserve pit at five locations presented on a map with the transmittal letter.
2. The thickness of the sampled solids at each sample location is recorded
3. A 5-point composite sample of the "clean" earth material from the adjacent trench burial also shown on the map with the transmittal letter

19.15.17.13. D. (4) …. When transferring the waste contents … into a burial trench, the operator shall stabilize or solidify the waste contents to a capacity enough to support the final cover of the temporary pit or burial trench. The operator shall not mix the contents with soil or other material at a mixing ratio of greater than 3:1, soil or other material to contents. The waste mixture must pass the paint filter liquids test (EPA SW-846, Method 9095 or other test methods approved by the division).

19.15.17.13. D. (5) The operator shall collect, at a minimum, a five point composite of the contents of the temporary pit …to demonstrate that, after the waste is solidified or stabilized

will also be collected in the event that some of the residual cuttings require additional stabilization by mixing per Rule 17.

4. Each of the six samples (five samples of cuttings and one of the "mixing dirt") is evaluated by a laboratory for the parameters listed in Table II of Rule 17.
5. We use the cuttings thickness of each discrete sample location to calculate a weighted average of the Table II constituents for the cuttings in the outer horseshoe and the cuttings of the inner horseshoe.
6. Depending upon the nature of the residual cuttings and the amount of mixing achieved during the initial closure event, we may calculate a weighted average of 3 parts non-waste material (the clean material sampled from the trench burial excavation) and the weighted average of the un-mixed cuttings in the closed pit to determine compliance with Table II.

If a concentration of a contaminant within the material mixed at a ratio not exceeding 3:1 is higher than the concentration given in Table II, closure will proceed in accordance with Subsection D of 19.15.17.13 NMAC.

In the event that on-site closure standards cannot be achieved, the operator will remove the solid pit contents and transfer to the following division-approved disposal facility, specifically:
R360 or Sundance Services

The operator will notify a BLM Environmental Protection Specialist and the OCD District Office three days prior to sampling pit contents and excavation bottoms.

Closure Notice

Trench burial of the closed reserve pit is the selected on-site disposal alternative.

The operator will notify the BLM by E-mail (per OCD-approved variance) that the operator plans closure operations at least 72 hours, but not more than one

with soil or other non-waste material at a ratio of no more than 3:1 soil or other non-waste material to waste, the concentration of any contaminant in the stabilized waste is not higher than the parameters listed in Table II of 19.15.17.13 NMAC.

19.15.17.13. D.
(6) If, after appropriate stabilization, the concentrations of all contaminants in the contents from a temporary pit … are less than or equal to the parameters of listed in Table II of 19.15.17.13 NMAC, the operator may either proceed to dispose of wastes in an existing temporary pit or construct a burial trench for disposal of these wastes.
(7) If the concentration of any contaminant in the contents… is higher than constituent concentrations shown in Table II of 19.15.17.13 NMAC, then closure must proceed in accordance with Subsection C of 19.15.17.13 NMAC.

19.15.17.1 E Closure notice.
(1) The operator shall notify the surface owner by certified mail, return receipt requested that the operator plans closure operations at least 72 hours, but not more than one week, prior to any closure operation. Notice shall include well name, API number and location. …
(2) The operator of a temporary pit… who is approved for onsite closure shall notify the

week, prior to any closure operation. The notice will include the well name, API number, and location.

Should onsite burial be on private land, the operator will file a deed notice including exact location of the burial with the county clerk of the county where the onsite burial is located.

Construction/Design Plan of Trench Burial

Earthwork and Sampling Beneath Cuttings within Closed Reserve Pit

The trench burial will adhere to appropriate prescriptive mandates of Rule 17. The process of earth work is described below.

1. Any soil that supports vegetation within the footprint of the former reserve pit will be excavated and removed to a stockpile
2. Cuttings and mixed soil/cuttings are removed and placed in the trench.
3. The exposed earth material beneath the reserve pit footprint is inspected for any impact and representative samples are obtained for field analysis (conductance or titration). If field analysis shows salt concentrations exceed Table I limits (e.g. 20,000 mg/kg chloride where depth to groundwater exceeds 100 feet), excavation will continue with stockpiling of earth material on cuttings until the excavated earth material meets Rule 17 Table I standards. The result of the sampling described herein is five (minimum) discrete samples from the footprint of the closed reserve pit. Laboratory analyses from these five samples will be compared to the standards of Table I.
4. The slope of the trench burial sides may be vertical or sloped at the discretion of the operator after input from the liner installation contractor. However, the trench must have a properly constructed foundation and side walls consisting of a firm, unyielding base, smooth and free of

appropriate division district office verbally and in writing at least 72 hours, but not more than one week, prior to any closure operation. The notice shall include the operator's name and the location to be closed by unit letter, section, township and range. If the closure is associated with a particular well, then the notice shall also include the well's name, number and API number.

19.15.17.1 E
(4) When onsite burial occurs on private land, the operator shall file a deed notice identifying the exact location of the onsite burial with the county clerk in the county where the onsite burial occurs.

19.15.17.13 D
(9) If the operator has removed the wastes and the liner to a burial trench pursuant to this subsection, the operator shall test the soils beneath the temporary pit as follows.
(a) At a minimum, a five point composite sample to include any obvious stained or wet soils, or other evidence of contamination shall be taken under the liner or the below-grade tank and that sample shall be analyzed for the constituents listed in Table I of 19.15.17.13 NMAC.
(b) If any contaminant concentration is higher than the parameters listed in Table I of 19.15.17.13 NMAC, the division may require additional delineation upon review of the results and the operator must receive approval before proceeding with closure.
(c) If all contaminant concentration are less than or equal to the parameters listed in Table I of 19.15.17.13 NMAC, then the operator can proceed to backfill the pit, pad, or excavation with non-waste containing, uncontaminated, earthen material.

19.15.17.11.K. Burial trenches for closure. The operator shall design and construct a burial trench in accordance with the following requirements.
(1) A trench shall have a properly constructed foundation and side walls consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.

rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.
5. If necessary, the trench may be expanded if the volume of cuttings is larger than anticipated.

Trench Liner Installation

Unless BLM and OCD approve an "in-place closure" method as recommended in the transmittal letter, the operator will direct the liner installation contractor to:

1. Place geotextile under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity
2. Use 20-mil string reinforced LLDPE liner or an equivalent liner material approved by OCD and BLM
3. Minimize liner seams and orient them up and down, not across a slope
4. Use factory welded seams where possible
5. Overlap liners four to six inches and orient seams parallel to the line of maximum slope, i.e., oriented along, not across, the slope, prior to any field seaming
6. Minimize the number of welded field seams in corners and irregularly shaped areas
7. Utilize only qualified personnel to weld field seams
8. Avoid excessive stress-strain on the liner
9. Outer edges of all liners are secured for the deposit of the excavated waste material into the trench
10. Place additional material (liner, felt, etc.) to ensure that the liner is protected from any mechanical damage at any point of discharge of solids into the trench burial.

Stabilization and Placement of Cuttings

If wet cuttings are observed during the excavation for the closed reserve pit, stabilization of cuttings may be required and will be executed in the following way:

1. Topsoil will not be used for stabilization of cuttings
2. Mix dry, clean earth from the excavated burial trench with cuttings and place the

19.15.17.11 K

(2) Geotextile is required under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity.

(3) A trench shall be constructed with a geomembrane liner. The geomembrane shall consist of a 20-mil string reinforced LLDPE liner or equivalent liner that the appropriate division district office approves….

(4) The operator shall minimize liner seams and orient them up and down, not across, a slope. The operator shall use factory welded seams where possible. Prior to field seaming, the operator shall overlap liners four to six inches and orient liner seams parallel to the line of maximum slope, i.e., oriented along, not across, the slope. The operator shall minimize the number of field seams in corners and irregularly shaped areas. Qualified personnel shall perform field welding and testing.

(5) The operator shall install sufficient liner material to reduce stress-strain on the liner.

(6) The operator shall ensure that the outer edges of all liners are secured for the deposit of the excavated waste material into the trench.

stabilized cuttings into the burial trench.

3. Periodically test the cuttings using the paint filter test prior to placement in the trench.
4. Add stabilized cuttings to the lined trench in small batches and periodically examine the liner for stress or tears.
5. Heavy equipment will not be allowed to drive in the trench unless at least 3 feet of stabilized cuttings lie over the liner in order to prevent compromising.
6. When the top of the stabilized cuttings in the trench are at least 4-feet below natural grade, cease filling the trench and slope the surface of the cuttings
7. Fold the outer edges of the trench liner to overlap the waste material in the trench (creating a "cuttings burrito" with a liner as the tortilla)
8. Install the 20-mil LLDPEr liner (or approved alternative) over the waste material in the lined trench. As the cuttings surface is sloped, the collection of infiltration water on the geomembrane cover after the soil cover is in place is highly unlikely.

Placement of Soil Cover, Final Reclamation

Over the sloping, stabilized material and capping liner of the trench burial and the excavated (unlined) reserve pit footprint, place the **Soil Cover** of:

1. at least 3-feet of compacted, uncontaminated, non-waste containing earthen fill with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0 (or an alternative method subject to a variance request).
2. Contour and grade the area of excavations to prevent erosion and prevent ponding of water over the trench burial footprint in preparation for placement of topsoil or equivalent earth material.

The operator will reclaim the surface impacted by the temporary pit, including access roads associated with the pit, to a safe and stable condition that blends with the surrounding undisturbed area. The reclaimed

19.15.17.13. D. (8) Upon achieving all applicable waste stabilization … transfer of stabilized wastes to … burial trench, the operator shall:
(a) fold the outer edges of the trench liner to overlap the waste material in the trench prior to the installation of the geomembrane cover;
(b) install a geomembrane cover over the waste material in the lined trench …; the operator shall install the geomembrane cover in a manner that prevents the collection of infiltration water in the lined trench and on the geomembrane cover after the soil cover is in place; the geomembrane cover shall consist of a 20-mil string reinforced LLDPE liner or equivalent cover that the appropriate division district office approves; the geomembrane cover shall be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions; cover compatibility shall comply with EPA SW-846 Method 9090A;

19.15.17.13. D
(9) If the operator has removed the wastes and the liner to a burial trench pursuant to this subsection, the operator shall test the soils beneath the temporary pit as follows.
(a) At a minimum, a five point composite sample to include any obvious stained or wet soils, or other evidence of contamination shall be taken under the liner or the below-grade tank and that sample shall be analyzed for the constituents listed in Table I of 19.15.17.13 NMAC.
(b) If any contaminant concentration is higher than the parameters listed in Table I of 19.15.17.13 NMAC, the division may require additional delineation upon review of the results and the operator must receive approval before proceeding with closure.
(c) If all contaminant concentration are less than or equal to the parameters listed in Table I of 19.15.17.13 NMAC, then the operator can proceed to backfill the pit, pad, or excavation with non-waste containing, uncontaminated, earthen material.

surface will be stabilized and maintained to minimize dust and erosion.

As stated above, the soil cover for trench burial and reclamation of the excavated reserve pit:

- consists of a minimum of three feet of non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg (or background concentration) as analyzed by EPA Method 300.0 placed over the liner and stabilized solids
- is capped by the background thickness of topsoil or 1-foot of suitable material to establish vegetation, whichever is greater
- blends into surrounding topography
- is graded to prevent ponding and to minimize erosion.

For all areas disturbed by the closure process that will not be used for production operations or future drilling, the operator will:

i. Replace topsoil and subsoil to their original relative positions
ii. Grade to achieve erosion control, long-term stability and preservation of surface water flow patterns
iii. Reseed in the first favorable growing season following closure.

The operator will notify the division when the site meets the surface owner's requirements or exhibits a uniform vegetative cover that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

Re-vegetation and reclamation plans imposed by the surface owner will be outlined in communications with the OCD.

The operator will notify the division when the surface grading work element of reclamation is complete.

19.15.17.13.H
(3) Soil cover designs for reclamation of pit locations and onsite burial locations. The soil cover for burial in -place burial shall consist of a minimum of four feet of non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0. The soil cover shall include either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.
(4) The operator shall construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material
19.15.17.13. H. Reclamation of pit locations, onsite burial locations….
(1) Site contouring.
(a) Once the operator has closed a pit … the operator shall reclaim the pit location…and all areas associated with the … pit… to a safe and stable condition that blends with the surrounding undisturbed area… substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover …, recontour the location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re -vegetate according to Paragraph (5) in Subsection H of 19.15.17.13 NMAC.
(b) The operator may propose an alternative to the re -vegetation or recontouring … demonstrates to the appropriate district office that the proposed alternative provides equal or better prevention of erosion, and protection of fresh water, public health and the environment. The proposed alternative shall be agreed upon by the surface owner. The operator shall submit the proposed alternative, with written documentation that the surface owner agrees to the alternative, ...
(c) Areas reasonably needed for production operations or for subsequent drilling operations shall be compacted, covered, paved, or otherwise stabilized and maintained in such a way as to minimize dust and erosion to the extent practicable.
19.15.17.13. H
5 (a) Reclamation of areas no longer in use. All areas disturbed by the closure of pits and below-grade tanks, except areas reasonably needed for production operations or for subsequent drilling operations, shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.

Closure Report

Within 60 days of closure completion, the operator will submit a:

- closure report on form C-144, with necessary attachments
- a certification that all information in the report and attachments is correct, that the operator has complied with all applicable closure requirements and conditions specified in the approved closure plan
- a plat of the pit location on form C-l05. If burial includes solids derived from a nearby well on the same lease, the report will list the name, API # and location of the well(s) from which the solids originated.

Unless the permit transmittal letter requests an alternative marker to comply with BLM specifications, the operator will place at the center of an onsite burial a steel marker that:

- is not less than four inches in diameter
- is anchored in a three-foot deep hole (minimum) that is filled with cement to secure the marker
- is at least four feet above mean ground level
- permanently displays the operator name, lease name, well number, unit letter, section, township and range in welded or stamped legible letters/numbers.

Because the reserve pits will be temporarily restored as production pads, the marker of the buried cuttings location will be placed at plugging and abandonment and final site restoration.

(b) Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long -term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season following closure of a pit, ….

5 (c) Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

5 (d) Other regulatory requirements. The re -vegetation and reclamation obligations imposed by other applicable federal or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of any operator subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

(e) The operator shall notify the division when reclamation and re -vegetation are complete.

19.15.17.13 F. Closure report and burial identification.

(1) Within 60 days of closure completion, the operator shall submit a closure report on form C-144, with necessary attachments to document all closure activities including sampling results; information required by 19.15.17 NMAC; and details on backfilling, capping and covering, where applicable. … If the operator used a temporary pit, the operator shall provide a plat of the pit location on form C-l 05 within 60 days of closing the temporary pit.

(2) If the operator elects to conduct onsite burial under Subsection D of 19.15.17.13 NMAC, … shall report the exact location of the onsite burial on form C-105 filed with the division.

(3) The operator shall place a steel marker at the center of an onsite burial. The steel marker shall be not less than four inches in diameter and shall be cemented in a three-foot deep hole at a minimum. The steel marker shall extend at least four feet above mean ground level and at least three feet below ground level. The operator name, lease name and well number and location, including unit letter, section, township and range, and that the marker designates an onsite burial location shall be welded, stamped or otherwise permanently engraved into the metal of the steel marker. …

C102

Form 3160-3
(December 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

OIL CONSERVATION DIV
811 S. 1st ST.
ARTESIA, NM 88210-2834

Form approved.

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a TYPE OF WORK: DRILL ☒ DEEPEN ☐

b. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ Other ____ SINGLE ZONE ☐ MULTIPLE ZONE ☐

2. NAME OF OPERATOR
DEVON ENERGY CORPORATION (NEVADA) 6137

3. ADDRESS AND TELEPHONE NO.
20 N. BROADWAY, SUITE 1500, OKC, OK 73102 (405) 552-4511

4. LOCATION OF WELL (*Repor0 location clearly and in accordance with any State requirements)**
At surface 1090' FSL & 330' FWL UNORTHODOX LOCATION: UNIT M
At top proposed prod. zone (SAME)

Subject to Like Approval By State

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AUG 20 1996
OIL CON. DIV.
DIST. 2

5. LEASE DESIGNATION AND SERIAL NO.
LC-057849

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
NA

7. UNIT AGREEMENT NAME
West Red Lake 8910089700

8. FARM OR LEASE NAME, WELL NO.
Eagle "34M" Federal #25 19415

9. API WELL NO.
30-015- 29114

10. FIELD AND POOL, OR WILDCAT
Red Lake (Q-GB-SA) 51300

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Section M-34-T17S-R27E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
Approximately 7 miles southeast of Artesia, NM

12. COUNTY OR PARISH
Eddy County

13. STATE
New Mexico

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
230'	800	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS***
NA	2500'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
GL 3544'

22. APPROX. DATE WORK WILL START*
September 13, 1996

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	14"	Conductor	40'	Redimix
12 1/4"	8 5/8", J-55	24 ppf	1000'	300 sx Lite + 200 sx Class C
7 7/8"	5 1/2", J-55	15.5 ppf	2500'	100 sx Lite + 200 sx Class C

*** Cement will be circulated to surface on all casing strings.**

Devon Energy plans to drill to 2500' +/- to test the San Andres Formation for commercial quantities of oil. If the San Andres is deemed non-commercial, the wellbore will be plugged and abandoned per Federal regulations. Programs to adhere to onshore oil and gas regulations are outlined in the following exhibits and attachments.

Drilling Program
Surface Use and Operating Plan
Exhibit #1 - Blowout Prevention Equipment
Exhibit #1-A - Choke Manifold
Exhibit #2 - Location and Elevation Plat
Exhibit #3 - Planned Access Roads
Exhibit #4 - Wells Within a One Mile Radius
Exhibit #5 - Production Facilities Plan
Exhibit #6 - Rotary Rig Layout
Exhibit #7 - Casing Design Parameters and Factors
Exhibit #8 - H_2S Operating Plan

The undersigned accepts all applicable terms, conditions, stipulation, and restrictions concerning operations conducted on the leased land or portion thereof, as described above.

Bond Coverage: Nationwide
BLM Bond File No.: CO-1104

Post ID-1
8-23-96
New Lse + API

Approval Subject to General Requirements and Special Stipulations Attached

NSL-

RECEIVED
CARLSBAD, NEW MEXICO
Jul 18 11 39 AM '96

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED E. L. Buttross Jr. TITLE E.L. BUTTROSS, JR. DISTRICT ENGINEER DATE July 17, 1996

*(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY (ORIG. SGD.) RICHARD L. MANUS TITLE Area Manager DATE AUG 19 1996

See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

EXHIBIT 2

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-29114	51300	Red Lake (Q-GB-SA)

Property Code	Property Name	Well Number
	Eagle 34 "M" Federal	25

OGRID No.	Operator Name	Elevation
6137	Devon Energy Corporation (Nevada)	3544'

Surface Location

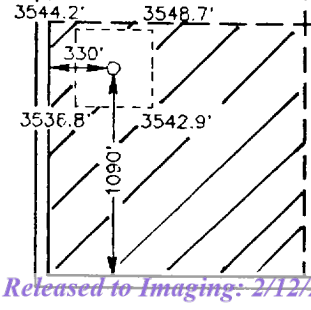
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	34	17 S	27 E		1090	South	330	West	Eddy

Bottom Hole Location If Different From Surface

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

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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 the the information contained herein is true and complete to the best of my knowledge and belief.

E.L. Buttross Jr.
Signature

E.L. Buttross, Jr.
Printed Name

District Engineer
Title

July 17, 1996
Date

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 supervison, and that the same is true and correct to the best of my belief

June 7, 1996
Date Surveyed

Signature & Seal of Professional Surveyor

NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

W.O. No. 620255

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

SITING CRITERIA DEMONSTRATION AND ASSOCIATED FIGURES

Surficial Geology of Sections 29-34 T 17-18 S, R 27 E

Figure 1a displays approximately 12 square miles of the Spring Lake Geologic Map (Open-file Digital Geologic Map OF-GM 214[1]). We examined the exposed sections of the uppermost Seven Rivers Formation (dolomitic facies, Psd) and the Yates Formation (Py on Figure 0) in Section 30 and the Tansill Formation mixed silty gypsiferous facies due north of the sites in Section 33. These three formations form the Permian Artesia Group, which is the backreef stratigraphic equivalent of the Capitan Reef. In the Spring Lake quadrangle area, OF GM 214 accurately describes the Artesia Group as "consisting of interbedded gypsum, reddish-brown mudstone and siltstone, and thin interbeds of dolomite, typical of deposition in a far-backreef intertidal-supratidal-sabkha environment".

The Tansill Formation mixed silty gypsiferous facies underlies the three closed reserve pits that are the subject of this closure plan proposal. The Yates Formation is identified in some reports as the uppermost groundwater unit. Therefore, we focused on these two Formations during our field program. The description of both units from Open File Report GM-214 is presented below verbatim with one addition regarding the dolomitic facies of the Tansill Formation that is from the Lake McMillian North geologic map of the same authors (OF GM-167).

> ***Ptd*** *Tansill formation, dolomitic facies (Guadalupian) — Light-gray to tan to light-brown, thick dolomite occupying both the base and top of the Formation, grading upward into interbedded mixed facies. Thickness <1 to 3 m* (see Field Image 5)**.**
>
> ***Ptm*** *Tansill formation, mixed silty gypsiferous facies (Guadalupian) — Interbedded mixed gray silty dolomite, siltstone and gypsum, and yellowish sandstone with sublitharenite and orange-red chert grains. Thickness 2 to 50 m* (see Field Image 7).
>
> ***Py*** *Yates formation, mixed gypsiferous facies (Guadalupian) — Very light gray, massive to vesicular gypsum interbedded with pink dolomite, green to white and orange to red siltstone and minor sandstone. Folded into domes and basins on a meter to several decimeter scale. Forms caverns. Outcrop exposures poor. Thickness increases westward from 2 to 50 m.* (see Field Image 1, B; Field Image 4: Field Image 6)
>
> ***Psd*** *Seven Rivers formation, dolomitic facies (Guadalupian) — Light gray to yellowish to pink, thinly to thickly bedded, vesicular to massive dolomite interbedded with pink dolomitic siltstone, yellowish sandstone and thin beds of milky gypsum. Thickness 1 to 3 m* (see Field Image 3; Field Image 9).

Quaternary depression fill is present throughout the study area and referenced in the Site Photos that are attached to this section of the application. This unit is described as:

> ***Qd*** *Quaternary depression fill, undifferentiated (Holocene to middle Pleistocene) Unconsolidated, well-sorted, fine-grained (fine sands to clay) complexes of alluvial,*

[1] https://geoinfo.nmt.edu/publications/maps/geologic/ofgm/details.cfml?volume=214

colluvial, eolian, and occasional lacustrine deposits within closed depressions. Colors variable. Depressions are created by either gradual subsidence or sudden collapse followed by gradual subsidence of underlying gypsiferous carbonate terrane. These complexes are often significantly modified by stream erosion and deposition, playa deposition, deflation, and mass wasting. Depression fills have been active since the middle Pleistocene and are usually 1-3 m thick but can reach thicknesses in excess of 30 m (see Field Image 3, foreground; Field Image 10; Field Image 11).

The site photographs present clear evidence of the quality of the work of the authors of OF GM 214. We urge the reviewer to examine OF GM -214, which can be downloaded at the link provided earlier in this section. Our goal for this discussion of the geology and depth to groundwater (which is included in the following section of this submission) is to emphasize the following facts for the consideration that the proposed closure plan meets all of the appropriate environmental setback requirements relating to groundwater and ground instability (due to karst features). With respect to the locations of the proposed trench burial remedy, these facts are:

- The Tansill Formation is unsaturated and is about 4 meters (12 feet) thick at Eagle 33 O Federal #11 and 10 meters thick to the east (down dip) at Eagle 34 M Federal #25 as most of the Tansill has been removed by erosion. This portion of the Tansill contains equal amounts of interbedded dolomite and siltstone units of 1-2 meters in thickness and lesser amount of thin gypsum beds. (refer to a site photograph).
- The Yates Formation is about 30 m thick (90 feet) and is probably saturated only in the basal 2-3 meters (less than 10 feet) – if at all. We observed little dolomite in the exposures near the proposed burial sites. Vesicular gypsum beds 0.2-1 m thick comprise about 75% of the unit interbedded with red siltstone and some green siltstone
- The upper dolomite bed of the Seven Rivers Formation crops out in Section 31 T17S R27E and is shown in the site image section of this submission. This unit may be saturated and would yield water to wells via fractures.
- Quaternary depression fill is displaced by solution-slumping in the mapped tributary of Logan Wash that flow north-south through the sites. Folding of dolomite and gypsum is apparent around areas mapped as depression fill.
- We observed no sinkhole surface features or fractures expanded by solution. The thin dolomite beds did not exhibit dissolution features. The thin beds of gypsum interbedded with siltstone is not conducive to formation of large caves but could probably provide dens for rodents and small mammals. The large volume of soluble gypsum and the obvious slumping and folding of competent bedrock is clear indication that mapping this area as high karst potential is appropriate.

In a separate submission, we discuss the net environmental benefit posed by the proposed remedy relative to an excavation and disposal alternative.

Distance to Groundwater

Figure 1b, Figure 2 and the discussion presented below demonstrate that groundwater (freshwater, as defined by NMOCD Rules) at the location is greater than 100 feet beneath the proposed trench burial of the closed Eagle reserve pits.

Figure 1 is a topographic map that shows:

1. The location of the Eagle closed reserve pits as the magenta octagons near the center of the map. The location of the temporary pit closure that are the subject of this permit application will be buried in-place or in a burial trench that is on-site within the same lease according to NMOCD Rule 17.
2. Water wells from the USGS database as blue or green colored triangles. Well numbers correspond to an identifier in the USGS database. The elevation of the water surface is also indicated displayed on the figure, below the USGS well number. The colors of the triangle indicate an opinion on which unit is the principal water-bearing unit. According to the USGS and our experience in the area, the wells shown on Figure 1 draw water from the:
    a. Artesia Group in the central area of the Figure, southeast of the previously closed reserve pits
    b. San Andres Limestone about 1-mile west of the pits and in the southwest corner of the map
    c. The Rustler Formation in the eastern margin of the map and
    d. The Pecos River Alluvium on the western margin of the map.
3. Water wells from the OSE database as a blue or green circle containing a triangle of the same color that indicate well depth. OSE wells are often mis-located in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter of the Township and Range Section. Well numbers indicate a listing in the OSE database. Under the Well number is the Depth to Water value from the OSE database as well as the start date of the well.
4. Water wells that are not documented in the public databases but were identified by field inspection or other published reports as colored squares. These "Misc" well numbers correspond to the Hicks Consultants internal database. Data from several of these wells are in Open File Report 95[2].
5. The depth to water is provided adjacent to the symbol representing a well, and it the most recent available measurement.

Figure 2 uses a topographic base map overlain by a transparent geologic map of New Mexico and shows:

1. The location of the Eagle closed reserve pits as magenta octagons near the center of the map
2. Water wells from the USGS and MISC databases as described above, displaying groundwater elevation instead of depth to water.

[2] https://geoinfo.nmt.edu/publications/openfile/downloads/0-99/95/ofr_95.pdf

3. Isocontour lines displaying the elevation of the groundwater surface based upon measurements made by professionals.

We relied upon the wells from the various water bearing units to create the water table elevation map shown in Figure 2. We do not believe the water-bearing units east of the outcrop of the Salado Formation (i.e. the Rustler on Figure 2) are hydraulically connected to groundwater west (stratigraphically beneath) the Salado. We also know that west of the Pecos River, water levels in the San Andres aquifer can be higher than water levels in adjacent wells completed in the Pecos Valley alluvium because the San Andres is a confined aquifer. The two wells in the Artesia Group (MISC 394 and USGS 8814) are affected by local surface recharge. Well MISC 394 is north of the Empire Abo gas plant that released fresh water from supply lines and wastewater from various sources for many decades. A documented groundwater mound exists in the Artesia Group around the plant (see the map in the Appendix Well Logs). Well USGS 8814 is within the channel of Scoggin Draw (see Site Photos) and is probably influenced by recharge from surface water infiltration.

Since Figure 2 uses head data from various groundwater units that are weakly connected hydraulically (at best), we urge the reader to understand that the potentiometric surface shown in Figure 2 provides a generalized idea of groundwater flow in the mapped area.

We used data from the three closest wells to the previously closed reserve pits to estimate the depth to groundwater:

- USGS 8889/8679, which is the same well based upon our field investigation and is reportedly completed in the San Andres Formation (Field Image13).
- MISC-394, which is completed in the Artesia Group (see well log in Appendix) and
- USGS 8814, which lies within Scoggin Draw to the south and is completed in the Artesia Group

From these data, we conclude that the water table elevation beneath the closed reserve pits is no higher than about 3400 feet above sea level. Thus, the bottom of a burial trench to hold the residual drilling waste will at least (3512 ft – 3400 ft -12 feet =) 100 feet.

Distance to Municipal Boundaries and Fresh Water Fields

Figure 3 demonstrates that the trench burial locations are not within incorporated municipal boundaries or within defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, section 3-27-3, as amended. This also qualifies the location for burial trench or in-place closure.

- The closest municipality is Atoka, NM, which is about 5 miles to the west of the Eagle closed reserve pits. Figure 3 does not identify any community water wells.
- Figure 3 does show that the City of Artesia has three municipal water wells in the OSE database

Distance to Subsurface Mines

Figure 4 illustrates the location of subsurface mines in relation to the Eagle Closed reserve Pits.

- The Eagle closed reserve pits do not overlay a subsurface mine.
- The nearest mine is a surface mine about 2.5 miles to the NE.
- The Empire Abo Gas Processing plant is located about 1 mile to the SE and processes natural gas, not minerals.

Distance to High or Critical Karst Areas

Figure 5 indicates the proximity of the Eagle closed reserve pit trench burial locations to high karst potential areas as described by the BLM.

- The Eagle closed reserve pits do exist in an area of high karst potential.
- Site visits confirm the BLM mapping of the area as high karst is appropriate

We contend that the presence of high or critical karst potential as mapped by BLM is important because of three environmental concerns:

1. The presence of voids, expanded fractures and other karst features that may provide more direct and less attenuated transport of contaminants to groundwater under certain circumstances, such as an unanticipated release
2. The presence of caves and protection of this resource pursuant to Federal mandates
3. The presence of unstable ground that can result in a compromise of a proposed action and

With respect to the first concern, the proposed action does not involve fluids that could migrate through fractures or voids. The proposal is burial saline residual cuttings and earth material in a trench that is capped with a synthetic liner and 4-feet of clean earth. Thus, downward migration of saline pore fluids in the buried cuttings must occur via unsaturated flow. As will be explained in a separate submission, large voids in earth material are a barrier to unsaturated flow.

In the area of the Eagle closed reserve pits, the exposed soluble gypsum and less soluble dolomite beds of the Yates Formation are generally less than 2 feet thick with a few gypsum horizons exceeding a thickness of 3 feet. Red and gray siltstone are inter bedded with gypsum. We observed no caves in our brief examination of the area and the term “cave” is not used in the Spring Lake Report or Map (OF GM-214). We do not believe that cave resources are present in the area

The description of the Yates Formation (above) states that this unit “forms caverns”. As suggested in Field Images 14-15, an arcuate outcrop of Tansill dolomite encloses what is mapped as depression fill, and this suggests the collapse of a cavern in the underlying Yates. Another collapse feature is also shown in Field Image 6 within the mapped watercourse that flows between Eagle 33 P Federal 13 and Eagle 33 O Federal 11. Thus, we conclude that

ground instability does exist in the general area and has occurred over geologic and, perhaps, historical time, as stated OF GM-214.

However, if the areas proposed for trench burial were susceptible to collapse (e.g. due to subsurface caverns), a reasonable person must conclude that the weight and vibration associated with drilling an oil well would cause such collapse. The areas of the proposed trench burials do not lie on depression fill material but on exposed Tansill Formation and are not within areas of current groundwater recharge (i.e. drainages). Recharge of fresh water is a significant source of solution of gypsum and potential collapse. We conclude that the areas proposed for trench burial are not unstable.

Distance to 100-Year Floodplain

Figure 6 demonstrates that the location of the trench burial locations associated with the Eagle closed reserve pits in relation to areas designated by the Federal Emergency Management Agency with respect to the flood insurance Rate 100-year floodplain.

- All Eagle Closed reserve pits exits outside the 1% Annual Chance Flood Hazard.

Distance to Surface Water

Figures 7a and 7b demonstrate the proposed trench burials for the Eagle closed reserve pits are not within 100 feet of a continuously flowing watercourse or any other significant watercourse or within 200 feet of a lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). All locations for trench burial at the Eagle closed reserve pits qualify for in-place and trench burial closure as the location is not within the 100- and 200-foot setback criteria.

- Significant watercourse is defined as “a watercourse with a defined bed and bank either named or identified by a dashed blue line on a USGS 7.5-minute quadrangle map or the next lower tributary with a defined bank of such a watercourse” in Rule 17.
- Figure 7a illustrates the proximity of all potential locations for trench burial of waste in the Eagle closed reserve pits to mapped watercourses in the area. All closed reserve pits are located further than 100 feet from a mapped watercourse.
- Figure 7b gives a more enhanced view of the proximity of the proposed pit burial locations associated with Eagle 34 M Federal 25 to a “next lower tributary.” All proposed locations are not within 100 feet of this tributary.

Distance to Permanent Residences or Structures

Figure 8 demonstrates that the location of the Eagle closed reserve pits are not within 300 feet of an occupied residence, school, hospital, institution, church, or other structure.

- The nearest structures are oil and gas wells and their associated facilities.

Distance to Non-Public Water Supply

Figures 1a, 2, and 7a demonstrate that the location is not within 300 feet of a private, domestic freshwater well or spring that less than five households use for domestic or stock watering purposes.

- Figures 1 and 2 shows the locations of all active water wells in the area.
  - The nearest well is located over 1 mile away and serves as a USGS monitoring well.
  - No active well lies within the setback criteria
- Figure 7a indicates that no springs are located within 1000 feet of the proposed burial sites.

Distance to Wetlands

Figure 9 demonstrates the location is not within 300 feet of mapped wetlands.

- The nearest wetland is over 2 miles from the Eagle closed reserve pits.

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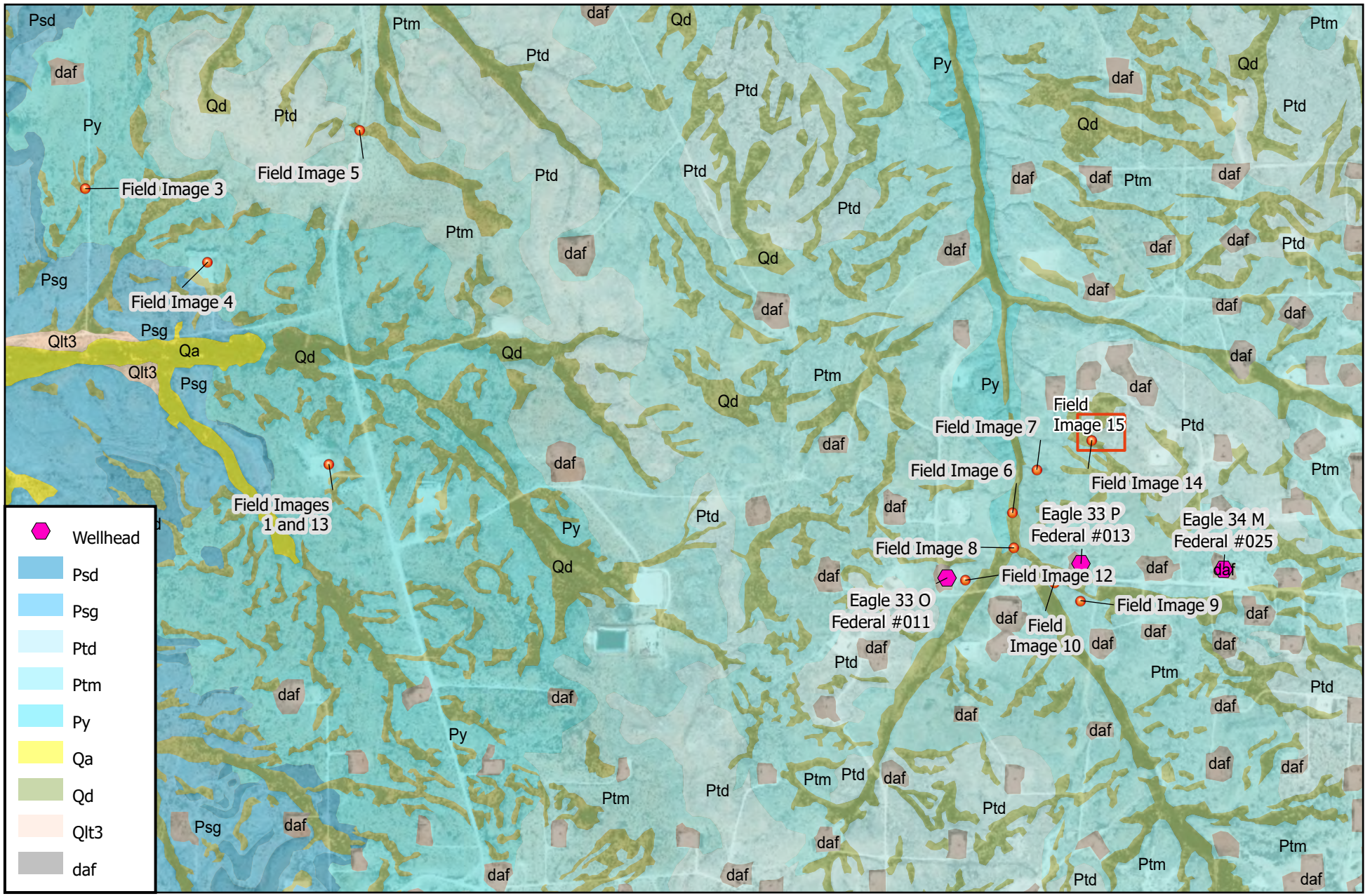

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Geologic Overview	Figure 1a
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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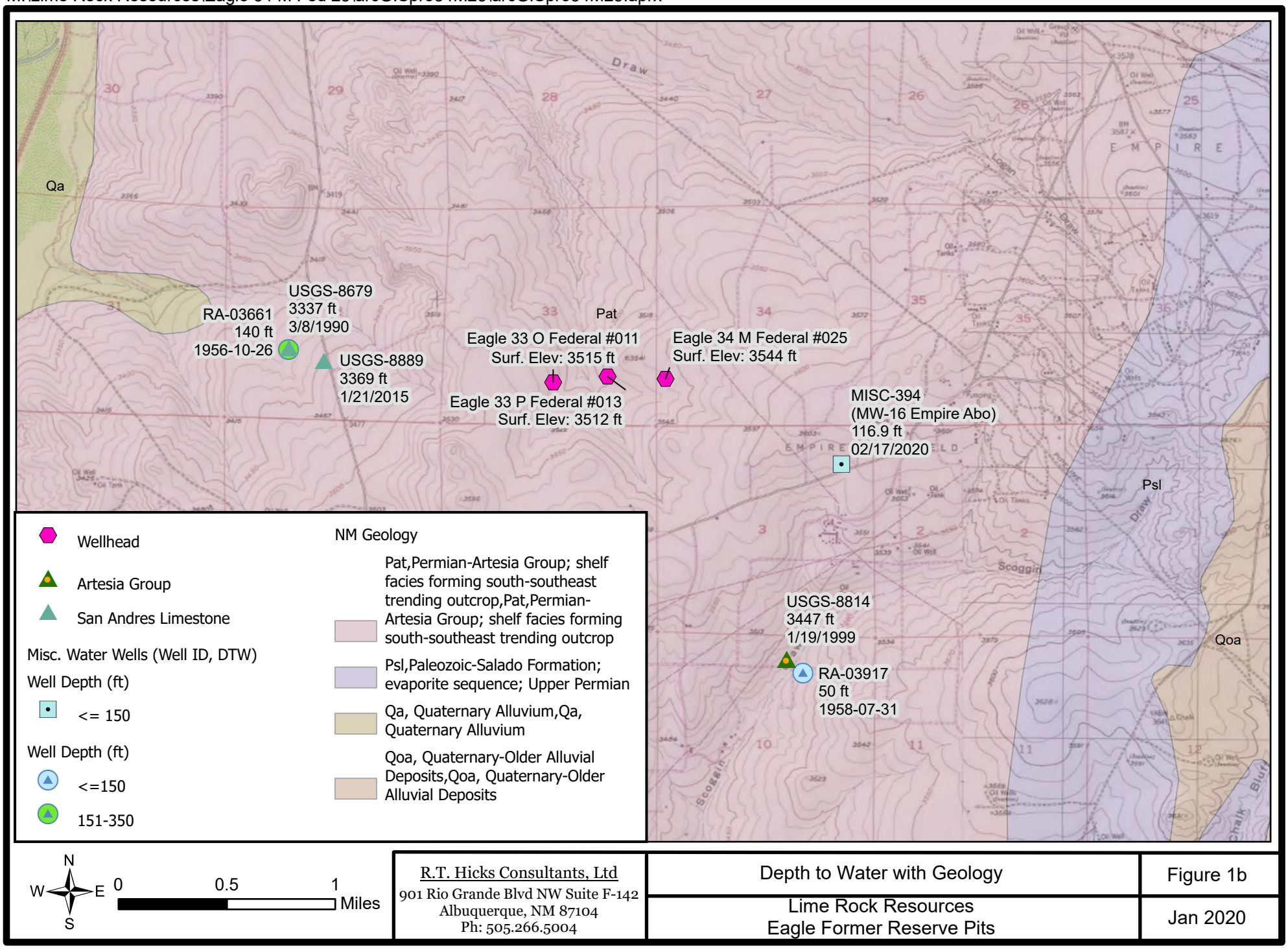

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Depth to Water with Geology

Figure 1b

Lime Rock Resources
Eagle Former Reserve Pits

Jan 2020

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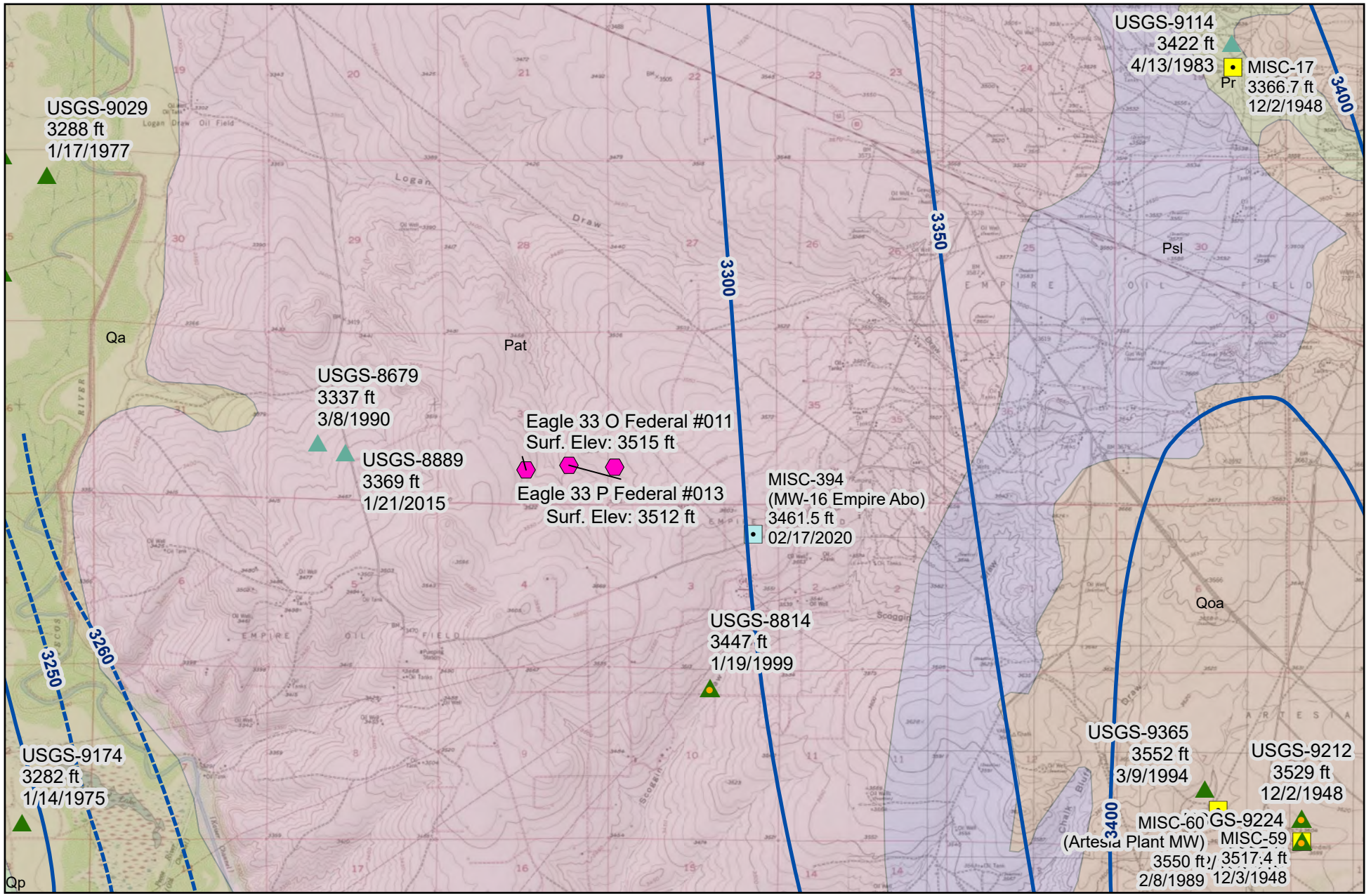
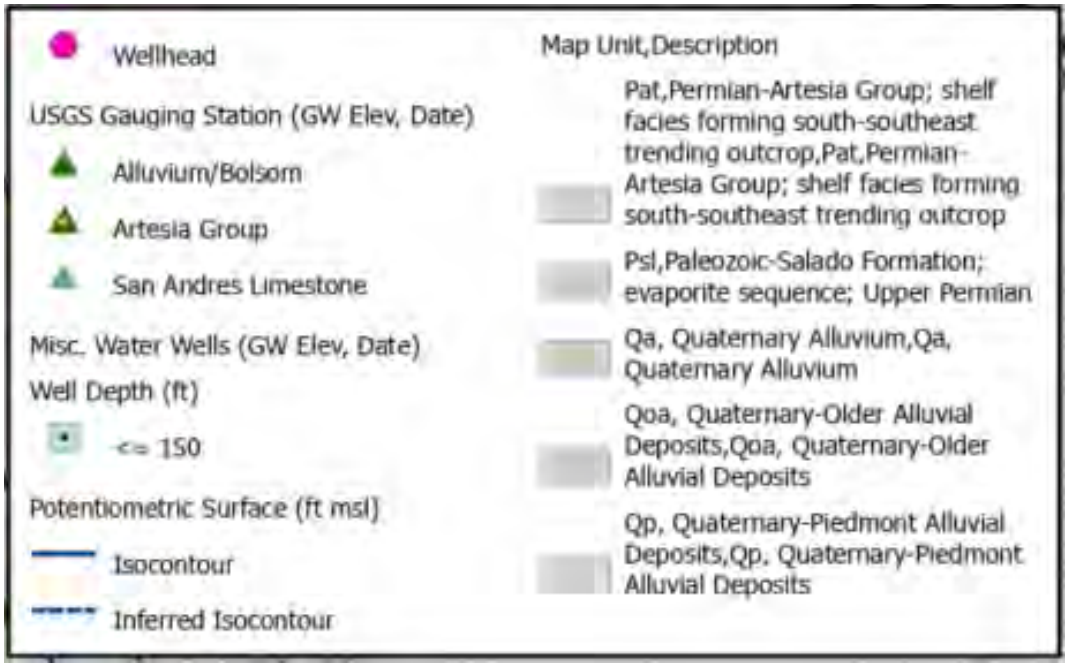


R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Ground Water Elevation and Geology Lime Rock Resources Eagle Former Reserve Pits	Figure 2 Jan 2020



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology Legend	Figure 2a
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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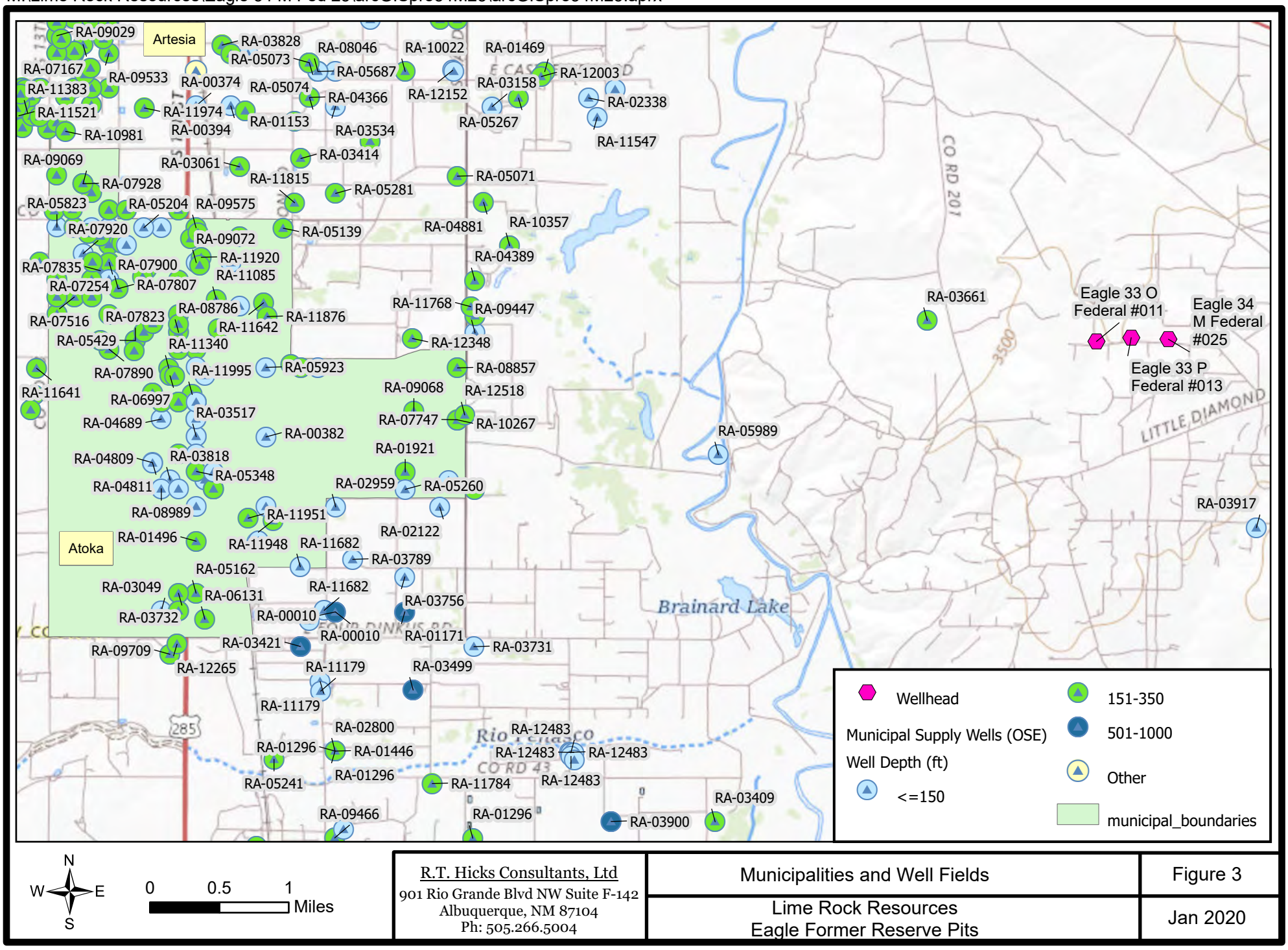

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Municipalities and Well Fields	Figure 3
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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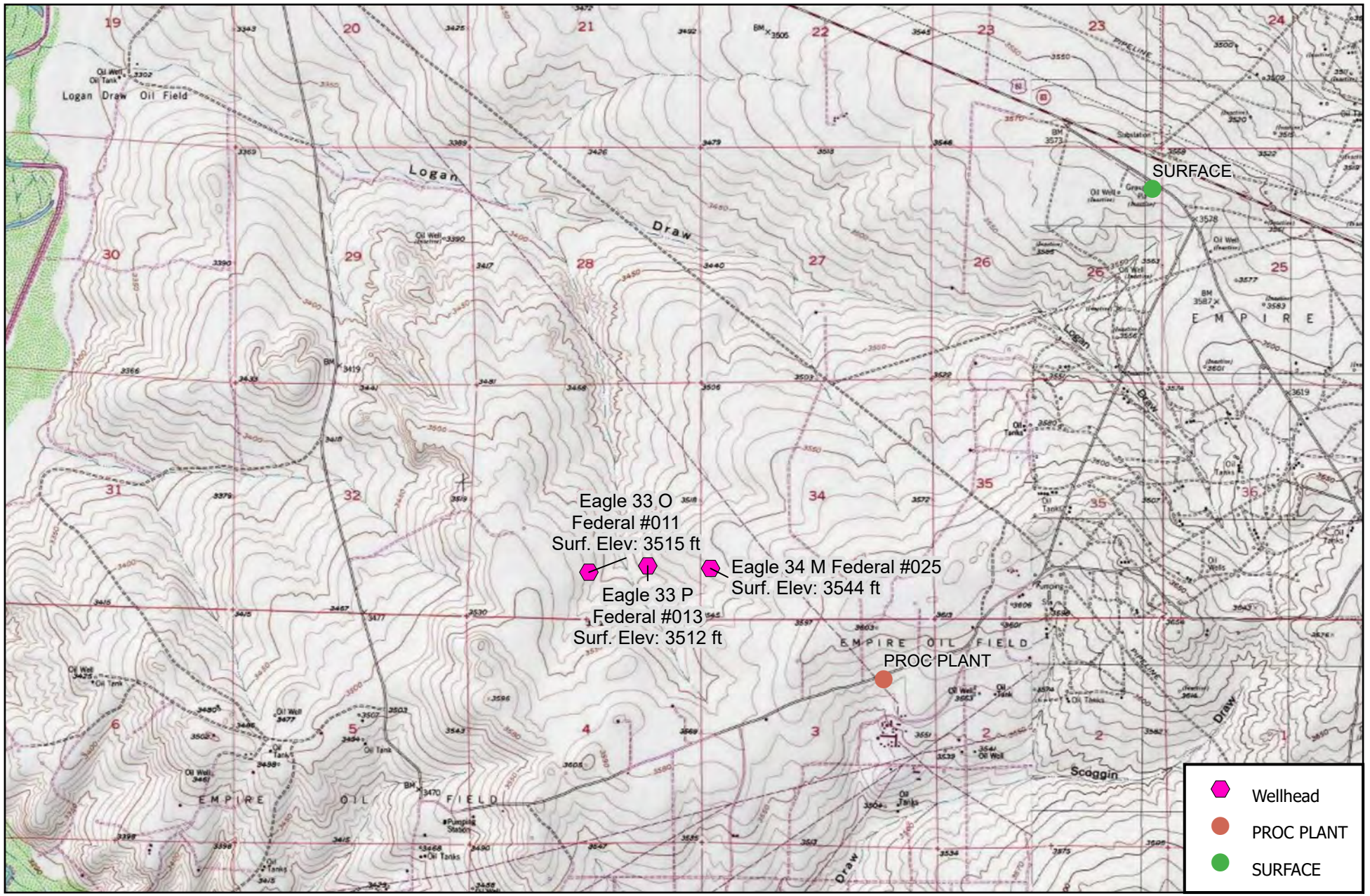

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mines and Minerals Lime Rock Resources Eagle Former Reserve Pits	Figure 4 Jan 2020

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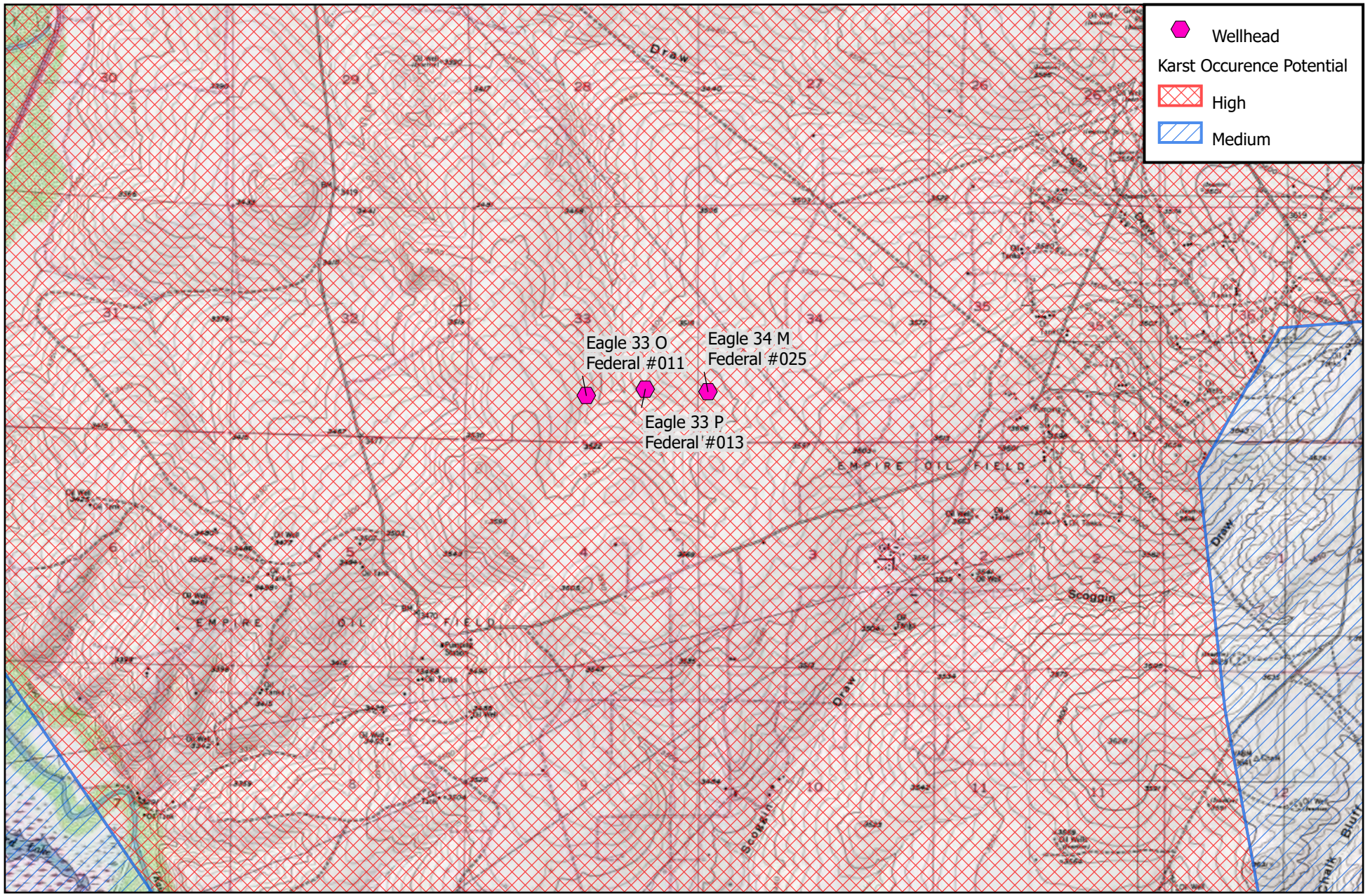

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Karst Potential	Figure 5
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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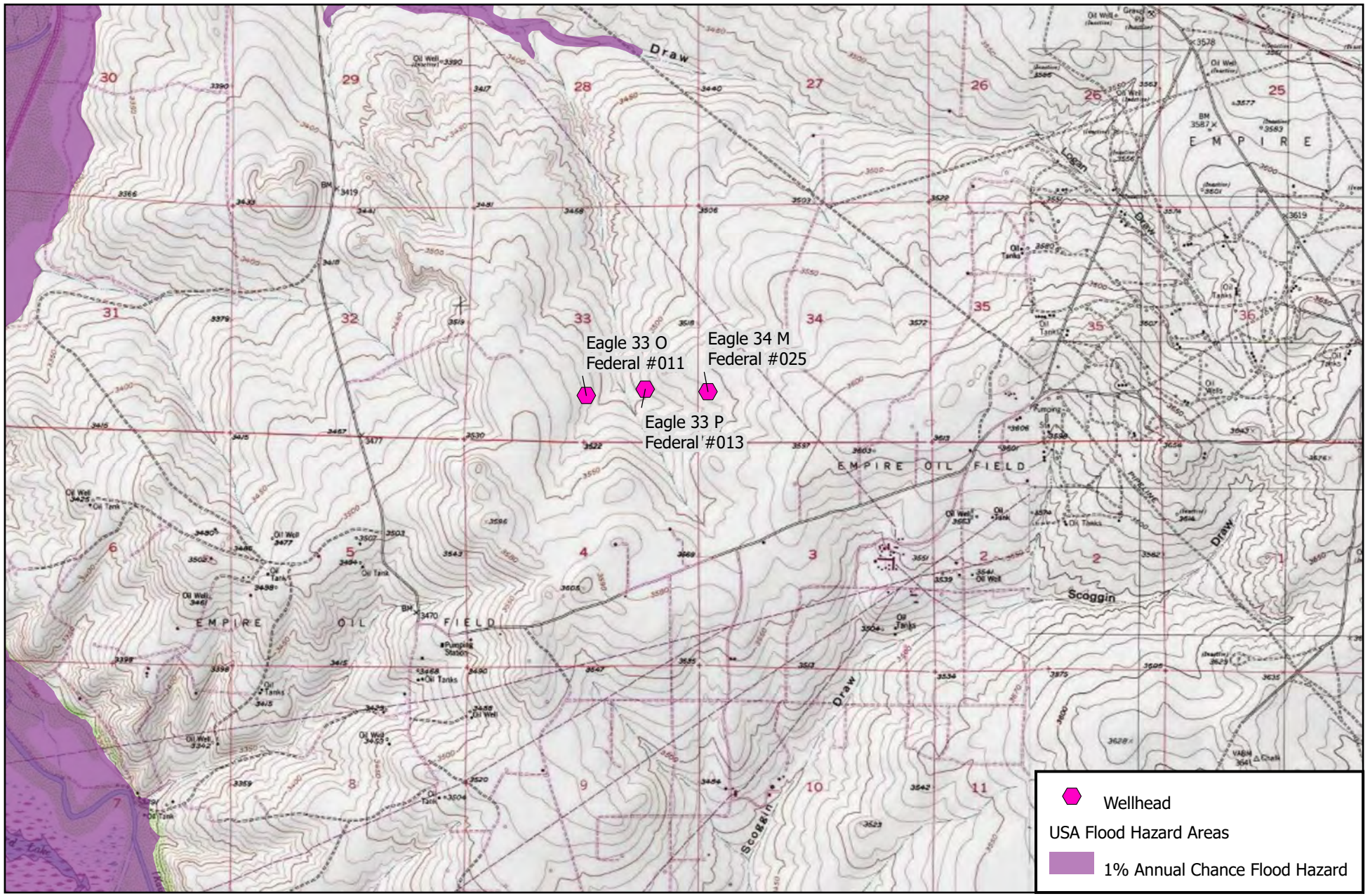

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R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Mapped Flooding Potential

Figure 6

Lime Rock Resources
Eagle Former Reserve Pits

Jan 2020

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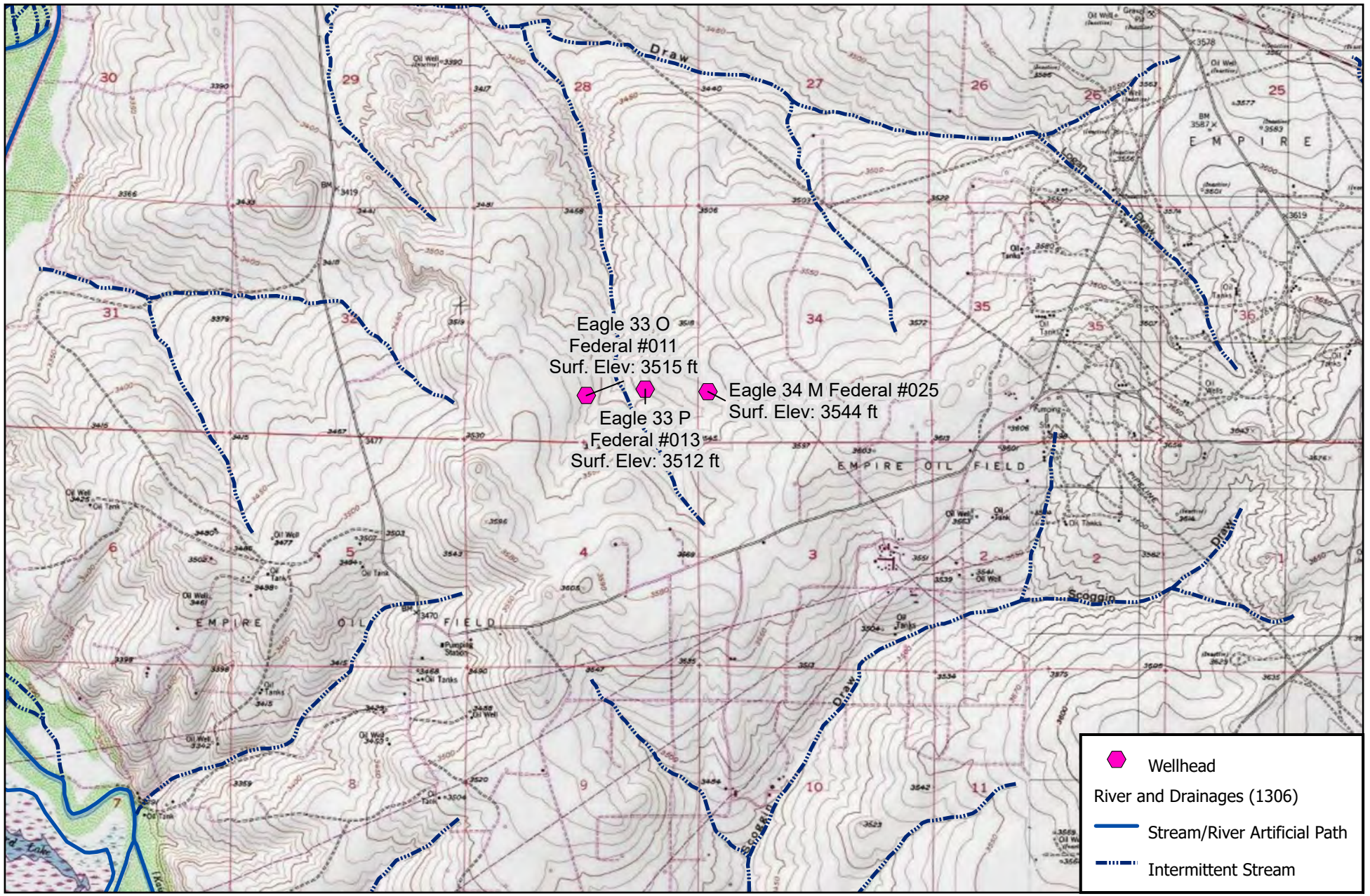

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Mapped Surface Water

Figure 7a

Lime Rock Resources
Eagle Former Reserve Pits

Jan 2020

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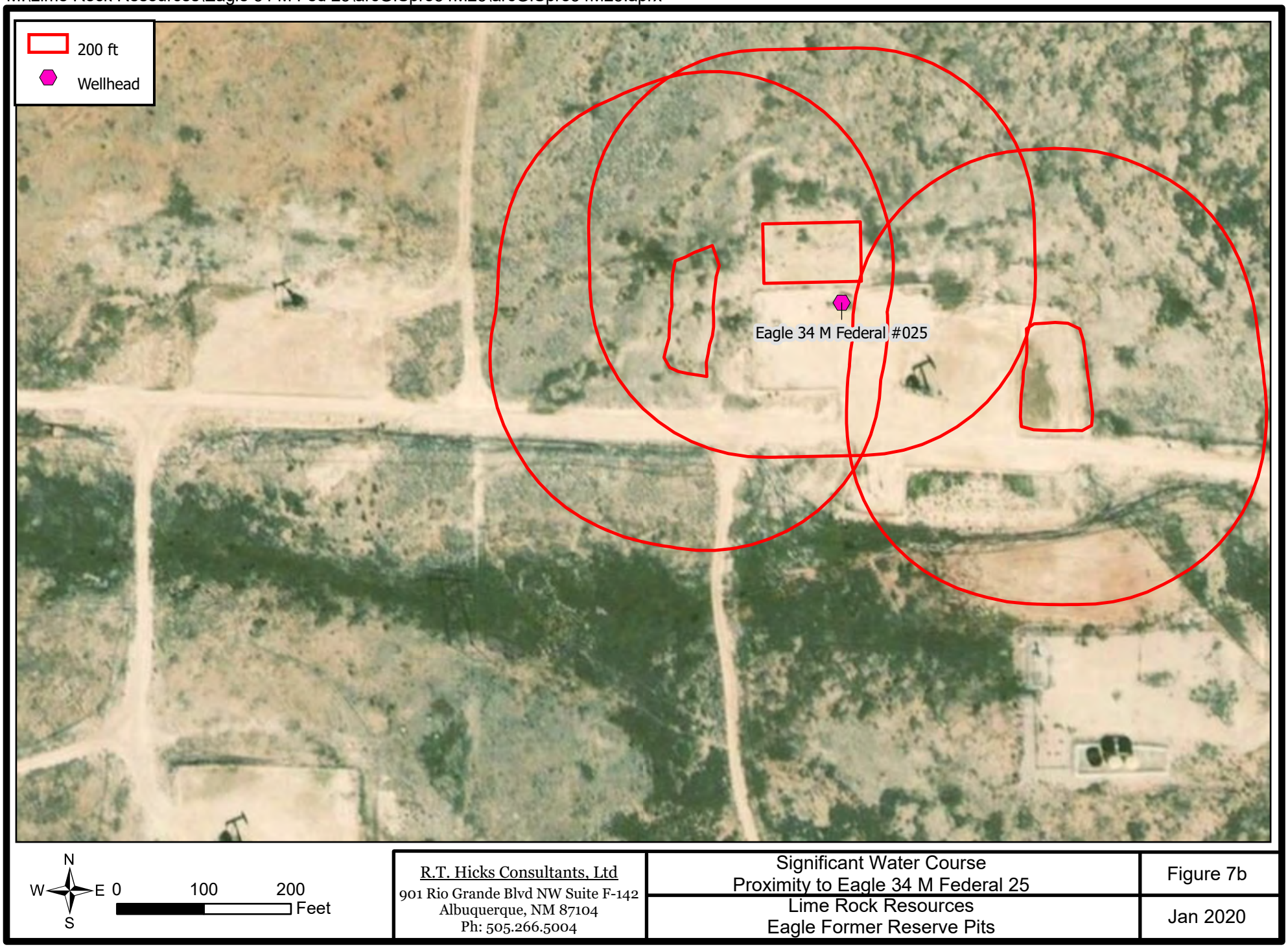

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Significant Water Course Proximity to Eagle 34 M Federal 25	Figure 7b
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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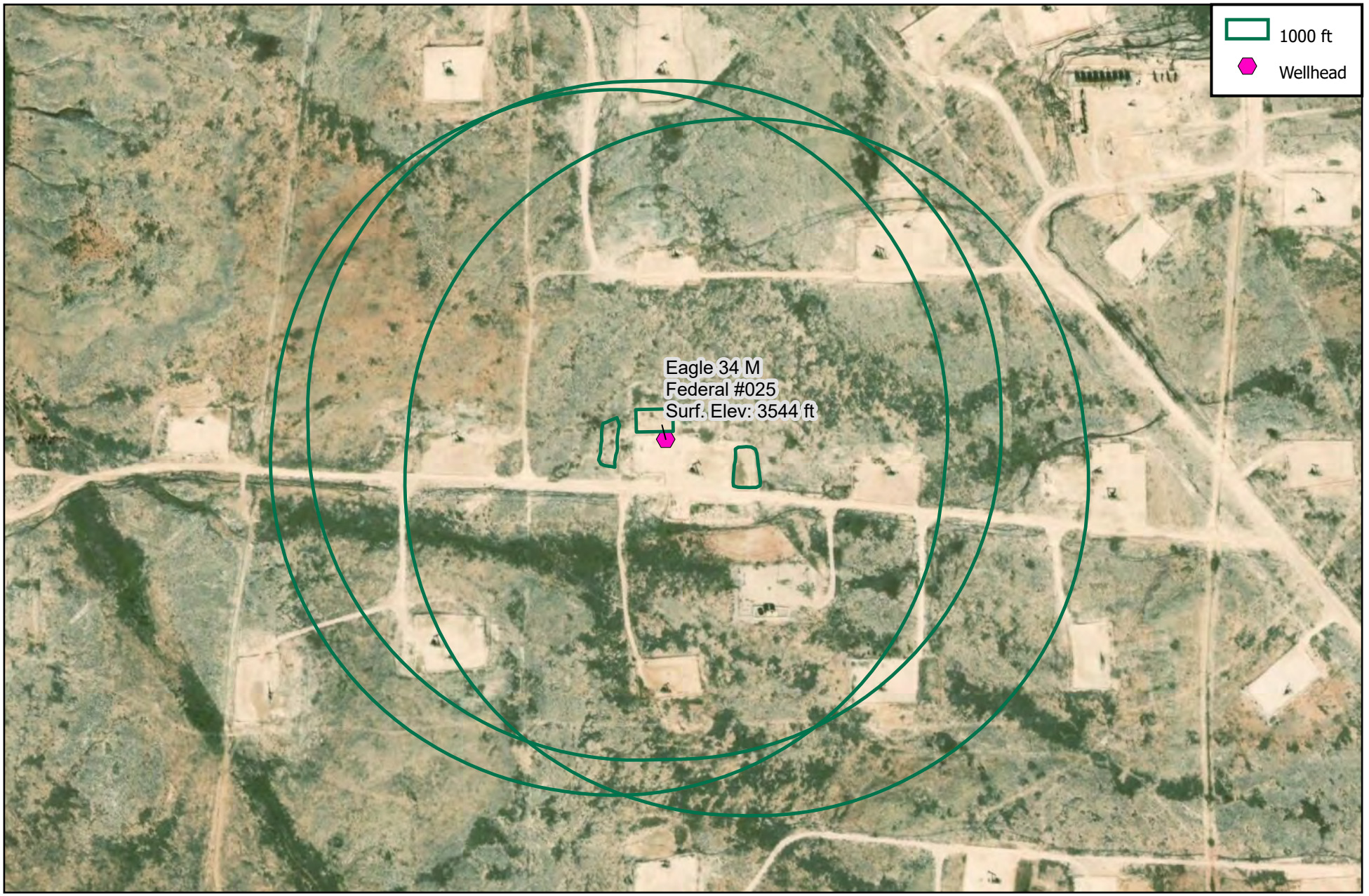

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Structures – Eagle 34 M Federal 25	Figure 8
	Lime Rock Resources Eagle Former Reserve Pits	Jan 2020

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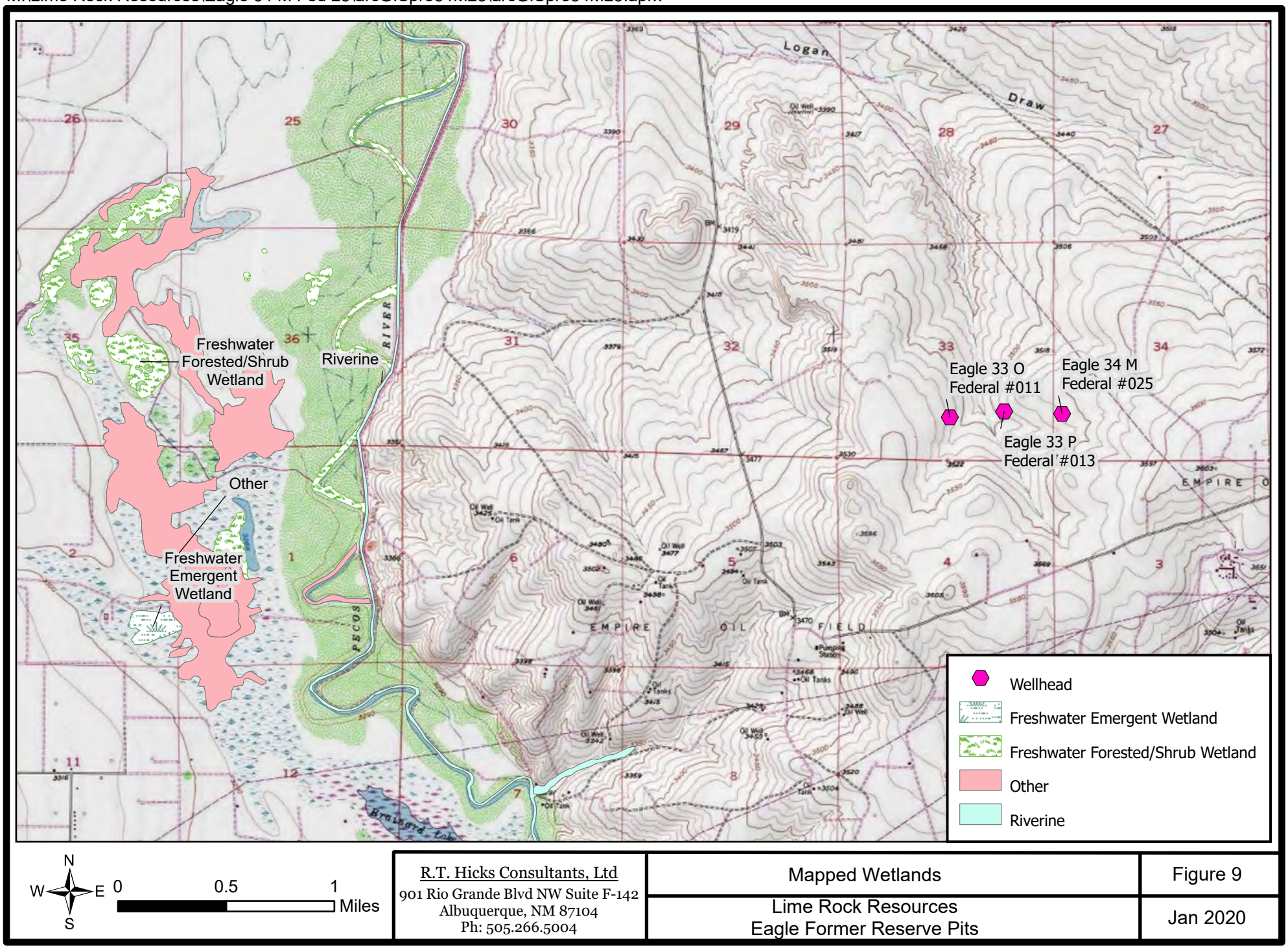
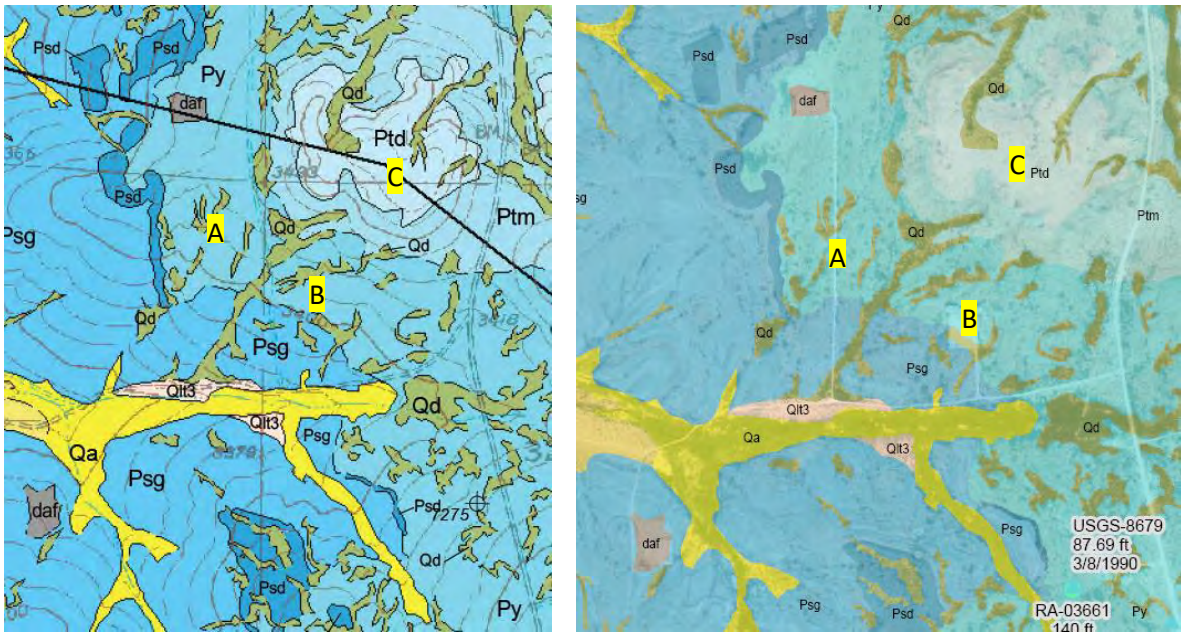


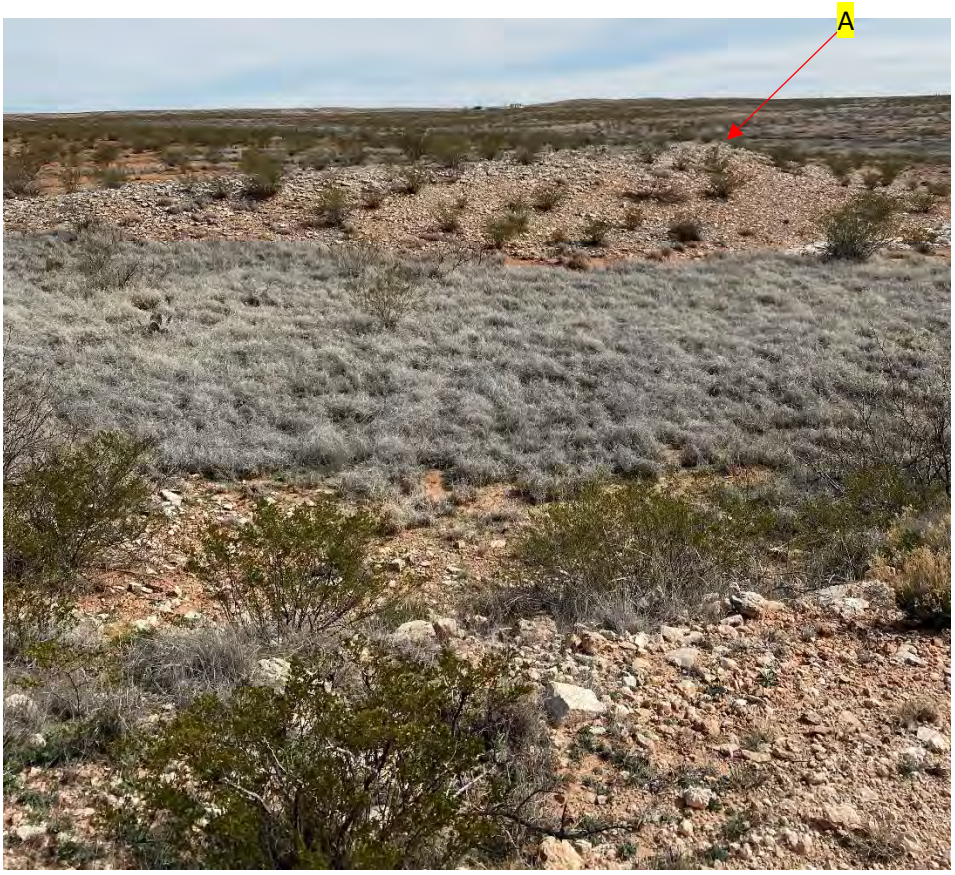
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mapped Wetlands Lime Rock Resources Eagle Former Reserve Pits	Figure 9 Jan 2020

SITE PHOTOGRAPHS

Field Image 1 – View looking north showing the geologic units of interest. The Seven Rivers gypsum and dolomite facies crop out along the left (west) edge of the image (see Field Image 3). The large pad with the spoil pile is excavated in the to Yates Formation (Field Image 4). The low mesa to the left of the road in the center right of the image is the Tansill dolomitic facies (Field Image 5)



Field Image 2 – Geologic map of the area. Left is the geologic map of the Spring Lake Quadrangle scanned map with a topographic base map, right is a figure from the GIS map package of the Spring Lake Quadrangle with an aerial imagery base map.



Field Image 3 – The upper thin dolomite unit of the Seven Rivers Formation is exposed in the low rise below the arrow. This unit is the marker bed that separates the Seven Rivers from the overlying Yates Formation. Beneath the sage in the foreground is Quaternary depression fill alluvium (Qd), which is described in Figure 5.

Field Image 4 – White gypsum and interbedded red siltstone shown in the cut is typical of the Yates in the area.

Field Image 5 – View to the west from the road on the right margin of Field Image 1. The red siltstone exposed in the borrow pit in the foreground may be Yates Formation. The gray unit in the upper half of the image is mapped as Tansill Formation mixed facies with the dolomite facies (Ptd) capping the mesa in this image.

Field Image 6 – View upstream of a "pour off" in the watercourse mapped to the north of the closed reserve pits that drains into Logan Wash. OF GM-213 maps this area exposed on the west side of this arroyo as Yates Formation. The 6-12-inch dolomite bed overlying the green and red siltstone creates the pour off. Note a slump feature displacement below the red arrow. Quaternary depression fill (Qd) is thicker on the downthrown side.

Field Image 7 – Downstream from Figure 6 on the east side of the drainage this gully exposes the Yates gypsum and red silt on the bottom right overlain by the mixed silty gypsiferous facies of the Tansill Formation.

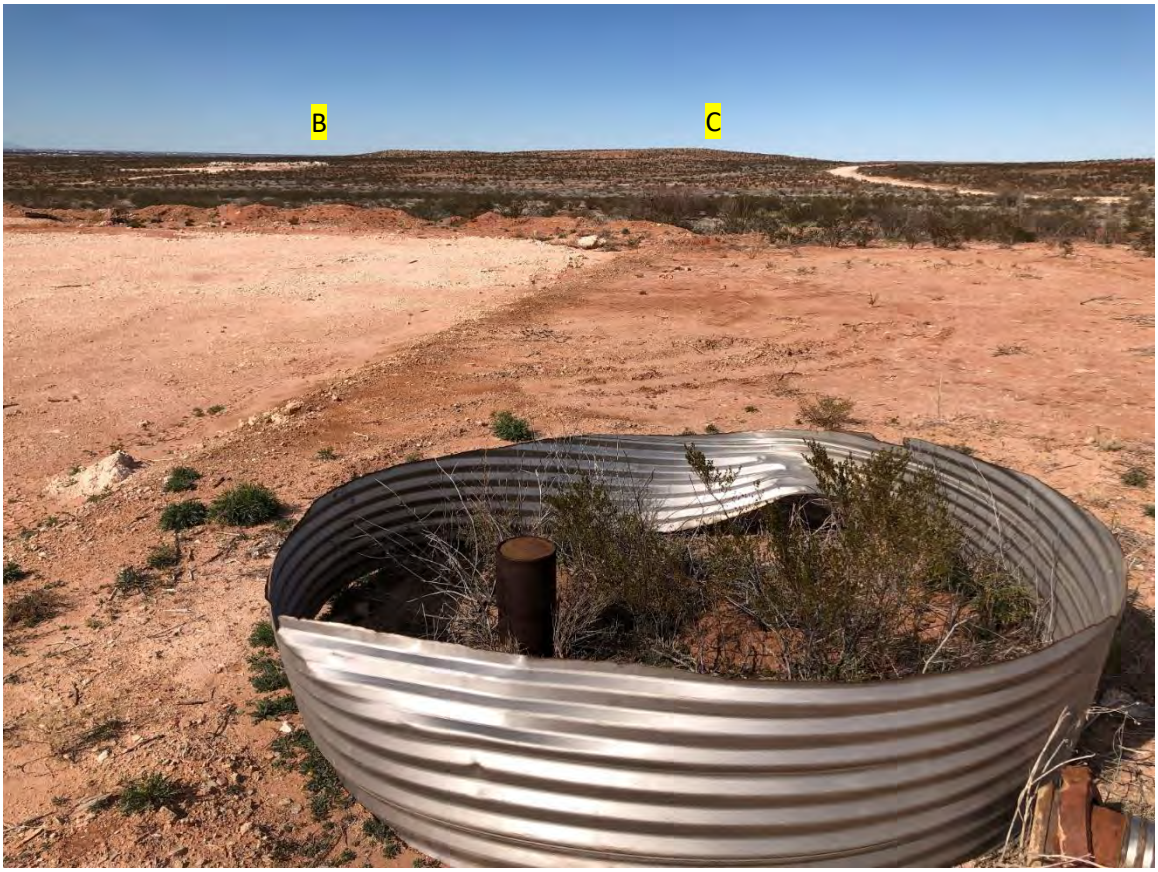
Field Image 8 – Image looking southwest at the junction of the mapped watercourse on Figure 7a (see on the left side of this image) and the next order tributary that flows northwest in the center of this image. OF GM 213 maps the exposed rock units as the mixed facies of the Tansill Formation. The Yates is exposed immediately downstream of this image and up stream of Figure 5. Quaternary depression fill (QD) is exposed in the stream cut in the left center. The lithology of this portion of the Tansill shown in this image is what probably underlies all the closed reserve pits. The closed reserve pit of Eagle O 33 Federal #11 is below the red arrow on the right.

Field Image 9 – View to the north of Eagle 33 P Federal #13 showing the next order tributary to the mapped watercourse on Figure 7a. The rocks exposed in this image is the mixed facies of the Tansill Formation. Most of the exposed dolomite or gypsum beds are 1-2 feet thick. While one can argue if a defined bed and bank exists within this channel, it clearly carries stormwater occasionally. The edge of this drainage (swale) is about 225 feet from any of the proposed locations of a trench burial shown in Figure 7b.

Field Image 10 – View to the north of Eagle 34 M Federal #25 from the middle of a broad swale mapped as Quaternary depression fill. There is no evidence of a defined channel in this area. The pad lies on an area mapped as the mixed facies of the Tansill.

Field Image 11 – Headward erosion of Quaternary depression fill (Qd) is obvious in the western next order tributary of the mapped watercourse. Eagle 33 O Federal 11 is on the horizon and the measuring wheel is at the edge of the drainage closest to the closed reserve pit.

Field Image 12 – The stake is 200 feet from the edge of the drainage shown in Figure 10. These is enough room to implement a trench burial near the closed reserve pit while meeting the setback criteria of Rule 17.



Field Image 13 – USGS-8679 well head (location can be seen on Field Image 2, right) in the foreground. In the background, the well pad spoil pile to the north west can be seen.

Field Image 14 – This image is 1200 feet north of Eagle 33 P Federal 13 and shows a arcuate exposure of dolomite in the Tansill. Within the arc is a grassy soil mapped as Quaternary depression fill.

Field Image 15 – The arcuate outcrop of Tansill dolomite is obvious in this Google Earth image and suggests a collapse of a cavern in the underlying Yates Formation

PREVIOUSLY APPROVED VARIANCE REQUESTS

Statement Explaining Why the Applicant Seeks a Variance

The prescriptive mandates of the Rule that are the subject of this variance request are the following subsections of NMAC 19.15.17.13.E:

> 19.15.17.13 Closure and Site Reclamation Requirements
> **E.** Closure notice.
> **(1)** The operator shall notify the surface owner by certified mail, return receipt requested that the operator plans closure operations at least 72 hours, but not more than one week, prior to any closure operation.
> Notice shall include well name, API number and location. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records is sufficient to demonstrate compliance with this requirement.

Hicks Consultants includes the SLO or BLM by carbon copy of the closure notice emails sent to NMOCD. This eliminates a delay in receipt of the notice by SLO or BLM and facilitates real-time dialogue between the surface owner, NMOCD, Hicks Consultants, and the operator should any questions arise about the closure. On November 24, 2014, Ed Martin of SLO confirmed that email is an acceptable method of copy for the notices of closure. BLM routinely accepts such email notifications.

Demonstration that the Variance Will Provide Equal or Better Protection of Fresh Water, Public Health and the Environment

Approval of an email copy of the closure notice for a temporary pit to substitute for one sent via U.S. Mail would offer a reduction of paper received and stored at the State Land Office and well as energy expended (carbon-emitted) to produce and ship the document. Lowering the carbon footprint provides better protection of the environment than compliance with the prescriptive mandate of the Rule.

From: Oberding, Tomas, EMNRD
To: Kristin Pope
Cc: ccottrell@jdmii.com; Randy Hicks; gboans@jdmii.com; Chace Walls; Martin, Ed
Subject: RE: VARIANCE REQUEST: Email substitution for pit closure notices
Date: Wednesday, January 07, 2015 10:13:08 AM

Ms. Pope,

This email is fine for OCD documentation, for the current site closure.
Mahalo
-Doc

Tomáš 'Doc' Oberding, PhD
Senior Environmental Specialist
New Mexico Oil Conservation Division, District 1
Energy, Minerals and Natural Resources Department
(575) 393-6161 ext 111
E-Mail: tomas.oberding@state.nm.us

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

From: Kristin Pope [mailto:kristin@rthicksconsult.com]
Sent: Wednesday, December 31, 2014 1:35 PM
To: Oberding, Tomas, EMNRD
Cc: ccottrell@jdmii.com; Randy Hicks; gboans@jdmii.com; Chace Walls; Martin, Ed
Subject: VARIANCE REQUEST: Email substitution for pit closure notices

Dr. Oberding:

Please find the attached variance request for a substitution of email to SLO in lieu of temporary pit closure notices submitted via US Mail, return receipt requested. It is referenced for the Murchison – Jackson Unit #14H but I also submitted a closure report for the Jackson Unit #16H.

Please contact me with any questions about this upon your return to work. Thank you.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

Request for OCD Approval of Alternative Test Methods to Analyze Concentrations of TPH and Chloride

The prescriptive mandates of the Rule that are the subject of this request are the following subsections of 19.15.17.16 [emphasis added]:

> 19.15.17.13 CLOSURE AND SITE RECLAMATION REQUIREMENTS:
> D.(5) The operator shall collect, at a minimum, a five point composite of the contents of the temporary pit or drying pad/tank associated with a closed-loop system to demonstrate that, after the waste is solidified or stabilized with soil or other non-waste material at a ratio of no more than 3:1 soil or other non-waste material to waste, the concentration of any contaminant in the stabilized waste is not higher than the parameters listed in Table II of 19.15.17.13 NMAC.

The referenced Table II, which is reproduced in part below, notes the Method with asterisk signifying: "*Or other test methods approved by the division".

Table II
Closure Criteria for Burial Trenches and Waste Left in Place in Temporary Pits

Depth below bottom of pit to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
25-50 feet	Chloride	EPA Method 300.0	20,000 mg/kg
	TPH	EPA SW-846 Method 418.1	100 mg/kg

After sampling solids of more than 50 drilling pits in the Permian Basin, we have observed and reported to OCD on numerous occasions significant problems with non-petroleum drilling additives (e.g. starch) interfering with the laboratory method 418.1. It is not surprising that in many instances we found no correlation between the laboratory results using 418.1 and the results using Method 8015.

We request approval of Method 8015 (GRO + DRO + MRO) for Method 418.1.

We request approval of EPA 300.0 or SM4500 for the analysis of chloride.

Demonstration that OCD Approval Will Provide Equal or Better Protection of Fresh Water, Public Health and the Environment

The purpose of TPH analyses in the Pit Rule is to measure total petroleum hydrocarbons not all non-polar compounds, such as starch or cellulose that can interfere with Method 418.1. While Method 418.1 may provide some useful data for transportation of crude oil or condensate spills to disposal, the addition of non-polar organic materials in drilling fluids, especially for horizontal wells, renders Method 418.1 highly problematic to determine compliance with the Rule. Using Method 8015 for TPH (GRO+DRO+MRO) provides a better measurement of what we believe the Commission intended operators to measure.

In hearings before the Oil Conservation Commission technical arguments were presented regarding the use of SM4500 in lieu of EPA 300.00 for chloride analysis for Rule 29. The Division and the Commission agreed that these two methods provide equal or better protection of fresh water, public health and the environment.

Request for Interim Alternative to Re-Vegetation and Re-Contouring

The Pit Rule states:

> 19.15.17.13.H.1
> (b) The operator may propose an alternative to the re-vegetation or re-contouring requirement if the operator demonstrates to the appropriate district office that the proposed alternative provides equal or better prevention of erosion, and protection of fresh water, public health and the environment. The proposed alternative shall be agreed upon by the surface owner. The operator shall submit the proposed alternative, with written documentation that the surface owner agrees to the alternative, to the division for approval.
>
> and
>
> 19.15.17.13.H (5) Reclamation and re -vegetation.
> (a) Reclamation of areas no longer in use. All areas disturbed by the closure of pits and below-grade tanks, except areas reasonably needed for production operations or for subsequent drilling operations, shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.

We do not believe a request for this proposed alternative constitutes a formal variance principally because the alternative is temporary in nature.

The operator proposes construction of a 1-foot thick production pad over the stabilized cuttings, capping liner and 3-feet of clean material. Upon plugging and abandonment of the wells on the pad, the entire location, including the pit sites, will be restored to meet the mandates of the Pit Rule.

The 1-foot thick surface of the production pad over the buried waste will be sloped to shed surface water and prevent ponding over the stabilized cuttings, liner and 3-feet of soil cover. Hicks Consultants maintains that a compacted caliche pad that is sloped to shed precipitation and minimize infiltration provides equal protection of the environment as re-vegetation and re-establishment of the sand dunes that characterize the area. The sloped caliche pad will cause less infiltration of precipitation than the sand dunes. Restoration of the location at plugging and abandonment of the wells will occur. Thus, the operator is requesting this alternative only for the time between present and P&A of the wells.

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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 4395

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
LIME ROCK RESOURCES II-A, L.P. 1111 Bagby Street Suite 4600 Houston, TX77002	277558	4395	C-144

OCD Reviewer	Condition
ehernandez	See attached conditions.