

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
June 24, 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**

RCVD JUL 22 '08

Oil Cons. Div.

DIST. 3

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

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.

Operator: Williams Production Co, LLC OGRID #: 120782
Address: PO Box 640/721 So. Main, Aztec, NM 87410
Facility or well name: Rosa Unit #311A
API Number: 30-039-30441 OCD Permit Number: _____
U/L or Qtr/Qtr A Section 33 Township 31N Range 04W County: Rio Arriba
Center of Proposed Design: Latitude 36.86144 Longitude -107.25498 NAD: ☐ 1927 ☒ 1983
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

<input checked="" type="checkbox"/> Pit: Subsection F or G of 19.15.17.11 NMAC Temporary: <input checked="" type="checkbox"/> Drilling <input checked="" type="checkbox"/> Workover <input type="checkbox"/> Permanent <input type="checkbox"/> Emergency <input type="checkbox"/> Cavitation <input type="checkbox"/> Steel Pit <input checked="" type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type: Thickness <u>20</u> mil <input checked="" type="checkbox"/> LLDPE <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> String-Reinforced Seams: <input checked="" type="checkbox"/> Welded <input checked="" type="checkbox"/> Factory <input type="checkbox"/> Other _____ Volume: <u>20,000</u> bbl Dimensions: L <u>140'</u> x W <u>70'</u> x D <u>12'</u>	<input type="checkbox"/> Closed-loop System: Subsection H of 19.15.17.11 NMAC <input type="checkbox"/> Drying Pad <input type="checkbox"/> Tanks <input type="checkbox"/> Haul-off Bins <input type="checkbox"/> Other _____ <input type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type: Thickness _____ mil <input type="checkbox"/> LLDPE <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____ Seams: <input type="checkbox"/> Welded <input type="checkbox"/> Factory <input type="checkbox"/> Other _____ Volume: _____ bbl _____ yd ³ Dimensions: Length _____ x Width _____
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<input type="checkbox"/> Below-grade tank: Subsection I of 19.15.17.11 NMAC Volume: _____ bbl Type of fluid: _____ Tank Construction material: _____ <input type="checkbox"/> Secondary containment with leak detection <input type="checkbox"/> Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off <input type="checkbox"/> Visible sidewalls and liner <input type="checkbox"/> Visible sidewalls only <input type="checkbox"/> Other _____ Liner type: Thickness _____ mil <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____	<input type="checkbox"/> Fencing: Subsection D of 19.15.17.11 NMAC <input type="checkbox"/> Chain link, six feet in height, two strands of barbed wire at top <input type="checkbox"/> Four foot height, four strands of barbed wire evenly spaced between one and four feet <input checked="" type="checkbox"/> Netting: Subsection E of 19.15.17.11 NMAC <input type="checkbox"/> Screen <input type="checkbox"/> Netting <input type="checkbox"/> Other _____ <input type="checkbox"/> Monthly inspections <input checked="" type="checkbox"/> Signs: Subsection C of 19.15.17.11 NMAC <input type="checkbox"/> 12'x24', 2' lettering, providing Operator's name, site location, and emergency telephone numbers <input checked="" type="checkbox"/> Signed in compliance with 19.15.3.103 NMAC
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<input type="checkbox"/> Alternative Method: Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	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: <input checked="" type="checkbox"/> Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval. <input type="checkbox"/> Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.
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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

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 - 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: _____

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 (required for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations (required 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 - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____

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 H₂S, 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

Proposed Closure: 19.15.17.13 NMAC

Type: ☒ Drilling ☒ Workover ☐ Emergency ☐ Cavitation ☐ 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)

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

Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) <i>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.</i>	
<input type="checkbox"/> Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC <input type="checkbox"/> Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC <input type="checkbox"/> Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings) <input type="checkbox"/> Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC <input type="checkbox"/> Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC <input type="checkbox"/> Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	
Waste Removal Closure For Closed-loop Systems That Utilize Haul-off Bins Only: (19.15.17.13.D NMAC) <i>Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings.</i>	
Disposal Facility Name: _____ Disposal Facility Permit Number: _____	
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) <i>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.</i>	
<input checked="" type="checkbox"/> Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC <input checked="" type="checkbox"/> Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC <input type="checkbox"/> Construction and Design of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC <input checked="" type="checkbox"/> Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC <input checked="" type="checkbox"/> Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC <input checked="" type="checkbox"/> Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC <input checked="" type="checkbox"/> Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved) <input checked="" type="checkbox"/> Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC <input checked="" type="checkbox"/> Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC <input checked="" type="checkbox"/> Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	
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): <u>Michael K. Lane</u> Title: <u>Sr. EH&S Specialist</u> Signature: <u></u> Date: <u>7/22/08</u> e-mail address: <u>myke.lane@williams.com</u> Telephone: <u>505-634-4219</u>	
OCD Approval: <input checked="" type="checkbox"/> Permit Application (including closure plan) <input type="checkbox"/> Closure Plan (only)	
OCD Representative Signature: <u></u> Approval Date: <u>8-5-08</u> Title: <u>Enviro / spec</u> OCD Permit Number: _____	
Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC <input type="checkbox"/> Closure Completion Date: _____	
Closure Method: <input type="checkbox"/> Waste Excavation and Removal <input type="checkbox"/> On-Site Closure Method <input type="checkbox"/> Alternative Closure Method <input type="checkbox"/> If different from approved plan, please explain.	
Closure Report Attachment Checklist: <i>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.</i>	
<input type="checkbox"/> Proof of Closure Notice <input type="checkbox"/> Proof of Deed Notice (if applicable) <input type="checkbox"/> Plot Plan <input type="checkbox"/> Confirmation Sampling Analytical Results <input type="checkbox"/> Waste Material Sampling Analytical Results <input type="checkbox"/> Disposal Facility Name and Permit Number <input type="checkbox"/> Soil Backfilling and Cover Installation <input type="checkbox"/> Re-vegetation Application Rates and Seeding Technique <input type="checkbox"/> Site Reclamation (Photo Documentation) On-site Closure Location: Latitude _____ Longitude _____ NAD: <input type="checkbox"/> 1927 <input type="checkbox"/> 1983	
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: _____	

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State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-3041		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 17033	*Property Name ROSA UNIT		*Well Number 311A
*GRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY		*Elevation 6739'

¹⁰ Surface Location

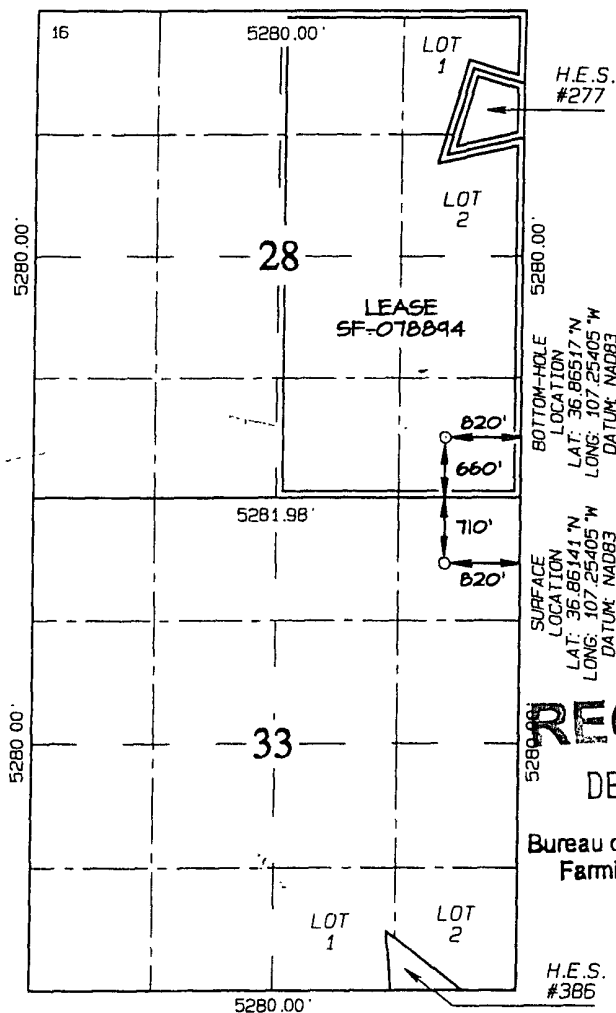
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	33	31N	4W		710	NORTH	820	EAST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	28	31N	4W		660	SOUTH	820	EAST	RIO ARriba

¹² Dedicated Acres 320.0 Acres - E/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Larry Higgins 12-26-07
Signature Date
Larry Higgins
Printed Name

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Survey Date: SEPTEMBER 27, 2006

Signature and Seal of Professional Surveyor

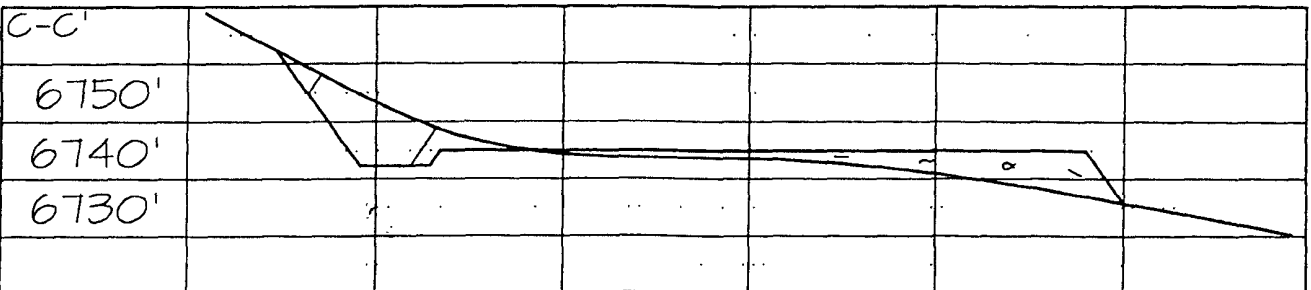
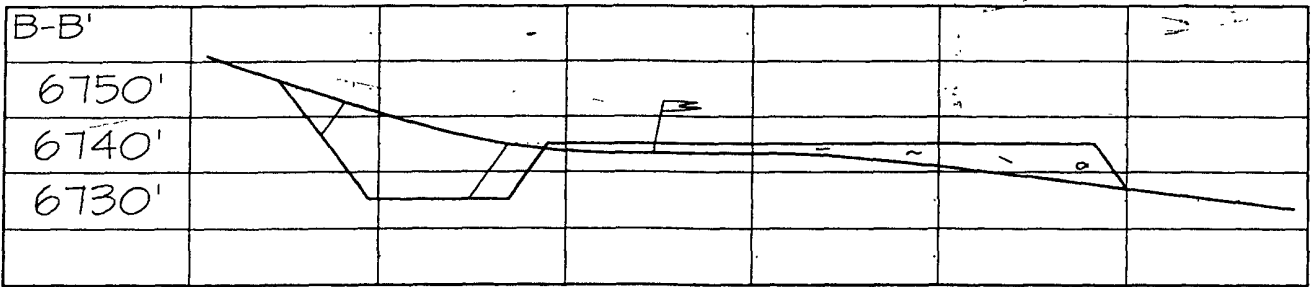
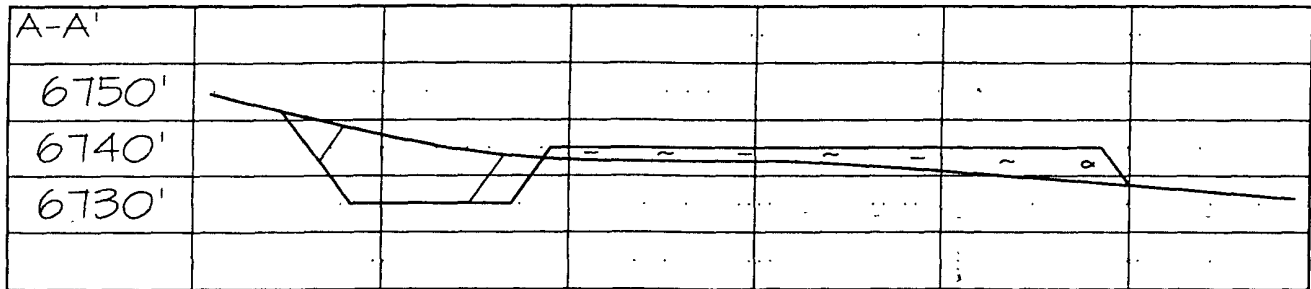
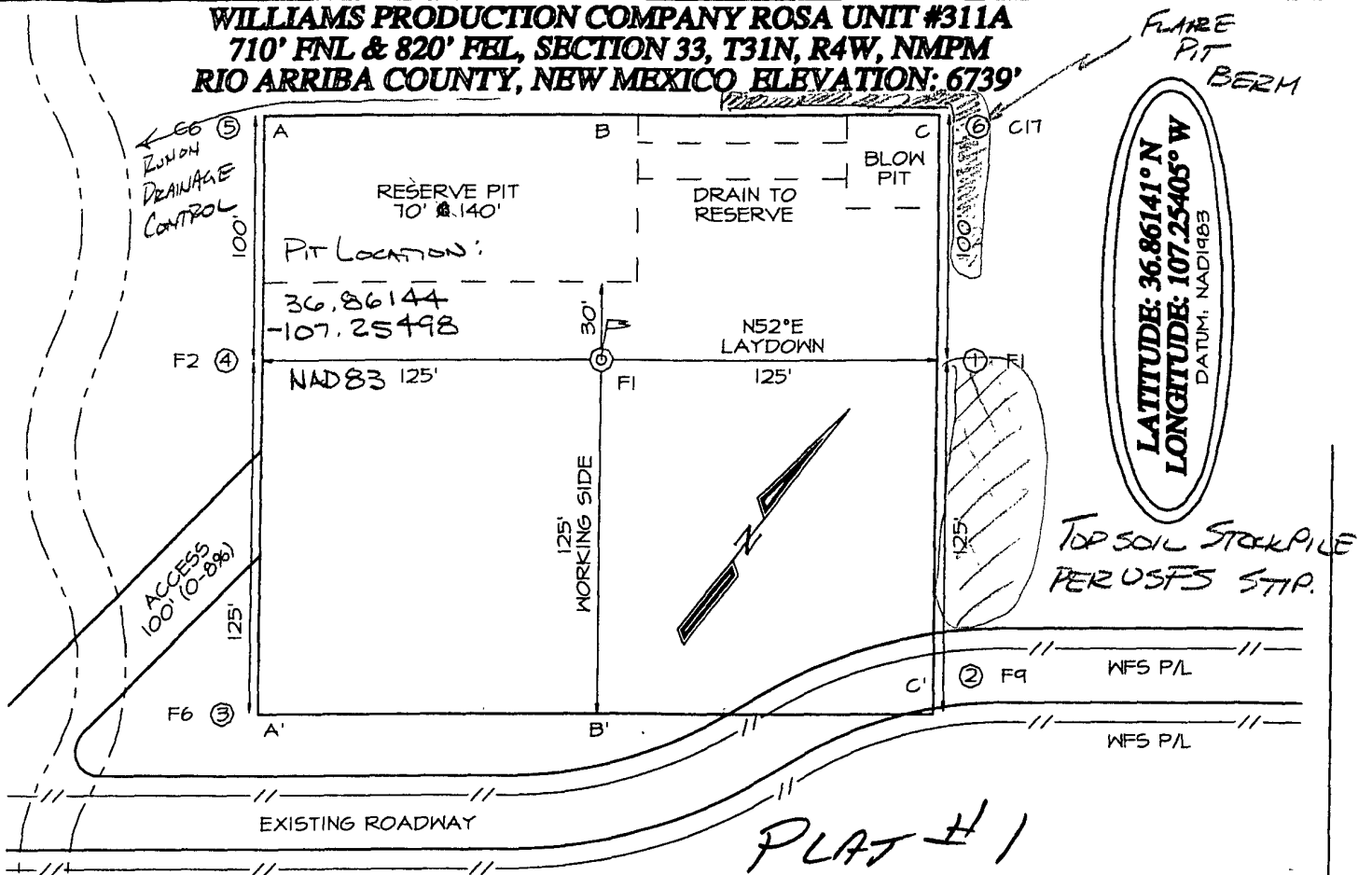


JASON C. EDWARDS
Certificate Number 15269

RECEIVED
DEC 26 2007

Bureau of Land Management
Farmington Field Office

WILLIAMS PRODUCTION COMPANY ROSA UNIT #311A
710' FNL & 820' FEL, SECTION 33, T31N, R4W, NMPM
RIO ARriba COUNTY, NEW MEXICO ELEVATION: 6739'



**Hydrogeological Report
Williams Production Co., LLC
Rosa Unit #311A**

Regional Hydrogeological Context:

Referenced Well Location:

The proposed Rosa #311A well is located in the northern portion of the Jicarilla Range District of the Carson National Forest in Rio Arriba County, New Mexico. The Ranger District is located in the northeastern portion of the San Juan Basin an asymmetrical syncline that extends from northwestern New Mexico into southwestern Colorado. (Carson Forest DEIS, 2007) Elevation of the proposed well site is 6739 ft MSL.

General Regional Groundwater Description:

As a portion of the San Juan River basin, the Jicarilla Ranger District is underlain by sandstone aquifers of the Colorado Plateau. The primary aquifer of potential concern at the reference site is the Unita-Animas Aquifer composed primarily of Lower Tertiary rocks in the San Juan Basin. It consists of the San Jose Formation, the underlying Animas Formation and its lateral equivalent, the Nacimiento Formation, and the Ojo Alamo Sandstone. The thickness of the Unita-Animas Aquifer generally increases toward the central part of the basin. Beneath Jicarilla Ranger District land, the maximum thickness of the aquifer is about 3,500 feet (USGS 2001). The Unita-Animas Aquifer contains fresh to moderately saline water.

Ground water generally flows toward the San Juan River and its tributaries where it becomes alluvial ground water or is discharged to streamflow. Additional information on the Hydrogeologic setting can be found in referenced provided.

Site Specific Information:

Surface Hydrology: The reference well site is located in the Ulibarri Canyon drainage near the confluent of Ulibarri Canyon, a first order tributary to Cabresto Canyon. The proposed pit is located slightly over 300 feet north of Ulibarri Canyon and a minor drainage is located some 200 feet east of the proposed well pad.

1st Water Bearing Formation: Suspect the San Jose Formation, Tertiary

Formation Thickness: +700 feet Est.

Underlying Formation: Nacimiento, Tertiary

Depth to Groundwater: 50-100 feet bgs. Based on first moisture in cathodic wells on the Rosa 43, Rosa 309 and Rosa 310, all along Ulibarri Canyon, at approximately 80 ft bgs.

References:

- USDA 2006. Jicarilla District Carson Forest Draft Environmental Impact Study.
- BLM 1987. Proposed Farmington Resource Management Plan and Final Environmental Impact Statement. Bureau of Land Management-Farmington Field Office.
- NMWQCC 2005. State of New Mexico Water Quality Act and the Water Control Commission Regulations.
- USGS 2001. Groundwater Atlas of the U.S. – Arizona, Colorado, New Mexico, Utah: HA 730-C Colorado Plateau Aquifers.
- USDA 1987. Terrestrial Ecosystems Survey of the Carson Forest. Prepared and published by the United States Department of Agriculture, Forest Service, Southwestern Region. Published August 1987.

**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

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

POD / SURFACE DATA REPORT 07/22/2008

(acre ft per annum)				(quarters are 1=NW 2=NE 3=SW 4=SE)									
DB File Nbr	Use	Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q	Zone	X Y are in
<u>SJ 00049</u>	IND	24	BURLINGTON RESOURCES OIL & GAS	<u>SJ 00049</u>	Shallow	31N	04W	33	3				
<u>SJ 02885</u>	DOM	3	FRED B. MIERS	<u>SJ 02885</u>		31N	04W	27	2	3	1		
<u>SJ 02886</u>	DOM	3	PHILLIP ROSS	<u>SJ 02886</u>		31N	04W	28	2	2	4		
<u>SP 03973</u>	STK	0	CARSON NATIONAL FOREST	<u>SP 03973</u>		31N	04W	35	4	3			

Record Count: 4

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 07/22/2008

(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 (in feet) Column
<u>SJ 02885</u>	31N	04W	27	2	3	1				150		
<u>SJ 02886</u>	31N	04W	28	2	2	4				150		
<u>SJ 00049</u>	31N	04W	33	3						112	80	32

Record Count: 3

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

Operator Meridian Oil Co. Location: Unit A Sec. 26 Twp 31 Rng 04

Name of Well/Wells or Pipeline Serviced CPS 2375W

ROSA UNIT #309

Elevation _____ Completion Date 6-16-93 Total Depth 334' Land Type F

Casing Strings, Sizes, Types & Depths 10/26 Set 60' of 8" PVC Casing.

NO GAS, WATER, or Boulders WERE ENCOUNTERED DURING CASING.

If Casing Strings are cemented, show amounts & types used Cemented

WITH 14 SACKS

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. Depth at 80'

Depths gas encountered: No

Ground bed depth with type & amount of coke breeze used: 334'

50 bags of Ashbury and 20 bags of Pasocco.

Depths anodes placed: 320, 310, 300, 290, 280, 270, 260, 220, 210, 180, 170, 160, 140, 130, 120

Depths vent pipes placed: 334'

Vent pipe perforations: Bottom 250'

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.

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐Completion Date 6-11-93

CPS #		Well Name Line or Plant		Work Order #		Static:		Ins Union Check	
2376-W		ROSA UNIT #310		M293				<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad UNION AT Well Head is BAD.	
Location		Anode Size		Anode Type		Size Bit			
N-26-31-04		2x60		Quartz		7 7/8"			
Depth Drilled		Depth Logged		Drilling Rig Time		Total Lbs. Coke Used		Lost Circulation Mat'l Used	
320		314							
Anode Depth		Anode Output (Amps)		Anode Depth		Anode Output (Amps)			
# 1	295	# 2	285	# 3	275	# 4	265	# 5	255
# 6	245	# 7	235	# 8	225	# 9	215	# 10	205
# 1	5.3	# 2	6.3	# 3	5.5	# 4	5.6	# 5	5.2
# 6	5.8	# 7	5.4	# 8	5.3	# 9	4.9	# 10	5.4
# 11	195	# 12	185	# 13	175	# 14	165	# 15	155
# 16		# 17		# 18		# 19		# 20	
# 11	5.3	# 12	5.2	# 13	6.0	# 14	5.8	# 15	5.6
# 16		# 17		# 18		# 19		# 20	
Total Circuit Resistance				No. 8 C.P. Cable Used				No. 2 C.P. Cable Used	
Volts 10.11		Amps 24.9		Ohms .40					

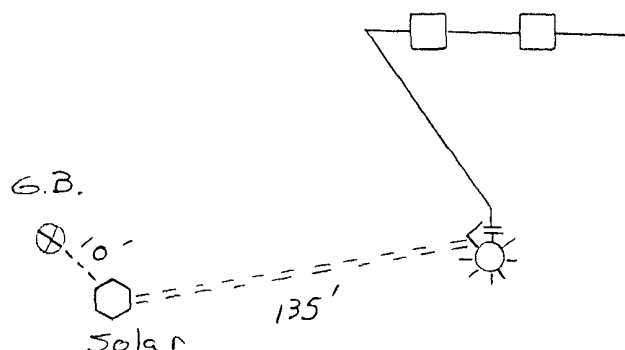
Remarks: 10/25 SET 60' OF 8" PVC CASING, AND CEMENTED WITH 18 SACKS.
NO GAS, WATER, OR BOULDERS WERE ENCOUNTERED DURING CASING.
Drilled 320', logged 314'. Driller said little water
at 320'. Not enough for sample. Installed 314' of 1"
PVC Vent pipe. Perforated bottom 200'.

Rectifier Size: Solar V — A
 Addn'l Depth: —
 Depth Credit: 186'
 Extra Cable: 165'
 Ditch & 1 Cable: 145'
 25' Meter Pole: —
 20' Meter Pole: —
 10' Stub Pole: —

All Construction Completed

John A. Elusick
(Signature)

GROUND BED LAYOUT SKETCH



SOIL

WILLIAMS PRODUCTION
COMPANY

AUG 23 1991

Clay	10'
"	20'
Sand	30'
lay / slate	40'
"	50'
shale / rock	60'
"	70'
rock / shale	80'

Shale
Sandy shale

Shale

[illegible]



○ Well Location

2,000 0 2,000 4,000
Feet



Exploration & Production



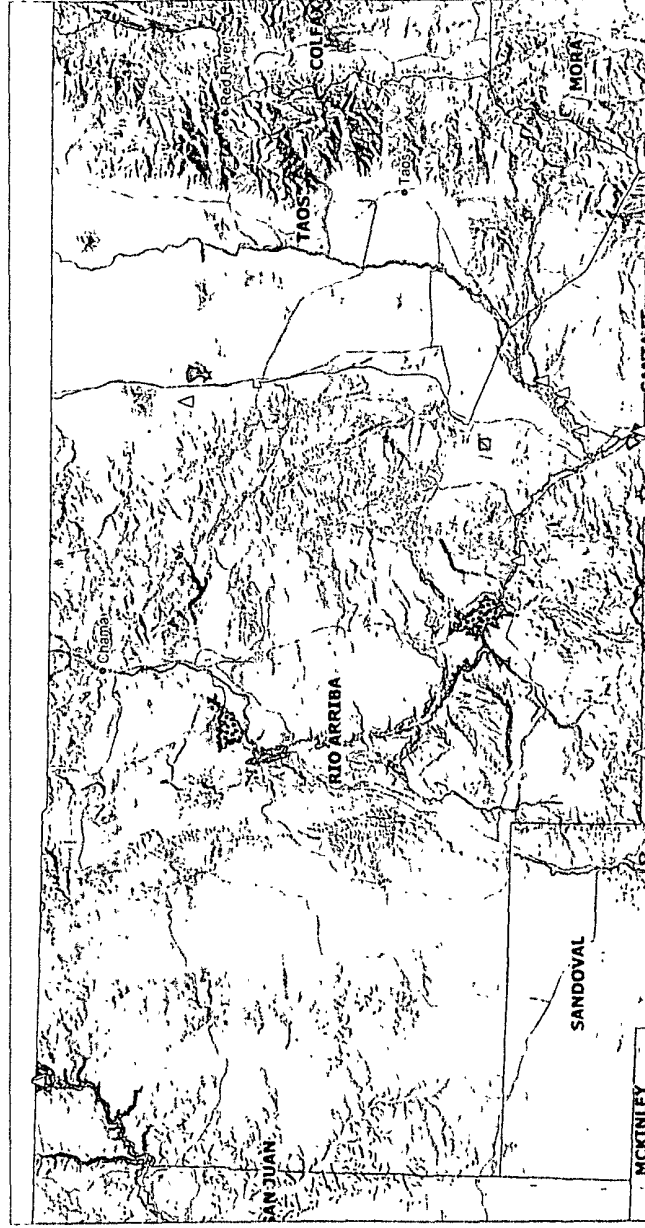
Rosa #311A
Rosa #397A

Map Document: \\Winstupg01\geop\Project\San_Juan\WELLS\Rosa_wells.mxd
7/8/2008 -- 3:18:23 PM

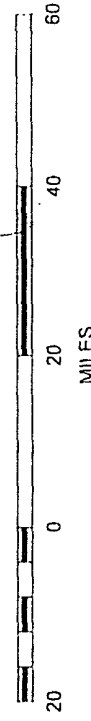
124,000

Mines, Mills, and Quarries in Rio Arriba Co, NM

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	
—	Disturbance



SCALE 1:1,371,774



**Sighting Compliance Demonstration
Williams Production Co., LLC
Rosa Unit #311A**

FEMA map – 100-year floodplain:

There is no FEMA Map covering areas in the Carson Forest. No floodplain have been mapped in vicinity of the Rosa #311A. The proposed well site in not located near any significant washes or water courses and is NOT in a 100-year floodplain as visible on the topographic map and aerial photo included in this application packet.

Sighting Criteria Compliance Demonstrations

The Rosa Unit #311A is not located in an unstable area. The location is not over a mine and the proposed grading plan will ensure the pad does not have unacceptable slopes. The location of the excavated pit material will not be located within 300 ft of any continuously flowing water course or 200 ft from any other significant water course. The site is not within 500 feet of any reported riparian areas or wetlands (See copy of USFS Vegetative Cover Map).

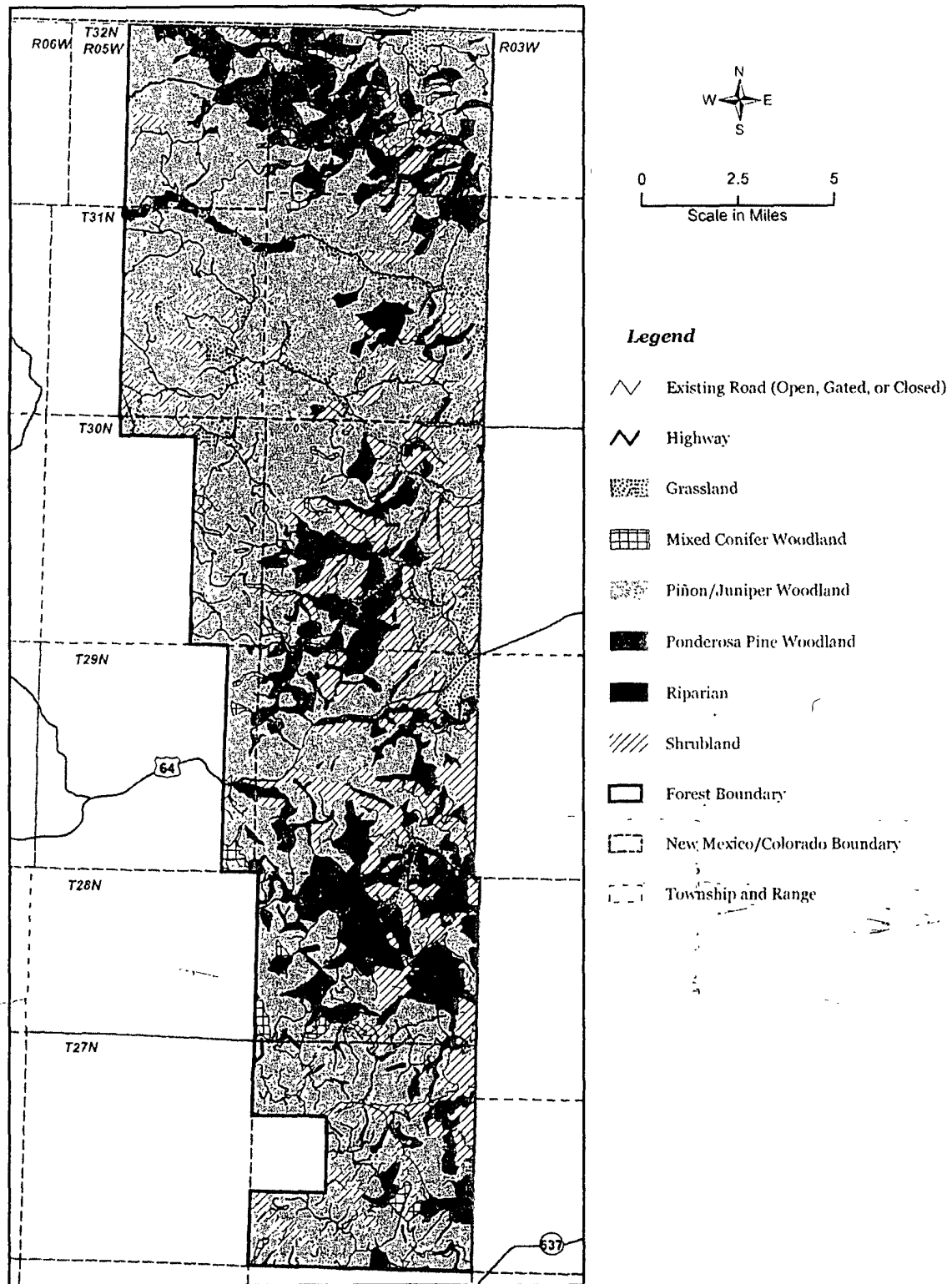


Figure 24. Vegetative cover types

Williams Production Co., LLC
San Juan Basin: New Mexico Assets
Temporary Pit Design and Construction Plan
Drilling/Completion and Workover

In accordance with Rule 19.15.17 NMAC, the following plan describes the general design and construction (D&C) of temporary pits on Williams Production Co, LLC (WPX) locations in the San Juan Basin of New Mexico. This is WPX's standard procedure for all temporary pits to be utilized for the drilling, completion and/or workover of oil and gas wells operated by WPX. For those temporary pits which do not conform to this standard plan, a separate well specific D&C plan will be developed and utilized.

General Plan Requirements:

1. WPX will design and construct a temporary pit to contain liquids and solids associated with drilling, completion and workover of oil and gas wells which will prevent contamination of fresh water resources and protect public health and the environment.
2. Prior to excavation of the pit, topsoil will be stripped and stockpiled within the construction zone for later use during restoration.
3. WPX will post a well sign, not less than 12" by 24", on the well site prior to construction of the temporary pit. This sign will list the operator on record, the location of the well site by unit letter/section/township/range, and emergency telephone number(s).
4. WPX shall construct all new fences utilizing 48" steel mesh field-fence (hogwire) on the bottom with a single strand of barbed wire on top. T-posts will be installed every 12 feet and corners shall be anchored utilizing a secondary T-post or similar bracing. Temporary pits will be fenced at all times excluding drilling/completion and/or workover operations when the rig is present on site, at which time the "front" side of the fence will be temporarily removed for operational purposes.
5. WPX shall construct the temporary pit so that the foundation and interior slopes are firm and free of rocks, debris, sharp edges or irregularities to meet manufacturers' specifications and potential liner failure.
6. WPX shall construct the pit so that the slopes are no steeper than two horizontal to one vertical. Where steeper slopes are required due to surface owner and right-of-way restriction, an engineers certification of stability will be provided with the well pit application.
7. Pit well will be walked down by a crawler type tractor following construction and prior to liner installation.
8. All temporary pits will be lined with a 20-mil, string reinforced, LLDPE liner, complying with EPA SW-846 method 9090A requirements.
9. Geotextile will be installed beneath the liner when rocks, debris, sharp objects or irregularities cannot be avoided.
10. All liners will be anchored in the bottom of a compacted earth-filled trench consistent with manufacturer's specifications and at least 18 inches deep.
11. WPX will minimize liner seams and orient them up and down, not across slope faces. Factory seams will be used whenever possible. Field seams will be overlapped per manufacturers specifications. WPX will minimize the number of field seams in corners and irregularly shaped areas.
12. The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides (secondary liner placed over the primary liner), and/or a manifold system.
13. The pit shall be protected from run-on by construction of diversion ditches around the location or around the perimeter of the pit in as necessary.
14. The volume of the pit shall not exceed 10 acre-feet, including freeboard
15. Temporary blow pits will be constructed to allow gravity flow to discharge into the lined reserve pit.
16. Only the upper portion of the blow pit will be unlined as allowed in the Rule 19.15.17.11.F(11) NMAC.
17. WPX will modify this design if field and/or operating conditions do not effectively allow drainage of the blow pit and freestanding liquids pose a potential concern.

Williams Production Co., LLC
San Juan Basin: New Mexico Assets
Temporary Pit Maintenance & Operating Plan
Drilling/Completion and Workover

In accordance with Rule 19.15.17 NMAC, the following plan describes the general operations and maintenance (O&M) of temporary pits on Williams Production Co, LLC (WPX) locations in the San Juan Basin of New Mexico. This is WPX's standard procedure for all temporary pits to be utilized for the drilling, completion and/or workover of oil and gas wells operated by WPX. For those temporary pits which do not conform to this standard O&M plan, a separate well specific O&M plan will be developed and utilized.

General Plan Requirements:

1. WPX will operate and maintain a temporary pit to contain liquids and solids associated with drilling, completion and workover of oil and gas wells which will prevent contamination of fresh water resources and protect public health and the environment.
2. WPX will to the extent practical conserve drilling fluids for reuse by transferring liquids to pits ahead of the rigs. All other fluids will be disposed by evaporation or transport to Basin Disposal, Inc in Bloomfield, New Mexico (Permit # NM-01-005).
3. WPX shall maintain at least two (2) feet of vertical freeboard for a temporary pit.
4. WPX shall remove all free liquids from a temporary pit within 30 days from the date the drilling or workover rig is released.
5. Only fluids and solids generated during the drilling/completion/workover process may be discharged into a temporary pit. Other miscellaneous solid waste or debris will not be allowed.
6. WPX will not discharge or store any hazardous waste as defined under RCRA 40CFR 261 and 19.15.1.7.W(3) NMA in any temporary pit.
7. If any pit liner's integrity is compromised, or if any penetration of the liner occurs:
 - a. Above the liquid's surface, WPX shall repair the damage or replace the liner as necessary. WPX will notify the NMOCD Aztec District Office by phone or email within 48-hours of discovery.
 - b. Leak below the liquid's surface, WPX shall suspend operations, remove all liquids above the damaged liner within 48 hours, and repair the damage or replace the liner. WPX will notify and report to NMOCD as follows:
 - i. If the release is less than 25 bbls, the Aztec District Office by phone or email within 48-hours of discovery and repair.
 - ii. If the release is suspected to be greater than 25 bbls, the Aztec District Office and the Environmental Bureau Chief by phone for immediate verbal notification pursuant to 19.15.3.116.B (1)(d).
 - c. Written Spill/Release reports will be submitted on Form C-141 per 19.15.3.116.C NMAC within 15 days to the Aztec District Office.
8. The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides (secondary liner placed over the primary liner), and/or a manifold system.
9. Diversion ditches, around the location or around the perimeter of the pit, shall be maintained as protection from run-on.
10. WPX shall immediately remove any visible layer of oil from the surface of a temporary pit following cessation of drilling/completion/workover operations. Oil absorbent booms will be utilized to contain and remove oil. An oil absorbent boom will stored on-site until the pit is covered.
11. WPX will inspect the temporary pits as follows to ensure compliance with this plan:
 - a. Daily during drilling or workover operations. Inspections will be included with the IADC reports.
 - b. Weekly as long as liquids remain in the pit. Electronic copies of the inspections will be kept at the WPX San Juan Basin office.
 - c. Copies of the inspections will be filed with the NMOCD Aztec District office upon pit closure.
12. WPX shall remove all free liquids from a blow/flare (cavitation) pit within 48 hours after completing operations. WPX may request additional time to remove liquids from the Aztec District office if it is not feasible to meet the 48 hour requirement.

Williams Production Co., LLC
San Juan Basin: New Mexico Assets
Temporary Pit In-place (50-100 ft to Groundwater) Closure Plan
Drilling/Completion and Workover

In accordance with Rule 19.15.17.13 NMAC, the following plan describes the general in-place closure requirements of temporary pits on Williams Production Co, LLC (WPX) locations in the San Juan Basin of New Mexico. This is WPX's standard procedure for all temporary pits to be utilized for the drilling, completion and/or workovers of oil and gas wells operated by WPX. For those temporary pits which do not conform to this standard closure plan, a separate well/pit specific closure plan will be developed and utilized.

All closure activities will include proper documentation and will be submitted to OCD within 60 days of the pit closure on a Closure Report using Division Form C-144. The Report will include the following:

- Details on Capping and Covering, where applicable
- Plot Plan (Pit Diagram)
- Inspection reports
- Sampling Results
- Division Form C-105: *WELL COMPLETION OR RECOMPLETION REPORT AND LOG*
- Copy of Deed Notice filed with the County Clerk (format to meet County requirements)

General Plan Requirements:

1. All free standing liquids will be removed from the pit at the start of the closure process. Liquids will be removed in a manner that the appropriate District Office approves including; recycled, reused, reclaimed, evaporated, and/or disposed of in a Division-approved facility.
2. The preferred method of closure for all temporary pits will be on-site closure by in-place burial, provided all the criteria in 19.15.17.13.B are met.
3. The surface owner shall be notified of WPX's proposed closure plan using a means that provides proof of notice (i.e. certified mail/retrun receipt requested)
4. Within six months of the "rig-off" status occurring WPX will ensure that the temporary pit is covered, recontoured and reseeded in progress.
5. Notice of Closure will be given to the Aztec District office between 72 hours and one week of the scheduled closure via email or phone. The notification of closure will include the following:
 - a. Operators Name (WPX)
 - b. Well Name and API Number
 - c. Location (USTR)
6. The pit liner shall be removed above "mud level" after stabilization. Removal of the liner will consist of manually or mechanically cutting the liner at the mud level and removing all remaining liner. Care will be taken to remove "all" of the liner (i.e. anchored material). All excessive liner will be disposed of at a licensed disposal facility (probably San Juan Regional Landfill operated by Waste Management under NMED Permit SWM-052426).
7. The shallow surface soils of the unlined flare/cavitation pit will be scrapped and placed in the lined pit. A five-point composite sample will be taken of the pit using sampling tools and all samples tested per 19.15.17.13(B)(1)(b) NMAC. In the event that the criteria are not met (See Table 1), a release will be reported to NMOCD in compliance with Rule 116 and additional soil removal will be done until closure criteria are met.

8. Solidification of the remaining pit contents shall be achieved by mixing non-waste containing, earthen material. The solidification process will be accomplished use a combination of natural drying and mechanical mixing. Pit contents will be mixed with non-waste, earthen material to a consistency that is deemed safe and stable. The mixing ratio shall not exceed 3 parts non-waste to 1 part pit contents.
9. A five-point composite sample will be taken of the pit using sampling tools and all samples tested per 19.15.17.13(B)(1)(b) NMAC. In the event that the criteria are not met (See Table 1), all contents will be handled per 19.15.17.13(B)(1)(a) (i.e. dig and haul to a Division-approved facility). Approval to haul will be requested of the Aztec District office prior to initiation.

Table 1: Closure Criteria for Temporary Pits in Non-sensitive Areas with Groundwater Between 50-100 bgs.

Components	Testing Methods	Closure Limits (mg/Kg)
Benzene	EPA SW-846 Method 8021B or 8260B	0.2
BTEX	EPA SW-846 Method 8021B or 8260B	50
TPH	EPA SW-846 Method 8015 M(Full Range)* or Method 418.1	2500
GRO/DRO	EPA SW-846 Method 8015M (GRO/DRO)	500
Chlorides	EPA SW-846 Method 300.1	500

* Preferred method

10. Upon completion of solidification and testing, the pit area will be backfilled with non-waste earthen material compacted to native conditions to enable effective revegetation for successful evapotranspiration. A minimum of four feet of cover including replacement of one foot of suitable material to establish vegetation, or the background thickness of topsoil, whichever is greater.
11. Following cover, the site will be recontoured to meet the Surface Management Agency or surface owner requirements. Re-contouring will attempt to match fit, shape, line form, and texture of the surrounding geography. Re-shaping will include drainage control, prevent ponding, and minimize erosion. Natural drainages will be unimpeded and stormwater Best Management Practices (BMPs) will be used to aid in soil stabilization and protection surface water quality.
12. Notification will be sent to the Aztec District office when the reclaimed area is seeded.
13. WPX shall seed the disturbed areas the first growing season after the pit is covered. Seeding will be accomplished via drilling on the contour whenever practical, or by other Division-approved methods. 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 maintained that cover through two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs. *Note: WPX assumes the seeding stipulations including mix and seeding methods specified by the Surface Management Agency (BLM, BOR, USFS, Tribal, etc.) or Land owner as part of a surface use agreement or APD are Division-approved methods unless notified by the Division of their unacceptability.*
14. The temporary pit will be located with a steel marker, no less than four inches in diameter, cemented in a hole three feet deep in the center of the on site burial upon the abandonment of all wells on the pad. The marker will be flush with the ground to allow access of the active well pad and for safety concerns. The marker will include a threaded collar to be used for future abandonment. The top of the marker will contain a welded steel 12" square plate that indicates the on site burial of the temporary pit. The plate will be easily removable and a four-foot tall riser will be threaded into the top of the collar marker and welded around the base with the operations information at the time of all wells on the pad abandoned. The information will include Operator Name, Lease Name, Well Name, and number, USTR, and an indicator that the marker is an onsite pit burial location.

Lane, Myke (E&P)

From: Lane, Myke (E&P)
Sent: Tuesday, July 22, 2008 9:16 AM
To: John Reidinger
Cc: Brandon.powell@state.nm.us; Higgins, Larry (E&P); Riley, Heather (E&P)
Subject: Pit Notice - Rosa Unit 311A

John:

This correspondence is to notify the USFS- Jicarilla Ranger District: Carson Forest that Williams Production is planning to close the temporary pit associated with the drilling and completion of the reference well on-site. The planned closure is consistent with the Surface Use Plan submitted with Williams APD, approved earlier.

This notice is to comply with the NMOCDC Pit Rule 19.15.17 NMAC requirement to notify surface owners of the operator's intended closure method. If site conditions do not allow Williams to close in-place, we will provide your office with prior notice should the Forest have any concerns.

Please contact us if there are any questions or additional information is required. Thanks for your time and consideration.

Michael K. (Myke) Lane, PE
EH&S Team Leader - San Juan Basin Operations
721 S. Main/PO Box 640, Aztec, NM 87410
(505) 634-4219(off); -4205(fax); 330-3198(cell)

"The problems we face cannot be resolved at the same level of thinking as that which gave rise to them!"---shared with me by Brent Hale

7/22/2008