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, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office. For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

<u>Pit, Below-Grade Tank, or</u> Proposed Alternative Method Permit or Closure Plan Application
Type of action: Below grade tank registration Permit of a pit or proposed alternative method Closure of a pit, below-grade tank, or proposed alternative method Modification to an existing permit/or registration Closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank, or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, 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.
Deperator: Williams Four Corners LLC OGRID #:
Address: 1755 Arroyo Drive, Bloomfield, NM, 87413
Facility or well name: Trunk L Compressor Station (BGT 5)
API Number: OCD Permit Number:
U/L or Qtr/Qtr NESE (I) Section 21 Township 28 N Range 5 W County: Rio Arriba
Center of Proposed Design: Latitude <u>36.643349</u> Longitude <u>-107.356648</u> NAD83
Operator:       Williams Four Corners LLC       OGRID #:         Address:       1755 Arroyo Drive, Bloomfield, NM, 87413         Facility or well name:       Trunk L Compressor Station (BGT 5)         API Number:       OCD Permit Number:         U/L or Qtr/Qtr       NESE (I)         Section       21         Township       28 N         Range       5 W         County:       Rio Arriba         U/L or Qtr/Qtr       NESE (I)         Section       21         Township       28 N         Range       5 W         County:       Rio Arriba         U/L or Qtr/Qtr       Section         Surface Owner:       Federal         State       Private         Tribal Trust or Indian Allotment
Pit: Subsection F, G or J of 19.15.17.11 NMAC Temporary: Drilling Workover Permanent Emergency Cavitation P&A Multi-Well Fluid Management Low Chloride Drilling Fluid yes no Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other String-Reinforced
Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D
3.
4.
Alternative Method:         Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.
<ul> <li>5.</li> <li>Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)</li> <li>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)</li> <li>Four foot height, four strands of barbed wire evenly spaced between one and four feet</li> </ul>

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

Screen Netting Other\_

6.

7

8

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

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 19.15.16.8 NMAC

#### Variances 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:

- Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.
- Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

9. <u>Siting Criteria (regarding permitting)</u> : 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. Siting criteria does not apply to drying pads or above-grade tanks.						
General siting						
<ul> <li>Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank.</li> <li>- ⊠ NM Office of the State Engineer - iWATERS database search; □ USGS; □ Data obtained from nearby wells</li> </ul>	□ Yes ⊠ No □ NA					
Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit. NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	□ Yes □ No ⊠ NA					
<ul> <li>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. (Does not apply to below grade tanks)</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>						
<ul> <li>Within the area overlying a subsurface mine. (Does not apply to below grade tanks)</li> <li>Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division</li> </ul>	🗌 Yes 🗌 No					
<ul> <li>Within an unstable area. (Does not apply to below grade tanks)</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes 🗌 No					
<ul> <li>Within a 100-year floodplain. (Does not apply to below grade tanks)</li> <li>FEMA map</li> </ul>	🗌 Yes 🗌 No					
Below Grade Tanks						
<ul> <li>Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🛛 No					
<ul> <li>Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🛛 No					
Temporary Pit using Low Chloride Drilling Fluid (maximum chloride content 15,000 mg/liter)						
<ul> <li>Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.)</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🗌 No					
<ul> <li>Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	🗌 Yes 🗌 No					
Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application. NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	Yes No					

<ul> <li>Within 100 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No					
Temporary Pit Non-low chloride drilling fluid						
<ul> <li>Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No					
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	Yes No					
<ul> <li>Within 500 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application;</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	Yes No					
<ul> <li>Within 300 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No					
Permanent Pit or Multi-Well Fluid Management Pit						
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					
<ul> <li>Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>						
<ul> <li>Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>						
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No					
10						
10.         Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist:       Subsection B of 19.15.17.9 N         Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the doc attached.         Image: Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC         Image: Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC         Image: Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Image: Design Plan - based upon the appropriate requirements of 19.15.17.10 NMAC         Image: Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC         Image: Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC         Image: Design Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.         Image: Previously Approved Design (attach copy of design)       API Number: or Permit Number:	cuments are NMAC 15.17.9 NMAC					
11. Multi-Well Fluid Management Pit Checklist: Subsection B of 19.15.17.9 NMAC						
Multi-weil Fluid Management Pit 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 doc         attached.	.15.17.9 NMAC					

<sup>12.</sup> <u>Permanent Pits Permit Application Checklist</u> : Subsection B of 19.15.17.9 NMAC <i>Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the</i>	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         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC         Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan         Emergency Response Plan         Oil Field Waste Stream Characterization         Monitoring and Inspection Plan         Erosion Control Plan         Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC					
13.       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       Multi-well Fl         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       Method       Method       Method	uid Management Pit				
Waste Excavation and Removal Closure Plan Checklist:       (19.15.17.13 NMAC) Instructions: Each of the following items must be a 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 C of 19.15.17.13 NMAC                  More than a propriate requirements of Subsection C of 19.15.17.13 NMAC                  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 H of 19.15.17.13 NMAC                 Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC	nttached to the				
15. <u>Siting Criteria (regarding on-site closure methods only)</u> : 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable sour provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. P 19.15.17.10 NMAC for guidance.					
Ground water is less than 25 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 25-50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells - 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					
<ul> <li>Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🗌 No				
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	🗌 Yes 🗌 No				
<ul> <li>Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🗌 No				
Written confirmation or verification from the municipality; Written approval obtained from the municipality	🗌 Yes 🗌 No				
Within 300 feet of a wetland. US Fish and Wildlife Wetland Identification map; Topographic map; 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
<ul> <li>Within the area overlying a subsurface mine.</li> <li>Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division</li> </ul>	Yes No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological</li> </ul>	
Society; Topographic map	🗌 Yes 🗌 No
Within a 100-year floodplain. - FEMA map	🗌 Yes 🗌 No
16.         On-Site Closure Plan Checklist:       (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure play a check mark in the box, that the documents are attached.                Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC                Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC                Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.                Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.13 NMAC                Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC                Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC                Waste Material Sampling Plan - based upon the appropriate requirements of 19.15.17.13 NMAC                Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards canned Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC                Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC                Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC                Site Reclamation Plan - based upon the appropriate	11 NMAC 15.17.11 NMAC
17. 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 beli	ef.
Name (Print): Matt Webre Title: EHS Supervisor	
Signature: The Date: August 27, 2018	
e-mail address: <u>matt.webre@williams.com</u> Telephone: (505) 632-4442	
18.       OCD Approval:       Permit Application (including closure plan)       Closure Plan (only)       OCD Conditions (see attachment)         OCD Representative Signature:	2019
19.	
<u>Closure Report (required within 60 days of closure completion)</u> : 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 is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not section of the form until an approved closure plan has been obtained and the closure activities have been completed.	
Closure Completion Date:	
20.         Closure Method:         Waste Excavation and Removal         On-Site Closure Method         If different from approved plan, please explain.	op systems only)
21.         Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please intermark 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 for private land only)         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	dicate, by a check

22. Operator Closure Certification:	
I hereby certify that the information and attachments submitted with this closure rebelief. I also certify that the closure complies with all applicable closure requirem	
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:

Variance Request:

Williams requests a variance request from Subsection E(1) of 19.15.17.13 New Mexico Administrative Code (NMAC) which states:

The operator shall notify the surface owner by certified mail, return receipt requested that the operator plans closure operations at least 72 hours, but not more than one week, prior to any closure operation. Notice shall include well name, API number and location. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records is sufficient to demonstrate compliance with this requirement.

The variance will allow Williams to notify public agencies such as the Bureau of Land Management (BLM), State of New Mexico, local government/municipalities, and/or tribal agencies via email based on their notification preferences

Variance Request:

Williams requests a variance from Subsection D(3) of 19.15.17.11 New Mexico Administrative Code (NMAC) which states:

The operator shall fence any other pit or below-grade tank to exclude livestock with a four foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level.

Williams proposes to use a four (4) foot tall "hog wire" fence with a top-rail to keep livestock and wildlife away from the below grade tank.

# SITING CRITERIA SUMMARY INFORMATION SHEET 19.15.17.10 NMAC



<b>GENERAL INFORMA</b>	TION	
Site Name:	Trunk L Compressor Station	<b>Operator:</b> Williams Four Corners LLC
Pit Identifier:	BGT 5	Date 3/15/2016
		Prepared by: LT Environmental, Inc.
<b>GENERAL SITE LOC</b>	ATION INFORMATION	
<b>Geologic Formation</b>	n: San Jose	SEC: 21 TWN: 28 N RNG: 5 W
Soil Type:	Orlie fine sandy loam	Latitude: 36.643349 Longitude: -107.356648
<b>Annual Precipitati</b>	on: Gobernador 12.31"	
GENERAL SITING CI	RITERIA	
Is groundwater less the	an 25 feet below the bottom of below	grade tank? – No
is groundwater less tha	in 25 reet below the bottom of below	
		See Figure 3 and attached iWaters Data
<b>BELOW GRADE TAN</b>	K SITING CRITERIA	
Within 100 feet of a cor	ntinuously flowing watercourse? - No	See Figure 1
	cated approximately 14.70 miles north-	
	nificant watercourse? - No	See Figure 1 and Figure 3
		nately 742 feet west-southwest and a 2nd order
	servoir is located approximately 1,119	
	cebed, playa lake, or sinkhole? - No	See Figure 2
	ted approximately 0.60 miles north-nor	
Within 200 horizontal f	feet of a spring or a freshwater well u	sed for
public or livestock cons		See Figure 3 and attached iWaters data
-	SJ 00047) is located approximately 0.87	
,		
ATTACHED DOCUM	ENTS:	
Hydrogeologic Report		
Figure 1: Topographic M		
Figure 2: Aerial Photogra		
Figure 3: Water Well and	I Surface Water Features	
iWaters Data		
ADDITIONAL COMM	IENTS:	



#### LT Environmental Inc.

2243 Main Avenue, Suite 3 Durango, Colorado 81301 T 970.385.1096 / F 970.385.1873

## Trunk L Compressor Station Hydrogeologic Report for Siting Criteria

## **General Geology and Hydrology**

The San Juan Basin is a typical Rocky Mountain basin with a gently dipping southern flank and a steeply dipping northern flank. Asymmetrically layered Tertiary sandstones and shales, along with Quaternary alluvial deposits, dominate surficial geology. The below-grade tank is located southeast of the San Juan River and Navajo Dam, New Mexico. The predominant geologic formation is the San Jose Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur prominently near the surface of the area, especially near streams and washes.

Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits, serve as the primary aquifers in the San Juan Basin. In most of the area, the San Jose Formation lies at the surface and overlies the Nacimiento Formation. Thickness of the San Jose Formation ranges from 200 feet to 2,700 feet, thickening from west to east across the region of interest. Aquifers occur within the coarser and continuous sandstone bodies of the San Jose Formation, and groundwater within these aquifers flows toward the San Juan River. Little specific hydrogeologic data are available for the San Jose Formation system, but numerous wells and springs are used for stock and domestic supplies (Stone et al., 1983).

The prominent soil type at the below-grade tank are Orlie Fine Sandy Loam, which are defined as soils that exhibit little to no profile development (<u>www.emnrd.state.nm.us</u>). Soils are basically unaltered from their parent rock. Miles of arroyos, washes, and intermittent streams exist as part of the drainage network toward the San Juan River. These features often cut into soil and other unconsolidated materials, contributing to sedimentation downstream. The sudden influx of water from storm events easily erodes the soils that cover the area and prohibits effective recharge to the underlying aquifers.

Dry and arid weather further prohibits active recharge. The climate of the region is arid, averaging just over 12.31 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. However, most recharge occurs during the winter months during snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu). The predominant vegetation are sagebrush and grasses with a more restricted pinon-juniper association (Dick-Peddie, 1993).



## Site-Specific Hydrogeology

Depth to groundwater is estimated to be greater than 100 feet at the below-grade tank. This estimation is based on data from Stone and others (1983), the United States Geological Survey (USGS) *Groundwater Atlas of the United States*. Local topography and proximity to surface hydrologic features are taken into consideration. When available, permitted water well logs and cathodic protection well logs are referenced to infer depth to groundwater near the site.

Beds of water-yielding sandstone are present in the San Jose Formation, which are fluvial in origin and are interbedded with mudstone, siltstone, and shale. "Extensive intertonguing" of different members of this formation is reported. Porous sandstones form the principal aquifers, while relatively impermeable shales and mudstones form confining units between the aquifers. Most aquifers exist within the San Jose Formation at depths greater than 100 feet, and thicknesses of the aquifers can be up to several hundred feet (USGS, *Groundwater Atlas of the United States*; Stone et al., 1983).

The below-grade tank is located in a region incised by canyons, washes, gullies, and arroyos, with the Laguna Seca Mesa being the predominant topographic features. The mesas are composed of cliff-forming sandstone, and systems of dry washes and their tributaries composed of alluvium are evident on the attached aerial image. The below-grade tank is located at an elevation of approximately 6,755 feet on a on a gentle slope. An elevation difference between the site and the primary channel of Gobernador Canyon of 232 feet.

Groundwater data are sparse in this region; the nearest iWaters data point with similar topographical characteristics is well number SJ 00047which is located approximately 0.87 miles southwest of the site at an elevation of 6,700 feet. Depth to groundwater in the permitted water well is listed as 265 feet below ground surface, indicating that groundwater is greater than 100 feet beneath the below-grade tanks on site. Groundwater data available from the New Mexico State Engineer's iWaters database for water well near the below-grade tank is attached.

## References

Dane, C.H. and G.O. Bachman, 1965, *Geologic Map of New Mexico*: U.S. Geological Survey, 1 sheet, scale 1:500,000.

Dick-Peddie, W.A., 1993, *New Mexico Vegetation – Past, Present and Future:* Albuquerque, New Mexico, University of New Mexico Press, 244 p.

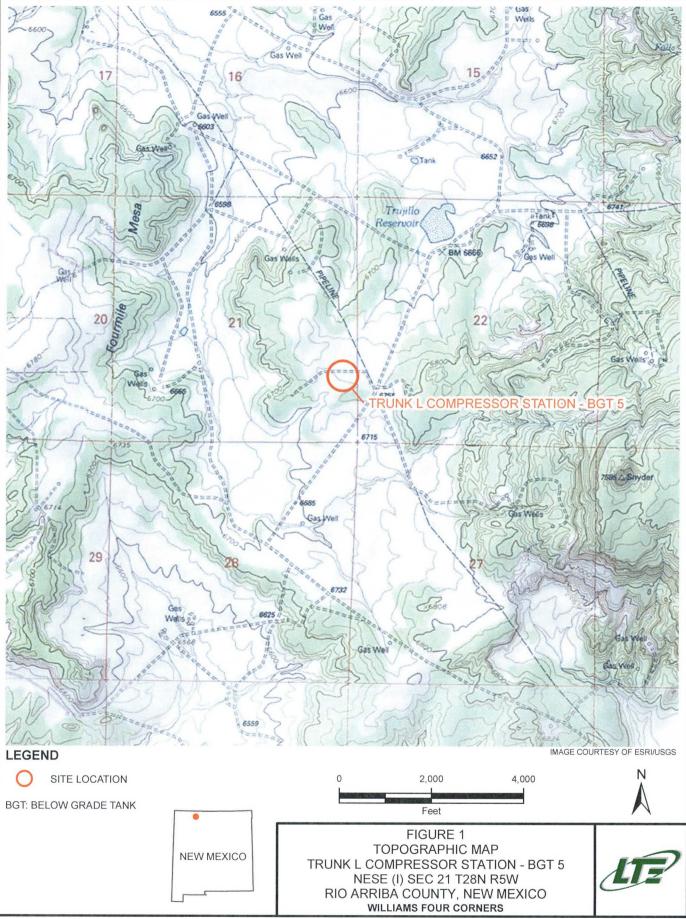
Stone, W.J., F.P. Lyford, P.F. Frenzel, N.H. Mizell, and E.T. Padgett, 1983, *Hydrogeology and Water Resources of the San Juan Basin, New Mexico*: HR-6 New Mexico Bureau of Geology and Mineral Resources Hydrology Report 6.



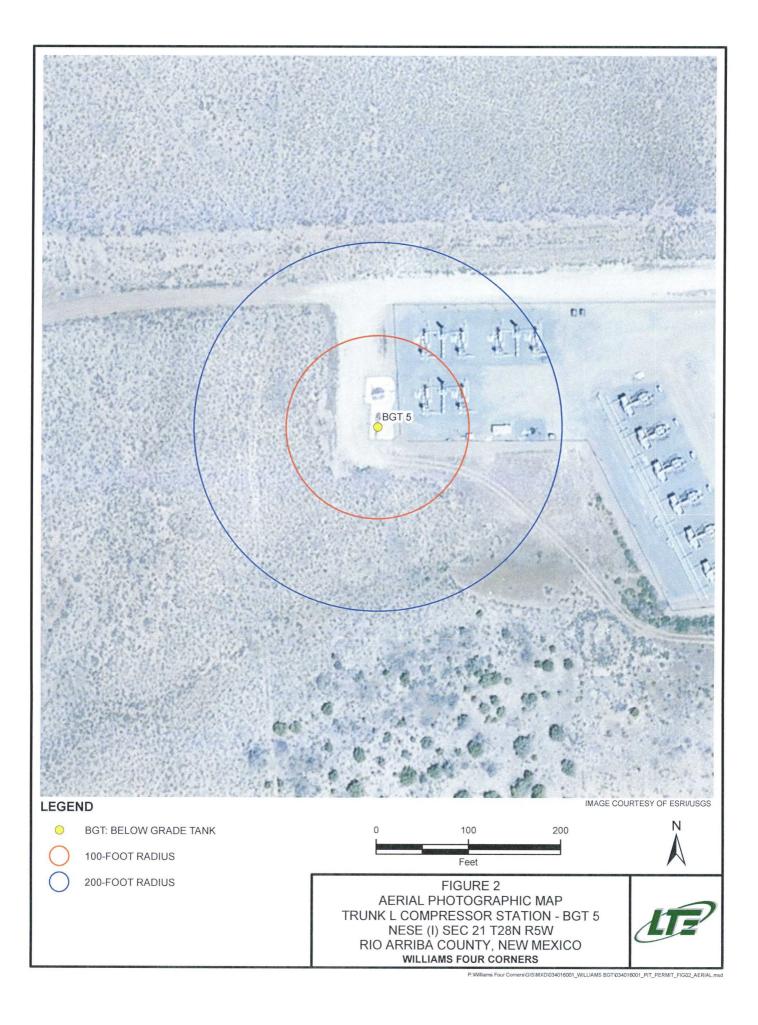
USGS, <u>Groundwater Atlas of the United States</u>: Arizona, Colorado, New Mexico, Utah, HA 730-C: (<u>http://www.pubs.usgs.gov</u>).

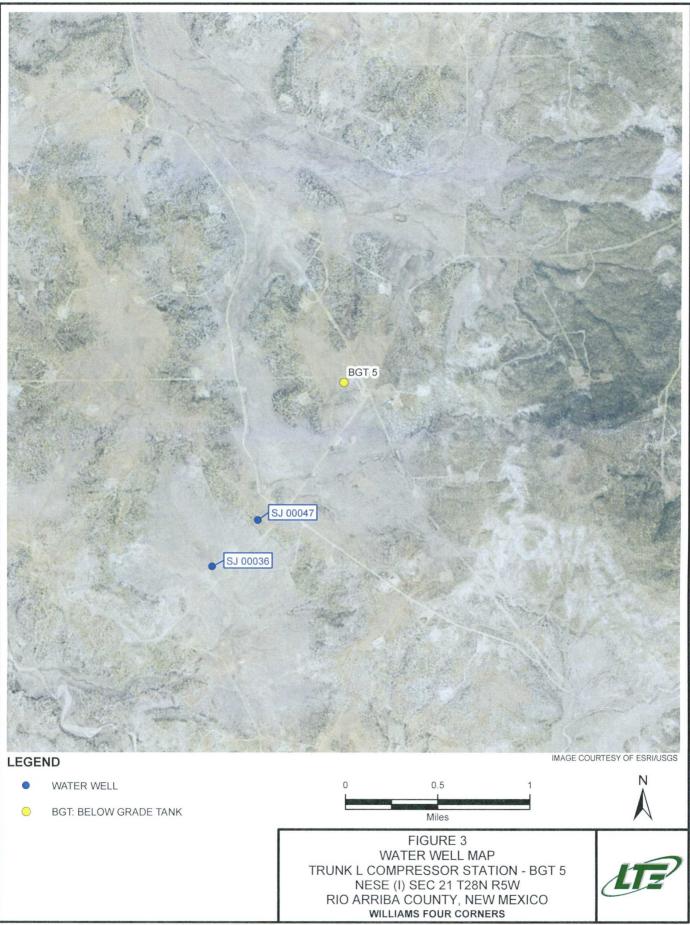
Western Region Climate Center, 2008, New Mexico climate summaries: Desert Research Institute at <u>http://www.wrcc.dri.edu/summary/climsmnm.html</u>.

New Mexico Energy, Minerals and Natural Resources Department, <u>www.emnrd.state.nm.us</u>.



P:/Williams Four Corners/GIS/MXD/034016001\_WILLIAMS BGT/034016001\_PIT\_PERMIT\_FIG01\_TOPO.mxd





P:\Williams Four Corners\GIS\MXD\034016001\_WILLIAMS BGT\034016001\_PIT\_PERMIT\_FIG03\_WW.mxd



# New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW###### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced O=orphaned, C=the file is closed)	(quar				NE 3=SW b largest)	,	3 UTM in meters)		(In feet	:)
POD Number	POD Sub- Code basin C	ounty	Q Q Q 64 16 4		: Tws	Rng	x	Y			Water Column
SJ 00036		RA			28N	100000000000000	288156	4056298* 🌍	303	243	60
SJ 00047		RA		28	28N	05W	288558	4056700* 🌍	465	265	200
								Average Depth to	o Water:	254 f	eet
								Minimun	n Depth:	243 f	eet
								Maximum	Depth:	265 f	eet

PLSS Search:

Section(s): 28

Township: 28N

Range: 05W

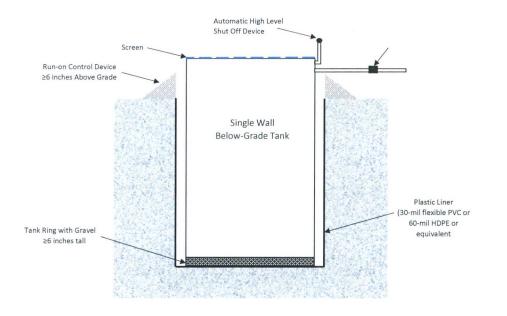
\*UTM location was derived from PLSS - see Help

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## Williams Four Corners LLC Design and Construction Plan - Below Grade Tanks

In accordance with Rule 19.15.17.11 NMAC of the New Mexico Administrative Code (NMAC), the information within this document describes the design and construction standards to be used by Williams Four Corners LLC (Williams) when installing Below Grade Tanks (BGTs). This is Williams' standard procedure for all BGTs. A separate design and construction plan will be submitted for any BGT which does not conform to this plan.

Pit Rule Citation (NMAC)	Rule Requirement	Operator Requirements
19.15.17.11.A	Design	Williams will design and construct a properly sized and approved BGT to contain liquids and solids, prevent contamination of fresh water and protect public health and environment. A solid riser pipe will be installed to facilitate liquid removal from the tank. The riser shall have a cap or cover and be positioned to prevent standing accumulation of liquids within the riser.
19.15.17.11.C	Construction	Williams will post appropriate signage to include operator name, legal location information, and emergency telephone contact information. The sign will be at least 12-inches x 24-inches with lettering not less than 2-inches in height and be placed on the fence surrounding the BGT.
19.15.17.11.D(1)	Construction	Williams will fence the BGT in a manner that deters unauthorized access and will maintain the fence in good repair. Williams facilities with an exterior perimeter fence will not have a fence installed around the BGT if it is located within the facility exterior perimeter fence.
19.15.17.11.D(3)	Construction	BGT installations will be fenced to protect livestock and wildlife. Fencing will be a minimum of four feet high with four strands of barbed wire spaced in the interval between one foot and four feet above ground. As a variance (if approved with the BGT registration), the fence may be constructed using four 4 foot tall "hog wire" with 1 stand of barbed wire at the top.
19.15.17.11.E	Construction	BGTs will have one-inch (or less) steel mesh (i.e. expanded metal), solid steel covers, or otherwise be constructed to prevent migratory bird contact.
19.15.17.11.I(1)	Design/Construction	Williams will design and construct the BGT to contain liquids associated with the dehydration and compression of natural gas, which will be resistant to the contents of the tank and resistant to damage from ultra violet light.
19.15.17.11.I(2)	Construction	The BGT foundation will be level and free of rocks, debris, sharp edges or irregularities and have a firm compacted bottom and sidewalls that are stable for the soil conditions.
19.15.17.11.I(3)	Construction	BGT installations will include an earthen berm or equivalent alternative at least 6-inches above ground to prevent surface water run-on; and install overflow monitoring device and/or monitor the tank at a frequency to prevent overflow as depicted in Figure 1.
19.15.17.11.I.4(a)	Construction	For BGTs that do not have double walls, Williams will construct the BGT to meet the requirements listed in 19.15.17.11.1.4(a) associated with visual inspection, tank construction, liner, and overflow as depicted in Figure 1. All other BGTs, in which the side walls are not open for visible inspection shall be double walled with leak detection capability as depicted in Figure 2.
19.15.17.11.I.4.(b)	Construction	Buried BGTs will be constructed of steel with double-walls and double-bottom, welded following appropriate API and industry codes, coated with an epoxy based paint. A solid riser pipe will be installed between the space of the double-walls to allow monthly inspection to determine tank integrity.
19.15.17.11.I.4.(c)	Design/Construction	Williams will meet with NMOCD district office before submitting application for an alternative BGT design.
19.15.17.11.I(5)	Construction	A single walled tank (installed prior to June 16, 2008) which has completely open sidewalls for visible inspection and which may or may not have a geomembrane liner, need not meet the above design and construction standards defined in Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC unless the integrity fails. If the integrity failes, the tank will then be closed pursuant to the approved Closure Plan or be retrofitted in accordance with the design drawings (see Figures 1 or 2) or NMOCD approved modification. Retrofitting actions that include changes to the BGT design and construction require an update to the BGT registration.
19.15.17.11.I(6)	Construction	All single walled BGTs must have sidewalls that are completely visible for inspection. Single walled tanks that do not meet this requirement must be retrofitted or closed persuant to the approved Closure Plan. Retrofitting actions that include changes to the BGT design and construction require an update to the BGT registration.
19.15.17.11.1(7)	Construction	A double walled tank (installed prior to June 16, 2008) need not meet the above design and construction standards defined in Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC unless the integrity fails. If the integrity fails, the tank will then be closed pursuant to the approved Closure Plan or be retrofitted in accordance with the design drawings (see Figures 1 or 2) or NMOCD approved modification. Retrofitting actions that include changes to the BGT design and construction require an update to the BGT registration.

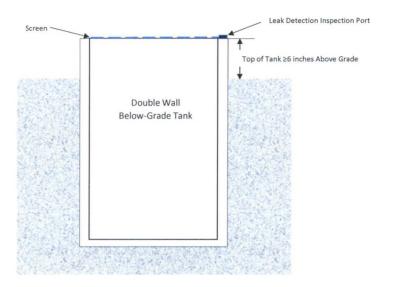


### FIGURE 1. BGT DESIGN AND CONSTRUCTION - 19.15.17.11.I.(4)(a) NMAC

- 1. The BGT's bottom must be elevated a minimum of six inches above the underlying ground surface.
- The BGT must be underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected. Gravel will be contained within a tank ring and not cover the visible portion of the liner.
- 3. Geomembrane liner shall consist of 30-mil flexible PVC or 60-mil HDPE liner, or an equivalent liner material. The liner must have a hydraulic conductivity no greater than 1 x 10-9 cm/sec, be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions, and resistant to ultraviolet light. The liner compatibility must comply with USEPA SW-
- 4. Equipped with a properly operating automatic high-level shut-off control device and manual controls to prevent overflows.

### Williams Four Corners LLC Design and Construction Plan - Below Grade Tanks

## FIGURE 2. BGT DESIGN AND CONSTRUCTION – 19.15.17.11.I.(4)(b) NMAC



- 1. Tank side walls are not open for visible inspection for leaks.
- 2. Double walled with leak detection capability.

## Williams Four Corners LLC Operations and Maintenance Plan - Below Grade Tanks

In accordance with Rule 19.15.17.12 NMAC of the New Mexico Administrative Code (NMAC), the information within this document describes the operations and maintenance standards to be used by Williams Four Corners LLC (Williams) when operating Below Grade Tanks (BGTs). This is Williams' standard procedure for all BGTs. A separate operations and maintenance plan will be submitted for any BGT which does not conform to this plan.

Pit Rule Citation (NMAC)	Rule Requirement	Operator Requirements
19.15.17.12.A(1)	Integrity	Williams will operate and maintain the BGT to contain liquids and solids and maintain the integrity of the liner, liner systems and secondary containment system to prevent contamination of fresh water and protect public health and environment.
19.15.17.12.A(3)	Waste Management	Willams will not discharge or store any hazardous waste in a BGT. "Hazardous waste" means non-exempt waste that exceeds the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended.
19.15.17.12.A(5)	Release Requirements	If the BGT integrity is compromised: 1. All discharges will be shut off to the BGT. 2. All liquids will be removed as soon as possible but no later than 48 hours after discovery. 3. Williams will notify and report to NMOCD in accordance to 19.15.29 NMAC and all other applicable agencys as require.
19.15.17.12.A(7)	Surface Water Run-on	Williams will maintain a berm or equivalent alternative at least 6-inches above ground to keep surface water run- on from entering the BGT as shown on the Design and Construction Plan.
19.15.17.12.D(1)	Surface Water Run- on and Overflow	Williams will require and maintain an adequate freeboard to prevent overtopping of the BGT.
19.15.17.12.D(2)	Measurable Oil	Any oil or hydrocarbon collecting in the BGT will be removed. Saleable condensate will be returned to the facility or field condensate tank. Slop oil from compression will be removed and transported to an offsite recycle facility.
19.15.17.12.D(3)	Inspection	Williams will inspect the BGT for leakage and damage on a monthly basis. Williams will document the integrity of each tank at least annually and maintain a written record for five years. Inspections may include: 1. Containment berms adequate and no oil present 2. Tank had no visible signs of corrosion 3. Tank valves, flanges, and hatches had no visible leaks 4. No evidence of significant spillage of produced liquids. 5. BGT cover intact and no signs of dead wildlife. 6. Sidewalls are completely visible for single walled BGTs.
19.15.17.12.D(4)	Freeboard	Williams will maintain a 10-inch freeboard to prevent overtopping of the BGT.
19.15.17.12.D(5)	Integrity	If the BGT loses integrity, Williams will repair the damage or close the BGT pursuant to the approved Closure Plan.
19.15.17.12.D(6)		While performing BGT equipment or retrofitting actions, Williams will visually inspect the area beneath the BGT and document any areas that are wet, discolored or showing other evidence of a release on OCD Form C-141. Williams will report the concentration of contaminants to the OCD with respect to the standards set forth in Table I of 19.15.17.13 NMAC. Williams will proceed with the approved Closure Plan if no evidence of impacts are present or concentrations of contaminants are below the OCD standards.

#### Williams Four Corners LLC Closure Plan - Below Grade Tanks

In accordance with Rule 19.15.17.13 NMAC of the New Mexico Administrative Code (NMAC), the information within this document describes the closure requirements to be used by Williams Four Corners LLC (Williams) when closing Below Grade Tanks (BGTs). This is Williams' standard procedure for all BGTs. A separate closure plan will be submitted for any BGT closure which does not conform to this plan.

Pit Rule Citation (NMAC)	Rule Requirement	Operator Requirements
19.15.17.13.A		This plan describes Williams proposed closure methods and the proposed procedures and protocols to implement and complete BGT closure.
19.15.17.13.C(1)		Prior to commencing BGT closure, Williams will obtain a NMOCD approved closure plan before any closure activities start. Williams understands that the NMOCD considers the start of closure for a BGT is when the BGT is being removed from the ground.
19.15.17.13.C(2)		Williams will remove liquids and sludge from a BGT prior to commencing closure actions and will dispose the material in a NMOCD approved facility.
19.15.17.13.C.3(a)	Closure Plan	Following removal of the tank and any liner material, Williams will test the soils beneath the BGT in accordance with 19.15.17.13.C.3(a) NMAC. Samples will be collected from beneath the liner and/or BGT for obvious stained or wet soils, or any other evidence of contamination.
19.15.17.13.C.3(b)		If any contaminant concentration is higher than the parameters listed in Table I of 19.15.17.13 NMAC, the NMOCD may require additional delineation upon review of the results and Williams must receive approval before proceeding with closure.
19.15.17.13.C.3(c)		Upon completion of BGT removal, if all contaminant concentrations are less than or equal to the parameters listed in Table I of 19.15.17.13 NMAC, the excavation will be backfilled with non-waste contained, uncontaminated, earthen material.
19.15.17.13.E(1)	Notification	Notice of closure will be given to the surface owner at least 72 hours, but not more than one week, prior to any closure operation via Certified mail. As a variance (if approved with the closure plan), surface owners which are public entities (State, BLM, or Tribal) will be notified by email or phone. The notification of closure will include the following: operators name, well name and API number (if applicable), and location (ULSTR).
19.15.17.13.E(2)	Notification	Notice of Closure will be given to the NMOCD office at least 72 hours, but not more than one week, prior to any closure operation via Certified mail. As a variance (if approved with the closure plan), the NMOCD district office will be notified by email or phone. The notification of closure will include the following: operators name, well name and API number (if applicable), and location (ULSTR).
19.15.17.13.F(1)	Reporting	Operator will send the NMOCD a closure report in accordance with 19.15.17.F(1) NMAC within 60 days of closure including the following items: Proof of closure notice, analytical results, backfill information, revegetation, and photo documentation of reclamation. Williams understands that the NMOCD considers the closure date the day in which the BGT is backfilled and re-contoured. Revegetation is still required but, may be addressed in closure report.
19.15.17.13.G.4(a)		Within 60 days of cessation of operations, Williams will remove liquids and sludge from a BGT prior to implementing a closure method and will dispose of the material in a NMOCD approved facility. Disposal facilities to be used by Williams are listed below based on the listed waste types.
19.15.17.13.G.4(b)	Timing	Within 6 months of cessation of operations, Williams will dispose, recycle, reuse, or reclaim the BGT in a NMOCD approved manner. If required, Williams will provide documentation of the disposition of the BGT to the NMOCD. Liner materials will be cleaned to remove soils or contaminated material for disposal as solid waste. Disposal facilities to be used by Williams are listed below based on the listed waste types.
19.15.17.13.H.1(a)		Williams will reclaim the area by substantially restoring the impacted surface area to the condition that existed prior to oil and gas operations by placement of soil cover as described below for 19.15.17.13.H.2 NMAC. The location and associated areas will be recontoured that approximates the original contour and blends with the surrounding topography and revegetate as described below for 19.15.17.13.H.5 NMAC.
19.15.17.13.H.1(b)	Reclamation	Williams will submit an alternative plan to be approved by the NMOCD and written approval from the surface owner before submitting the C-144 application.
19.15.17.13.H.1(c)		If a BGT is removed from an area where production operations will continue, the area will be reclaimed in such a way to minimize dust and erosion to the extent practicable.
19.15.17.13.H.2		Cover will include one foot of suitable material, with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0, to establish vegetation at the site, or the background thickness of topsoil, whichever is greater.
19.15.17.13.H.4		Williams will construct the soil cover to the existing grade to prevent ponding of water and erosion of the cover material.

#### Williams Four Corners LLC Closure Plan - Below Grade Tanks

Pit Rule Citation (NMAC)	Rule Requirement	Operator Requirements	
19.15.17.13.H.5(a) 19.15.17.13.H.5(b) 19.15.17.13.H.5(c) 19.15.17.13.H.5(d) 19.15.17.13.H.5(e)	Reclamation	For those portions of the former BGT area no longer in use with the exception where production operations will continue, the area will be reclaimed as nearly as practicable to their original condition or their final land use. Reclamation will begin as early as practical. The areas will be maintained to minimize dust and topsoils placed and contoured to limit erosion control, maintain stability, and preserve surface-water flow patterns. Williams will seed the disturbed areas the first favorable growing season following closure of the BGT. Williams will comply with obligations imposed by other applicable federal or tribal agencies in which their re-vegetation and reclamation requirements provide equal or better protection of fresh water, human health and the environment. Williams will notify the NMOCD when reclamation and re-vegetation is complete.	

Summary of Waste Materials and Disposal Facilities				
Waste Types	Disposal Facility			
Steel Tank	San Juan County Landfill; Steel Recycling			
Fiberglass Tank	San Juan County Landfill; Bondad Landfill; Re-use			
Liner (cleaned – absent soil / sludge)	San Juan County Landfill; Bondad Landfill			
Sludge	Envirotech; Industrial Ecosystems Inc.; T-N-T; Bondad Landfill			
Liquids (Water / Hydrocarbons)	Basin Disposal; Key Energy; T-N-T			
Contaminated Soil	Envirotech; Industrial Ecosystems Inc.; T-N-T; Bondad Landfill			
Fencing / Miscellaneous	Re-use or Scrap			

#### Table I

Depth Below Bottom of pit to ground water less than 10,000 mg/l	Constituent	Method	Limit**
	Chloride	EPA 300.0	600 mg/kg
≤50 feet	ТРН	EPA SW-846 Method 418.1	100 mg/kg
	BTEX	EPA SW-846 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 8021B or 8260B	10 mg/kg
	Chloride	EPA 300.0	10,000 mg/kg
	ТРН	EPA SW-846 Method 418.1	2,500 mg/kg
51 feet – 100 feet	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 8021B or 8260B	10 mg/kg
	Chloride	EPA 300.0	20,000 mg/kg
	ТРН	EPA SW-846 Method 418.1	2,500 mg/kg
≤100 feet	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846	10 mg/kg