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ConocoPhillips Company's
Fogelson 35 No. 1E
Blanco Mesa Verde / Basin Dakota
Natural Gas Well Project

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

ConocoPhillips Company has submitted an Application for Permit to Drill (APD) with the Bureau of Land Management - Farmington Field Office (BLM-FFO) for the Fogelson 35 No. 1E conventional natural gas well project. The proposed project includes the construction of a new access road and well pad in order to drill and develop federal mineral resources administered by the BLM-FFO. Once the well has been drilled and proves to be viable, a subsurface, well-tie pipeline would be constructed to transport produced natural gas to the Kutz Lateral 3B-3 pipeline operated by Enterprise Products Company (EPCO). ConocoPhillips would receive an approved APD to develop their lease. EPCO would apply separately for a right-of-way (ROW) Grant from the BLM-FFO for the authorization to construct, maintain and operate the subsurface, natural gas well-tie pipeline on public lands. The proposed action is the approval of the APD and ROW Grant by the BLM-FFO, located in Farmington, New Mexico.

The proposed project is located on public lands managed by the BLM-FFO. In addition to constructing a new access road, ConocoPhillips would upgrade the existing road for approximately 1.25 mile. Proposed road construction and upgrades will designed, constructed 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). The proposed new access road would be constructed parallel to EPCO's existing pipeline ROW for the Kutz Lateral 3B-3. Public use of the area has resulted in an unauthorized two-track road on the existing ROW.

Surface disturbance associated with the proposed project area would be approximately 8.1 acres, total. Of this, approximately 3.5 acres would be considered new surface disturbance. Proposed new surface disturbances would include the construction of a new well pad within a total permitted area of 3.03 acres, 0.38 acre for the construction of an access road, and 0.11 acre for the construction of a well-tie pipeline. The upgrade of existing access road would take place within approximately 4.55 acres existing disturbance. New surface disturbance associated with the well pad would be reclaimed to a BLM-approved working area. Production equipment will be placed on the location in such a manner to allow proper safe access to produce and service the well/facilities while minimizing long-term disturbance and maximizing interim reclamation. As practical, access will be provided by a tear-drop shaped road through the production area. All new surface disturbance associated with the pipeline corridor would be reclaimed during 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 produced 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 ConocoPhillips Company reasonable access to their mineral lease.

The need for the proposed action is established by the BLM's responsibility under the Mineral Leasing Act of 1920, as amended (30 USC [United States Code] 181 et seq.) to respond to the APD.

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

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 (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

ConocoPhillips Company 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*, and the *National Conference of State Historic Preservation Officers*, 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 ConocoPhillips Company, BLM-FFO representatives, EPCO, the Navajo Nation Historic Preservation Department (HPD), and an environmental consultant (Adkins Consulting, Inc. [ACI]), was held for the proposed project on May 29, 2014. A public invitation to the on-site meetings was posted online (http://www.blm.gov/nm/st/en/fo/Farmington_Field_Office/ffo_oil_and_gas/ffo_onsites.html); no private citizens or groups attended the meeting. A BLM-FFO Interdisciplinary Team meeting was held in June 2014 to discuss the proposed action. At the aforementioned meetings, potential issues of concern 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 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 impact 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 noxious weeds and invasive species?
- How would the proposed project impact transportation and travel on public lands?
- How would vegetation-clearing, proposed project activities, and final reclamation associated with the proposed project impact soils?

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.

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 Knickerbocker Butte #1 (New Mexico Office of the State Engineer [NMOSE] point of diversion [POD] authorization number SJ-197); 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 (Western Cultural Resource Management, Inc. [WCRM] Report No. WCRM(F)1323 [Proper 2014]), 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. Proposed Action

The proposed action is the BLM-FFO approval of the APD and ROW Grant associated with ConocoPhillips Company's Fogelson 35 No. 1E project. The proposed action includes the construction of a new 558-foot access road and a 230-foot by 300-foot well pad in order to conventionally drill and develop federal mineral resources in the Blanco Mesa Verde / Basin Dakota Pool. If the well is successful and proves to be viable, a 184-foot, subsurface pipeline would be constructed to transport produced natural gas to the Kutz Lateral 3B-3 pipeline operated by EPCO. In addition, ConocoPhillips would upgrade approximately 1.25 mile of existing access road to improve access to the proposed well site. The proposed project would commence after the APD and ROW Grant are issued.

Construction plats associated with the proposed project are provided in Appendix C. Photographs of the proposed project area are provided in the Surface Reclamation Plan (Appendix D).

2.1.1. Location of Proposed Project Area

A map of the proposed project area plotted on USGS topographic quadrangle (Figure A.1) and a drawing of the proposed development on aerial imagery (Figure A.3) are provided in Appendix A.

The proposed project area is located within the BLM-FFO management area on public lands managed by the BLM within the San Juan Basin of northwest New Mexico. The proposed development is located approximately 4 miles north-northeast of Bloomfield, 4.5 miles southeast of Aztec, and 8 miles northwest of Blanco.

The proposed project area, including the proposed road upgrades and rehabilitation, is located within Sections 27, 34, and 35, Township 30 North, Range 11 West, New Mexico Principle Meridian (NMPM) in San Juan County.

The general region surrounding the proposed project area is characterized by badlands, mesas, and relatively flat lowland valleys. The project area contains previously disturbed areas, badlands, and sagebrush shrubland interspersed with open piñon-juniper woodland. No prominent topographical features are located within the project area. The proposed well head is located at approximately 5,850 feet above mean sea level (AMSL).

Existing oil and gas development, public roads, and commercial/residential development are in the general vicinity of the proposed project area.

2.1.2. Description of Proposed Project

For a detailed description of design features and construction practices associated with the proposed actions, refer to the APD and ROW Grant applications on file at the BLM-FFO. Construction plats associated with the proposed projects are provided in Appendix C and provide additional details. Photographs of the proposed project area are provided in the Surface Reclamation Plan (Appendix D).

Design Features and Best Management Practices

ConocoPhillips and EPCO would adhere to the stipulations attached to an approved APD and ROW Grant, respectively, from the BLM-FFO. The following general design features and best management practices (BMPs) would occur.

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 ConocoPhillips and/or EPCO 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, ConocoPhillips and/or EPCO 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 2013a; Figure A.2 [Appendix A]). Both plants are designated SMS by the BLM-FFO and listed endangered species by the State of New Mexico. During a biological survey by ACI, one Brack's cactus was found within the proposed project area. No Aztec gilia plants were found within the analysis area. Soils derived from the Nacimiento Formation, which provides the appropriate geologic substrate for the two plants, is present within the action area and provides suitable habitat for the two plants.

A previously documented golden eagle nest site is located approximately 3.3 miles northeast of 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 East Bloomfield Community grazing allotment No. 5031 managed by the BLM-FFO. 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.
- Trees to be removed that are 3-inch-diameter and greater would be cut, de-limbed, and stacked for public access.
- ConocoPhillips would upgrade the existing access road for approximately 1.25 mile. The existing road crosses two ephemeral USGS watercourses within Bloomfield Canyon. A low-water crossing would be developed at the southeast crossing. ConocoPhillips would complete the installation of erosion matting at the northwest crossing. 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. ConocoPhillips would have inspectors present during construction. Any accidents involving persons or property would immediately be reported to the BLM-FFO. ConocoPhillips 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 ConocoPhillips' responsibility to monitor, control, and eradicate all invasive, non-native plant species within the proposed project area throughout the life of the project. ConocoPhillips' weed-control contractor would contact the BLM-FFO regarding acceptable weed-control methods. If the contractor does not hold a current Pesticide Use Permit, a Pesticide Use Permit would be submitted 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. Pesticides would be used only in accordance with their registered use and limitations. ConocoPhillips' weed-control contractor would contact the BLM-FFO prior to using these chemicals.

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.

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). ConocoPhillips and EPCO would adhere to company safety policies, Occupational Safety and Health Administration regulations, and Department of Transportation regulations.

ConocoPhillips and EPCO 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. 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 ROW Grant 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, would be chipped or mulched and incorporated into the topsoil as additional organic matter. Trees greater than 3 inches in diameter will be cut, de-limbed, and stacked for public access. 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. A 230-foot by 300-foot level well pad area would be constructed within a total permitted area of 3.03 acres. 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 between 4 and 11 feet of cut on the west side of the pad, and between 6 and 8 feet of fill on the east side of the pad. A reserve pit would be excavated using heavy equipment.

ConocoPhillips would construct a new 558-foot road to provide access to the well site. In addition, approximately 1.25 mile 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). Road upgrades would include the development of a low-water crossing and the completion of erosion mat placement within two ephemeral, USGS watercourses.

The well-tie pipeline would be constructed within a single trench parallel to the proposed access road. The trench would be offset from the proposed access road centerline by approximately 15 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).

After setting the surface casing, directional drilling would begin with a “kick-off” (kick-off point) at which drilling would “build angle” and begin angle drilling which typically cumulates at an angle of 0-50 degrees to reach the bottom hole location and the target formation. 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 Knickerbocker Butte #1 (NMOSE POD #SJ-197).

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 Juniper 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 bulldozer and 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, if possible. 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). ConocoPhillips would reclaim the unauthorized two-track resulting from public access to the EPCO pipeline ROW.

During the May 2014 pre-disturbance onsite meeting, it was determined that the Sagebrush/Grass Community best represents the proposed project area. Details of the interim reclamation process (including species included in the seed mixture) are provided in the Surface Reclamation Plan (Appendix D). Reclamation 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.

2.1.3. Proposed Surface Disturbance

Surface disturbance associated with the proposed project area would be approximately 8.1 acres, total. Of this, approximately 3.5 acres would be considered new surface disturbance. Proposed new surface disturbances would include the construction of a new well pad within a total permitted area of 3.03 acres, 0.38 acre for the construction of an access road, and 0.11 acre for the construction of a well-tie pipeline. The upgrade of existing access road would take place within approximately 4.55 acres existing disturbance.

Depictions of the surface-disturbing activity locations are provided in Appendices A (Maps) and C (Plats).

Table 1. Proposed Project Surface Impacts

Surface Disturbance Description (Approximate Stationing)	Existing/Previously Permitted Surface Disturbance	New Surface Disturbance
Access Roads		
New road construction (0+00 to 5+57.88)	-	558' long x 30' wide (0.38 acre)
Existing road upgrade	6600' long x 30' wide (4.55 acres)	-
Well Pad		
New well pad construction	-	3.03 acres
Natural Gas Well-tie Pipeline		
New pipeline construction (0+00 to 1+84.01)	-	184' long x 25' wide (0.11 acre)
Total Project Surface Disturbance (acres)	**4.55**	**3.52**

2.2. No Action

Under the No Action Alternative, the APD associated with the proposed Fogelson 35 No. 1E project would not be approved. The proposed access road, well pad, and pipeline would not be constructed, nor would the existing access road be upgraded. Current land and resource uses would continue to occur in the proposed project area.

2.3. Alternatives Considered but Eliminated from Detailed Study

One alternative was considered to twin the proposed Fogelson 35 No. 1E on the Payne No. 2. This alternative was eliminated from detailed study due to the following reasons:

- **Drilling**: Due to the Payne No. 2 being a Fruitland Coal (FC) well and the proposed Fogelson 35 No. 1E being a Mesaverde/Dakota (MV/DK) well, with an estimated spacing of 50 to 70 feet separation during the drilling process there exists a potential to have isolation concerns for the Payne No. 2 during the drilling of the proposed Fogelson 35 No. 1E. If the well is twinned with the Payne No. 2, we could potentially circulate cement into the Payne No. 2 well bore causing loss of 108 mcfd production. There are other wellbore communications that can take place as well due to the existing FC well, i.e., high loss circulation potential while drilling the Fogelson 35 No. 1E.

- **Geology/Reservoir**: The best reservoir location is represented by the Proposed Action surface location (Unit P) as a vertical. From a reservoir standpoint, Unit P is the best placement for a MV/DK well. ConocoPhillips can't legally be in Unit O as a vertical. Unit J appears to be in direct alignment with the drainage ellipse of the +2.7 BCF Fogelson 35 No. 1 DK well in Unit O, and we want to keep maximum distance from it. Unit I would be an improvement over Unit J, but still less desirable than Unit P.

- **Staking/Survey**: Twinning the Fogelson 35 No. 1E on the Payne No. 2 would result in the possibility of contamination of the producing formation during the casing cementing operation. A 100-foot by 15-foot offset from the Payne No. 2 would be needed to avoid the laydown equipment being in the line of contact with the well head, allowing further distance from the quickly rising slope at corner three (which is at a cut of 18 feet). Due to the slope, the fill side of the well pad is at 12 feet to 11 feet reducing the option to use a downhill pit and meet the NMOCD pit rules. Another option evaluated, is to have an uphill pit, but this was rejected due to the large fills that would be generated by the working side being downhill. This would also leave the well pad with pits both downhill and uphill (the pit for the Payne No. 2 is downhill), limiting the area for the production equipment.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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 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).

3.1. Air Resources

3.1.1. Affected Environment

The proposed project 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; (U.S. Department of Interior Bureau of Land Management, 2014). 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 (U.S. Environmental Protection Agency, 2013) 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. Total emissions of criteria pollutants from each source sector were calculated by adding together the emissions from the four counties that are located in FFO: San Juan, McKinley, Rio Arriba, and Sandoval.

"Design Concentrations" are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2012 design concentrations of criteria pollutants are listed below in Table 2. 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. PM10 design concentrations are not available for San Juan County.

Table 2. 2012 Criteria Pollutant Monitored Values in San Juan County (U.S. Environmental Protection Agency, 2014)

Pollutant	2012 Design Concentration	Averaging Time	NAAQS	NMAAQS
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]	

[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 (U.S. Environmental Protection Agency, 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 3). 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 3. Number of Days classified as "unhealthy for sensitive groups" (AQI 101-150) or worse (U.S. Environmental Protection Agency, 2013a)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Days	3	6	9	18	1	0	12	9	0	1

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 (U.S. Department of Interior Bureau of Land Management, 2014). 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 (U.S. Environmental Protection Agency, 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 4. 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 Precipitation (inches)
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

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.

3.1.2. Impacts from the Proposed Action

Methodology and assumptions for calculating air pollutant and greenhouse gas emissions are described in the Air Resources Technical Report (U.S. Department of Interior Bureau of Land Management, 2014). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one conventional 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 conventional gas well for criteria pollutants, volatile organic compounds (VOC) and greenhouse gas (GHG). For comparison, Table 6 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 Conventional Gas Well; Average 9 Days to Drill and Complete

Activity	NOx	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CH4	CO2
One time operations (tons)*								
Construction	1.98	0.54	0.18	0.90	0.10	0.04	0.003	215.55
Completion	0.18	0.04	0.01	0.01	0.01	-	-	19.80
Interim Reclamation	0.006	0.006	0.006	0.001	-	0.003	-	1.24
Final Reclamation	0.008	0.008	0.008	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	**2.44**	**0.92**	**0.31**	**0.93**	**0.13**	**0.05**	**0.02**	**268.46**

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
Total	**70,340.5**	**127,435.2**	**53,525.0**	**219,838.9**	**25,487.6**	**7,110.0**

(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 7 displays the percent increase in total emissions in the analysis area from the proposed action to construct and operate one conventional gas well.

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

	NO_X[1]	CO[2]	VOC[3]	PM_{10}[4,5]	$PM_{2.5}$[5,6]	SO_2[5,7]
Total Emissions	70,340.5	127,435.2	53,525.0	219,838.9	25,487.6	7,110.0
Conventional Gas Well Emissions	2.44	0.92	0.31	0.93	0.13	0.05
Percent Increase	**.003**	**.0007**	**.0006**	**.0004**	**.0005**	**.0007**

(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 of 0.031 tons/year reported here should be considered a very gross estimate.

Total Greenhouse Gases

The available statewide GHG summary (NMED 2010) 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 (243.5 metric tons) would represent a 0.0003 percent increase in New Mexico CO2 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 18,483 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.

3.2. Cultural Resources

3.2.1. 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 (2003) and will not be reiterated here. Additional information can also be found in an associated documented, Cultural Resources Technical Report (CRTR; SAIC 2002).

Cultural sites 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.

The entire Area of Potential Effect (APE) for the Proposed Action was archaeologically surveyed by WCRM at a BLM Class III (100 percent) level. The archaeological report was prepared and submitted to the BLM in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005).

The Class III inventory identified no cultural sites within the APE (WCRM Report WCRM(F)1323; BLM Report ******). No TCPs are known to exist in the APE.

3.2.2. Impacts from the Proposed Action

Direct and Indirect Impacts

There are no cultural sites within the APE. The proposed action is not known to physically threaten any TCPs, 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 impacts on cultural sites.

Cumulative Impacts

There will be no negative cumulative impact on cultural resources as no cultural sites are present. A positive cumulative effect is the additional scientific information yielded by the archaeological survey.

3.3. Upland Vegetation

3.3.1. 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 minimally vegetated badlands, saltbush scrub, sagebrush shrubland valleys, and wooded hills and mesas. The analysis area is within the BLM-designated potential habitat area for Aztec gilia and Brack's hardwall cactus. Soils derived from the Nacimiento Formation, which provides the appropriate geologic substrate for the two plants, is found within the analysis area. One Brack's cactus was found within the action area, as well as suitable habitat for both Aztec gilia and Brack's cactus to occur. The action area contains previously disturbed areas, minimally vegetated badlands, and sagebrush shrubland interspersed with open piñon-juniper woodland. Details of the upland vegetation composition found within the proposed project area are described in the BSR (Appendix B).

3.3.2. 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 3.5 acres of Sagebrush/Grass Community, including the removal of approximately 80 piñon pine and Utah juniper trees, and one Brack's cactus.

Details of the proposed actions during interim reclamation can be found in the Surface Reclamation Plan attached as Appendix D.

During final reclamation, BROG 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 Sagebrush/Grass Community Seed Mixture would be utilized; the species included in this mixture are included in the Surface Reclamation Plan (Appendix D). Reestablished vegetation would consist of native grass, forb, and shrub species included in the seed mixture, 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 is the proposed project area and immediately adjacent lands. Within the spatial analysis area, the following vegetative disturbances have occurred or are anticipated to occur in the reasonably foreseeable future:

- Approximately 28 wells have been drilled within a one mile radius of the proposed well location.
- A resource road has been developed to provide access to the Payne No. 2 well located approximately 700 feet northwest of the proposed Fogelson 35 No. 1E.
- The EPCO Kutz Lateral 3B-3 pipeline ROW corridor is situated to the north and east of the project area. Unauthorized access to the ROW corridor has resulted in the formation of a two-track road traveling southeast from the proposed Fogelson 35 No. 1E project area and through the East Fork of Bloomfield Canyon.
- U.S. Highway 550 is located approximately 1.7 road-miles northeast of the project area.
- Active wildlife and livestock grazing occurs in the area. The proposed action is located within the East Bloomfield Community grazing allotment No. 5031 managed by the BLM-FFO.

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.

The proposed project would contribute to direct and indirect vegetation disturbance and fugitive dust and/or deposition within the spatial analysis area.

3.4. Migratory Birds

3.4.1. Affected Environment

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
- 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.

The selected species have a known distribution in the BLM-FFO area and may be affected by various types of perturbations. The BSR (Appendix B) lists those priority species that have the potential to occur within the proposed project area.

During the biological survey of the proposed project area, no priority bird species were observed or heard.

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 3.5 acres of Sagebrush/Grass Community, including the removal of approximately 80 piñon pine and Utah juniper trees. The impacts to the vegetation communities are described in detail in Section 3.3 (Upland Vegetation) and the BSR (Appendix B).

There is available, similar habitat in the surrounding area that wildlife could utilize. However, the clearing of vegetation would remove potential habitat. The transformation of the proposed project area to a reseed community could remove potential habitat for numerous wildlife species, including the priority bird species listed in the BSR (Appendix B).

The well pad would be reclaimed to a BLM-approved working area. All new surface disturbance associated with the proposed pipeline corridor would be reclaimed during interim reclamation. The proposed project area would be converted to a reseed community following interim reclamation. If interim reclamation is successful, Sagebrush/Grass Community would become re-established within the proposed project area. However, as discussed in Section 3.3 (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).

Due to the mobility of adult birds, they would be unlikely to be directly harmed by the proposed project. It is unlikely that nests, eggs, or young birds within the proposed project area would be directly harmed if project activities occur outside of the typical migratory bird breeding season of 15 May to 31 July. If proposed project activities would occur during 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.

Cumulative Impacts

Reasonably foreseeable development within the Upper San Juan sub-watershed may include an estimated additional 2,148 oil and gas wells and related facilities, and 174 miles of new roads. Surface-disturbing activities that would be associated with these actions may affect an estimated 7,981 acres of potential migratory bird habitat (USDI/BLM 2003a, page 4-7 and 4-8). Other reasonably foreseeable actions such as continued livestock grazing, vegetation treatments, and community development would cumulatively impact wildlife, including migratory birds, through direct and effective habitat loss. The proposed action would contribute to the direct loss of approximately 3.5 acres of Sagebrush/Grass Community, including the removal of approximately 80 piñon pine and Utah juniper trees. 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.

3.5. Special Status Species

3.5.1. 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 2012a). 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 2008a, 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 2008c). 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.

BLM-FFO Sensitive Species and SMS are discussed in detail in the BSR (Appendix B). It was determined that the following species have the potential to occur or are known to occur within the proposed project area:

- **Aztec gilia**: The proposed project area is within the BLM-designated potential habitat area for Aztec gilia. Suitable habitat is present in the project area. No Aztec gilia were found during the biological survey of the Fogelson 35 No. 1E project area.

- **Brack's hardwall cactus**: The proposed project area is within the BLM-designated potential habitat area for Brack's hardwall cactus. Suitable habitat is present in the project area. One Brack's cactus was found during the biological survey of the Fogelson 35 No. 1E project area.

- **Ferruginous hawk**: Potential foraging habitat is available within the proposed project area; however, no suitable nesting habitat is present within or adjacent to the proposed project area. No sign of this species was recorded during the biological survey of the Fogelson 35 No. 1E project area.

- **Golden eagle**: Potential foraging habitat is available within the proposed project area; however, no suitable nesting habitat is present within the proposed project area. A previously documented golden eagle nest site is located approximately 3.3 miles northeast of the project area. No sign of this species was recorded during the biological survey of the Fogelson 35 No. 1E project area.

- **Prairie falcon**: Potential foraging habitat is available within the proposed project area; however, no suitable nesting habitat is present within or adjacent to the proposed project area. A previously documented prairie falcon nest site is located approximately 6 miles east of the project area. No sign of this species was recorded during the biological survey of the Fogelson 35 No. 1E project area.

3.5.2. 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 3.5 acres of Sagebrush/Grass Community, including the removal of approximately 80 piñon pine and Utah juniper trees, one Brack's cactus, and suitable Aztec gilia and Brack's cactus habitat. The potential impacts to SSS are described in detail in the site-specific BSR (Appendix B).

The proposed well pad would be reclaimed to a BLM-approved working area. All new surface disturbance associated with the proposed pipeline corridor would be reclaimed during interim reclamation. The proposed project area would be converted to a reseed community following interim reclamation. If interim reclamation is successful, Sagebrush/Grass Community would become re-established within the proposed project area. However, as discussed in Section 3.3 (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).

Audial and visual disturbances associated with the proposed project could temporarily deter special status wildlife species from utilizing the proposed project area and immediately adjacent lands.

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 (USDI/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 (USDI/BLM 2003a, page 4-125). Other reasonably foreseeable actions within the planning area that could impact SSS would include livestock grazing, agriculture, commercial and residential development, mining, wildfire, and vegetation management.

3.6. Noxious Weeds and Invasive Species

3.6.1. 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).

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 April 2014 biological survey and May 2014 onsite field inspection of the proposed project area, no USDA-listed noxious weeds (NRCS 2010), NMDA-listed noxious weeds (NMDA 2010), or BLM-FFO invasive or poisonous weed species (BLM 2003a, 3-34 – 3-35) were identified within the proposed project area.

3.6.2. 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).

Cumulative Impacts

The spatial analysis area is the proposed project area and immediately adjacent lands. Within the spatial analysis area, ground-disturbing activities have or are anticipated to occur in the reasonably foreseeable future; these disturbances are described in Section 3.3 (Upland Vegetation). These ground disturbances could encourage the establishment of noxious weeds. In addition, ongoing activities, such as vehicles driving and livestock grazing, have contributed to the potential for weeds to be introduced to the spatial analysis area from other locations. The disturbances and activities have contributed to the establishment of cheatgrass (downy brome) and Russian thistle (tumbleweed), and could contribute to the establishment and spread of other noxious weeds or invasive species. The proposed project would contribute to surface disturbance and ongoing activity, and thus contribute to the potential for the establishment and spread of noxious weeds or invasive plant species within the spatial analysis area.

3.7. Transportation and Travel

3.7.1. 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). During the onsite meeting, the BLM-FFO assigned ConocoPhillips upgrades on existing resource road providing access to the Payne No. 2 well site and the proposed Fogelson 35 No. 1E well site.

3.7.2. Impacts from the Proposed Action

Direct and Indirect Impacts

ConocoPhillips would construct a new 558-foot resource road and upgrade approximately 1.5 mile of existing resource road to improve access to the proposed Fogelson 35 No. 1E well site. The 30-foot-wide

workspace associated with the proposed access road would include a 14-foot-wide running surface with adequate crowning. Resource road construction, design, maintenance, and upgrade will be done in accordance with *The Gold Book* (BLM and USFS 2007). If the well associated with the proposed access road are commercially viable, ConocoPhillips would upgrade the entire access road, as necessary, to accommodate year-round traffic and meet all-weather standards. In addition, ConocoPhillips would reclaim a two-track road as a result of unauthorized access to the EPCO Kutz Lateral 3B-3 pipeline ROW corridor adjacent to the proposed project area. The proposed road upgrades and pipeline ROW access closure would enhance pipeline and public safety.

During all proposed project phases, vehicles would use existing and proposed 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, tanks, pipes, sand, and other materials in/out of a project well pad area using heavy vehicles. The traffic estimates provided for access road construction, pipeline tie construction, and reclamation would not likely increase.

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). ConocoPhillips would inspect and maintain the road as outlined in their Road Maintenance Plan attached to the approved APD applications.

BMPs to be utilized along the proposed and existing access roads and the proposed access road construction and reclamation methods are described further in Section 2.1 (Proposed Action) and the Surface Reclamation Plan (Appendix D).

The roads in the general region of the proposed project area are currently utilized for accessing oil and gas development and public lands.

Access to the proposed project area would be gained by traveling on U.S. Highway 550, located approximately 1.7 road-miles northwest of the proposed project area, and existing resource roads.

Cumulative Impacts

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.

The proposed project would contribute to the cumulative transportation impacts within the spatial analysis area. As a new road is going to be developed to replace the current access route, there would be no net loss of authorized access to public lands. Overall impacts to the transportation network and access in general will be negligible due to the development of the new access.

3.8. Soils

3.8.1. Affected Environment

The San Juan Basin is bordered by the Defiance Uplift and Chuska Mountains to the west, San Juan Dome to the north, Chaco Slope and Zuni Uplift to the south and the Nacimiento Uplift to the east. In total,

the San Juan Basin covers a surface of approximately 4,600 square miles. The soils in the San Juan Basin were formed primarily from two kinds of parent material: alluvial sediment and sedimentary rock. The alluvial sediment is material that was deposited in river valleys and on mesas, plateaus, and abandoned river terraces. The material has been mixed and sorted in transport and has a wide range of mineralogy and particle size. Sedimentary parent material consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes, and mesas bounded by cliffs.

According to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Web Soil Survey, the proposed project area is situated in an area having two distinct soil mapping units. These mapping units consist of the Stumble-Fruitland association, gently sloping (SW) and the Gypsiorthids-Badland-Stumble complex, moderately steep (GY).

The SW mapping unit consists of 40 percent Stumble loamy sand, 30 percent Fruitland sandy loam and the 30 percent of other inclusions to small and scatter to map separately. Slopes associate with this soil type range from 0 to 8 percent. The Stumble soil is deep and somewhat excessively drained. It has the ability to rapidly absorb water but because of it loamy sand texture the availability of water is low making for a droughty soil. Runoff is very slow with an erosion hazard that is slight to none depending on where you are within the mapping unit. The hazard from wind erosion is very severe. The Fruitland is a deep, well-drained soil. The Fruitland has a moderately rapid permeability along with a moderate water availability capacity. Runoff is slow with a slight erosion hazard, while wind erosion is severe.

The GY mapping unit consists of 35 percent Gypsiorthids, 5 to 30 percent slopes, 35 percent Badlands, 5 to 30 percent slopes, and 15 percent Stumble loamy sand, 5 to 8 percent slopes. The Gypsiorthids soil depths vary from shallow to deep and are well to excessively drained. The permeability varies from slow to rapid with the available water capacity also varying from very low to high depending on the depth of the soil and the amount of vegetative cover. The Badlands are barren, nonstony shale uplands scattered throughout the mapping unit and separated by drainage ways and gullies. The Stumble soil has been described above.

Both the Stumble and Fruitland soil have low erosive factors of 0.17 and 0.24 tons per year respectively. These erosive factors are conducted in a lab setting and do not necessarily reflect the conditions that exist on the ground. Under ideal conditions, moderate rain fall, and adequate vegetative (particularly herbaceous cover), these erosive factors can be expected. However, this area was heavily grazed by livestock decades ago altering the vegetative composition of the area with a heavy lost in herbaceous cover. No erosion rating has been provided for the Gypsiorthids soils. Gypsiorthids erosions can be very serious due to poor aggregation/structural stability, lack of plasticity, cohesion, high solubility, and generally do not provide a good medium for plant growth. Because of their general association with the highly erodible badland soils the FFO has identified them as fragile soils.

The proposed project area is situated within previously disturbed areas, minimally vegetated badlands, and sagebrush shrubland interspersed with open piñon-juniper woodland. The slope of the analysis area is not estimated to be 15 percent or more.

3.8.2. Impacts from the Proposed and Alternative Actions

Direct and Indirect Impacts

The Proposed Action would result in the removal of established vegetation in Sagebrush/Grass Community. Construction of the project could reduce up to approximately 8.1 acres of Sagebrush/Grass Community to bare mineral soils. As discussed in Section 2.1.2 (Description of Proposed Project - 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. In addition, 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 protected using wattles or other BMPs so that erosion is minimized.

Cumulative Impacts

The primary cumulative impacts on soils would result from an increase in the amount of surface disturbance due to increased oil and gas development activity and other earthmoving activities in the Largo sub-watershed of the planning area. Other vegetation damaging practices, such as OHV use, livestock grazing, and vegetation management on non-public lands, could contribute to increased soil erosion.

4. SUPPORTING INFORMATION

4.1. Tribes, Individuals, Organizations, or Agencies Consulted

- Dollie Busse, BROG
- Patsy Clugston, BROG
- Kenny Davis, BROG
- Enterprise Products Company
- Brent Hottell, BROG
- Sam Jaquez, BROG
- Denise Journey, BROG
- United Field Services Inc.
- Arleen White, BROG
- Western Cultural Resource Management, Inc.

4.2. List of Preparers

- Janelle Alleman, Outdoor Recreation – BLM-FFO
- Jim Copeland, Archaeologist – BLM-FFO
- Stan Dykes, Natural Resource Specialist – BLM-FFO
- Mike Flaniken, Environmental Protection Specialist – BLM-FFO
- John Kendall, Wildlife Management Biologist – BLM-FFO
- Amanda Nisula, Planning and Environmental Coordinator – BLM-FFO
- Sheila Williams, District Botanist – BLM-FFO
- Dale Wirth, Branch Chief – BLM-FFO
- Matthew Zabka, Environmental Specialist – Adkins Consulting, Inc.

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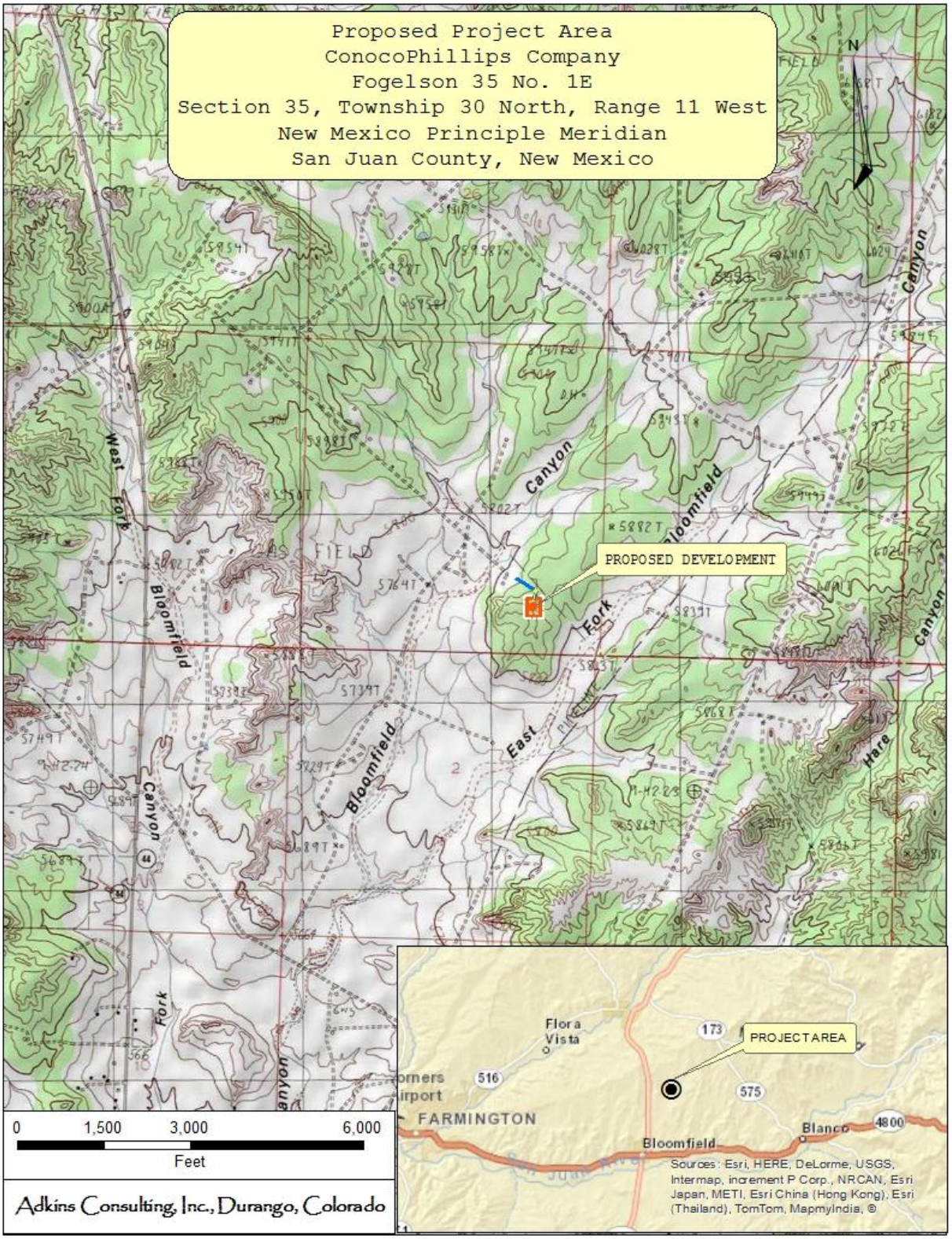
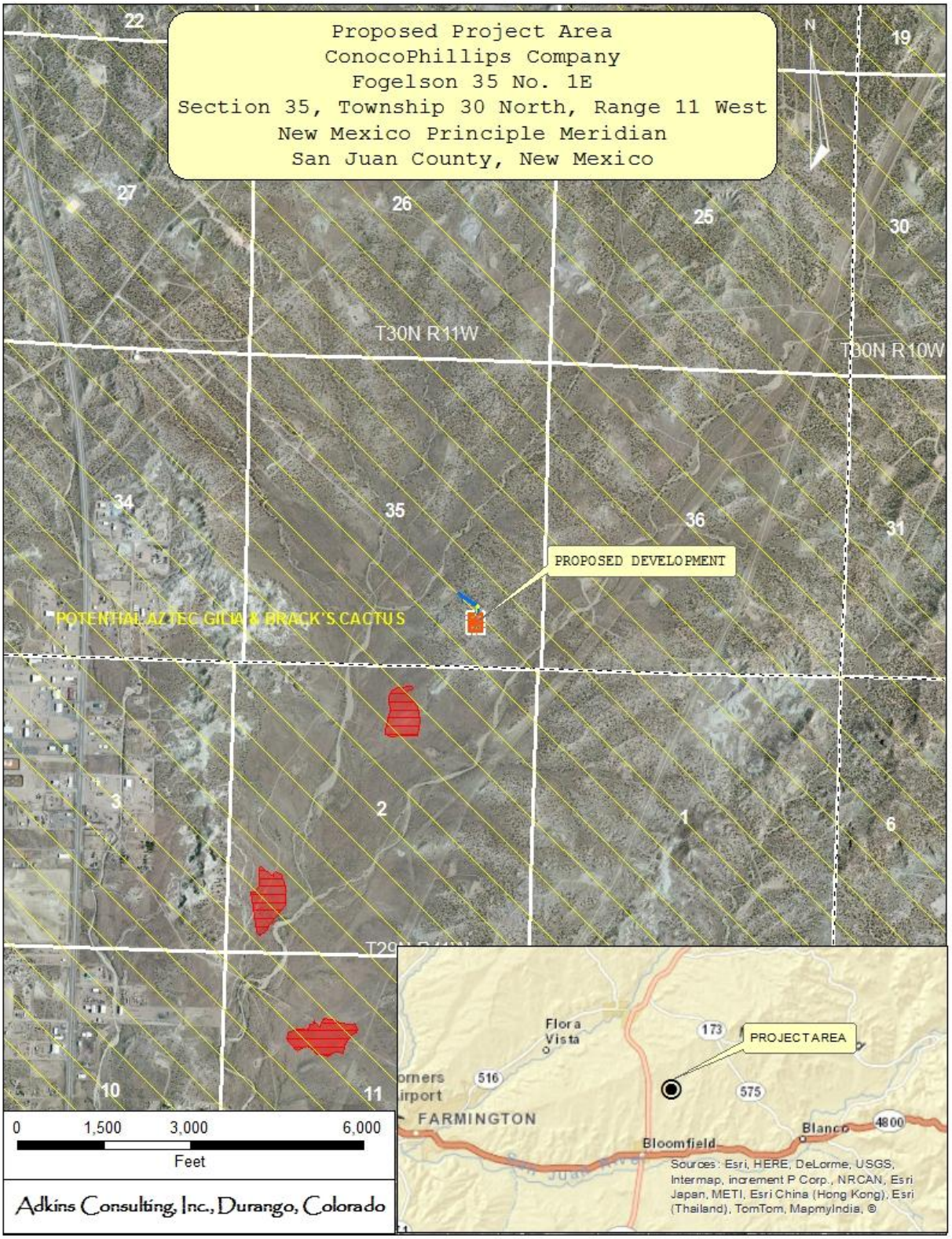
APPENDIX A. MAPS

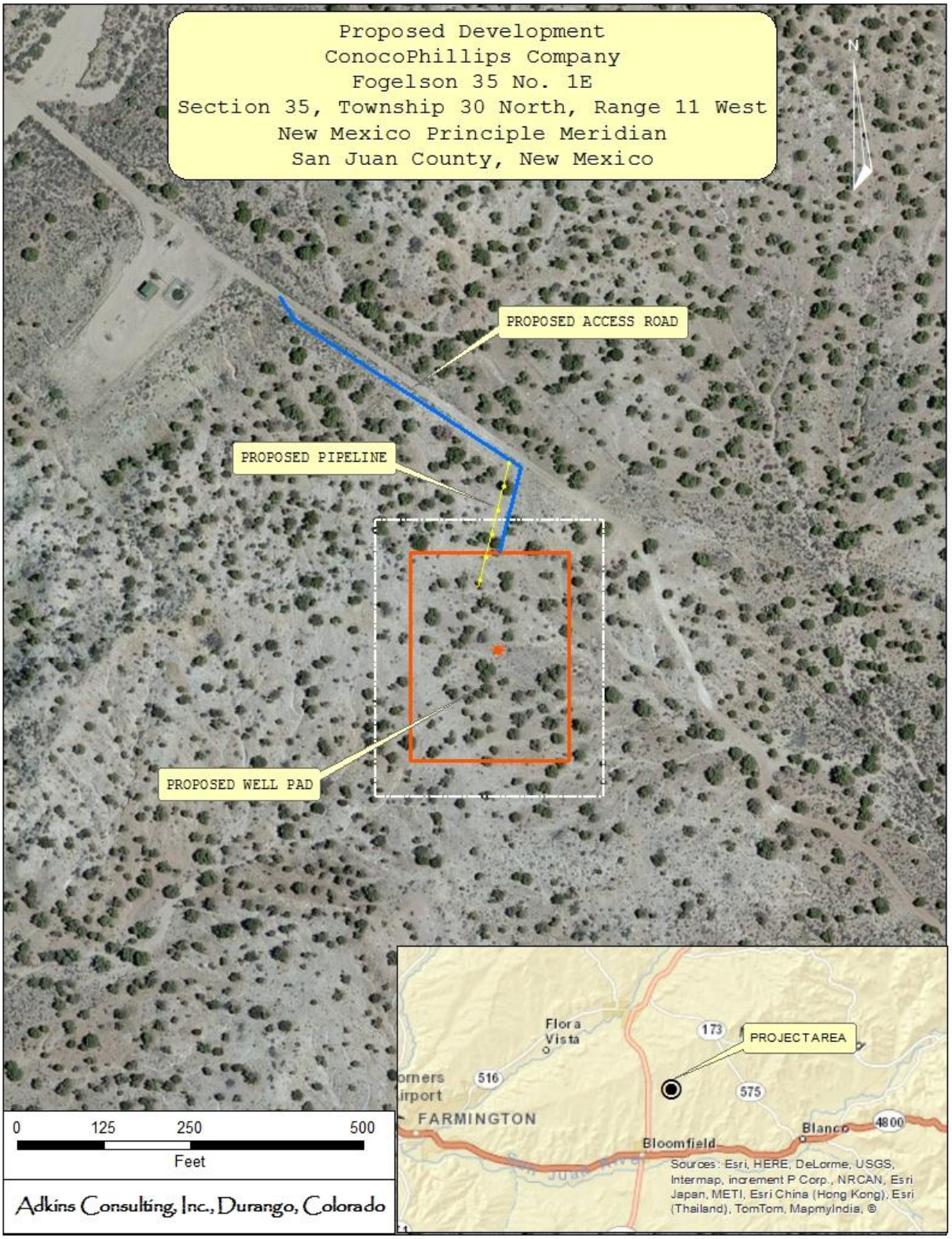
A.1. Project Area Map



A.2. Sensitive Resources Project Area Map



A.3. Proposed Development Map



APPENDIX B. BIOLOGICAL SURVEY REPORT

APPENDIX C. PLATS

APPENDIX D. SURFACE RECLAMATION PLAN