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

1084

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: _CDX Gas LLC_____ OGRID #: ___222374_____

Address __2700 Farmington Ave, Building K, Suite #1_____

Facility or well name __Jicarilla Contract 148 #025_____

API Number _____30-039-22525_____ OCD Permit Number _____

U/L or Qtr/Qtr ____A_____ Section _____15_____ Township _____25N____ Range ___5W_____ County ___Rio Arriba_____

Center of Proposed Design Latitude ____36 4044 _____ Longitude ___107.342 _____ 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

RCVD SEP 12 '08
OIL CONS. DIV.
DIST. 3

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 _____

4

☒ **Below-grade tank:** Subsection I of 19 15 17 11 NMAC

Volume _____95___bbl Type of fluid. _____Produced water_____

Tank Construction material _____Steel _____

☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off

☐ Visible sidewalls and liner ☒ Visible sidewalls only ☒ Other __See closure plan_____

Liner type: Thickness _____mil ☐ HDPE ☐ PVC ☒ Other Below grade tank to be closed per new rule._____

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_Four foot hog wire_____

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) Lee Gardner Title: HSE Coordinator

Signature Lee Gardner Date: 8-26-08

e-mail address: lee gardner@cdxgas com Telephone: 505-324-5427

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

OCD Representative Signature: [signature] **Approval Date:** 4/05/2012

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 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.

CDX GAS

Hydrogeological Report
Jicarilla 148 #25
Peter Kondrat

CDX Gas, LLC Tapicito Project
Jicarilla Apache Nation, San Juan Basin

Jicarilla Contract 148 #025
Below Grade Blow Pit Tank
Well API: 30-039-22525
TWP: 25 N - Range: 5 W - Sec. 15; 1120 FNL 1120 FEL

Siting Criteria Compliance

- Ground water is not less than 50 feet below the bottom the subject location
- The subject location is not within 300 feet of a continuously flowing watercourse.
- The subject location is not within 200 feet of any significant watercourse, lakebed, sinkhole or playa lake
- The subject location is not within 300 feet of a known permanent residence, school, hospital, institution or church
- The subject location is not within 500 feet of any known private domestic fresh water well or 1000 feet of any other fresh water well spring
- The subject location is not within any known incorporated municipal boundary
- The subject location is not within 500 feet of a known wetland
- The subject location is not within a known unstable area
- The subject location is not within a known 100 year flood plain
- The subject location is not over any known subsurface or surface mine

Regional Geologic Setting

At CDX's Tapicito Project located in the eastern-central portion of the San Juan Basin, within the Jicarilla Apache Indian Nation, the San Jose Formation outcrops and forms the surface landscape.

The San Jose Formation outcrops in the eastern-northeastern portion and covers ~1/6th of the San Juan Structural Basin. The San Jose Formation overlies the Nacimiento Formation in the area generally south of the CO-NM state line, and overlies the Animas Formation in the area generally north of the CO-NM state line (Fassett, 1974, p. 229). The basal contact of the San Jose varies with location in the basin. This contact is a disconformity along the basin margins, and it is an angular unconformity along the Naciemento Uplift; the contact is conformable in the central basin (Baltz, 1967, p. 54; Fassett, 1974 p. 229).

The Eocene-aged San Jose Formation was deposited in various fluvial-type environments (Baltz, 1967, p 44-45) and consists of interbedded sequence of sandstone, siltstone and shale. The sandstone are buff to yellow and rusty-colored, crossbedded, very fine to coarse-grained arkose, which are locally conglomeratic and contain abundant silicified wood (Baltz, 1967, p. 46; Fassett, 1974, p 229; Anerholm, 1979, p. 23).

Thickness of the San Jose Formation generally increases from west to east. Fassett (1974, p 229) reported a maximum thickness if 2,400 feet in the east-central part of the basin, and Stone and other (1983, p. 25) reported a range of from about 200 feet in the west and south to almost 2,700 feet in the center of the structural basin.

New Mexico State Land Office

Oil, Gas, and Minerals Land/Lease Information Map

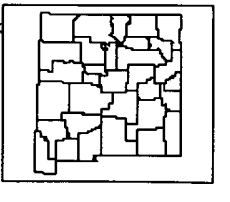
0 0 025 0 05 0 1 0 15 0 2 Miles

Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

The New Mexico State Land Office assumes no responsibility or liability for or in connection with, the accuracy, reliability or use of the information provided here, in State Land Office data layers or any other data layer

Land Office Geographic Information Center
logic@slo state nm us

Created On 8/20/2008 3 31 34 PM



LEGEND

- County Seats
- SLO District Offices
- City, Town or Village
- Volcanic Vents

NMOCD Oil, Gas Wells

- Carbon Dioxide
- Gas
- Injection
- Miscellaneous
- Oil
- Salt Water Disposal
- Water
- DA or PA

Federal Subsurface Ownership

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

State Trust Lands Ownership

- Surface Estate
- Subsurface Estate
- Both Estates

State Lease Types

- Commercial Leases
- Minerals Leases
- Oil and Gas Leases
- Agricultural Leases
- Oil, Gas Leasing Influenced By Restriction
- Not Available for Oil, Gas Leasing

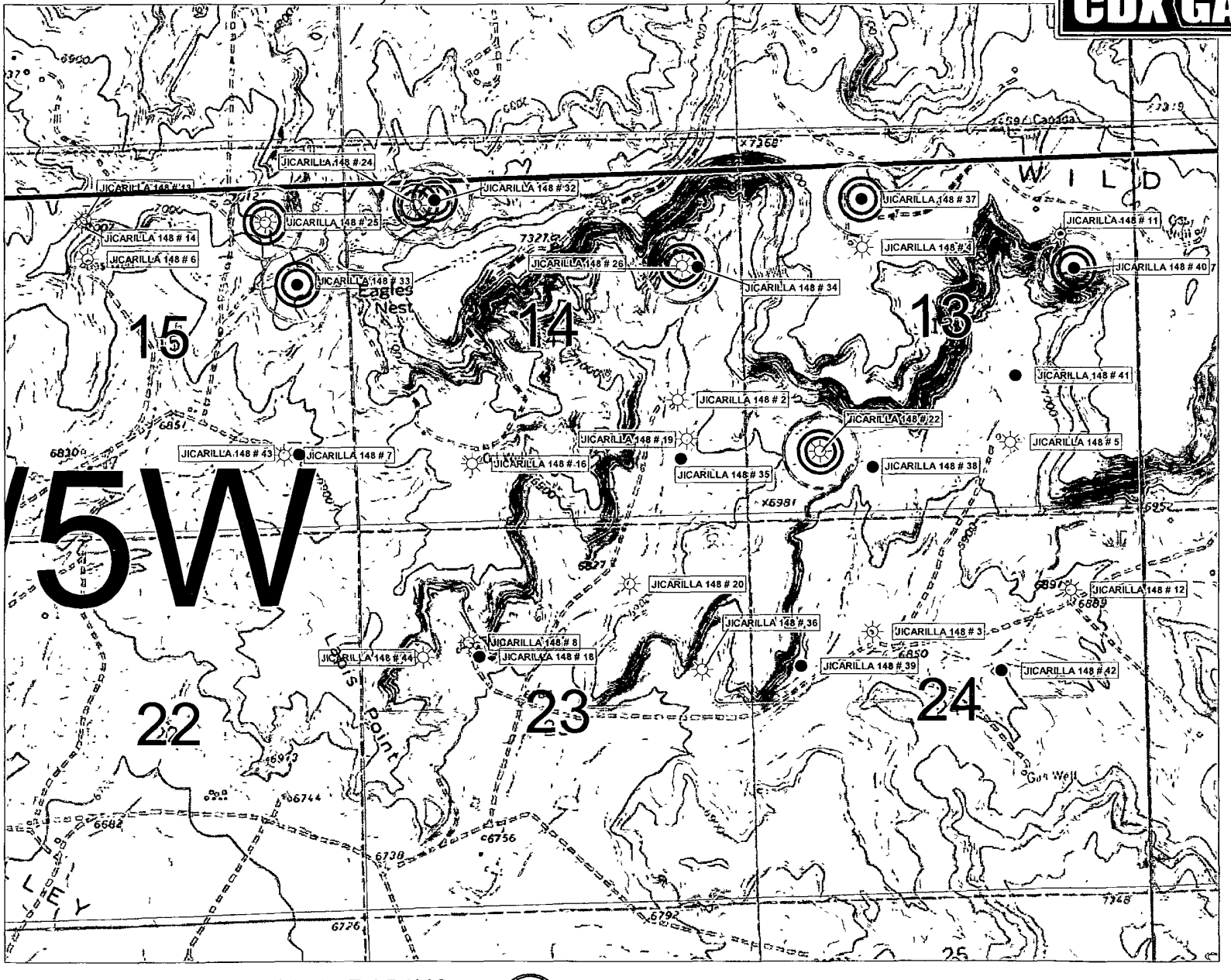
Other Boundaries

- Continental Divide
- State Boundary
- County Boundaries
- Oil and Gas Unit Boundary
- Geologic Regions

For detailed legend of the Geologic Map of New Mexico, Please see http //geoinfo nmt edu/

CDX RIO LLC, JICARILLA 148 LEASE, SAN JUAN BASIN

CDX GAS



200 FT RADIUS FROM WELLHEAD

300 FT RADIUS FROM WELLHEAD

500 FT RADIUS FROM WELLHEAD

500 0 500 1000 1500 ft

CDX GAS

Hydrogeological Report
Jicarilla 148 #25
Peter Kondrat

Ground Water Data, Water Well Locations

Hydraulic Properties: Levings and Others (1990) reported well yields from 79 water wells completed in the San Jose, Nacimiento and Animas Formations ranged from 1 to 61 gallons per minute and median is 6 gallons per minute. Transmissivity data for the San Jose, Nacimiento and Animas Formations are minimal. Values of 40 and 120 feet squared per day were determined from two aquifer tests (Stone and Others, 1983, table 5). The San Jose, Nacimiento and Animas Formations are a source of water for public supply, commercial, private-domestic and livestock use in areas where drilling depths and pumping levels are economically feasible and where water quality is suitable.

The San Jose, Nacimiento and Animas Formations are all hydrologically similar because sands in all units produce approximately the same quantities of water. The great percentage of fine material in all may restrict the downward vertical leakage to the Ojo Alamo Sandstone or Kirtland Shale. The poorly cemented material is highly erodible, forms a badland terrain and supports only spotty vegetation. These conditions are more conductive to runoff than retention of precipitation.

iWaters Database: The search showed no reported wells with groundwater information in the T25N-R5W. Attached are the results for the three query engines: 1) POD/Surface Data Report, 2) Avg Depth to Water Report, 3) Water Column Report

- Ground water is not less than 50 feet below the bottom the subject location
- No known private water wells are within 500 feet of the subject location
- No known public water wells are within 1000 feet of the subject location
- No water wells around the subject area are listed in the iWaters Database

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 25N Range: 05W 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

Clear Form | iWATERS Menu | Help

AVERAGE DEPTH OF WATER REPORT 08/25/2008

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: 25N Range: 05W 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

Clear Form | iWATERS Menu | Help

WATER COLUMN REPORT 08/25/2008

(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 Column (in feet)

No Records found, try again

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 25N Range: 05W 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

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 08/25/2008

DB File Nbr	Use (acre ft per annum)	Diversion	Owner	POD Number	Source	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest Tws	Rng	Sec	q	q	q
SJ 01100	OIL	15	AMOCO PRODUCTION COMPANY	SJ 01100		25N	05W	06	4	4	1

Record Count: 1

New Mexico Office of the State Engineer
Water Right Summary

Back

DB File Nbr: SJ 01100
Primary Purpose: OIL OIL PRODUCTION
Primary Status: PMT Permit
Total Acres: 0
Total Diversion: 15
Owner: AMOCO PRODUCTION COMPANY

Documents on File

Doc	File/Act	Status 1 2 3	Trans_Desc	From/To	Acres	Diversion	Consumptive
APPRO	03/13/1980	PMT APR PRC	SJ 01100	T	0	15	

Point of Diversion (qtr are 1=NW 2=NE 3=SW 4=SE) (qtr are biggest to smallest) X Y are in Feet) UTM are in Meters)

POD Number	Source	Tws	Rng	Sec	q	q	q	Zone	X	Y	UTM_Zone	Easting	Northing	La
SJ 01100		25N	05W	06	4	4	1				13	285226	4033678	

Priority	Status	Acres	Diversion	POD Number	Source
12/06/1979	PMT	0	15	SJ 01100	

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

Tws	Rng	Sec	q	q	q	q	Acres	Diversion	Consumptive	Use	Priority	Status	Other Location Description
25N	05W	06					0	15		OIL		PMT	PLACE OF USE WILL BE AT VARIOU

New Mexico Office of the State Engineer
Transaction Summary

Back

APPRO Application to Appropriate

Trn_nbr: 222993 **Trn_desc:**SJ 01100 **File Date:**12/06/1979

Primary status: PMT Permit
Secondary status: APR Approved
Person assigned: *******
Applicant: AMOCO PRODUCTION COMPANY

Events

Date	Type	Description	Comment	Processed By
12/06/1979	APP	Application Received	*	******
12/06/1979	MAP	Map or Plat Received	*	******
12/21/1979	NFP	Notice for Publication		******
02/12/1980	AOP	Affidavit of Publication rcv		******
03/13/1980	PUC	PBU/PCW Approval		******
03/13/1980	FIN	Final Action on application		******
12/30/2002	ARV	Rec & Arch - file location	SJ 01100 Box: 81	******
12/16/2003	QAT	Quality Assurance Completed	SQ 1	******
03/24/2005	QAT	Quality Assurance Completed	IMAGES MAP	******
10/19/2005	QAT	Quality Assurance Completed	SQ2	******

DB_File_Nbr	Acres	Diversion	Consumptive	Purpose of Use
SJ 01100	0	15	0	OIL OIL PRODUCTION

Point of Diversion
SJ 01100 25N 05W 06 SE SE NW in Rio Arriba County

Place Of Use

Tws	Rng	Sec	q	q	q	q	Acres	Diversion	Consumptive	Use	Priority	Status	Other Locati
25N	05W	06					0	15		OIL		PMT	PLACE OF USE

Remarks
THIS WELL WILL BE DRILLED ON THE SAME LOCATION AS AMOCO'S

JICARILLA CONTRACT 147 #3E.

Conditions

5B :A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of water; pumping records shall be submitted to the District Supervisor on or before the 10th of Jan., April, July, and Oct. of each year for the 3 preceeding calendar months.

Action of the State Engineer

Approval Code: A Approved
Action Date: 03/13/1980
pcw due date: 03/31/1984
pbu due date: 03/31/1984
State Engineer: John R. D Antonio, Jr., P.E.
By:

Wetland Maps and Data

The US Fish and Wildlife for the **Jicarilla 148 #25** is unavailable due to its location being within the Jicarilla Apache Indian Nation. The US Fish and Wildlife does not have wetland information for the Jicarilla Apache Indian Nation. This well is not located near a wash or watercourse and is not in a wetland area as visible on the topographic map.

Flood Zone Maps and Data

The FEMA Map for the **Jicarilla 148 #25** is unavailable due to its location being within the Jicarilla Apache Indian Nation. FEMA does not provide floodplain information for the Jicarilla Apache Indian Nation. This well is not located near a wash or watercourse and is not in a 100 year floodplain as visible on the topographic map.

References

Baltz, E.H., 1967, Stratigraphy and Regional Tectonic Implications of part of Upper Cretaceous Rocks, east-central San Juan Basin, New Mexico: USGS Professional Paper 552, 101p

Brimhall, R.M., 1973, Ground-water hydrology of Tertiary Rocks of the San Juan Basin, New Mexico, in Fassett, J.E., ed., Cretaceous and Tertiary Rocks of the Southern Colorado Plateau: Four Corners Geological Society Memoir, p. 197-207

Fassett, J.E., 1974, Cretaceous and Tertiary rocks of the eastern San Juan Basin, New Mexico and Colorado, in Guidebook of Ghost Ranch, central-northern New Mexico: New Mexico Geological Society, 25th Field Conference, p. 225-230.

Fassett, J.E., and Hinds, J.S., 1971, Geology and fuel resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado: USGS Professional Paper 676, 76p.

Levings, G.W., Craigg, S.D., Dam, W.L., Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, Animas Formations in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah: USGS Hydrologic Investigations Atlas HA-720-A, 2 sheets.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resource of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6

Wells, S.G., Lambert, W., and Callender, J., 1981, Environmental Geology and Hydrology in New Mexico: New Mexico Geological Society Special Publication #10, 152p.

New Mexico Office of the State Engineer-iWATERS Database
http://www.ose.state.nm.us/water_db_index.html

New Mexico EMNRD Mining and Mineral Divison
http://www.emnrd.state.nm.us/MMD/coalminewebmap/coalminewebmap.html
http://www.enrd.state.nm.us/MMD/MRRS/MinesMillsQuarriesWebMap.htm

State Bureau of Mines and Minerals Resources
http://geoinfo.nmt.edu/index.html

US Fish and Wildlife
http://www.fws.gov.html

New Mexico Land Office

http://store.usgs.gov/mod/index.html
http://terraserver-usa.com

US Geological Survey (USGS)
http://store.usgs.gov/mod/index.html
http://terraserver-usa.com/

Federal Emergency Management Agency (FEMA)
http://www.fema.gov/
http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1

Google Earth
http://landstatus.nmstatelands.org/
http://www.earthpoint.us/townships.html

New Mexico Geological Society
http://nmgs.nmt.edu/

CDX'S TAPICITO PROJECT SAN JUAN BASIN MINES, MINERALS AND QUARRIES WEB MAP

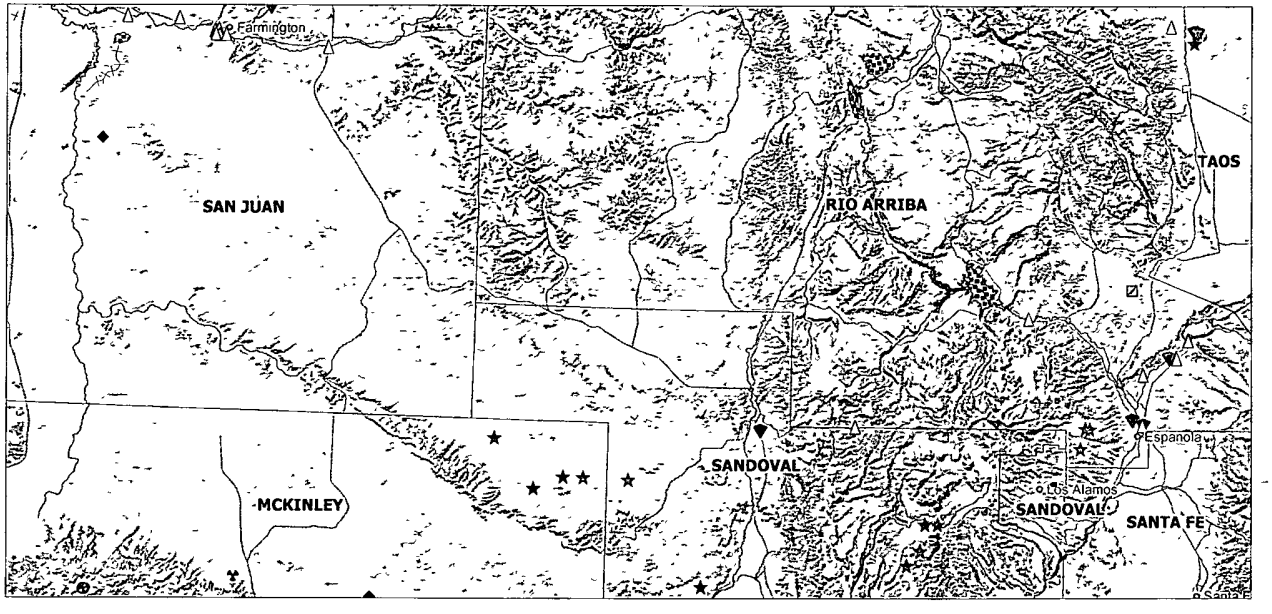
Mines, Mills & Quarries Commodity Groups

- △ 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 - major

Transportation



SCALE 1 : 1,557,276

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MILES

N

CDX GAS

Below Grade Tank Management Plan

I. Siting Criteria

1. No below grade tank may be located where:
    a. Ground water is less than 50 feet below the bottom of the temporary pit or below grade tank.
    b. Within 300 feet of a continuously flowing watercourse
    c. Within 200 feet of any significant watercourse, lakebed, sinkhole or playa lake
    d. Within 300 feet from a permanent residence, school, hospital, institution or church
    e. Within 500 feet of a private domestic fresh water well or spring used by less than five households for domestic or stock watering purposes or within 1000 feet of any other fresh water well spring.
    f. 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, unless the municipality specifically approves
    g. Within 500 feet of a wetland
    h. Within an unstable area
    i. Within a 100 year flood plain
    j. Over or near any known or suspected mined area
2. If ground water is an issue, the tank shall be placed above ground in a lined berm.
3. All excavated material will be stored at least 300 feet from any continuous flowing water and 200 feet away from any other water way.

II. Construction:

1. After June 16, 2008 any below grade tank replacement will use only steel double walled, double bottom tanks with a leak detection system.
2. The below grade tank pit bottom shall be free on any rocks, debris, sharp edges, or irregularities
3. Prior to the installation of any tank, the soil shall be sampled for
    a. Chlorides
    b. Benzene, toluene, ethyl benzene, and xylene
    c. Benzene
    d. Total petroleum hydrocarbons.
4. A fence meeting one of the following requirements shall be erected around the tank site consisting of:
    a. Four strands of barbed wire placed on a pole between one and four feet

b. A chain link fence six feet tall and topped with at least two strands of barbed wire when the temporary pit is within 1000 feet of a residence, school, hospital, institution or church. The fence shall have a gate which is locked when responsible personnel are not on-site.
c. Oil Conservation Division approved alternative
Note: CDX Gas uses Jicarilla Apache Tribal approved hog wire with a barbed wire top

5. Any open top tank shall be covered with netting, expanded metal, or "chicken wire" to prevent wildlife from entering the tank.
6. Any tank area shall be bermed to prevent the run on of water.

III. Operations and Maintenance:

1. All tanks and existing pits shall be inspected each month as a part of the Spill Prevention Control and Countermeasure facility inspection.
2. The inspection shall be documented on the Spill Prevention Control and Countermeasures Plan inspection form and maintained for at least five years.
3. All sides of the below grade tanks existing before June 16, 2008 shall be visible.
4. Any dirt or debris shall be noted on the inspection form and removed promptly.
5. Any oil visible on the surface of the fluid in the below grade tank shall be promptly removed.
6. Absorbent materials shall be maintained on site for this purpose.
7. Each below grade tanks shall have enough free board to prevent overflowing.
8. Any spillage or leak shall be reported to the Oil Conservation Division with in 48 hours of detection.
9. Any produced waste shall be disposed at either:
    a. Basin Disposal (permit number NM-01-005)
    b. Aquamoss (permit number SWD-1034A)

IV. Closure:

1. Current configuration consists of one single walled steel tank which does meet 19.15.17 NMAC. The tank will be replaced with steel, double walled, double bottomed tanks having a leak detection system by June 16 2013.
2. The tank shall be recycled, reused, reclaimed or disposed of in an Oil Conservation Division approved manner.
3. Any existing below grade tank which does not show integrity shall be immediately removed from service.
4. The soil under a pit shall be sampled for:
    a. Benzene as determined by Environmental Protection Agency SW-846 method 8012B or 8260B or other Environmental Protection Agency method that the Oil conservation Division approves. The test shall not exceed 0.2 mg/kg.
    b. Total Petroleum Hydrocarbons as determined by the Environmental Protection Agency SW-846 method 8021B or 8260B or other

Environmental Protection Agency method that the Oil Conservation Division approves. The test shall not exceed 100 mg/kg.

c. Total Benzene, Toluene, Ethyl Benzene, and Xylene as determined by Environmental Protection Agency SW-846 method 8021B or 8260B or other Environmental Protection Agency method that the Oil Conservation Division approves. The test shall not exceed 50 mg/kg.
d. Chlorides as determined by Environmental Protection Agency method 300.1. The test shall not exceed 250mg/kg or background concentration, whichever is greater.

5. If contaminated soil is found under the pit, the soil will be removed and transported to either:
   a. TNT land farm (permit number NM-01-0008)
   b. Industrial Ecosystems Landfarm (permit number NM 01-0010B)
6. Any produced sludge shall be disposed of at either:
   a. Basin Disposal (permit number NM-01-005)
   b. Aquamoss (permit number SWD-1034A)
7. Any equipment associated with the removed below grade tank shall be removed unless needed for some other purpose.
8. Upon permanent closure of the below grade tank location:
   a. Notify the land owner in writing by certified mail, return receipt requested, of the closure.
   b. Notify the Oil Conservation Division at least 72 hours but not more than one week in advance of the closure.
   c. Submit a closure report to the Oil Conservation Division with in 60 days.

V. Site Reclamation

A. Contouring:

1. The site shall be contoured to blend in with the surrounding terrain.
2. The soil cover shall consist of the background thickness of topsoil or one foot of suitable material for establishing vegetation at the site, which ever is greater.
3. The soil shall be spread in such a manner as to prevent the pooling of water.

B. Reseeding:

1. The area shall be reseeded at the first growing season after the completion of all work.
2. The seed mixture shall consist of three native plant species including one grass or Jicarilla Apache Tribal approved seed mix.
3. The seed mixture shall be drilled on the contour whenever practical.
4. At least 70 percent of the native perennial vegetative cover (unimpacted by overgrazing, fire, or other intrusive damage) shall be maintained through two successive growing seasons. Irrigation may not be used to accomplish the required ground cover.