

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

Received 5/28/2015  
NMOCD District 2

Form C-144  
Revised June 6, 2013

**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.

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: Murchison Oil and Gas, Inc. OGRID #: 15363  
Address: 7250 DALLAS PARKWAY STE 1400 PLANO, TX 75024  
Facility or well name: War Horse Federal Com 2  
API Number: 30-015-43333 OCD Permit Number: 2-13-0026  
U/L or Qtr/Qtr H Section 21 Township 18S Range 29E County: Eddy  
Center of Proposed Design: Latitude 32 44 05.250 Longitude -104 04 18.608 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 14,037 barrels Dimensions: L 155 x 115 x D 7 feet

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.

**Variations 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 Figures 1 & 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 Figures 1 & 2**

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	<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
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 adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

☐ 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.*

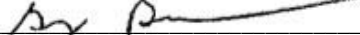
- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☒ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC
- ☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate 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): Greg Boans Title: Production Superintendent

Signature:  Date: May 27, 2015

e-mail address: gboans@jdmii.com Telephone: (575) 361-4962

18.

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

**OCD Representative Signature:** M Bratcher **Approval Date:** 7/28/2015

**Title:** Environmental Specialist **OCD Permit Number:** 2-13-0026

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

May 2015

**C-144 Permit Package for  
War Horse Federal Com #2  
SHL Section 21 T18S R29E, Eddy Co, NM**



*View west showing location stake in foreground and War Horse Federal 6H location stake in background.*

**Prepared for  
Murchison Oil and Gas Inc.  
Plano, Texas**

**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  
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

May 28, 2015

Ms. Heather Patterson  
Mr. Mike Bratcher  
NMOCD District 2  
811 S. First Street  
Artesia, New Mexico 88210  
Via E-mail and US Mail

RE: C-144 for Murchison Oil and Gas – War Horse Fed Com 2  
SHL Section 21 T18S R29E, Eddy Co, NM

Dear Ms. Patterson and Mr. Bratcher:

On behalf of Murchison Oil and Gas, Inc., R.T. Hicks Consultants, Ltd. is pleased to submit the attached permit for a temporary pit. Please note the following in the C-144 Package

1. The hydrogeologic data are quite good for the area; the location meets the setback distance to groundwater.
2. My personal site inspection showed no signs of unstable ground within this low cave/karst potential area.
3. With respect to nearby watercourses, the pad location with a pit on the north side meets the setback criteria of 300 feet.
4. The submission includes a variance request that has been previously approved by OCD (Berry SWD) for the temporary pit: a change in the side slope requirement from 2H:1V to 1.5H:1V for the suction walls of the pit.
5. The temporary pit generic plans are verbatim from previously-approved C-144 drilling pit permits.
6. This letter and application are copied to the surface owner (BLM) as notification of the intent to bury drilling solids on-site. The Sundry Notice submitted to BLM on is attached to this cover letter.
7. Appendix B of this submission provides the previously-approved COAs for the nearby War Horse Federal Com 3H well. We expect BLM to approve the use of drilling pits for this well with similar conditions.

Please let me know if you have any questions or concerns. Approval of this permit with the condition of BLM's approval of the attached sundry will work for Murchison.

Sincerely,  
R.T. Hicks Consultants



Randall Hicks

Copy: Murchison Oil and Gas  
Cody Layton, BLM (surface owner)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS**  
***Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.***5. Lease Serial No.  
NMNM030752

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.  
WAR HORSE FEDERAL 2H

9. API Well No.

10. Field and Pool, or Exploratory  
WILDCAT G-04 S182927M

11. County or Parish, and State

EDDY COUNTY, NM

***SUBMIT IN TRIPLICATE - Other instructions on reverse side.***

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

MURCHISON OIL &amp; GAS INC

Contact: CINDY COTTRELL

E-Mail: ccottrell@jdmii.com

3a. Address

7250 DALLAS PARKWAY STE 1400  
PLANO, TX 75024

3b. Phone No. (include area code)

Ph: 972-931-0700 Ext: 113

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 21 T18S R29E Mer NMP 1700FNL 175FEL

**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	PD

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Pending NMOCD approval of the C-144 Permit application, Murchison Oil and Gas plans to change from a closed-loop/haul-off protocol for drilling waste management (solids and liquids) to a temporary pit with on-site burial of dry waste solids. The location of the proposed pit lies within the permitted location footprint. BLM and OCD have approved drilling pits for the nearby War Horse 1H and 3H. Murchison understands the COAs associated with the use of drilling pits and on-site burial on Federal wells.

If Murchison cannot gain OCD approval for the temporary pit, drilling of this well will proceed as currently approved for closed-loop/haul-off.

14. I hereby certify that the foregoing is true and correct.

**Electronic Submission #302222 verified by the BLM Well Information System  
For MURCHISON OIL & GAS INC, sent to the Carlsbad**

Name (Printed/Typed) RUSTY COOPER

Title VICE PRESIDENT OPERATIONS

Signature (Electronic Submission)

Date 05/19/2015

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved By

Title

Date

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

**\*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\***



# **C-144 and Site Specific Information for Temporary Pit**

**R.T. Hicks Consultants, Ltd.**

901 Rio Grande Blvd. NW, Suite F-142  
Albuquerque, NM 87104

**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: \_\_\_\_\_

## Distance to Groundwater

**Figure 1, Figure 2, and the discussion below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is greater than 50 feet beneath the temporary pit that will contain fluids that cannot be classified as “low-chloride.” Groundwater will be more than 50 feet below the bottom of the buried waste, meeting criteria for in-place closure.**

Figure 1 is a geologic/ topographic map that shows:

1. The location of the staked well location as a hexagon with the surface elevation.
2. The location of nearby Murchison War Horse wells
3. Water wells from the OSE database are plotted as a blue triangle inside colored circles that indicate well depth (see legend). 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 Section Township and Range. For example, the figure shows at least 3 wells with an “L” suffix (e.g. L-01978 on east central map area); these are Lea County wells that are mis-located.
4. Water wells from the USGS database as large colored triangles that represent the unit in which the well was completed.
5. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports as colored squares (none were identified in Figure 1).
6. The depth-to-water from the most recent available measurement for each well is provided adjacent to the well symbol.

Figure 2 is the same scale geologic and topographic map as Figure 1 that shows:

1. The location of the staked location as a hexagon.
2. Water wells measured by the USGS or other professionals, the formation completion depth of the well (see Figure 1 Legend) and the calculated elevation of the groundwater surface and the date of the observation.
3. Isocontour lines displaying the elevation of the groundwater surface of the Rustler Formation.

## Geology

The proposed temporary pit is located on an outcrop of the Quaternary eolian deposits (Qe on Figure 2). It consists of low sand dunes that have been stabilized by vegetation. Quaternary piedmont (Qp), alluvium (Qa), and older alluvium (Qoa) are also exposed at the surface near the site. Underlying the thin layer of Quaternary age sediments is the Permian Rustler Formation (Pr on Figure 2). It is exposed at the surface approximately 5 miles to the south and 8 miles to the northwest. The Rustler is probably more than 150 feet thick at this site and consists of siltstone, gypsum, sandstone, and dolomite, which provide fresh water to a few nearby wells. The underlying Permian Salado Formation (Psl on Figure 2) is comprised of evaporite sequence rocks (gypsum, shale, salts) and is not considered a source for fresh water. Salado Formation rocks are exposed at the surface 10 miles to the northwest. The Permian-Artesia Group (Pat on Figure 2) crops out approximately 12 miles to the northwest of the site and extends in the subsurface to the east, underlying the Salado Formation. These formations are comprised of

Siting Criteria (19.15.17.10 NMAC)  
Murchison Oil & Gas: War Horse Federal Com No. #2

more clastic (shelf facies) rocks that are capable of producing fresh water when located near the surface and below the water table elevation; conditions that are not present at this site.

Topographically, the site is located on a gentle southeast slope that is interrupted by small dunes. Surface drainage for the area is provided by Bear Grass Draw, located approximately 0.5 miles to the east.

### **Water Table Elevation**

Twenty-three water wells are plotted on Figure 2. Visual inspections of questionable wells were performed to verify the information provided by the public records and published reports. Initially, an attempt was made to identify each well using USGS topographic maps. The surface elevations of wells identified on the maps were compared to the published surface elevation, if available. Wells that could not be verified using maps were searched for using current and historic satellite photographs in an effort to identify windmills, tanks, or roads associated with the well. Locations that could not be verified by maps or photographs were verified in the field. Attempts were also made to gauge wells during the field investigation when access was permitted.

Most of the depth to water measurements were recorded in OFR-95 (typically MISC wells), are dated from 1948 to 1977, and should be considered conservative with respect to this evaluation. The OFR-95 potentiometric surface map (not included) indicated that the groundwater elevation near the War Horse sites was approximately 3,280 feet above sea level (approximately 216 feet below the surface). This map however contained a few contour anomalies. To verify the data we elected to field check three locations (four wells) that were close to the site. These included:

- (1) MISC-5 (and MISC-37) located in Section 29 (T-17-S, R-29-E), 4 miles to the north
- (2) MISC-35 located in Section 34, approximately 2.5 miles to the south-southeast.
- (3) MISC-27 located in Section 24, approximately 2.5 miles to the east,

A summary of the investigation of these data points is provided below:

- Well Misc-5 was identified at the location reported in OFR-95 but the casing had collapsed and could not be accessed. A section of exposed casing is present approximately 30 feet to the southeast of the former windmill. According to the land owner this water well encountered groundwater but was not considered productive. The depth to water in the newer well (MISC-37) was measured at 102.4 feet below the surface on October 4, 2012, which is significantly less than the 210-foot depth recorded in OFR-95 from the windmill in 1948. The OFR-95 groundwater elevation for the windmill is considered to be incorrect and was discarded in favor of the recent data in the preparation of Figure 2.
- Well MISC-35 in Section 34, was located on the side of the road, under blow sand in 2015. Access to this well to measure depth to water was not possible at the time of the visit as an electrical cable was in the casing and we did not know who the owner of this well is.
- Two wells are described in OF-95 (MISC-27) and one well was found at the approximate location reported. An effort was made to measure the depth to water but casing access was not possible in either well. Based on the inspection, we have assumed that the data in OFR-95 was valid for this area.

### **Distance Between Bottom of Pit and Groundwater**

All of the groundwater in the area is produced from the Permian Rustler Formation, which is considered a regionally consistent aquifer. The most recent and accurate available groundwater data was used in the preparation of the potentiometric map (Figure 2). Based on this map and the well survey information provided, War Horse Federal Com. No. #2 should encounter groundwater at an elevation of 3,315 feet above sea level, which is approximately 159 feet below the surface or 149 feet below the bottom of a 10-foot deep drilling pit.

### **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 any other significant watercourse or 200 feet from lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). This temporary pit will also qualify for in-place closure as the location is not within 100 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).**

- No continuously flowing watercourses, significant watercourses, sinkhole or other water bodies, as defined by NMOCD Rules, exist within the prescribed setback criteria for the siting, trench burial, or in-place closure of a temporary pit at this location.
- A mapped blue-line watercourse (Bear Grass Draw) is present about 2000 feet from the staked location.
- Our site inspection found no evidence of connected drainages between the low sand dunes.

### **Distance to Permanent Residence or Structures**

**Figure 4 and the site visit demonstrates that the location is not within 300 feet from an occupied permanent residence, school, hospital, institution, church, or other structure in existence at the time of initial application. This also qualifies the location for in-place closure.**

- The nearest structures are oil and gas wells and tank batteries.
- Route 360 (Bluestem Road) is about 1000 feet south of the staked location

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

**Figures 1 and Figure 2 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 1,000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. Additionally, this location is also not within 300 feet of a spring or private, domestic fresh water well used for domestic or stock watering purposes, thus qualifying for in-place closure.**

- Figure 1 shows the locations of all area water wells, active or plugged.
- There are no known domestic wells within 1,000 feet of this location.
- No springs were identified within the mapping area (see Figure 3).

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

**Figure 5 demonstrates that the location is 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 in-place closure.**

- The closest municipality is Artesia, NM approximately 20 miles west-northwest.
- The closest public well field is located approximately 20 miles northeast.

### **Distance to Wetlands**

**Figure 6 demonstrates the location is not within 300 feet of wetlands. This also qualifies the location for in-place closure.**

- The nearest designated wetlands are “freshwater pond” located approximately 6000 feet northeast of the location

### **Distance to Subsurface Mines**

**Figure 7 and our general reconnaissance of the area demonstrate that the nearest mines are caliche pits. This location is not within an area overlying a subsurface mine.**

- The nearest mapped caliche pit is located approximately 5 miles northeast

### **Stability of Pit Area and Distance to High or Critical Karst Areas**

**Figure 8 shows the location of the Temporary Pit with respect to BLM Karst areas using the 2014 map and Figure 1 shows the regional geology.**

- The proposed temporary pit is located within a “low” potential karst area.
- The nearest “high” or “critical” potential karst area is located approximately 3 miles south of the site.
- No evidence of solution voids were observed near the site during the field inspection.
- No evidence of unstable ground was observed.
- A professional geologist (Randall Hicks) conducted the field survey and concluded that the ground is stable.

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

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

- An area subject to flooding exists near Bear Grass Draw to the east
- Our field inspection and examination of the topography permits a conclusion that the location is not within any floodplain and has low risk for flooding.

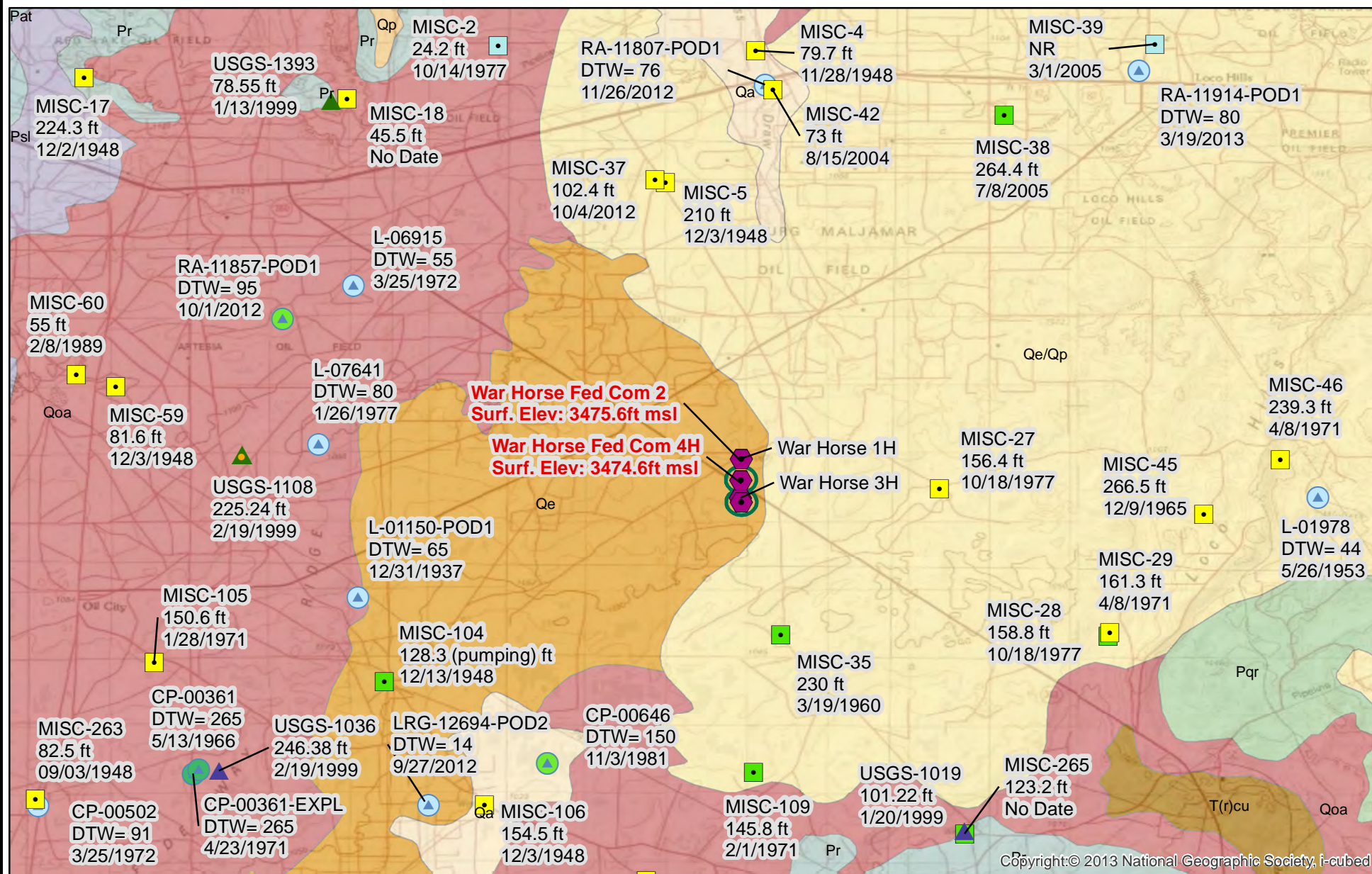
### **Temporary Pit Design**

Please refer to Plate 1 for the design of the temporary pit and the Design and Construction Plan at the end of this application.

# **Site Specific Information Figures**

**R.T. Hicks Consultants, Ltd.**

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Albuquerque, NM 87104



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Miles

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

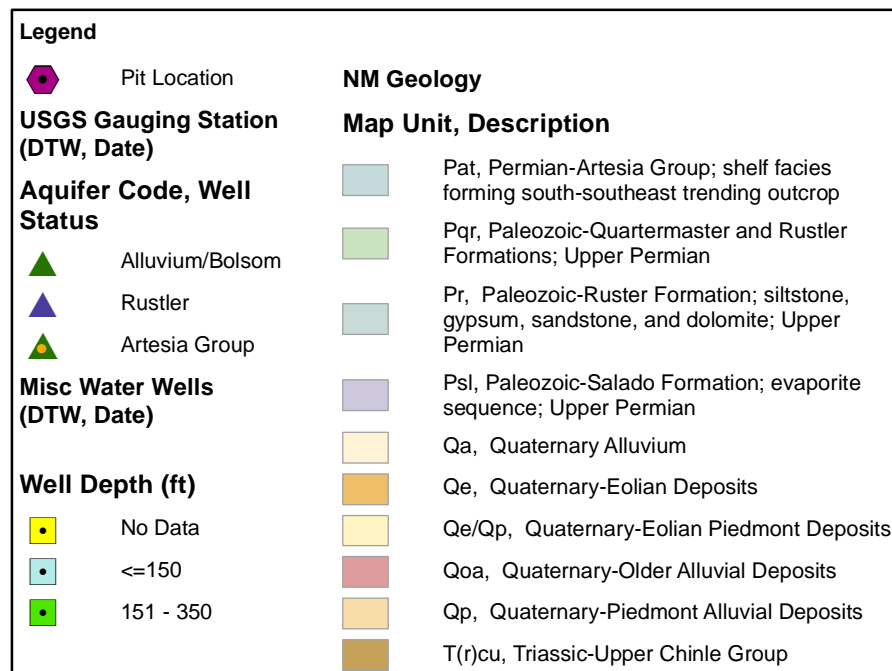
Depth To Water and Geology

Murchison Oil and Gas, Inc.  
War Horse Federal Com. 2 & 4H

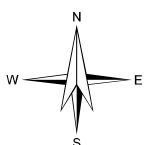
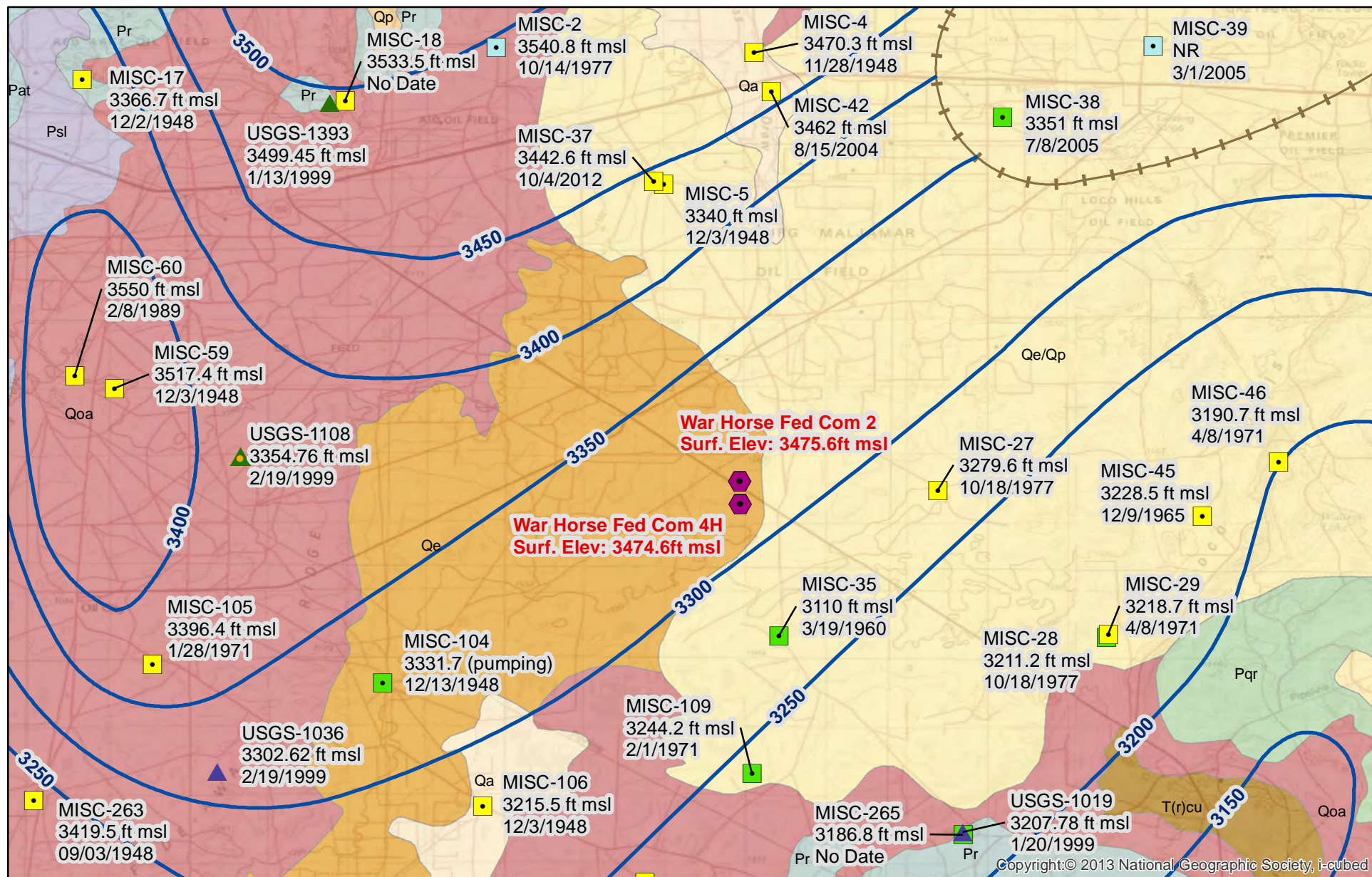
Figure 1

May 2015





R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	LEGEND - Depth To Water and Geology	Figure 1 Legend
	Murchison Oil and Gas, Inc. War Horse Federal Com. 2 & 4H	May 2015

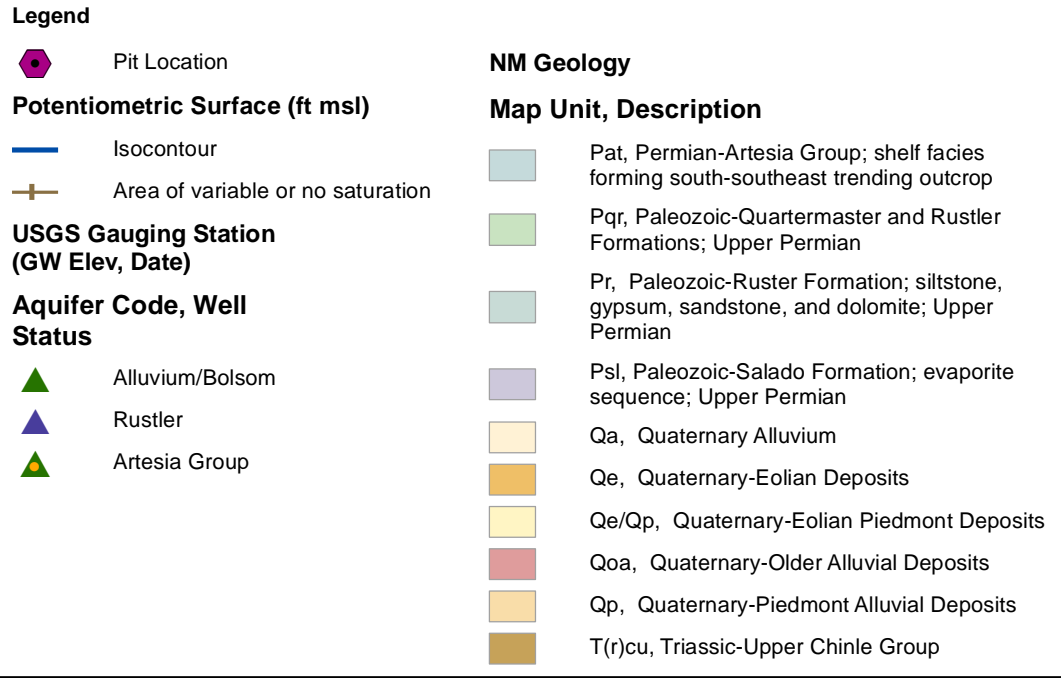


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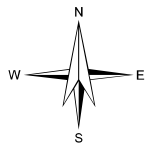
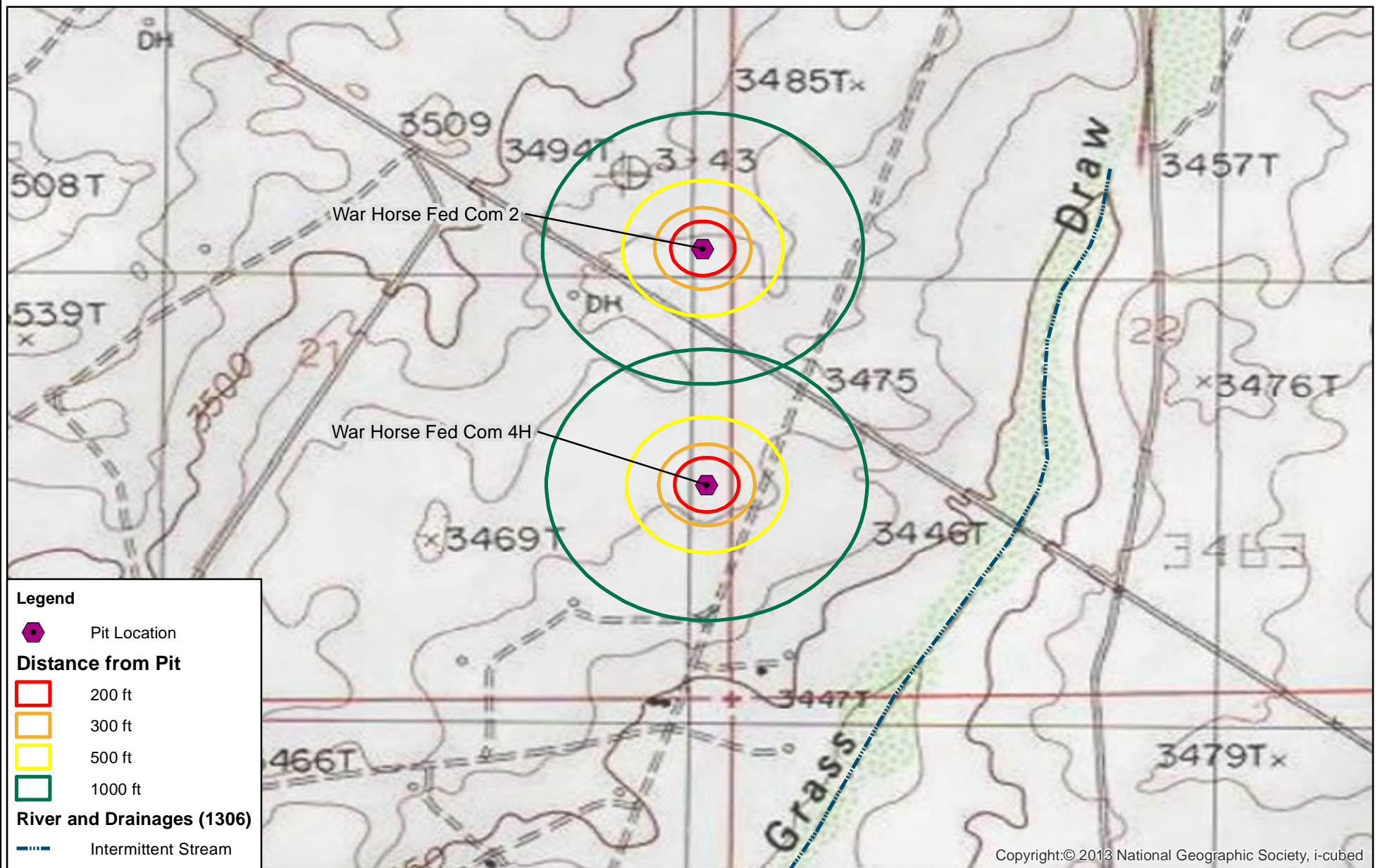
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Potentiometric Surface and Groundwater Elevation  
at Nearby Water Wells  
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War Horse Federal Com. 2 & 4H

Figure 2  
May 2015







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Feet

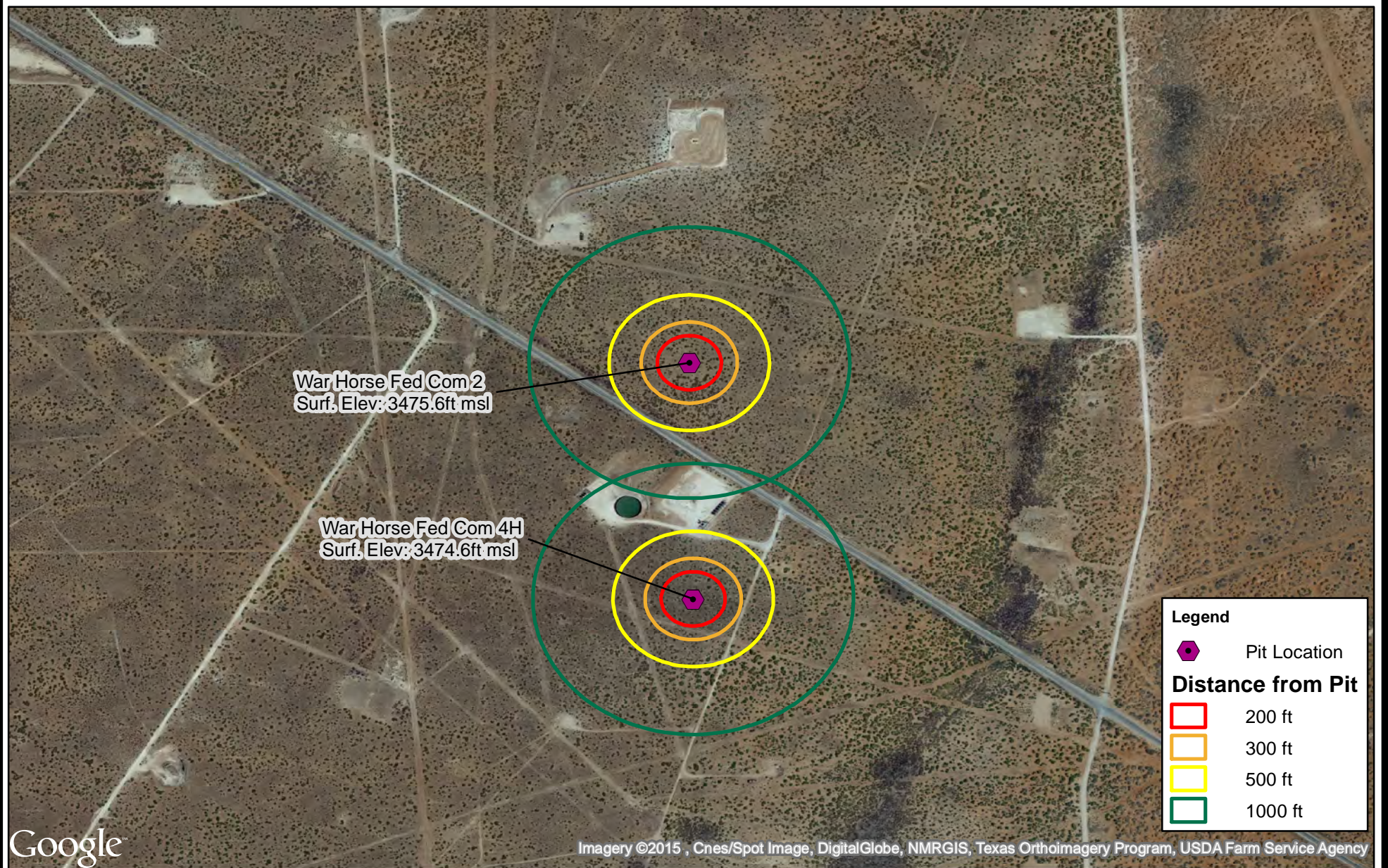
R.T. Hicks Consultants, Ltd  
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Albuquerque, NM 87104  
Ph: 505.266.5004

Surface Water and Topography  
Murchison Oil and Gas, Inc.  
War Horse Federal Com. 2 & 4H

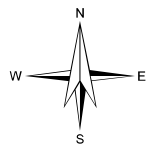
Figure 3

May 2015





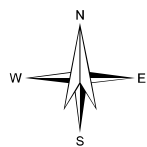
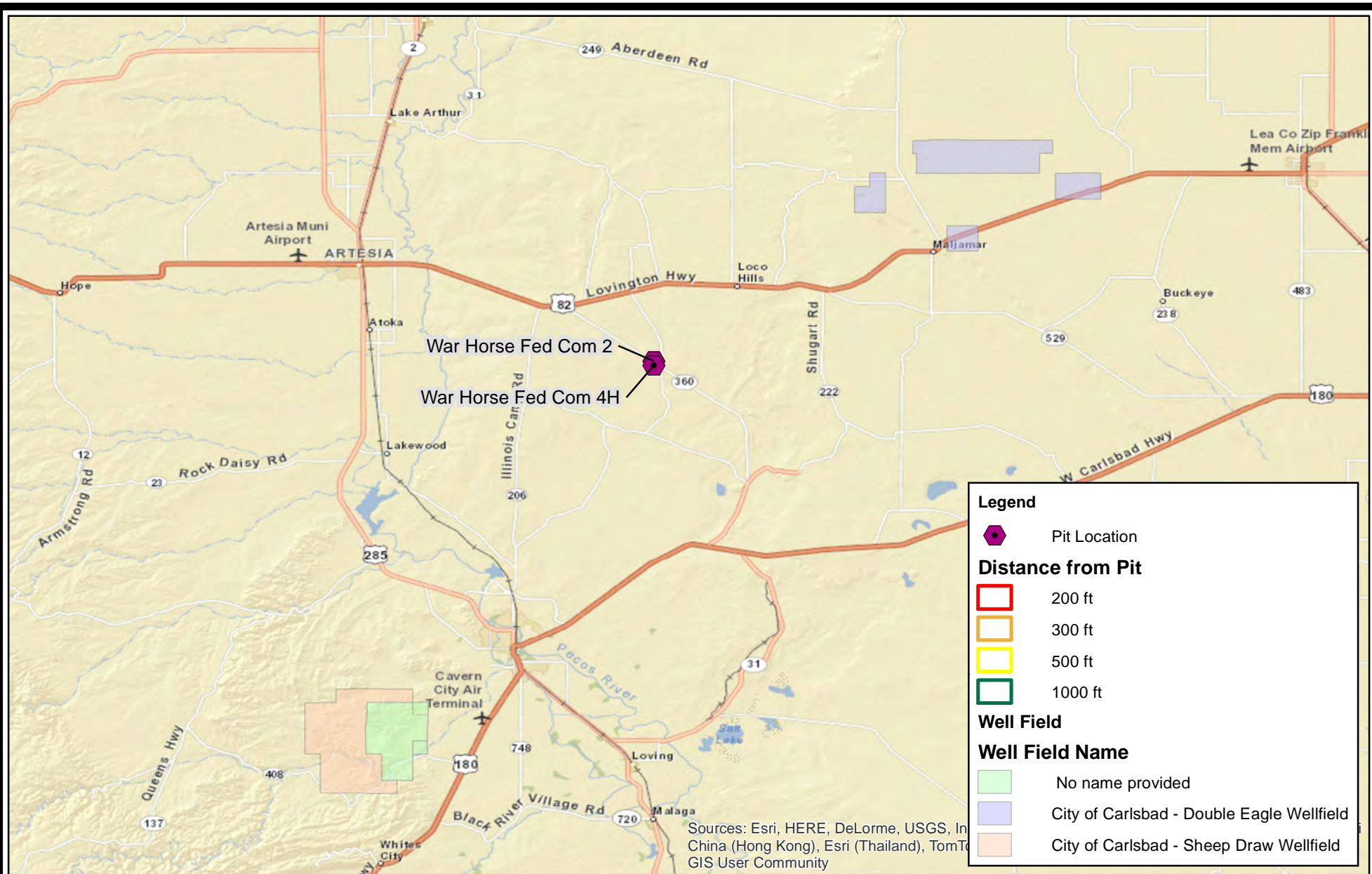
(aerial image c.2015)



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Feet

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Structures	Figure 4
	Murchison Oil and Gas, Inc. War Horse Federal Com. 2 & 4H	May 2015





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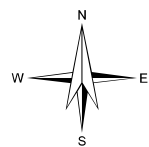
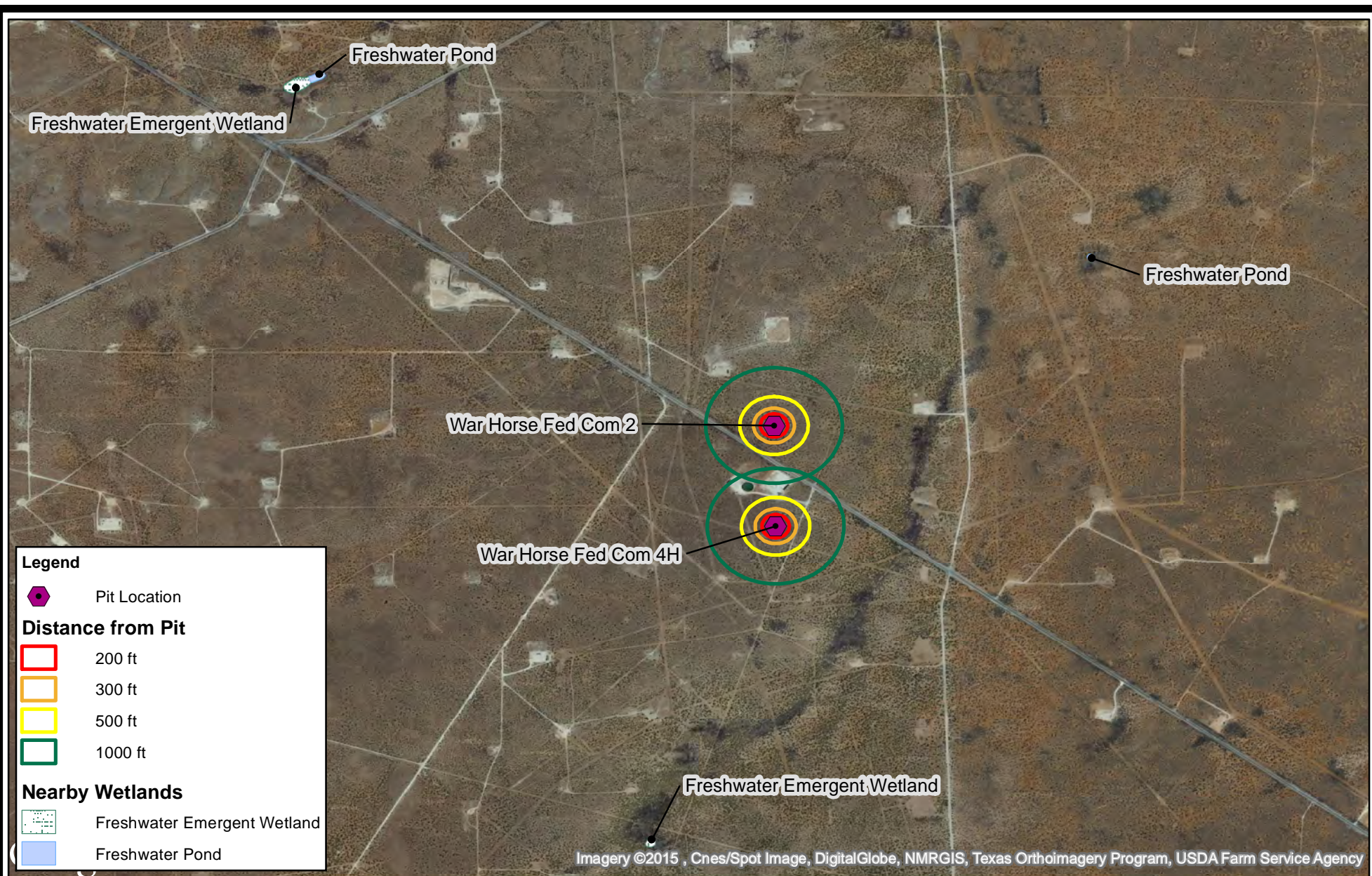
Nearby Municipalities and Well Fields

Murchison Oil and Gas, Inc.  
War Horse Federal Com. 2 & 4H

Figure 5

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Feet

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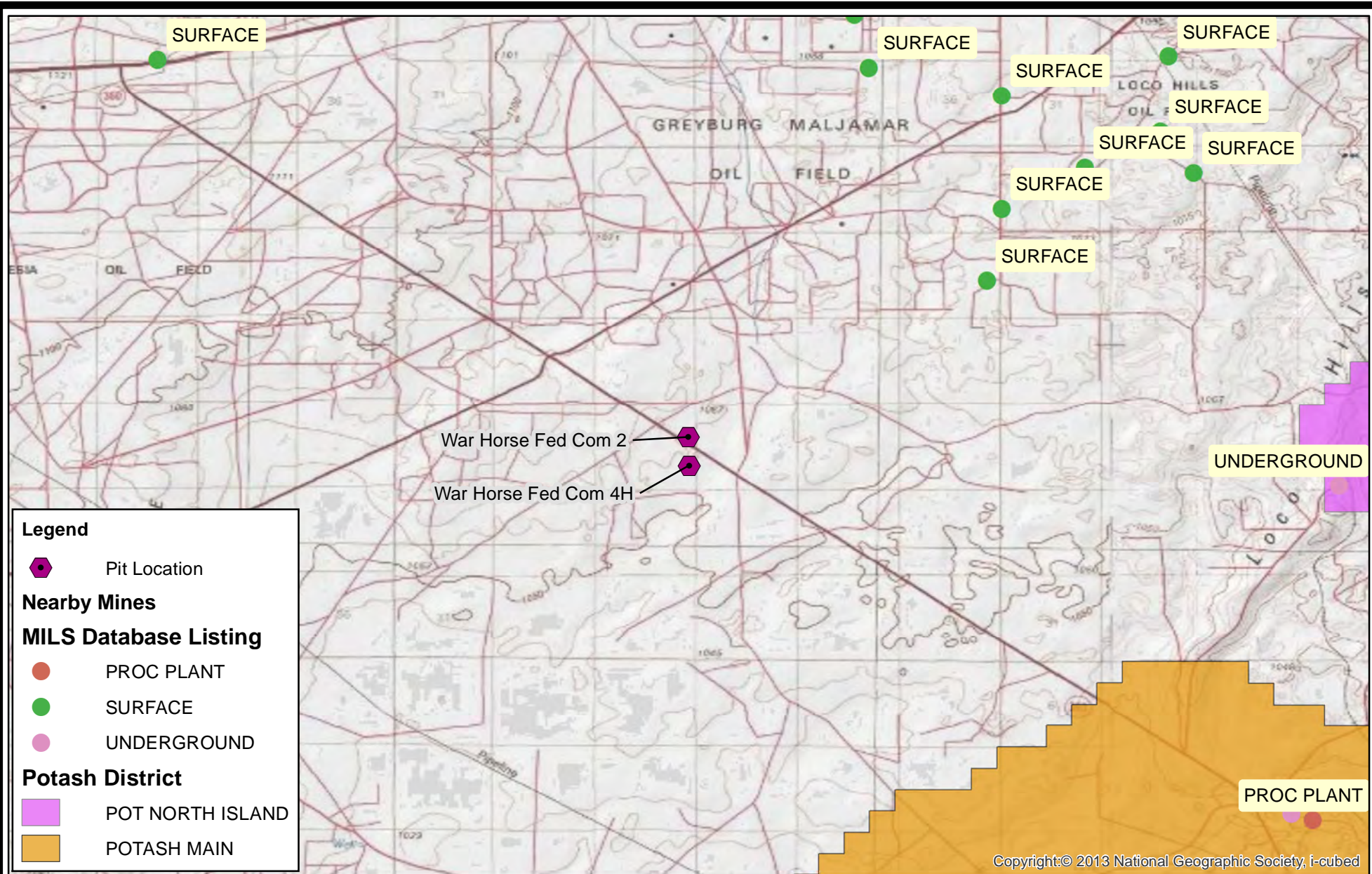
Nearby Wetlands

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War Horse Federal Com. 2 & 4H

Figure 6

May 2015





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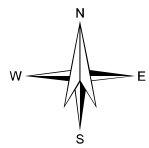
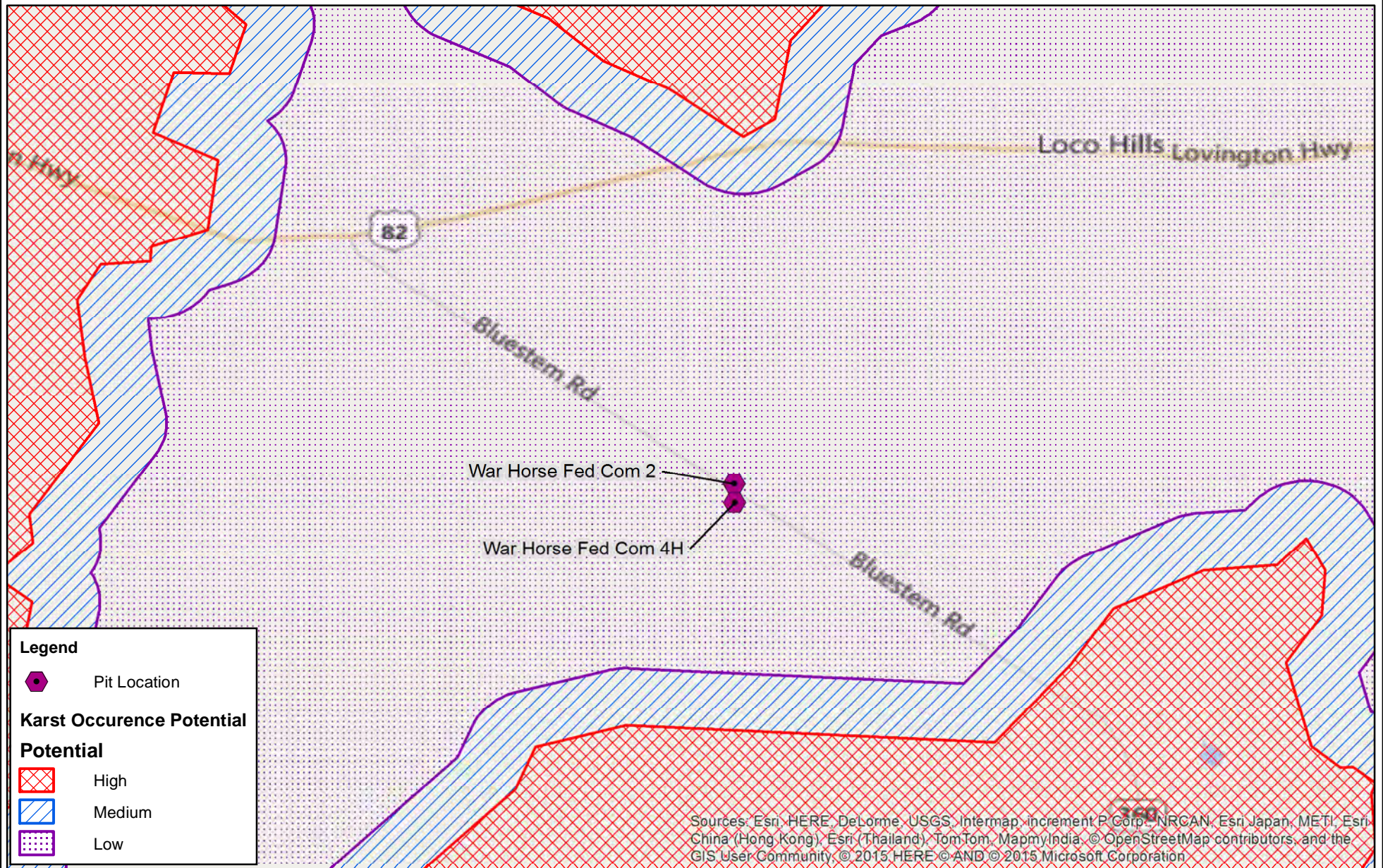
Nearby Mines and Minerals

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War Horse Federal Com. 2 & 4H

Figure 7

May 2015





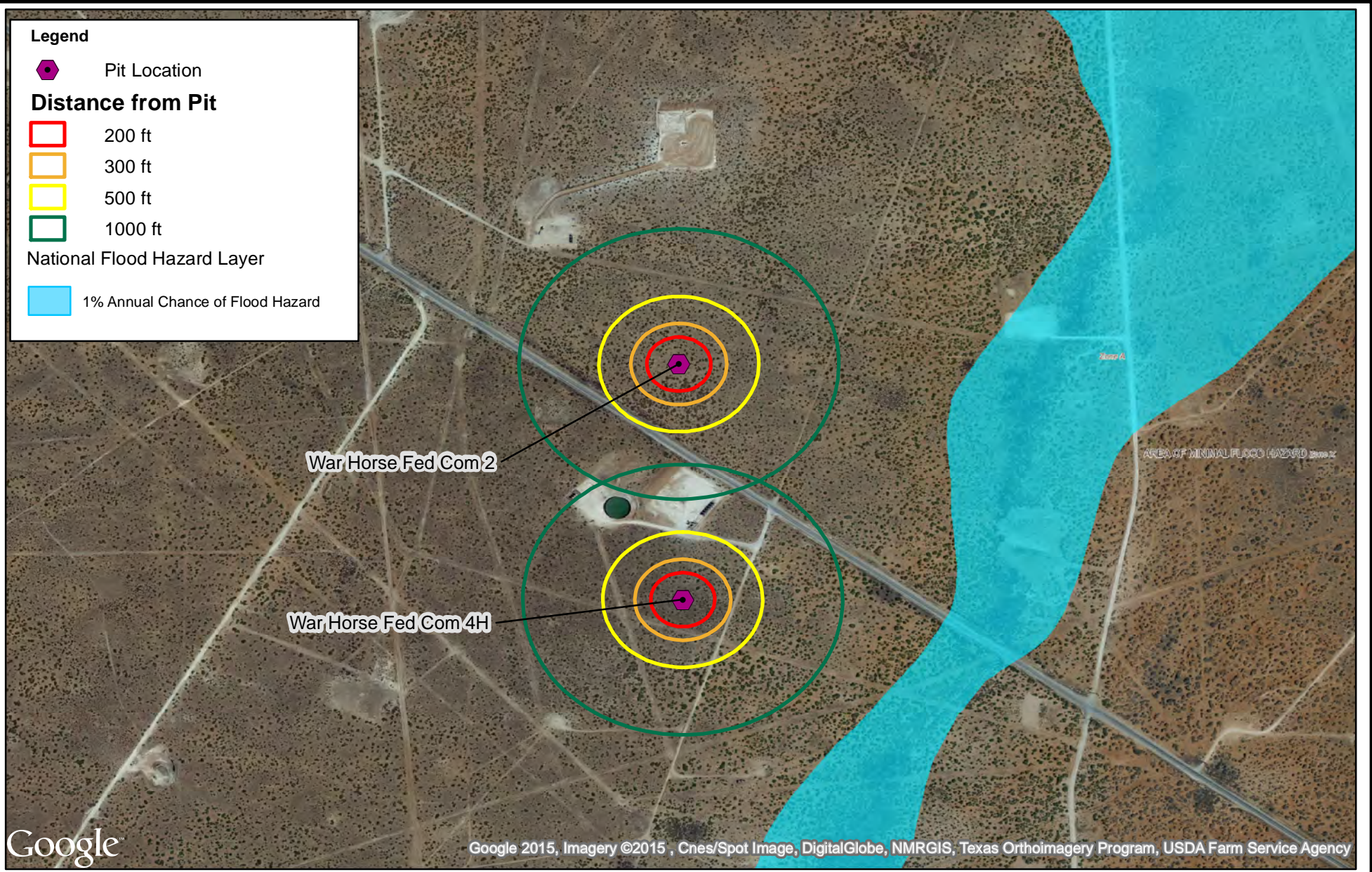
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Ph: 505.266.5004

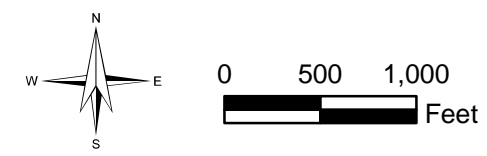
**Karst Potential**  
Murchison Oil and Gas, Inc.  
War Horse Federal Com. 2 & 4H

**Figure 8**  
May 2015





FEMA Source: <https://hazards.fema.gov/gis/nfhl/services/public/NFHLWMS/MapServer/WMSServer>



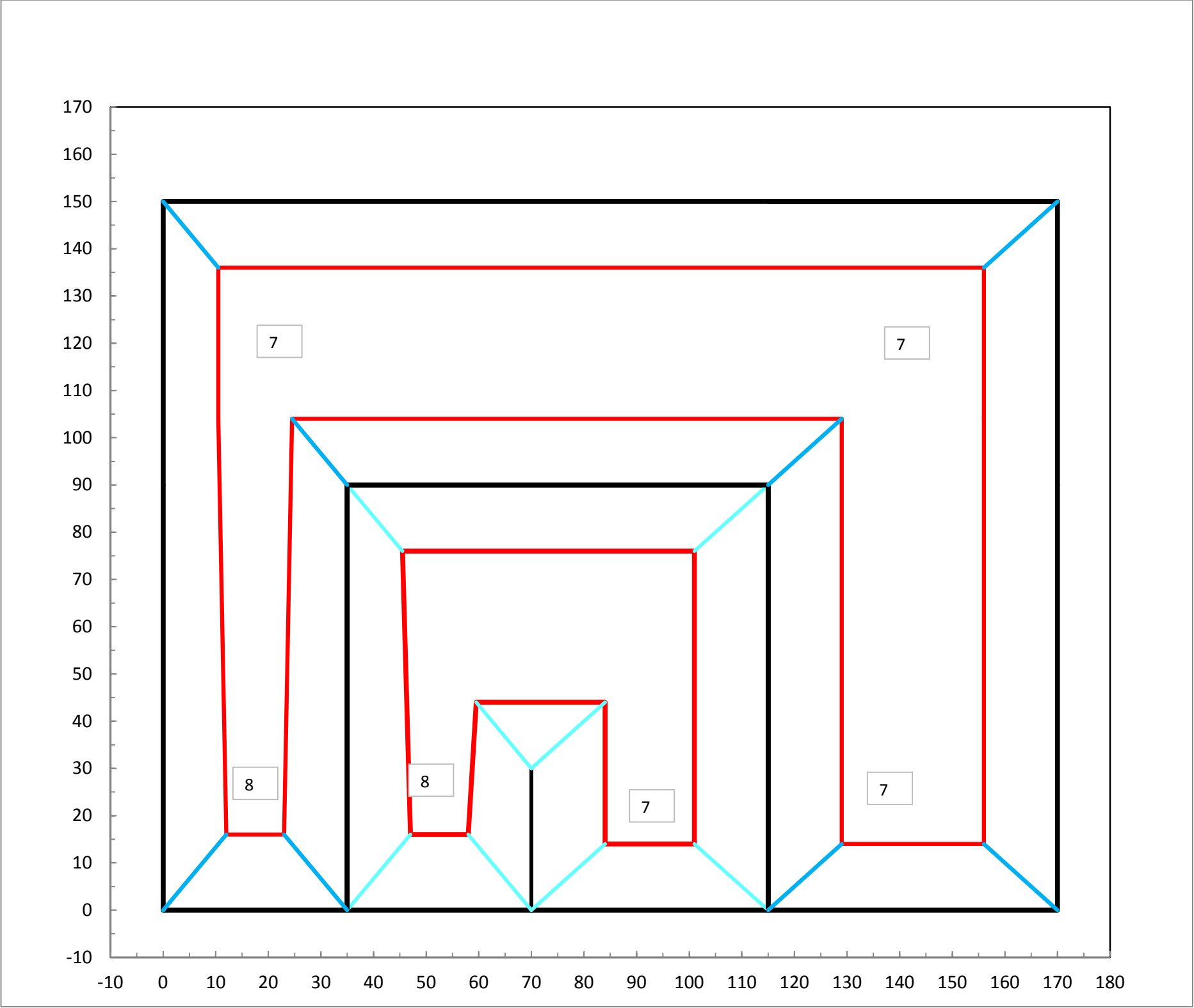
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	FEMA Flood Map	Figure 9
	Murchison Oil and Gas, Inc. War Horse Federal Com. 2 & 4H	May 2015

# **Site Specific Information Plates**

**R.T. Hicks Consultants, Ltd.**

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**Drilling Cell Dimensions**

Drilling Cell Total Width	170.0
Drilling Cell Total Length	150.0

**Slope Dimensions**

Pit Slopes (Rise to Run)	1.00	to	2.00
Inner Shoe, Suction Side, Side walls (Rise to Run)	1.00	to	1.50
Outer Shoe, Suction Side, Side walls (Rise to Run)	1.00	to	1.50

**Inner Horseshoe Dimensions**

Total Width (left right)	80.0
Total Length (up down)	90.0
Depth Discharge Side	7.0
Depth Far Side (Discharge)	7.0
Depth Far Side (Suction)	7.0
Depth Suction Side	8.0
Length of Divider	30.0
Divider Width	0.0
Width of discharge floor	17.0
Width of suction floor	11.0

**Outer Horseshoe Dimensions**

Width Discharge Side	55.0
Width Suction Side	35.0
Length Far Side (up down)	60.0
Width of discharge Floor	27.0
Width of Suction Floor	11.0
Width of Far Side Floor (right-left dimension)	122.0
Length of Far side (up-down dimension)	32.0
Depth Discharge Side	7.0
Depth Far Side (Discharge)	7.0
Depth Far Side (Suction)	7.0
Depth Suction Side	8.0

Inner Horseshoe Capacity 5914 bbl  
Outer Horseshoe Capacity 16678 bbl

Total Capacity 22592 bbl



RT Hicks Consultants 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, N. M. 87104	War Horse Fed Com 2	Plate 1
	Murchison	May 2015

# **Generic Plans for Temporary Pits**

**R.T. Hicks Consultants, Ltd.**

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Albuquerque, NM 87104

## **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 outer and inner drilling cells and an optional fluids cell as described below:

1. Drilling cells (reserve pit) consist of:
  - a. An outer horseshoe for
    - i. fresh water and cut-brine fluid and cuttings or
    - ii. brine and cut-brine fluid and cuttings
  - b. An inner horseshoe for
    - i. brine and fluid and cuttings or
    - ii. fresh water fluid and cuttings
2. The optional fluids cell may be used
  - a. For storage of fresh water used in drilling or stimulation
  - b. For storage of stimulation flow-back (fresh) water prior to re-use or disposal
  - c. As an approved disposal site for drilling solids derived from a nearby well on the same lease. Prior to such disposal the operator will provide notice to OCD that
    - i. Identifies the well(s) to be served by the fluids cell of the temporary pit
    - ii. Provides the date that the drilling rig moved from the first well using the pit
    - iii. Affirms that the fluids pit will be closed in conformance with the mandates of the Rule

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 or rinse the solids to remove salt and/or petroleum hydrocarbons. The drainage system may be installed in the entire drilling cell or only in one horseshoe (e.g. the inner horseshoe). As described in the closure plan, this system of fabric-wrapped perforated pipe and drainage mats lie on the bottom of the drilling cells of the pit. The system will drain to the lowest corner of horseshoe where a standpipe rises from the depression to the top of the berm. The drainage system can remove 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. After any rinsing process, the 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.

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

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
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 any 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 LLDPE string-reinforced liner (that meets the requirements of OCD Rules for temporary pits) 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 that is 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 as specified by and meets all requirements of OCD Rules.

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 comers 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



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

- 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.

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.

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

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. However, a transmittal letter may notify OCD that drilling waste from a nearby site on the same lease may be placed in the temporary pit (e.g. placed in the drilling or fluids cells of the temporary pit). A notice will include the name of the nearby well, the date that the drilling or workover rig moved from the temporary pit, an affirmation that the temporary pit will be closed in conformance with the mandates of the Rule, including the mandated lifetime of the pit.

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 via email, which serves as notification that the operator intends on-site burial of solids.

### **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 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 last drilling or workover rig associated with the relevant pit permit.
- 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 the fluids cell of the temporary pit; thereby further rinsing the residual solids in the pit.
- 20-60 days after placement of fresh or 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, an eight-point composite sample of the residual solids in the drilling cell of the temporary pit and a five-point composite sample of any solids in the fluids cell of the temporary pit will be tested in a laboratory to demonstrate that the stabilized material will not exceed the

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

contaminant concentrations listed in Table II of 19.15.17.13 NMAC after being mixed in a ratio of 3:1 with the earth material to be used for stabilization of the residual cuttings and mud. A volumetric average of the laboratory result from the drilling cell solids and any fluid cells solids will be used to determine compliance with the standards of Table II.

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 sloping surface of the stabilized waste material. It will be placed in a manner so as 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
3. Over the sloping, stabilized material and liner, place the **Soil Cover** of:
  - 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  
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 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 rig was released from the first well using the pit. This date will be noted on form C-105 or C-103 filed with the division upon the well's completion (or re-completion in the case of a workover).

**Reclamation and Re-vegetation Plan**

In addition to the area of the in-place burial, 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 including:

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. This includes the area of the temporary pit if a transmittal letter to OCD proposes an alternative to the re-vegetation or recontouring requirement with

- a demonstration that the proposed alternative provides equal or better prevention of erosion, and protection of fresh water, public health and the environment
- written documentation that the alternative is agreed upon by the surface owner.

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

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

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.

# **Appendix A**

## **Site Inspection Photographs & Survey Information**

**R.T. Hicks Consultants, Ltd.**

901 Rio Grande Blvd. NW, Suite F-142  
Albuquerque, NM 87104





View north-northeast showing nature of vegetation on stabilized sand dunes. Murchison well and battery is in upper right of photograph.



View east of staked locations (War Horse Federal Com #2 is marked with yellow arrow). Drilling pit excavation for War Horse Federal 3H (previously-approved) is on horizon.



View west of staked location with War Horse Federal 1H on horizon, west of highway. Low stabilized sand dunes characterize the area.



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 <b>WAR HORSE FEDERAL COM</b>		<sup>6</sup> Well Number <b>2</b>
<sup>7</sup> OGRID No. <b>15363</b>	<sup>8</sup> Operator Name <b>MURCHISON OIL &amp; GAS, INC.</b>		<sup>9</sup> Elevation <b>3475.6</b>

<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
<b>H</b>	<b>21</b>	<b>18 S</b>	<b>29 E</b>		<b>1980</b>	<b>NORTH</b>	<b>200</b>	<b>EAST</b>	<b>EDDY</b>

<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
<b>E</b>	<b>21</b>	<b>18 S</b>	<b>29 E</b>		<b>1980</b>	<b>NORTH</b>	<b>330</b>	<b>EAST</b>	<b>EDDY</b>

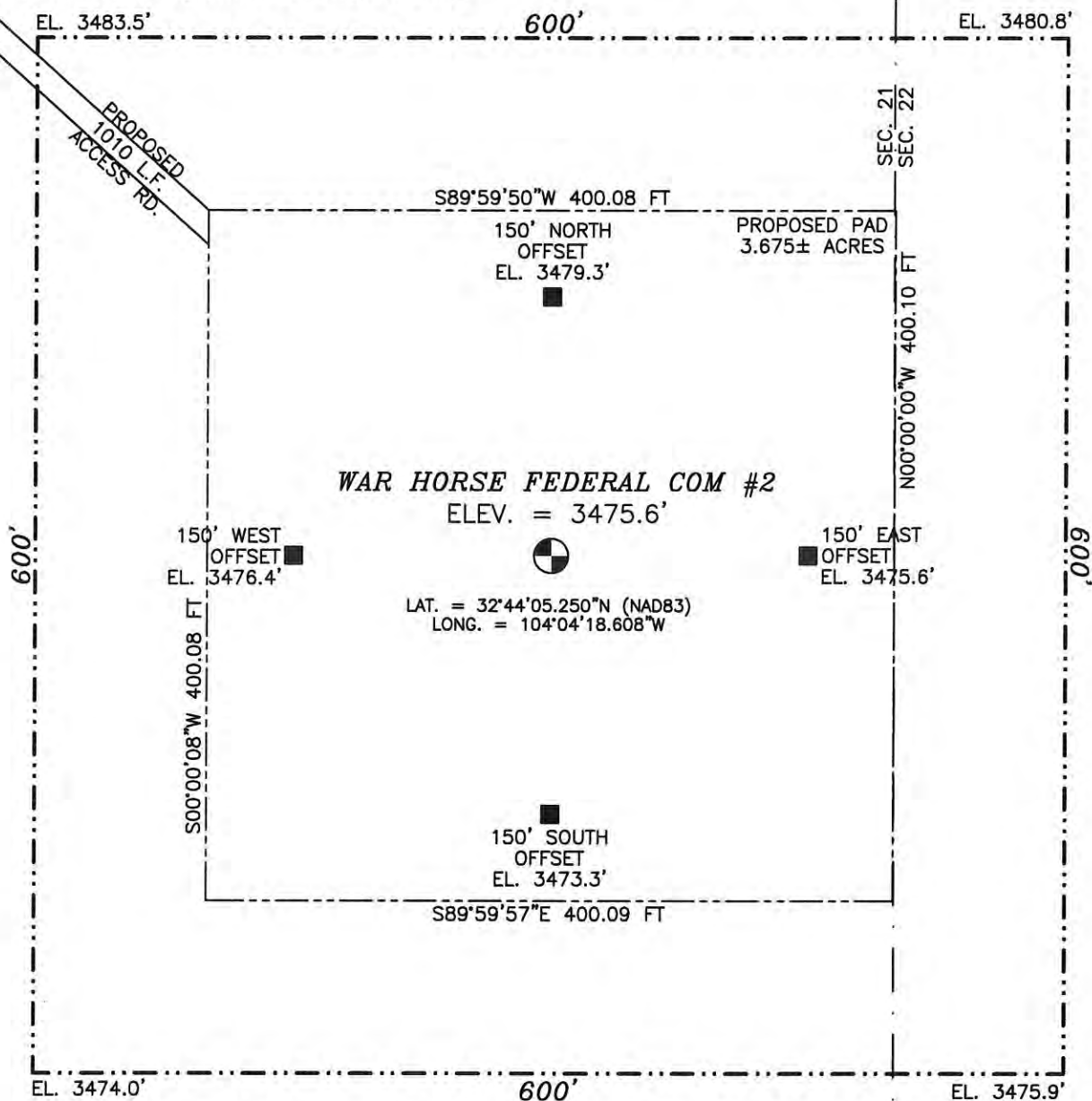
<sup>12</sup> Dedicated Acres	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
-------------------------------	-------------------------------	----------------------------------	-------------------------

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>S89°48'51"W 2641.78 FT</p> <p>S89°48'54"W 2638.42 FT</p> <p>NW CORNER SEC. 21 LAT. = 32°44'24.796"N LONG. = 104°05'18.073"W</p> <p>N/4 CORNER SEC. 21 LAT. = 32°44'24.819"N LONG. = 104°04'47.150"W</p> <p>NE CORNER SEC. 21 LAT. = 32°44'24.840"N LONG. = 104°04'16.266"W</p> <p>W/4 CORNER SEC. 21 LAT. = 32°43'58.663"N LONG. = 104°05'18.064"W</p> <p>E/4 CORNER SEC. 21 LAT. = 32°43'58.714"N LONG. = 104°04'16.267"W</p> <p>SW CORNER SEC. 21 LAT. = 32°43'32.546"N LONG. = 104°05'17.999"W</p> <p>S/4 CORNER SEC. 21 LAT. = 32°43'32.570"N LONG. = 104°04'47.164"W</p> <p>SE CORNER SEC. 21 LAT. = 32°43'32.538"N LONG. = 104°04'16.284"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><b>17 OPERATOR CERTIFICATION</b> <i>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.</i></p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>E-mail Address _____</p> <p><b>18 SURVEYOR CERTIFICATION</b> <i>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.</i></p> <p>FEBRUARY 6, 2013</p> <p>Date of Survey _____</p> <p>Signature and Seal of Professional Surveyor _____</p> <p>Certificate Number _____ FILIMON E. JARAMILLO, PLS 12797</p> <p>SURVEY NO. 1481</p>	
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SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES, MINUTES AND DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.



0 10 50 100 200

SCALE 1" = 100'

**DIRECTIONS TO LOCATION**

FROM INTERSECTION OF HWY 360 (BLUESTEM RD.) AND HAGERMAN CUTOFF ROAD (CO. ROAD #217) GO SOUTHEAST ON HWY 360 (BLUESTEM ROAD) APPROX. 1.2 MILES TO A LEASE ROAD ON LEFT (NORTH) TURN LEFT (NORTH) AT LEASE ROAD GO APPROX. 0.1 MILES TURN RIGHT (EAST) ON LEASE ROAD GO APPROX. 0.18 MILE TO EXISTING WELL PAD AT SOUTHWEST CORNER OF PAD IS A ROAD LATH WITH RED AND WHITE RIBBON LOCATION IS APPROX 0.21 MILE TO THE SOUTHEAST OF EXISTING PAD.

**MURCHISON OIL & GAS, INC.**  
**WAR HORSE FEDERAL COM #2**  
LOCATED 1980 FT. FROM THE NORTH LINE  
AND 200 FT. FROM THE EAST LINE OF  
SECTION 21, TOWNSHIP 18 SOUTH,  
RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

FEBRUARY 6, 2013

SURVEY NO. 1481

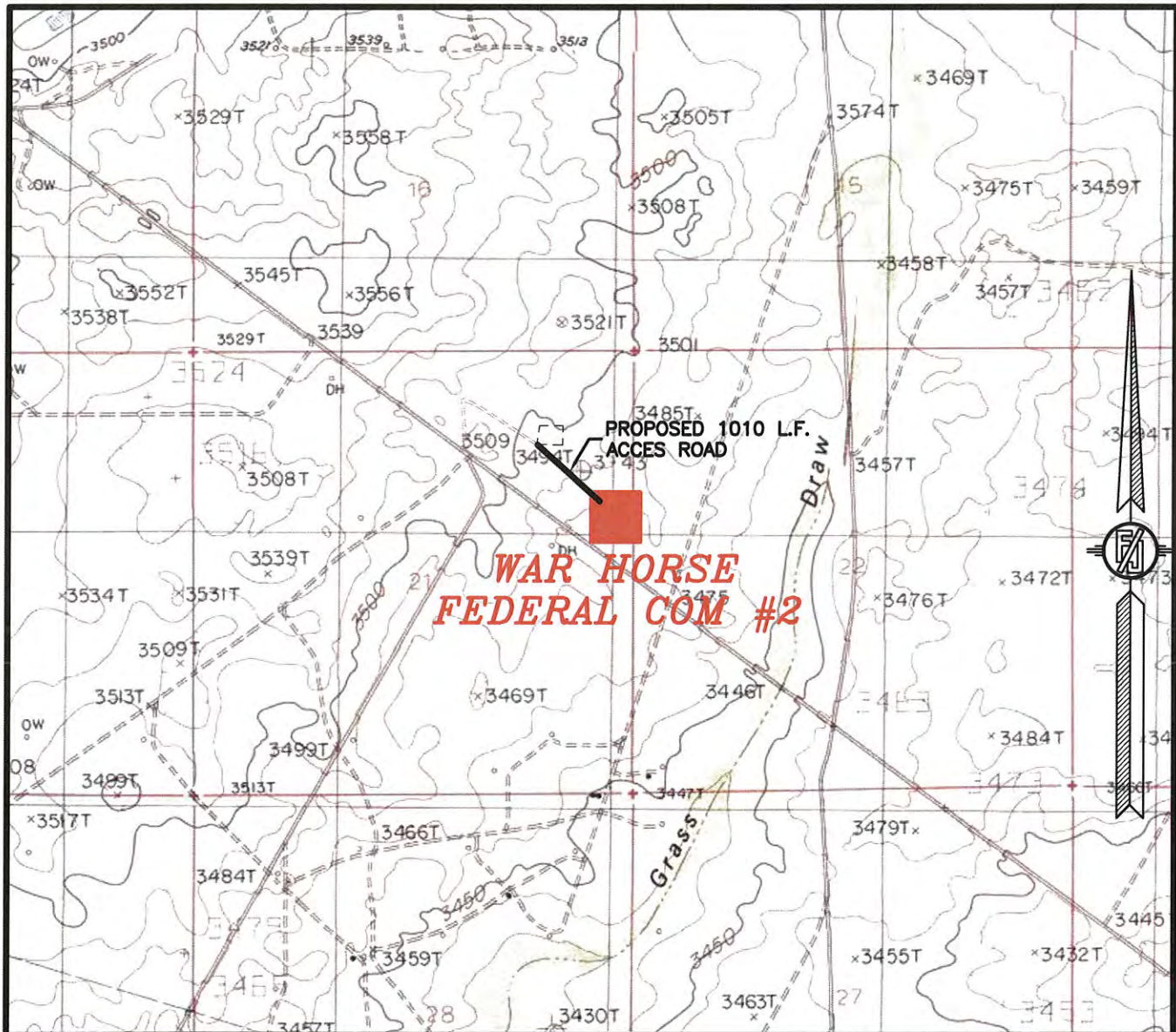
MADRON SURVEYING, INC.

301 SOUTH CANAL  
(575) 234-3341

CARLSBAD, NEW MEXICO



SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
LOCATION VERIFICATION MAP



USGS QUAD MAP:  
ILLINOIS CAMP NE

NOT TO SCALE

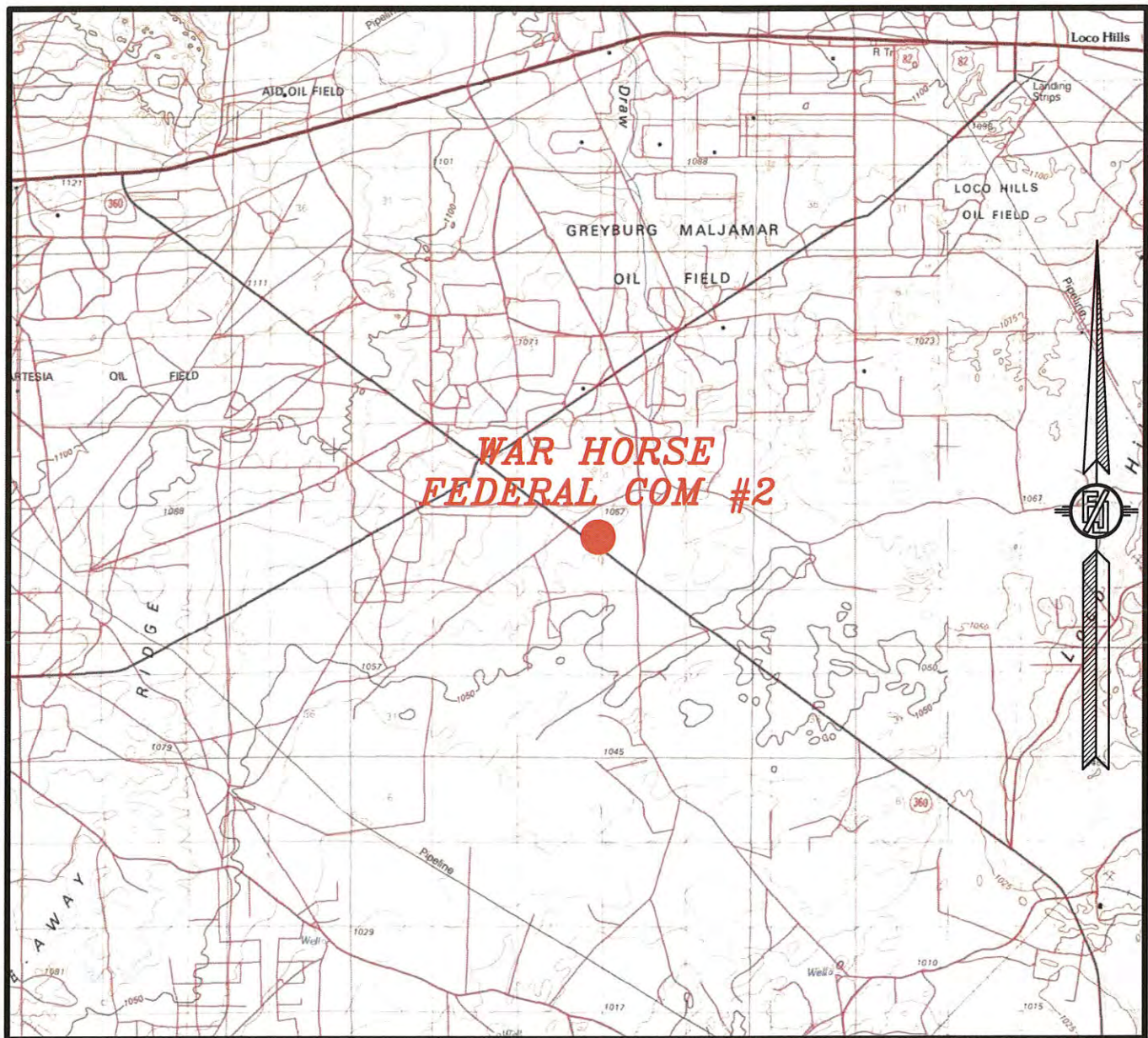
MURCHISON OIL & GAS, INC.  
**WAR HORSE FEDERAL COM #2**  
LOCATED 1980 FT. FROM THE NORTH LINE  
AND 200 FT. FROM THE EAST LINE OF  
SECTION 21, TOWNSHIP 18 SOUTH,  
RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

FEBRUARY 6, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO SURVEY NO. 1481



SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
VICINITY MAP



NOT TO SCALE

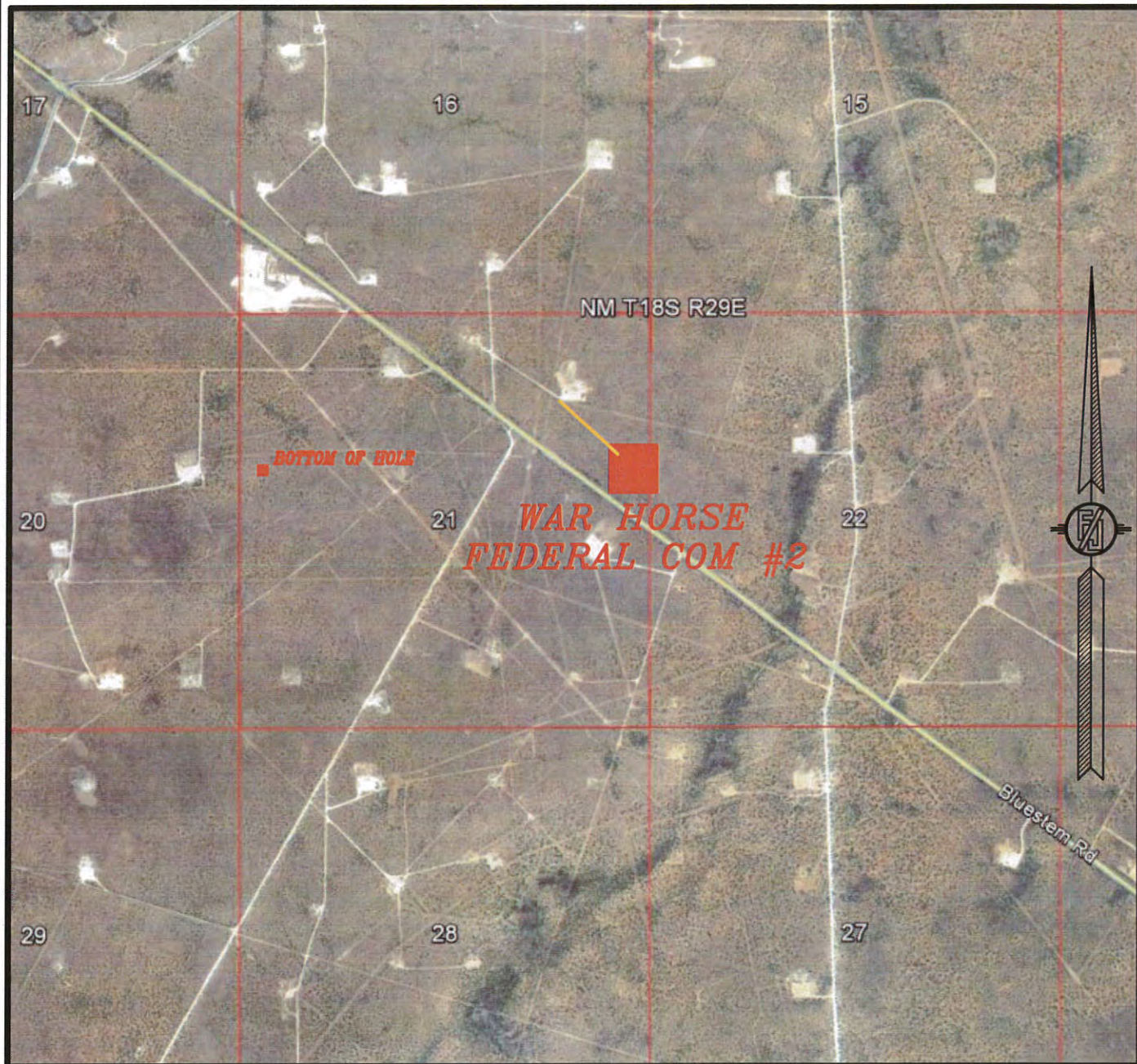
MURCHISON OIL & GAS, INC.  
**WAR HORSE FEDERAL COM #2**  
LOCATED 1980 FT. FROM THE NORTH LINE  
AND 200 FT. FROM THE EAST LINE OF  
SECTION 21, TOWNSHIP 18 SOUTH,  
RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

FEBRUARY 6, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO  
SURVEY NO. 1481



SECTION 21, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
**AERIAL PHOTO**



NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
JUNE 2011

**MURCHISON OIL & GAS, INC.**  
**WAR HORSE FEDERAL COM #2**  
LOCATED 1980 FT. FROM THE NORTH LINE  
AND 200 FT. FROM THE EAST LINE OF  
SECTION 21, TOWNSHIP 18 SOUTH,  
RANGE 29 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

FEBRUARY 6, 2013

SURVEY NO. 1481

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

# **Appendix B**

## **BLM Approved Conditions and Sundry Modification of COAs**

**R.T. Hicks Consultants, Ltd.**

901 Rio Grande Blvd. NW, Suite F-142  
Albuquerque, NM 87104



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0137  
Expires: July 31, 2010

**SUNDRY NOTICES AND REPORTS ON WELLS**  
**Do not use this form for proposals to drill or to re-enter an  
abandoned well. Use Form 3160-3 (APD) for such proposals.**

5. Lease Serial No.  
SHL: NM 34461 BHL: NM 30752

6. If Indian, Allottee or Tribe Name

**SUBMIT IN TRIPLICATE – Other instructions on page 2.**

7. If Unit of CA/Agreement, Name and/or No.  
n/a

8. Well Name and No.  
War Horse Federal Com 1H

9. API Well No.  
30-015-41013

10. Field and Pool or Exploratory Area  
Wildcat G-04 5182927m; B.S.

11. Country or Parish, State  
Eddy, NM

**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

The current APD for this well allows for the use of a reserve pit and on-site disposal burial of drilling waste. BLM approved a previous sundry notice (update to match new NMOCD Pit Rule) for this well on 11/7/2013 and issued new COAs. On 1/13/2014, NMOCD approved the C-144 application for a temporary pit and on-site closure of the pit in accordance with the NMOCD Pit Rule. After discussing these COAs with BLM in meetings and in the field, Murchison requests the following VARIANCES from the existing COAs:

(1) ENCLOSURE NETTING: After the well is drilled, 24-hour activity typically continues on site for approximately 15-25 days for fracturing, flowback, and monitoring of the well. Murchison will remove free fluids from the pit during this time. If this cannot be achieved, Murchison will install netting that is protective of humans, wildlife, and livestock over remaining free fluids after 24-hour activity has ceased.

(2) ESCAPE RAMPS: In lieu of escape ramps described in the COA and to prevent entrapment of livestock, humans, and wildlife, a felt-like geotextile fabric is proposed to be installed over the liner across the entire rig side of the pit, at the far corners of the outer horse shoe cell, and in the center of the outside walls of the discharge and suction legs of the outer cell.

14. I hereby certify that the foregoing is true and correct.

Name (Printed Typed)  
Chace Walls

Title Production Foreman

Signature

Date 03/14/2014

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by

Title

Date

Office

Conditions of approval, if any, are attached. Approval of this notice 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.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

(Instructions on page 2)

## GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

## SPECIFIC INSTRUCTIONS

*Item 4* - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

*Item 13* - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment.

## NOTICES

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

**PRINCIPAL PURPOSE:** The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

**ROUTINE USES:** Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

**EFFECT OF NOT PROVIDING THE INFORMATION:** Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0137  
Expires: July 31, 2010

**SUNDRY NOTICES AND REPORTS ON WELLS**  
**Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**

5. Lease Serial No.  
SHL NM067132 BHL: NM30752

6. If Indian, Allottee or Tribe Name

**SUBMIT IN TRIPLICATE** - Other instructions on page 2.

7. If Unit of CA/Agreement, Name and/or No.  
N/A

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.  
War Horse Fed Com 3H

2. Name of Operator  
Murchison Oil and Gas, Inc

9. API Well No.  
30-015-41227

3a. Address  
1100 Mira Vista Blvd. Plano, Texas 75093

3b. Phone No. (include area code)  
972-931-0700

10. Field and Pool or Exploratory Area  
Wildcat G-04 5182927m; B.S.

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
Surface Location 2290 F&L & 175 F&L, Section 21, T18S R29E

11. Country or Parish, State  
Eddy

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BLA. Required subsequent reports must be filed within 90 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Today, BLM recieved an email-transmission of a C-144 Permit for a reserve pit at this location. The current APD for this well did not allow reserve pits and on-site burial of drilling waste - probably due to the lack of a surface use agreement with the surface owner (Concho Oil and Gas). The surface use agreement between Murchison and Concho is now in place and provides for the use of reserve pits with on-site burial of waste. Note that this sundry notice and the C-144 application was also transmitted to Concho.

BLM approved the use of a reserve pit for War Horse Fed Com 1H, which lies about 1/2 mile north of this well. The current C-144 for the War Horse Fed Com 3H conforms with the 2013 NMOCD Pit Rule and is nearly identical to the previously approved pit permit for the War Horse Fed Com 1H, which was submitted under the 2012 Pit Rule.

OK CRL \* see new Coa's Attached \*

14. I hereby certify that the foregoing is true and correct.

Name (Printed/Typed)  
Greg Boans

Title Production Superintendent

Signature

Date 10/21/2013

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by

Title

MRS

Date

11/04/13

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

CFO

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

(Instructions on page 2)

## PECOS DISTRICT CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Murchison Oil &amp; Gas, Inc.</b>
<b>LEASE NO.:</b>	<b>NMNM-030752</b>
<b>WELL NAME &amp; NO.:</b>	<b>War Horse Fed Com 3H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>2290' FSL &amp; 0175' FEL</b>
<b>BOTTOM HOLE FOOTAGE</b>	<b>2290' FSL &amp; 0330' FWL</b>
<b>LOCATION:</b>	<b>Section 21, T. 18 S., R 29 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
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- ☒ **Construction**
  - Notification
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  - Reserve Pits
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- ☐ **Road Section Diagram**
- ☒ **Drilling**
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  - Waste Material and Fluids
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  - Well Structures & Facilities
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## **V. SPECIAL REQUIREMENT(S)**

### **Communitization Agreement**

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.

### **Communitization Agreement Wells**

The well sign for a communitization agreement (CA) wells shall include the CA number in addition to the surface and bottom hole lease numbers.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. RESERVE PITS**

The pit will be closed in accordance with NMOCD pit rules, with the following additional stipulations:

#### **Construction:**

#### **Burial**

The reserve pit shall be constructed, so that upon completion of drilling operations, the dried pit contents shall be buried a minimum depth of four (4) feet below ground level. Should the pit content level not meet the four foot minimum depth requirement, the excess contents shall be removed until the required minimum depth of four feet below ground level has been met. The operator shall properly dispose of the excess contents at an authorized disposal site.

#### **Below Ground Level**

The reserve pit will be constructed entirely below ground level (as opposed to pushing up dirt to form the sides of the pit).

#### **Liner and Contents**

All pits that may contain liquid material shall be lined with a 20 ml liner or greater to prevent seepage into the ground. The pit liner shall be maintained in good working condition, with no tears or holes, until the pit is closed. No trash, pipe, barrels, wireline, or metal equipment is permitted in the pit.

#### **Freeboard**

Pits shall be constructed to preclude the accumulation of precipitation runoff and maintain a minimum of 2 feet of freeboard between the maximum fluid level and the lowest point of containment at all times. If pit fluids threaten to rise to a level allowing less than 2 feet of freeboard, steps shall immediately be taken to prevent introduction of additional fluids until sufficient pit capacity has been restored through fluid removal or an alternative containment method is approved and installed.

#### **Exclosure Netting**

The operator will prevent humans, wildlife (*including avian wildlife*), and livestock access to fluid pits that contain or have potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will install approved netting in accordance with the requirements below. (**Note:** *The BLM does not approve of the use of flagging, strobe lights, metal reflectors, or noise makers as techniques for deterring wildlife.*)

Minimum Netting Requirements - The operator will:

- Construct a rigid structure made of steel tubing or wooden posts with cable strung across the pit at no more than seven (7) foot intervals along the X- and Y-axes to form a grid of 7 foot squares.
- Suspend netting a minimum of 4 to 5 feet above the fluid surface.
- Use a maximum netting mesh size of 1 ½ inches to exclude most birds.
- Cover the top and all sides of the netting support frame with netting and secure the netting at the ground surface around the entire pit to prevent wildlife entry at the netting edges. (**Note:** *Hog wire panels or other wire mesh panels or fencing used on the sides of the netting support frame is ineffective in excluding small wildlife and birds unless covered by the smaller mesh netting.*)
- Monitor and maintain the netting sufficiently to ensure the netting is functioning as intended, has not entrapped wildlife, and is free of holes and gaps greater than 1 ½ inches.

#### **Exclosure Fence**

The operator will install and maintain exclosure fencing on all sides of the reserve pit to prevent access to public, livestock, and large forms of wildlife. Only one side of the

reserve pit fence may be set aside during drilling or fracturing operations, but must be reconstructed when these operations are not being performed.

- The fence shall be installed at least two (2) feet from the edge of the pit.
- Construction of the fence shall consist of steel and/or wooden posts set firmly into the ground.
- All corners shall be braced.
- Use a fence with five separate wires (smooth or barbed) or hog panel (16 ft. length by 50 in. height) with connectors such as fence staples, clips, hog rings, hose clamps, twisted wire, etc. The fencing must be secured to the posts.
- The wire (if used) must be stretched tightly and spaced evenly to effectively exclude animals.
- Do not use electric fences.
- The erected fence shall be maintained in adequate condition until the dried reserve pit undergoes backfilling.
- (For examples of enclosure fencing design, refer to BLM's Oil and Gas Gold Book, Enclosure Fence Illustrations, Figure 1, Page 18.)

#### **Escape Ramps**

The operator will construct and maintain reserve pits to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in reserve pit. Escape ramps must be installed at every corner of the reserve pit and in the center of each side if that side exceeds 100 feet in length. Escape ramps must be in contact with the side of the reserve pit, bottom of the reserve pit, and the top of the reserve pit berm. Escape ramps cannot be made of metal and cannot be steeper than a 3:1 slope (Horizontal Distance: Vertical Distance) or 30% slope. (*Examples of escape ramps: 12" wide wooden planks wrapped in matting, felt lining, etc.*)

#### **Maintenance:**

##### **Hydrocarbons**

Any hydrocarbons (condensate, paraffin, diesel, etc.) introduced to the reserve pit shall be removed within 24 hours.

#### **Closure:**

##### **NMOCD**

The pit will be closed in accordance with NMOCD pit closure rules, with the following additional stipulations:

##### **Drying**

When drilling is completed, the fluids must be drawn off the pit within 30 days and the pit reclaimed within six months. The pit should also be fully enclosed with fencing on 4 sides during the drying process.

##### **Notification**

The operator will notify a BLM Environmental Protection Specialist (575-234-5972) three days prior to beginning closure operations.

##### **Sampling**



The BLM may wish to witness the sampling of the pit contents and excavation bottoms. The operator will notify a BLM Environmental Protection Specialist three days prior to sampling pit contents or excavation bottoms.

**Solidifying Pit Contents**

Only mineral materials can be used to solidify pit contents. The operator is prohibited from using topsoil materials stockpiled on location for this purpose.

**Burial (Onsite)**

If onsite burial is approved by the NMOCD, the pit liner sides will be folded over the pit contents and a separate liner installed atop the encapsulated pit materials. The top liner must be located four feet below the natural ground surface. Should the pit content level not meet the four foot minimum depth requirement, the excess contents shall be removed until the required minimum depth of four feet below ground level has been met. The operator shall properly dispose of the excess contents at an authorized disposal site.

**Burial (Trench)**

If trench burial is elected as a closure method, the trench burial must be located within the confines of the approved pad. The operator should consider where the trench burial will be located in advance of pad and facility construction in order to accommodate this requirement. The trench will 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.

**Surface Restoration:**

**Backfilling**

For both onsite and trench burials: clean mineral materials may be used to backfill on top of the liner installation or to backfill excavated pit areas to a backfill level that reaches the natural topsoil depth of the surrounding terrain or 1 foot below surface level, whichever is greater. (In sandy soils, 2 feet of topsoil material is required.) Clean and viable topsoil must be used as the top fill on the excavations and reclamation areas in order to establish vegetation. Topsoil materials must be a good match to that of the surrounding terrain.

**Contouring**

The surface of the reserve pit reclamation and/or trench burial should be recontoured to match that of the native terrain.

**Erosion Control**

Erosion control measures must be installed to ensure that reclamation stabilizes and establishes vegetation. If erosion issues develop, the erosion issues must be addressed immediately by bringing in additional backfill material and re-establishing erosion control measures.

**Seeding**

The location must be seeded with an appropriate BLM seed mix for the soil type of the area.

**D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

#### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

#### **F. EXCLOSURE FENCING (CELLARS & PITS)**

##### **Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

#### **G. ON LEASE ACCESS ROADS**

##### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

##### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

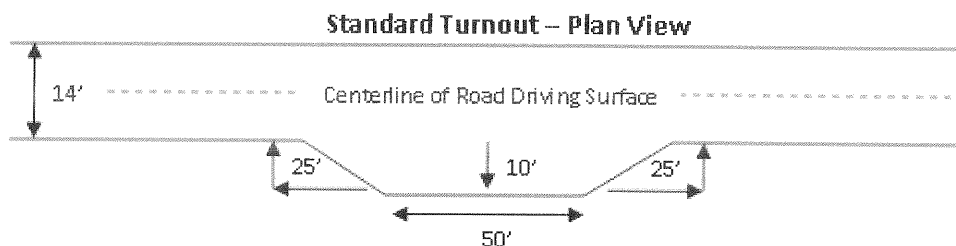
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

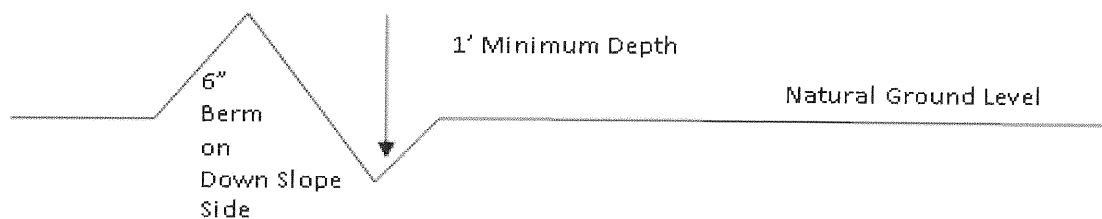


### **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### **Cross Section of a Typical Lead-off Ditch**



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### **Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

### **Culvert Installations**

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

### **Cattleguards**

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

### **Fence Requirement**

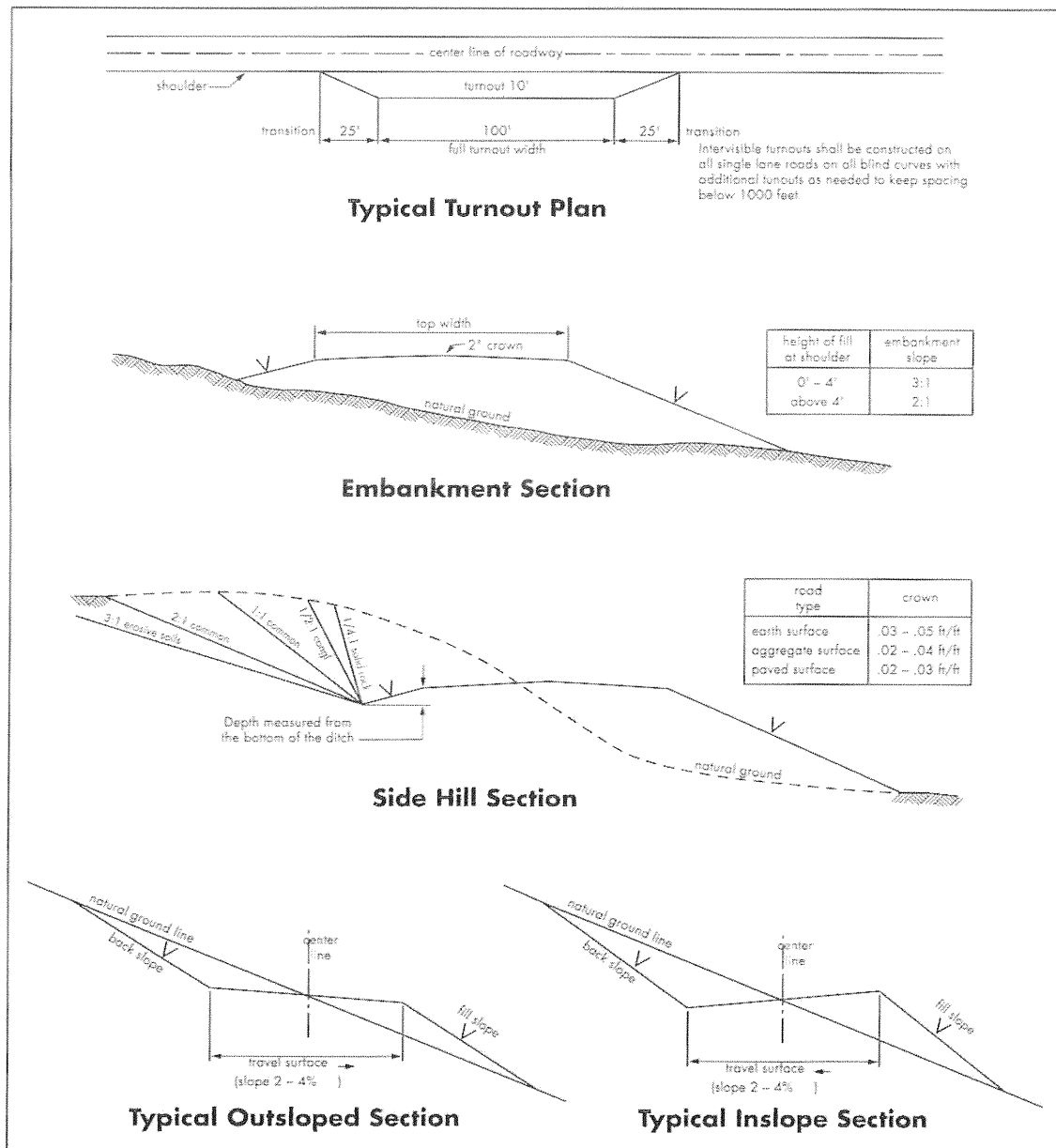
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

### **Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Figure 1 – Cross Sections and Plans For Typical Road Sections**



## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

1. **A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan shall be activated prior to drilling out the surface shoe. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**



## **B. CASING**

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possibility of water and brine flows in the Salado and Artesia Groups.**

**Possibility of lost circulation in the Grayburg and San Andres formations.**

- 1. The 13-3/8 inch surface casing shall be set at approximately 280 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. If salt is encountered, set casing at least 25 feet above the salt.**
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.**
  - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.**
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.**

**Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to BLM office.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to BLM office.**

**Centralizers required through the curve and a minimum of one every other joint.**

3. The minimum required fill of cement behind the **7** inch production casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Formation below the 7" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight anticipated to control the formation pressure to the next casing depth. Report results to BLM office.**

4. Cement not required on the **4-1/2"** casing. **Packer system being used.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi. 5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer.**
  - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
  - d. The results of the test shall be reported to the appropriate BLM office.
  - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
  - f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

### **IX. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

### **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by

drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

## Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed

ALL 11/4/13