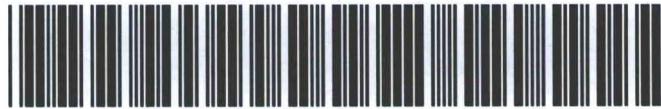




# AE Order Number Banner

## Report Description

**This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.**



**App Number: pCS1804734544**

**144B - 16232**

**WILLIAMS FOUR CORNERS**

FEB-05 2018

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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, 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.

16232

Pit, Below-Grade Tank, or  
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.

1.  
Operator: Williams Four Corners LLC OGRID #: \_\_\_\_\_  
Address: 1755 Arroyo Drive, Bloomfield, NM, 87413  
Facility or well name: Kernaghan Compressor Station (BGT 1)  
API Number: Not Applicable OCD Permit Number: Not Applicable  
U/L or Qtr/Qtr SW/NW (E) Section 29 Township 31N Range 8W County: San Juan  
Center of Proposed Design: Latitude 36.869783 Longitude -107.707055 NAD83  
Surface Owner:  Federal  State  Private  Tribal Trust or Indian Allotment

2.  
 **Pit:** Subsection F, G or J of 19.15.17.11 NMAC \*BGT Side wall's must be visible  
Temporary:  Drilling  Workover  
 Permanent  Emergency  Cavitation  P&A  Multi-Well Fluid Management Low Chloride Drilling Fluid  yes  no  
 Lined  Unlined Liner type: Thickness \_\_\_\_\_ mil  LLDPE  HDPE  PVC  Other \_\_\_\_\_  
 String-Reinforced  
Liner Seams:  Welded  Factory  Other \_\_\_\_\_ Volume: \_\_\_\_\_ bbl Dimensions: L \_\_\_\_\_ x W \_\_\_\_\_ x D \_\_\_\_\_

3.  
 **Below-grade tank:** Subsection I of 19.15.17.11 NMAC  
Volume: 18 bbl Type of fluid: Produced Water BGT1  
Tank Construction material: Steel  
 Secondary containment with leak detection  Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off  
 Visible sidewalls and liner  Visible sidewalls only  Other Single Wall/ Double Bottom. Tank Installed prior to June 18, 2008  
Liner type: Thickness \_\_\_\_\_ mil  HDPE  PVC  Other \_\_\_\_\_

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.

5.  
**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: Facility Fence

17

6.  
**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)

7.  
**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

8.  
**Variations 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.  
**Siting Criteria (regarding permitting):** 19.15.17.10 NMAC  
*Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Siting criteria does not apply to drying pads or above-grade tanks.*

| <b><u>General siting</u></b>  |  |
|---|--|
| <b><u>Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank.</u></b><br>- <input checked="" type="checkbox"/> NM Office of the State Engineer - iWATERS database search; <input type="checkbox"/> USGS; <input type="checkbox"/> Data obtained from nearby wells   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br><input type="checkbox"/> NA   |
| <b><u>Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit.</u></b><br>NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells<br><br>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. <b>(Does not apply to below grade tanks)</b><br>- Written confirmation or verification from the municipality; Written approval obtained from the municipality<br><br>Within the area overlying a subsurface mine. <b>(Does not apply to below grade tanks)</b><br>- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division<br><br>Within an unstable area. <b>(Does not apply to below grade tanks)</b><br>- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map<br><br>Within a 100-year floodplain. <b>(Does not apply to below grade tanks)</b><br>- FEMA map | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><input checked="" type="checkbox"/> NA<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No |
| <b><u>Below Grade Tanks</u></b>   |  |
| Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark).<br>- Topographic map; Visual inspection (certification) of the proposed site  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  |
| Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;<br>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  |
| <b><u>Temporary Pit using Low Chloride Drilling Fluid</u> (maximum chloride content 15,000 mg/liter)</b>  |  |
| 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.)<br>- Topographic map; Visual inspection (certification) of the proposed site   | <input type="checkbox"/> Yes <input type="checkbox"/> No   |
| Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image   | <input type="checkbox"/> Yes <input type="checkbox"/> 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.<br>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site   | <input type="checkbox"/> Yes <input type="checkbox"/> No   |

|   |  |
|---|--|
| <p>Within 100 feet of a wetland.</p> <ul style="list-style-type: none"> <li>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p><b><u>Temporary Pit Non-low chloride drilling fluid</u></b></p>  |  |
| <p>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).</p> <ul style="list-style-type: none"> <li>- Topographic map; Visual inspection (certification) of the proposed site</li> </ul>  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</p> <ul style="list-style-type: none"> <li>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>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;</p> <ul style="list-style-type: none"> <li>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul> | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>Within 300 feet of a wetland.</p> <ul style="list-style-type: none"> <li>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p><b><u>Permanent Pit or Multi-Well Fluid Management Pit</u></b></p>   |  |
| <p>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).</p> <ul style="list-style-type: none"> <li>- Topographic map; Visual inspection (certification) of the proposed site</li> </ul>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</p> <ul style="list-style-type: none"> <li>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>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.</p> <ul style="list-style-type: none"> <li>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <p>Within 500 feet of a wetland.</p> <ul style="list-style-type: none"> <li>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |

10.

**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: \_\_\_\_\_

11.

**Multi-Well 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 documents are attached.*

- 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
- A List of wells with approved application for permit to drill associated with the pit.
- 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
- Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

Previously Approved Design (attach copy of design)    API Number: \_\_\_\_\_ or Permit Number: \_\_\_\_\_

12.  
**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<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 Subsection C 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 Fluid Management Pit  
 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

14.  
**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 C 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 H of 19.15.17.13 NMAC
- Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.  
**Siting Criteria (regarding on-site closure methods only):** 19.15.17.10 NMAC  
*Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.*

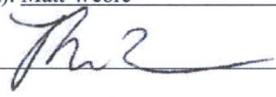
|   |   |
|---|---|
| Ground water is less than 25 feet below the bottom of the buried waste.<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells   | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><input type="checkbox"/> NA |
| Ground water is between 25-50 feet below the bottom of the buried waste<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells   | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><input type="checkbox"/> NA |
| Ground water is more than 100 feet below the bottom of the buried waste.<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells  | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><input type="checkbox"/> NA |
| 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).<br>- Topographic map; Visual inspection (certification) of the proposed site                        | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image  | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |
| 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.<br>- NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |
| Written confirmation or verification from the municipality; Written approval obtained from the municipality   | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |
| Within 300 feet of a wetland.<br>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site   | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance   | <input type="checkbox"/> Yes <input type="checkbox"/> No                                |

|   |  |
|---|--|
| adopted pursuant to NMSA 1978, Section 3-27-3, as amended.<br>- Written confirmation or verification from the municipality; Written approval obtained from the municipality | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within the area overlying a subsurface mine.<br>- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division                                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within an unstable area.<br>- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map     | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Within a 100-year floodplain.<br>- FEMA map   | <input type="checkbox"/> Yes <input type="checkbox"/> No |

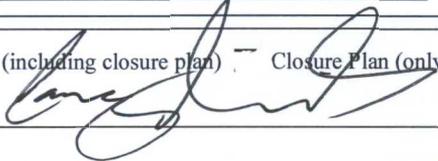
16.  
**On-Site Closure Plan Checklist:** (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  
 Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC  
 Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.11 NMAC  
 Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC  
 Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  
 Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 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 cannot be achieved)  
 Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
 Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  
 Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 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 belief.

Name (Print): Matt Webre Title: EHS Supervisor  
Signature:  Date: 2/1/2018  
e-mail address: matt.webre@williams.com Telephone: (505) 632-4442

18.  
**OCD Approval:**  Permit Application (including closure plan) - Closure Plan (only)  OCD Conditions (see <sup>Front</sup> attachment)

OCD Representative Signature:  Approval Date: 2/16/18  
Title: Environmental Spec OCD Permit Number: 16232

19.  
**Closure Report (required within 60 days of closure completion):** 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: \_\_\_\_\_

20.  
**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.

21.  
**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 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  
 Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ NAD:  1927  1983

22.

**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: \_\_\_\_\_

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

**SITING CRITERIA  
SUMMARY INFORMATION SHEET  
19.15.17.10 NMAC**



**LT Environmental Inc.**  
2243 Main Avenue, Suite 3  
Durango, Colorado 81301  
T 970-385-1096

**GENERAL INFORMATION**

|                        |                              |                     |                           |
|------------------------|------------------------------|---------------------|---------------------------|
| <b>Site Name:</b>      | Kernaghan Compressor Station | <b>Operator:</b>    | Williams Four Corners LLC |
| <b>Pit Identifier:</b> | BGT 1                        | <b>Date:</b>        | 3/15/2016                 |
|                        |                              | <b>Prepared by:</b> | LT Environmental, Inc.    |

**GENERAL SITE LOCATION INFORMATION**

|  |                            |                               |                |
|--|----------------------------|-------------------------------|----------------|
| <b>Geologic Formation:</b> San Jose            | <b>SEC:</b> 29             | <b>TWN:</b> 31N               | <b>RNG:</b> 8W |
| <b>Soil Type:</b> Penistaja Loam               | <b>Latitude:</b> 36.869783 | <b>Longitude:</b> -107.707055 |                |
| <b>Annual Precipitation:</b> Navajo Dam 12.87" |                            |                               |                |

**GENERAL SITING CRITERIA**

**Is groundwater less than 25 feet below the bottom of below grade tank? - No**

See Figure 3 and attached iWaters Data

**BELOW GRADE TANK SITING CRITERIA**

**Within 100 feet of a continuously flowing watercourse? - No**

5.3 miles east to the Los Pinos River.

See Figure 1

**Within 100 feet of a significant watercourse? - No**

0.24 miles west to a 2nd order tributary of Manga Canyon, 1.44 miles southeast to Manga Canyon, and 1.1 miles west to Pump Canyon.

See Figure 1 and Figure 3

**Within 100 feet of a lakebed, playa lake, or sinkhole? - No**

0.25 miles east to a stock pond

See Figure 2

**Within 200 horizontal feet of a spring or a freshwater well used for public or livestock consumption? - No**

See Figure 3 and attached iWaters data

**ATTACHED DOCUMENTS:**

Hydrogeologic Report  
Figure 1: Topographic Map  
Figure 2: Aerial Photograph  
Figure 3: Water Well and Surface Water Features  
iWaters Data

**ADDITIONAL COMMENTS:**

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## Kernaghan CDP 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 near Pump Canyon, between Aztec, New Mexico 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 rock lands and aridisols, which are defined as soils that exhibit little to no profile development ([www.emnrd.state.nm.us](http://www.emnrd.state.nm.us)). 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 12.87 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](http://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 et al. (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 near the primary channel of Pump Canyon. Regional topography of Pump Canyon is composed of mesas dissected by deep, narrow canyons and arroyos. 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 6,590 feet on the northwestern edge of an un-named mesa in the upper reaches of Manga Canyon. Groundwater is expected to be shallow within the canyon and within the surrounding tributary systems. An elevation difference between the site and the primary channel of Pump Canyon of 630 feet suggests groundwater is greater than 100 feet deep beneath the below-grade tank.

Groundwater data available from the New Mexico State Engineer’s iWaters database for wells near the site are attached. Groundwater data are sparse in this region; the nearest iWaters data point with similar topographical characteristics and associated depth to groundwater information is well number SJ 00012 located approximately 0.40 miles to the northwest. Depth to groundwater in the permitted water well is 475 feet below ground surface.

### **References**

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

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

New Mexico Energy, Minerals and Natural Resources Department, [www.emnrd.state.nm.us](http://www.emnrd.state.nm.us).

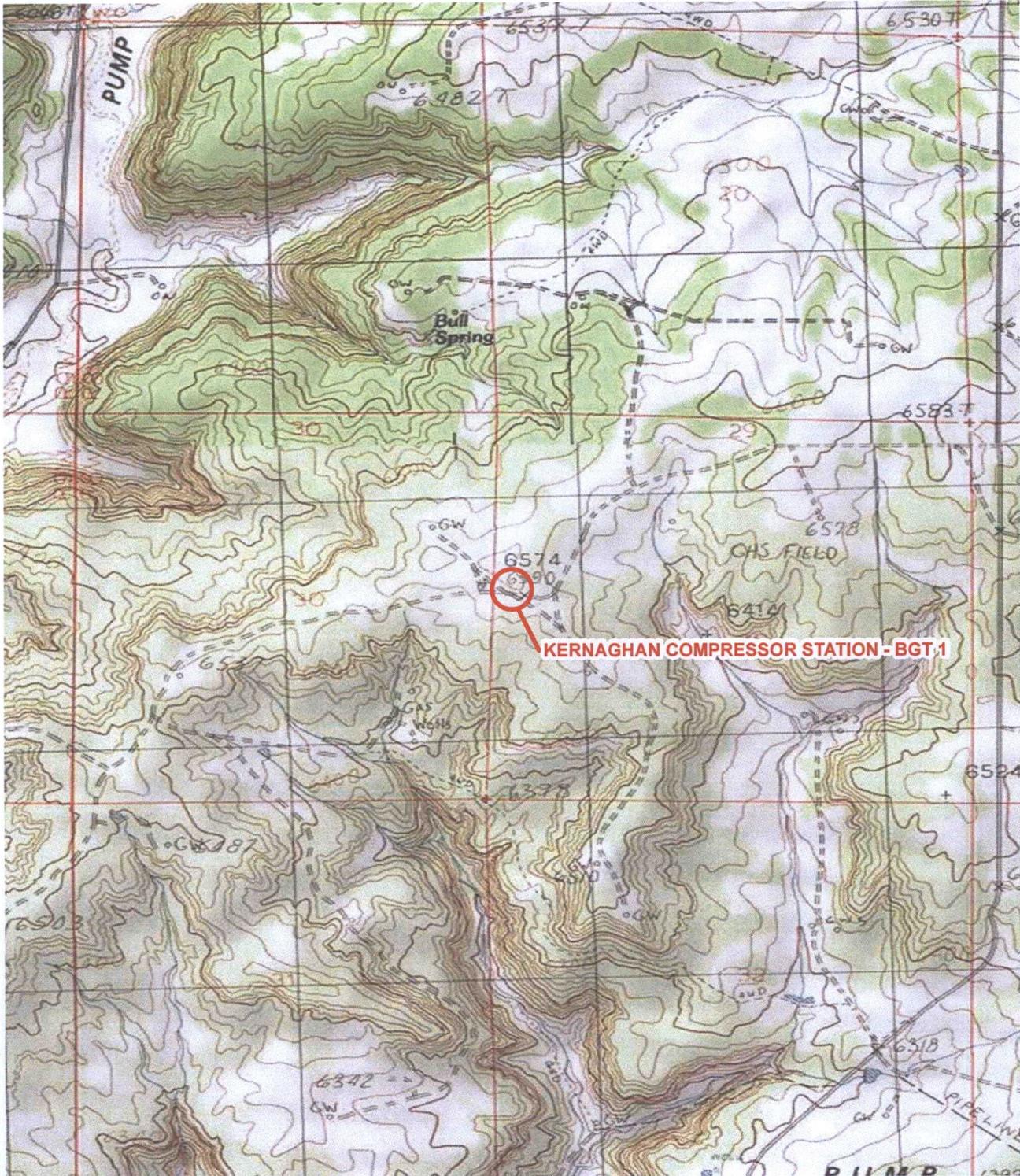
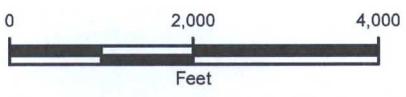


IMAGE COURTESY OF ESRI/USGS

**LEGEND**

 SITE LOCATION

BGT: BELOW GRADE TANK



**FIGURE 1**  
**TOPOGRAPHIC MAP**  
**KERNAGHAN COMPRESSOR STATION - BGT 1**  
**SW/NW (E) SEC 29 T31N R8W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WILLIAMS FOUR CORNERS**

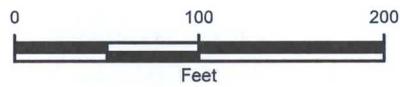




IMAGE COURTESY OF ESRI

**LEGEND**

-  BGT: BELOW GRADE TANK
-  100-FOOT RADIUS
-  200-FOOT RADIUS



**FIGURE 2**  
AERIAL PHOTOGRAPHIC MAP  
KERNAGHAN COMPRESSOR STATION - BGT 1  
SW/NW (E) SEC 29 T31N R8W  
SAN JUAN COUNTY, NEW MEXICO  
**WILLIAMS FOUR CORNERS**



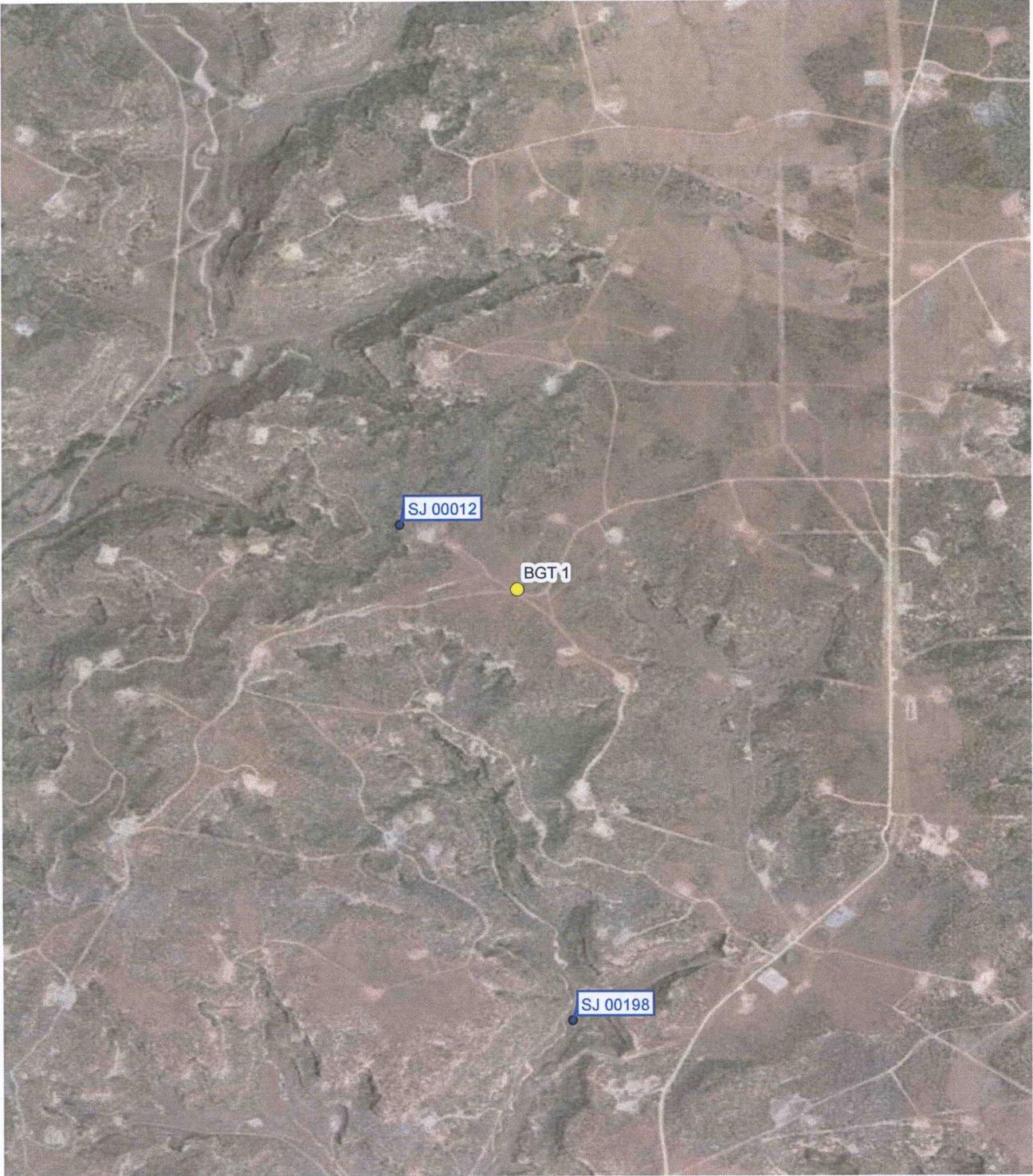
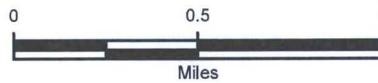


IMAGE COURTESY OF ESRI

**LEGEND**

- WATER WELL
- BGT: BELOW GRADE TANK



**FIGURE 3**  
**WATER WELL MAP**  
**KERNAGHAN COMPRESSOR STATION - BGT 1**  
**SW/NW (E) SEC 29 T31N R8W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WILLIAMS FOUR CORNERS**





# 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) (quarters are 1=NW 2=NE 3=SW 4=SE)  
 (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

| POD Number               | POD Sub-Code | basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X      | Y        | Depth Well | Depth Water | Water Column |
|--------------------------|--------------|-------|--------|------|------|-----|-----|-----|-----|--------|----------|------------|-------------|--------------|
| <a href="#">SJ 00012</a> |              |       | SJ     | 2    | 30   | 31N | 08W |     |     | 258218 | 4084189* | 1021       | 475         | 546          |

Average Depth to Water: **475 feet**  
 Minimum Depth: **475 feet**  
 Maximum Depth: **475 feet**

**Record Count: 1**

**PLSS Search:**

**Section(s): 29-31      Township: 31N      Range: 08W**

**\*UTM location was derived from PLSS - see Help**

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

**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            | Closure Plan     | 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)       |                  | 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)         |                  | 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)       | Timing           | 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)       |                  | 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)       | Reclamation      | 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)       |                  | 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)<br>19.15.17.13.H.5(b)<br>19.15.17.13.H.5(c)<br>19.15.17.13.H.5(d)<br>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  
Closure Criteria for Soils Beneath Below Grade Tanks, Drying Pads Associated with Closed Loop Systems and Pits where contents are Removed

| Depth Below Bottom of pit to ground water less than 10,000 mg/l | Constituent | Method                    | Limit**      |
|---|-------------|---------------------------|--------------|
| ≤50 feet  | Chloride    | EPA 300.0                 | 600 mg/kg    |
|   | TPH         | 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     |
| 51 feet – 100 feet  | Chloride    | EPA 300.0                 | 10,000 mg/kg |
|   | TPH         | EPA SW-846 Method 418.1   | 2,500 mg/kg  |
|   | 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     |
| ≤100 feet   | Chloride    | EPA 300.0                 | 20,000 mg/kg |
|   | TPH         | EPA SW-846 Method 418.1   | 2,500 mg/kg  |
|   | 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     |