District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application		
Proposed Alternative Method Permit of Closure Plan Application         Type of action:       Image: Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method         Image: Description of a pit, closed-loop system, below-grade tank, or proposed alternative method		
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request		
Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.		
1. Operator: BP AMERICA PRODUCTION COMPANY OGRID #: 778		
Address: 200 Energy Court, Farmington, NM 87401		
Facility or well name: GALLEGOS CANYON UNIT 034		
API Number:         3004507144         OCD Permit Number:		
U/L or Qtr/Qtr K Section 28.0 Township 28.0N Range 12W County: San Juan County		
Center of Proposed Design: Latitude <u>36.6305</u> Longitude <u>-108.12035</u> NAD: <u>1927</u> × 1983		
Surface Owner: 🗷 Federal 🗌 State 🗋 Private 🗋 Tribal Trust or Indian Allotment		
2.       Pit: Subsection F or G of 19.15.17.11 NMAC         Temporary:       Drilling       Workover         Permanent       Emergency       Cavitation       P&A         Lined       Unlined       Liner type: Thickness      mil       LLDPE       HDPE       PVC       Other		
▼ Below-grade tank:       Subsection I of 19.15.17.11 NMAC       Tank ID: _A		

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

<ul> <li>6.</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, institution or church)</li> <li>Four foot height, four strands of barbed wire evenly spaced between one and four feet</li> <li>Alternate. Please specify <u>4' Hogwire with single barbed wire</u></li> </ul>	, hospital,
<ul> <li>7.</li> <li><u>Netting</u>: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)</li> <li>Screen Netting Other</li> <li>Monthly inspections (If netting or screening is not physically feasible)</li> </ul>	
<ul> <li>8.</li> <li>Signs: Subsection C of 19.15.17.11 NMAC</li> <li>12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers</li> <li>Signed in compliance with 19.15.16.8 NMAC</li> </ul>	
<ul> <li>9.</li> <li><u>Administrative Approvals and Exceptions</u>: Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.</li> <li><i>Please check a box if one or more of the following is requested, if not leave blank:</i> <ul> <li>X Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval.</li> <li>Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.</li> </ul> </li> </ul>	office for
<sup>10.</sup> 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 acce material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appro office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to dry above-grade tanks associated with a closed-loop system.	opriate district approval.
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	🗶 Yes 🗌 No
<ul> <li>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).</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>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes 🗷 No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits)	Yes No
<ul> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> <li>Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🗷 No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	🗌 Yes 🗶 No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	🗌 Yes 🗶 No
<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 Society; Topographic map</li> </ul>	🗌 Yes 🗶 No
Within a 100-year floodplain. - FEMA map	🗌 Yes 🗶 No

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<ul> <li>11. <u>Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment 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 documents are attached.</i></li> <li>X 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 19.15.17.12 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>X 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</li> </ul>
Previously Approved Design (attach copy of design) API Number: or Permit Number:
12.         Closed-loop Systems Permit Application Attachment Checklist:       Subsection B of 19.15.17.9 NMAC         Instructions:       Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.            Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9            Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC            Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
<ul> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC</li> <li>and 19.15.17.13 NMAC</li> </ul>
Previously Approved Design (attach copy of design) API Number:
Previously Approved Operating and Maintenance Plan API Number: (Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
<ul> <li>Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC</li> <li>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.</li> <li>Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Climatological Factors Assessment</li> <li>Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Quality Control/Quality Assurance Construction and Installation Plan</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Imageney Response Plan</li> <li>Oil Field Waste Stream Characterization</li> <li>Monitoring and Inspection Plan</li> <li>Erosion Control Plan</li> <li>Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC</li> </ul>
Proposed Closure:       19.15.17.13 NMAC         Instructions:       Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.         Type:       Drilling       Workover       Emergency       Cavitation       P&A       Permanent Pit       Below-grade Tank       Closed-loop System         Alternative         Proposed Closure Method:       Waste Excavation and Removal       Waste Removal (Closed-loop systems only)       On-site Closure Method (Only for temporary pits and closed-loop systems)         In-place Burial       On-site Trench Burial       Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
<ul> <li>15.</li> <li>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.</li> <li>Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC</li> <li>Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC</li> <li>Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)</li> <li>Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC</li> <li>Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC</li> <li>Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC</li> </ul>

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16. <u>Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only</u> : (19.15.17.13.D NMAC) Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two		
facilities are required.	-	
Disposal Facility Name: Disposal Facility Permit Number:		
Disposal Facility Name: Disposal Facility Permit Number:		
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that <i>will not</i> be used for fu Yes (If yes, please provide the information below) No	ture service and operations?	
Required for impacted areas which will not be used for future service and operations:         Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13         Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13         Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13	3 NMAC	
<sup>17.</sup> <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 accepta provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropria considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	ate district office or may be	
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA	
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No	
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No	
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	playa 🗌 Yes 🗌 No	
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	Yes 🗌 No	
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or sto watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial applie - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site		
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordin adopted pursuant to NMSA 1978, Section 3-27-3, as amended.         -       Written confirmation or verification from the municipality; Written approval obtained from the municipality	ance 🗌 Yes 🗌 No	
Within 500 feet of a wetland.         -       US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed size	ite 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 Geologi Society; Topographic map</li> </ul>	cal 🗌 Yes 🗍 No	
Within a 100-year floodplain. - FEMA map	Yes No	
<ul> <li>18.</li> <li>On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan check mark in the box, that the documents are attached.</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Proof of Surface Owner Notice - based upon the appropriate requirements of subsection F of 19.15.17.13 NMAC</li> <li>Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMA</li> <li>Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirement</li> <li>Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC</li> <li>Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC</li> <li>Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC</li> </ul>	C is of 19.15.17.11 NMAC	

Instantial sumpling Flair Subset upon the appropriate requirements of Subsection F of DATASTANT (NMTC)
 Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
 Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
 Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
 Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

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19. Operator Application Certification: I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.
Name (Print) Jeffrey Peace
Signature: Heid Environmental Advisor Date: 06/14/2010
e-mail address: Peace.Jeffrey@bp.com Telephone: _505-326-9479
20.       OCD Approval:       Permit Application (including closure plan)       Closure Plan (only)       CCD Conditions (see attachment)       See EMAIL         OCD Representative Signature:       Jame       Jame       Approval Date:       09/28/15
OCD Representative Signature: 109/28/15
Title: Environmental Engineer OCD Permit Number:
21. Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.           Closure Completion Date:
22.
Closure Method:         Waste Excavation and Removal       On-Site Closure Method         Alternative Closure Method       Waste Removal         If different from approved plan, please explain.
<sup>23.</sup> <u>Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:</u> Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.
Disposal Facility Name: Disposal Facility Permit Number:
Disposal Facility Name: Disposal Facility Permit Number:
Were the closed-loop system operations and associated activities performed on or in areas that <i>will not</i> be used for future service and operations? Yes (If yes, please demonstrate compliance to the items below) No
Required for impacted areas which will not be used for future service and operations:         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique
24.
Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check         mark in the box, that the documents are attached.         Proof of Closure Notice (surface owner and division)         Proof of Deed Notice (required for on-site closure)         Plot Plan (for on-site closures and temporary pits)         Confirmation Sampling Analytical Results (if applicable)         Waste Material Sampling Analytical Results (required for on-site closure)
<ul> <li>Disposal Facility Name and Permit Number</li> <li>Soil Backfilling and Cover Installation</li> <li>Re-vegetation Application Rates and Seeding Technique</li> </ul>
Ke-vegetation Application Rates and Seeding Technique     Site Reclamation (Photo Documentation)     On-site Closure Location: Latitude Longitude NAD: [1927 ] 1983
25.
<b>Operator Closure Certification:</b> I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.
Name (Print): Title:
Signature: Date:
e-mail address: Telephone:

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# SITING AND HYDRO-GEOLOGICAL REPORT FOR GALLEGOS CANYON UNIT 034

# Siting Criteria 19.15.17.10 NMAC

Depth to groundwater at the site is estimated to be less than 50 feet. This estimation is based on proximity to local irrigation ditches visible on the topographic map and aerial photographs (Figures 1 through 8). A topographic map of the site is provided as Figure 2 and demonstrates that the below grade tank (BGT) is not within 300 feet of any continuously flowing watercourse or within 200 feet of any other significant watercourse, lakebed, sinkhole or playa lake as measured from the ordinary high water mark. Figure 3 demonstrates that the BGT is not within 300 feet of a permanent residence, school, hospital, institution or church. Figure 4 demonstrates, based on a search of the OSE database and USGS topographic maps, that there are no freshwater wells or springs within 1000 feet of the BGT. Figure 5 demonstrates that the BGT is not within a municipal boundary or a defined municipal freshwater well field. Figure 6 demonstrates that the BGT is not in an area overlying a subsurface mine. The BGT is not located in an unstable area. Figure 8 demonstrates that the BGT is not within the mapped FEMA 100-year floodplain.

# Local Geology and Hydrology

This particular site is located on a relatively flat plateau in the Bisti Region of the San Juan Basin, in between irrigated fields associated with the Navajo Indian Irrigation Project. There are lined irrigation ditches associated with the project that supply water for the fields surrounding the BGT site. These are visible by center-pivot irrigation patterns on the aerial photographs. Depth to water is estimated to be less than 50 feet below ground surface (bgs) at this site. This is attributed to seasonal irrigation practices which often produce shallow perched aquifers which are not likely discussed in published literature. The predominant geologic formation is the Nacimiento Formation of Tertiary age, which underlies surface soils and is often exposed.

At this site, there appears to be no imminent threat to human health, safety, and welfare from either a surficial or subsurface release because it is unlikely to migrate horizontally to a wash, arroyo, or domestic well. The only potential impact would be to regional groundwater. In this case, a release would have to travel greater than 50 vertical feet to reach the regional water table. There is potential for sorption or biodegradation of hydrocarbons and in the case of extremely mobile pollutants there will be a time-lag before arrival at the groundwater. Should this occur, dissolved- or liquid-phase migration of contaminants would be limited to the immediate area and appears not likely to reach any public or private water source before remedial actions could be initiated.

The BGT subject to the attached application for a permit under 19.15.17 NMAC (New Mexico Administrative Code) was in existence prior to promulgation of 19.15.17 NMAC. A review of the best available data and a visual inspection of the siting criteria of 19.15.17 NMAC specific to the BGT in question demonstrate that the BGT does not appear to pose an imminent threat to public health and the environment.

# **Regional Geology and Hydrology**

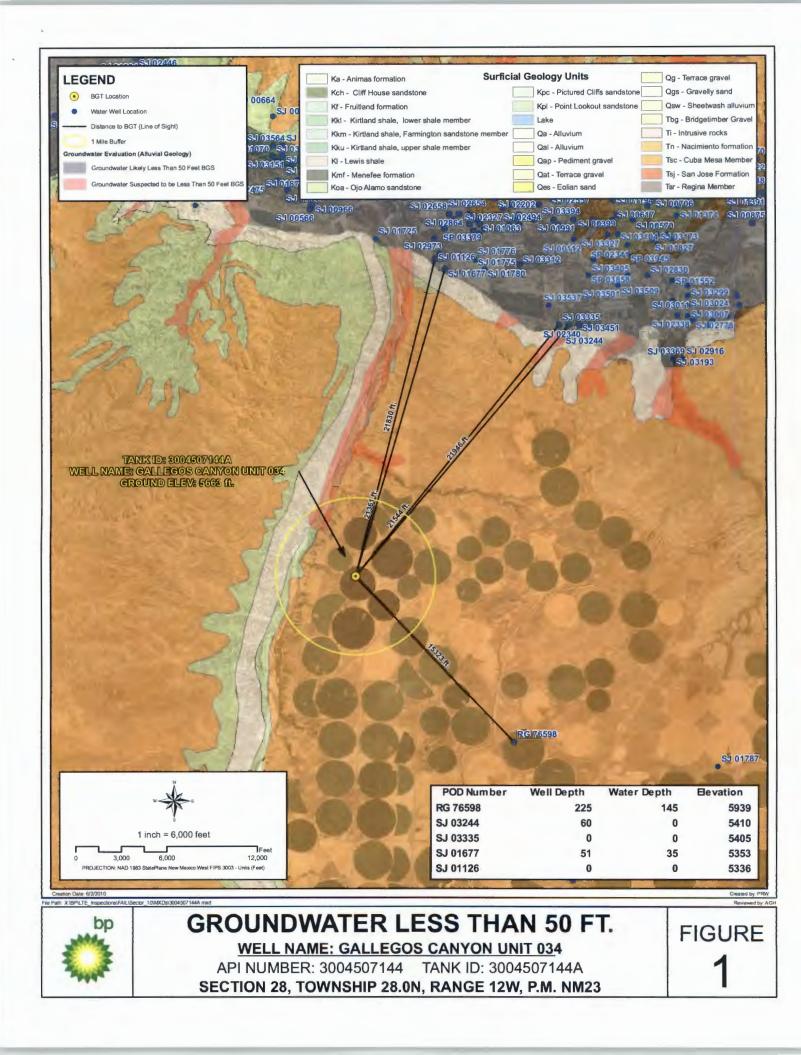
The San Juan Basin is situated in the Navajo section of the Colorado Plateau and is characterized by broad open valleys, mesas, buttes and hogbacks. Away from major valleys and canyons topographic relief is generally low. Native vegetation is sparse and shrubby. Drainage is mainly by the San Juan River, the only permanent stream in the Navajo Section of the Colorado Plateau. The San Juan River is a tributary of the Colorado River. Major tributaries include the Animas, Chaco and La Plata Rivers. Flow of the San Juan River across the basin is regulated by the Navajo Dam, located about 30 miles northeast of Farmington, New Mexico. The climate is arid to semiarid with an average annual precipitation of 8 to 10 inches. Soils within the basin consist of weathered parent rock derived from predominantly physical means mostly from eolian depositional system with fluvial having a lesser impact.

Cretaceous and Tertiary sandstones, as well as Quaternary Alluvial deposits, serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). In most of the proposed area, the Nacimiento Formation lies at the surface and grades into the Animas Formation to the west. The lower part of the Nacimiento Formation is composed of interbedded black, carbonaceous mudstones and white coarse-grained sandstones. The upper part is comprised of mudstone and sandstone. It is generally slope-forming, even within the sandstone units. Thickness of the Nacimiento ranges from 418 to 2232 feet (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000 feet deep in this section of the basin. Wells within these bodies flow from 16 to 100 gallons per minute (gpm), and transmissivities are expected to be 100 ft<sup>2</sup>/d (Stone et al., 1983). Groundwater within these aquifers flows toward the San Juan River.

# **References**

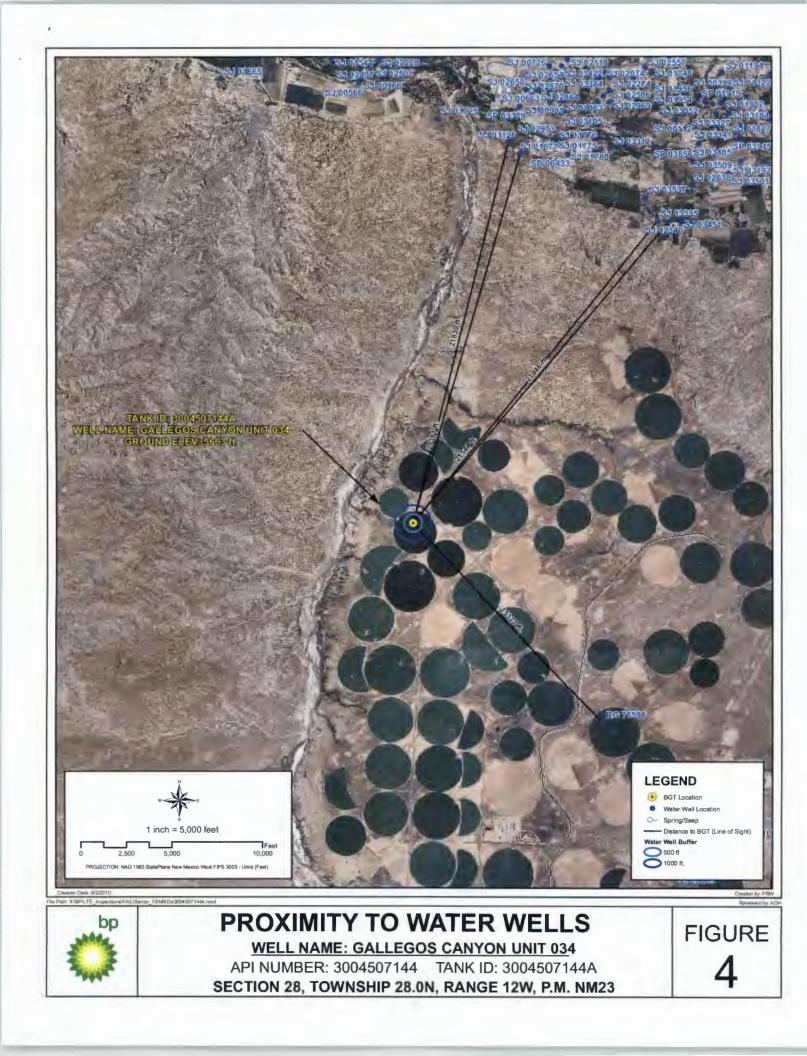
Circular 154—Guidebook to coal geology of northwest New Mexico By E. C. Beaumont, J. W. Shomaker, W. J. Stone, and others, 1976

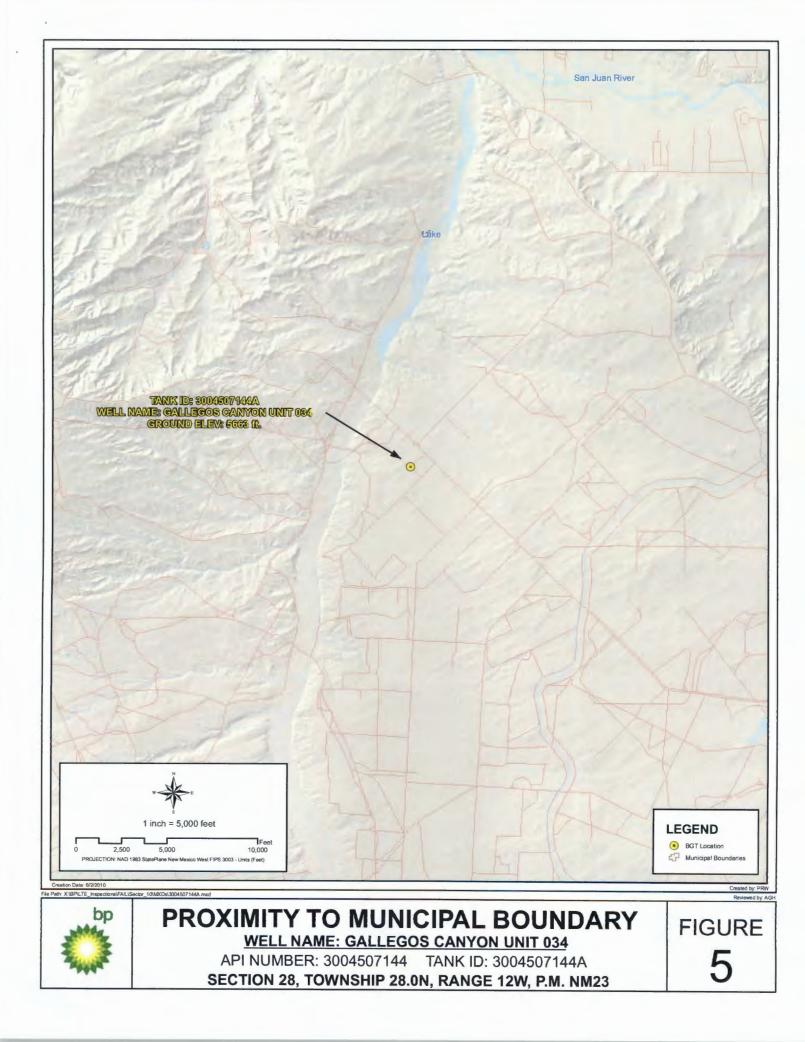
Stone, et al., 1983, Hydrogeology and Water Resources of the San Juan Basin, New Mexico, Socorro, New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p

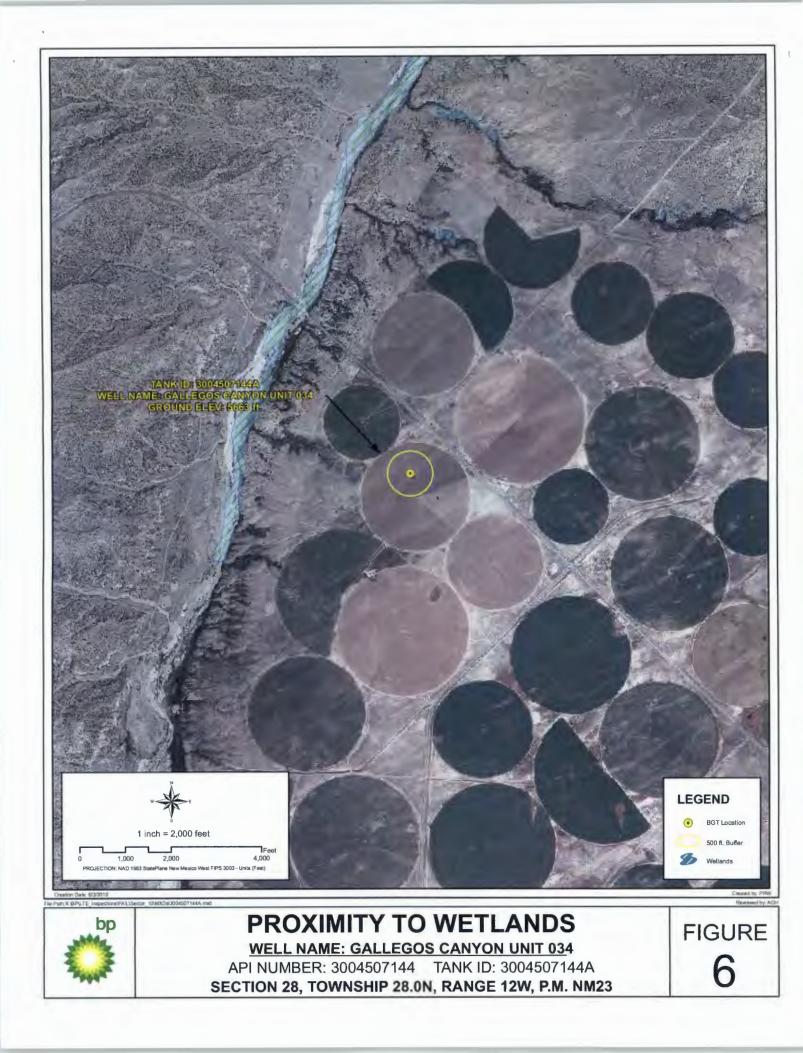


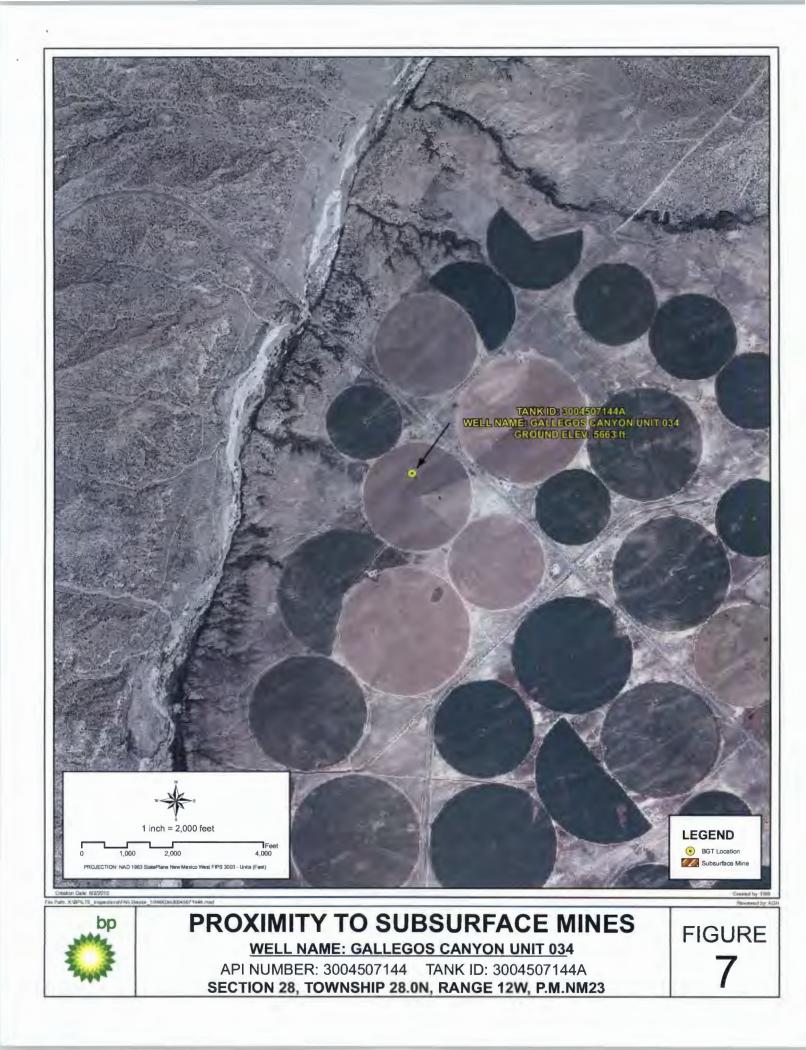


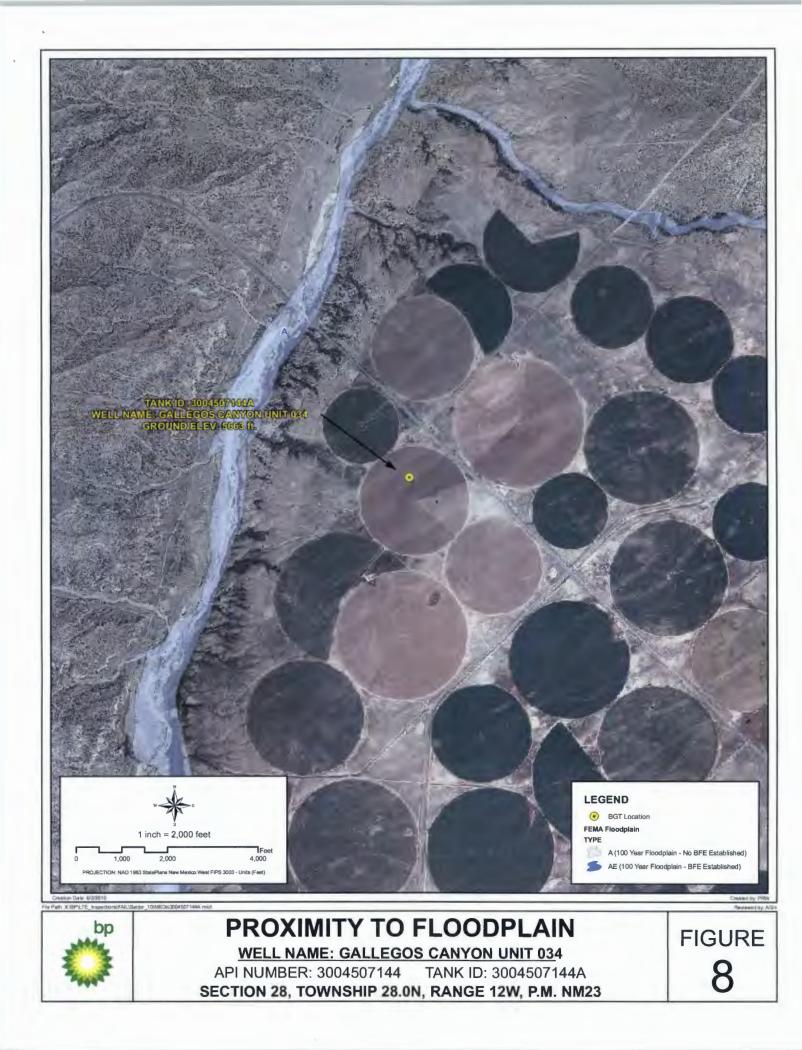












# SOUTHERN SAN JUAN BASIN (SSJB)

# **Figure Citation List**

# **March 2010**

# Figure 1: Groundwater Less Than 50 ft.

# Layers:

# iWaters Database: NMOSE/ISC (Dec. 2009)

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: http://www.ose.state.nm.us/waters\_db\_index.html.

#### **Cathodic Wells:**

Water Wells:

Tierra Corrosion Control, Inc. (Aug. 2008)

Tierra Corrosion Control, Inc. 1700 Schofield Ln. Farmington, NM 87401. Driller's Data Log. (Data collected: All data are associated with cathodic protection wells installed at BP facilities between 2008-2009. Data received: 05/06/2010).

#### Hydrogeological Evaluation:

#### Wright Water Engineers, Inc. (2008)

Evaluation completed by Wright Water Engineers, Inc. Durango Office. Data created using digital statewide geology at 1:500,000 from USGS in combination with 10m Digital Elevation Model (DEM) from NRCS. (Data compiled: 2008.)

Results: Spatial Polygons representing "Groundwater likely to be less than 50 ft." and "Groundwater suspected to be less than 50 ft.".

# Surficial Geology:

# USGS (1963/1987)

Data digitized and rectified by Geospatial Consultants. (Data digitized: 03/23/2010). Original hard copy maps sourced from United States Geological Survey (USGS). Data available from: <u>http://pubs.er.usgs.gov/</u>.

Geology, Structure and Uranium Deposits of the Shiprock Quadrangle, New Mexico and Arizonia. 1:250,000. I - 345. Compiled by Robert B. O'Sullivan and Helen M. Beikman. 1963.

Geologic Map of the Aztec 1 x 2 Quadrangle, Northwestern New Mexico and Southern Colorado. 1:250,000. I - 1730. Compiled by Kim Manley, Glenn R. Scott, and Reinhard A. Wobus. 1987.

#### **Aerial Imagery:**

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

# Figure 2: Proximity to Watercourses

#### Layers:

#### Perennial Streams:

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

NHD, USGS (2010)

# Intermittent Streams: NHD, USGS (2010)

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: <u>http://nhd.usgs.gov/.</u>

#### Water Bodies:

# National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24 000. Digital representation of US

NHD, USGS (2010)

2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

#### USGS Topographic Maps: USGS (2007)

USGS 24k Topographic map series. 1:24000. Maps are seamless, scanned images of USGS paper topographic maps. Data available from: <u>http://store.usgs.gov</u>.

# Figure 3: Proximity to Permanent Structure

#### Layers:

#### **Aerial Imagery:**

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

# Figure 4: Proximity to Water Wells

#### Layers:

#### Water Wells:

# iWaters Database: NMOSE/ISC (Dec. 2009)

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: <u>http://www.ose.state.nm.us/waters\_db\_index.html.</u>

#### Springs/Seeps:

# NHD, USGS (2010)

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: <u>http://nhd.usgs.gov/.</u>

#### **Aerial Imagery:**

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

# Figure 5: Proximity to Municipal Boundary

#### Layers:

Municipal Boundary:	San Juan County, New Mexico (2010)
Data provided by San Juan County GIS Divisio	n. (Data received: 03/25/2010).

#### **Shaded Relief:**

#### **NED, USGS (1999)**

National Elevation Dataset (NED). U.S. Geological Survey, EROS Data Center. (Data created: 1999. Data downloaded: April, 2010). Resolution: 10 meter (1/3 arc-second). Data available from: <u>http://ned.usgs.gov/</u>.

# StreetMap North America: Tele Atlas North America, Inc., ESRI (2008)

Data derived from Tele Atlas Dynamap/Transportation North America, version 5.2. (Data updated: annually. Data series issue: 2008).

# Figure 6: Proximity to Wetlands

#### Layers:

#### Wetlands: NWI (2010)

National Wetlands Inventory (NWI). U.S Fish and Wildlife Service. (Data last updated: 09/25/2009. Data received: 03/21/2010). Data available from: <u>http://www.fws.gov/wetlands/.</u>

#### Aerial Imagery:

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

# Figure 7: Proximity to Subsurface Mine

#### Layers:

# **Subsurface Mine:**

#### NM Mining and Minerals Division (2010)

New Mexico Mining and Minerals Division. (Data received: 03/12/2010). Contact: Susan Lucas Kamat, Geologist. Provided PLSS NM locations (Sections) for the two subsurface mines located in San Juan and Rio Arriba counties.

#### **Aerial Imagery:**

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

# Figure 8: Proximity to FEMA Floodplain

#### Layers:

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# **FEMA Floodplain:**

# FEMA (varying years)

Data digitized and rectified by Wright Water Engineers, Inc. (Data digitized: August 2008). Digitized from hard copy Flood Insurance Rate Maps (FIRMs) (varying years) of San Juan County.

#### **Aerial Imagery:**

#### Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD\_1983\_StatePlane\_New\_Mexico\_West\_FIPS\_3003\_Feet.

# BP AMERICA PRODUCTION COMPANY SAN JUAN BASIN, NORTHWEST NEW MEXICO

### BELOW-GRADE TANK CLOSURE PLAN

This plan will address the standard protocols and procedures for closure of below-grade tanks (BGTs) on BP America Production Company (BP) well sites. As stipulated in Paragraph A of 19.15.17.13 NMAC, BP shall close a BGT within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the New Mexico Oil Conservation Division (NMOCD) requires because of imminent danger to fresh water, public health, safety or the environment. If deviations from this plan are necessary, any specific changes will be included on form C-144 and approved by the NMOCD. BP shall close an existing BGT that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofit with a BGT that complies with the BP NMOCD approved BGT design attached to the BP Design and Construction Plan. BP shall close an existing BGT that does not meet the requirements of Paragraphs (1) through (4) of Subsection 1 of 19.15.17.11 NMAC, if not previously retrofitted to comply with the BP NMOCD approve BGT Design attached to the BP Design and Construction Plan, prior to any sale or change in operator pursuant to 19.15.9.9 NMAC. BP shall close the permitted BGT within 60 days of cessation of the BGTs operation or as required by the transitional provisions of Subsection B, D, or E of 19.15.17.17 NMAC.

# **General Closure Plan**

- 1. BP shall notify the surface owner by certified mail that it plans to close a BGT. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records demonstrates compliance with this requirement.
- 2. BP shall notify the division District III office verbally or by other means at least 72 hours, but not more than one (1) week, prior to any closure operation. The notice shall include the operator's name, and the location to be closed by unit letter, section, township and range. If the BGT closure is associated with a particular well, then the notice shall also include the well's name, number and API number.
- 3. BP shall remove liquids and sludge from the BGT prior to implementing a closure method and dispose of the liquids and sludge in a NMOCD's division-approved facility. The facilities to be used are:
  - a. BP Crouch Mesa Landfarm, Permit NM-02-003 (Solids)
  - b. JFJ Landfarm, Permit NM-01-010(B) (Solids and Sludge)
  - c. Basin Disposal, Permit NM-01-0005 (Liquids)
  - d. Envirotech Inc Soil Remediation Facility, Permit NM-01-0011 (Solids and Sludge)
  - e. BP Operated E.E. Elliott SWD #1, API 30-045-27799 (Liquids)
  - f. BP Operated 13 GCU SWD #1, API 30-045-28601 (Liquids)
  - g. BP Operated GCU 259 SWD, API 30-045-20006 (Liquids)
  - h. BP Operated GCU 306 SWD, API 30-045-24286 (Liquids)
  - i. BP Operated GCU 307 SWD, API 30-045-24248 (Liquids)
  - j. BP Operated GCU 328 SWD, API 30-045-24735 (Liquids)
  - k. BP Operated Pritchard SWD #1, API 30-045-28351 (Liquids)

- 4. BP shall remove the BGT and dispose of it in a NMOCD approved facility or recycle, reuse, or reclaim it in a manner that the NMOCD approves. If a liner is present and must be disposed of it will be cleaned by scraping any soils or other attached materials on the liner to a de minimus amount and disposed at a permitted solid waste facility, pursuant to Subparagraph (m) of Paragraph (1) of Subsection C of 19.15.35.8 NMAC. Documentation as to the final disposition of the removed BGT will be provided in the final closure report.
- 5. BP shall remove any on-site equipment associated with a BGT unless the equipment is required for well production.
- 6. BP shall test the soils beneath the BGT to determine whether a release has occurred. BP shall collect at a minimum: a five (5) point composite sample and individual grab samples from any area that is wet, discolored or showing other evidence of a release and analyze for BTEX, TPH and chlorides. The testing methods for those constituents are as follows;

Constituents	Testing Method	Release Verification
		(mg/Kg)
Benzene	US EPA Method SW-846 8021B or 8260B	0.2
Total BTEX	US EPA Method SW-846 8021B or 8260B	50
TPH	US EPA Method SW-846 418.1	100
Chlorides	US EPA Method 300.0 or 4500B	250 or background

Notes: mg/Kg = milligram per kilogram, BTEX = benzene, toluene, ethylbenzene, and total xylenes, TPH = total petroleum hydrocarbons. Other EPA methods that the division approves may be applied to all constituents listed. Chloride closure standards will be determined by which ever concentration level is greatest.

- 7. BP shall notify the division District III office of its results on form C-141.
- 8. If it is determined that a release has occurred, then BP will comply with 19.15.30 NMAC and 19.15.29 NMAC, as appropriate.
- 9. If the sampling demonstrates that a release has not occurred or that any release does not exceed the concentrations specified above, then BP shall backfill the excavation, with compacted, non-waste containing, earthen material; construct a division-prescribed soil cover, re-contour and re-vegitate the location. The location will be reclaimed if it is not with in the active process area.
- 10. BP shall reclaim the BGT location and all areas associated with the BGT including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. BP shall substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Subsection H of 19.15.17.13 NMAC, re-contour the location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re-vegetate according to Subsection I of 19.15.17.13 NMAC.
- 11. The soil cover for closures where the BGT has been removed or remediated to the NMOCD's satisfaction shall consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater. The soil

- 12. BP shall seed the disturbed area the first growing season after closure of the BGT. Seeding will be accomplished by drilling on the contour whenever practical or by other division-approved methods. Vegetative cover will be, at a minimum, 70% of the native perennial vegetative cover (un-impacted by overgrazing, fire or other intrusion damaging to native vegetation), consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintenance of that cover through two successive growing seasons. During the two growing seasons that prove viability, there shall be no artificial irrigation of the vegetation.
- 13. BP shall seed, plant and re-seed pursuant to Paragraph (3) of Subsection 1 of 19.15.17.13 NMAC, until the location successfully achieves the required vegetative cover.
- 14. Pursuant to Paragraph (5) of Subsection 1 of 19.15.17.13 NMAC, BP shall notify the NMOCD when it has seeded or planted and when it successfully achieves revegetation.
- 15. Within 60 days of closure completion, BP shall submit a closure report on NMOCD's form C-144, and will include the following;
  - a. proof of closure notification (surface owner and NMOCD)
  - b. sampling analytical reports; information required by 19.15.17 NMAC;
  - c. disposal facility name and permit number
  - d. details on back-filling, capping, covering, and where applicable re-vegetation application rates and seeding techniques and
  - e. site reclamation, photo documentation.Disposal Facility Name and Permit Number
- 16. BP shall certify that all information in the report and attachments is accurate, truthful, and compliant with all applicable closure requirements and conditions specified in the approved closure plan.

From:	Lowe, Leonard, EMNRD
To:	"Moskal, Steven"; Smith, Cory, EMNRD
Cc:	<u>Hixon, Vance E; Railsback, Farrah (CH2M HILL); jeffcblagg@aol.com; Nelson Velez (nelsonvelez4519@msn.com)</u> (nelsonvelez4519@msn.com)
Subject:	FW: BGT Operating Permit Approvals
Date:	Tuesday, September 29, 2015 4:36:00 PM
Importance:	High

OCD approves the BGT remove and replace for the following Below Grade Tank, located:

GCU 34	95 bbl	Tank A	API # 3004507144 (Lacking
information)			
Hughes 007E	95 bbl	Tank A	API # 3004525748
E E Elliott B 009E	95 bbl	Tank A	API # 3004526570
Elliott GC F 001B	95 bbl	Tank A	API # 3004530075
Heath GC 001B	95 bbl	Tank A	API # 3004530111
Schoen LS 001R	95 bbl	Tank A	API # 3004523790

The conditions of approval for the BGT remove and replacement are as follows:

The existing BGT be removed following the closure protocols described in your application. Results from the composite sampling should be reviewed for determination as to whether or not a release has occurred before replacement with the new double/double tank. The new BGT shall be registered with the Aztec OCD office. Please retain a copy of this e-mail as not hardcopy will be sent. In addition, the closure reports for these tanks must be provided to the OCD district office in Aztec within 60 days of tank closure.

Your approved Remove and Replace C-144 is (are) located in the OCD imaging link below:

• Open link below:

http://ocdimage.emnrd.state.nm.us/imaging/default.aspx.

The OCD could not find the reaming requested list of C-144's, see below.

If you need assistance to find your C-144 you may contact me. My information is below.

Thank you.

# Leonard Lowe

Environmental Engineer [Environmental Bureau] Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St. Frances Santa Fe, New Mexico 87004 Office: 505-476-3492 Fax: 505-476-3462 E-mail: <u>leonard.lowe@state.nm.us</u> Website: <u>http://www.emnrd.state.nm.us/ocd/</u>

From: Moskal, Steven [mailto:Steven.Moskal@bp.com]
Sent: Thursday, September 24, 2015 8:45 AM
To: Lowe, Leonard, EMNRD <Leonard.Lowe@state.nm.us>
Cc: Hixon, Vance E <Vance.Hixon@bp.com>; Railsback, Farrah (CH2M HILL)
<Farrah.Railsback@bp.com>; jeffcblagg@aol.com; Nelson Velez (nelsonvelez4519@msn.com) (nelsonvelez4519@msn.com) <nelsonvelez4519@msn.com>
Subject: BGT Operating Permit Approvals

Leonard,

Please approve the following BGT operating permits:

GCU 34 10	95 bbl	Tank A	API # 3004507144 Sector
GCU 595 (3004531660) Sector 6 C	95 bbl COULD NOT F	Tank A IND	API # 3004531665
Hughes 007E	95 bbl	Tank A	API # 3004525748 Sector 7
W H Riddle 001A COULD NOT FIND	95 bbl	Tank A	API # 3004522199 Sector 5
E E Elliott B 009E	95 bbl	Tank A	API # 3004526570 Sector 6
Helen Jackson 001E COULD NOT FIND	95 bbl	Tank A/B	API # 3004524940 Sector 7
Elliott GC F 001B	95 bbl	Tank A	API # 3004530075 Sector 6
Likins GC A 001B COULD NOT FIND	95 bbl	Tank A	API # 3004530109 Sector 9
Heath GC 001B 5	95 bbl	Tank A	API # 3004530111 Sector
Schoen LS 001R	95 bbl	Tank A	API # 3004523790 Sector 4

Steve Moskal BP Lower 48 – San Juan – Farmington Field Environmental Coordinator Office: (505) 326-9497 Cell: (505) 330-9179