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.

1360

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: Koch Exploration Company, LLC OGRID #: 12807
Address: PO Box 489, Aztec, NM 87410
Facility or well name: Nordhaus 715
API Number: 30-045-28314 OCD Permit Number:
U/L or Qtr/Qtr L Section 12 Township 31N Range 9W County: San Juan
Center of Proposed Design: Latitude 36° 54.66' N Longitude 107° 44.244' W 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 _____

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SEP 2008
OIL CONS. DIV. DIST. 3

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: 95 bbl Type of fluid: primarily produced water with compressor skid precipitation and incidental lubricating oil
Tank Construction material: Steel open-top with expanded metal cover
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☒ Other Visible sidewalls, 6-inch lift, and electronic monitoring (see attachment Sec 3.7)
Liner type: Thickness ___mil ☐ HDPE ☐ PVC ☒ Other See Attachment Section 3.9 – Design and Construction Plan

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 4 foot hog wire with top rail-this design keeps out smaller livestock and wildlife that barbed wire would not

7.

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

☐ Screen ☐ Netting ☒ Other Expanded metal top

☐ 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): **Fencing** 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): John Clark Title: District Superintendent

Signature: John Clark Date: 9-11-08

e-mail address: clark23j@kochind.com Telephone: (505) 334-9111

20.

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

OCD Representative Signature: Bd Bell **Approval Date:** 10-29-09

Title: Envir Spec **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:

Attachment to Form C-144
Below-grade Tank Permit Application

Introduction

Koch Exploration Company, LLC (KEC) is submitting this permit application to operate an existing below-grade tank under the authority of 19.15.17 NMAC. The tank isn't currently permitted. This document serves as supporting documentation referenced in the attached Form C-144. KEC operates coal bed methane production sites in San Juan County, New Mexico. The below-grade tank at the subject facility is used to collect precipitation and residual lubrication oil from the engine skid drain system and produced water from the primary and secondary separators. Produced water from the secondary separator may have small quantities of entrained lubricating oil from the compressor cylinder. In general, emulsified lubricating oil makes up a small percentage of the overall contents of the below-grade tank.

This application is being submitted for the following well site:

Site Name: Nordhaus 715
Location (S/T/R): S12, T31N, R9W

The supporting documentation contained in this C-144 attachment is organized as follows:

Section 1 – Hydrogeologic Report
Section 2 – Siting Criteria Compliance Demonstration
Section 3 – Design Plan
Section 4 – Operating and Maintenance Plan
Section 5 – Closure Plan
References

Appendices
A – USGS 7.5 Minute Topography Map
B – Groundwater Data (water well searches and/or depth to groundwater per cathodic bed data)
C – Aerial Photo
D – FEMA 100-year Floodplain Map
E – Municipal Boundary Map
F – Mine Map

Section 1 – Hydrogeologic Report

The site is located in the San Juan Basin. The San Juan Basin covers an area of about 7,500 square miles across the Colorado/New Mexico line in the Four Corners region. It measures roughly 100 miles long in the north-south direction and 90 miles wide. The Continental Divide trends north-south along the east side of the basin, and land surface elevations within the basin range from 5,100 feet on the western side to over 8,000 feet in the northern part (EPA 2004).

The geology of the area as written in the Final Approved Total Maximum Daily Load (TMDL) For The San Juan River Watershed (May 2005) is described below:

> The San Juan Basin lies on the Colorado Plateau. Several formations of Tertiary and Cretaceousage compose the consolidated geology in the New Mexico portion of the San Juan River basin. The predominant geologic formation is the Nacimiento Formation of Tertiary age which underlies the soils and crops out along nearly all of the reach of the San Juan River valley east of Farmington (Blanchard et al. 1993). The Cretaceous Kirtland and Fruitland Formation and the Mancos Shale layers underlie the soils and crop out west of the Hogback. These two formations underlie tile soils and compose the outcrop in most of the upland area south of the San Juan River. Near Farmington, Cretaceous rocks rise sharply in some areas, forming hogback ridges (Chronic 1987). All of the shales of Cretaceous age consist at least in part of gray arid black shale. The San Juan River valley is composed in part of Quaternary unconsolidated sand, gravel, silt, clay, and terrace gravel and boulder deposits. Valley soils typically are derived from sandstone, shale, siltstone, and mudstone and range in permeability from moderately rapid to moderately slow (Blanchard et al. 1993).

The San Juan County-Eastern Part Soil Survey lists the permeability of native soils as moderate with an infiltration rate of 0.2 – 2.0 in/hr. A 7.5 minute USGS topography map depicting the site location and localized surface drainage (topography) is included as Appendix A.

Based on information obtained during installation of cathodic beds at the location (see Appendix B), depth to groundwater is expected to be 206 ft from the bottom of the below grade tank.

Section 2 – Siting Criteria Compliance Demonstration (19.15.17.10)

This section, along with referenced appendices, provides data to demonstrate compliance with the siting criteria.

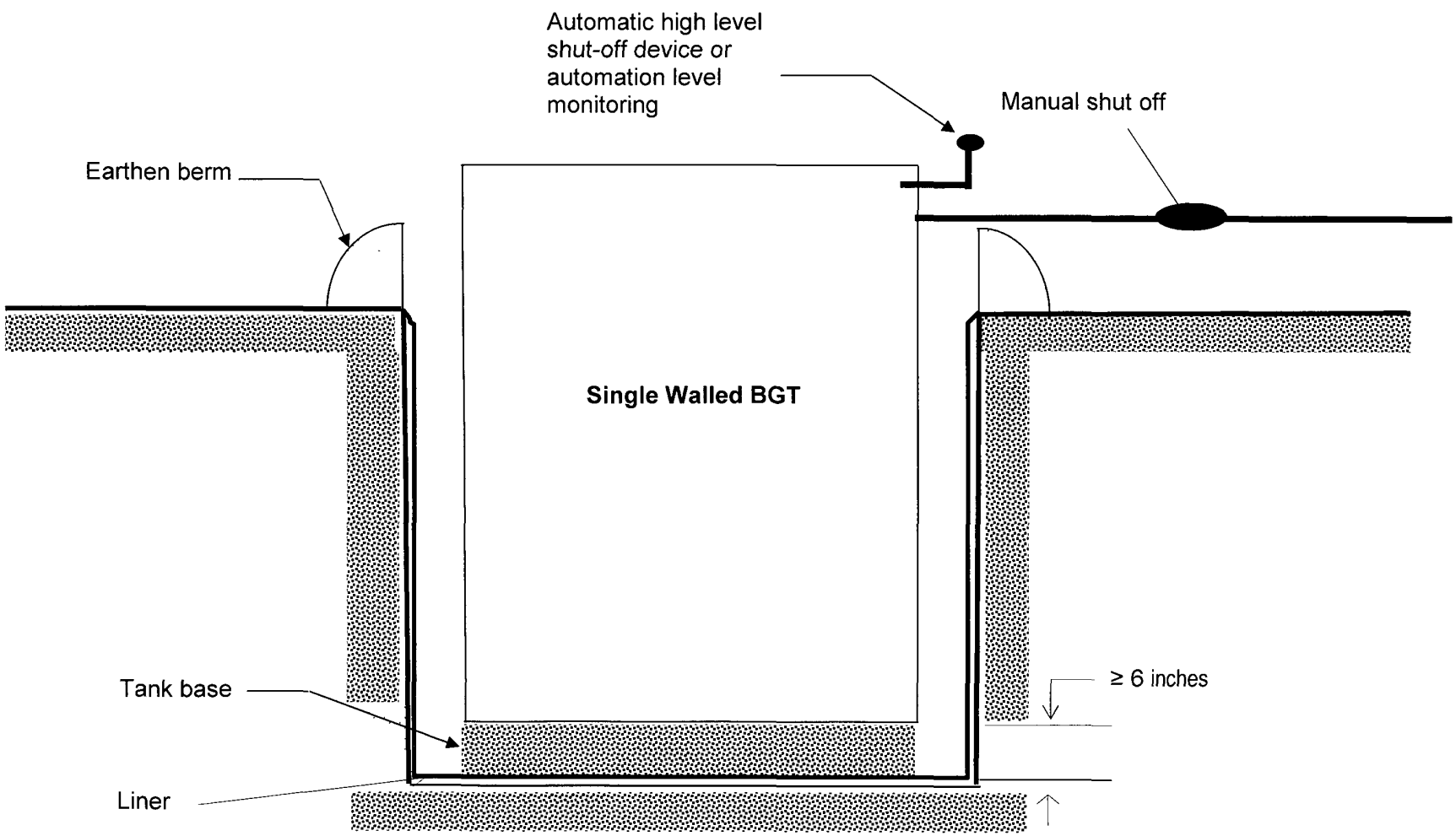
Criteria [19.15.17.10.A(1)]	Compliance Statement
(a) Ground water > 50ft below bottom of tank	Groundwater is greater then 50 ft from bottom of tank (Appendix B)
(b) Continuously flowing water course > 300 ft from tank and significant watercourse [1] or lakebed, sinkhole, or playa lake measured from high water mark > 200 ft from tank	Nearest continuously flowing water course is greater then 300 ft from tank. Nearest significant watercourse [1], lakebed, sinkhole, or playa lake is greater then 200 ft from tank (Visual inspection and Appendix A)
(c) Permanent Residence, school, hospital institution, or church > 300 ft from tank	Nearest residence, school, or hospital is greater then 300 ft from tank (Visual inspection and Appendix C)
(d) Private, domestic fresh water well or spring > 500 ft from tank. Any other fresh water well or spring >1,000 ft from tank	Nearest private, domestic fresh water well is greater then 500 ft from tank and any other fresh water well or spring > 1,000 ft from tank (Visual inspection and Appendix B)
(e) Within incorporated municipal boundary or defined municipal fresh water field	Not within incorporated municipal boundary or defined municipal fresh water field (Appendix E)
(f) Wetland > 500 ft	No wetlands within 500 ft (Visual inspection and Appendix A)
(g) Not overlying a subsurface mine	Not overlying a subsurface mine (Appendix F)
(h) Not within an unstable area	Not within an unstable area. Engineering measures incorporated into design.
(i) Not within a 100-year floodplain	Not within a 100-year floodplain (Appendix D)

[1] A significant watercourse is defined as "a watercourse with a defined bed and bank either named on a USGS 7.5 quadrangle map or a first order tributary of such watercourse" [19.15.17.7(G)]

Section 3 – Design and Construction Plan (19.15.17.11)

1. **Tank specifications:** ¼" steel bottom with 3/16" steel sidewalls
2. **Purpose:** Temporary storage of produced water, lubricating oil, and rainwater
3. **Capacity:** 95 bbl, sufficient to contain the volume of liquids generated at the site
4. **Material:** Steel resistant to corrosion from contents and damage from sunlight
5. **Netting:** Tanks are covered with either solid or expanded metal mesh top to prevent entry of wildlife, including migratory birds.
6. **Side walls:** Visible for leak inspection.
7. **Overflow protection:** Well levels are monitored daily using remote sensing automation. Tanks are emptied when they reach approximately 75% full.
8. **Run-on protection:** Surrounded by an earthen berm to divert run-on around the tank
9. **Liner and Foundation:** A geomembrane liner consisting of at least 60-mil HDPE will be installed beneath the tank within five years of the permit issue date. The liner will have a hydraulic conductivity greater than 1×10^{-9} cm/s and the material will be impervious and resistant to petroleum hydrocarbons, salts, acidic and alkaline solutions, and ultraviolet light. The liner will comply with EPA SW-846 method 9090A. The absence of leaked liquids will be visually inspected on the liner surface. The tank is set on a level base greater then 6 inches thick consisting of I-beams designed to prevent damage to the liner.
10. **Sign:** A sign is posted on the well site in a prominent place indicating the operator name, location of site by quarter quarter, section, township, and range, and emergency telephone numbers. The sign is in compliance with 19.15.3.103 NMAC.
11. **Fencing:** The tank is surrounded by a fence composed of 4 foot welded hog panels or 4 foot hog wire with top rail. Because the well site is in a remote location (and not within 1,000 feet of a permanent residence, school, hospital, institution, or church), this fence is sufficient to secure the tank and prevent livestock/wildlife entry.

Figure 1. Below-grade Tank Schematic (Specific material and design specifications are described in Section 3)



Section 4 - Operating and Maintenance Plan (19.15.17.12 NMAC)

General Specifications (19.15.17.12 (A) NMAC)

1. The below-grade tank will be operated such that the liner integrity and secondary containment system are maintained to prevent contamination of fresh water and protect public health and the environment.
2. Only liquids generated by normal gas production operations (produced water, precipitation from the compressor engine skid, and incidental lubricating oil) will be stored in the tank. Accumulated produced water and precipitation is collected by a vacuum truck and disposed in a licensed Class II underground injection well. Lubricating oil is removed separately and hauled to a licensed recycling or disposal facility.
3. Hazardous wastes will not be discharged into or stored in the tank.
4. If the below-grade tank develops a leak, KEC will remove all liquid above the damage or leak line within 48 hours. The division district office will be contacted within 48 hours of the discovery. KEC will repair the damage or replace the below-grade tank.
5. The below-grade tank has overflow prevention measures in place (see Section 3). An earthen secondary containment berm is in place to divert run-on and contain a tank overflow.

Additional Requirements for Below-Grade Tanks (19.15.17.12 (D) NMAC)

1. Incidental quantities of lubricating oil (generally as an emulsion) may collect in the below-grade tank. This oil will be removed periodically and hauled to a licensed recycling or disposal facility.
2. Liquids will be discharged to the below-grade tank via a steel pipe mounted to the top of the tank. Liquids will be removed from the tank via a stand pipe by a vacuum truck and disposed as described above.
3. The tank is inspected monthly and a written record is maintained for at least five years.
4. Adequate freeboard exists to prevent overtopping of the below-grade tank. The secondary containment system is designed to hold, at a minimum, the contents of the tank plus freeboard for accumulated precipitation from a 25 year, 24 hour rain event (2 inches), as designed by a New Mexico Registered Professional Engineer and described in the Spill Prevention, Control, and Countermeasure Plan.

Section 5 – Closure and Reclamation Plan (19.15.17.13 NMAC)

KEC will close this below-grade tank within 60 days of cessation of the below-grade tank's operation in accordance with 19.15.17.13(E) NMAC (summarized below):

1. Liquids and sludge will be removed from the tank prior to implementing a closure method and disposed in a division-approved facility.
2. The below-grade tank will be removed and disposed in a division approved facility, or it will be recycled, reused, or reclaimed in a manner to be approved by the division district office.
3. Equipment associated with the below-grade tank and not required for some other purpose will be removed and disposed, recycled, or reused.
4. KEC will test the soils beneath the below-grade tank to determine whether a release has occurred. KEC will 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 0.2 mg/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 (such as EPA Method 300.0 or Standard Method 4500B, as approved in the July 24, 2008 NMOCD memorandum from Mark Fesmire), does not exceed 250 mg/kg, or the background concentration, whichever is greater. KEC will notify the division of its results on form C-141.
5. If it's determined that a release has occurred, KEC will comply with 19.15.3.116 or 19.15.1.19 NMAC as appropriate.
6. Once sampling demonstrates that concentrations specified in 19.15.17.13(E)(4) are not exceeded, KEC will backfill the excavation with compacted, non-waste containing, earthen material, construct a division-prescribed soil cover, and recontour and re-vegetate the site. The division-prescribed soil cover, recontouring, and re-vegetation shall comply with Subsections G, H, and I or 19.15.17.13 NMAC.
7. The soil cover design will be consistent with the requirements of 19.15.17.13(H)(1)and (3). The soil cover will consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater. The soil cover will be constructed to the site's existing grade and prevent ponding of water and erosion of the cover material.
8. KEC will seed the disturbed areas the first growing season after closing the below grade tank. 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 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 occurs. During the two growing seasons that prove viability, there shall be no artificial irrigation of the vegetation.
9. KEC shall notify the surface owner by certified mail, return receipt requested, that the operator plans to close a temporary pit, a permanent pit, a below-grade tank or where the operator has

approval for on-site closure. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records is sufficient to demonstrate compliance with this requirement.

10. Within 60 days of closure completion, KEC shall submit a closure report on form C-144 and other supporting documentation required by 19.15.17.13(K).
11. KEC will notify the appropriate division district office verbally or by other means at least 72 hours, but not more than one week, prior to any closure operation (19.15.17.13(J)(2)).

References

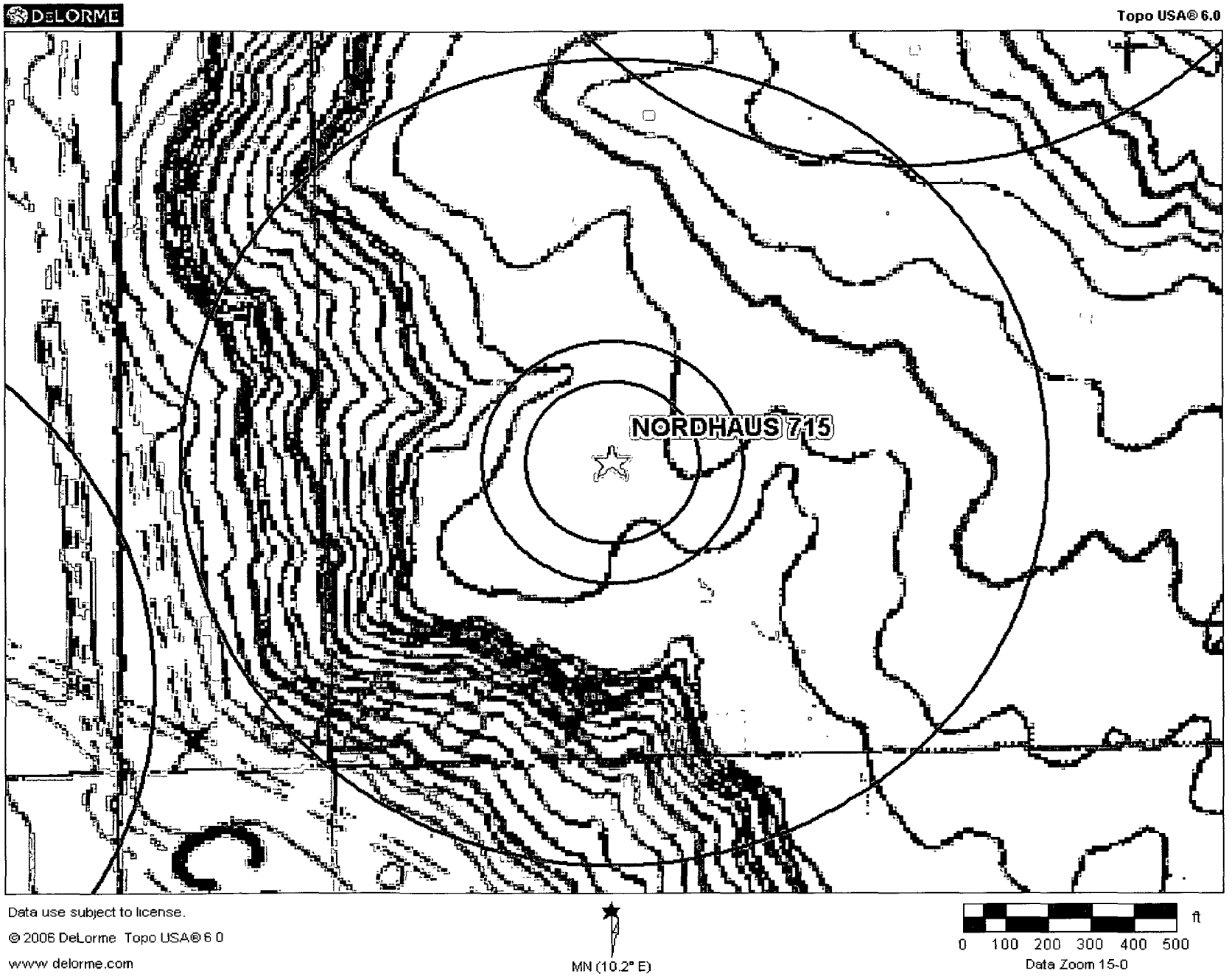
Environmental Protection Agency. 2004. Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs. Available at www.nmenv.state.nm.us/swqb/Projects/SanJuan/TMDL1/11.pdf

Blanchard, P., R. Roy, and T. O'Brien. 1993. Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the San Juan River Area, San Juan County, Northwestern New Mexico, 1990-91. USGS Water Resources Investigations Report 93-4065.

Chronic, H. 1987. Roadside Geology of New Mexico. Mountain Press Publishing Company, Missoula, MT.

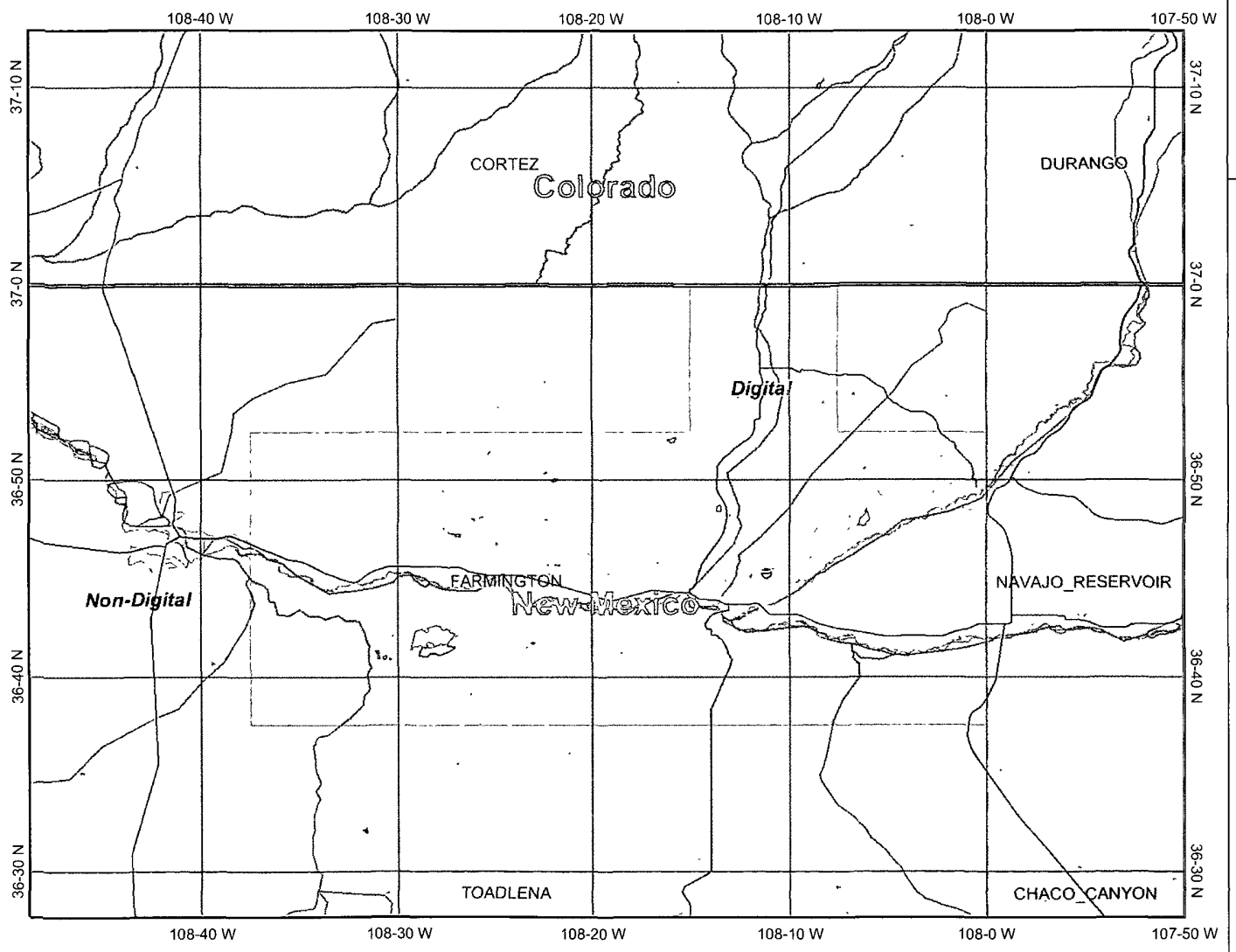
APPENDIX A

USGS 7.5 Minute Topography Map and US Fish & Wildlife Wetland Identification Map



Radii denote 200 feet, 300 feet and 1,000 feet from location

Wetlands Map-San Juan County



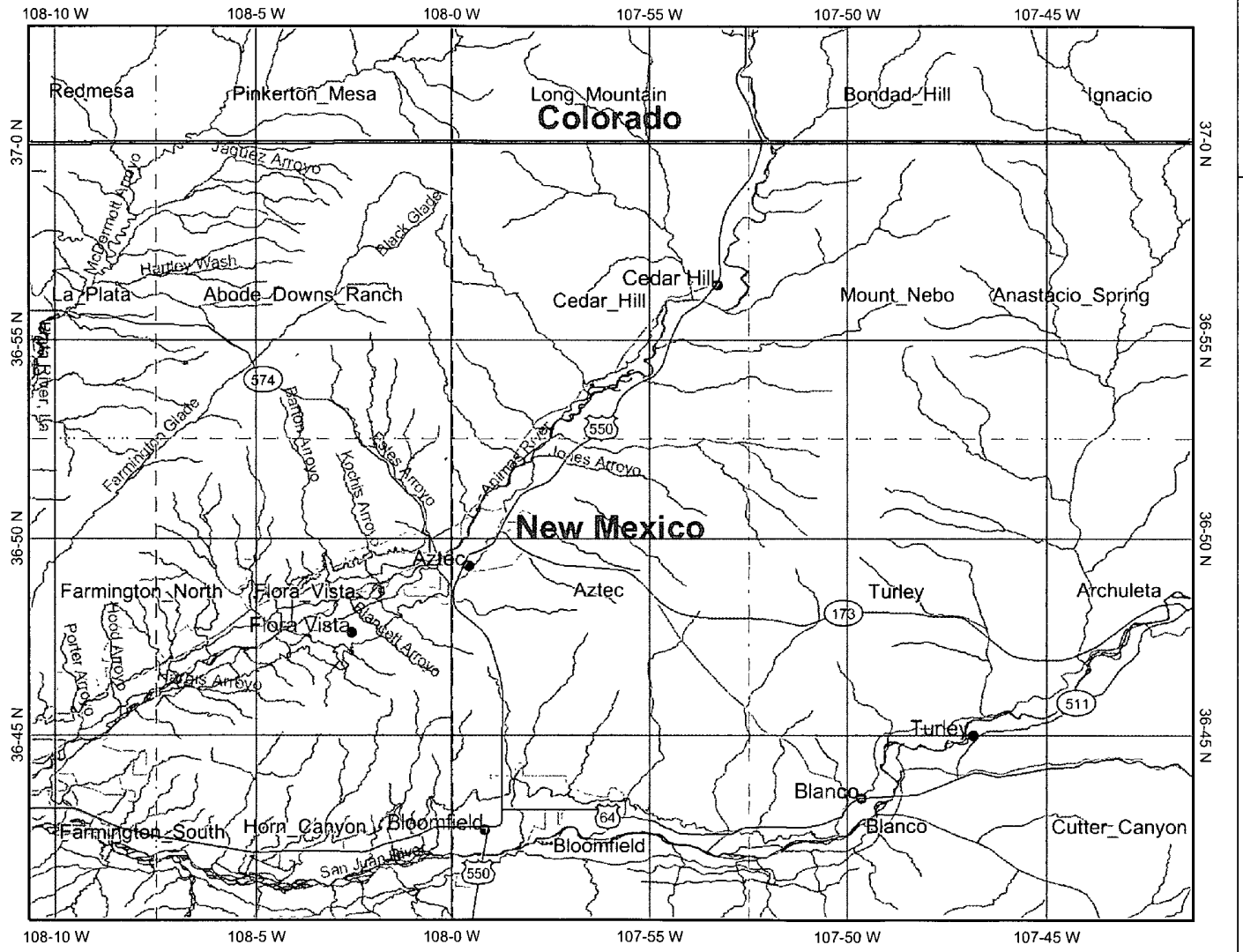
Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Major Cities
- USGS Quad Index 100K
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Waterbodies
- LAKE/POND
- RESERVOIR
- STREAM/RIVER
- Streams 2M
- Counties 100K
- Urban Areas 300K
- States 100K
- South America
- North America

Map center: 36°50' N, 108°19' W

Scale: 1:586,805

Pump Canyon Wetlands



Map center: 36°51' N, 107°56' W

Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Cities
- USGS Quad Index 24K
- NHD Waterbodies
- LAKE/POND
- RESERVOIR
- STREAM/RIVER
- NHD Streams
- Counties 100K
- Urban Areas 300K
- States 100K
- South America
- North America

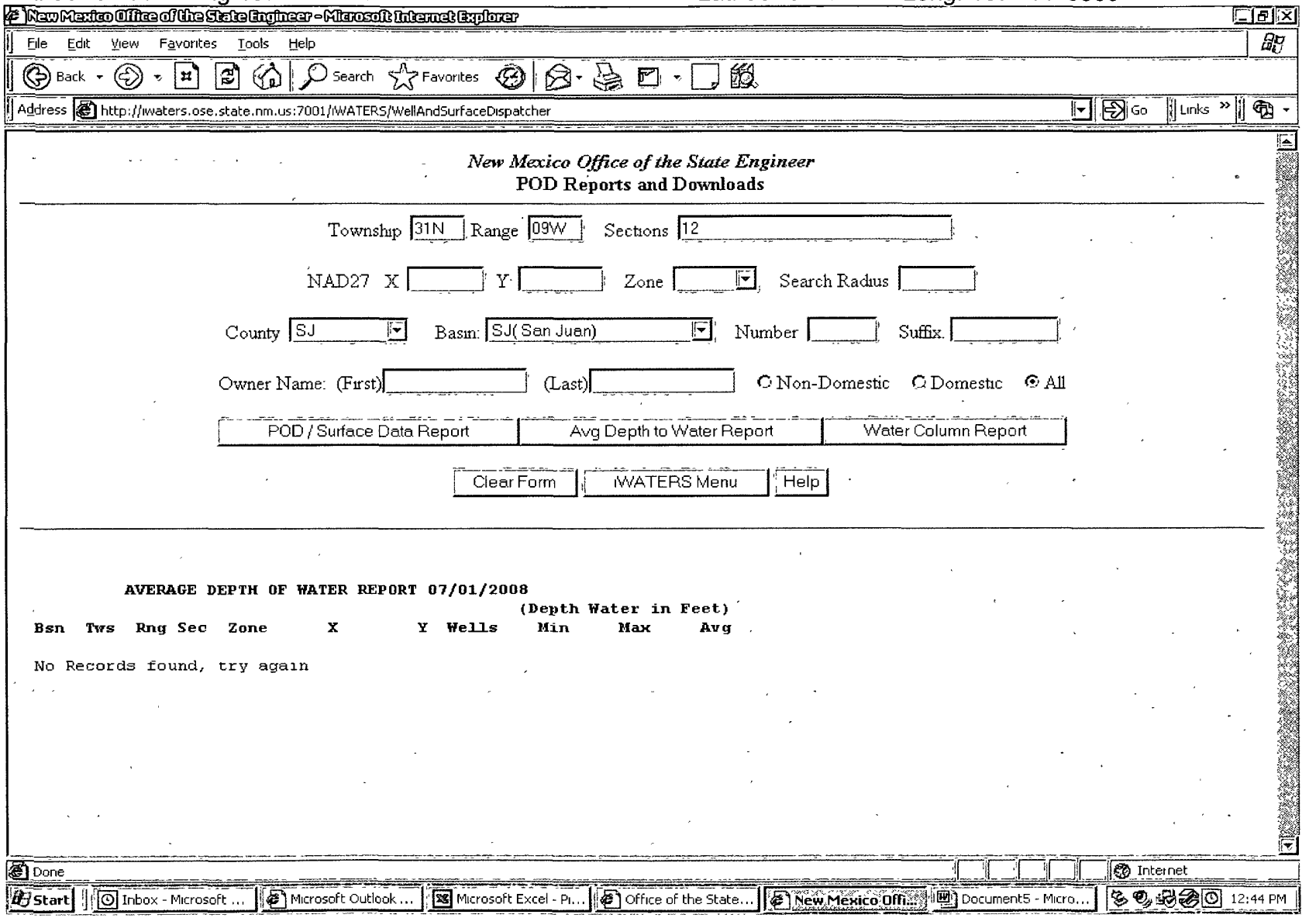
Scale: 1:293,403

APPENDIX B

Groundwater Data (water well searches and/or depth to groundwater per cathodic bed data)

Nordhaus 715
API #30-045-28314
S12, T31N, R9W 1885' FSL & 1130' FWL NW ¼ SW ¼
Lat. 36° 54'66" Long 107° 44' 244"

Nordhaus 715S
API #30-045-32531
S12, T31N, R9W 1555' FNL & 1650' FWL SE ¼ NW ¼
Lat. 36° 54' 9112" Long. 107° 44' 0809"



APPENDIX B

CP 2:2 02W

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO

Operator MERIDIAN Location: Unit K Sec. 12 Twp 31 Rng 9

Name of Well/Wells or Pipeline Serviced NORDHAUS #715

Elevation 6466 Completion Date 7-23-91 Total Depth 483' Land Type F

Casing Strings, Sizes, Types & Depths 8" PVC CASING 50' DEEP

If Casing Strings are cemented, show amounts & types used 16 BAGS NEAT CEMENT

If Cement or Bentonite Plugs have been placed, show depths & amounts used NO

Depths & thickness of water zones with description of water: Fresh, Clear, Salty, Sulphur, Etc. FRESH AT 210'

Depths gas encountered: NO

Ground bed depth with type & amount of coke breeze used: 483 DEEP W/ 4 10 BAGS LORESCO SW + 63 BAGS ASBURY FLO COKE 48518

Depths anodes placed: 465, 455, 445, 435, 426, 351, 342, 333, 324, 316, 295, 285

Depths vent pipes placed: 485

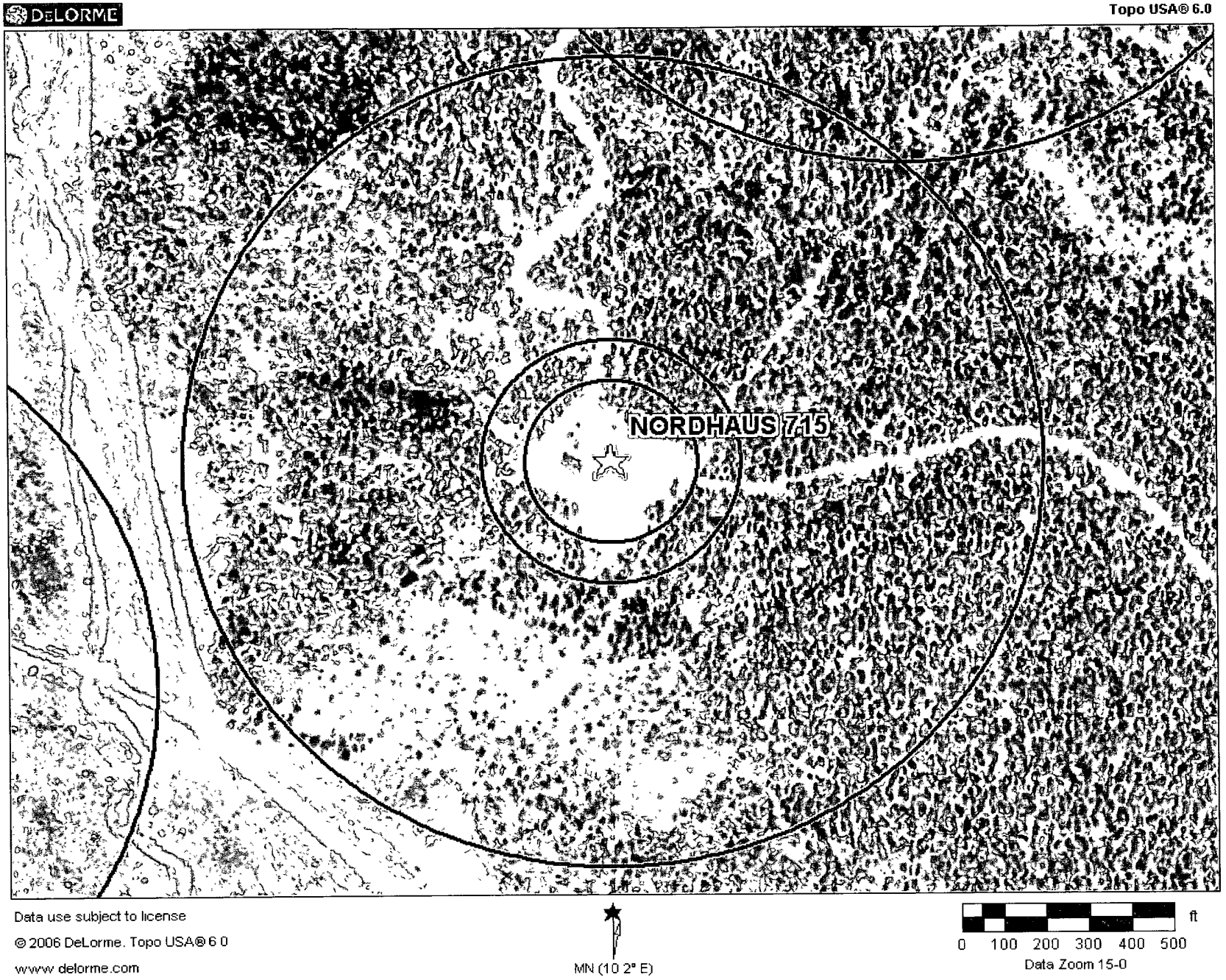
Vent pipe perforations: 50' TO 480'

Remarks:

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

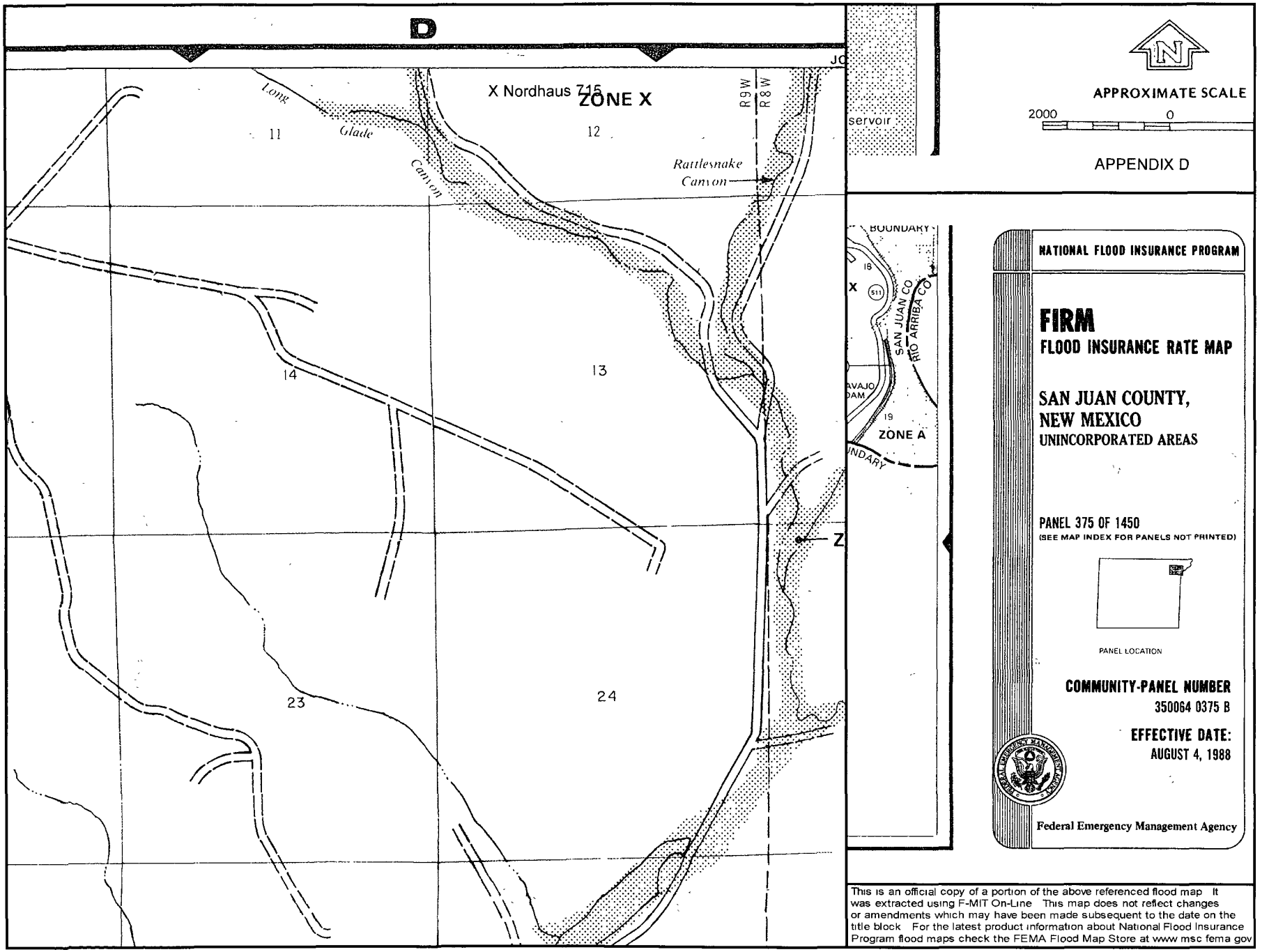
Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

APPENDIX C
Aerial Photo



Radii denote 200 feet, 300 feet and 1,000 feet from location

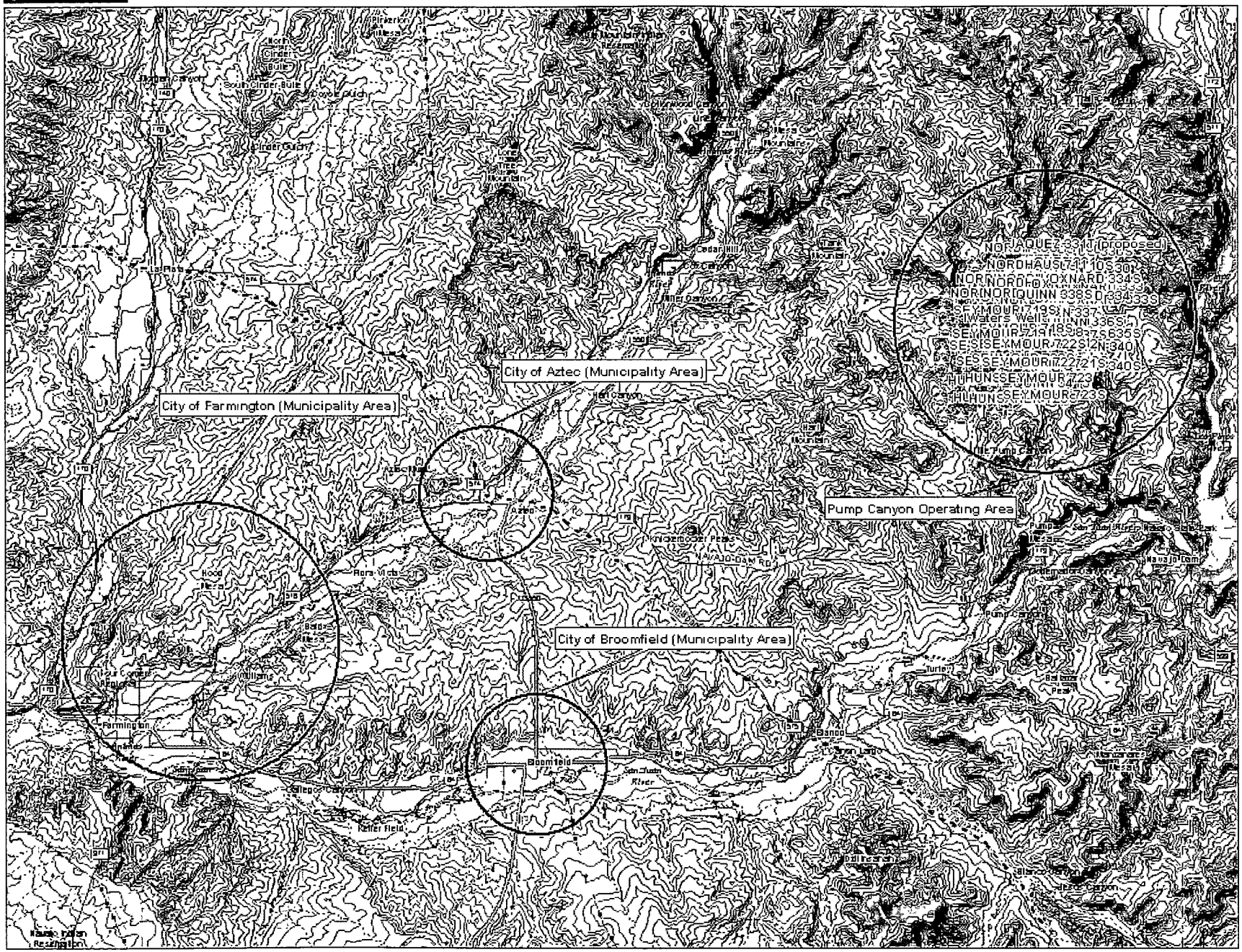
APPENDIX D
FEMA 100-year Floodplain Map



APPENDIX E
Municipal Boundary Map

DELORME

Topo USA® 6.0



Data use subject to license.

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www.delorme com

The belowgrade tank is located in the Pump Canyon Operating Area

MN (10.3° E)

0 1 2 3 4 5 6 7 mi

Data Zoom 10-0

APPENDIX F
Mine Map

MMQonline Public Version

Mines, Mills & Quarries Commodity Groups

- Aggregate & Stone Mines
- Coal Mines
- Industrial Minerals Mines
- Industrial Minerals Mills
- Metal Mines and Mill Concentrate
- Potash Mines & Refineries
- Smelters & Refinery Ops.
- Uranium Mines
- Uranium Mills

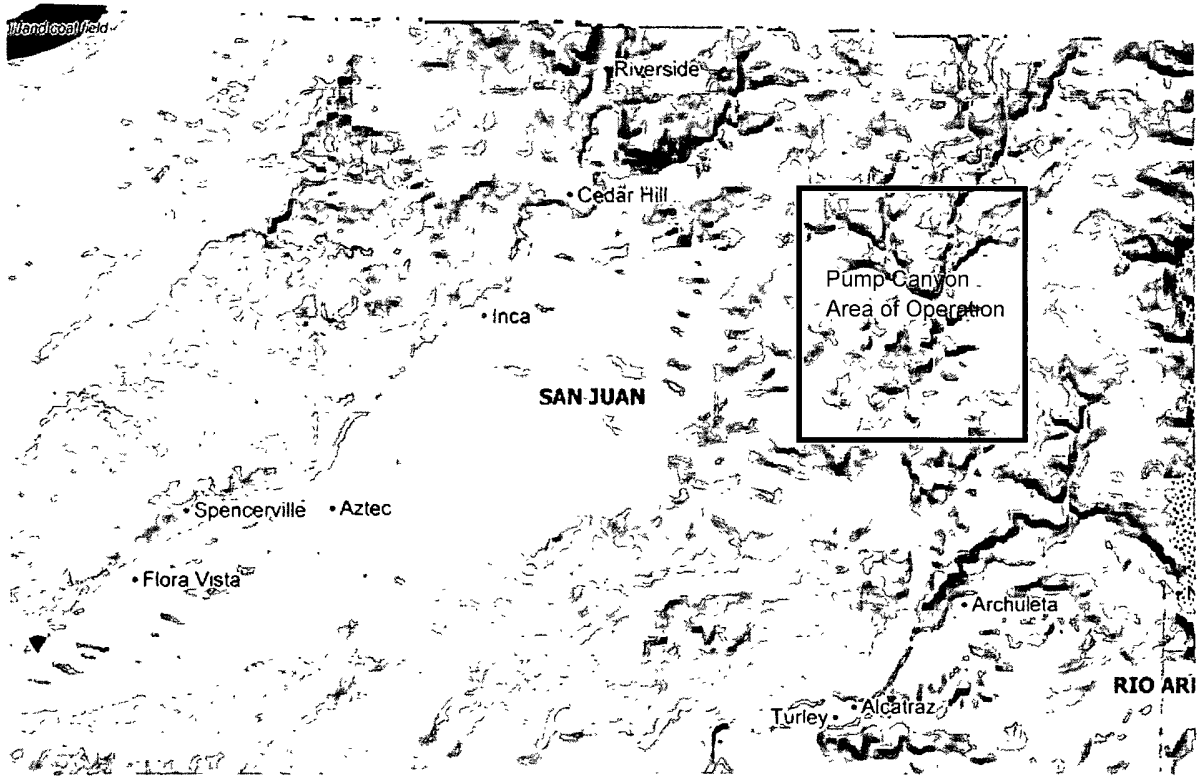
Population

- Cities (2000 Census)

Transportation

- Railways
- Interstate Highways
- Major Roads

Hydrology



SCALE 1 : 284,073

5 0 5 10 15

MILES

The belowgrade tank is located within the Pump Canyon Area of Operation No mines are located in this area.

Monday, July 14, 2008 10:19 AM