

30-025-42228

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March 2014

**C-144 Permit Package for  
North Lea "3" Federal Com. No. 3H  
Temporary Pit  
Section 3 T20S R34E Lea County NM**



**Prepared for  
Read & Stevens Inc.  
Roswell, New Mexico**

**Prepared by  
R.T. Hicks Consultants, Ltd.  
Albuquerque, New Mexico**

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

March 24, 2014

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Mr. Geoffrey Leking

NMOCD District

1625 French Drive

Hobbs, NM 88240

Via E-Mail and US Mail

Mr. Cody Layton

BLM Carlsbad

Via E-Mail

RE: Read and Stevens, Inc. – North Lea “3” Federal Com. Well No. 3H C-144 Application,  
Section 3 (C), T-20-S, R-34-E, Lea County, New Mexico (API: not assigned)

Dear Geoff and Cody:

On behalf of Read and Stevens, Inc., R.T. Hicks Consultants, Ltd. is pleased to submit the C-144 application package for the above-referenced well. Please note the following:

1. Generic Plans included in this submission have all been recently approved by OCD.
2. Plates 1 and 2 are based on a previously approved C-144 application with similar dimensions and volumes.
3. We anticipate “in place” burial of stabilized solids.
4. This letter and application is also addressed to the BLM to notify the surface landowner of the operator’s intent to use on-site burial. An amendment to the existing BLM application permit to drill was submitted on March 11, 2014 to provide information concerning the utilization of the temporary pit.
5. We certify that we performed a visual inspection of the site on March 6, 2014.

If you have any questions or concerns regarding this application, please contact Dale Littlejohn in our Midland office or me. As always, we appreciate your work ethic and attention to detail.

Sincerely,

R.T. Hicks Consultants



Dale T. Littlejohn

Geologist

Copy: Read & Stevens, Inc.



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

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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 June 6, 2013

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

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: Read & Stevens, Inc. OGRID #: 18917  
Address: 400 North Pennsylvania Ave., #1000, Roswell, NM 88201  
Facility or well name: North Lea "3" Federal Com. Well No. 3H  
API Number: 30-025- OCD Permit Number: PI-06552  
U/L or Qtr/Qtr C Section 3 Township 20S Range 34E County: Lea  
Center of Proposed Design: Latitude 32° 36' 32.150" N Longitude -103° 32' 57.020" W NAD: ☐ 1927 ☒ 1983  
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 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other \_\_\_\_\_  
☒ String-Reinforced  
Liner Seams: ☒ Welded ☐ Factory ☐ Other \_\_\_\_\_ Volume: 37,006 bbl Dimensions: L 135 x W 275 x D 7.0-9.0 ft (drilling) 10 ft (fluids cell)

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.

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 **See Figure 2**

☐ 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**) **See Figure 5**

- 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**) **See Figure 7**

- 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**) **See Figure 8**

- 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**) **See Figure 9**

- 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). **See Figure 3**

- 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. **See Figure 4**

☐ 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

**See Figure 1**

Within 300 feet of a wetland. **See Figure 6**

- 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<sub>2</sub>S, 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 300 feet of a wetland. US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- Written confirmation or verification from the municipality; Written approval obtained from the municipality

☐ Yes ☒ No

Within the area overlying a subsurface mine.

- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

☐ Yes ☒ No

Within an unstable area.

- 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.

- FEMA map

☐ 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): Tim Collier Title: Vice President

Signature:  Date: March 21, 2014

e-mail address: tcollier@read-stevens.com Telephone: (575) 633-3770 (x-316)

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

OCD Representative Signature:  Approval Date: 7-14-2014

Title: Environmental Specialist OCD Permit Number: P1-06557

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: \_\_\_\_\_

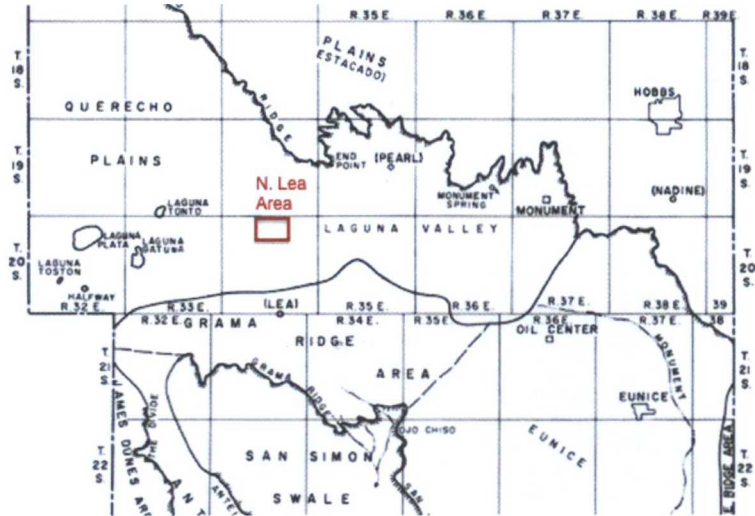
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

e-mail address: \_\_\_\_\_ Telephone: \_\_\_\_\_



### Geologic Setting of the Regional Fresh-Water Bearing Formations

The proposed temporary pit site is located within the central portion of the Laguna Valley, which is on the eastern edge of the Pecos Valley Physiographic Province. Regionally, Laguna Valley drains from east to west and is approximately thirteen miles wide extending from the Mescalero Ridge on the north to Hat Mesa and Grama Ridge on the south (see adjacent map insert). There is approximately 150 to 250 feet of elevation change from valley floor (location of proposed site) to the areas north and south of the valley.



Groundwater in the area within and surrounding the Laguna Valley is found only in Mesozoic and Cenozoic Era rocks that were deposited since approximately 235 million years ago. The oldest of these are the Triassic age Santa Rosa Formation and Chinle Group. They consist of conglomerates, cross-bedded sandstones, claystones, and siltstones that were deposited in a continental fluvial environment over the evaporites of the late Permian Ochoan Series, which had filled the Delaware Basin by that time.



Any Jurassic or Cretaceous age rocks that were deposited above the Triassic have subsequently been removed by erosion leaving an irregular surface on the Triassic rocks. Cenozoic Era rocks in the area consist of the Tertiary age Ogallala Formation and Quaternary age eolian and piedmont deposits. The Ogallala Formation consists of terrestrial sediments (sand with some



Siting Criteria (19.15.17.10 NMAC)

Read & Stevens, Inc.: North Lea "3" Federal Com Well No. 3H

clay, silt and gravel) that were deposited on the Triassic age rocks. Generally, the Ogallala is capped by a caliche layer that remains as ridges to the north and south of the valley, being resistant to the erosion that shaped the present topography.

The Ogallala aquifer is the primary groundwater source to the north of Mescalero Ridge and is known to be present in more isolated locations to the south and east of the Laguna Valley. Water wells drilled within the central and western portions of Laguna Valley produce only from the Triassic aquifer or isolated alluvium near the Laguna Gatuna and Laguna Tonto (dry lake beds) located 6.5 miles to the west of the temporary pit site.

### **Distance to Groundwater**

**Figure 1, Figure 2, and the discussion presented below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is greater than 100 feet beneath the temporary pit.**

Figure 1 is an area geologic base map that depicts regional topography (metric contour units) and includes the water wells located nearest to the temporary pit site for which information is available, regardless of how comprehensive or useful. A dashed line represents the western extent of the known water wells that produce from the Ogallala Aquifer. It also shows:

1. The location of the temporary pit as a purple hexagon (center location on map).
2. Water wells from the USGS database as a large green triangle.
3. Water wells from the New Mexico Office of the State Engineer (OSE) database as a small blue triangle inside a colored circle that indicates the well depth (see Legend). Please note, OSE wells are often miss-located in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter, of the Section Township and Range. Topographic maps and/or aerial photographs verified all of the OSE well locations included on this map.
4. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports are shown as a dot inside a color-coded (depth) square.
5. Depth to water and gauging dates from the most recent and reliable measurement for each well is provided adjacent to the well symbol. It should be noted that in most cases the depth to water provided by the OSE database are from drillers log notes estimated at the time of completion, rather than actual field measurements.

Figure 2 is a regional topographic base map (metric contour units) that depicts the potentiometric surface contours of the Triassic Chinle aquifer, which is believed to be the shallow-most aquifer within the central portion of the Laguna Valley. The potentiometric contours are labeled in feet above sea level (ASL). The water wells plotted include the USGS database water wells from Figure 1 and four additional USGS database wells, beyond the Figure 1 area, for which a reliable depth to water measurement has been recorded for the Chinle aquifer. Figure 2 also shows:

1. The location of the temporary pit as a purple hexagon.
2. Groundwater elevations and gauging dates from the most recent available static water level measurement for each well.



# Siting Criteria (19.15.17.10 NMAC)

## Read & Stevens, Inc.: North Lea "3" Federal Com Well No. 3H

### Site Geology

The proposed temporary pit for the North Lea "3" Federal Com. No. 3H well is located on an outcrop of Quaternary Age eolian and piedmont deposits (Qe/Qp on Figure 1). These fine-grained sands and clays, along with the Quaternary piedmont deposits (Qp on Figure 1), are present as a thin covering of the underlying eroded Tertiary or Triassic age rocks. Based on information from Ground-Water Report 6 (GWR-6) *Geology and Ground-Water Conditions in Southern Lea County, New Mexico* by Alexander Nicholson and Alfred Clebsch (1961) and the survey elevation of the site (3,668 feet ASL), the Triassic age rocks are present approximately 56 feet below the proposed temporary pit location. The surface drainage is generally to the west, however the area is covered by stabilized sand dunes and no distinct drainage features are present.

### Water Table Elevation

Nineteen water wells were identified in the area surrounding the North Lea "3" Federal Com. No. 3H site (see Figure 1). A summary of the available water well data, with respect to groundwater elevation, is provided on the table below. In addition to data from the USGS, published, and field verified well information, which is generally considered reliable, the table also includes wells listed on the OSE Waters database. As stated earlier, the groundwater elevations provided for these wells are likely based on driller log notes rather than measurements made under static conditions.

Well Numbers (see Map)	Well Location						Well Source Information						Groundwater Elevation Data						Gauging Date	
	Township (south)	Range (east)	Section	Quarter Section OSE protocol (64, 16, 4)			NM-OSE Database	USGS Database	Open File Rpt. 95	GW Report No. 6	USGS Topo Sheet	Aerial Photograph	Field Verification	Surface Elevation (published)	Surface Elevation (Topo Sheet)	Well Total Depth (published)	Depth to Water (published)	Groundwater Elev. (published)		Groundwater Elev. (using topo elev.)
USGS-932	19	33	26	2	2	4		✓	✓	✓	✓	--	--	3,608	3,608	100	84.56	3,523	3,523	1/30/96
Misc-113	19	34	16	3	3	4			✓				--	3,755	3,755		243.91	3,511	3,511	3/19/68
Misc-117	19	34	31	4	1	4	✓					?		3,625	3,625	160	110	3,515	3,515	5/15/74
Misc-112	19	34	31	1	3	1			✓	✓		?	✓	3,625	3,614	66	59	3,566	3,555	11/17/65
Misc-116	19	34	31	1	3	2					✓	✓	✓		3,634					
L 09569	19	35	17		4	3	✓					✓	--		3,872	80	30		3,842	2/22/85
Misc-121	20	33	4	2	3	4			✓		✓	?	--	3,556	3,556	58	33.19	3,523	3,523	3/19/68
USGS-885	20	33	20	2	2	2		✓	✓		✓	?	--	3,536	3,536	52	33.17	3,503	3,503	2/2/96
Misc-120	20	33	24	2	2	1			✓	✓	✓	✓	--	3,630	3,630	700	300+	<3,330	<3,330	no date
USGS-902	20	34	4	4	4	4		✓			✓	✓	✓	3,635	3,630	200	124.77	3,510	3,505	1/26/96
USGS-891	20	34	14	3	3	1		✓			✓	✓	✓	3,648	3,651	230	145.2	3,503	3,506	2/2/96
USGS-887	20	34	17	4	3	3		✓			✓	✓	✓	3,639	3,639	160	127.58	3,511	3,511	1/26/96
Misc-111	20	34	22	2	2	2			✓	✓	✓	✓	✓	3,656	3,656	250	215.0	3,441	3,441	2/3/71
Misc-122	20	34	25	1	1	1	✓						✓		3,690	370				11/1/13
L 04158	20	35	5	2	2	4	✓					✓	--		3,686	70	64		3,622	12/18/59
USGS-907	20	35	5	4	1	3		✓	✓		✓	✓	--	3,685	3,685	70	53.48	3,632	3,632	1/25/96
USGS-905	20	35	6	4	3	3		✓	✓		✓	✓	--	3,678	3,679	70	56.39	3,622	3,623	3/5/96
Misc-118	20	35	7	4	4	4			✓		✓	✓	--	3,674	3,675		38.03	3,636	3,637	1/26/71
USGS-868	20	35	31	3	2	1		✓	✓	✓	✓	✓	--	3,729	3,730	85	65.29	3,664	3,665	2/2/96

✓ Indicates well was verified, (blank) indicates well not verified, and -- indicates no attempt to verify

Initially, an attempt was made to identify each well using USGS topographic maps. The surface elevation of each well identified on the topographic maps was compared to the published surface elevation, if available. Wells that could not be verified using maps were searched for using



Siting Criteria (19.15.17.10 NMAC)

Read & Stevens, Inc.: North Lea "3" Federal Com Well No. 3H

current and historic satellite photographs in an effort to identify windmills, tanks, or roads associated with the well. The following comments should be noted from Figure 1 and the table:

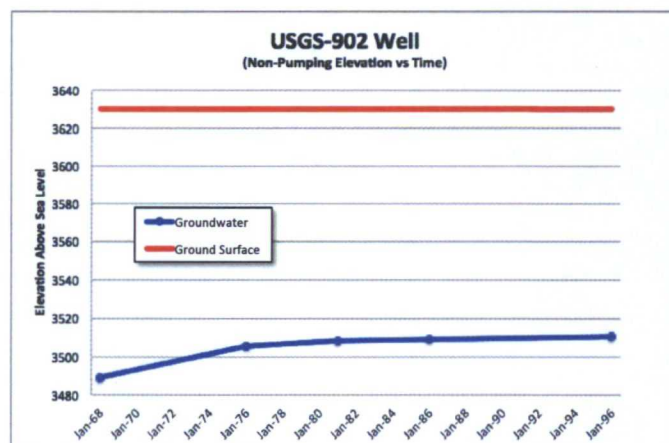
- Topographic maps could not identify the locations of wells Misc-112 and Misc-117, but some evidence of their historic existence was found on the aerial photographs. Misc-112 was field verified as a plugged well but surface access to Misc-117 was not possible due to a locked gate. The published total depth and depth to water measurements for Misc-112 are not considered reliable based on more recent information from USGS-932 and Misc-117.
- Topographic maps and historic aerial photographs could not precisely identify the location of water well Misc-113 and surface access was not readily possible. The surface elevation provided in OFR-95 however was a favorable match to the immediate area.
- Topographic maps identified the locations of wells Misc-121 and USGS-885, but more recent evidence of their existence was not found on the historic aerial photographs. Neither well was field verified due to the distance from the proposed temporary pit site and the difficulty of access.



An attempt was made to gauge USGS-902, as it is the nearest water well to the temporary pit site, located 1.3 miles to the southwest. The well and disabled windmill were identified but a welded cap, as shown in the adjacent photograph, currently seals the casing. Eight gauging events however were performed by the USGS from 1965 to 1996. Five of the measurements were made while the windmill was not operative in order to establish a historic static groundwater elevation as shown in the graph below:

### Hydrogeology

GWR-6 indicates that Ogallala groundwater is not present as a regional aquifer in the area surrounding the temporary pit location, but can be found in wells at higher elevations to the north, east, and south. The nearest water well, designated by the USGS as an Ogallala producer, is USGS-905, located approximately 3.2 miles to the east-southeast. All of the wells within the central portion of the Laguna Valley produce from the Triassic Chinle Formation.





Siting Criteria (19.15.17.10 NMAC)

Read & Stevens, Inc.: North Lea "3" Federal Com Well No. 3H

Based on the stable historic depth to water measurements from USGS-902 and the potentiometric surface contours created using the available measurements from surrounding wells (Figure 2), it has been determined that the groundwater elevation at the North Lea "3" Federal Com. Well No. 3H temporary pit site is approximately 3,513 feet ASL. With a surface elevation of 3,668 feet ASL and a maximum depth of the temporary pit of 9 feet, the depth to groundwater below the pit floor should be approximately 146 feet.

Please note, Open File Report No. 95 (OFR-95) includes a potentiometric map that covers the Laguna Valley. Unfortunately, the contours drawn on this map do **not** honor the data found in the OFR-95 report table for the water wells located in T-20-S, R-34-E. The contours indicate a groundwater elevation that is 50 to 100 feet higher than what the actual measurements support.

### Distance to Surface Water

**Figure 3 and the site visit demonstrates that the location is not 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).**

- The nearest surface drainage feature (Lake/Pond) is located 1.0 mile to the west-southwest and no longer contains water (see photograph), but appears to have once been used for the storage of oil field liquids.
- No other watercourses, as defined by NMOCD Rules, or water bodies exist within 300-feet of the location, based upon our site visit and examination of the surrounding area.



### Distance to Permanent Residence or Structures

**Figure 4 and the site visit demonstrates that the location is not within 300 feet from a permanent residence, school, hospital, institution, church, or other structure in existence at the time of initial application.**

- An oil company field office is located 1,700 feet northwest and an unmanned telephone utility building is located 1.3 miles west of the site.
- A former "frac" water pit is located approximately 400 feet to the north of the proposed North Lea "3" Federal Com. 3H well location (approximately 220 feet from the northern edge of the proposed temporary pit). A secure fence surrounds the former pit but the liner is no longer present, as shown in the photographs below.





### **Distance to Non-Public Water Supply**

**Figure 1 demonstrates that the location is not within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.**

- Figure 1 shows the locations of all area water wells; the nearest fresh water well is USGS-902, which is located 1.3 miles to the southwest. There are no known domestic water wells located within the mapping area.
- No springs were identified within the mapping area.

### **Distance to Municipal Boundaries and Fresh Water Fields**

**Figure 5 demonstrates that the location is not within incorporated municipal boundaries or defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.**

- The closest municipality is Monument, NM approximately 19 miles to the east.
- The closest public well field is located approximately 20 miles to the northwest.

### **Distance to Wetlands**

**Figure 6 demonstrates the location is not within 500 feet of wetlands.**

- The nearest designated wetlands is a "Freshwater Pond" located 1.0 mile to the west-southwest, as described above in the "Distance to Surface Water" section.

### **Distance to Subsurface Mines**

**Figure 7 and our general reconnaissance of the area demonstrate that the nearest mines are caliche pits.**

- The nearest caliche pit is located approximately 2.3 miles to the northeast.

### **Distance to High or Critical Karst Areas**

**Figure 8 shows the location of the temporary pits with respect BLM Karst areas**

- The proposed temporary pit is located within a "low" potential karst area.
- The nearest "high" or "critical" potential karst area is located approximately 17 miles west of the site.
- We saw no evidence of unstable ground near the proposed pit location during the site inspection.

### **Distance to 100-Year Floodplain**

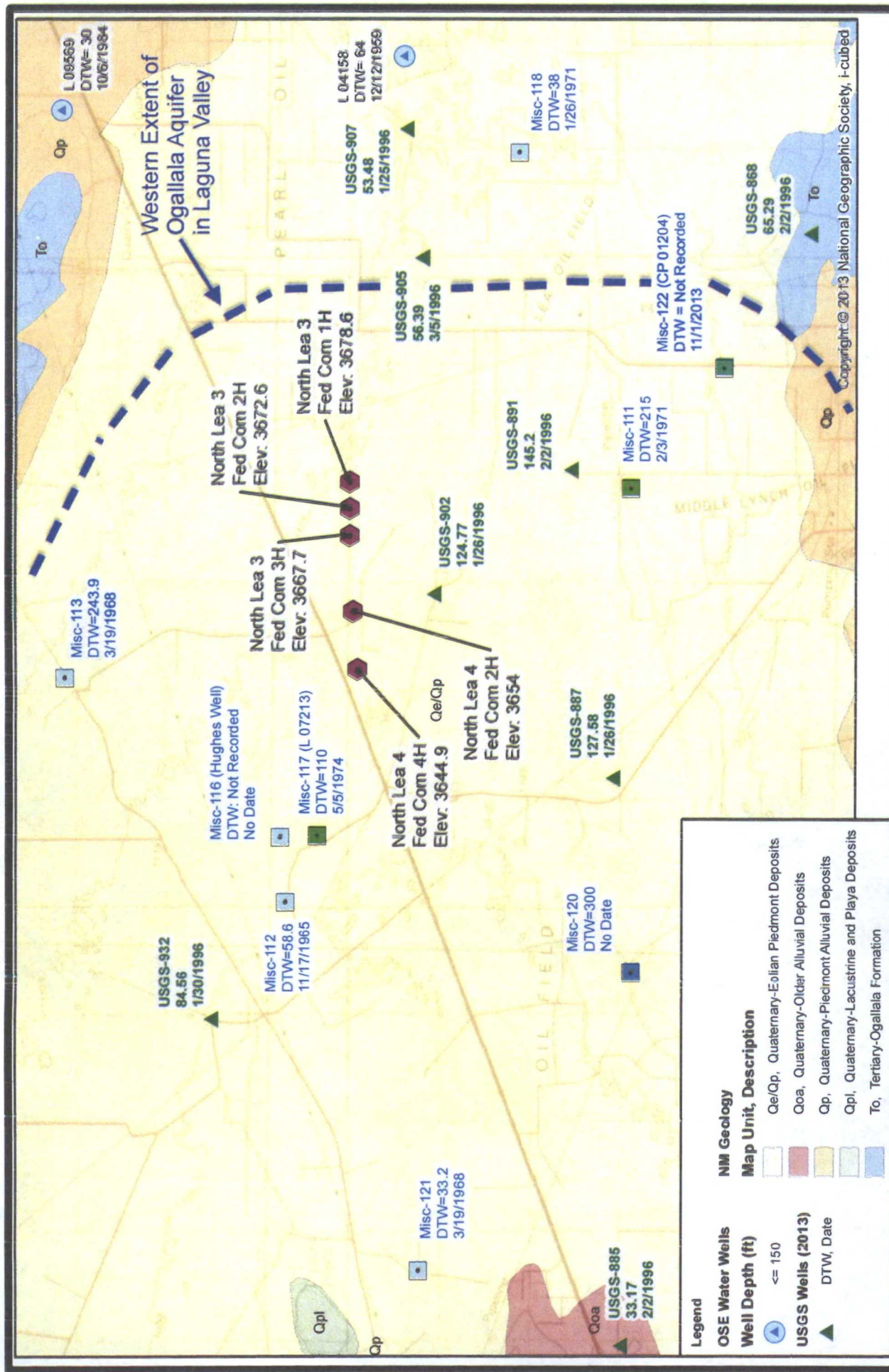
**Figure 9 demonstrates that the location is within an area that has not yet been mapped by the Federal Emergency Management Agency with respect to the Flood Insurance Rate 100-Year Floodplain.**

- Areas that are not mapped are designated as "Undetermined Flood Hazard" and are generally considered minimal flood risk.
- Our field inspection and examination of the topography permit a conclusion that the location is not within any floodplain.



### **Temporary Pit Design**

**Please refer to Plates 1 and 2 for the design of the temporary pit and the Design and Construction Plan at the end of this application. Note that the outline of the bottom of the pit is not to scale and the Flow-Back Cell is optional.**



**R.T. Hicks Consultants, Ltd**  
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Albuquerque, NM 87104  
Ph: 505.266.5004

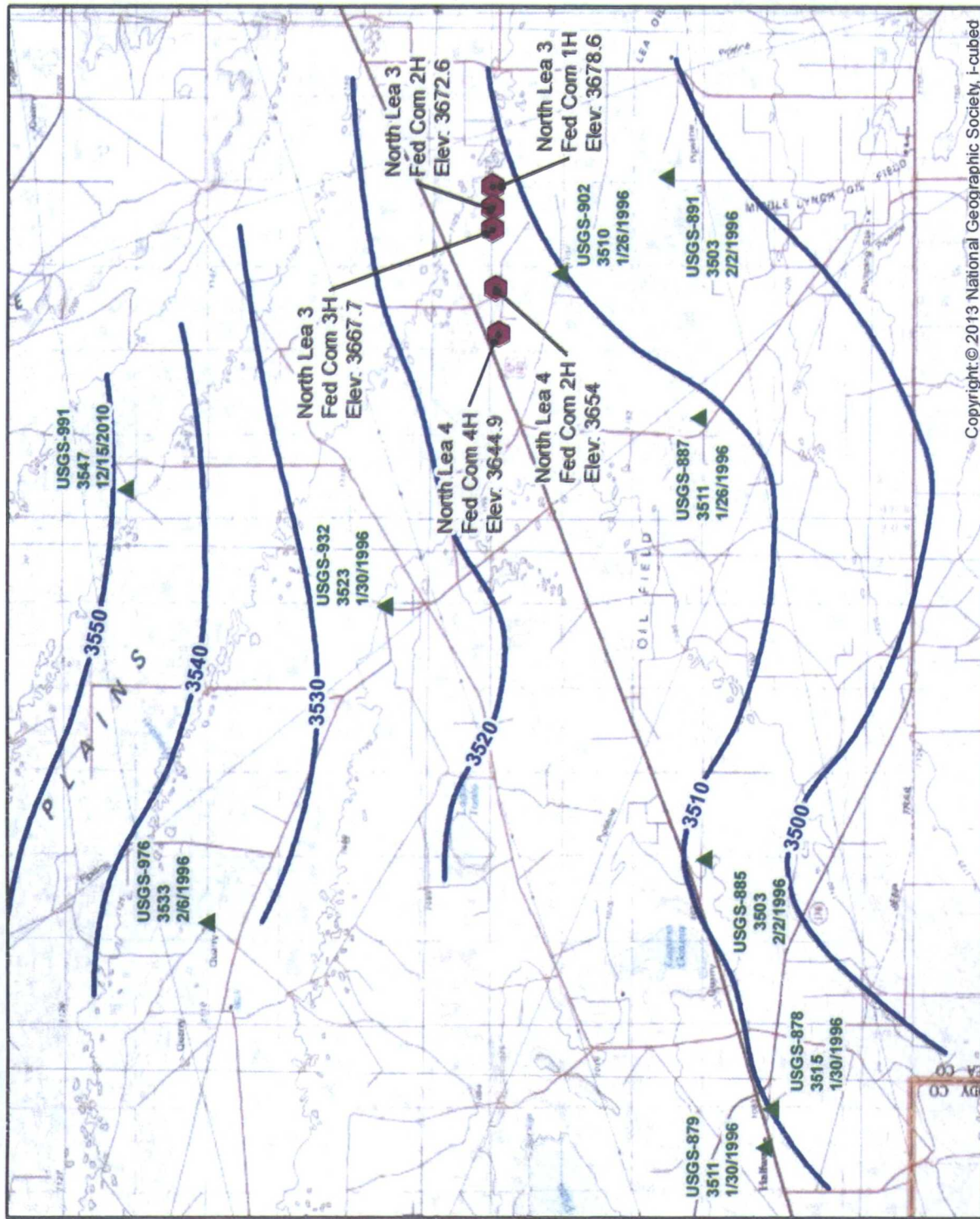
**Depth To Water and Geology**

**Read & Stevens, Inc: North Lea 3 & 4 Fed Com**

**Figure 1**

**March 2014**





Copyright: © 2013 National Geographic Society, Inc.

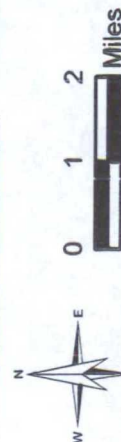
**Legend**

Potentiometric Surface

— Isocontour (ft msl)

**USGS Wells (2013)**

▲ USGS Wells (2013)



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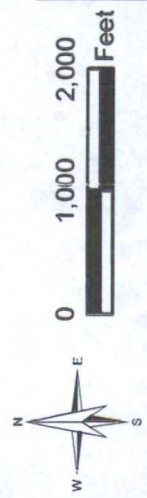
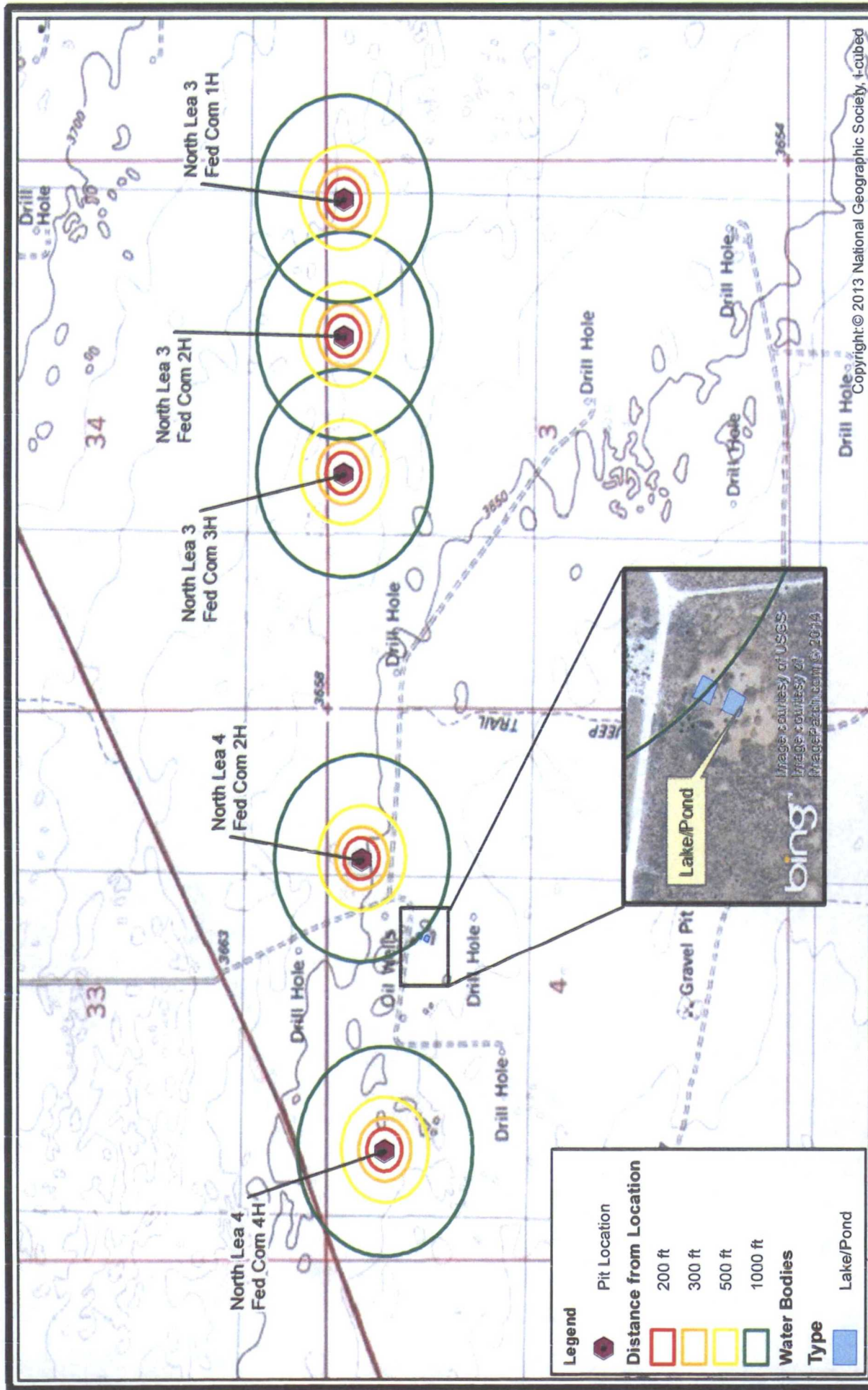
Potentiometric Surface and Groundwater Elevation of  
 Chinle Aquifer in Laguna Valley

Figure 2

Read & Stevens, Inc: North Lea 3 & 4 Fed Com

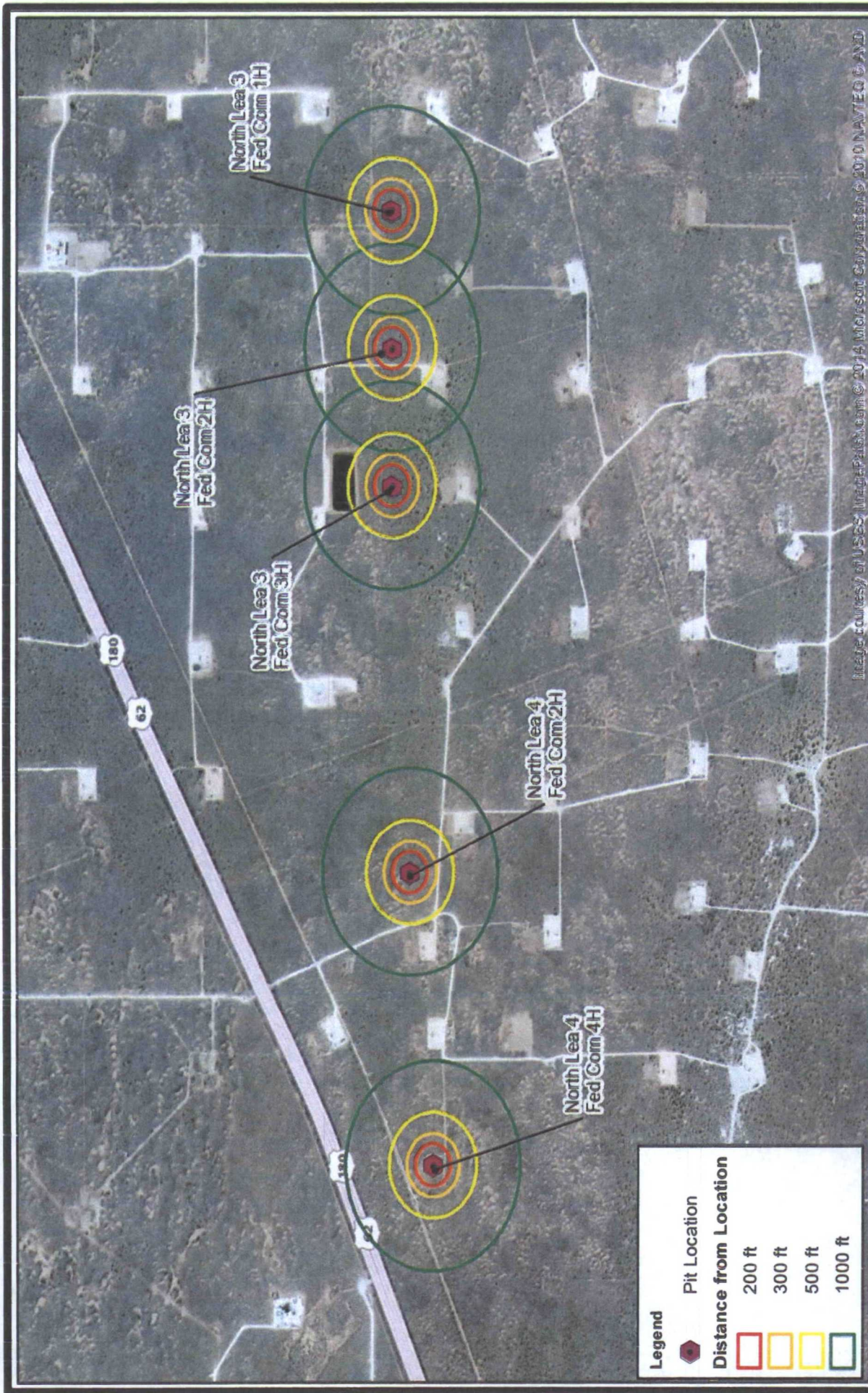
March 2014





<p>R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004</p>	<p>Surface Water and Topography</p>	<p>Figure 3</p>
	<p>Read &amp; Stevens, Inc: North Lea 3 &amp; 4 Fed Com</p>	<p>March 2014</p>

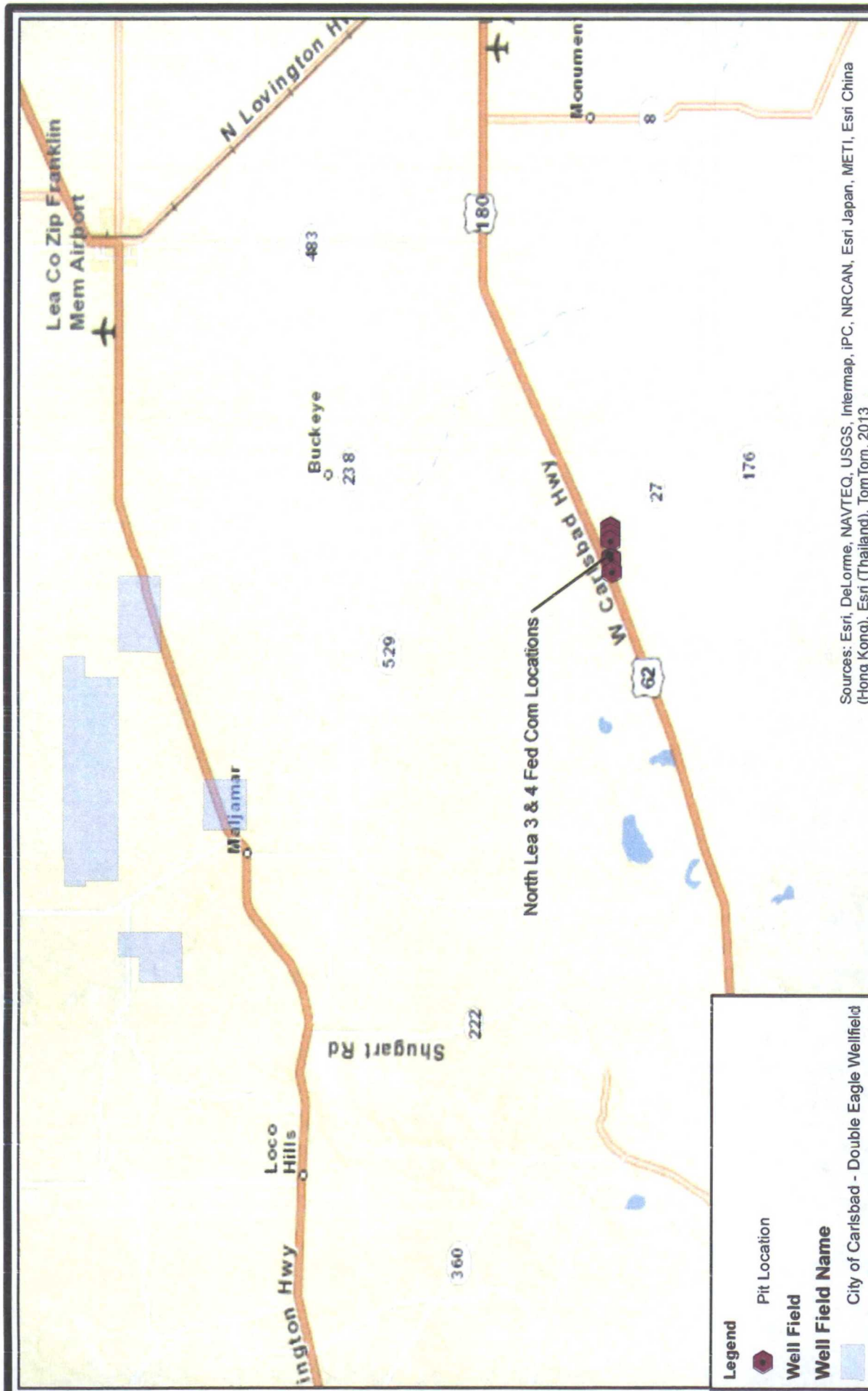




(aerial image c.2014)

<p>R.T. Hicks Consultants, Ltd            901 Rio Grande Blvd NW Suite F-142            Albuquerque, NM 87104            Ph: 505.266.5004</p>	<p>Nearby Structures</p>	<p>Figure 4</p>
	<p>Read &amp; Stevens, Inc: North Lea 3 &amp; 4 Fed Corn</p>	<p>March 2014</p>





Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

**Legend**

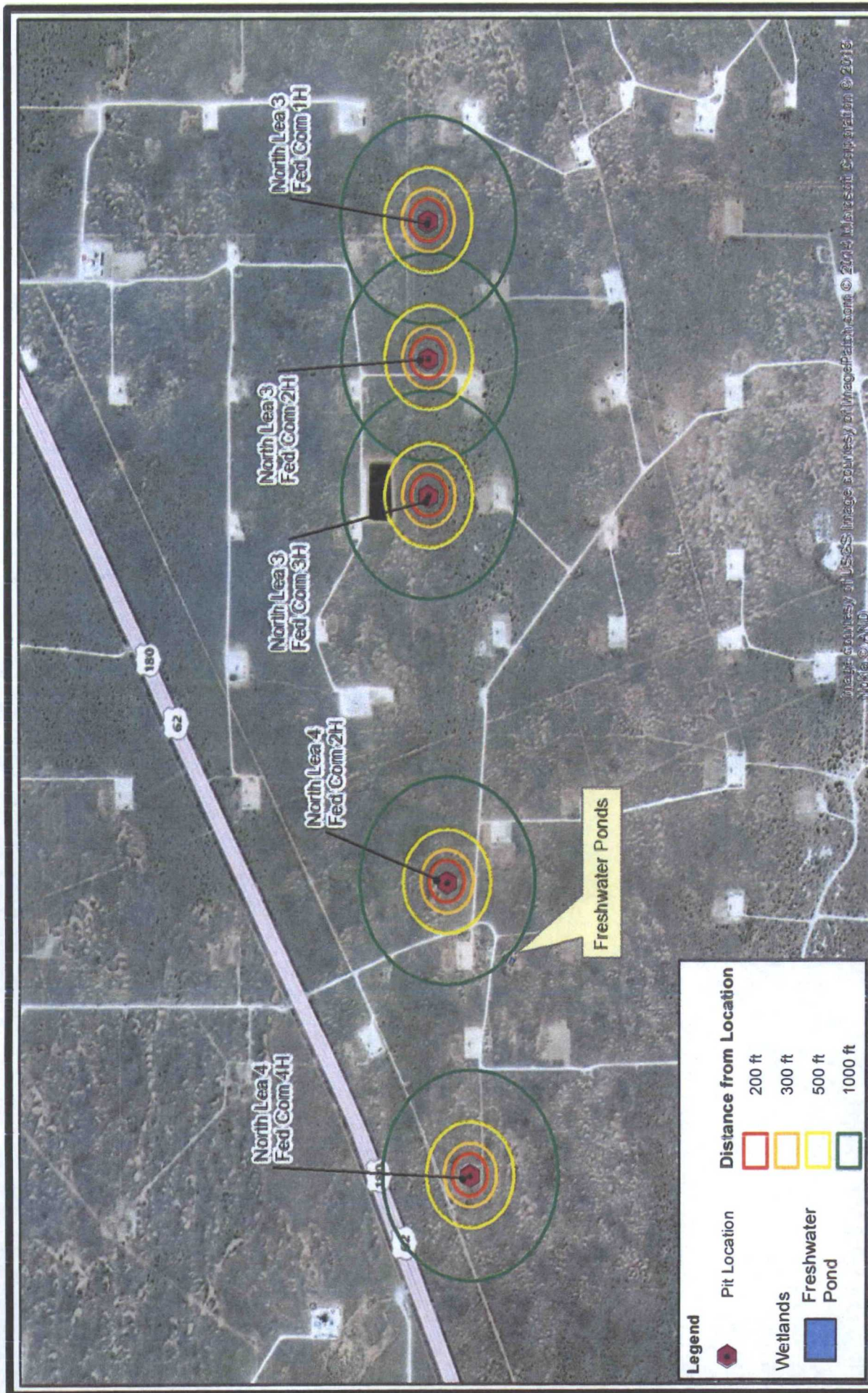
- Pit Location
- Well Field
- Well Field Name
- City of Carlsbad - Double Eagle Wellfield



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Figure 5	Nearby Municipalities and Well Fields
March 2014	Read & Stevens, Inc: North Lea 3 & 4 Fed Com





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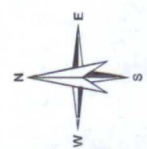
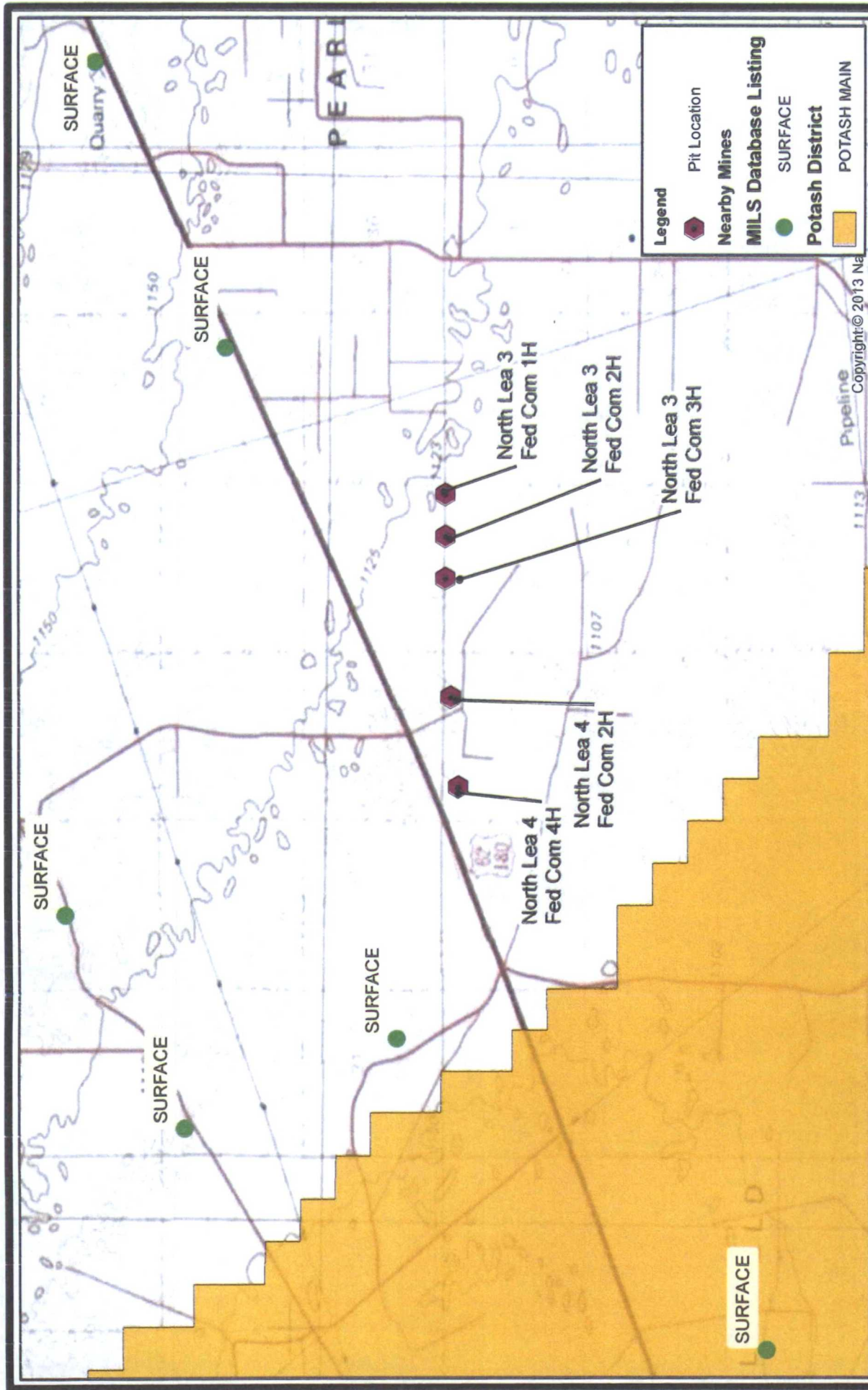
Nearby Wetlands

Read & Stevens, Inc: North Lea 3 & 4 Fed Com

Figure 6

March 2014





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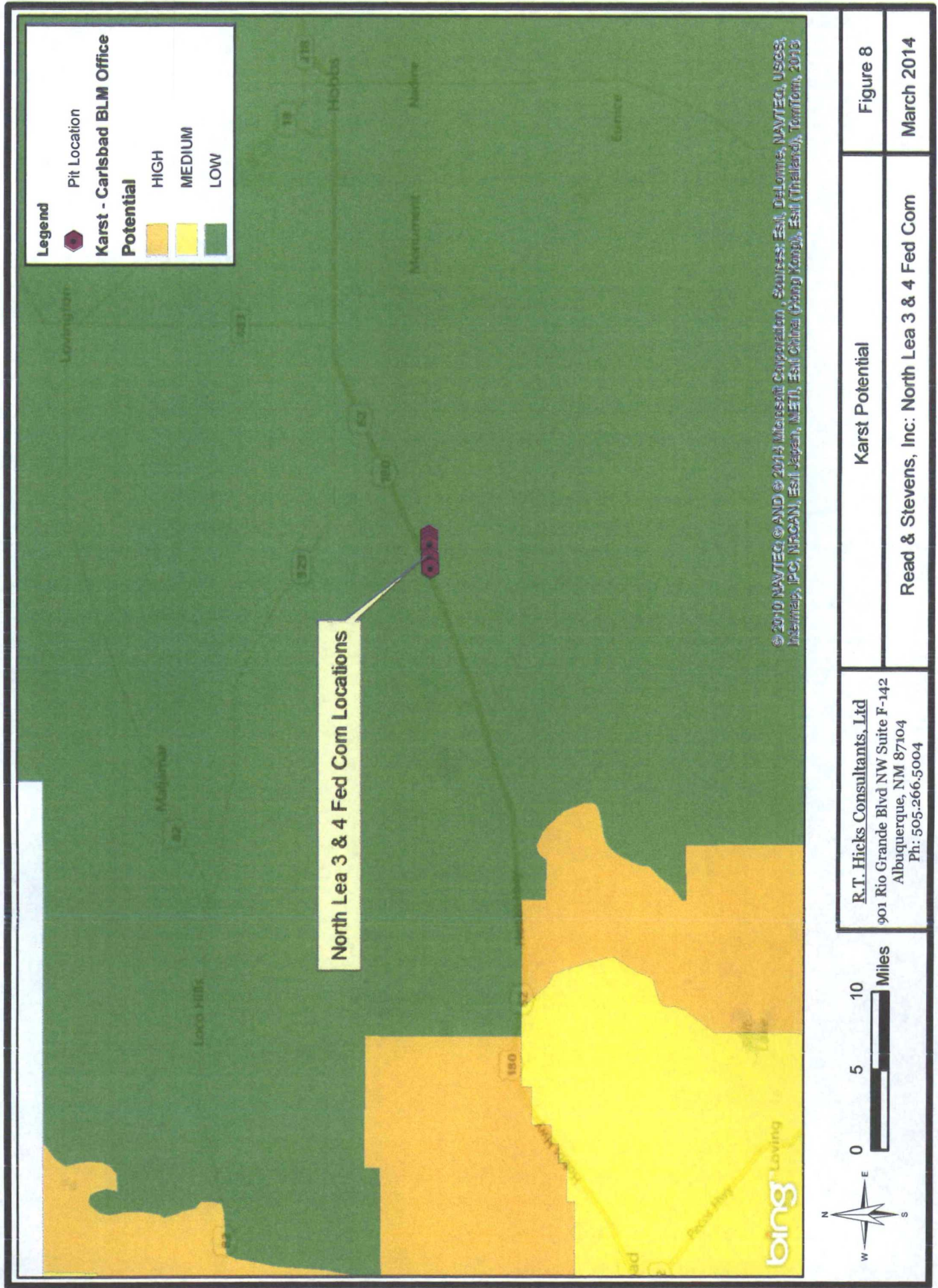
Nearby Mines and Minerals

Read & Stevens, Inc: North Lea 3 & 4 Fed Com

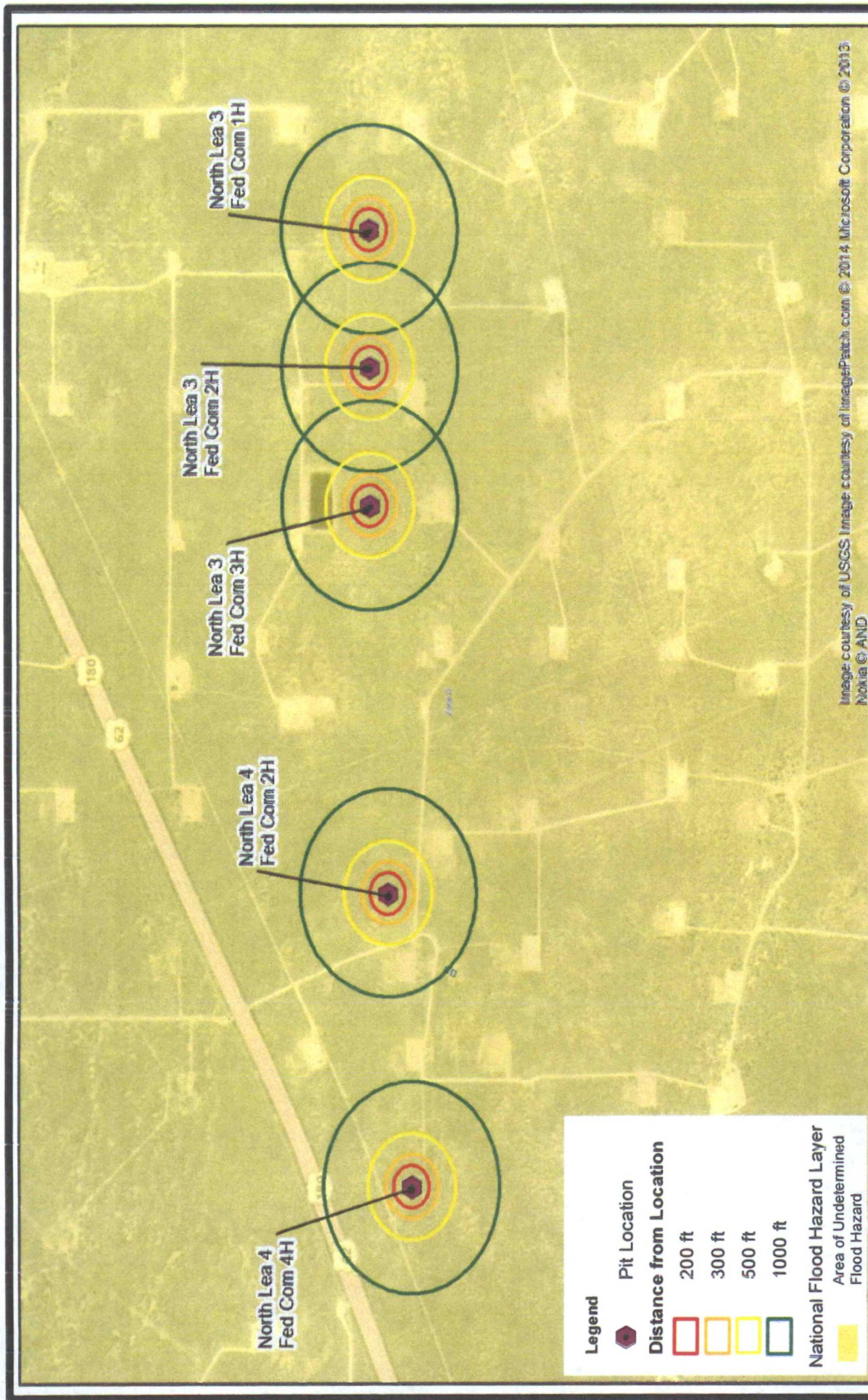
Figure 7

March 2014





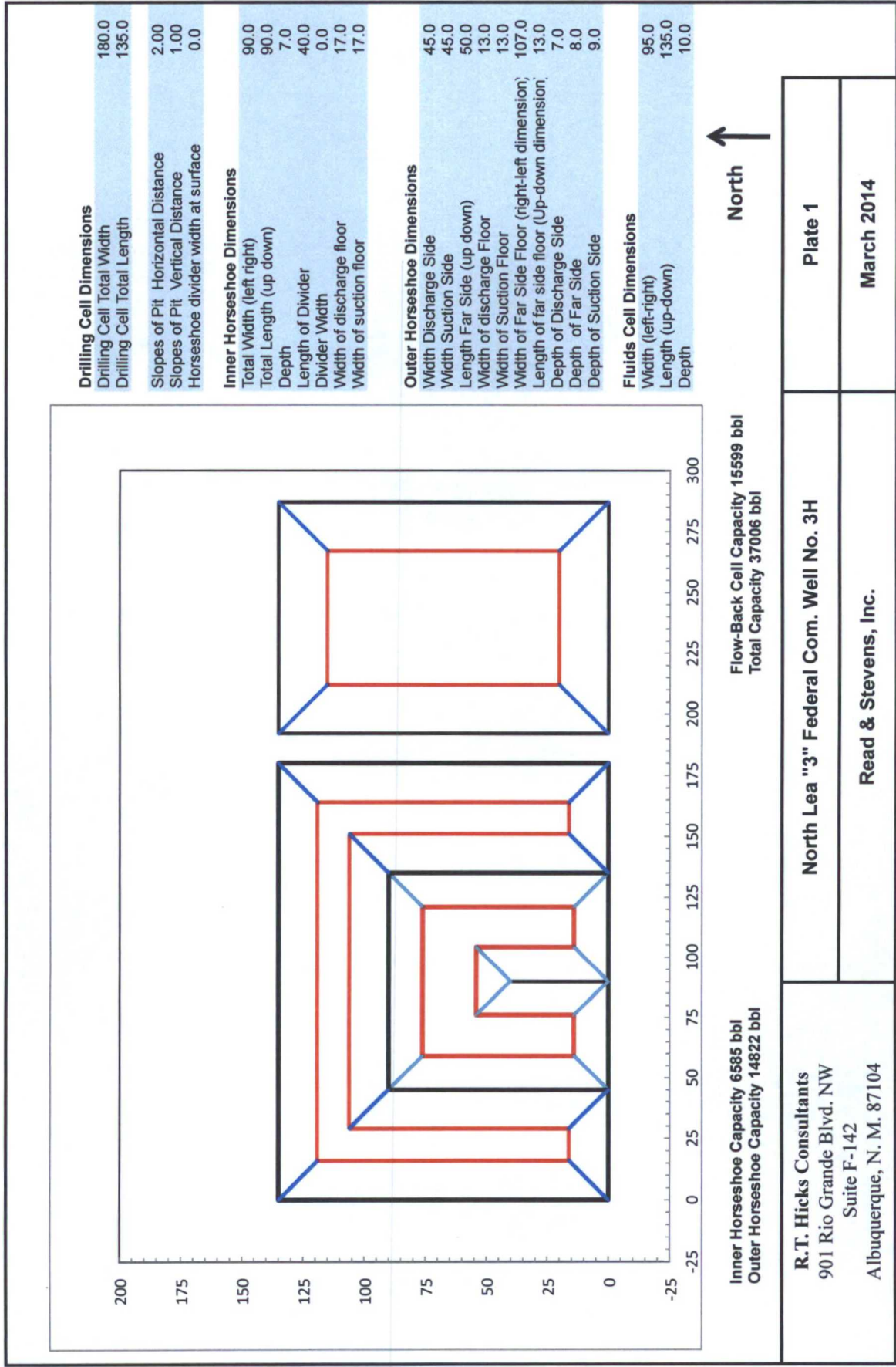




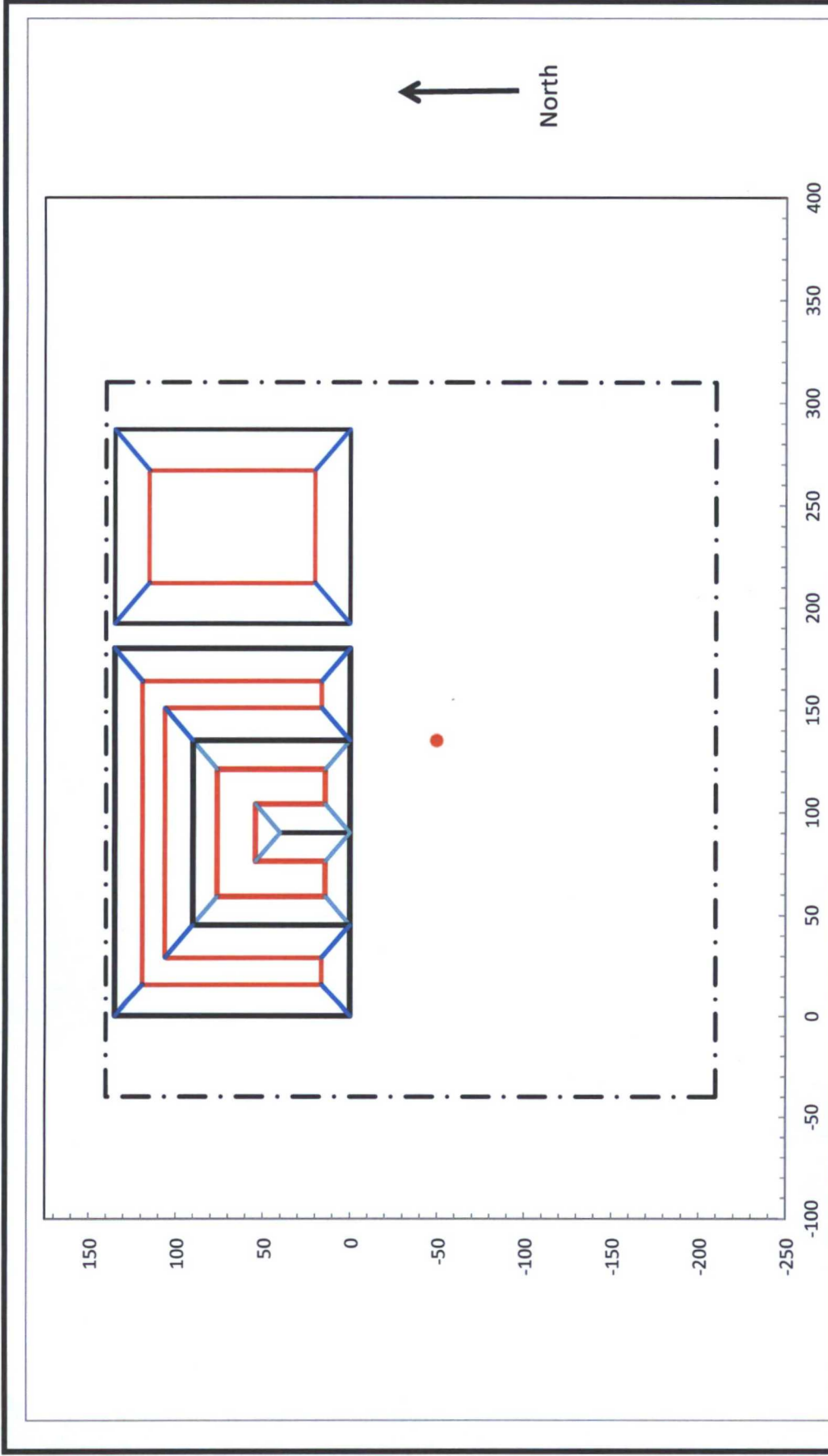
FEMA Source: <https://hazards.fema.gov/gis/nfhl/services/public/nfhlwms/MapServer/WMS/Server>

<p>R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004</p>	<p>FEMA Flood Map</p>	<p>Figure 9</p>
<p>Read &amp; Stevens, Inc: North Lea 3 &amp; 4 Fed Com</p>	<p>March 2014</p>	





<b>R.T. Hicks Consultants</b> 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, N. M. 87104	<b>North Lea "3" Federal Com. Well No. 3H</b>	<b>Plate 1</b>
	<b>Read &amp; Stevens, Inc.</b>	<b>March 2014</b>



**R.T. Hicks Consultants**  
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Suite F-142  
Albuquerque, N. M. 87104

**Drawing of Drilling Pit and Well in Relation to Pad Boundary**  
North Lea "3" Federal Com. Well No. 3H

**Plate 2**

**Read & Stevens, Inc.**

**March 2014**



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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number	<sup>2</sup> Pool Code	<sup>3</sup> Pool Name
<sup>4</sup> Property Code	<sup>5</sup> Property Name NORTH LEA 3 FED COM	
<sup>7</sup> OGRID No. 18917	<sup>8</sup> Operator Name READ & STEVENS, INC.	<sup>6</sup> Well Number 3H  <sup>9</sup> Elevation 3667.7

<sup>10</sup> Surface Location



UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3	3	20 S	34 E		200	NORTH	2290	WEST	LEA

<sup>11</sup> 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
N	3	20 S	34E		330	SOUTH	2290	WEST	LEA

<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
-------------------------------	-------------------------------	----------------------------------	-------------------------

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>N89°29'50"E 2642.95 FT</p> <p>N89°25'36"E 2639.86 FT</p> <p>2290'</p> <p>SURFACE LOCATION</p> <p>200'</p> <p>NW CORNER SEC. 3 LAT. = 32°36'34.097"N LONG. = 103°33'23.785"W</p> <p>NORTH LEA "3" FED COM #3H ELEV. = 3667.7' LAT. = 32°36'32.150"N (NAD83) LONG. = 103°32'57.020"W</p> <p>40.30 AC. (40.85 AC. BLM)</p> <p>L4</p> <p>L3</p> <p>L2</p> <p>L1</p> <p>W/4 CORNER SEC. 3 LAT. = 32°36'07.810"N LONG. = 103°33'23.804"W</p> <p>E/4 CORNER SEC. 3 LAT. = 32°36'07.865"N LONG. = 103°32'22.094"W</p> <p>NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES MINUTES DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.</p> <p>2290'</p> <p>SW CORNER SEC. 3 LAT. = 32°35'41.520"N LONG. = 103°33'23.804"W</p> <p>BOTTOM OF HOLE LAT. = 32°35'44.856"N LONG. = 103°32'57.063"W</p> <p>330'</p> <p>S/4 CORNER SEC. 3 LAT. = 32°35'41.635"N LONG. = 103°32'53.040"W</p> <p>SE CORNER SEC. 3 LAT. = 32°35'41.724"N LONG. = 103°32'22.156"W</p> <p>589°19'33"W 2632.55 FT</p> <p>589°22'54"W 2642.75 FT</p> <p>500°19'32"E 2862.21 FT</p> <p>500°18'45"E 2642.45 FT</p>		<p><b><sup>17</sup> OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p> 01/23/2014 Signature Date</p> <p>Rory McMinn Printed Name</p> <p>rmcminn@read-stevens.com E-mail Address</p> <p><b><sup>18</sup> SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>AUGUST 28, 2013 Date of Survey</p> <p> Signature and Seal of Professional Surveyor</p> <p>Certifican Number: THIOMON FUJARAMILLO, PLS 12797 SURVEY NO. 1892</p>
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## **Temporary Pit Design/Construction Plan**

Plates 1 and 2 show the design of the temporary pit proposed for this project. Field conditions and the drilling rig layout will determine the final configuration of the pit cells, which will consist of the following:

1. A cell for drilling fluid circulation and cuttings storage consisting of:
  - a. An outer horseshoe for brine and cut-brine fluid and cuttings
  - b. An inner horseshoe for freshwater and cuttings
2. A cell for the storage of fresh water (drilling/stimulation) and stimulation flow-back water prior to re-use or disposal (OPTIONAL)

In addition to the commitments listed below, the operator may install a system that can drain water entrained in the drilling waste of the drilling pit. As described in the closure plan, this system of fabric-wrapped perforated pipe and drainage mats lie on the bottom of the drilling cell of the pit – generally the brine cell. The system will drain to the lowest corner of each cell, generally near the suction area. The exact location will be determined upon completion of the cells. Standpipes rise from the depression and can house a solar-powered pump. The drainage system for the brine cell removes water to an above-ground tank, the fluids cell of the pit, or directly to a truck for re-use or disposal. The drainage system may also be used to introduce fresher water below the residual cuttings/mud, causing the introduced fluid to move upwards through the cuttings/mud and enhance the solids rinsing process. Introduced water can be removed from the pit for re-use via a vacuum truck or recovered from the drainage system at the bottom.

The temporary storage of fluids, fluid reuse or fluid disposal will be conducted in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. This drainage and rinsing system allows the operator to:

- Recover clear water for possible re-use
- Reduce the concentration of constituents of concern in the drilling waste by removing some water entrained in the drilling waste.

Precipitation and the possible addition of relatively fresh water (see closure plan) will rinse the solid drilling waste, causing additional reduction in the constituents of concern as the water is recovered for re-use or disposal.

For any temporary storage of fluids derived from the drilling pit and placed in an above-ground tank, the following will apply:

1. Construction, operation and maintenance of the temporary storage tank(s) will adhere to all applicable NMOCD Rules including but not limited to:
  - a. Safety stipulations
  - b. Protection from hydrogen sulfide mandates
  - c. Signage and identification requirements
  - d. Secondary containment requirements for temporary tanks
  - e. Applicable netting requirements



## **C-144 Supplemental Documentation for Temporary Pit**

2. Any cleaning of the temporary tank(s) will adhere to NMOCD Rules relating to tank cleaning.
3. Transportation of water or drilling fluids derived from the drilling pit will adhere to all applicable NMOCD Rules relating to transportation.
4. Storage of water or drilling fluids in temporary above-ground tanks will also adhere to all applicable Federal mandates.

During final closure of the pit, the tanks and secondary containment system will be removed from the location and the area beneath the tank inspected for any leakage. If any leakage is suspected, the operator will sample the soil beneath the tanks and report any release pursuant to NMOCD Rules.

Finally, we intend to place any temporary tank used in conjunction with the pit drainage system on a 20-mil liner with a berm around it that would allow any inadvertently released fluids to drain or be pumped back into the pit.

### ***Construction/Design Plan of Temporary Pit***

#### **Stockpile Topsoil**

Prior to constructing the pit, the qualified contractor will strip and stockpile the topsoil for use as the final cover or fill at the time of closure.

#### **Signage**

The operator will post an upright sign in a conspicuous place in compliance with 19.15.16.8 NMAC as the pit and the well are operated by the same operator. Section 19.15.16.8 states in part:

##### **19.15.16.8 SIGN ON WELLS:**

B. For drilling wells, the operator shall post the sign on the derrick or not more than 20 feet from the well.

C. The sign shall be of durable construction and the lettering shall be legible and large enough to be read under normal conditions at a distance of 50 feet.

F. Each sign shall show the:

- (1) well number;
- (2) property name;
- (3) operator's name;
- (4) location by footage, quarter-quarter section, township and range (or unit letter can be substituted for the quarter-quarter section);
- and
- (5) API number.

The sign will also provide emergency telephone numbers.

#### **Fencing:**

During drilling or workover operations, the operator will not fence the edge of the pit adjacent to the drilling or workover rig.

As the pit is not located within 1000 feet of a permanent residence, school, hospital, institution or church, the operator will fence the pit to exclude livestock with four-wire strands evenly spaced in the interval between one foot and four feet above ground level.

**Earthwork**

The temporary pit will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.

The slopes of the pit will be no steeper than two horizontal feet to one vertical foot (2H:1V) unless in the transmittal letter the operator requested an alternative to the slope requirement with a demonstration that the pit can be operated in a safe manner to prevent contamination of fresh water and protect public health and the environment.

A berm or ditch will surround the temporary pit to prevent run-on of surface water.

If the transmittal letter identifies concerns relating to the presence of karst and associated instability, during construction of the pit the contractor will compact the earth material that forms the foundation for the pit liner. An expected proctor density of greater than 90% will be achieved by

1. adding water to the earth material as appropriate,
2. compacting the earth by walking a crawler-type tractor down the sides and bottom of the pit
3. repeating this process with a second 6-inch lift of earth material if necessary

**Liner Installation**

The geomembrane liner will consist of 20-mil string reinforced LLDPE or equivalent liner material identified in the transmittal letter or on Form C-144 (that the appropriate division district office approves through approval of this permit application). The geomembrane liner will be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner material will be resistant to ultraviolet light. Liner compatibility will comply with EPA SW-846 method 9090A.

The operator will direct the liner installation contractor to:

1. minimize liner seams and orient them up and down, not across a slope
2. use factory welded seams where possible
3. 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
4. minimize the number of welded field seams in corners and irregularly shaped areas
5. utilize only qualified personnel to weld field seams
6. avoid excessive stress-strain on the liner
7. place geotextile under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity
8. anchor the edges of all liners in the bottom of a compacted earth-filled trench that is at least 18 inches deep
9. place additional material (liner, felt, etc.) to ensure that the liner is protected from any fluid force or mechanical damage at any point of discharge into or suction from the lined temporary pit.



#### **C-144 Supplemental Documentation for Temporary Pit**

A berm or ditch will surround the temporary pit to prevent run-on of surface water. During drilling operations, the operator may elect to remove run-on protection on the pit edge adjacent to the drilling or workover rig provided that the pit is being used to collect liquids escaping from the drilling or workover rig and this additional fluid will not cause a breach of the temporary pit.

The temporary pit will not be used to vent or flare gas and the volume of the temporary drilling pit, including freeboard, will not exceed 10 acre-feet.

## **Temporary Pit Operating and Maintenance Plan**

The operator will maintain and operate the pit in accordance with the following plan to contain liquids and solids and maintain the integrity of the liner to prevent contamination of fresh water and protect public health and the environment.

If feasible, the operator will recycle, reuse or reclaim all drilling fluids in the temporary pit in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. Re-use of drilling fluids and workover fluids (stimulation flow-back) for drilling and stimulation of subsequent wells is anticipated. If re-use is not possible, fluids will be sent to disposal at a division-approved facility.

The operator will not discharge into or store any hazardous waste in the pit.

If the pit develops a leak or if any penetration of the pit liner occurs above the liquid's surface, then the operator will repair the damage or initiate replacement of the liner within 48 hours of discovery or will seek a variance from the division district office within this time period.

If the pit develops a leak or if any penetration of the pit liner occurs below the liquid's surface, then the operator will remove all liquid above the damage or leak line within 48 hours of discovery. The operator will also notify the district division office (19.15.29 NMAC) within this same 48 hours of the discovery and repair the damage or replace the pit liner.

The operator will ensure that the drilling contractor installs and uses a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes during injection or withdrawal of liquids.

During construction, the operator or qualified contractor will install diversion ditches and berms around the pit as necessary to prevent the collection of surface water run-on. As outlined in the Construction and Design Plan, during drilling operations, the edge of the temporary pit adjacent to the drilling or workover rig may not have run-on protection if the operator is using the temporary pit to collect liquids escaping from the drilling or workover rig and run-on will not result in a breach of the temporary pit.

The operator will maintain on site an oil absorbent boom to contain and remove oil from the pit's surface.

The operator will only discharge fluids or mineral solids (including cement) generated or used during the drilling, completion, or workover processes into the pit.

The operator will maintain the temporary pit free of miscellaneous solid waste or debris. Immediately after cessation of drilling or a workover operation, the operator will remove any visible or measurable layer of oil from the surface of the pit.

The operator will maintain at least two feet of freeboard for the temporary pit, except under extenuating circumstances, which will be noted on the pit inspection log as described below.



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The operator will inspect the temporary pit containing drilling fluids daily while the drilling rig or workover rig is on site. After the rigs have left the site, the operator will inspect the pit weekly as long as liquids are present in the pit. The operator will maintain a log of the inspections. The operator will make the log available to the division district office upon request.

The operator will remove all free drilling fluids from the surface of the temporary pit within 60 days from the date that the last drilling or workover rig associated with the pit permit is released. The operator will note the date of this release upon Form C-105 or C-103 upon well or workover completion. The operator may request an extension up to two months from the division district office as long as this additional time does not exceed the temporary pit life span (Subsection R of 19.15.17.7 NMAC).

## **Temporary Pit In-Place Closure Plan**

The wastes in the temporary pit are destined for in place burial at the drilling location or, if stated in the permit transmittal letter, a nearby site on the same lease.

The operator will not begin closure operations without approval of the closure plan submitted with the permit application.

### **Siting Criteria Compliance Demonstration**

Compliance with siting criteria is described in the site-specific information appended to the C-144.

### **Proof of Surface Owner Notice**

The application package was transmitted to the surface landowner and OCD via email.

### **Construction/Design Plan of Temporary Pit**

The design and construction protocols for the temporary pit are provided in the design and construction plan and in Plates 1-2. The optional drainage system described in the design and construction plan (above) is not shown on the Plates but can be important element of the closure plan.

### **General Protocols and Procedures**

- All free liquids from the pit will be recycled or disposed in a manner consistent with OCD Rules.
- Residual drilling fluids will be removed from the pit within 60 days of release of the drilling rig.
- Water derived from the well stimulation program (flow-back or unused fresh water) that is significantly higher quality than the residual drilling fluids *may* discharge into the pit. The fresher water *may* discharge into the drainage system to flow through the solids or onto the solids in the pit.
- A low-flow pump *may* remove water from the drainage system to a tank or a fluids cell of the temporary pit; thereby further rinsing the residual solids in the pit.
- 20-60 days after placement of fresh flow-back water into the drilling cell, any water in the pit will be removed for re-use or disposal.
- The residual drilling mud and cuttings will be stabilized to a capacity sufficient to support the 4-foot thick soil cover.
- The residual pit solids will not be mixed at a ratio greater than 1 part pit solids to 3 parts dry earth material (e.g. subsoil).
- The pit will not be closed until the stabilized pit contents pass the paint filter liquids test.

### **Waste Material Sampling Plan**

Prior to closure, a five-point (minimum) composite sample of the residual solids in the pit will be tested in a laboratory to demonstrate that the stabilized material will not exceed the contaminant concentrations listed in Table II of 19.15.17.13 NMAC mixed in a ratio of 3:1 with the earth material to be used for mixing and stabilization of the residual cuttings and mud.



## C-144 Supplemental Documentation for Temporary Pit

In-place burial is the selected on-site disposal alternative.

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 C 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 facility:

Disposal Facility Name: R360      Permit Number: NM 01-0006

### Protocols and Procedures for Earthwork

Stabilization of the residual cuttings and mud is accomplished by mixing dry earth material within the temporary pit footprint. After stabilization the operator or qualified contractor will:

1. Place a geomembrane cover over the waste material in a way to prevent infiltration of water and so that infiltrated water does not collect on the geomembrane cover after the upper soil cover has been placed.
2. Use a geomembrane cover made of 20-mil string reinforced LLDPE liner or an equivalent cover approved by the district office that is composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions and complies with EPA SW-846 Method 9090A.
3. Over the sloping, stabilized material and liner, place the **Soil Cover**:
  - a. 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.
  - b. either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater, over the 3-foot earth material.
4. Contour the cover to
  - a. blend with the surrounding topography
  - b. prevent erosion of the cover and
  - c. prevent ponding over the cover.

### Closure Notice

The operator will 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. The notice will include the well name, API number, and location.

After approval for in-place burial, the operator shall notify the district office verbally and in writing at least 72 hours but not more than one week before any closure operation. Notice will include the operator's name and the location of the temporary pit. The location will include unit letter, section number, township and range. If the location is associated with a well, then the well's name, number and API number will be included.

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.

**Closure Report**

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

- i. closure report on form C-144, with necessary attachments
- ii. 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
- iii. a plat of the pit location on form C-105
- iv. if burial is in a nearby trench/pit, a separate C-105 showing the exact location

Unless the permit transmittal letter requests an alternative marker to comply with surface landowner 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 placed at the bottom of 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

**Timing of Closure**

The operator will close the temporary pit within 6 months from the date the drilling or workover rig was released from the site. This date will be noted on form C-105 or C-103 filed with the division upon the well's or workover's completion.

**Reclamation and Re-vegetation Plan**

In addition to the area of the in-place burial, the operator will reclaim the surface to a safe and stable condition that blends with the surrounding undisturbed area including:

1. the pit location not used for burial
2. other areas associated with the in-place burial including access roads

Areas not reclaimed as described herein due to their use in production or drilling operations will be stabilized and maintained to minimize dust and erosion.

As stated above, the soil cover for burial in-place

- A. 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
- B. is capped by the background thickness of topsoil or 1-foot of suitable material to establish vegetation, whichever is greater
- C. blends into surrounding topography
- D. is graded to prevent ponding and to minimize erosion



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

- I. Replace topsoils and subsoils to their original relative positions
- II. Grade so as to achieve erosion control, long-term stability and preservation of surface water flow patterns
- III. Reseed in the first favorable growing season following closure

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.

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.

## Read & Stevens, Inc.

## Pit Inspection Log Sheet

(daily while rig is on site, then weekly as long as free drilling liquids are present)

Well Name: N Lea "\_\_\_" Fed Com #\_\_H

API: 30-025-(not assigned)

[illegible]