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

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 Comended~				
Proposed Alternative Method Permit or Closure Plan Application				
Type of action Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method Modification to an existing permit Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method				
Instructions. Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request				
Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances				
Operator Williams Operating Co, LLC OGRID # 120782				
Address PO Box 640 / 721 S Main Aztec, NM 87410				
Facility or well name Rosa Unit #398A (re-permitted as the Rosa Unit #602)				
API Number 30-039-30914 OCD Permit Number				
U/L or Qtr/Qtr C Section 27 Township 31N Range 4W County Rio Arriba				
Center of Proposed Design Latitude 36 87456N Longitude -107 24540W NAD 1927 \(\times \) 1983				
Surface Owner S Federal State Private Tribal Trust or Indian Allotinent				
2. Pit Subsection F or G of 19 15 17 11 NMAC				
Temporary Drilling Workover				
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Lined ☐ Unlined Liner type Thicknessmil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other				
String-Reinforced				
1 — -				
Liner Seams Welded Factory Other Volume 20,000 bbi Dimensions L 140' x W 70' x D 12'				
☐ 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 Thicknessmil LLDPE HDPE PVC Other				
Cilici Scalits Welded Factory Gallet				
Below-grade tank Subsection I of 19 15 17 11 NMAC				
Website Subsection 10 19 15 17 11 NMAC				
Volumebbl Type of fluid \cdot \cdo				
Below-grade tank Subsection I of 19 15 17 11 NMAC Volumebbl Type of fluid Tank Construction material Secondary containment with leak detection Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off Visible sidewalls and liner Visible sidewalls only Other I mer type. Thickness MI HDPF PVC Other				
Secondary containment with leak detection Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off				
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other				
Liner type Thicknessmil				
5				
Alternative Method Submitted of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval				
L NUMBER OF AN EXCENDION FORMEST IS FORMED — EXCENDIONS MUST BE SUMMINED TO THE NAME OF PROVIDENCIAL BUILDING OF CONSIDERATION OF ANDROVAL				

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

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.

			District Office.
LeOII	Propo	Pit, Closed-Loop System, Below-Gr sed Alternative Method Permit or Clos	
	Type of action: below-grade tank	Permit of a pit, closed-loop system, below-grade Closure of a pit, closed-loop system, below-grade Modification to an existing permit Closure plan only submitted for an existing perms, or proposed alternative method	e tank, or proposed alternative method

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 Operating Co, LLC OGRID #: 120782				
Address: PO Box 640 / 721 S Main Aztec, NM 87410				
Facility or well name: Rosa Unit 602				
API Number:30-039-30914OCD Permit Number:				
U/L or Qtr/Qtr C Section 27 Township 31N Range 4W County: Rio Arriba				
Center of Proposed Design: Latitude 36.87456N Longitude -107.24540W NAD: □ 1927 □ 1983				
Surface Owner: Sederal State Private Tribal Trust or Indian Allotment				
2.				
☑ Pit: Subsection F or G of 19.15.17.11 NMAC				
Temporary: Drilling Workover				
Permanent Emergency Cavitation P&A				
 ☑ Lined ☐ Unlined Liner type: Thickness 20 mil ☑ LLDPE ☐ HDPE ☐ PVC ☐ Other ☑ String-Reinforced 				
Liner Seams: Welded Factory Other Volume: 20,000 bbl Dimensions: L 140' x W 70' x D 12'				
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				
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other				
☐ Lined ☐ Unlined Liner type: Thicknessmil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other				
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 FARD To Seams				
Below-grade tank: Subsection I of 19.15.17.11 NMAC Volume:				
Volume:bbl Type of fluid:				
Tank Construction material:				
Secondary containment with leak detection Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off				
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other				
Liner type: Thicknessmil				
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.				

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 As per BLM specifications				
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				
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 acceptance.	ntable source			
material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appro	priate district			
office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to dry				
above-grade tanks associated with a closed-loop system.	□ v. ⊠ v.			
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).	☐ Yes ☑ No			
- Topographic map; Visual inspection (certification) of the proposed site				
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)	☐ Yes ☑ No ☐ NA			
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image				
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.	☐ Yes ☐ No 図 NA			
 (Applies to permanent pits) Visual inspection (certification) of the proposed site; Aerial photo; Satellite image 				
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock	☐ Yes ⊠ No			
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				
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance	☐ Yes ⊠ No			
adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	!			
Within 500 feet of a wetland.	U V. DIN			
- 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	☐ Yes ☒ No			
Society; Topographic map				
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)
above ground steet tanks or naut-off ones 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 ₂ S, Prevention Plan
☐ Emergency Response Plan ☐ Oil Field Waste Stream Characterization
Monitoring and Inspection Plan
☐ Erosion Control Plan ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
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

Naste Removal Closure For Closed-loop Systems That Utilize Above Ground Instructions: Please indentify the facility or facilities for the disposal of liquids, facilities are required.		
Disposal Facility Name: Disposal Facility Permit Number:		
Disposal Facility Name:		
Will any of the proposed closed-loop system operations and associated activities of Yes (If yes, please provide the information below) No	occur on or in areas that will not be used for future ser	vice and operations?
Required for impacted areas which will not be used for future service and operation Soil Backfill and Cover Design Specifications based upon the appropriate Re-vegetation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection	e requirements of Subsection H of 19.15.17.13 NMA n I of 19.15.17.13 NMAC	С
or. Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the provided below. Requests regarding changes to certain siting criteria may requiconsidered an exception which must be submitted to the Santa Fe Environmenta demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC	re administrative approval from the appropriate dist il Bureau office for consideration of approval. Just	rict office or may be
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Database search;	ta 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; Database search;	ta 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; Database search; USG	ta obtained from nearby wells	☐ Yes ☒ No ☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other siglake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	gnificant watercourse or lakebed, sinkhole, or playa	☐ Yes ⊠ No
Within 300 feet from a permanent residence, school, hospital, institution, or church - Visual inspection (certification) of the proposed site; Aerial photo; Satellit		☐ Yes ⊠ No
Within 500 horizontal feet of a private, domestic fresh water well or spring that les watering purposes, or within 1000 horizontal feet of any other fresh water well or some NM Office of the State Engineer - iWATERS database; Visual inspection	spring, in existence at the time of initial application.	☐ Yes ⊠ No
Within incorporated municipal boundaries or within a defined municipal fresh wat adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approx	·	☐ Yes ⊠ No
Within 500 feet of a wetland US Fish and Wildlife Wetland Identification map; Topographic map; Visu	al 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	g and Mineral Division	☐ Yes ⊠ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geolog Society; Topographic map	y & Mineral Resources; USGS; NM Geological	☐ Yes ☑ No
Within a 100-year floodplain. - FEMA map		☐ Yes ☑ No
8. On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the	e following items must be attached to the closure pla	an. Please indicate,
by a check mark in the box, that the documents are attached. Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of Proof of Surface Owner Notice - based upon the appropriate requirements of Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Protocols and Procedures - based upon the appropriate requirements of 19.1: Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Waste Material Sampling Plan - based upon the appropriate requirements of Disposal Facility Name and Permit Number (for liquids, drilling fluids and on Soil Cover Design - based upon the appropriate requirements of Subsection Re-vegetation Plan - based upon the appropriate requirements of Subsection	f Subsection F of 19.15.17.13 NMAC appropriate requirements of 19.15.17.11 NMAC and) - based upon the appropriate requirements of 19.5.17.13 NMAC uirements of Subsection F of 19.15.17.13 NMAC Subsection F of 19.15.17.13 NMAC arill cuttings or in case on-site closure standards cannot 19.15.17.13 NMAC of 19.15.17.13 NMAC	

19. Operator Application Certification:			
I hereby certify that the information submitted with this application is true, accura	ate and complete to the best of my knowledge and belief.		
Name (Print): Michael K. Lane	Title: Sr. EH & S Specialist		
Signature:	Date: 4/23/"10		
e-mail address: myke.lanc@williams.com	Telephone: <u>505-634-4219</u>		
OCD Approval: Permit Application (including closure plan) Closure Plan			
	Approval Date: 4(27(10		
Title: Enviro / spec	OCD Permit Number:		
21. Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.			
	Closure Completion Date:		
22. Closure Method: Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Removal (Closed-loop systems only) If different from approved plan, please explain.			
23. Closure Report Regarding Waste Removal Closure For Closed-loop Systems Instructions: Please indentify the facility or facilities for where the liquids, drill 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: LatitudeLongitu	ldeNAD: □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:

District I 1625 N. French Dr., Hobbs, NM 88240

District II 1301 W. Grand Avenue, Artesia, NM 88210

District III 1000 Rio Brazos Rd., Aztec, NM 87410

District IV 1220 S. St. Francis Dr. Santa Fe, NM 87505

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

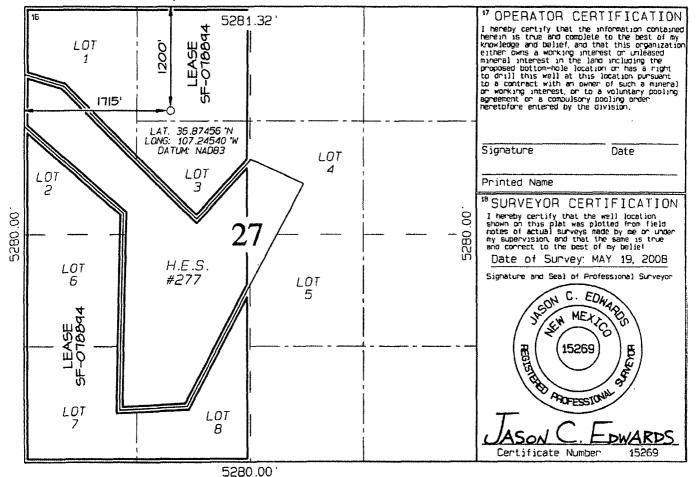
AMENDED REPORT

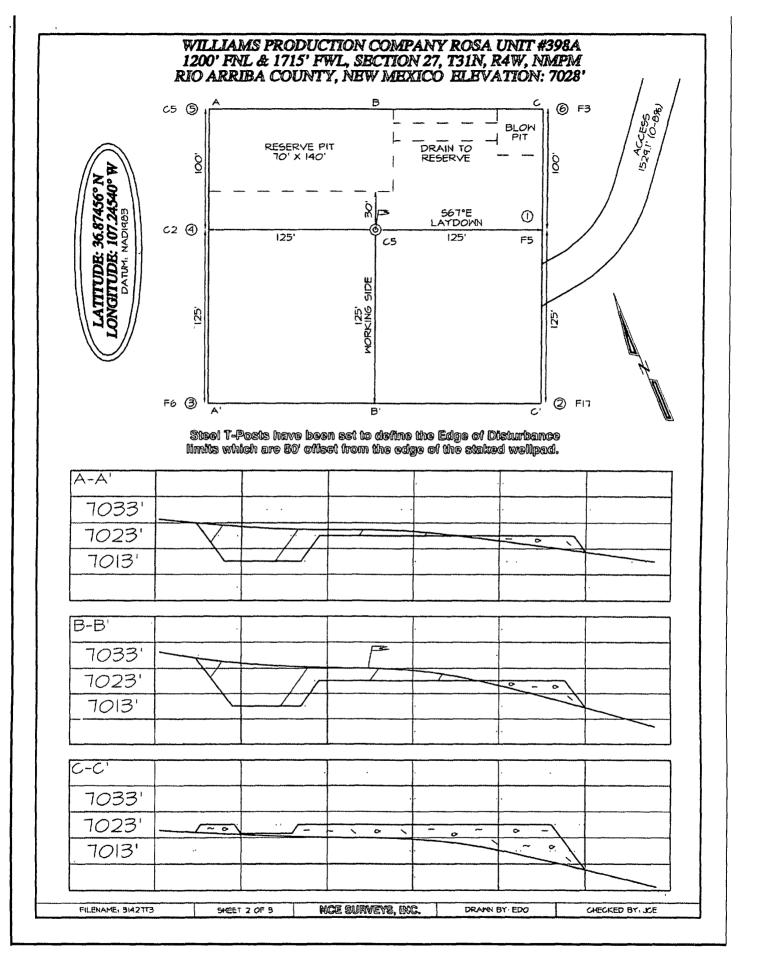
WELL LOCATION AND ACREAGE DEDICATION PLAT

'API Number	'Pool Code 71629	'Pool Name BASIN FRUITLAND COAL	
'Property Code 17033		'Property Name ROSA UNIT	
'0GRID No ' 120782		'Operator Name WILLIAMS PRODUCTION COMPANY	

¹⁰ Surface Location UL or lot no. Section Township Range Lot Id Feet from the North/South line Feet from the East/West line RIO С 27 31N 4W 1200 NORTH 1715 WEST ARRIBA 11 Bottom Hole Location Different From Surface UL or lot no. Lot Ion County Sect ion TOWNSTIP North/South line Feet from the Feet from the East/West line is Jount or Infall ™ Consolidation Code 13 Droter No. Dedicated Acres 320.00 Acres - (W/2)

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





Hydrogeological Report Williams Production Company, LLC Rosa Unit #602

Regional Hydrological Context

Referenced Well Location:

The referenced well and pit is located Carson National Forest's Jicarilla Ranger District management jurisdiction in Rio Arriba County, New Mexico. This site is positioned in the northeastern portion of the San Juan Basin, an asymmetrical syncline that extends from northwestern New Mexico into southwestern Colorado (Carson National Forest FEIS, 2008). Elevation of the referenced well is approximately 7028 feet MSL.

General Regional Groundwater Description:

As a portion of the San Juan Basin, the Jicarilla Ranger District is underlain by sandstone aquifers of the Colorado Plateau. The primary aquifer of potential concern at this location is the Uinta-Animas Aquifer, composed primarily of Lower Tertiary rocks in the San Juan Basin. The aquifer 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 Uinta-Animas aquifer generally increases toward the central part of the basin. In this region, the maximum thickness of the aquifer is approximately 3500 feet (USGS, 2001). This aquifer contains fresh to moderately saline water.

Groundwater generally flows toward the San Juan River and it tributaries, where it becomes alluvial groundwater or is discharged to stream flow. Additional information regarding the hydrogeologic setting can be found in the provided references.

Site Specific Information:

Depth to Groundwater:

Surface Hydrology: The pit is located on a southeast-facing bench of Estufa Ridge,

overlooking the upper reaches of an unnamed canyon which drains into

Ulibarri Canyon, approximately one mile to the souh.

1st Water Bearing Formation:

Formation Thickness:
Underlying Formation:

San Jose, Tertiary
Approximately 1,900 ft.
Nacimiento, Tertiary

Depth to groundwater is estimated at less than 100 feet bgs. Within a one-mile radius of this location, there were no iWATERS wells with recorded water depth information. However, cathodic data associated with the Rosa Unit Nos. 296 (approximately 3,676 feet from pit), & 297 (approximately 4,929 feet from pit), show depth to moisture at 80 feet

(see Siting Criteria Map I for details).

Well	Elevation	Depth to Moisture	Moisture Elevation
RU #296	7001	80	6921
RU #297	6768	80	6688
RU# 602	7028 (7016 pit btm)	if 100	6928

References:

Allen, Erin. Undated. Colorado Plateau Aquifers.

http://academic.emporia.edu/schulmem/hydro/TERM%20PROJECTS/2007/Allen/Aquifer.html.

New Mexico Energy, Minerals and Natural Resources Department, Division of Mining and Minerals. Database. 2010. Internet accessed January 2010.

New Mexico Office of the State Engineer. 2010. iWaters database. Internet accessed January 2010.

New Mexico WQCC. 2005. State of New Mexico Water Quality Act and the Water Control Commission Regulations.

United States Department of Agriculture, Forest Service. 2008. Final Environmental Impact Statement for Surface Management of Gas Leasing and Development. Jicarilla Ranger District, Carson National Forest, Rio Arriba County, New Mexico.

United States Department of the Interior. Bureau of Land Management. 2003. Final Farmington Resource Management Plan and Final Environmental Impact Statement. Farmington Field Office, Farmington, New Mexico.

United States Geological Survey. 2001. Ground Water Atlas of the United States: Arizona, Colorado, New Mexico and Utah. USGS Publication HA 730-C; http://capp.water.usgs.gov.

Page 8 of 17 Rosa Unit 602



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

(quarters are smallest to targest) (NAO83 UTM (is meters)) 000

Depth Depth Weter POD Number basin Use County 64 16 4 Sec Twis Ring Well WaterColumn SJ 000±9 INO 3 33 31M 0#W 288090 4080910* 32 SJ 02895 **©**O₩ 0 3 2 27 31M 64W 156 SJ 02885 ©ĐM 4 2 2 28 31M B#W 4093393° Average Depth to Water: teet 08

Minimum Depin: 80 feet

Maximum Depth: teet 08

Record Count: 3

PL88 Searon:

Township: ESN Range: 04NV

"UŤM ládálad was desived libis PLŠŠ - see kielý

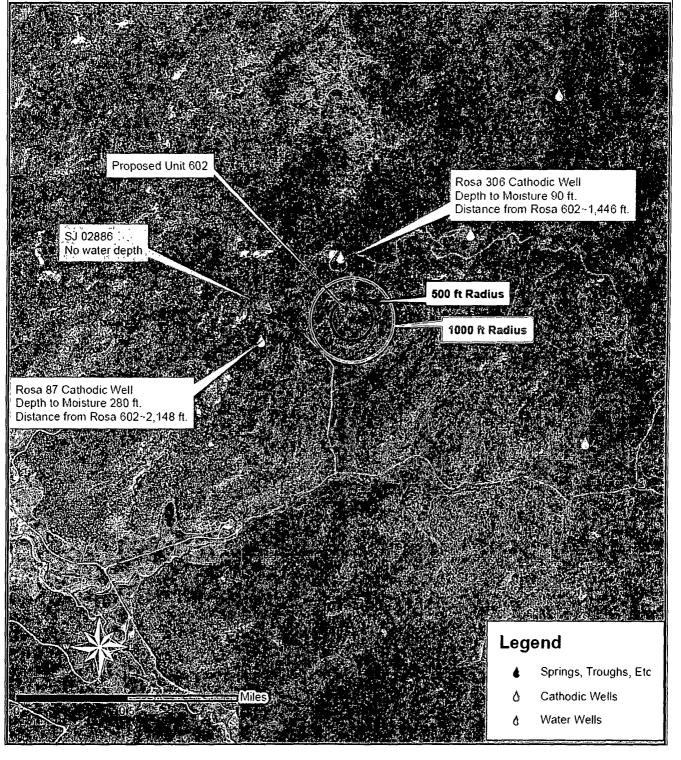
The data is furnished by the KWOSERSC and is accorded by the neithern with the explorated understanding that the OSERSC make so warrandes, explanated of implied, econocising the accuracy, completeness, leaded by, usefully, or sulfability for any positionial purpose of the data.

4/21/10 10:13 AM

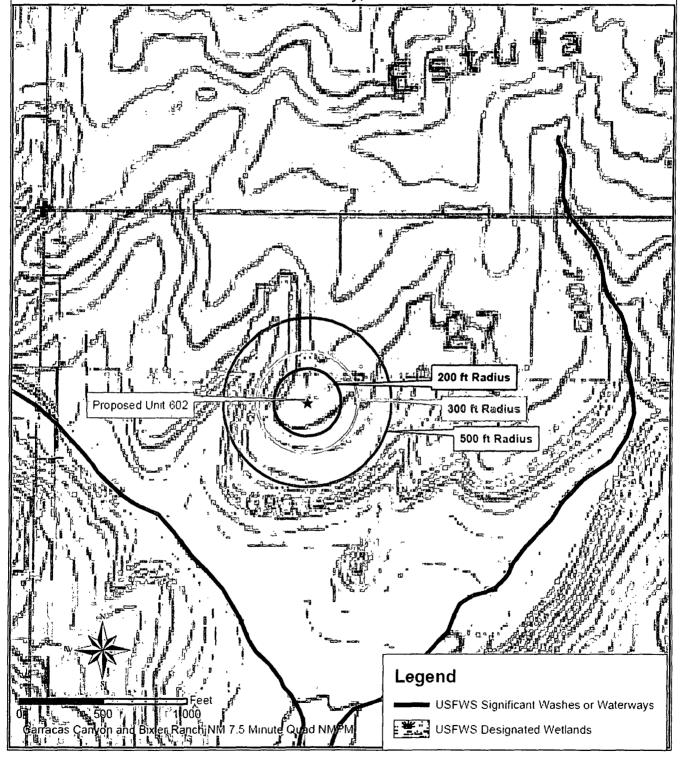
Page 1 of 1

WATER COLUMNIAVERAGE DEPTH TO MATER

Siting Criteria Map I
Water Wells, Cathodic Wells, & Springs
Williams Production Company, LLC
Proposed Rosa Unit No. 600
T31N, R04W, Section 27 NMPM
Rio Arriba County, New Mexico



Siting Criteria Map II
Topographic Features
Williams Production Company, LLC
Proposed Rosa Unit No. 602
T31N, R04W, Section 27 NMPM
Rio Arriba County, New Mexico



MMQonline Public Version



△ Aggregate & Stone Mines

Coal Mines

★ Industrial Minerals Mines

▼ Industrial Minerals Mills

Metal Mines and Mill Concentrate

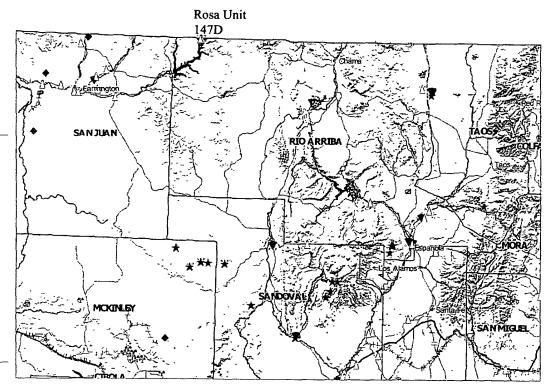
Potash Mines & Refineries

Smelters & Refinery Ops.

¥ Uranium Mines

Uranium Mills

Population







FEMA Map - 100-Year Floodplain:

As this location is within Carson National Forest, no FEMA maps are available. However, ortho-photographic and topographic maps, and an on site investigation indicate that this location is not within a floodplain.

Siting Criteria Compliance Demonstrations:

The Rosa Unit #602 well is not located in an unstable area. The location is not situated over a mine or a steep slope. Excavated pit material will not be located within 300 feet of a continuously flowing water course or within 200 feet of any other significant water course, lakebed, sinkhole, or playa lake (see Siting Criteria Map II). The site is not within 500 feet of any reported riparian areas or wetlands; within 500 feet of any private, domestic fresh water well or spring; or within 1000 feet of any other fresh water well or spring (see Siting Criteria Map I). The proposed pit will not be within any incorporated municipal boundaries or defined municipal freshwater well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. The location of the proposed pit is not within 300 feet of any permanent residence, school, hospital, institution, or church.

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:

- 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 construction 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-a-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.
- Geotextile will be installed beneath the liner when rocks, debris, sharp objects or irregularities can not 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.
- 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:

- i. 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.
- Only fluids and solids generated during the drilling/completion/workover process may be discharged into a temporary pit. Other miscellaneous soild 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:
 - 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:
 - 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. Once all free liquids are removed, the sludge will be stabilized by one of the following methods depending on equipment availability: blending with clean stockpiled soils or dewatering using a Bowl Decanter Centrifuge then blending with clean stockpiles soils.
- 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/return receipt requested)
- 4. Within six months of the "rig-off" status occurring WPX will ensure that the temporary pit is covered, recontoured and reseeding 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 bas.

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.

From:

Lane, Myke

Sent: To: Friday, April 23, 2010 8:58 AM 'Jon J Miller'; 'John Reidinger'

Cc:

Powell, Brandon, EMNRD; Meador, Tasha

Subject:

Surface Management Agency Notice - Pit Closure Rosa 602

This correspondence is to notify the USFS that Williams Production is planning to use a temporary pit associated with the drilling and completion of the reference well and following discontinued use of the pit will close by onsite burial. The planned closure is consistent with the Surface Use Plan submitted with Williams APD.

This notice is to comply with the NMOCD 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 USFS have any concerns.

Please contact us if there are any questions or additional information is required

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