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BP America Production Company's
Gallegos Canyon Unit 599 Com No.1H
Basin Mancos
Natural Gas Well Project

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

BP America Production Company (BP) has submitted an Application for Permit to Drill (APD) with the Bureau of Land Management - Farmington Field Office (BLM-FFO) for the Gallegos Canyon Unit 599 Com No.1H natural gas well project. The proposed project includes the construction of a well pad and a new 105-foot access road in order to horizontally drill and develop federal mineral resources administered by the BLM-FFO. The project also includes upgrading the existing resource road for approximately 560 feet. Once the well has been completed and proves to be viable, a 79-foot subsurface well-tie pipeline would be constructed by Enterprise Field Services, LLC (Enterprise) to transport produced natural gas. BP would receive an approved APD to develop their lease on public lands. The proposed action is the approval of the APD by the BLM-FFO, located in Farmington, New Mexico.

The Gallegos Canyon Unit 599 Com No.1H proposed project area is situated within San Juan County, New Mexico approximately 5 miles southwest of Bloomfield and 10 miles southeast of Farmington. Refer to Appendix A for project maps and Section 2.2.1. (Location of Proposed Project Area) for further information.

Surface disturbance associated with the proposed project would be approximately 5.59 acres, total. Of this, approximately 5.20 acres would be considered new. Potential new surface disturbances would include construction of a well pad within a total permitted area of 5.06 acres, 0.07 acre for the construction of an access road, and 0.07 acre for the construction of a well-tie pipeline. Please see Table 2 in Section 2.2.3. (Proposed Surface Disturbance) for a summary of the disturbance footages and acreages associated with project construction. All new surface disturbance associated with pipeline construction would be reclaimed during interim reclamation. Production equipment will be placed on the location in such a manner to allow safe access to facilities while minimizing long-term disturbance and maximizing interim reclamation.

Oil and natural gas, vital components of the nation's energy supply, account for approximately 36 and 25 percent of total energy consumed in the U.S., respectively (U.S. Energy Information Administration 2012).

Natural gas is used in homes, commercially, in industry, and in the transportation sector. Common uses for natural gas include space heating, water heating, cooling, cooking, waste treatment and incineration, metals preheating, drying and humidification, glass melting, food processing, fueling industrial boilers, vehicle fueling, and electricity generation. Gases such as butane, ethane, and propane can be extracted from natural gas to be used for products such as fertilizers and pharmaceuticals. Natural gas can also be used to create methanol, which is utilized in the production of formaldehyde, acetic acid, fuel cell sources, and additives for cleaner burning gasoline (Natural Gas Supply Association 2010). Most oil goes into fuels, including gasoline, jet fuel, and home-heating oil. Additionally, non-fuel compounds extracted from oil are used to develop lubricants; asphalt for roads; tar for roofing; waxes for food wrapping; solvents for paints; cosmetics and dry-cleaning products; plastics; and foams (U.S. Energy Information Administration 2012).

Most of the oil and natural gas found in North America is concentrated in distinct basins. The BLM-FFO management area is within the San Juan Basin, one of the most prolific gas-producing basins in the country. Currently, the San Juan Basin produces small amounts of oil (BLM 2003a).

Taxes and royalties on oil, natural gas, and carbon dioxide production contribute approximately 25 percent of New Mexico's general fund, and the oil and gas industry is one of the largest private sector employers in the state (New Mexico Bureau of Geology and Mineral Resources 2012). Additionally, the federal government receives royalties, or a share of the production income, for extracted federal minerals.

In 2011, federal natural gas royalties totaled over 2 billion dollars (Office of Natural Resources Revenue 2012).

1.2. Purpose and Need for Action

The purpose of the proposed action is to allow BP reasonable access to BLM managed lands to develop their mineral lease.

The need for the proposed action is established by the BLM's responsibility to respond to the APD and/or ROW under the Mineral Leasing Act of 1920, as amended (30 USC [United States Code] 181 et seq.) and the Federal Land Policy and Management Act (FLPMA) of 1976.

1.3. Decision to be Made

Based on the information in this environmental assessment (EA), the BLM-FFO will decide whether or not to issue the APD and/or ROW, and if so, under what terms and conditions. Under the National Environmental Policy Act (NEPA) (Public Law [PL] 91-90, 42 USC 4321 et seq.), the BLM-FFO must determine if there are any significant environmental impacts associated with the proposed actions warranting further analysis in an Environmental Impact Statement (EIS). The BLM-FFO Field Manager is the responsible officer who will decide either:

- To approve the APD and/or ROW with design features as submitted;
- To approve the APD and/or ROW with additional mitigations;
- To analyze the effects of the proposal in an EIS; or
- To deny the APD and/or ROW.

1.4. Conformance with Applicable Land Use Plan(s)

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific EA tiers to and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement [(PRMP/FEIS) BLM 2003a]. This EA is in conformance with the management goals set forth in the Resource Management Plan (RMP) for the Farmington Field Office (FFO) of the BLM, which was approved by the Record of Decision (ROD) signed September 29, 2003, and updated in December 2003 (BLM 2003b).

Specifically, the proposed action supports the following BLM policy:

> It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable market prices. At the same time, the BLM strives to ensure that mineral development is carried out in a manner that minimizes environmental damage and provides for the rehabilitation of affected lands (BLM 2003b, 2-2 – 2-3).

The PRMP/FEIS, RMP, and ROD are available for review at the BLM Farmington Field Office, 6251 College Blvd., Suite A, Farmington, NM, or electronically at: http://www.nm.blm.gov/ffo/ffo_home.html.

1.5. Relationship to Statutes, Regulations or Other Plans

BP would comply with applicable federal, state, and local laws and regulations. Necessary permits and approvals for the proposed project would be obtained prior to project implementation.

Many requirements regulating specific environmental elements are found in the appropriate elements sections of this EA (Chapter 3). Several permits, licenses, consultations, or other requirements are discussed below.

1.5.1. Clean Water Act

Recognizing the potential for the continued or accelerated degradation of the Nation's waters, the U.S. Congress enacted the Clean Water Act (CWA), formerly known as the Federal Water Pollution Control Act (33 USC 1344). The objective of the CWA is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States.

Under Section 401 of the CWA, an applicant for a federal license or permit to conduct an activity that may result in a discharge into a water of the U.S. must provide the federal agency with a Section 401 certification declaring that the discharge would comply with the CWA. The certification would be granted by the New Mexico Environment Department (NMED).

Under Section 402 of the CWA, the U.S. Environmental Protection Agency (EPA) regulates storm water discharges from industrial and construction activities under the National Pollution Discharge Elimination System (NPDES) program. Permits are required if discharge results in a reportable quantity for which notification is required (pursuant to 40 CFR 117.21, 40 CFR 302.6, or 40 CFR 110.6) or if the discharge contributes to a violation of a water quality standard.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) has jurisdiction over "waters of the U.S." These jurisdictional waters include those that have a "significant nexus" to traditional navigable waters. The BLM-FFO and USACE Durango Regulatory Office have determined that jurisdictional waters may include USGS watercourses (i.e., "blue lines" on USGS 1:24,000 topographic maps).

The proposed action is in conformance with the CWA (33 USC 1251 et seq.).

1.5.2. National Historic Preservation Act

Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM – New Mexico SHPO protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation (2014), and the National Conference of State Historic Preservation Officers (2012), and other applicable BLM handbooks.

1.5.3. Clean Air Act

The Clean Air Act of 1972, as amended (CAA; 42 USC 7401 et seq.), establishes national ambient air quality standards (NAAQS) to control air pollution. In New Mexico, the NMED has adopted most of the CAA into the New Mexico Administrative Code (NMAC). The NMED issues construction and operating permits for air quality and enforces air quality regulations and permit conditions.

1.6. Scoping, Public Involvement, and Issues

1.6.1. Scoping and Public Involvement

The Farmington Field Office (FFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located on the BLM New Mexico website:

http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html

An onsite meeting, attended by BP, BLM-FFO representatives, Enterprise, and an environmental consultant (Adkins Consulting, Inc. [ACI]), was held for the proposed project on April 19th and July 16th, 2015. A public invitation to the on-site meetings was posted online; no private citizens or groups attended the meeting.

http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_oil_and_gas/ffo_onsites.html

A BLM-FFO Interdisciplinary Team meeting was held on July 20th, 2015 to discuss the proposed action. At the aforementioned meetings, potential issues of concern (Section 1.6.2--Issues) were identified by the BLM-FFO and ACI.

Based on the size and scale, routine nature, and potential impacts associated with the proposed action, no additional external scoping was conducted. No public comments were received for the proposed action.

1.6.2. Issues

Issues Analyzed

The following issues were identified during internal scoping as potential issues of concern for the proposed action. These issues will be addressed in this EA.

- How would dust, equipment emissions, and consumption of hydrocarbons associated with the proposed project impact air resources?
- How would surface-disturbing activities associated with construction of the proposed project impact cultural resources?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact upland vegetation?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact wildlife including migratory birds?
- How would vegetation-clearing, proposed project activities, and final reclamation impact the following BLM Special Status Species (SSS): Aztec gilia (*Aliciella formosa*), Brack's hardwall cactus (*Sclerocactus cloveriae ssp. brackii*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), and prairie falcon (*Falco mexicanus*)?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact the distribution and establishment of noxious weeds and invasive species?
- What effects will the proposed action have on public health and safety?
- What effects will the proposed action have on social and economic features / environmental justice?
- What effects will the proposed action have on transportation and travel?

- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact livestock grazing?

Issues Considered but not Analyzed

The following issues were identified during scoping as issues of concern that would not be impacted by the proposed action or that have been covered by prior environmental review. These issues will not be analyzed in this EA.

Areas of Critical Environmental Concern (ACECs)

The nearest Area of Critical Environmental Concern to the proposed action is *River Tracts ACEC*, approximately 2.6 miles away to the north (BLM 2014b).

Groundwater

Stimulation (i.e., hydraulic fracturing or "fracking") is a process used to maximize the extraction of underground resources by allowing oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface. Fluids, commonly made up of water (99 percent) and chemical additives (1 percent), are pumped into a geologic formation at high pressure during hydraulic fracturing (USEPA 2004). Chemicals added to stimulation fluids may include friction reducers, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers. When the fracking pressure exceeds the rock strength, the fluids open or enlarge fractures that typically extend several hundred feet away from the well bore, and may occasionally extend up to 1,000 feet from the well bore. After the fractures are created, a propping agent (usually sand) is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracturing is completed, a portion of the injected fracturing fluids returns to the wellbore and is recovered for future fracturing operations (USEPA 2004) or disposal. Stimulation techniques have been used in the United States since 1949 and in the San Juan Basin since the 1950s. Over the last 10 years, advances in multi-stage and multi-zone hydraulic fracturing have allowed development of gas fields that previously were uneconomic, including the San Juan Basin.

Hydraulic fracturing is a common process in the San Juan Basin and applied to nearly all wells drilled. The producing zone targeted by the proposed action is well below any underground sources of drinking water. The Mancos Shale formation is also overlain by a continuous confining layer. The geological confining layer is the Lewis Shale formation that is located above both the Mancos Shale and Mesaverde formations and provides an impermeable layer that isolates the Mancos Shale and Mesaverde formations from both identified sources of drinking water and surface water. On average, total depth of the proposed well bore would be about 5,000 feet below the ground surface. Fracturing in the Basin Mancos formation is not expected to occur above depths of 4,000 feet below the ground surface. Fracturing could possibly extend into the Mesaverde formation overlying the Basin Mancos; however, the formation has not been identified as an underground source of drinking water based on its depth and relative high levels of TDS. No impacts to surface water or freshwater-bearing groundwater aquifers are expected to occur from hydraulic fracturing of this proposed well.

Endangered Species Act Species

The Endangered Species Act (ESA) of 1973 requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend, and to consult with the U.S. Fish and Wildlife Service (USFWS) on all actions authorized, funded, or carried out by the agency to ensure that the action will not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat. Consultation with the USFWS, as required by Section 7 of the ESA, was conducted as part of the Farmington PRMP/FEIS (Consultation No. 2-22-01-I-389) to address cumulative effects of RMP implementation. The consultation is summarized in Appendix M of the PRMP/FEIS. Water used to construct, produce, and maintain the proposed well would be acquired from Blanco Trading Post Water Well (New Mexico Office of the State Engineer

[NMOSE] point of diversion [POD] authorization number SJ-2105) and/or Hilltop Water Hole (NMOSE POD No. SJ-00077); no unaccounted-for water depletions within USFWS-listed fish habitat would occur. Therefore, there is no need for additional Section 7 consultation.

Native American Religious Concerns

For the proposed action, identification efforts for Native American Religious Concerns were limited to a review of existing published and unpublished literature (e.g., Van Valkenburgh 1941, 1974; Brugge 1993; Kelly, et al. 2006), development of the site-specific Class III survey report prepared for the proposed action (Division of Conservation Archaeology [DCA] Report No. 15-DCA-013 [Meininger 2015]), and a review by the BLM's cultural resources program regarding the presence of Traditional Cultural Properties (TCPs) identified through ongoing BLM tribal consultation efforts. There are currently no known remains that fall within the purview of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001) or the Archaeological Resources Protection Act (ARPA; 16 USC 470) within the proposed project area. The proposed action would not impact any known TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (AIRFA; 42 USC 1996) or Executive Order (EO) 13007.

Paleontology

The San Juan Basin in northwestern New Mexico is rich in paleontological resources. The BLM used the Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands (Instruction Manual 2008-009) to identify areas with a high potential to produce significant fossil resources (BLM 2008d). Under this system, all lands within the BLM-FFO management area were designated as Class 5 (Very High Potential) for paleontological resources. Class 5 areas require an assessment of paleontological resources at the project level (BLM 2009). If a paleontological site is discovered during the construction phase of the proposed project, the site would be avoided by personnel, personal vehicles, and company equipment. Therefore, no impacts to paleontological resources are anticipated as a result of the proposed project.

2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Alternative A: No Action

Under the No Action Alternative, the APD and/or ROW associated with the proposed Gallegos Canyon Unit 599 Com No.1H project would not be approved. The proposed access road, resource road upgrade, well pad, and pipeline would not be constructed. Current land and resource uses would continue to occur in the proposed project area.

2.2. Alternative B: Proposed Action

The proposed action is the BLM-FFO approval of the APD and/or ROW associated with BP's Gallegos Canyon Unit 599 Com No.1H project. The proposed project includes the construction of a well pad and a new 105-foot access road in order to horizontally drill and develop federal mineral resources administered by the BLM-FFO. The project also includes upgrading the existing resource road for approximately 560 feet. Once the well has been completed and proves to be viable, a 79-foot subsurface well-tie pipeline would be constructed by Enterprise Field Services, LLC (Enterprise) to transport produced natural gas. The proposed project would commence after issuance of the APD and/or ROW.

Sections 2.2.1 through 2.2.3 describe the proposed action in detail. Construction plats associated with the proposed project are provided in Appendix B.

2.2.1. Location of Proposed Project Area

A map of the proposed project area plotted on USGS topographic quadrangle and a drawing of the proposed development on aerial imagery are provided in Appendix A.

The proposed project area is located on BLM-FFO managed lands within the San Juan Basin of northwest New Mexico. Development would occur approximately 5 miles southwest of Bloomfield, 10 miles southeast of Farmington, and just west of Horn Canyon. The proposed well head location is as follows:

Table 1. Surface Hole Location

Surface Hole Location: 36.65353, -108.03821, Datum NAD 83								
UL or Lot No.	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	**19**	**28N**	**11W**	**517**	**NORTH**	**599**	**East**	**San Juan**
New Mexico Principle Meridian (NMPM)								

The general region surrounding the proposed project area (PPA) is characterized by saltbush scrub, sagebrush shrubland valleys, and wooded hills and mesas. The PPA is situated within moderately to gently sloping shrubland with a moderate Piñon-Juniper canopy cover. Prominent topographical features occurring near the PPA include steep badland slopes to the southwest and Horn Canyon adjacent to the east. Project area elevation ranges from approximately 5,590 to 5,610 feet above mean sea level (AMSL). Existing oil and gas development and public roads are in the general vicinity of the PPA.

2.2.2. Description of Proposed Project

A detailed description of design features and construction practices associated with the proposed action can be found below. Construction plats associated with the proposed project are provided in Appendix B and provide additional details.

Design Features and Best Management Practices

BP would adhere to the stipulations attached to an approved APD from the BLM-FFO. The following general design features and best management practices (BMPs) would occur.

Surface Water

The proposed project area is within the Upper San Juan Watershed. Numerous unnamed drainages transect the project area: the proposed access road and pipeline corridors would cross an unnamed intermittent/ephemeral drainage, and there are multiple smaller washes that run southwest to northeast through the proposed well pad area. During large precipitation events, storm water would likely flow through these drainages eventually draining into the adjacent larger wash northeast of the pad.

The watercourse within the proposed access road and pipeline corridors has a defined stream channel (i.e., Ordinary High Water Mark) and would thereby likely be subject to regulatory jurisdiction under the USACE. Assuming the watercourse is jurisdictional, the crossing would be covered under Nationwide Permit No. 12 and 13 (Utility Line Activities and Transportation Corridors). A low water crossing will be constructed where the access road crosses the unnamed wash at the entrance to the well pad.

The proposed well pad dimensions were adjusted to avoid jurisdictional watercourses, and project erosion control features have been designed to avoid discharge into other watercourses that are potentially USACE jurisdictional. Erosion control features are described in Section 2.2.2--Additional Design Features and BMPs.

Control of Waste

Liquid and solid wastes would be disposed of at an appropriate waste-disposal site. The proposed project area would be maintained in a sanitary condition. Hazardous substances would be handled and disposed of according to federal law. Waste resulting from construction activities would be removed from the proposed project area and disposed of in an authorized area, such as an approved landfill.

Protection of Paleontological Resources

If a paleontological site is discovered, the BLM would be notified and the site would be avoided by personnel, personal vehicles, and company equipment. Workers would be informed that it is illegal to collect, damage, or disturb some such resources, and that such activities are punishable by criminal and/or administrative penalties.

Protection of Cultural Resources

All cultural resource stipulations would be followed as indicated in the Cultural Resource Records of Review, attached to the stipulations in an approved APD/ROW Grant. These stipulations could include, but would not be limited to, temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, reduction of the proposed project areas and/or establishment of specific construction avoidance zones, and employee education.

Employees, contractors, and sub-contractors associated with the proposed project would be informed by BP that cultural sites are to be avoided by personnel, personal vehicles, and company equipment. These individuals would be informed that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and/or administrative penalties under the provisions of ARPA.

In the event of a cultural discovery during construction, BP would immediately stop all construction activities in the immediate vicinity of the discovery and immediately notify the archaeological monitor, if present, or the BLM. The BLM would then evaluate or cause the site to be evaluated. Should a discovery be evaluated as significant (e.g., eligible for the National Register of Historic Places [NRHP] or protected under NAGPRA or ARPA), it would be protected in place until mitigating measures could be developed and implemented according to guidelines set by the BLM.

Protection of Flora and Fauna, including SSS and Livestock

The proposed project area is within the FFO-designated potential habitat area for Aztec gilia and Brack's hardwall cactus (BLM 2015; [Appendix A]). Both plants are designated SMS by the BLM-FFO and listed endangered species by the State of New Mexico. Soils derived from the Nacimiento Formation, which provides the appropriate geologic substrate for the two plants, is present along the northwest side of the PPA; however, no Brack's cactus or Aztec gilia plants were found within the project area.

Should any active raptor nests be observed within one-third mile of the proposed project area or should any additional SSS (listed by the USFWS or BLM) be observed within the proposed project area prior to or during project implementation, construction would cease and the BLM-FFO would be immediately contacted. The BLM-FFO would then ensure evaluation of the resource. Should a discovery be evaluated as significant (protected under the ESA, etc.), it would be protected in place until mitigation could be developed and implemented according to guidelines set by the BLM.

Under the Migratory Bird Treaty Act – BLM/FFO Interim Management Policy (IM No. NM-F00-2010-001), timing limitations on use authorizations will be enforced for projects during the nesting period of May 15 to July 31 to avoid or minimize the possibility of the unintentional take of migratory birds. These timing limitations will be enforced for projects during the nesting period of May 15 to July 31 under the following conditions:

- For proposed projects 4.0 acres or more of vegetative disturbance, no construction activities from May 15 to July 31 will be permitted without a migratory bird nest survey. These surveys will be

conducted by a BLM/FFO approved biologist using a survey protocol provided by a BLM/FFO biologist. If any active nests are located within the proposed project area, projects activities will not be permitted until written approval by a BLM/FFO biologist. The BLM/FFO will monitor any active nests located from a nest survey.

- The use of prescribed fire and mechanical thinning equipment (i.e. hydromower and tree axe) during this period (5/15-7/31) will be avoided. Exceptions to this policy will be considered where repeated complications due to weather have prevented the attainment of resource objectives through the use of prescribed fire. In these situations a thorough environmental analysis will be prepared assessing the effects of conducting the burn during the restricted period. The decision to proceed or not will be based upon this analysis. It should be noted also that this policy does not apply to natural ignitions in areas that the District Fire Management Plan has designated as a "wildland fire use area" nor does it apply to treatments 4.0 acres or less in size. In addition, should state or national guidance be issued that differs from this policy; the FFO policy will be modified to conform to it.

- Should active nests be observed, the contractor has determined that project activities cannot be avoided until after the birds have fledged (left the nest), and if no practicable or reasonable avoidance alternatives are identified, then the contractor must contact the USFWS's Migratory Bird Permit Office in Albuquerque, NM at (505) 248-7882. The contractor may proceed with work on the affected project activities following receipt of the approved permit from the USFWS.

The proposed action is located within the Kutz Canyon grazing allotment No. 05125 managed by the BLM-FFO. Allotment is currently un-allotted. However, it is being considered for re-authorization of grazing. If the allotment is re-authorized during the lifetime of the proposed project the grazing lease operator(s) would be notified at least 10 business days prior to beginning the construction phase of the proposed project in order to ensure that there would be no conflicts between construction activities and livestock grazing operations. Construction would not cease or delay unless directed by the authorized BLM-FFO officer. If present, any range improvements (e.g., fences, pipelines, and ponds) disturbed by construction activities would be repaired to the condition they were in prior to disturbance. Repairs, if needed, would take place immediately following construction.

The following design features would apply to the proposed project:

- All construction and/or maintenance resulting in surface disturbance would be done in accordance to the BLM Surface Operating Standards and Guidelines for Oil and Gas Development, Fourth Edition-Revised 2007 (The Gold Book).
- Backfilling operations would be performed within a reasonable amount of time to ensure that a pipeline trench is not left open for more than 24 hours. If a trench is left open overnight, it will be fenced with a temporary fence or a night watchman will be utilized.
- If used, all pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17.
- Vegetation removed during construction including slash/brush and trees that are 3-inch-diameter and greater would be chipped or mulched and incorporated into the topsoil as additional organic matter.
- BP would upgrade the existing access road for approximately 560. The road would be upgraded and maintained in accordance with BLM Gold Book Standards, BLM 9113-1 (Roads Design Handbook), and BLM 9113-2 (Roads Inventory and Condition Assessment Guidance and Instructions Handbook).

Protection of Topsoil

Topsoil, which would be stripped from the surface during the construction phase of the proposed project, would be stored and protected until it is redistributed during reclamation. The topsoil would be stored separately from subsoil or other excavated material within the permitted project area. The topsoil would be free of brush and tree limbs, trunks, and roots. Vehicle/equipment traffic would not be allowed to cross topsoil stockpiles. The topsoil would be protected using wattles or other BMPs so that erosion is minimized. If topsoil is stored for a length of time such that nutrients are depleted from the topsoil, amendments would be added to the topsoil as advised by an appropriate agent/contractor.

Protection of the Public

The hauling of equipment and materials for the proposed project on public roads would comply with Department of Transportation regulations. No toxic substances would be stored or used within the proposed project area. BP would have inspectors present during construction. Any accidents involving persons or property would immediately be reported to the BLM-FFO. BP would notify the public of potential hazards by posting signage, as necessary.

Prevention and Control of Weeds

Prior to construction equipment entering the proposed project area, construction equipment would be inspected for noxious weeds and cleaned.

It would be BP's responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project area throughout the life of the project. BP's weed-control contractor would contact the BLM-FFO regarding acceptable weed-control methods. BP would be required to submit a Pesticide Use Proposal (PUP) for the location if one does not currently exist. BP's weed-contractor would need to hold a current pesticide applicator's permit prior to pesticide application. Only pesticides authorized for use on BLM lands would be used. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. BP's weed-control contractor would contact the BLM-FFO prior to using these chemicals and provide quarterly Pesicide Use Reports (PURs).

Protection of Air Resources

BMPs for dust suppression would be utilized within the proposed project area to reduce fugitive dust during the construction phase of the proposed project. Water application, using a rear-spraying truck or other suitable means, would be the primary method of dust suppression within the proposed project area. Any additional dust-suppression practices would include the BLM-standard BMPs found in the Gold Book (BLM and USFS 2007) and the BMPs outlined in the stipulations attached to an approved APD and/or ROW.

Additional Design Features and BMPs

Vehicles would be restricted to proposed disturbance areas and existing areas of surface disturbance, such as existing roads and well pads.

Worker safety incidents would be reported to the BLM-FFO as required under Notice to Lessees (NTL) - 3A (USGS 1979). BP would adhere to company safety policies, Occupational Safety and Health Administration regulations, and Department of Transportation regulations.

BP would comply with Onshore Oil and Gas Order No. 2, issued under Onshore Oil and Gas Operations (43 CFR 3160).

Construction and maintenance activities would cease when soil or road surfaces become saturated to the extent that construction equipment is unable to stay within the proposed project area and/or when activities would cause irreparable harm to roads, soils, or watercourses.

Erosion-control features, such as berms, culverts, diversion ditches, and waterbars would be applied as specified by the BLM-FFO Authorized Officer. Suggested applications discussed during the April 19th and July 16th, 2015 on-site meetings include:

- A split diversion along the northwest side of the pad will drain to the north and to the south of the pad.
- A silt trap will be constructed on both sides of the pad at the ends of the split drainage diversion.
- A low water crossing will be constructed where the access road crosses the unnamed wash at the entrance to the well pad.
- The northeast well pad corner will be rounded to avoid the adjacent wash.

Installation and maintenance of erosion-control features would be done in accordance with BLM Gold Book Standards.

Proposed Project Phases

Under the proposed action, the following phases would occur.

Construction Phase

Once the APD and/or ROW are issued, project construction can begin. The BLM-FFO would be notified at least 48 hours prior to the start of construction activities.

Within the proposed project area, all vegetation would be cleared, and the top 6 inches of topsoil would be salvaged and stockpiled for use in reclamation. Vegetation removed during construction, including slash/brush and trees greater than 3 inches in diameter, would be chipped or mulched and incorporated into the topsoil as additional organic matter. The subsurface portion of any trees (tree stumps) would be placed in adjacent areas needing soil stabilization, or hauled to an approved disposal facility.

Construction would involve preparing a level area for the equipment that would drill and complete the well. The well pad will be an irregular shaped rectangle measuring approximately 553 feet by 378 feet at the maximum length and width. Several temporary use areas will be around the perimeter of the pad approximately 50 feet in width on the west side and approximately 25 feet in width on the east side. The well pad would be constructed from the earthen materials present on-site and gravel brought in from off-site. No concrete or other foreign materials would be brought in for use in construction of the well pad. Following removal of vegetation and stockpiling of viable soil material, the pad would be graded using standard, cut-and-fill techniques of construction using a bulldozer, grader, front-end loader, and/or backhoe. Construction of the well pad would require a maximum cut of 21 feet on the western side of the well pad, and a maximum fill of 19 feet on the northeast side of the location.

BP would construct a new 105-foot road to provide access to the well site. In addition, approximately 560 feet of the existing resource road would be upgraded. Proposed road construction and upgrades will be done in accordance with BLM Gold Book Standards, BLM 9113-1 (Roads Design Handbook), and BLM 9113-2 (Roads Inventory and Condition Assessment Guidance and Instructions Handbook).

The well-tie pipeline would be constructed within a single trench with a ROW width of 40 feet. Additional, related appurtenances, such as above ground valve assembly and above and below ground cathodic protection, would be installed within the proposed pipeline corridor as necessary.

Trenching activity would be conducted using a trencher or backhoe. The trench would be 16 inches in width if a trencher is used or 24 inches in width if a backhoe is used. After a pipe has been welded and coated, a side-boom tractor would be used to place the pipe into the trench. The pipeline would be buried to a minimum depth of 3 feet.

After trenching and pipe placement in the trench, the soils excavated from the trench would be returned and compacted to prevent subsidence. The trench would be compacted after approximately two feet of fill is placed within the trench and after the ground surface has been leveled.

Prior to the pipeline being placed in service, the pipe would be pressure tested. Pipeline markers would be installed along the proposed pipeline corridor within the line of sight, without voiding safety measures.

Drilling Operations

A drilling rig would be transported in sections and erected on the well site following construction of the well pad. Additional equipment and materials needed for drilling operations would be trucked into the well site. Drilling is a 24-hour operation taking an average of 9 days to drill a conventional gas well. To protect fresh water zone, surface casing is utilized. A 12 ¼-inch (diameter) hole is drilled to a depth of 500 to 1,000 feet, depending on the depth necessary to penetrate the fresh-water zones. Steel casing is lowered into the hole, and then specially designed cement is pumped down inside the casing out the shoe (at the bottom of the pipe) and up the outer annulus of the pipe to protect aquifers above the top of the casing shoe and to secure the base of the pipe. Surface casing is set to below the depth of the nearest potable water well within ½ mile of the surface location, or as specified by the BLM-FFO. After setting the surface casing, drilling resumes. Depending on well bore conditions, additional strings of casings may be run, using the same cementing practices before the well reaches the objective depth (total depth). A pipe casing is then installed from the surface of the bore hole through the production zone and cemented in place to prevent interzonal communication between gas bearing zones and water zones.

Most of the water used during the life of a producing well is consumed during drilling operations. A small amount of water is used for dust suppression or equipment installation during other phases of development. Recirculating mud systems are used to reduce the total volume of water needed. Drilling mud can be recycled to the next drilling location. Produced water from wells in the area can be used for most drilling operations except mixing cement. Water used to construct, produce, and maintain the proposed well would be acquired from Blanco Trading Post Water Well (NMOSE POD No. SJ-2105) and/or Hilltop Water Hole (NMOSE POD No. SJ-00077).

The drilling fluid, called “mud,” is a mixture of water, bentonite, caustic soda, barite, and polymers. Drilling mud cools and lubricates the bit, while lifting the well cuttings caused by the bit to the surface for examination and disposal. The mud in the well bore prevents the hole walls from sloughing off into the hole, keeps underground pressures stable, and seals the sides of the well bore through formation of a thin “mud cake”. Mud properties are carefully supervised, and several measurements of the mud are made by a mud specialist during daily visits to the well site. The drilling mud is mixed on location and stored in steel bins or lined earthen pits. Drill cuttings are separated from the drilling mud and buried in a trench dug on the well location at the end of the drilling operation. The mud can be recycled to another drilling operation. If not recycled, it remains in the pit until the water has evaporated, and then is buried on location.

In the event formation evaluation determines the well would not be economically feasible to complete, then the well would be a dry hole, and would be plugged and abandoned in accordance with current BLM procedures.

Completion Operations

A smaller completion rig is used for the final phase of completing the well. Casing is run to the producing zone and cemented in place. To ensure isolation and protection of all zones between the surface and total depth, the BLM requires cement to be circulated from total depth to surface on the production casing, as well as on the surface casing. Remedial measures are taken if cement cannot be circulated to the surface.

If formation pressure can raise oil/gas to the surface, the well would be completed as a flowing well. Several downhole acid or fracture treatments may be necessary to enhance the formation permeability, to make the well flow. At the end of the treatment, the treatment water flows back to the surface and is captured in temporary tanks on location. This fluid is hauled to injection wells or evaporation ponds for disposal with other produced water.

Acidizing a well requires introducing acid in the well bore across the productive interval, which causes the solution of some of the mineral materials (e.g., calcite, dolomite, etc.) around the pore space. Upon solution and removal of these minerals, porosity and permeability are enhanced.

Hydrofracturing is conducted using fluid pumped down the well through perforations in the casing and into the formation. Pressures are increased to the point that the formation fractures or breaks, and sand is added to the injection fluid to “prop open” the crack, once the pressure is released. The pressure required to fracture a given formation is generally predictable. However, some coals require very high pressures to fracture the formation.

Before a well can begin producing gas for sale, the well bore and surrounding reservoir must be "cleaned up" (e.g., any fluids, sand, coal particles, or drill cuttings within the well bore must be removed). The conventional method for doing this is to pump air down the well bore, which lifts the waste fluids and solids out. The solid and liquid waste materials are then dumped into a pit or tank, and any gas that is removed is flared or vented to the atmosphere. In some flareless or green completions, natural gas, rather than air, is pumped down the well bore to clean it out.

The green completion technique is used on some wells in the San Juan Basin, which eliminates flaring and testing. The gas from flowback is run through a special separator and then placed in the pipeline for gathering. This technique reduces flaring and venting overall. The additional equipment for green completion may include considerably more tankage, special gas-liquid-sand separator traps, and portable gas dehydration. In addition to reducing methane emissions, green completions produce an immediate revenue stream with the produced natural gas and gas liquids, less solid waste and water pollution, and a safer operating practice.

During completion and testing of wells, flaring may be used to safely removed gas from the rig and work area. During the process produced gas is ignited and burned rather than directing that gas to sales. Produced gas is piped away from the well bore into a pit constructed on the well pad, ignited and allowed to burn. A berm is usually constructed around the pit to aid in containing the flame and any materials that might be blown out with the gas.

A free flowing well is closed off with an assemblage of valves, pipes, and fittings to control the flow of oil and gas to other production facilities. If the well is not free flowing, artificial-lift (pump) methods would be used.

Production Facilities

The production equipment and facility layout will be deferred until the well’s production characteristics can be evaluated after completion. Above ground equipment will be painted Covert Green to reduce visual impacts to the surrounding environment.

Routine production operations occur throughout the year and require use and maintenance of access roads and well pads on a periodic, as needed basis. Maintenance of the various mechanical components used in production occurs at intervals recommended by manufacturers or as needed, based on site inspections. A pumper would visit the producing well to ensure that equipment is functioning properly. Pumpers may visit the well on a daily basis. A pumper may visit the well site once a week by utilizing off site computer based automation systems. Solar panels are used to power the radio telemetry equipment. When a problem is identified through the system a pumper is dispatched to the location. Control and

monitoring of well production by radio telemetry reduces regular site inspections of the well, and vehicular traffic.

Periodically, a workover on a well is required. A unit similar to a completion rig is used to conduct maintenance procedures for efficient operation. Workover rigs can include repairs to the well bore equipment (casing, tubing, etc.), the well head, or the production formation itself. These repairs occur during daylight hours only and are usually completed in one day. Some situations may require several days to finish a workover. The frequency for this type of work cannot be accurately projected, since workover rigs vary and depend on site specific circumstances.

Interim Reclamation

Following the above mentioned phases of the proposed project, interim reclamation would occur within all new disturbance areas associated with the proposed project. The BLM-FFO would be notified at least 48 hours prior to surface reclamation activities.

During this phase, a tractor with seeding capabilities would be used for reclamation purposes.

In areas that would be reclaimed, slopes would be re-contoured to pre-construction topographical contours, as appropriate. Additionally, stockpiled topsoil would be redistributed and the surface would be ripped and seeded. The well pad would be reclaimed to a BLM-approved working area. Access to the well site would be maintained in accordance with the BLM Gold Book Standards, BLM 9113-1 (Roads Design Handbook), and BLM 9113-2 (Roads Inventory and Condition Assessment Guidance and Instructions Handbook).

During the April 19th and July 16th, 2015 pre-disturbance onsite meetings, it was determined that a seed mix appropriate for Piñon-Juniper Woodland Community would be used for proposed project area reclamation. Additionally, during the Traditional Cultural Property review of the proposed project the Navajo Nation Historical Preservation Department (NNHPD) identified a list of five (5) culturally sensitive plants that were present with the project area and requested the reseeding of these culturally sensitive species during interim and final reclamation (see Cultural Resources 3.3). A reseeding plan was created by ACI and is included within the Surface Reclamation Plan (attached to the APD application on file at the BLM-FFO). Additional details of the interim reclamation process (including species included in the seed mixtures) monitoring and reporting are discussed in the Surface Reclamation Plan.

Final Reclamation and Abandonment

Once the well site is no longer necessary and would not be expected to be utilized in the foreseeable future, it would be abandoned. Abandonment of the well would be carried out under current BLM regulations. Aboveground facilities would also be removed.

Final reclamation would occur within any portion of the project area that would be disturbed to bare soil during the abandonment phase of the proposed project, if these areas meet the acreage requirements for reclamation. These acreage requirements are summarized below:

- If final abandonment activities would disturb less than or equal to 0.1 acre to bare soil, the area(s) would be expected to re-vegetate naturally (no reclamation or monitoring activities will be required).
- If final abandonment activities would disturb more than 0.1 acre to bare soil, final abandonment reclamation activities would be the same as described for interim reclamation.

2.2.3. Proposed Surface Disturbance

Surface disturbance associated with the proposed project area would be approximately 5.59 acres, total. Of this, approximately 5.20 acres would be considered new. Proposed new surface disturbances would include construction of a new well pad within a total permitted area of 5.06 acres, 0.07 acre for the

construction of an access road, and 0.07 acre for the construction of a well-tie pipeline. Depictions of the surface-disturbing activity locations are provided in Appendices A (Maps) and B (Plats).

Table 2. Proposed Project Surface Impacts

Surface Disturbance Description		
New road construction	-	105’ long x 30’ wide (0.07 acres)
Existing road upgrade	560’ long x 30’ wide (0.39 acres)	-
New well pad construction	-	553’ x 378’ max + 50’ max buffer = 5.06 acres
Cross Country (0+00 to 0+79.02)	-	79.02’ x 40’ wide (0.07 acres)

2.3. Alternatives Considered but Eliminated from Detailed Study

During the April 19th, 2015 onsite, two alternatives were discussed for placement of the Gallegos Canyon Unit 599 Com No.1H well pad but eliminated from detailed study, these alternatives include:

- Building the proposed location 1,600 feet southwest. This alternative was eliminated due to archeological issues within the well pad.
- Building the proposed location 1000 feet to the west. This alternative was eliminated due to archeological issues within the well pad as well.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Alternative A: No Action

Under the No Action alternative, current land and resource issues within the proposed project area would continue; there would be no new impacts from oil and gas development. The No Action Alternative reflects the current situation within the project area and will serve as the baseline for comparing the environmental impacts of the analyzed alternatives, and will not be further evaluated in this EA (BLM 2008b).

Alternative B: Proposed Action

Under the Proposed Action, the Gallegos Canyon Unit 599 Com No.1H project would continue as proposed, all proposed actions outlined in Section 2.2 Alternative B – Proposed Action, would occur. The potential affected environment and environmental consequences for the Proposed Action are described in the following sections.

3.1. Methodology

3.1.1. Direct and Indirect Impacts

In the following discussion of affected environment and potential environmental consequences, the action area is defined as any area that may be directly or indirectly impacted by the proposed action described in Chapter 2. Impacts to the action area are based on predicted trends and typical current land uses. Impacts can either be direct, referring to immediate impacts in time, or indirect impacts which are effects that occur later in time but are still reasonably likely to occur as a result of project implementation. The analysis area will be a defined area with either a natural or human delineated boundary. Often, the analysis area is the watershed in which the action occurs. For some issues, the analysis area may be a county or grazing allotment boundary.

3.1.2. Cumulative Impacts

A Reasonably Foreseeable Development scenario (RFD) was prepared for the FFO in October 2014 (Engler, et al., 2014). The RFD identified high, moderate, and low potential regions for oil development of the Mancos-Gallup Formation. Within the high potential region, full development would include 5 wells per section, resulting in 1,600 completions. Within the moderate potential region, full development would include one well per section, resulting in 330 completions. Within the low potential region, full development would include one well per township, resulting in 30 well completions. Additionally, the RFD predicted 2,000 gas wells could be development in the northeastern corner of the FFO.

The following methods and assumptions were used to predict the potential impact of the development predicted in the RFD.

Past Oil and Gas Development

Past oil and gas wells were identified using Ongard. Following interim reclamation, the average wellpad size for past development is 0.75 acres per wellpad.

Present and Future Oil Development

Based on previous development, it was assumed that development of the high potential region would involve the twinning of well pads. This is the placement of two or more wells on one well pad. The assumption for the analysis is that the development of a section would include two twinned well pads and one single well pad, resulting in three well pads for five wells. In the moderate and low potential regions, it

was assumed that development would involve single well pads. The proposed action is located in the low potential region.

The average well pad size for a twinned well pad was assumed to be 500 feet by 530 feet, or 6.08 acres. An additional 0.6 acres was added to account for any associated road or pipeline development, resulting 6.68 acres of short-term disturbance. Following completion of the well, interim reclamation of the well pad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The average well pad size for a single well pad was assumed to be 500 feet by 500 feet, or 5.74 acres. Again, an additional 0.6 acres was added to account for associated road or pipeline development, resulting in 6.34 acres of long-term disturbance. Following completion of the well, interim reclamation of the well pad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The Random Point Tool in ArcMap was used to randomly assign points representing well pads and associated disturbance based on the RFD assumptions: five wells per section in the high potential region, one well per section in the moderate potential region, and one well per township in the low potential region. This allowed both long-term and short-term disturbance from oil development of the Mancos-Gallup Formation to be calculated for the analysis areas used in this EA.

Present and Future Gas Development

The RFD predicted 2,000 wells could be developed in the gas prone area. The average wellpad size was assumed to be 555 feet by 410 feet, or 5.22 acres. An additional 0.6 acres of disturbance was added to account for associated roads and pipelines, resulting in total disturbance of 5.82 acres. Following completion of the well, interim reclamation of the wellpad and reclamation of any pipelines would occur, resulting in 1.5 acres of long-term disturbance.

The Random Point Tool in ArcMap was used to randomly assign points representing one wellpad and associated disturbance. This allowed both long-term and short-term disturbance from gas development in the northeastern corner of the FFO to be calculated for the analysis areas used in this EA.

3.2. Air Resources

3.2.1. Affected Environment

The proposed well is located in San Juan County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington PRMP/FEIS. In addition, new information about greenhouse gases (GHGs) and their effects on national and global climate conditions has emerged since this document was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2) methane (CH_4); nitrous oxide (N_2O); water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions may cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes, typically referred to as global warming.

Much of the information referenced in this section is incorporated from the Air Resources Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report; (BLM 2014a)). This document summarizes the technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including six nationally regulated ambient air pollutants (criteria pollutants). These criteria pollutants

include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb). EPA has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The NAAQS are protective of human health and the environment. EPA has approved New Mexico's State Implementation Plan and the state enforces state and federal air quality regulations on all public and private lands within the state, except for tribal lands and within Bernalillo County. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. EPA has proposed or completed actions recently to implement Clean Air Act requirements for greenhouse gas emissions. Climate has the potential to influence renewable and non-renewable resource management.

Air Quality

Criteria Air Pollutants

The Air Resources Technical Report describes the types of data used for description of the existing conditions of criteria pollutants, how the criteria pollutants are related to the activities involved in oil and gas development, and provides a table of current National and state standards. EPA's Green Book web page (USEPA 2013b) reports that all counties in the Farmington Field Office area are in attainment of all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The area is also in attainment of all state air quality standards (NMAAQS). The current status of criteria pollutant levels in the Farmington Field Office are described below.

"Design Values" are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2012 design values for criteria pollutants are listed below in Table 3. There is no monitoring for CO and lead in San Juan County, but because the county is relatively rural, it is likely that these pollutants are not elevated. PM_{10} design concentrations are not available for San Juan County.

Table 3. 2012 Criteria Pollutant Monitored Design Values in San Juan County

Pollutant				
O_3	0.071 ppm	8-hour	0.075 ppm[1]	
NO_2	13 ppb	Annual	53 ppb[2]	50 ppb
NO_2	38 ppb	1-hour	100 ppb[3]	
$PM_{2.5}$	4.7 µg/m^3	Annual	12 µg/m^3[3,4]	60 µg/m^3[3,6]
$PM_{2.5}$	14 µg/m^3	24 hour	35 µg/m^3[3,3]	150 µg/m^3[3,6]
SO_2	19 ppb	1-hour	75 ppb[5]	

Source: U.S. Environmental Protection Agency, 2014b
[1] Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
[2] Not to be exceeded during the year
[3] 98th percentile, averaged over 3 years
[4] Annual mean, averaged over 3 years
[5] 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
[6] The NMAAQS is for Total Suspended Particulate (TSP)

In 2005, the EPA estimates that there was less than 0.01 ton per square mile of lead emitted in FFO counties, which is less than 2 tons total (USEPA 2012). Lead emissions are not an issue in this area, and will not be discussed further.

Air quality in a given region can be measured by its Air Quality Index value. The air quality index (AQI) is reported according to a 500-point scale for each of the major criteria air pollutants, with the worst denominator determining the ranking. For example, if an area has a CO value of 132 on a given day and all other pollutants are below 50, the AQI for that day would be 132. The AQI scale breaks down into six categories: good (AQI<50), moderate (50-100), unhealthy for sensitive groups (100-150), unhealthy (>150), very unhealthy and hazardous. The AQI is a national index, the air quality rating and the

associated level of health concern is the same everywhere in the country. The AQI is an important indicator for populations sensitive to air quality changes.

Mean AQI values for San Juan County were generally in the good range (AQI<50) in 2013 with 80% of the days in that range. The median AQI in 2013 was 42, which indicates “good” air quality. The maximum AQI in 2013 was 156, which is “unhealthy.”

Although the AQI in the region has reached the level considered unhealthy for sensitive groups on several days almost every year in the last decade, there are no patterns or trends to the occurrences (Table 4). On 8 days in the past decade, air quality has reached the level of “unhealthy” and on two days, air quality reached the level of “very unhealthy”. In 2009 and 2012, there were no days that were “unhealthy for sensitive groups” or worse in air quality. In 2005 and 2013, there was one day that was “unhealthy” during each year. In 2010, there were five “unhealthy” days and two “very unhealthy days”.

Table 4. Number of Days classified as “unhealthy for sensitive groups” (AQI 101-150) or worse

Days	3	6	9	18	1	0	12	9	0	1
Source: U.S. Environmental Protection Agency, 2013a										

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (BLM 2014a). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP emissions by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2005 NATA shows that cancer, neurological and respiratory risks in San Juan County are generally lower than statewide and national levels as well as those for Bernalillo County where urban sources are concentrated in the Albuquerque area (USEPA 2012).

Climate

The analysis area is located in a semiarid climate regime typified by dry windy conditions and limited rainfall. Summer maximum temperatures are generally in the range of 80 or 90 degrees Fahrenheit (°F), and winter minimum temperatures are generally in the teens to 20s. Temperatures occasionally reach above 100°F in June and July and have dipped below zero in December and January. Precipitation is divided between summer thunderstorms associated with the southwest monsoon and winter snowfall as Pacific weather systems drop south into New Mexico. Table 4 shows climate normals for the 30-year period from 1981 to 2010 for the Farmington, New Mexico, area.

Table 5. Climate Normals for the Farmington Area, 1981-2010

Month	Average Temperature (^{O}F [1])	Average Maximum Temperature (^{O}F)	Average Minimum Temperature (^{O}F)	Average
January	30.5	40.8	20.3	0.53
February	35.8	46.8	24.8	0.59
March	43.2	56.1	30.3	0.78
April	50.4	64.7	36.2	0.65
May	60.4	74.8	46.1	0.54
June	69.8	85.1	54.5	0.21
July	75.4	89.6	61.2	0.90
August	73.2	86.5	59.8	1.26
September	65.4	79.1	51.7	1.04
October	53.3	66.4	40.1	0.91
November	40.5	52.2	28.8	0.68

December	31.0	41.2	20.7	0.50
Source: data collected at New Mexico State Agricultural Science Center - Farmington (1) degrees Fahrenheit				

Very recently, pioneering research using space-borne (satellite and aircraft) determination of methane concentrations have indicated anomalously large methane concentrations may occur in the Four Corners region (Kort, Frankenberg, Costigan, Lindenmaier, Dubey, & Wunch, 2014). A subsequent study (Schneising, Burrows, Dickerson, Buchwitz, Reuter, & Bovensmann, 2014) indicated larger anomalies over other oil and gas basins in the U.S. Methane is 34 times more potent at trapping greenhouse gas emissions than CO2 when considering a time horizon of 100 years (Intergovernmental Panel on Climate Change 2013). While space-borne studies can determine the pollutant concentration in a column of air, these studies cannot pinpoint the specific sources of air pollution. Further study is required to determine the sources responsible for methane concentrations in the Four Corners region; however, it is known that a significant amount of methane is emitted during oil and gas well completion (Howarth, Santoro, & A.Ingraffea, 2011). Methane is also emitted from process equipment, such as pneumatic controllers and liquids unloading, at oil and gas production sites. Ground-based, direct source monitoring of pneumatic controllers conducted by the Center for Energy and Environmental Resources (Allen, et al., 2014b) show that methane emissions from controllers exhibit a wide range of emissions and a small subset of pneumatic controllers emitted more methane than most. Emissions measured in the study varied significantly by region of the U.S., the application of the controller and whether the controller was continuous or intermittently venting. The Center for Energy and Environmental Resources had similar findings of variability of methane emissions from liquid unloading (Allen, et al., 2014a). In October 2012, USEPA promulgated air quality regulations controlling VOC emissions at gas wells. These rules require air pollution mitigation measures that reduce the emissions of volatile organic compounds. These same mitigation measures have a co-benefit of reducing methane emissions. Future ground-based and space-borne studies planned in the Four Corners region with emerging pollutant measurement technology may help to pinpoint significant, specific sources of methane emissions in the region.

The Air Resources Technical Report summarizes information about greenhouse gas emissions from oil and gas development and their effects on national and global climate conditions. While it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.2.2. Impacts from the Proposed Action

Methodology and assumptions for calculating air pollutant and greenhouse gas emissions are described in the Air Resources Technical Report. This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one horizontal gas well. The calculators give an approximation of criteria pollutant, HAP, and greenhouse gas (GHG) emissions to be compared to regional and national emissions levels. Also incorporated into this document are the sections describing the assumptions used in developing the inputs for the calculator (U.S. Department of Interior Bureau of Land Management, 2014).

Direct and Indirect Impacts

Criteria Pollutants

Table 5 shows estimated emissions from one proposed horizontal gas well for criteria pollutants, volatile organic compounds (VOC) and greenhouse gas (GHG). For comparison, Table 66 shows total human-caused emissions for each of the counties in the FFO and La Plata County, Colorado, based on USEPA's 2011 emissions inventory (U.S. Environmental Protection Agency, 2014).

Table 5. Criteria Pollutant and VOC Emissions Estimated for Construction of One Horizontal Gas Well; Average 25 Days to Drill and Complete

One time operations (tons)								
Construction	5.5	1.5	0.5	2.5	0.25	0.1	0.007	598.85
Completion	0.5	0.1	0.03	0.025	0.025	-	-	55.00
Interim Reclamation	0.006	0.006	0.006	0.001	-	0.003	-	1.24
Final Reclamation	0.006	0.006	0.006	0.001	-	0.004	-	1.66
Ancillary Operations (tons)								
Workover	0.129	0.04	0.01	0.01	0.01	-	-	10.59
Road Maintenance	-	-	-	-	-	-	-	0.26
Road Traffic	-	-	-	-	-	-	-	0.06
Annual operations (tons/yr)								
Equipment Leaks	-	-	-	-	-	-	0.013	-
Field Compression	0.14	0.29	0.10	0.01	0.01	-	-	19.30
Total	**6.28**	**1.94**	**0.65**	**2.55**	**0.30**	**0.11**	**0.02**	**686.96**

Table 6. Analysis Area Emissions in Tons/Year, 2011

County	NO_X (1)	CO (2)	VOC (3)	PM_{10} (4)	$PM_{2.5}$ (5)	SO_2 (6)
McKinley	11,952.9	17,007.8	3,891.2	70,096.4	7,645.2	1,381.1
Rio Arriba	12,012.3	27,344.6	19,149.8	33,761.2	4,130.6	60.4
San Juan	42,231.5	63,568.9	26,110.8	76,638.3	9,201.0	5,559.3
Sandoval	4,143.8	19,513.9	4,373.1	39,343.0	4,510.8	109.3
La Plata	4,838.2	17,116.3	3,740.1	2,330.0	919.6	127.9
Total	**75,187.7**	**144,551.5**	**57,265.1**	**222,168.9**	**26,407.2**	**7,237.9**

(1) NO_X – nitrogen oxides
(2) CO – carbon monoxide
(3) VOC – volatile organic compounds
(4) PM_{10} – particulate matter with an aerodynamic diameter equal to or less than 10 microns
(5) $PM_{2.5}$ – particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
(6) SO_2 – sulfur dioxide

Table 77 displays the percent increase in total emissions in the analysis area from the proposed action to construct and operate one horizontal gas well.

Table 7. Percent Increase in Analysis Area Emissions from the Proposed Action

Total Emissions	75,187.7	144,551.5	57,265.1	222,168.9	26,407.2	7,237.9
Horizontal Gas Well Emissions	6.28	1.94	0.65	2.55	0.30	0.13
Percent Increase	**0.008**	**0.001**	**0.001**	**0.001**	**0.001**	**0.002**

(1) NO_X – nitrogen oxides
(2) CO – carbon monoxide
(3) VOC – volatile organic compounds
(4) PM_{10} – particulate matter with an aerodynamic diameter equal to or less than 10 microns
(5) Values derived from average emissions for any well drilling in the analysis area. Calculated results available upon request.
(6) $PM_{2.5}$ – particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
(7) SO_2 – sulfur dioxide

Hazardous Air Pollutants

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10 percent of VOC emissions. Therefore, the estimated HAP emissions 0.065 tons/year should be considered a very gross estimate.

Total Greenhouse Gases

The available statewide GHG summary combines GHG emissions from CO_2 and CH_4. To compare the GHG emissions from the Proposed Action estimated by the calculator with statewide GHG emissions, CO_2e emissions for both CH_4 and CO_2 were summed. The total statewide GHG emission estimate for 2007 was 76,200,000 metric tons CO_2e (76.2 million metric tons; (New Mexico Environment Department, 2010)). The estimated CO_2e metric tons emissions from one conventional gas well (623.2 metric tons) would represent a 0.0008 percent increase in New Mexico CO_2 emissions.

Cumulative Impacts

The FFO manages federal hydrocarbon resources in San Juan, Sandoval, Rio Arriba, and McKinley Counties. There are approximately 21,150 wells in the San Juan Basin. About 14,843 of the wells in these counties are federal wells. Analysis of cumulative impacts for reasonable development scenarios and RFDS of oil and gas wells on public lands in the FFO was presented in the 2003 RMP. This included modeling of impacts on air quality. A more detailed discussion of Cumulative Effects can be found in the Air Resources Technical Report (U.S. Department of Interior Bureau of Land Management, 2014).

The primary activities that contribute to levels of air pollutant and GHG emissions in the Four Corners area are electricity generation stations, fossil fuel industries, and vehicle travel. The Air Quality Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present, and reasonably foreseeable impacts to air resources (U.S. Department of Interior Bureau of Land Management, 2014). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct and indirect increases in several criteria pollutants, HAPs, and GHGs as a result of implementing the proposed alternative. The very small increase in emissions that could result would not be expected to result in exceeding the NAAQS for any criteria pollutants in the analysis area.

The very small increase in GHG emissions that could result from implementing the proposed alternative would not produce climate change impacts that differ from the No Action Alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from the action alternatives cannot be translated into effects on climate change globally or in the area of this site-specific action. It is currently not feasible to predict with certainty the net impacts from the action alternatives on global or regional climate.

The Air Resources Technical Report (U.S. Department of Interior Bureau of Land Management, 2014) discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands.

3.3. Cultural Resources

3.3.1. Affected Environment

The proposed project is located within the archaeologically rich San Juan Basin of northwest New Mexico. In general, the history of the San Juan Basin can be divided into five major periods: PaleoIndian

(ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 B.C. to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (aka Anasazi; A.D. 1-1540), and the historic (A.D. 1540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. Detailed descriptions of these various periods are provided in the Bureau of Land Management Farmington Field Office Final Environmental Impact Statement (BLM 2003a) and will not be reiterated here. Additional information can also be found in an associated documented, Cultural Resources Technical Report (Science Applications International Corporation 2002).

BLM Manual 8100, The Foundations for Managing Cultural Resources (2004) defines a cultural resource as "*a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. (cf. "traditional cultural property"). Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit described in this Manual series. They may be but are not necessarily eligible for the National Register (a.k.a. "historic property")."*

In the broadest sense cultural resources include sites, buildings, structures, objects, and districts/landscapes (NPS 1997). Cultural resources (prehistoric or historic) vary considerably, and can include but are not limited to simple artifact scatters, domiciles of various types with a myriad of associated features, rock art and inscriptions, ceremonial/religious features, and roads and trails. Traditional Cultural Properties (TCPs) are cultural resources that are eligible for the National Register of Historic Places (NRHP) and have cultural values, sometimes sacred, that transcend for instance the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites and may or may not coincide with archaeological sites (Parker and King 1998). Historically Native American communities are most likely to identify TCPs, although TCPs are not restricted to those associations. Some TCPs are well known while others may only be known to a small group or otherwise only vaguely known. Native American tribal perspectives on what is considered a TCP are not necessarily limited by a places National Register eligibility or lack thereof.

The National Register of Historic Places (NRHP; 36 CFR Part 60) is the basic benchmark by which the significance of cultural resources are evaluated by a federal agency when considering what effects its actions may have on those resources. To summarize, to be considered eligible for the NRHP a cultural resource must meet one or more of the following criteria: a) are associated with events that have significantly contributed to the broad patterns of our history; or b) are associated with the lives of persons significant in our past; or c) embody distinctive characteristics of the type, period, or method of construction, or represents the work of a master, or possesses high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; or d) have yielded, or may be likely to yield, information that is important in a pre-history or history. The resource, as applicable, must possess one or more of the following aspects of integrity; location, design, setting, materials, workmanship, feeling, and association. In the event a determination of eligibility cannot be made, the resource is treated as eligible (a historic property).

Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800) requires federal agencies to consider what effect their licensing, permitting, funding or otherwise authorizing an undertaking, such as an APD or R-O-W, may have on properties eligible for the National Register. Pursuant to 36 CFR 800.16 (i), "Effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." Effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. Area of Potential Effect (APE) means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is typically defined as areas to be directly disturbed and areas in immediate close proximity.

Cultural resources are identified through a combination of literature review and pedestrian survey consistent with guidelines set forth in the Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities (BLM 2005).

Cultural resources within the entire APE for the Proposed Action were identified by a literature review and an archaeological BLM Class III level (100%) pedestrian survey by DCA and a report was prepared and submitted to the BLM.

The cultural resources inventory identified two cultural sites within the APE (15-DCA-013 [Meineger 2015]; BLM 2015(IV)038F). One is recommended eligible for nomination to the National Register of Historic Places (NRHP), and one is recommended not eligible. One potential TCP intersects with the Proposed Action. It is an unnamed and poorly defined plant gathering area centered around Horn Canyon. Consultation with the Navajo Nation Historic Preservation Department …….

3.3.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Cultural resources tend to degrade over time from natural forces; however, many survive for hundreds or thousands of years. Any land-disturbing activity can disturb, damage, or uncover cultural resources. Direct impacts normally include alterations to the physical integrity of a historic property. If a historic property is significant for other than its information potential, direct impacts may also include the introduction of audible, atmospheric, or visual elements that are out of character for the property. A potential indirect impact from the proposed action, particularly in undeveloped areas is the increase in human activity or access to the area with an increased potential of unauthorized damage to historic properties.

Historic properties are being avoided with the implementation of design features such as but not limited to reduction of construction areas, temporary barriers, and site monitoring. These design features are detailed in the Cultural Resource Record of Review, attached to the COA in the ROW. The proposed action is not known to physically threaten any TCP's, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies/rituals. The proposed action will have no direct or indirect impact on historic properties (no historic properties affected).

Additionally, during the Traditional Cultural Property review of the proposed project the NNHPD identified a list of five (5) culturally sensitive plants that were present with the project area and requested the reseeding of these culturally sensitive species during interim and final reclamation. A reseeding plan was created by ACI and is included within the Surface Reclamation Plan (attached to the APD application on file at the BLM-FFO). After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture and culturally sensitive plants seed mixture.

Cumulative Impacts

The Cumulative Impacts Analysis Area (CIAA) is the associated watershed(s).The United States is divided and sub-divided into successively smaller hydrologic units which are classified into six levels nested within each other, from the largest geographic area (region) to the smallest geographic area (subwatershed). The boundaries are distinguished by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters (USGS 2013, NRCS 2013). Hydrologic units can be viewed as a naturally defined landscape and impacts to cultural resources in one part of that landscape could, theoretically, affect a broader understanding of the interrelationships between sites in the landscape as a whole. The smallest hydrologic unit area, typically from 10 to 40 K acres (15 to 62 mi^2; HUC 12) or combination thereof are used as the CIAA.

The CIAA for cultural resources is the proposed project area and the Gallegos Canyon-San Juan River subwatershed which total 28,333 acres. Based on New Mexico Cultural Resource Information System data (NMCRIS; July 2015), within the subwatershed there are 130 recorded sites and approximately 38% of the subwatershed (10,698 ac) have been inventoried for cultural resources by 430 unique investigations since 1975. The cultural inventory coverage for the CIAA is likely higher as not all survey data is digitally available (e.g., Navajo lands, surveys since July 2015).

There are no properties listed on the National Register of Historic Places, Chaco Protection Sites, World Heritage Sites, or National Historic Trails within the CIAA. The Citizens Ditch, an irrigation ditch located north of US 64 is listed on the New Mexico State Register of Cultural Properties

- What impacts would surface disturbance for the proposed action have on historic properties in the CIAA?

There will be no negative cumulative impact on known historic properties as they are being avoided by relocating the surface disturbing components of the proposed action away from the property. There will be no known negative cumulative impact on the landscape that would affect the seven aspects of integrity (location, design, setting, materials, workmanship, feeling, association) of known historic properties. A positive cumulative effect is the additional scientific information yielded by the archaeological survey both in terms of site specific information and the amount of the landscape inventoried for cultural resources.

- What impacts would the project have on unknown (buried, not visible) historic properties in the CIAA?

Risks of impacting unknown (i.e., buried) historic properties is normally negligible as cultural resources "discoveries" during surface disturbing components of a proposed action are infrequent in the FFO. Since FY2000, 28 discoveries have occurred in association with 21,290 actions, or 1:760. During that period 153,626 ac of land were inspected for cultural resources, with an average of 7.2 ac per action and one discovery per 5,472 acres. All authorizations (e.g., APDs, R-O-Ws) have stipulations, under penalty of law, require the reporting of and avoidance of further disturbing cultural discoveries during a proposed action. Where the risk of discoveries can be reasonably expected (e.g., ≤ 100' of a known historic property, or in environmental settings known or suspected to be conducive to buried sites), archaeological monitoring by a qualified and permitted archaeologist during initial disturbance (e.g., blading, trenching) is normally required. If buried historic properties are discovered, collaborative steps are taken to protect them in place or recover their important information.

3.4. Upland Vegetation

3.4.1. Affected Environment

The analysis area is located within the United States Environmental Protection Agency (USEPA) designated Arizona/New Mexico Plateau Level III ecoregion. The Arizona/New Mexico Plateau occurs primarily in Arizona, Colorado, and New Mexico, with a small portion in Nevada. This ecoregion is approximately 45,870,500 acres (185,632 square kilometers [km^2]), and the elevation ranges from 2,165 to 11,949 feet AMSL (660 to 3,642 meters). The ecoregion's landscapes include low mountains, hills, mesas, foothills, irregular plains, alkaline basins, some sand dunes, and wetlands. This ecoregion is a large transitional region between the semiarid grasslands to the east, the drier shrublands and woodlands to the north, and the lower, hotter, less vegetated areas to the west and south. Vegetation communities include shrublands with big sagebrush, rabbitbrush, winterfat, shadscale saltbush, and greasewood; and grasslands of blue grama, western wheatgrass, green needlegrass, and needle-and-thread grass. Higher elevations may support piñon pine and juniper forests. The ecoregion includes the urban areas of Santa Fe and Albuquerque. Important land uses include irrigated farming, recreation, rangeland, wildlife habitat, and some natural gas production (Griffith, et al. 2006).

The general region surrounding the proposed project area is characterized by saltbush scrub, sagebrush shrubland valleys, and wooded hills and mesas. The PPA is situated mainly within a piñon-juniper woodland vegetation community with minimally vegetated badlands located to the west. Dominant vegetation includes big sagebrush (*Seriphidium tridentatum*), Utah juniper (*Sabina osteosperma*), blue grama (*Bouteloua gracilis),* Indian Ricegrass *(Achnatherum hymenoides),* Alkali Sacaton *(Sporobolus airoides),* Western wheatgrass *(Pascopyrum smithii),* Needle and thread *(Hesperostipa comate),* crested wheatgrass *(Agropyron cristatum),* rabbitbrush *(Chrysothamnus sp.),* New Mexican prickly pear cactus (*Opuntia phaeacantha*), narrowleaf yucca (*Yucca angustissima*), Mountain Mahogany (*Cercocarpus montanus*), Mormon tea (*Ephedra viridis*), Rocky Mountain Bee Plant (*Cleome serrulata*), Milkvetch (*Astragalus sp*.), Desert Four O'Clock (*Mirabilis multiflora*), globemallow (*Sphaeralcea coccinea*) and Russian thistle (*Salsola australis*). Approximately 80-110 Utah juniper trees were documented within the proposed project area.

The PPA is located within the FFO-designated special management area for the BLM Sensitive and State of New Mexico Endangered Brack's hardwall (*Sclerocactus cloveriae ssp brackii*) cactus (BLM 2015). Nacimiento Formation, which provides the appropriate geologic substrate for the Brack's hardwall cactus and Aztec gilia (*Aliciella formosa*,), is present along the northwest side of the PPA; however, neither species was observed during the field survey.

A Biological Survey Report (BSR) was prepared for this project (Appendix C) with a detailed listing of species occurring or potentially occurring within the proposed project area.

3.4.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During the construction phase of the proposed project, all vegetation within the proposed project area would be cleared. The proposed action would result in the removal of approximately 5.20 acres of sagebrush scrubland and Piñon Juniper vegetation communities; approximately 80 to 110 trees would be removed as a result of the proposed action.

Details of the proposed action during interim reclamation can be found in the Surface Reclamation Plan on file with the BLM-FFO. During final reclamation, BP would fully reclaim any portions of the proposed project that would be disturbed to bare soil as a result of final abandonment earthwork activities (if such areas total greater than 0.1 acre).

During interim and final reclamation, the BLM Piñon-Juniper seed mixture and culturally sensitive plants seed mixture (see Cultural Resources 3.3) would be utilized; the species included in these mixtures are included in the Surface Reclamation Plan on file with the BLM-FFO. Reestablished vegetation would consist of native grass, forb, and shrub species included in the seed mixtures, as well as native species that are not deliberately planted. It is also possible that invasive, non-native species could become established within the proposed project area, as such species could be transported by project equipment and tend to thrive in disturbed areas. Following the reclamation process, the resulting vegetation communities could differ from the native plant communities surrounding the proposed project area. Within reclaimed areas, it is not expected that the vegetation communities would return to native conditions within 20 years (BLM 2003a, 4-18).

The deposition of fugitive dust generated during vegetation-clearing activities and during wind events could reduce photosynthesis and productivity of the surrounding vegetation (Thompson, et al. 1984; Hirano, et al. 1995), increase water loss in plants near the proposed project area (Eveling and Bataille 1984), and result in injury to leaves of surrounding vegetation.

Cumulative Impacts

The spatial analysis area of the proposed project area is within the Upper San Juan Sub-Watershed (HUC_10 #1408010121). Existing surface disturbances within the spatial analysis area include an estimated 2031 well pads for a total disturbance of approximately 4,252 acres (1523 acres long term disturbance and 2,728 reclaimed acres). Potential surface disturbances within the spatial analysis area, anticipated to occur in the reasonably foreseeable future include an estimated 66 well pads for a total disturbance of approximately 387 acres (99 acres long term disturbance and 288 reclaimed acres, Engler et al. 2014).

Additional existing surface disturbances within the spatial analysis area include:

- Resource roads and unimproved access roads have been developed to provide access to numerous wells and agricultural fields in the vicinity.
- Active wildlife and livestock grazing occurs in the area. The proposed action is located within the Kutz Canyon grazing allotment No. 05125 managed by the BLM-FFO.
- Considerable soil disturbance from field cultivation occurs to the south of the project area. Approximately 8,500 acres of agricultural fields exists in the sub-watershed.

Indirectly, fugitive dust or deposition associated with existing roads, well pads, utility corridors, and public use in the immediate area could impact the vegetation within the analysis area, and could continue to do so throughout the life of the proposed project. Aside from those discussed above, no additional impacts to vegetation are expected within the analysis area for the reasonably foreseeable future.

3.5. Wildlife

3.5.1. Affected Environment

Migratory Birds

Executive Order 13186 dated January 17, 2001 calls for increased efforts to more fully implement the Migratory Bird treaty Act of 1918. In keeping with this mandate, the BLM/FFO has issued an interim policy to minimize unintentional take as defined by the EO 13186 and to better optimize migratory bird efforts related to BLM/FFO activities (BLM 2010). In keeping with this policy, a list of priority birds of conservation concern which occur in similar eco-regions as the proposed action area was compiled through a review of existing bird conservation plans including:

- Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC)
- New Mexico Partners in Flight (NMPIF) New Mexico Bird Conservation Plan (2007)
- Comprehensive Wildlife Conservation Strategy for New Mexico (CWCS)
- Gray Vireo Recovery Plan
- The North American Waterbird Conservation Plan
- Recovery plans and conservation plans/strategies prepared for federally-listed candidate species.

These selected species have a known distribution in the BLM-FFO area and may be affected by various types of perturbations: Black-throated sparrow (*Amphispiza bilineata*), Brewer's sparrow (*Spizella breweri*), Gray vireo (*Vireo vicinior*), Loggerhead shrike (*Lanius ludovicianus*), Mountain bluebird (*Sialia currucoides*), Mourning dove (*Zenaida macroura*), Sage sparrow (*Amphispiza belli*), Sage thrasher (*Oreoscoptes montanus*), Scaled quail (*Callipepla squamata*), Swainson's hawk (*Buteo swainsoni*) and Vesper sparrow (*Pooecetes gramineus*).

General Wildlife

The analysis area is located within a Piñon-Juniper Woodland and Sagebrush/Grass Community. Terrestrial wildlife encountered within these habitat types may include American badger (*Taxidea taxus*), black-tailed jackrabbit (*Lepus californicus*), common gray fox (*Urocyon cinereoargenteus*), cottontail rabbit (*Sylvilagus* sp.), coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), kit fox (*Vulpes velox*), mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus elaphus*), and various squirrels (*Spermophilus* sp.) and reptiles (snakes and lizards). Terrestrial wildlife or signs observed in the analysis area included cottontail rabbit, and mule deer.

Prior to the April 19th and July 16th, 2015, 2015 biological surveys of the proposed project area, no prairie dog colonies had been recorded within the proposed project area (BLM 2014b).

3.5.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During the construction phase of the proposed project, 5.20 acres of existing vegetation within the proposed project area would be cleared including approximately 80 to 110 trees. The impacts to the vegetation communities are described in detail in Section 3.4 (Upland Vegetation).

There is available, similar habitat in the surrounding area that avian and terrestrial wildlife could utilize. However, the clearing of vegetation and ground disturbing activities would remove potential habitat. The transformation of the proposed project area to a reseed community could remove potential habitat for numerous wildlife species.

If interim reclamation is successful, the Piñon-Juniper Community would become re-established within the proposed project area. However, as discussed in Section 3.4 (Upland Vegetation), the re-establishment of a mature, native plant community could require decades, and it is possible that the plant community could never fully recover from disturbance (BLM 2003a, 4-18).

Audial and visual disturbances associated with the proposed project could temporarily deter wildlife (including migratory birds) from utilizing the proposed project area and immediately adjacent lands.

Migratory Birds

As discussed in Section 2.2.2 (Description of Proposed Project – Protection of Flora and Fauna, Including SSS and Livestock), under the Migratory Bird Treaty Act – BLM/FFO Interim Management Policy (IM No. NM-F00-2010-001), timing limitations on use authorizations will be enforced for projects during the nesting period of May 15 to July 31 to avoid or minimize the possibility of the unintentional take of migratory birds. If proposed project activities would occur during the migratory bird breeding season, birds nesting outside of but near the proposed project area could abandon existing nests as a result of visual and audial disturbances.

General Wildlife

It is possible that burrowing animals could be killed or injured during the construction phase of the proposed project, as equipment digs into the earth and rolls over the surface of the ground. During the construction phase of the proposed project, terrestrial wildlife could fall into an open pipeline trench and be injured, stressed, or killed. The presence of an open trench could also disrupt normal wildlife movements to and from water and/or food sources. Wildlife could have to skirt the open-trench portions of the proposed pipeline corridor to access water and/or food; this disruption could stress wildlife and result in the loss of valuable energy resources. As discussed in Section 2.2.2 (Description of Proposed Project – Protection of Flora and Fauna, Including SSS and Livestock), design features and BMPs would be implemented during the construction phase of the proposed project to assist in the prevention of injury, stress, or death of wildlife.

Cumulative Impacts

Reasonably foreseeable development within the watershed was discussed in detail in Section 3.4.2 (Upland Vegetation—Cumulative Impacts). These foreseeable actions would cumulatively impact wildlife, including migratory birds, through direct and effective habitat loss. The intensity of indirect effects would be dependent upon the species, its life history, time of year and/or day and the type and level of human and vehicular activity occurring.

3.6. Special Status Species

3.6.1. Affected Environment

The BLM manages certain species which are not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. BLM SSS include BLM Sensitive Species and BLM-FFO Special Management Species (SMS).

New Mexico BLM State Directors have developed a list of BLM Sensitive Species for the State of New Mexico (BLM 2011a, BLM 2011b, BLM 2011c, BLM 2012). In accordance with BLM Manual 6840, the BLM-FFO has prepared a list of BLM-FFO SMS to focus species management efforts toward maintaining habitats under a multiple-use mandate (BLM 2008b, BLM 2008c). BLM-FFO SMS include some BLM Sensitive Species and other species for which the BLM-FFO has determined special management is appropriate (BLM 2008b). The authority for this policy and guidance is established by the ESA; Title II of the Sikes Act, as amended (16 USC 670a-670o, 74 Stat. 1052); FLPMA; and Department of Interior Manual 235.1.1A.

Table 8 provides an evaluation of BLM Special Status Species potentially occuring in the analysis area. Potential presence determination is based on evaluation of the proposed action area habitat and the known habitat requirements of the species. Species are listed by the BLM New Mexico State Office as Sensitive (SEN) and/or as Special Management Species (SMS) by the BLM-FFO.

Table 8. BLM Special Status Species

American peregrine falcon (*Falco peregrinus anatum*)	SMS	NM-T	Open country near lakes or rivers with rocky cliffs and canyons. Tall city bridges and buildings also inhabited.	Suitable foraging habitat documented within project area.
Bendire's thrasher (*Toxostoma bendirei*)	SEN		Typically inhabits sparse desert shrubland & open woodland with scattered shrubs; breeds in scattered locations in central & western portions of NM; most common in southwest NM.	Suitable habitat documented within project area.
Ferruginous hawk (*Buteo regalis*)	SMS		Grasslands and semi-desert shrub; occasionally piñon-juniper edge habitat. Nest on rock spires in NW New Mexico.	Suitable foraging habitat documented within project area.
Golden Eagle (*Aquila chrysaetos*)	SMS		In the West, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	Suitable foraging habitat documented within project area.
Prairie falcon (*Falco mexicanus*)	SMS		Arid, open country, grasslands or desert scrub, rangeland; nests on cliff ledges, trees, power structures.	Suitable foraging habitat documented within project area.
Brack's hardwall cactus	SEN	NM-E	Sandy clay slopes of the Nacimiento	Nacimiento Formation is

(*Sclerocactus cloveriae* ssp. *brackii*)	SMS		Formation in sparse semi desert, piñon-juniper grasslands and open arid areas of badland habitat (5,000-6,400 ft).	present along the northwest and southwest side of the PPA. No individuals were observed.
Aztec gilia (*Aliciella formosa*)	SEN SMS	NM-E	Arid and sparsely vegetated Badland /Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,400 ft).	Nacimiento Formation is present along the northwest and southwest side of the PPA. No individuals were observed.

3.6.2. Impacts from the Proposed Action

Direct and Indirect Impacts

There is similar habitat available in the surrounding area that BLM SSS could utilize. However, the proposed action would result in the removal of approximately 5.20 acres of sagebrush shrubland and Piñon-Juniper vegetation communities, including the removal of approximately 80-110 Utah juniper trees. All new surface disturbance associated with the proposed project would be reclaimed during interim reclamation and converted to a reseed community following interim reclamation. The impacts to the vegetation communities are described in detail in Section 3.4 (Upland Vegetation). Habitat loss likely reduces the carrying capacity for wildlife, although the exact level of reduction cannot be quantified (BLM 2003a, 4-26 – 4-27). If interim reclamation is successful the Sagebrush community would become re-established within the proposed project area. However, as discussed in Section 3.4 (Upland Vegetation), the re-establishment of mature, native plant communities could require decades, and it is possible that plant communities could never fully recover from disturbance (BLM 2003a, 4-18).

Cumulative Impacts

The FFO would continue to manage non-federally listed species according to BLM policies and guidelines, with the goal of contributing to the conservation of these species to reduce the potential for being listed under the ESA of 1973, as amended (BLM 2003a, 4-111). For reasonably foreseeable actions on federal lands, direct impacts to SSS would be avoided through the BLM's siting criteria. Development on federal and private land would result in the removal or modification of potential SSS habitat. These effects would be related to availability of undisturbed habitat in the area and the amount of disturbance that would occur within the area. The PRMP/FEIS determined that cumulatively up to 5.5 percent (128,000 acres) of vegetation in the planning area could be impacted by oil and gas development (BLM 2003a, page 4-125). Other reasonably foreseeable actions within the planning area that could impact SSS were discussed in detail in Section 3.4.2 (Upland Vegetation—Cumulative Impacts).

3.7. Noxious Weeds and Invasive Species

3.7.1. Affected Environment

Management of invasive and non-native plant species is mandated under several pieces of legislation, including the Lacey Act, as amended (16 USC 3371-3378); the Federal Noxious Weed Act of 1974, as amended (7 USC 2801 et seq.); the New Mexico Noxious Weed Management Act of 1998; and EO 13112 regarding Invasive Species. Under EO 13112, Federal agencies are ordered not to authorize or carry out actions that would cause or promote the introduction of invasive species.

In the San Juan Basin, invasive plants are frequently found in areas that have been disturbed by surface activities. A mission of the BLM-FFO is to detect new invasive plant species populations, prevent the spread of these new populations, manage existing populations, and eradicate invasive populations. This is to be accomplished in a timely manner, using the safest environmental methods available. For all actions on BLM-FFO lands that involve surface disturbance or reclamation, reasonable steps are required to prevent the introduction or spread of invasive plants (BLM 2003a, 3-34). A noxious weed plan for

monitoring and treatment of any existing or new infestations will be established for the length of this project. BMP's for the management of invasive and non-native plants associated with the proposed project are described in detail in Section 2.2.2 (Description of Proposed Project).

The U.S. Department of Agriculture (USDA) has designated certain plants as federally listed noxious weeds (NRCS 2010). The New Mexico Department of Agriculture (NMDA) has designated certain plants as state-listed noxious weeds (NMDA 2010). A total of 212 invasive and poisonous weed species have been identified on BLM-FFO lands. The PRMP/FEIS lists the invasive, non-native plant species of concern in the BLM-FFO area (BLM 2003a, 3-34 – 3-35).

During the pre-disturbance site visit, the proposed action area was surveyed for noxious weeds listed on the New Mexico Department of Agriculture's Class A and Class B list. During the onsite field inspections of the proposed project area, no Class A or Class B NMDA-listed noxious weeds (NMDA 2010) were identified within the proposed project area. Occurrences of the Class C NMDA-listed noxious weeds (NMDA 2010) cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola spp.*) were noted in some of the previously disturbed portions of the project area.

3.7.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Noxious weeds and invasive species are generally tolerant of disturbed conditions, and disturbed soils at project sites could provide an opportunity for the introduction and establishment of noxious weeds and invasive species. Seeds or other propagules of noxious/invasive species could be transported to a project site from infested areas by heavy equipment or other vehicles that are used at the site. Noxious weeds and invasive species could also spread from established populations near a project site and colonize soils disturbed by project activities. In arid regions, such as the area in which the proposed project area is located, longer time periods are required for the re-establishment of plant communities; this could create an increased potential for the establishment and spread of noxious/invasive species. Noxious weeds and invasive species typically develop high population densities and tend to exclude most other plant species, thereby reducing species diversity and potentially resulting in long-term effects. The establishment of noxious/invasive species could greatly reduce the success of native plant community restoration efforts in project areas and create a source of future colonization and degradation of adjacent undisturbed areas.

The establishment of invasive species, particularly annual grasses, such as cheatgrass, which produce large amounts of easily ignitable fuel over large contiguous areas, could also alter fire regimes. This situation could result in an increase in the frequency and intensity of wildfires, and in some areas, such as in some desert-scrub communities, a fire regime could be created where none was present before. In plant communities that are not adapted to frequent or intense fires, native species, particularly shrubs and trees, could be adversely affected, and their populations could be greatly reduced, creating opportunities for greater increases in noxious/invasive species populations (Brooks and Pyke 2001). Increases in fire frequency or severity could thus result in a reduction of biodiversity and could promote the conversion of some habitats (such as forest, shrubland, or shrub-steppe) to other types, prolonging or preventing the development of mature native habitats (BLM and U.S. Department of Energy 2010).

BMP's for the management of invasive and non-native plants associated with the proposed project are described in detail in Section 2.2.2 (Description of Proposed Project).

Cumulative Impacts

The spatial analysis area of the proposed project area is within the Upper San Juan Sub-Watershed (HUC_10 #1408010121). Reasonably foreseeable development within the watershed was discussed in detail in Section 3.4.2 (Upland Vegetation—Cumulative Impacts).

These ground disturbances could encourage the establishment of noxious weeds. In addition, ongoing activities, such as vehicle activity and livestock grazing, have contributed to the potential for weeds to be introduced to the spatial analysis area from other locations. Within the analysis area, the disturbances and activities have contributed to the establishment of cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola spp*.), and could contribute to the establishment and spread of other noxious weeds or invasive species. The proposed project would contribute to surface disturbance in the project area in addition to cumulative disturbance in the analysis area, and thus contribute to the potential for the establishment and spread of noxious weeds or invasive plant species within the spatial analysis area.

3.8. Public Health and Safety

3.8.1. Affected Environment

Worker safety is regulated under the Occupational Safety and Health Act of 1970, as amended (29 USC 651). Additional safety regulations found in Pipeline Safety Programs and Rulemaking Procedures (49 CFR 190) and Transportation of Natural and Other Gas by Pipeline: Minimal Federal Safety Standards (40 CFR 192) apply to natural gas pipelines.

The Environmental Protection Agency (EPA) and Department of Transportation (DOT) regulate hazardous materials under the Resource Conservation and Recovery Act (1976). The BLM manages public health and safety by complying with federal and state hazardous materials laws and regulations. The associated management goal of the BLM is to maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated sites (BLM 2003a).

The project area is in the vicinity of rural development: residences from the small community of Lee Acres are approximately 1.3 miles north and development from Navajo Agricultural Products Industry (NAPI) begins approximately 1.5 miles to the south. There are no designated recreation areas or commercial areas within 1.0 mile of the proposed project area; however, the proposed project area is accessible to the public by dirt roads.

The nearest hospital is in Farmington, New Mexico. This hospital is approximately 10.5 air miles or approximately 12.4 road miles from the proposed project area.

3.8.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During construction, the proposed project would result in increased traffic on area roads; some vehicles would be hauling heavy equipment. Therefore, there would be an increased potential for traffic accidents.

Dust associated with construction activities or travel on existing and proposed dirt access roads could result in poor visibility in the proposed project area. The increased use of dirt access roads during muddy conditions could worsen the roads' conditions. Following proposed construction, traffic levels would be similar to current levels.

During proposed construction, reclamation, and maintenance activities, the operation of heavy equipment could pose potential safety concerns. Existing facilities (such as oil and gas wells, pipelines, and powerlines) could be damaged or ruptured, which could pose a risk to human safety.

During operation of the proposed pipeline corridor, facility failure (such as pipeline ruptures) could represent a potential danger to the public.

Health and safety BMPs associated with the proposed projects are described in detail in Section 2.2.2 (Description of Proposed Projects).

Cumulative Impacts

The spatial analysis area of the proposed project area is within the Upper San Juan Sub-Watershed. Within the spatial analysis area, ground-disturbing activities have or are anticipated to occur in the reasonably foreseeable future. This future development, discussed in detail in Section 3.4.2 (Upland Vegetation—Cumulative Impacts), could contribute to public health and safety concerns in the general proposed project area. Transportation issues are a primary safety concern. Vehicles associated with oil and gas development utilize the developed highway and county road systems in the spatial analysis area. In addition, the oil and gas industry constructs and utilizes dirt access roads in the spatial analysis area. These roads, most of which are accessible by the public, are often hazardous, particularly during and following periods of inclement weather.

Additional safety concerns in the spatial analysis area include wildfire; oil and gas facility leakage or rupture; moving equipment (such as pump jacks); oil and gas explosions; and the handling, storage, and disposal of wastes, chemicals, or condensate. The proposed project would contribute to the cumulative public safety impacts in the spatial analysis area.

3.9. Environmental Justice

3.9.1. Affected Environment

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, requires that federal agencies identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. It focuses on environmental hazards and human health to avoid disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Guidance on environmental justice terminology developed by the President's Council on Environmental Quality (CEQ 1997) is discussed below.

Low-income population. A low-income population is determined based on annual statistical poverty thresholds developed by the US Census Bureau. In 2012, poverty level is based on total income of $11,720 for an individual and $23,283 for a family of four (US Census Bureau 2012d). A low-income community may include either a group of individuals living in geographic proximity to one another or dispersed individuals, such as migrant workers or Native Americans.

Minority. Minorities are individuals who are members of the following population groups: American Indian, Alaskan Native, Asian, Pacific Islander, Black, or Hispanic.

Minority population area. A minority population area is so defined if either the aggregate population of all minority groups combined exceeds 50 percent of the total population in the area or if the percentage of the population in the area comprising all minority groups is meaningfully greater than the minority population percentage in the broader region. Like a low-income population, a minority population may include either individuals living in geographic proximity to one another or dispersed individuals.

Comparison population. For the purpose of identifying a minority population or a low-income population concentration, the comparison population used in this study is the state of New Mexico as a whole

Low-income Populations

Income and poverty data estimates for study area counties from the US Census Small Area Poverty Estimates model indicate that the percent of the population living below the poverty level in the socioeconomic study area as a whole is slightly above that of the state (21.3 percent and 20.6 percent), but it is much higher than the national average of 12.1 percent (Table 9). Poverty levels ranged from 37.7

percent in McKinley County to 13.7 percent in San Juan County. Only that of Sandoval County was below the state average.

Table 9. Study Area County Population in Poverty (2002-2012)

Percent of Population in Poverty 2002	21,766	7,165	19,934	22,152	71,017	421,123	34,569,951
	30.2%	17.7%	11.1%	18.2%	21.3%	20.6%	12.1%
Percent of Population in Poverty 2012	27,296	8,806	18,502	25,802	80,406	327,444	48,760,123
	37.7%	22.0%	13.7%	20.3%	21.5%	17.7%	15.9%
Median Household Income 2002	$25,197	$30,557	$45,213	$34,329	N/A	$34,827	$45,409
Median Household Income 2012	$29,821	$36,900	$57,376	$45,901	N/ A	$42,828	$51,371
Classified as Low Income Population in 2012 based on CEQ guidelines?	No	No	No	No	No	NA	NA
Source: US Census Bureau 2013b							

Similarly, estimates from 2012 indicate that Sandoval and San Juan Counties had household median incomes ($57,376 and $45,901) that were above the state level of $42,828. McKinley County ($29,821) and Rio Arriba County ($36,900) were below that of the state in 2012 (Table 10). While no area communities meet the CEQ definition of a low-income population area (50 percent or higher), the highest poverty rates were seen in Bloomfield (29 percent), Espanola (26.3 percent), and Bernalillo (24.1 percent).

Table 10. Study Area Key Community Race/Ethnicity and Poverty Data

Aztec	36.4%	No	14.4%	No
Bernalillo	78.8%	Yes	24.1%	No
Bloomfield	55.8%	Yes	29.0%	No
Espanola	91.6%	Yes	26.3%	No
Farmington	48.8%	No	15.5%	No
Gallup	76.9%	Yes	20.9%	No
Rio Rancho	46.7%	No	9.8%	No
Source: US Census Bureau 2012b Note: American Community Survey estimates are based on data collected over a 5-year time period. The estimates represent the average characteristics of populations between January 2008 and December 2012 and do not represent a single point in time.				

Census Tracts are geographic regions within the United States that are defined by the US Census Bureau in order to track changes in a population over time. Census Tracts are based on population sizes and not geographic areas. The average population of a Census Tracts is about 4,000 people, so rural areas that are sparsely populated may have very large Census Tracts while densely populated urban areas may have very small Census Tracts.

When broken down by Census Tract, 3 out of 87 tracts in the socioeconomic study area have greater than 50 percent of individuals living below the poverty line: Census Track 9440 in eastern McKinley County had an individual poverty rate of 54.6 percent; Census Tract 9405 in southwestern McKinley County had an individual poverty rate of 59.4 percent; and Census Tract 9409 in northwestern Sandoval

County had an individual poverty rate of 51.9 percent (US Census Bureau 2012b). These 3 Census Tracts are all relatively large, indicating a sparsely populated, rural area.

Minority Populations

Based on 2008-2012 data, minorities made up 59.5 percent of the population in New Mexico, compared to 36.3 percent in the United States as a whole (Table 11). The proportion of minorities in the socioeconomic study area (65.3 percent) substantially exceeded the United States and is slightly higher than the state average. At the county level, the population ranged from 89.7 percent minority in McKinley County to 52.8 percent in Sandoval County. Within relevant tribal nations, Native Americans represented the vast majority of the population. The largest minority groups were Hispanics/Latinos in Rio Arriba and Sandoval Counties and Native Americans in McKinley and San Juan Counties.

Table 11. Study Area County Population by Race/Ethnicity (2008-2012)

Population	McKinley County	Rio Arriba County	Sandoval	San Juan	Study Area	New Mexico	United States	Jicarilla Apache Nation	Navajo Nation	Ute Mountain Nation
Hispanic or Latino ethnicity of any race	9,744	28,714	46,334	24,496	109,288	952,569	50,545,275	382	2,958	99
	13.6%	71.4%	35.3%	19%	29%	46.3%	16.4%	11.6%	1.7%	6.0%
White alone	7,413	5,370	61,977	54,218	128,978	831,543	196,903,968	74	3,762	47
	10.3%	28.6%	47.2%	42.2%	34.67%	40.5%	63.7%	2.3%	2.2%	2.9%
Black or African American alone	353	149	2,704	794	4000	35,586	37,786,591	0	250	5
	0.5%	0.4%	2.1%	0.6%	1.08%	1.7%	12.2%	0%	0.1%	0.3%
American Indian or Alaskan Native alone	52,358	5,629	15,964	46,676	120,627	176,766	2,050,766	2,692	162,920	1,429
	72.8%	14.0%	12.2%	36.3%	32.43%	8.6%	0.7%	82.0%	94.3%	87.0%
Asian alone	506	173	1,685	464	2828	25,411	14,692,794	73	834	14
	0.7%	0.4%	1.3%	0.4%	0.76%	1.2%	4.8%	2.2%	0.5%	0.9%
Native Hawaiian and Other Pacific Islander alone	38	7	100	72	217	989	480,063	0	209	0
	0.1%	0%	0.1%	0.1%	0.06%	<.01%	0.2%	0%	0.1%	0%
Some Other Race	7	22	437	84	550	3,623	616,191	0	102	0
	<.01%	0.1%	0.3%	0.1%	0.15%	0.2%	0.2%	0%	0.1%	0%
Two or more Races	1,469	137	2,101	1,796	5,503	28,800	6,063,063	62	1,660	49
	2.0%	0.3%	1.6%	1.4%	1.48%	1.4%	2.0%	1.9%	1.0%	3.0%
Classified as Minority Population based on CEQ guidelines?	Yes	Yes	Yes	Yes		Yes	NA	Yes	Yes	Yes

Source: US Census Bureau 2012b
Note: American Community Survey estimates are based on data collected over a 5-year time period. The estimates represent the average characteristics of populations between January 2008 and December 2012 and do not represent a single point in time

Based on the CEQ definition of a minority population area (minority residents exceed 50 percent of all residents), Bernalillo, Bloomfield, Espanola, and Gallup all are considered minority communities. (See Table 10: Study Area Key Community Race/Ethnicity and Poverty Data)

When examined at the Census Tract level, there are 24 out of 87 tracts that have a minority population greater than 50 percent. These range from Census Tract 6.1 located just north of the city of Aztec with a minority population of 80.5 percent to Census Tract 107.17 located north of the city of Rio Rancho with a minority population of 50.2 percent (US Census Bureau 2012b). These Census Tracts are relatively small and are based around the city of Rio Rancho and the Aztec/Farmington/Bloomfield area.

Native American Populations

Data in Table 11 accounts for a substantial portion of the study area population in some areas, notably McKinley and San Juan Counties, where the population is 72.8 and 36.3 percent American Indian respectively. Three tribal governments have reservations within the planning area: the Jicarilla Apache Nation, the Navajo Nation, and the Ute Mountain Nation (Table 12). The Southern Ute Nation has lands just north of the planning area in the state of Colorado, but none within the planning area. Almost one half of the planning area is tribal lands. Each tribe maintains a general concern for protection of and access to areas of traditional and religious importance, and the welfare of plants, animals, air, landforms, and water on reservation and public lands. Policies established in 2006 by the BLM and US Forest Service, in coordination with federal tribes, ensure access by traditional native practitioners to area plants. The policy also ensures that management of these plants promotes ecosystem health for public lands. The BLM is encouraged to support and incorporate into their planning traditional native and native practitioner plant-gathering for traditional use (Boshell 2010).

Table 12. Tribal Nations in the Planning Area

Jicarilla Apache Nation	739,600	The majority of the Jicarilla Apache Nation is located in western Rio Arriba County, but within the eastern portion of the planning area
Navajo Nation	860,900	A portion of the Navaho Nation extends into western San Juan County and into the western portion of the planning area
Ute Mountain Nation	103,500	A portion of the Ute Mountain Nation extends into the northern portion of San Juan County, just east of the Navajo Nation, and into the northern portion of the planning area
Unknown	196,300	Lands located in the southern portion of the planning area [Note to BLM: this is due to inconsistencies between US Census Bureau tribal areas dataset and BLM land status dataset.]
Source: BLM GIS 2014, US Census Bureau 2014		

3.9.1. Impacts from the Proposed Action

Direct and Indirect Impacts

Minority Populations and Low-income Populations do occur in the analysis area for the proposed action. The closest community that meets the CEQ definition of a low-income population area is Bloomfield, NM 5 miles to the northeast of the proposed project area. In addition San Juan County would be considered a minority community based on CEQ guidelines.

The proposed action would be in compliance with Executive Order (EO) #12898. No disproportionate adverse impacts to the environmental conditions and overall quality of life of minority and low-income communities are anticipated as a result of the proposed action. Project design features for the protection of Air, Soil, Water, Flora and Fauna, Public Health and Safety are in place to protect the human environment.

Cumulative Impacts

Minority Populations and Low-income Populations do occur in the analysis area for the proposed action. Reasonably foreseeable development within the analysis area was discussed in detail in Section 3.4 (Upland Vegetation). Other reasonably foreseeable actions such as continued livestock grazing, vegetation treatments, and community development would cumulatively impact the environmental justice of the area. Because there would be no change from socioeconomic baseline conditions and no foreseeable environmental hazards, there would be no disproportionate impacts to low income or minority populations.

A positive cumulative effect to socioeconomics associated with the project is the additional employment opportunities in the oil and gas industry and/or increases in business to local service industry due to the presence of work crews. In addition, there could be taxes and royalties to state and county governments as a result of the project.

3.10. Transportation and Travel

3.10.1. Affected Environment

Within the BLM-FFO planning area, there are approximately 15,000 miles of roads. Most of the roads are unpaved and provide access to resources on Federal lands, predominantly oil and gas facilities. In areas with a high level of oil and gas development, there are approximately 4 miles of roads per square mile. In areas outside of oil and gas development areas, there are approximately 1 mile of roads per square mile. The major roads within the BLM-FFO planning area are U.S. Highways 550, 64, and 491 and State Highways 96, 170,173, 371, 511, 537, 544, 574, and 595 (BLM 2003a, 3-57 – 3-58).

The county roads within the BLM-FFO planning area have been categorized (BLM 2003a, 3-58):

- Full county-maintained: maintained at best level possible with resources available
- Lesser county-maintained: bladed twice a year
- Unmaintained roads

There are existing roads within the general vicinity of the proposed project area. The government entity that owns a road is responsible for maintenance (BLM 2003a, 3-58).

3.10.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During all proposed project phases, vehicles would use existing resource roads, as well as developed BLM roads, county roads, and highways in the region. Traffic would include light vehicles (such as cars and pick-up trucks) and heavy vehicles (such as water trucks and large tractor-trailers hauling equipment), as described in Section 2.1.2 (Description of Proposed Project – Proposed Project Phases).

During all proposed project phases, the proposed project would result in increased traffic on area roads; therefore, there would be an increased potential for traffic accidents. Traffic estimates would likely increase during mobilization/demobilization phases, which would include the movement of equipment, pipes, and other materials in/out of a project area using heavy vehicles.

Roads would be maintained in the same or better condition as existed prior to the commencement of proposed operations. The maintenance activities would continue until final abandonment and reclamation of the proposed project area. The proposed access road would be maintained for the life of the proposed project in accordance with The Gold Book (BLM and USFS 2007).

BMPs to be utilized along the existing roads and proposed upgrades including reclamation methods are described further in Section 2.1 (Proposed Action) and the Surface Reclamation Plan (attached to the APD application on file at the BLM-FFO).

Access to the proposed project area would be gained by traveling on U.S. Highway 550 to County Road 5500. Traffic would proceed to the intersection of County Road 5500 and Country Road 5190 (3.8 miles SW of Bloomfield, NM), and head southwesterly for approximately 1.6 miles on unnamed roads.

Cumulative

The spatial analysis area for transportation includes the proposed access road and the existing roads between U.S. Highway 550 and the proposed project area. Within the spatial analysis area, the existing roads are used to access existing oil and gas development and public lands. County Road 5500 may be used to access the small community of Lee Acres located approximately 1.5 miles north of the proposed project area, or as a short cut for Farmington traffic headed south on U. S Highway 550.

The proposed project would contribute to the cumulative transportation impacts within the spatial analysis area. Overall impacts to the transportation network and access in general will be negligible. A positive cumulative effect is the improved safety from road maintenance that would occur.

3.11. Livestock Grazing

3.11.1. Affected Environment

The proposed project would result in approximately 5.20 acres of new surface disturbance within the Kutz Canyon grazing allotment No. 05125 managed by the BLM-FFO. The allotment is currently un-allotted but is being considered for re-authorization of grazing. The Kutz Canyon allotment provides approximately 613 active AUMs (Animal Unit Months) of forage. Ninety-two percent (92%) of the Kutz Canyon grazing allotment is public lands, and the average rangeland carrying capacity for this allotment is approximately 17.7 acres/AUM.

An AUM is the amount of forage needed to sustain a cow (1,000 lb.) or cow/calf pair for one month.

3.11.2. Impacts from the Proposed Action

Direct and Indirect Impacts

The proposed project would result in approximately 5.20 acres of new surface disturbance within the Kutz Canyon grazing allotment. This would result in the loss of approximately 0.29 AUM. The potential impacts to vegetation communities are described in detail in Section 3.4 (Upland Vegetation).

Additional short term impacts may include displacement of permitted livestock during construction activities or exposure of livestock to hazards. After construction, livestock should become acclimated to the well and traffic associated with its maintenance. Vehicle traffic associated with the well could pose impacts to livestock considering that the area is open range and livestock may be found on roads in the area.

Direct impacts to livestock occur when holes or ditches are not excluded properly. Any type of hole or ditch is potentially a hazard to livestock while grazing. Livestock injuries may occur when they fall into a ditch-type cavity or in process of trying to get out. Livestock leg injuries also may occur when any type of small hole is left uncovered. Livestock can step into the hole and break a leg.

Impacts to livestock may occur when containment of livestock is compromised (i.e., fencing cutting). This could result in injury to livestock or individuals in the event of a vehicular accident. Indirect impacts include extra time required by the permittee to locate livestock or potential trespass issues for the respective livestock owner if the livestock cross allotment boundaries.

BMP's for the protection of livestock are discussed in Section 2.2.2 (Description of Proposed Project – Protection of Flora and Fauna, Including SSS and Livestock).

Cumulative Impacts

The spatial analysis area of the proposed project area is the Kutz Canyon grazing allotment No. 05125. Existing surface disturbances within the spatial analysis area include an estimated 254 well pads for a total disturbance of approximately 511 acres (191 acres long term disturbance and 320 reclaimed acres). Potential surface disturbances within the spatial analysis area, anticipated to occur in the reasonably foreseeable future include an estimated 3 well pads for a total disturbance of approximately 19 acres (5 acres long term disturbance and 14 reclaimed acres, Engler et al. 2014). Disturbances associated with the proposed project would contribute to 1-percent of the existing disturbance within the Kutz allotment (5.20 acres proposed disturbance / 511 acres existing allotment disturbance).

These foreseeable actions in addition to other reasonably foreseeable actions such as wildlife grazing, vegetation treatments, and community development would cumulatively impact livestock grazing through direct and indirect rangeland alteration and/or loss.

4. SUPPORTING INFORMATION

4.1. Tribes, Individuals, Organizations, or Agencies Consulted

Table 12 contains a list of tribes, individuals, organizations, and agencies invited to attend the on-site for the project.

Table 12. Tribes, Individuals, Organizations, and Agencies Invited to the On-Site

Name	Tribe, Organization, or Agency	Attended On-Site

The BLM fulfills its responsibilities under the National Historic Preservation Act (NHPA) through a number of agreements. The National Programmatic Agreement (NPA; 2012) between the BLM, Advisory Council on Historic Preservation (ACHP), and the National Council of State Historic Preservation Officers (NCSHPO) allows the agency to fulfill its NHPA responsibilities according to the provisions of the NPA in lieu of 36 CFR 800.3 through 800.7 regulations. The NPA, which applies to all BLM activities below specified thresholds, provides among other things, regulatory relief in many instances from the requirement for case-by-case review by State Historic Preservation Officers (SHPOs) and the ACHP, in exchange for managers' maintenance of appropriate staff capability and observance of internal BLM standards as set out in the 8100 Manual series.

The New Mexico BLM has a two-party protocol with the New Mexico SHPO (2014) specifically encouraged by the NPA. This protocol details how the New Mexico BLM and SHPO will regulate their relationship and consult. Specifically, this document outlines among other things, how and when consultation will be conducted between the BLM, SHPO, Tribes, and the public. The protocol also outlines when case-by-case SHPO consultation is or is not required for specific undertakings and the procedures for evaluating the effects of common types of undertakings and resolving adverse effects to

historic properties. These common types of undertakings regularly include the common actions undertaken in the BLM FFO.

4.2. List of Preparers

- Jim Copeland, Archaeologist – BLM-FFO
- Michael Porter, Natural Resource Specialist – BLM-FFO
- John Kendall, Wildlife Management Biologist – BLM-FFO
- Marcella Martinez, Planning and Environmental Specialist – BLM-FFO
- Sarah McCloskey, Environmental Specialist – Adkins Consulting, Inc.
- Lori Gregory, Environmental Specialist – Adkins Consulting, Inc.
- Jeff Tafoya, Supervisor, Multiple Resources– BLM-FFO
- Heather Perry, Noxious Weed Coordinator – BLM-FFO
- Craig Willems, Environmental Protection Specialist – BLM-FFO
- Sheila Williams, District Botanist – BLM-FFO

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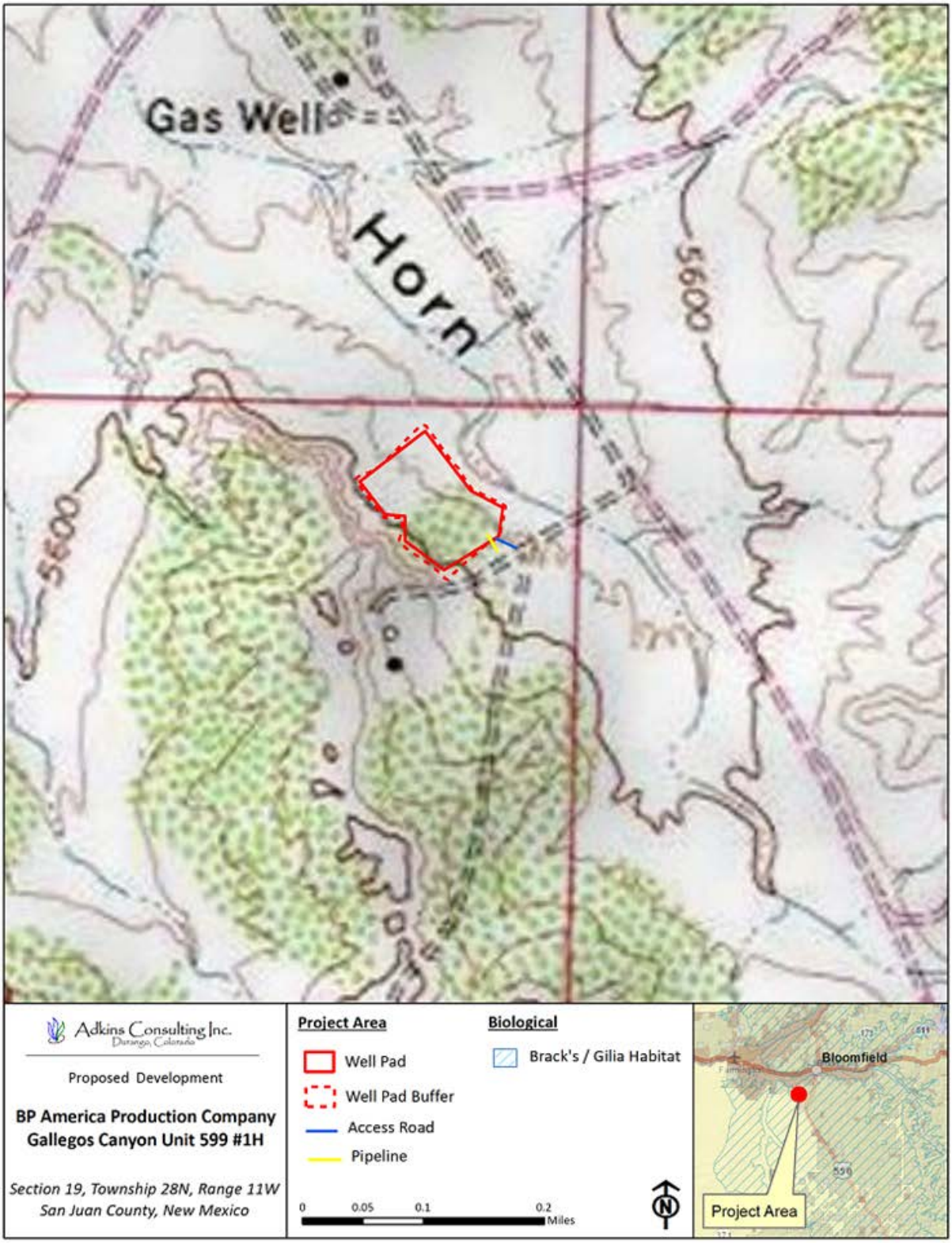
Appendix A. MAPS



Adkins Consulting Inc.
Durango, Colorado

Proposed Development

BP America Production Company
Gallegos Canyon Unit 599 #1H

Section 19, Township 28N, Range 11W
San Juan County, New Mexico

Project Area

- Well Pad
- Well Pad Buffer
- Access Road
- Pipeline

Biological

- Brack's / Gilia Habitat

0 100 200 400 Feet

N

Appendix B. PLATS

Appendix C. BIOLOGICAL SURVEY REPORT

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Farmington District
Farmington Field Office
6251 N College Blvd., Ste. A
Farmington, NM 87402

Finding of No Significant Impact

BP America Production Company's Gallegos Canyon Unit 599 Com No. 1H

NEPA No. DOI-BLM-NM-F010-2015-0202-EA
(ATS-F010-15-127)

FINDING OF NO SIGNIFICANT IMPACT

I have determined that the proposed action, as described in the Environmental Assessment (EA) DOI-BLM-NM-F010-2015-0202-EA will not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an Environmental Impact Statement is not required.

In making this determination, I considered the following factors:

Context

The Farmington Field Office (FFO) is located in northwestern New Mexico. The field office boundaries include approximately 7,800,000 acres; 1.4 million surface acres and an additional 1 million acres of mineral estate are managed by the BLM. The distribution of BLM-managed lands is fairly well consolidated in the north and becomes increasingly mingled with Tribal lands to the south. BLM-managed lands abut the Navajo Reservation to the west and south, Jicarilla Apache Nation Reservation to the east, and the Ute Mountain Reservation and Southern Ute Indian Reservation to the north. Aztec Ruins National Monument and Chaco Culture National Historical Park, managed by the National Park Service, lie within the field office boundaries. The BLM manages approximately 18% of lands within a 10 mile radius of Chaco Culture National Historical Park.

The FFO encompasses the New Mexico portion of the San Juan Basin. The San Juan Basin and surrounding areas have been occupied by varied cultures since the Paleo Indian period (circa 10,000 BC). The San Juan Basin and Four Comers area have one of the most extensive prehistoric and protohistoric occupations in the United States. The most commonly known archaeological resources are the Anasazi structures at Chaco Culture National Historical Park, Mesa Verde National Park, and other National Park Service sites. Scattered across BLM-managed lands are similar, but smaller structures, which were probably related to these larger sites. Twenty-three Chacoan outliers are known to exist within the FFO. Each contains at least one Chacoan structure and most have associated communities, prehistoric roads, and great kivas along with features such as herraduras and special use areas. The FFO contains an extensive system of finely engineered roads radiating out form Chaco Canyon and extending a considerable distance to outlying sites through the San Juan Basin and beyond. These roads are remarkably straight and carefully constructed. The most notable is the Great North Road, which starts at Chaco Canyon and runs north to the Aztec Ruins.

Located within the boundary of the FFO is much of Dinétah, the ancestral homeland to the Navajo. Here the Navajo constructed forked-stick hogans, shades, sweat lodges, and other structures over a several hundred year span. During a short period between 1680 and the mid-1700s, pueblitos were constructed,

often associated with other structures. Although not firmly dated, extensive Navajo pictograph and petroglyph sites were painted, etched, pecked, or ground onto the sandstone cliffs of the canyons of Dinétah. Most are believed to be ceremonial art which is no longer traditionally executed in a permanent form.

Native American Traditional and Sacred Areas are known to exist across the FFO. Many are associated with narrative accounts of origin or other traditional stories. Most of the identified sacred areas are associated with the Navajo culture. These places are still important in Navajo ceremonies and daily activities.

Historic Hispanic or Spanish and Anglo sites within the San Juan Basin primarily date from the late 1800s to the present. Although there are some early Spanish land grants in the southern portion of the FFO, most historic sites located on public lands are either Hispanic or Anglo homesteads with associated structures from the late 1800s and early 1900s. Associated with many clusters of homesteads were a school house and often a church which was visited every few months by a priest.

Cultural resource inventories have been conducted throughout the FFO for project undertakings, management studies, and scientific inquiries. As of April 2014, approximately 760,000 acres of the 7,800,000 acres in the FFO boundaries have been inventoried. Over 46,000 sites have been identified ranging from small artifacts to the 800-room structures in Chaco Canyon. Many of these sites are listed on the National Register of Historic Places and Chaco Culture National Historical Park along with several of the Chacoan sites which have been placed on the World Heritage List. The FFO manages 79 Areas of Critical Environmental Concern (ACECs) for relevant and important cultural values, including five World Heritage Sites.

The San Juan Basin is an important area for mammalian and reptilian fossils. A variety of paleontological resources exist in the FFO including animal fossils, fossil leaves, palynomorphs, petrified wood, and trace fossils occurring in the Triassic, Jurassic, Cretaceous, and Tertiary rocks. Dinosaur and other fossils that have made significant contribution to the scientific record have been found and excavated in the FFO. Paleontological resources are present in the Bisti De-Na-Zin Wilderness Area, Ah-Shi-Sle-Pa Wilderness Study Area, Fossil Forrest Research Natural Area, and seven fossil areas identified in the 2003 Farmington Resource Management Plan.

The San Juan Basin is one of the largest natural gas fields in the nation and has been under development for more than 60 years. Oil was discovered by accident in the Seven Lakes area of McKinley County in 1911. Natural gas was discovered near Aztec, New Mexico, in 1920-1921 with oil of commercial quantity discovered near the Hogback in 1922 (Barnes 1951). Several small pipelines were built to carry the oil and gas from these discoveries to Aztec and Farmington, respectively. Development began in earnest in the late 1940s and early 1950s as the demand for natural gas increased. The FFO manages 2,765 active oil and gas leases in the San Juan Basin consisting of 2.1 million acres. Leasing began in the mid-1930s and accelerated in the late 1940s. By 1950, over 1 million acres were under lease.

In 1951, El Paso Natural Gas completed the first interstate pipeline out of the San Juan Basin to California. That same year, oil was discovered in the Mancos Shale in Dogie Canyon (Barnes 1951). Since that time, over 30,000 oil and gas wells have been drilled in the San Juan Basin with approximately 16,000 associated rights-of-way. Approximately 23,000 wells are currently producing. Since Stanolind Oil introduced hydraulic fracturing in 1949, nearly every well in the San Juan Basin has been fracture stimulated.

Intensity

1. The activities described in the proposed action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b)(1)). Per 40 CFR 1500.1(b), the EA concentrated on issues that are truly significant to the action in question, rather than amassing needless detail. Issues have a cause and effect relationship with the proposed action or alternatives; are within the scope of the analysis; have not been decided by law, regulation, or previous decision; and are amendable to scientific analysis rather than conjecture (BLM 2008, page 40). The following issues were identified related to the proposed project:

- How would dust, equipment emissions, and consumption of hydrocarbons associated with the proposed project impact air resources?
- How would surface-disturbing activities associated with construction of the proposed project impact cultural resources?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact upland vegetation?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact wildlife including migratory birds?
- How would vegetation-clearing, proposed project activities, and final reclamation impact the following BLM Special Status Species (SSS): Aztec gilia (Aliciella formosa), Brack's hardwall cactus (Sclerocactus cloveriae ssp. brackii), ferruginous hawk (Buteo regalis), golden eagle (Aquila chrysaetos), and prairie falcon (Falco mexicanus)?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact the distribution and establishment of noxious weeds and invasive species?
- What effects would the proposed action have on public health and safety?
- What effects would the proposed action have on social and economic features / environmental justice?
- What effects would the proposed action have on transportation and travel?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact livestock grazing?

The EA includes a description of the expected environmental consequences of the proposed activities for those issues in Chapter 3.

2. The activities included in the proposed action and alternatives would not significantly affect public health or safety (40 CFR 1508.27(b)(2)). The following design features have been included in the proposed action to address any impacts to public health and safety:

- The hauling of equipment and materials for the proposed project on public roads would comply with Department of Transportation regulations. No toxic substances would be stored or used within the proposed project area. BP would have inspectors present during construction. Any accidents involving persons or property would immediately be reported to the BLM-FFO. BP would notify the public of potential hazards by posting signage, as necessary.
- There are no designated recreation areas or commercial areas within 1 mile. The closest populated area is approximately 2 miles to the Northwest. The proposed project area is accessible to the public by dirt roads.
- Vehicles would be restricted to proposed disturbance areas and existing areas of surface disturbance, such as existing roads and well pads.
- Worker safety incidents would be reported to the BLM-FFO as required under Notice to Lessees (NTL) - 3A (USGS 1979). BP would adhere to company safety policies, Occupational Safety and Health Administration regulations, and Department of Transportation regulations.
- Construction and maintenance activities would cease when soil or road surfaces become saturated to the extent that construction equipment is unable to stay within the proposed project area and/or when activities would cause irreparable harm to roads, soils, or watercourses.
- The nearest hospital is in Farmington, New Mexico. This hospital is approximately 11 air miles or approximately 14 road miles from the proposed project area.

3. The proposed activities would not significantly affect any unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas (40 CFR 1508.27(b)(3)). Unique characteristics are generally limited to those that have been identified through the land use planning process or other legislative, regulatory or planning processes (BLM 2008, page 71). The FFO does not contain any prime and unique farmlands, suitable or designated wild and scenic rivers, or designated caves. Table 1 discloses the distance of the proposed activities to identified wetlands. Table 2 discloses the distance of the proposed activities to

National Park Service units and Congressionally designated areas. The proposed action and alternatives are not located within an Area of Critical Environmental Concern. Impacts to historic or cultural resources are described in the Cultural Resources section of the EA and discussed further under item 8.

Table 1. Distance of the Proposed Activities from Identified Wetlands

Identified Wetlands	Distance from Proposed Activities
Bancos	41 miles
Blanco	9 miles
Bloomfield	5 miles
Cutter Canyon	19 miles
Carrizo Oxbow	19 miles
Desert Hills	3 miles
Valdez	7 miles

Table 2. Distance of the Proposed Activities from Park Lands and Ecologically Critical Areas

Park Land or Ecologically Critical Area	Distance from Proposed Activities
Ah-Shi-Sle-Pah Wilderness Study Area	33 miles
Aztec Ruins National Monument	13 miles
Bisti De-Na-Zin Wilderness Area	21 miles
Chaco Culture National Historical Park	39 miles
Fossil Forest Research Natural Area	29 miles

4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b)(4)). Controversy in this context means disagreement about the nature of the effects, not expressions of opposition to the proposed action or preference among the alternatives (BLM 2008, page 71). Oil and gas development has occurred in the San Juan Basin for more than 60 years. While there may be controversy over the appropriateness of oil and gas development, there is not a high level of controversy or substantial scientific dispute over the impacts of that activity. The impacts of the proposed activities are described in Chapter 3 of the EA.

5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)). As described under Context, oil and gas development has occurred in the San Juan Basin since the late 1940s and early 1950s. The field office has permitted over 30,000 wells and 16,000 rights-of-way. Hydraulic fracturing has occurred on nearly every well in the San Juan Basin since the 1950s. As such, the FFO has decades of experience and is knowledgeable about the impacts and risks associated with the proposed activities.

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)). Approval of these activities in no way assures approval of any future activities.

7. The effects of the proposed activities would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). Direct, indirect, and cumulative impacts are described in Chapter 3 of the EA.

8. I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). The proposed activities are not located in an ACEC containing relevant and important cultural values. The project is located within Horn Canyon a cullturally sensitive area used for plant gathering. BLM Cultural Resource survey 2015(IV)038F stipulates the proponant will notify BLM and NNHPD prior to reseeding, and a seed mix containing traditionally sensitive species used for plant gathering is described in the Surface Use Plan of Operations. Any Known cultural resources will be avoided by project activities, and protected through employee education, archaeological monitoring. (DOI-BLM-NM-F010-2015-0202-EA ch. 3).

9. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The project area does not contain any known populations of threatened or endangered species. (DOI-BLM-NM-F010-2016-0006-EA, p. 8-9, 29-31).

10. The proposed activities will not threaten any violation of Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). Sections 1.4 and 1.5 of the EA describe the relationship of the proposed activities to relevant laws, policies, regulations, and plans.

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APPROVED:

/s/Richard A. Fields 3/31/16

Richard A. Fields
Field Manager
Farmington Field Office

Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington District
Farmington Field Office
6251 N College Blvd., Ste. A
Farmington, NM 87402

DECISION RECORD
for the

BP America Production Company's
Gallegos Canyon Unit 599 Com No. 1H

NEPA No. DOI-BLM-NM-F010-2015-0202-EA
(ATS-F010-15-127)

I. Decision

I have decided to select Alternative B (Proposed Action) for implementation as described in the BP America Production Company's Gallegos Canyon 599 Com No. 1H Environmental Assessment (EA). Based on my review of the Environmental Assessment (EA) and project record, I have concluded that Alternative B was analyzed in sufficient detail to allow me to make an informed decision. I have selected this alternative because the proposed project would allow BP America Production Company access to their proposed drilling site in order to drill for natural gas within their valid and existing lease.

II. Conformance and Compliance

The proposed action is in conformance with the 2003 BLM-FFO Resource Management Plan (RMP). Pursuant to 40 CFR 1508.28 and 1502.21, this site-specific Environmental Assessment (EA) tiers into and incorporates by reference the information and analysis contained in the BLM-FFO Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) (BLM 2003a). The RMP was approved by the September 29, 2003 Record of Decision (ROD) (BLM 2003b), and updated in December 2003.

It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable market prices. At the same time, the BLM strives to ensure that mineral development is carried out in a manner that minimizes environmental damage and provides for the rehabilitation of affected lands. (BLM 2003b, 2-2 – 2-3)

III. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the EA for BP America Production Company's Gallegos Canyon 599 Com No. 1H. I have also reviewed the project record for this analysis. The effects of the proposed action and alternatives are disclosed in the Alternatives and Environmental Consequences sections of the EA. I have determined that the construction of a well pad, pipeline tie and access road to allow BP America Production Company (BP) reasonable access to the mineral lease in order to develop the existing lease as described in the EA will not significantly affect the quality of the human environment.

Accordingly, I have determined that the preparation of an Environmental Impact Statement is not necessary.

IV. Other Alternatives Considered

No reasonable alternatives to the proposed action have been developed that would result in significantly fewer impacts or any clear advantages over the proposed action. The proposed access road and proposed pipeline corridor follows the most economic and direct route based on the location of existing BP America Production Company's infrastructure, existing disturbance, surface resources, and terrain.

V. Rationale for the Decision

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement [(PRMP/FEIS) BLM 2003a]. This EA is in conformance with the management goals set forth in the Resource Management Plan (RMP) for the Farmington Field Office (FFO) of the BLM, which was approved by the Record of Decision (ROD) signed September 29, 2003 (BLM 2003b). Specifically, this action is in conformance with the following: It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable market prices. At the same time, the BLM strives to ensure that mineral development is carried out in a manner that minimizes environmental damage and provides for the rehabilitation of affected lands (2003b, 2-2). The PRMP/FEIS, RMP, and ROD are available for review at the BLM Farmington Field Office, 6251 College Blvd., Farmington, NM, or electronically at: http://www.nm.blm.gov/ffo/ffo_home.html

I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). The proposed activities are not located in an ACEC containing relevant and important cultural values. The project is located within Horn Canyon a cullturally sensitive area used for plant gathering. BLM Cultural Resource survey 2015(IV)038F stipulates the proponant will notify BLM and NNHPD prior to reseeding, and a seed mix containing traditionally sensitive species used for plant gathering is described in the Surface Use Plan of Operations. Any Known cultural resources will be avoided by project activities, and protected through employee education, and archaeological monitoring.

The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The project area does not contain any known populations of threatened or endangered species. (DOI-BLM-NM-F010-2015-0202-EA, ch. 3).

VI. Public Involvement

The Notice of Staking was made available for the public to review at the Farmington Field Office. No comments were received. The project was posted on the Farmington Field Office NEPA log. No comments were received.

VII. Administrative Review and Appeal

Under BLM regulations, this Decision Record (DR) is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this DR, with or without oral presentation, must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the

State Director, Bureau of Land Management, 301 Dinosaur Trail, Santa Fe, NM 87508, no later than 20 business days after this DR is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

This decision to authorize a right-of-way may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with the Field Manager, Bureau of Land Management, Farmington Field Office, 6251 College Boulevard, Suite A, Farmington, NM 87402. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U. S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the Farmington Field Office Manager.

Notwithstanding the provisions of 43 CFR 4.21(a)(1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;

(2) The likelihood of the appellant's success on the merits;

(3) The likelihood of immediate and irreparable harm if the stay is not granted; and

(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor: United States Dept. of the Interior, Office of the Solicitor, Southwest Regional Office, 505 Marquette Avenue NW, Suite 1800, Albuquerque, NM 87102

/s/Richard A. Fields 3/31/16

Richard A. Fields Date
Field Manager
Farmington Field Office