District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

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

Form C-144
July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office

5471

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

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

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, 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 Noble Energy Inc OGRID # 234550
Address 5802 US Highway 64, Farmington, N M 87401
Facility or well name Tribal C 1
API Number 3003906655 OCD Permit Number
U/L or Qtr/Qtr M Section 6 Township 26N Range 3W County Rio Arriba
Center of Proposed Design Latitude 36 510195 Longitude 107 189962 NAD ☐1927 ☐ 1983
Surface Owner ☐ Federal ☐ State ☐ Private ☒ Tribal Trust or Indian Allotment

2
☐ **Pit:** Subsection F or G of 19 15 17 11 NMAC
Temporary ☐ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☐ Lined ☐ Unlined Liner type Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
☐ String-Reinforced
Liner Seams ☐ Welded ☐ Factory ☐ Other Volume bbl Dimensions L x W x D

3
☐ **Closed-loop System:** Subsection H of 19 15 17 11 NMAC
Type of Operation ☐ P&A ☐ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other
☐ Lined ☐ Unlined Liner type Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
Liner Seams ☐ Welded ☐ Factory ☐ Other

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JUN 2009
OIL CONS. DIV. DIST. 3

4
☒ **Below-grade tank:** Subsection I of 19 15 17 11 NMAC
Volume 95 bbl Type of fluid Water
Tank Construction material Steel double bottom tank
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☒ Visible sidewalls only ☒ Other leak detection
Liner type Thickness N/A mil ☐ HDPE ☐ PVC ☐ Other

5
☐ **Alternative Method:**
Submittal of an exception request is required Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval

6

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 Wire mesh fence with a pipe railing

7

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)

8

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 3 103 NMAC

9

Administrative Approvals 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:

☒ Administrative approval(s) Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval

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

10

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. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. **Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.**

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank - NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells	☐ Yes ☒ No
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 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application *(Applies to temporary, emergency, or cavitation pits and below-grade tanks)* - Visual inspection (certification) of the proposed site, Aerial photo, Satellite image	☐ Yes ☒ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application *(Applies to permanent pits)* - Visual inspection (certification) of the proposed site, Aerial photo, Satellite image	☐ Yes ☒ No ☐ NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended - Written confirmation or verification from the municipality, Written approval obtained from the municipality	☐ 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
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

11

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 _____

12

Closed-loop Systems 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.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19 15 17 9
- ☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - 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 _____

☐ Previously Approved Operating and Maintenance Plan API Number _____ *(Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)*

13

Permanent Pits Permit Application Checklist: Subsection B of 19 15 17 9 NMAC

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

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19 15 17 9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19 15 17 10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19 15 17 12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19 15 17 9 NMAC and 19 15 17 13 NMAC

14

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 ☐ Closed-loop System ☐ 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 (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

15

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 F 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 I of 19 15 17 13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17 13 NMAC

16

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19 15 17 13 D NMAC)

Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name _____ Disposal Facility Permit Number _____

Disposal Facility Name _____ Disposal Facility Permit Number _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please provide the information below) ☐ No

Required for impacted areas which will not be used for future service and operations

☐ 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 I of 19 15 17 13 NMAC

☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17 13 NMAC

17

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 may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is more than 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS, Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
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 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application - Visual inspection (certification) of the proposed site, Aerial photo, Satellite image	☐ Yes ☐ No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application - NM Office of the State Engineer - iWATERS database, Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended - Written confirmation or verification from the municipality, Written approval obtained from the municipality	☐ 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
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

18

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 F of 19 15 17 13 NMAC

☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements 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 Subsection F of 19 15 17 13 NMAC

☐ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F 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 I of 19 15 17 13 NMAC

☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17 13 NMAC

19
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) Jean Muse Title Regulatory Compliance

Signature Jmuse Date 6.22.09

e-mail address jmuse@nobleenergyinc.com Telephone (866) 404-3161

20
OCD Approval: ☒ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: Jonathan D. Kelly **Approval Date:** 4/26/2012

Title: Deputy Oil & Gas Inspector, District #3 **OCD Permit Number:**

21
Closure Report (required within 60 days of closure completion): Subsection K of 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:**

22
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

23
Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name Disposal Facility Permit Number

Disposal Facility Name Disposal Facility Permit Number

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations

☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

24
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)
☐ 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

25
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

Noble Energy, Inc.

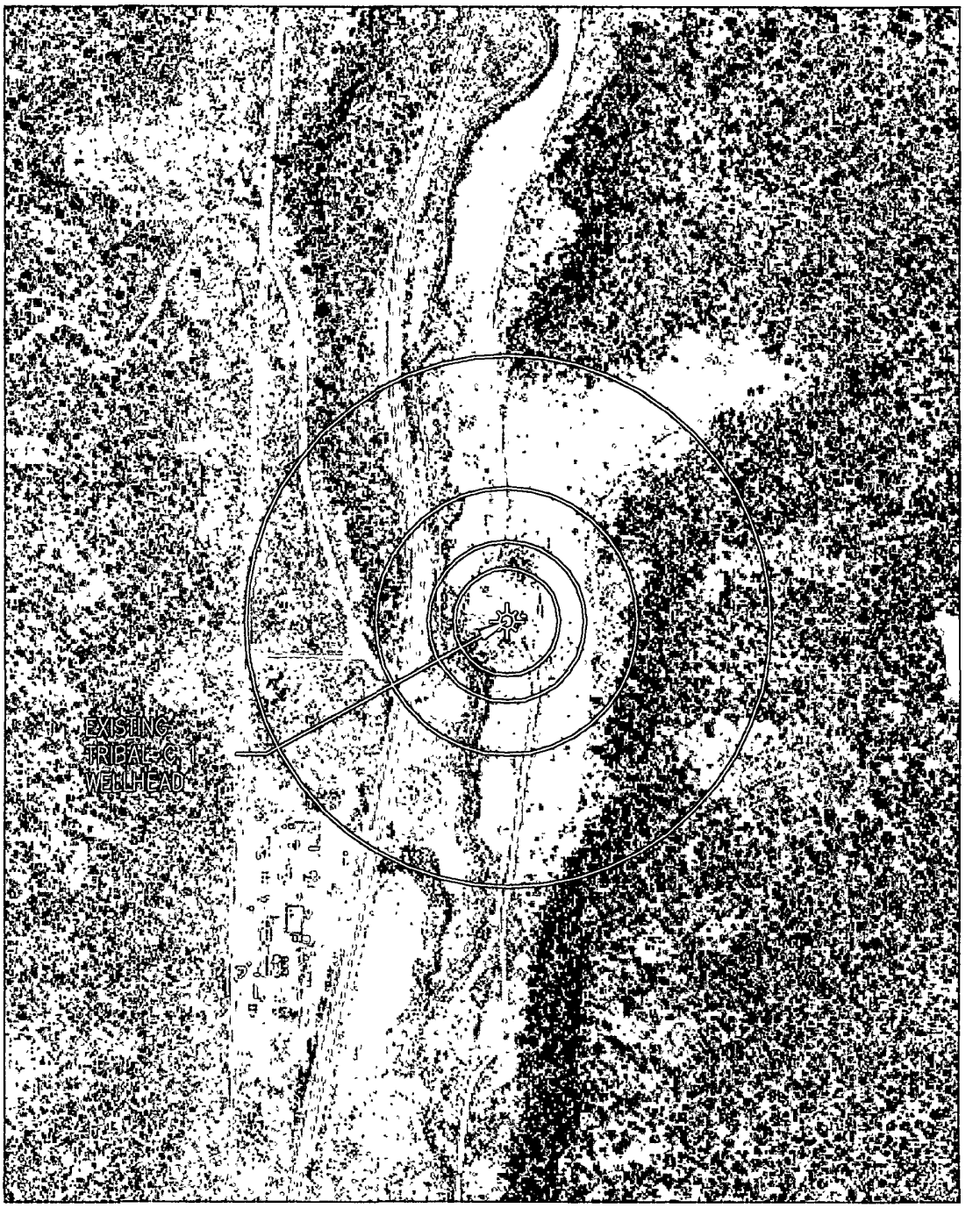
Below-grade Tank

TRIBAL C1

San Juan Basin Locations

The following is a discussion of the siting criteria contained in New Mexico Administrative Code 19.15.17.10. as they pertain to Noble's below-grade tank located on the Tribal C1 well pad. Visual observation of aerial photography (Pine Lake, NM SE USGS DOQQ) and the Pine Lake Quadrangle Topographic Map suggests the proposed below-grade tank is within 200 feet of a significant watercourse (Bull Well). Our criteria for a significant watercourse is 1) having a defined channel visible on an aerial photo or topographic map, 2) ground water is shallow (less than 50') and 3) the intermittent watercourse is named on a topographic map. The watercourse in question is intermittent but is significant based on criteria 1 and 3.

The Maintenance and Operations General Plan included with this application describes the standards of practice and intentions for the tank at this location. The below-grade tank intended for this location will consist of a steel double-bottom tank, with leak protection, enclosed in a secondary containment structure The double bottom serves to prevent leaks from the tank. The secondary containment structure is sized adequately to contain any overflow that may result from an unforeseen precipitation event. A detention berm is constructed around the tank perimeter. The berm will be designed to provide sufficient freeboard to prevent overflow. The berm also prevents surface water from flowing into the tank or containment structure. Water will be pumped from the tank at regular intervals to prevent the tank from filling and overflowing The design features serve to prevent liquids from entering the tank from the well pad surface and to prevent liquids in the tank from leaving the tank area. These measures are sufficient to protect groundwater quality.



SOURCE INFORMATION:

1) NEW MEXICO GEOSPATIAL DATA ACQUISITION COORDINATION COMMITTEE (GDACC), STATE OF NEW MEXICO. "PINE LAKE, NM SE USGS DOQQ, SUMMER OF 2006" (REMOTE SENSING IMAGE). 1:12000. ALBUQUERQUE, NM: BOHANNAN-HUSTON, INC., 2006.

2) U.S. GEOLOGICAL SURVEY. PINE LAKE QUADRANGLE, NEW MEXICO (TOPOGRAPHIC MAP). 1 24,000. 7.5 MINUTE SERIES. WASHINGTON D C USGS, 1963.

REVISIONS					
NO.	DESCRIPTION	DATE	BY	CHK.	APPR.

DRAWN BY: C.POITRAS 5/9/09
CHECKED BY: C.DICKERT 5/9/09
REVIEWED BY:
APPROVED BY:
SCALE: SCALE:1"=600'

noble energy

CH2MHILL
150 TECH CENTER DRIVE, SUITE E
DURANGO, COLORADO 81301-5340
970-385-9100

TRIBAL C 1
SITING CRITERIA
NOBLE ENERGY-BELOW GRADE TANK PERMITS
RIO ARRIBA COUNTY, NEW MEXICO

PROJECT NUMBER: 2484-47
DRAWING NUMBER: A248447-500
REV.

Jun 11, 2009 - 12:18pm by cpoitras - Path = K:\Jobs\Noble Energy\2484 Series\2484-07 Pit Permits\WELLS 1-140 individual folders by API#\47-3003906655 Tribal C 01\2484-47.dwg

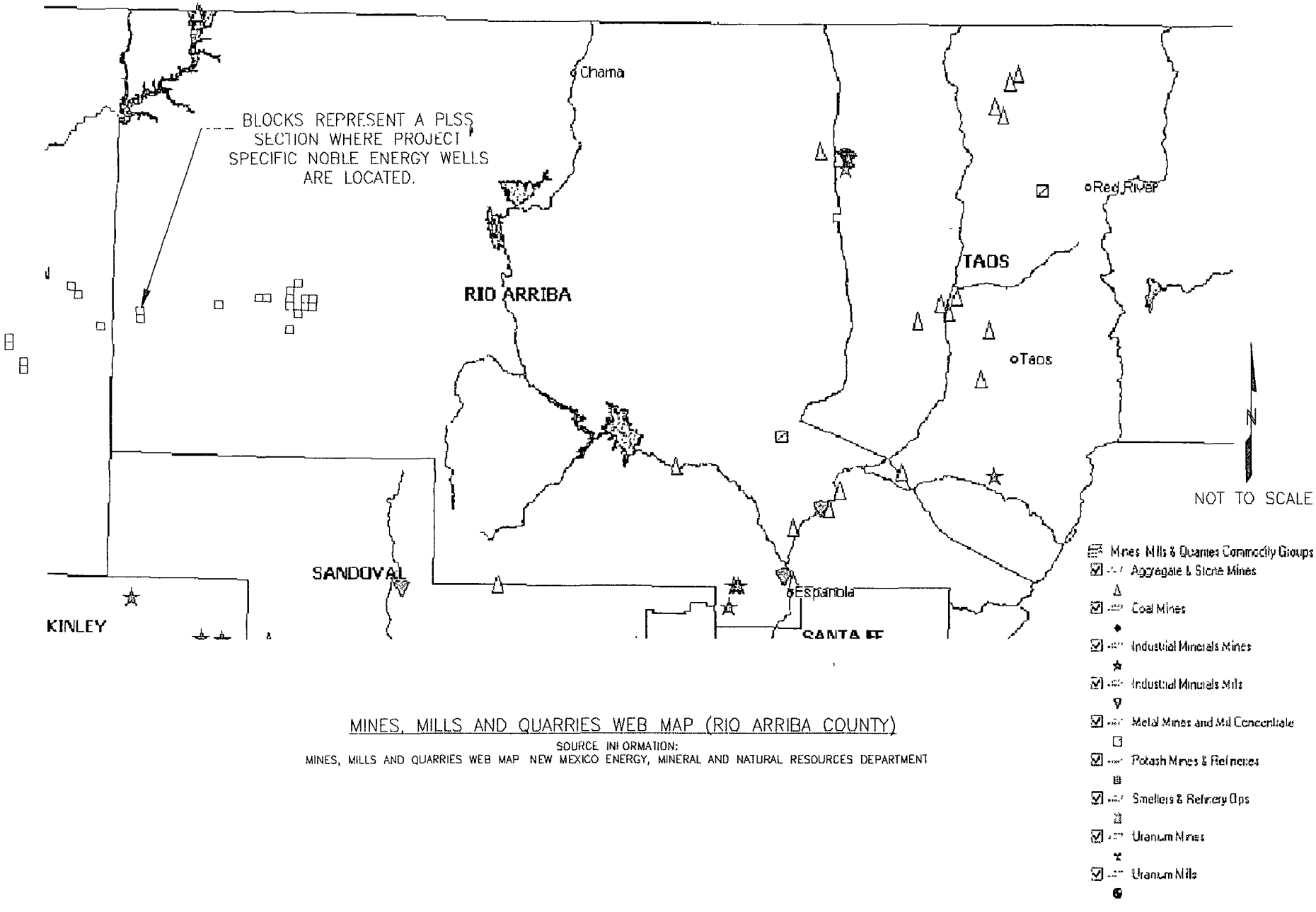
New Mexico Office of the State Engineer
Wells with Well Log Information

No wells found.

PLSS Search:

Section(s): 6 **Township:** 26N **Range:** 03W

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data



MINES, MILLS AND QUARRIES WEB MAP (RIO ARRIBA COUNTY)

SOURCE INFORMATION:
MINES, MILLS AND QUARRIES WEB MAP NEW MEXICO ENERGY, MINERAL AND NATURAL RESOURCES DEPARTMENT

Noble Energy, Inc.
Below-grade Tank
Hydrogeologic Report
(Item 11)
San Juan Basin Locations

The below-grade tank described in this application is located within the planning area of the Farmington Field Office of the Bureau of Land Management. This office prepared a Resource Management Plan and Environmental Impact Statement in March 2003 (USDI 2003). Geology of the region was analyzed in this document. A summary of this section (Geology and Minerals pages 3-4 -3-9 in Farmington Proposed Resource Management Plan and Final Environmental Impact Statement 2003) is included below as relevant to the below-grade tank for which a C-144 form is being submitted. Additional sources of information for this resource are listed in the original text

The San Juan Basin, an asymmetrical syncline roughly 200 miles long and 130 miles wide (including the portion that extends north into Colorado), is the dominant geological feature of northwestern New Mexico. The San Juan Basin reached its current structural arrangement upon completion of downwarping of Cretaceous-aged rocks at the end of the Laramide uplift. Later, deeply buried organic matter was heated and gas and oil were formed in stratigraphic traps in the basin Epicontinental sea deposition that occurred between periods of major uplift created the Cambrian to Quaternary sedimentary rocks that are found over Precambrian rocks. Depositional environments for rock units included deep marine, shoreline, continental, and fluvial. Wind-blown sand also contributed to the depositional environment in the Triassic-Jurassic interval Tertiary sediments arrived in the San Juan Basin when the San Juan Mountains and southern Rocky Mountains began to erode and these sediments were transported and deposited in the basin (in the Tertiary period).

Rocks of the San Juan Basin include predominately shales and sandstones that range in age from Cambrian to Quaternary Coals, carbonates, and igneous rocks are also found in the basin to a lesser degree. Together, the sedimentary rocks are more than 14,000 feet thick at the New Mexico/Colorado state line. Six thousand feet of Cretaceous sandstones, siltstones, shales, and coals form the top layers in the basin. The hydrocarbon reservoirs in the basin are all within these Cretaceous layers where plants and animals decomposed. These include the Fruitland Formation, Pictured Cliffs Sandstone, Mesa Verde Group, and Dakota Sandstone. Shales and sandstones from the Permian through the Pennsylvanian periods (1,700 – 2,900 feet thick) are found below these layers The oldest layer of rocks, the Precambrian basement rocks, are located more than 7,500 feet below sea level in the basin's deepest part.

Understanding the geology of the San Juan Basin sets the stage for understanding its hydrology. As with geology, hydrology of the basin was researched and described in the Farmington Proposed RMP and Final EIS (USDI 2003). The following is a summary of this report as pertains to the below-grade tank that is being permitted through the Oil Conservation District.

Aquifers are found in the sandstones under the San Juan Basin as well as within unconsolidated sands and gravels. Water quality in these aquifers ranges from fair to poor (varying degrees of salinity) The largest aquifer under the San Juan Basin is the Uinta-Animas Aquifer. This aquifer is made up of the San Jose Formation, the Animas Formation, the Nacimiento Formation and the Ojo Sandstone. This aquifer reaches its maximum thickness at the northeast end of the basin at approximately 3,500 feet. The Uinta-Animas aquifer receives groundwater recharge from the higher altitude areas of the basin, which are located along its margins. Water is discharged from the aquifer toward the San Juan River and is discharged into streams, valley alluvium, and lost to vegetation evapotranspiration.

The Mesaverde Aquifer is also present in the San Juan Basin. Its water-yielding components are within the Upper Cretaceous Mesaverde Group as well as in some Tertiary and other Upper Cretaceous formations The Mesaverde aquifer reaches its maximum thickness at the southern end of the basin at approximately 4,500 feet. It receives recharge from areas of higher elevation that receive more precipitation. Water is discharged from the aquifer along streams and rivers including the San Juan River and the Chaco River.

Groundwater is also present in unconsolidated sand and gravel of the Rio Grande aquifer system. Water enters this aquifer through runoff from mountainous areas surrounding the basin. Most of this water is lost through evaporation before it can reach the aquifer. The quality of this water is affected by the quality of the runoff that reaches it.

From: Farmington Proposed Resource Management Plan and Final Environmental Impact Statement. March 2003 US Department of Interior, Bureau of Land Management, Farmington Field Office, Farmington, NM (BLM-NM-PL-03-014-1610).

Noble Energy, Inc.

Below-grade Tank Design and Construction General Plan

San Juan Basin Locations

This general plan was written in accordance with New Mexico Administrative Code 19.15.17 to describe Noble Energy's standard design and construction of below-grade tanks in the San Juan Basin. Any tanks that do not conform to this plan will be described in separate, specific plans submitted to the Oil Conservation Division for those tanks.

All below-grade tanks will be designed and constructed to contain liquids and solids, to prevent contamination of fresh water, and to protect public health and the environment (19.15 17.11 A). The location of these tanks will be indicated by the existing well site sign in accordance with NMAC 19.15.16.8. Noble will ensure the tank is fenced in accordance with 19.15.17.11 D to prevent unauthorized access. Fences will be designed and maintained to keep livestock and wildlife out of the tank area. If the tank is located within 1,000 feet of a permanent residence, school, hospital, institution, or church, a six-foot (minimum height) chain link security fence with at least two strands of barbed wire along the top will be used instead. Migratory birds and other wildlife will be protected from entering the tank from the top by netting, screening, or other covering that prevents access into the tank (19.15.17.11 E).

All tanks will be constructed from materials resistant to that tank's contents as well as to sunlight damage (19.15.17 11 I). The foundation of the tank will be level and free from objects that could crack or dent the tank liner or bottom. All tanks will be constructed so that overflow is prevented and surface water run-on is not collected. These tanks do not have double walls. The side walls are open for visual inspection for leaks. The tanks will be enclosed within a secondary containment structure sized to accommodate all possible overflow in the event the tank fills before it can be pumped (i.e. resulting from an unusual rain event). This secondary containment structure will be surrounded on the surface by a berm to prevent surface water flow into the tank or containment structure. Tanks will be pumped of produced water at regular intervals to prevent overflow.

Noble Energy, Inc.
Below-grade Tank Maintenance and Operations General Plan
(Item 11)
San Juan Basin Locations

This general plan was written in accordance with New Mexico Administrative Code 19.15.17.12 to describe Noble Energy's standard maintenance and operations for below-grade tanks in the San Juan Basin. Any tanks that do not conform to this plan will be described in separate, specific plans submitted to the Oil Conservation Division for those tanks.

All tanks will be maintained and operated such that:

- liquids and solids are contained in the tank
- the integrity of the liner is maintained
- the liner system and/or secondary containment system is maintained
- contamination of fresh water is prevented
- public health and the environment are protected

Noble will not discharge or store any hazardous waste in the below-grade tank.

Noble will inspect the below-grade tank at least monthly and will maintain a written record of each inspection for five years. In the event of a leak, or if there is any penetration of the tank below the liquid's surface, Noble will remove all liquid above the damage point (leak) within 48 hours. Noble will notify the appropriate division office within 48 hours of the discovery. The damage will be repaired or the entire tank will be replaced.

Noble will not allow a tank to overflow or allow surface water run-on to enter the tank. Noble will operate this tank in order to prevent the collection of surface water run-on The tank will be operated so that adequate freeboard is maintained to avoid overtopping the tank.

Noble will remove any visible or measurable layer of oil from the fluid surface of a below-grade tank.

Noble Energy, Inc
Below-grade Tank Closure General Plan
(Item 11)
San Juan Basin Locations

This general plan was written in accordance with New Mexico Administrative Code 19 15 17.13 to describe Noble Energy's standard closure of below-grade tanks in the San Juan Basin Any tanks that do not conform to this plan will be described in separate, specific plans submitted to the Oil Conservation Division for those tanks

Noble will close below-grade tanks according to the requirements of NMAC 19 15 17 13 A, unless otherwise required by the division due to imminent danger to fresh water, public health, or the environment Noble will close existing below-grade tanks that do not meet the requirements of Paragraphs (1) through (4) of Subsection I of NMAC 19.15.17 11 or are not included in Paragraph (5) of Subsection I of 19 15 17 11 within five years of June 16, 2008, unless they are retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19 15.17.11 Noble will close permitted below-grade tanks within 60 days of cessation of the below-grade tank's operation or as required by the transitional provisions of Subsection B of 19 15 17.17 in accordance with a closure plan that the appropriate division office approves.

Noble will use division-approved methods to close below-grade tanks (Subsection E 19 15 17.13) Noble will remove liquids and sludge from a below-grade tank prior to implementing a closure method and will dispose of the liquids and sludge in a division-approved facility. Noble will remove the tank and either dispose of it in a division-approved facility, recycle it, reuse it, or reclaim it in a manner that the appropriate division office approves Any associated on-site equipment will be removed unless required for another purpose on site

Noble will test the soils under the tank to determine whether or not a release has occurred Noble will collect at a minimum

- a five-point, composite sample
- individual grab samples from any area that is wet, discolored, or showing other evidence of release

Noble will have samples analyzed for BTEX, TPH, and chlorides to demonstrate that

- the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method as approved by the division, does not exceed 0.2 mg/kg
- total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method approved by the division, does not exceed 50 mg/kg
- the TPH concentration, as determined by EPA method 418 1 or other EPA method approved by the division, does not exceed 100 mg/kg
- the chloride concentration, as determined by EPA method 300 1 or other division-approved EPA method, does not exceed 250 mg/kg, or the background concentration, whichever is greater

Noble will notify the division of testing results on form C-144. Noble will perform additional testing as required by the division upon their review of the initial results

If Noble or the division determines that a release has occurred, Noble will comply with NMAC 19.15.29 and 19 15 30 as appropriate

If the sampling indicates that no release has occurred or that any release did not cause the samples to exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17 13, Noble will:

- backfill the excavation with compacted, non-waste containing, earthen material
- construct a division-prescribed soil cover
- recontour and re-vegetate the site

Noble will follow Subsections G, H, and I of 19.15.17.13 for soil cover, recontouring, and re-vegetation of the site. Soil cover will consist of the background thickness of topsoil or 1 foot of suitable material to establish vegetation, whichever is greater. The soil required for backfilling the excavation will consist of a minimum of 4 feet of compacted, non-waste containing, earthen material Recontouring of the land will return the land to a safe and stable condition that blends with the surrounding undisturbed area by restoring the near-original contour of the site. Noble will grade the soil cover to the site's existing grade and will prevent ponding of water and erosion of the cover material Noble will seed or plant the site (including any associated areas such as access roads that are no longer needed) during the first growing season following tank closure. Noble will drill seed on the contour whenever practical or follow another division-approved seeding method Noble will achieve 70% of native perennial vegetative cover consisting of at least three native plant species, at least one grass, and without establishment of noxious weed species This cover will be maintained without irrigation for two successive growing seasons Noble will repeat seeding and/or planting until this cover goal has been met at which point Noble will notify the division that re-vegetation has been successful

Notice of tank closure will be according to 19.15.17.13J. Noble will notify the surface owner by certified mail, return receipt requested that the tank is to be closed The appropriate division office will be notified at least 72 hours (but no more than one week) prior to tank closure. Noble will communicate the following details to the division in this closure notice.

- operator's name (Noble Energy Inc)
- location unit letter
- location section, township, and range

In the case of closure of a tank associated with a well, Noble will include

- well name
- well number
- API number

Within 60 days of closure completion, Noble will submit to the division a certified closure report on form C-144 as specified in 19.15.17.13K.

Item # 15: Disposal Facility name and permit number (page 3)

The following are used by Noble Energy Inc. for waste water disposal.

Company: AGUA MAS

Phone: 505-632-3640

Permit #: IPI-278
Location: PRETTY LADY 30-11-34 #1

API: 30-045-30922

Company: BASIN DISPOSAL

Phone: 505-334-3013

Permit #: NM001-0005
Location: Disposal # 001

API: 30-045-26862

Company: T-N-T DISPOSAL

Phone: 505-320-2130
505-320-2737

Permit #: NM001-0008