

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.

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

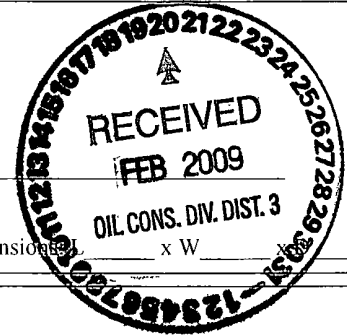
8501  
Type of action: ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method  
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method  
☐ Modification to an existing permit  
☐ Closure plan only submitted for an existing permitted or 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: Huntington Energy, L.L.C. OGRID #: 208706  
Address: 908 N W. 71<sup>st</sup> St., Oklahoma City, OK 73116  
Facility or well name: Canyon Largo Unit #130R  
API Number: 30-039-23426 OCD Permit Number: \_\_\_\_\_  
U/L or Qtr/Qtr C Section 9 Township 24N Range 6W County: Rio Arriba  
Center of Proposed Design. Latitude 36.33168 Longitude -107.47649 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 \_\_\_\_\_ x W \_\_\_\_\_



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 \_\_\_\_\_

4.  
☒ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC  
Volume: 100 bbl Type of fluid: Produced Water  
Tank Construction material: Metal  
☐ 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 60 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.

☐ 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 4' hogwire fence with a single strand of barbed wire on top.       

☒ Screen ☐ Netting ☐ Other \_\_\_\_\_

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

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

☒ Signed in compliance with 19.15.3.103 NMAC

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

*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.*

☐ Yes ☒ No☐ Yes ☒ No

☐ Yes ☒ No  
☐ NA

☐ Yes ☐ No  
☒ NA

☐ Yes ☒ No☐ Yes ☒ No☐ Yes ☒ No☐ Yes ☒ No☐ Yes ☒ No☐ 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 NMAC
- ☐ 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<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

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 identify 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): Catherine Smith Title: Regulatory

Signature:

Catherine Smith

Date: 2/16/2009

e-mail address: csmith@huntingtonenergy.com Telephone: 405-840-9876

20.

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

OCD Representative Signature: Jonathan D. Kelly Approval Date: 12/19/2011

Title:

Compliance Officer

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 identify 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 unpacted 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:

New Mexico Office of the State Engineer  
POD Reports and DownloadsTownship  Range  Sections NAD27 X  Y  Zone  Search Radius County  Basin  Number  Suffix Owner Name (First)  (Last)  ☐ Non-Domestic ☐ Domestic ☒ All☐ POD / Surface Data Report ☐ Avg. Depth to Water Report ☐ Water Column Report  

POD / SURFACE DATA REPORT 02/17/2009

DB File Nbr	(acre ft per annum)	Use	Diversion	Owner
SJ 00681 3	STK	4.839	HOMER C. BERRY	

POD Number
SJ 00681 3

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are biggest to smallest)

Source	Tws	Rng	Sec	q	q	q	Zone	X	Y	UTM_Zone	Easting
	24N	06W	09	1	1	1				13	277280

Record Count: 1

**New Mexico Office of the State Engineer**  
**POD Reports and Downloads**

---

Township:  Range:  Sections: NAD27 X:  Y:  Zone:  Search Radius: County:  Basin:  Number:  Suffix: Owner Name: (First)  (Last)  ☐ Non-Domestic ☐ Domestic ☒ All

---

AVERAGE DEPTH OF WATER REPORT 02/17/2009

Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	(Depth Water in Feet)		
								Min	Max	Avg

No Records found, try again

*New Mexico Office of the State Engineer*  
**POD Reports and Downloads**

Township:  Range:  Sections: NAD27 X:  Y:  Zone:  Search Radius: County:  Basin:  Number:  Suffix: Owner Name: (First)  (Last)  ☐ Non-Domestic ☐ Domestic ☒ All

WATER COLUMN REPORT 02/17/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water (in feet) Column
------------	-----	-----	-----	---	---	---	------	---	---	---------------	----------------	---------------------------

No Records found, try again

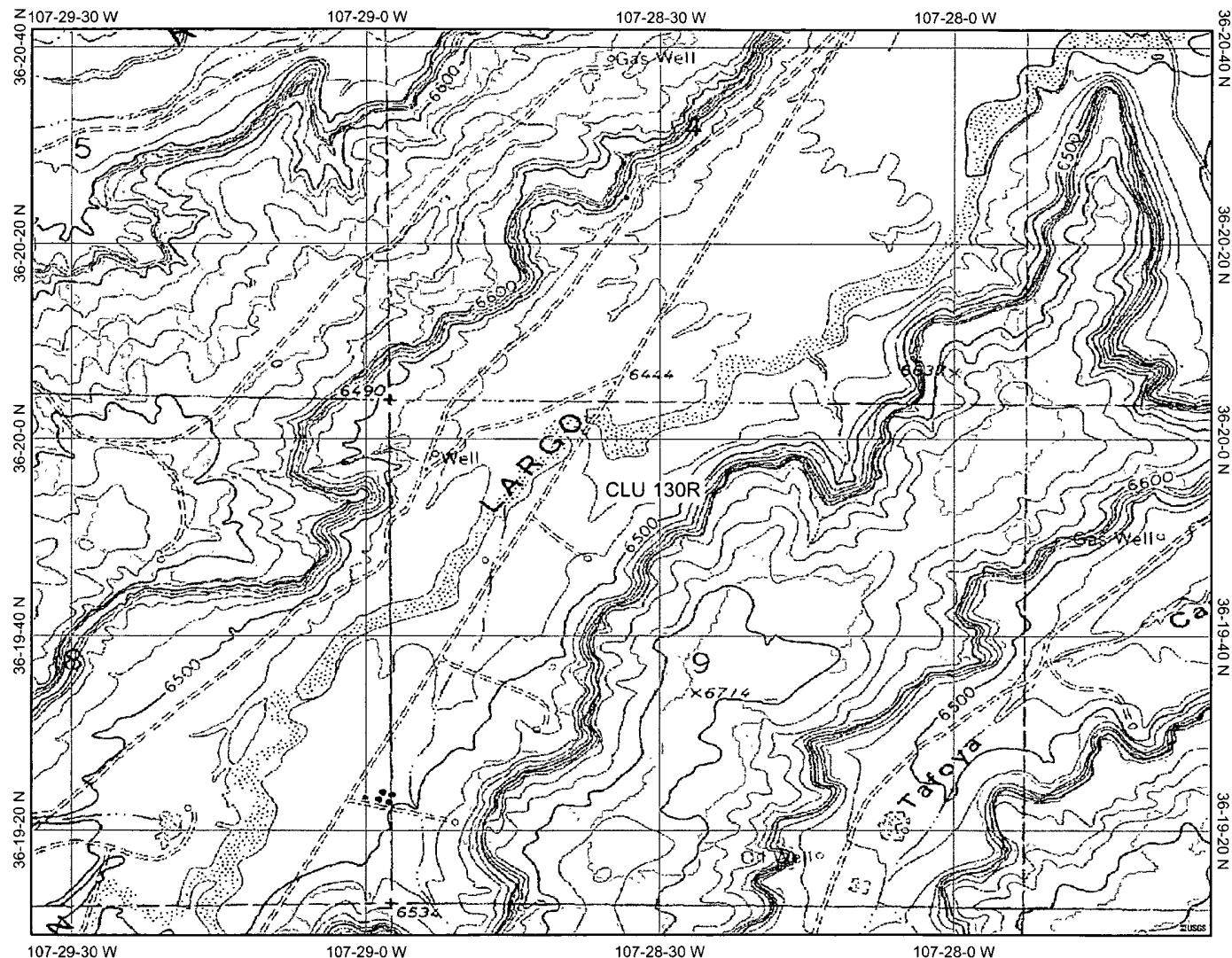


# CLU 130R USGS TOPO MAP



## Legend

☐ North America



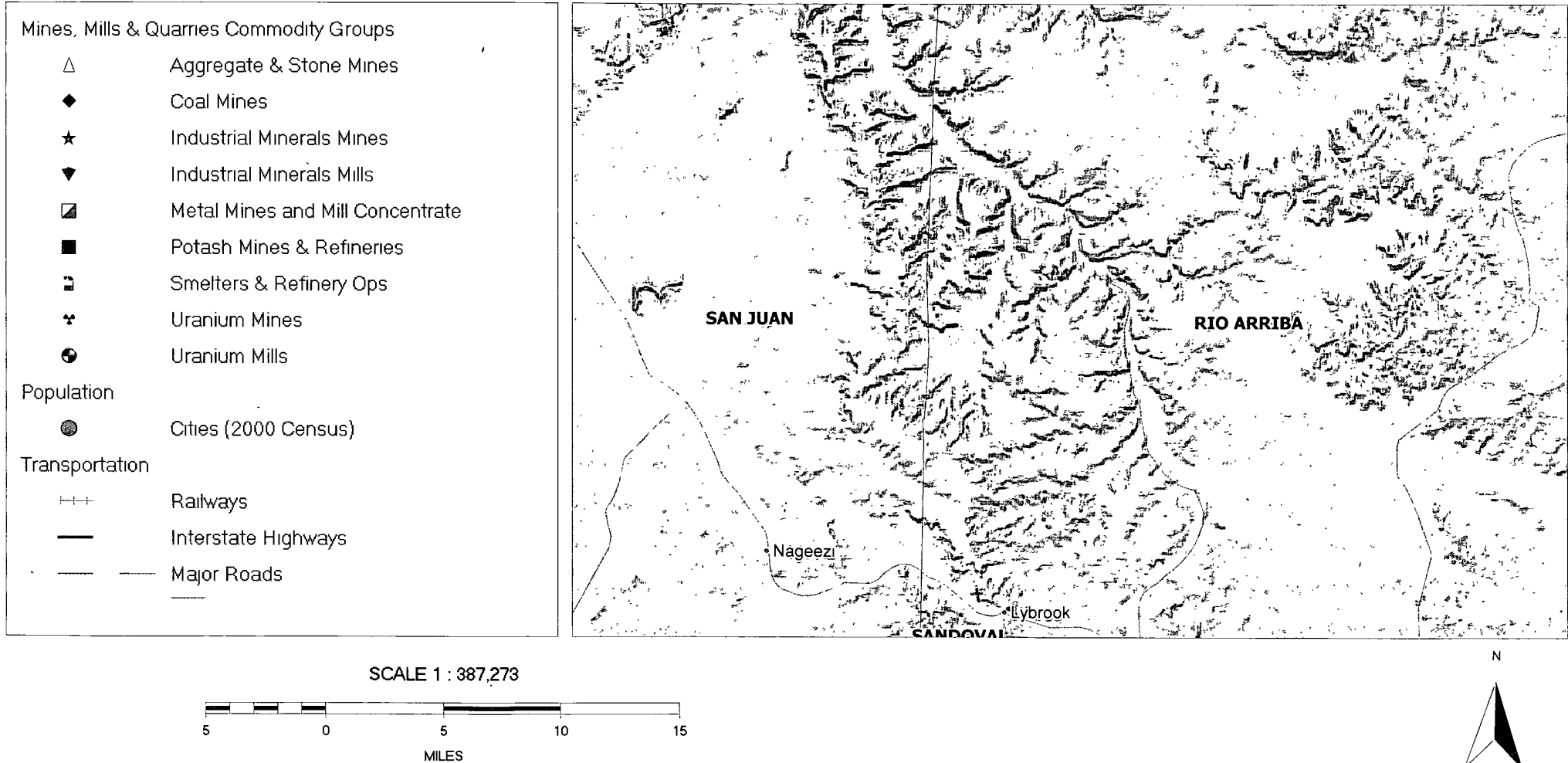
Map center: 36° 19' 56" N, 107° 28' 34" W



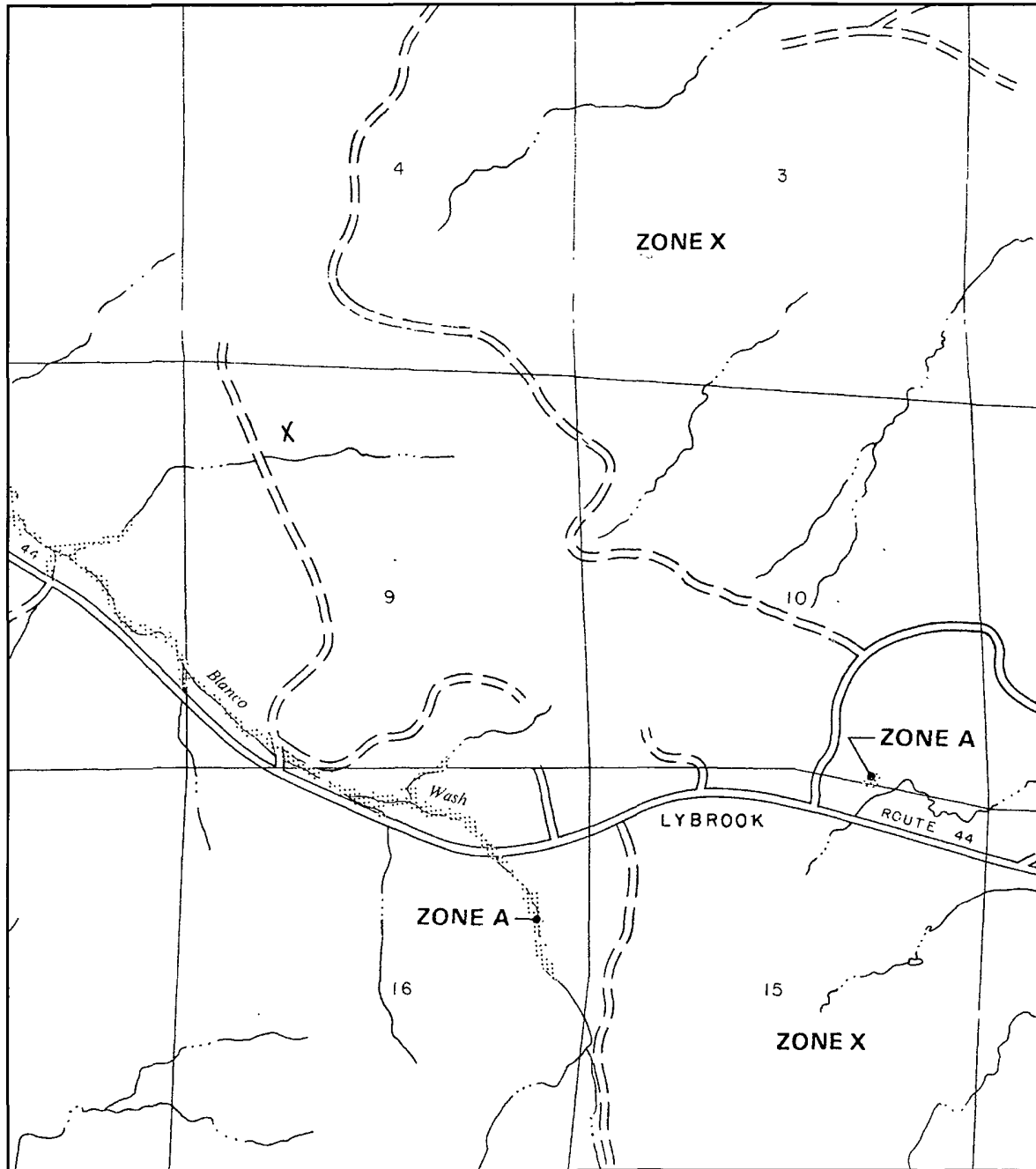
Scale: 1:20,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

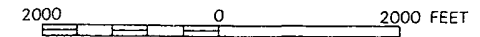
# Canyon Largo Unit 130R Mines, Mills and Quarries Web Map



CANYON LARGO UNIT #130R



APPROXIMATE SCALE

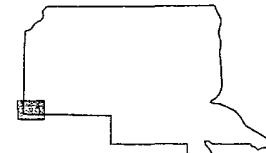


NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP

RIO ARriba COUNTY,  
NEW MEXICO  
UNINCORPORATED AREAS

PANEL 900 OF 1325  
(SEE MAP INDEX FOR PANELS NOT PRINTED)



PANEL LOCATION

COMMUNITY-PANEL NUMBER

350049 0900 8

EFFECTIVE DATE:

JANUARY 5, 1989



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## Hydrogeological Report for Canyon Largo Unit #130R

### Geological Context:

Tertiary sandstones and Quaternary alluvial deposits are present at the surface over much of the basin interior. These serve as the primary drinking water aquifers in the basin (Figure A1-2), and produced 55 million gallons per day in 1985 (Wilson, 1986). Cretaceous sandstones are an important source of water on the basin's periphery (Choate et al., 1993). The Paleocene Ojo Alamo Sandstone yields as much as 30 gallons per minute of potable water (Hale et al., 1965) and is mentioned as one of the primary drinking water aquifers of the region (Brown and Stone, 1979). Cleats and larger fractures in the Fruitland coals and the presence of interbedded permeable sandstones make the Fruitland Formation an aquifer and source of drinking water along the northern margin of the basin where TDS in the groundwater are less than 10,000. The Fruitland and upper Pictured Cliffs Sandstone aquifer is underlain and confined by the low-permeability main Pictured Cliffs Formation and is overlain and partly confined by the Kirtland shale, which is up to 1,000 feet thick in the central basin.

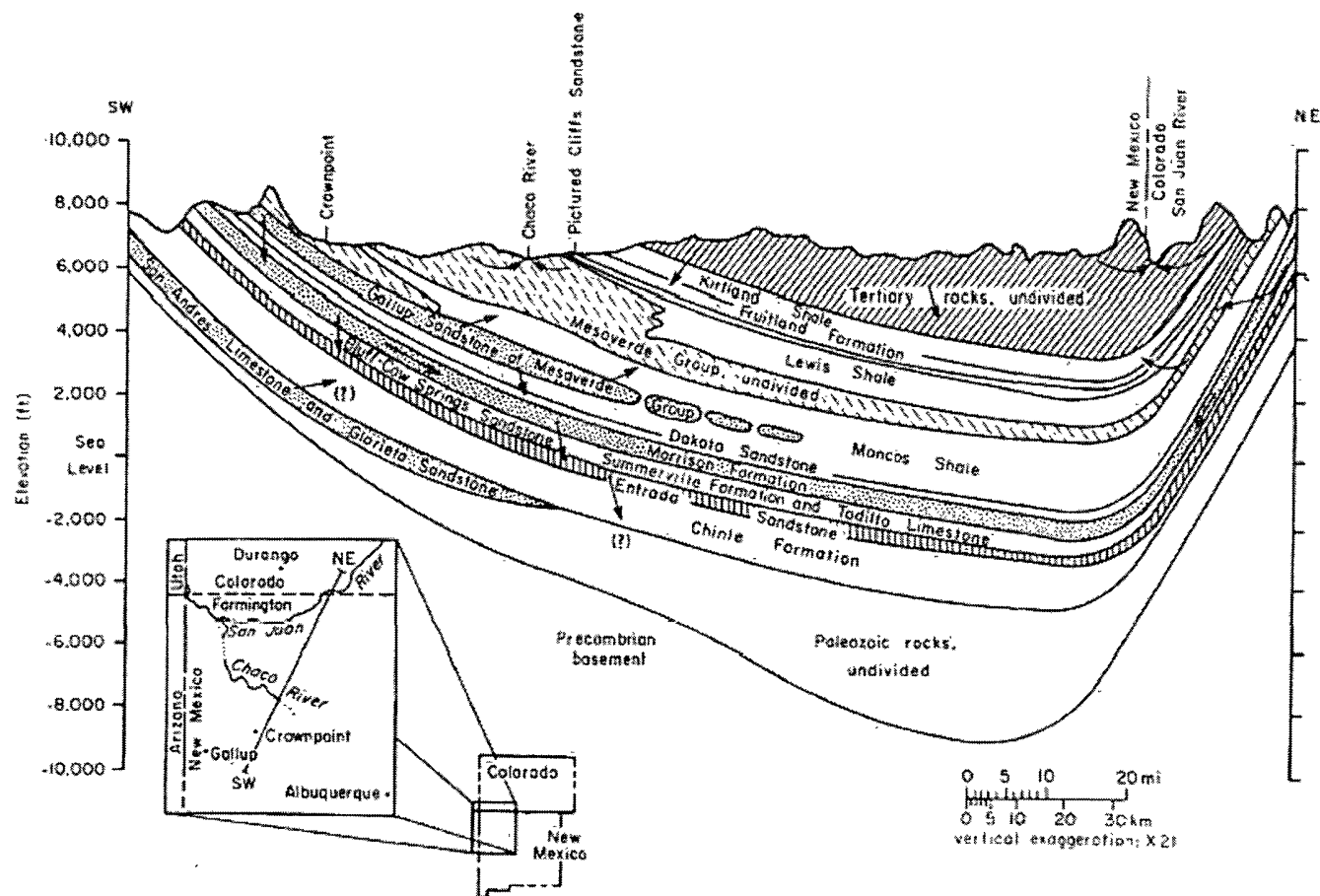
In the northern part of the basin, the Fruitland Formation and the underlying upper Pictured Cliffs Sandstone can be considered a single hydrogeologic unit on a regional scale because they exhibit the same hydraulic head and water quality characteristics and are the source of both the water and gas in the Pictured Cliffs sand tongues (Ayers and Zellers, 1994; Ayers et al., 1994). At the local scale, however, the two formations appear to exhibit poor hydraulic continuity, as evidenced by areas of over-pressuring (greater than 0.5 pounds per square inch per foot), abrupt changes in potentiometric surface, and upward flow (Kaiser et al., 1994). Discrete flow within individual units here is likely due to pinch out of thick, laterally extensive coal seams and truncation and offset of the beds by faults.

Mostly, the Fruitland system produces water containing less than 10,000 mg/L TDS, the water quality criteria for a USDW. Groundwater is usually freshest at the outcrop in recharge areas. The water dissolves salts and mixes with formation water as it flows, and the groundwater becomes increasingly saline as distance from the recharge source increases. The presence of low-salinity water at given locations in the San Juan Basin usually marks close proximity to the recharge source or the most permeable flow paths and implies a dynamic, active aquifer system (Kaiser et al., 1994). Figure A1-12 shows the chloride concentration of groundwater in the Fruitland Formation, and indicates that water nearest the northern recharge areas has a low dissolved solids and chloride content. Kaiser et al. (1994) reported that wells produced water containing from 180 to 3,015 mg/L TDS. This was found to be the case over large portions of the region, especially within freshwater plumes resulting from areas of high permeability or fracture trends (Kaiser and Swartz, 1990; Oldaker, 1991).

Kaiser et al. (1994) conducted a water-quality sampling program in the San Juan Basin. Analyses taken from Fruitland coal wells show that the majority of wells (16 of 27 wells) produce water containing less than 10,000 mg/L TDS, (Figures A1-13a and A1-13b), although some nearby wells thought to be in less permeable zones produce water with higher TDS concentrations up to 23,000 mg/L (Kaiser et al., 1994). The boundary between waters with more and less than 10,000 TDS has not been published. Another group of wells throughout the same area was also sampled, but these wells were completed (constructed) in the adjacent and underlying Pictured Cliffs Sandstone bodies, which are in hydrologic communication with the Fruitland system (Kaiser et al., 1994).

Although from the above information it would seem that the Fruitland would be classified a USDW, the following additional information about disposal of brackish water produced along with the methane would seem to indicate that most of the water in the Fruitland would not meet the TDS

criteria for USDW. Coalbed methane wells in the San Juan Basin produced from 0 to over 10,500 gallons of water per day, which contain from less than 300 mg/L TDS to over 25,000 mg/L (Kaiser et al., 1994; Kaiser and Ayers, 1994). Brackish water of various TDS concentrations and brine are produced in the basin.



Generalized Hydrogeologic Cross-Section of the San Juan Basin (Stone et al., 1983)

1/14/01 10:17:52.22 am

Figure A1-2

## REFERENCES

- Ayers, W.B. and Zellers. 1994. Coalbed methane in the Fruitland Formation, Navajo Lake area – geologic controls on occurrence and producibility. New Mexico Bureau of Mines and Minerals Bulletin 146: Coalbed methane in the upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado, pp. 63-86.
- Brown, D.R. and Stone, W.J. 1979. Hydrogeology of the Aztec quadrangle, San Juan county, New Mexico. New Mexico Bureau of Mines and Mineral Resources (Sheet 1).
- Choate, R., Lent, T., and Rightmire, C.T. 1993. Upper Cretaceous geology, coal, and the potential for methane recovery from coalbeds in the San Juan Basin – Colorado and New Mexico. AAPG Studies in Geology, 38:185-222.
- Hale, W.E., Reiland, L.J., and Beverage, J.P. 1965. Characteristics of the water supply in New Mexico. New Mexico State Engineer, Technical Report 31.
- Kaiser, W.R. and Swartz, T.E. 1988. Hydrology of the Fruitland Formation and coalbed methane producibility, *In* Geologic evaluation of critical production parameters for coalbed methane resources, Part 1: San Juan Basin. Annual Report to the Gas Research Institute, GRI-88/0332.1, pp. 61-81.
- Kaiser, W.R. and Swartz, T.E. 1990. Hydrodynamics of the Fruitland Formation. *In* Geologic Evaluation of critical production parameters for coalbed methane resources, Part 1: San Juan Basin. Annual Report for 1990, Gas Research Institute, GRI-90/0014.1, pp. 99-126.
- Kaiser, W.R. and Ayers, W.B. Jr. 1994. Coalbed methane production, Fruitland Formation, San Juan Basin: geologic and hydrologic controls. New Mexico Bureau of Mines and Minerals Bulletin 146: Coalbed methane in the upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado, pp. 187-207.
- Kaiser, W.R., Swartz, T.E., and Hawkins, G.J. 1994. Hydrologic framework of the Fruitland Formation, San Juan Basin. New Mexico Bureau of Mines and Minerals Bulletin 146: Coalbed methane in the upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado, pp. 133-164.
- Wilson, B. 1986. Water Use in New Mexico. New Mexico State Engineer Technical Report 46, 84 p.

## Siting Criteria Compliance Demonstration & Hydro Geologic Analysis

The Canyon Largo Unit #130R is not located in an unstable area. The location is not over a mine or located on the side of a hill. The pit material will not be located within 300' of any flowing water source or 200' from any other water source. It is not within a 100 yr floodplain area. There are no iWATERS data to indicate groundwater depth. Therefore, the well location and formation will be a stable area for this location.



All distances must be from the outer boundaries of the Section.

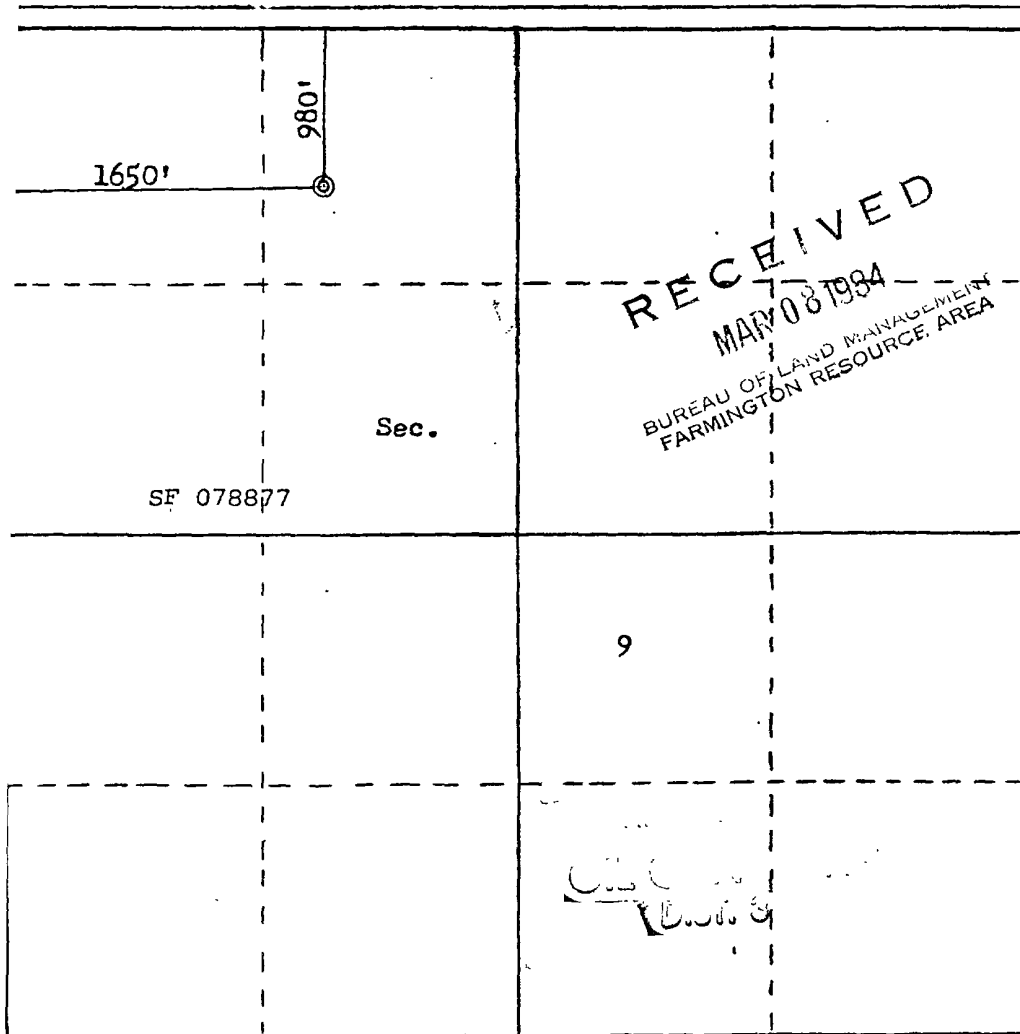
Operator <b>MERRION OIL &amp; GAS CORPORATION</b>			Lease <b>CANYON LARGO UNIT</b>		Well No. <b>130R</b>
Init Letter <b>C</b>	Section <b>9</b>	Township <b>24N</b>	Range <b>6W</b>	County <b>Rio Arriba</b>	
Actual Footage Location of Well: <b>980</b> feet from the <b>North</b> line and <b>1650</b> feet from the <b>West</b> line					
Ground Level Elev: <b>6454</b>	Producing Formation <b>Gallup</b>		Pool <b>Devils Fork Gallup</b>		Dedicated Acreage: <b>160</b> Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation \_\_\_\_\_

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) \_\_\_\_\_

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



Scale: 1"=1000'

CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

*Steve S. Dunn*

Name  
Steve S. Dunn

Position  
Operations Manager

Company  
Merrion Oil & Gas Corporation

Date  
3/5/84

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 knowledge and belief.

Date Surveyed  
February 14, 1984

Registered Professional Engineer and Land Surveyor

*Fred B. Kerr Jr.*  
Fred B. Kerr Jr.

Certificate No. 3950

FENCE  
SWIRE W/ 1" PIPE ALONG TOP  
TO EACH POST

HUNTINGTON ENERGY  
EXISTING WELL

PRIOR 6/16/2008

DRAIN FROM SEPARATOR

MANUAL  
SHUTOFF

AUTO. SHUTOFF CONTROL

DRAIN LINE FROM TANKS

TRUCK LOAD OUT  
SLOPE TO DRAIN

3"

BERM

BERM  
RUN ON  
CONTROL

2'6"

5'

ORIGINAL  
GRADE

60 MIL  
LINER

54"

6"

LOAD LINE STINGER

60 MIL HDPE LINER

TANK CLEARANCE  
6"

14' DIA

TANK SIZE: 100 BBL  
12' x 5' METAL  
CONSTRUCTION.

**Huntington Energy, L.L.C.**  
**Below Grade Tank Design and Construction**  
**San Juan Basin**

In accordance with NMAC 19.15.17.11.I, the following information describes the design and construction of below grade tanks on Huntington Energy, L.L.C. (HE) locations. This is HE's standard procedure for all below grade tanks (BGT). A separate plan will be submitted for any BGT which does not conform to this plan.

General Plan:

1. HE will design and construct a BGT to contain liquids and to prevent contamination of fresh water and protect public health and environment.
2. HE will use the general location sign posted on location. If no general sign is posted, a separate sign at the location of the BGT will be provided.
3. HE shall construct fencing around the BGT using 4 foot hog wire fencing topped with two strands of barbed wire, or with a pipe top rail. A six foot chain link fence topped with three strands of barbed wire will be used if the well location is within 1000 feet of permanent residence, school, hospital, institution or church.
4. HE will construct an expanded metal covering on the top of the BGT.
5. HE shall ensure that a below-grade tank is constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight.
6. The HE below-grade tank system shall have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom.
7. HE shall construct a below-grade tank to prevent overflow and the collection of surface water run-on.
8. HE will construct and use a below-grade tank that does not have double walls. The below-grade tank's side walls will be open for visual inspection for leaks and sloped to prevent cave-ins, the below-grade tank's bottom is elevated a minimum of six inches above the underlying ground surface using 6" I-beams and the below-grade tank is underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected.
9. HE shall equip below-grade tanks designed in this manner with a properly operating automatic high-level shut-off control device and manual controls to prevent overflows.
10. The geomembrane liner shall consist of 30-mil flexible PVC or 60-mil HDPE liner, or an equivalent liner material that the appropriate division district office approves. The geomembrane liner shall have a hydraulic conductivity no greater than  $1 \times 10^{-9}$  cm/sec. The geomembrane liner shall be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner

**Huntington Energy, L.L.C.**  
**Below Grade Tank Operational Plan**  
**San Juan Basin**

In accordance with Rule 19.15.17.12, the following information describes the operation and maintenance of Below Grade Tanks (BGT) on Huntington Energy, L.L.C. (HE) locations. This is HE's standard procedure for all Below Grade Tanks.

General Plan:

1. HE will operate and maintain a BGT to contain liquids and solids and prevent contamination of fresh water and protect public health and environment.
2. HE shall not allow a below-grade tank to overflow or allow surface water run-on to enter the below-grade tank.
3. HE shall continuously remove any visible or measurable layer of oil from the fluid surface of a below-grade tank in an effort to prevent significant accumulation of oil over time.
4. HE shall inspect the below-grade tank at least monthly and maintain a written record of each inspection for five years.
5. If any penetration of the BGT occurs, then HE shall remove all liquid above the damage or leak line, repair damage, or replace the BGT.
6. HE shall maintain adequate freeboard to prevent overtopping of the below-grade tank.

**Huntington Energy, L.L.C.**  
**Below Grade Tank Closure Plan**  
**San Juan Basin**

In accordance with Rule 19.15.17.13.E NMAC, the following information describes the closure requirements of Below Grade Tanks (BGTs) on Huntington Energy, L.L.C. (HE) locations.

General Requirements:

1. HE shall close a below-grade tank within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
2. HE shall close an existing below-grade tank that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.
3. HE shall close a permitted below-grade tank 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 NMAC in accordance with a closure plan that the appropriate division district office approves. The closure report will be filed on C-144.
4. HE shall remove liquids and sludge from a below-grade tank prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility.
5. HE shall remove the below-grade tank and dispose of it in a division-approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office approves.
6. If there is any on-site equipment associated with a below-grade tank, then HE shall remove the equipment, unless the equipment is required for some other purpose.
7. HE shall test the soils beneath the below-grade tank to determine whether a release has occurred. HE shall collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze 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 that the division approves, does not exceed 0.2mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 100 mg/kg; and the chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. HE shall notify the division of its results on form C-141.

8. If HE or the division determines that a release has occurred, then HE shall comply with 19.15.3.116 NMAC and 19.15.1.19 NMAC, as appropriate.
9. If contamination is confirmed by field sampling, HE will follow the Guidelines for Remediation of Leaks, Spills, and Releases, NMOCD August 1993, when remediating contaminants are identified.
10. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then HE shall backfill the excavation with compacted, non-waste containing, earthen material; construct a division-prescribed soil cover; recontour and re-vegetate the site.
11. Notice of Closure will be given to the Aztec Division office between 72 hours and one week of closure via email, or verbally. The notification of closure will include the following:
  - i. Operator's name
  - ii. Location by Unit Letter, Section, Township, and Range. Well name and API number.
12. All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of closure of the below-grade tank. Closure report will be filed on C-144 and incorporate the following:
  - Details on Capping and Covering, where applicable.
  - Inspection Reports
  - Sampling Results
13. Re-contouring of location will match fit, shape, line, form and texture of the surrounding. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
14. HE shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM or Forest Service stipulated seed mixes will be used on federal lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occur.
15. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater.

16. The surface owner shall be notified of HE's closing of the below-grade tank as per the approved closure plan using certified mail, return receipt requested.
17. Within 60 days of closure completion, HE will submit a Closure Report C-144 with all attachments to document all closure activities including sampling results.

Canyon Largo Unit #130R

Siting Criteria Compliance Demonstration & Hydro Geologic Analysis

The subject well is not located in an unstable area. Visual inspection has been performed location is not within 300' of flowing watercourse or 200' from any other water course or lake bed; not within 300' of any permanent residence, school, or institution; not within 500' of any private water well or spring. The topographic map confirms visual inspection of water course. FEMA Map confirms the location is not within a 100 year floodplain. The location is not over a mine and is not on the side of a hill, as indicated on the Mines, Mills and Quarries Map. iWaters search indicates the closest water is 7,660': POD# SJ00681-12, TD 435', no water report. The Canada Mesa Com #4 & 4E wells, Sec 10-24N-6W, have depth to groundwater less than 50'.





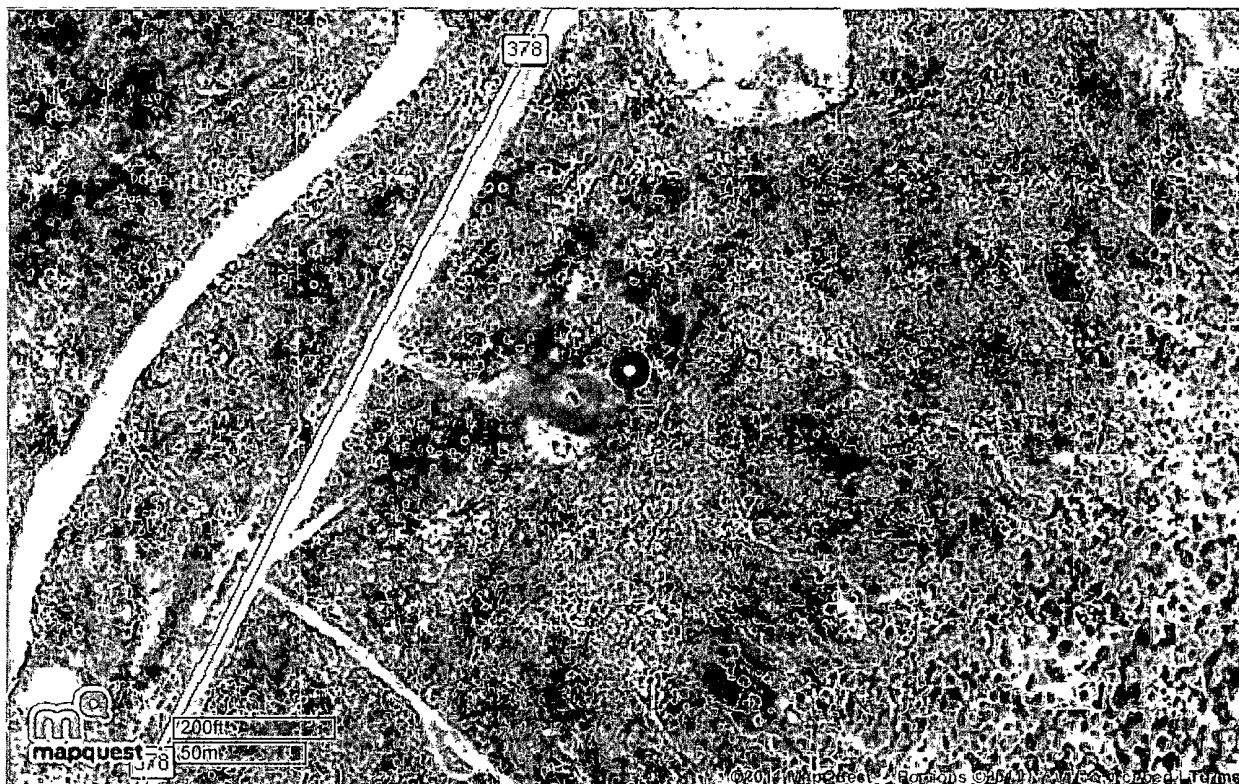


**Map of:**

Latitude: 36.33168 Longitude: -  
107.47649  
Dulce, NM 87528

**Notes**

Canyon Largo Unit #130R



©2011 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

# FIELD PIT SITE ASSESSMENT FORM

GENERAL	<p>Meter: <u>03908</u> Location: <u>CANADA MESA COM #4 CPD</u></p> <p>Operator #: _____ Operator Name: <u>MERRION OIL</u> P/L District: <u>BALLARD</u></p> <p>Coordinates: Letter: <u>A</u> Section <u>10</u> Township: <u>24</u> Range: <u>6</u></p> <p>Or Latitude _____ Longitude _____</p> <p>Pit Type: Dehydrator <input checked="" type="checkbox"/> Location Drip: _____ Line Drip: _____ Other: _____</p> <p>Site Assessment Date: <u>1-25-95</u> Area: <u>07</u> Run: <u>42</u></p>
SITE ASSESSMENT	<p>NMOCD Zone: _____ Land Type: BLM <input checked="" type="checkbox"/> (1)          (From NMOCD State <input type="checkbox"/> (2)          Maps) Inside <input checked="" type="checkbox"/> (1) Free <input type="checkbox"/> (3)          Outside <input type="checkbox"/> (2)</p> <p>Depth to Groundwater</p> <p>Less Than 50 Feet (20 points) <input checked="" type="checkbox"/> (1)</p> <p>50 Ft to 99 Ft (10 points) <input type="checkbox"/> (2)</p> <p>Greater Than 100 Ft (0 points) <input type="checkbox"/> (3)</p> <p>Wellhead Protection Area :</p> <p>Is it less than 1000 ft from wells, springs, or other sources of fresh water extraction? , or ; Is it less than 200 ft from a private domestic water source? <input type="checkbox"/> (1) YES (20 points) <input checked="" type="checkbox"/> (2) NO (0 points)</p> <p>Horizontal Distance to Surface Water Body</p> <p>Less Than 200 Ft (20 points) <input type="checkbox"/> (1)</p> <p>200 Ft to 1000 Ft (10 points) <input checked="" type="checkbox"/> (2)</p> <p>Greater Than 1000 Ft (0 points) <input type="checkbox"/> (3)</p> <p>Name of Surface Water Body <u>CANYON LARGO</u></p> <p>(Surface Water Body : Perennial Rivers, Major Wash, Streams, Creeks, Irrigation Canals, Ditches, Lakes, Ponds)</p> <p>Distance to Nearest Ephemeral Stream <input type="checkbox"/> (1) &lt; 100' (Navajo Pits Only)</p> <p><input type="checkbox"/> (2) &gt; 100'</p> <p>TOTAL HAZARD RANKING SCORE: <u>30</u> POINTS</p>
REMARKS	<p>Remarks : <u>REDLINE 5' TOPO SHOW LOCATION INSIDE V.Z. 3 PITS ON LOCATION.</u></p> <p><u>DEHYDRATOR PIT BELONGS TO EPNG. WILL CLOSE PIT. DEHY HAS NOT YET BEEN</u></p> <p><u>REMOVED.</u></p>

*Denny L. Fout*  
DEPUTY OIL & GAS INSPECTOR

SEP 11 0 1996

**RECEIVED**  
APR - 4 1996

OIL CON. DIV.  
BUTTE

Denny 10087

~~District I~~  
P.O. Box 1980, Hobbs, NM  
~~District II~~  
P.O. Drawer DD, Artesia, NM 88211  
~~District III~~  
100 Rio Brazos Rd., Artesia, NM 87410

State of New Mexico  
Energy, Minerals and Natural Resources Department

SUBMIT 1 COPY TO  
APPROPRIATE  
DISTRICT OFFICE  
AND 1 COPY TO  
SANTA FE OFFICE

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

*Denny & ...*  
DEPUTY OIL & GAS INSPECTOR

OCT 20 1995

PIT REMEDIATION AND CLOSURE REPORT

Operator: Merrion Oil & Gas Corporation

Telephone: (505) 327-9801

Address: P.O. Box 840, Farmington, NM 87499

Facility Or: Canada Mesa #4E Dakota  
Well Name

Location: Unit or Qtr/Qtr Sec F Sec 10 T 24N R 6W County Rio Arriba

Pit Type: Separator X Dehydrator    Other   

Land Type: BLM   , State   , Fee X, Other   

Pit Location: Pit dimensions: length 15', width 15', depth 3'  
Attach diagram)

Reference: wellhead X, other   

Footage from reference: 100'

Direction from reference: 45 Degrees    East North X  
of  
X West South   

Depth To Ground Water:  
(Vertical distance from  
contaminants to seasonal  
high water elevation of  
ground water)

Less than 50 feet	(20 points)	
50 feet to 99 feet	(10 points)	
Greater than 100 feet	(0 Points)	<u>20</u>

Wellhead Protection Area:  
(Less than 200 feet from a private  
domestic water source, or; less than  
1000 feet from all other water sources)

**RECEIVED**  
JUN 14 1994  
**OIL CON. DIV.**  
**DIST. 3**

Yes	(20 points)	<u>0</u>
No	(0 points)	<u>  </u>

Distance To Surface Water:  
(Horizontal distance to perennial  
lakes, ponds, rivers, streams, creeks,  
irrigation canals and ditches)

Less than 200 feet	(20 points)	
200 feet to 1000 feet	(10 points)	
Greater than 1000 feet	(0 points)	<u>0</u>

RANKING SCORE (TOTAL POINTS): 20