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XTO Energy, Inc.

SE Mounds No. 3

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1.0 Introduction

1.1 Background

A representative of XTO Energy, Inc. (XTO) filed an Application for a Permit to Drill (APD) with the Bureau of Land Management, Farmington Field Office (BLM/FFO) for the proposed SE Mounds No. 3 natural gas well. The proposed project is located in Sections 5 and 6, Township 29 North, Range 13 West, in San Juan County, New Mexico.

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan Final Environmental Impact Statement (PRMP/FEIS). This project EA addresses site-specific resources and/or impacts that are not specifically covered within the PRMP/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91-90, 42 U.S.C. 4321 et seq.).

1.2 Purpose and Need

The purpose for the proposal is to provide XTO with reasonable access to their mineral lease. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act to respond to the Application for Permit to Drill (APD). 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. The Mineral Leasing Act of 1920 (MLA), as amended [30 USC 181 et seq.], authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases. The existing lease is a binding legal contract that allows development of the mineral by the holder. An approved Application for Permit to Drill (APD), issued by the BLM, authorizes the applicant to construct and drill the proposed well.

1.3 Conformance with Applicable Land Use Plan and Other Environmental Assessments

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

http://www.nm.blm.gov/ffo/ffo_home.html

This EA addresses the resources and impacts on a site-specific basis as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.). The proposed project would not be in conflict with any local, county, or state plans.

1.4 Federal, State or Local Permits, Licenses or Other Consultation Requirements

1.4.1 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, formerly known as the Federal Water Pollution Control Act (33 U.S.C. 1344), in 1977. The objective of the Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States.

Under Section 402 of the Act (as amended), the U.S. Environmental Protection Agency (EPA), was directed to develop a phased approach to regulate storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing land may require permit coverage through a NPDES storm water discharge. Depending on the acreage disturbed, either a Phase I industrial activity (five or more acres disturbance) or a Phase II small construction activities (between one and five acres disturbance) permit may be required. However, gas and oil activities have been exempt from NPDES permitting regulations in New Mexico.

Section 404 of the Act 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 United States, including wetlands. It would be the proponent's responsibility to obtain all necessary permits prior to project implementation.

1.4.2 Endangered Species Act

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. Farmington Field Office staff reviewed the action alternatives and determined they would be in compliance with threatened and endangered species management guidelines outlined in the September 2002 Biological Assessment (Consultation No. 2-22-01-I-389). No further consultation with the U.S. Fish and Wildlife Service is required.

1.4.3 National Historic Preservation Act

Compliance with Section 106 responsibilities of the National Historic Preservation Act of 1966 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.

1.4.4 Air Resources

The FFO has been a participant of the Four Corners Air Quality Task Force (FCAQTF) since its inception in 2002 when it was known as the Four Corners Ozone Task Force. Because of the unanswered questions raised by these modeling efforts, the FCAQTF has continued to look at air quality issues in the Four Corners region. The FCAQTF is comprised of a broad base of representatives including federal, state, tribal, and local governments, as well as industry, interest groups, and concerned community members. The FCAQTF has several working groups, which worked on the development of a mitigation options report (completed December 2007), to serve as a resource and guide to the regulatory agencies. The responsible agencies may use the report as the basis for developing air quality management plans for the region. This may include developing new and revising existing regulations, supporting new

legislation, developing new outreach and information programs, and developing and/or expanding voluntary programs for emission reductions.

Additional air quality modeling conducted since completion of the 2003 FEIS/RMP and provisions in the ROD for the FEIS/RMP provide for applications of additional emission controls if requested by the NMAQB. Based on this modeling, the NMAQB issued an interim directive that all newly issued APDs limit compressor emissions to no more than 2 grams per horsepower hour of N_2O for engines of 300 horsepower or less. The FFO has complied with this directive through a condition of approval (COA) which has been in effect since August 1, 2005. To date, NMAQB has made no other such requests.

Currently, development on Federal minerals in New Mexico's San Juan Basin is at a lower level than forecast in the Reasonable Foreseeable Development (RFD) Scenario prepared in 2001 for the FFO EIS/RMP. The impacts forecast by the RFD are still valid. At the time the 2003 EIS/RMP was written, ozone readings did not represent a violation of the NAAQS for this pollutant. The New Mexico Environment Department Air Quality Bureau has determined that the 2007 – 2009 ozone design value for San Juan County is 0.070 ppm. The design value for the county must be greater than the revised 8-hour ozone standard of 0.075 ppm for a nonattainment designation.

The EPA's inventory data describes "Natural Gas Systems" and "Petroleum Systems" as the two major categories of total US sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO_2 and CH_4 emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other greenhouse gases). Within the larger category of "Natural Gas Systems", the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" sub-activities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of waste (via leaks, spills and unauthorized flaring and venting).

The BLM's regulatory jurisdiction over field production operations has resulted in the development of "Best Management Practices" (BMPs) designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures may include: flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; placement of compressors engines 300 horsepower or less must have NOx emissions limited to 2 grams per horsepower hour; re-vegetate disturbed areas not required for production facilities to reduce the amount of dust; and water dirt roads during periods of high use in order to reduce fugitive dust emission.

The EPA data show that improved practices and technology and changing economics have reduced emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006). One of the factors in this improvement is the adoption by industry of the BMPs proposed by the EPA's Natural Gas Energy Star program. The Farmington Field Office will work with industry and NMAQB to help facilitate the use of the relevant BMPs for operations proposed on federal mineral leases where such mitigation is consistent with agency policy.

1.4.5 Paleontological Resources

Fossils found on BLM-managed lands are considered part of our national heritage and afforded protection. The BLM manages fossil resources for their scientific, educational, and recreational values. On public lands paleontological resources are managed under authorities and policy's that govern the management and preservation of the resource. Paleontological resources are managed under numerous authorities including the BLM Field Office 2003 Resource Management Plan (2003b:4-117), Paleontological Resources Preservation Act of 2009 (Sections 6301-6312 of the Omnibus Public Lands Act of 2009, 16 USC 470aaa), Federal Land Policy and Management Act of 1976 (P.L. 94-579), National Environmental Policy Act of 1969 (P.O. 91-190), Potential Fossil Yield Classification System for Paleontological Resources on Public Lands (IM 2008-009), and the Assessment and Mitigation of

Potential Impacts to Paleontological Resources (IM 2009-011). The authorities provide for civil and criminal penalties and also require that public lands be managed to preserve and protect the quality of scientific values of paleontological resources.

The BLM's Potential Fossil Yield Classification (PFYC, BLM 2008-009) system is a predictive modeling tool that was developed to provide baseline guidance for assessing and mitigating paleontological resources. It is intended to be used at an intermediate point in analyses and should be used to assist in determining the need for further mitigation assessment or actions. It is intended to be utilized at an intermediate point in analyses, and should be used to assist in determining the need for further mitigation assessment or actions (IM 2008-011). The PFYC is based on the fact that occurrences of paleontological resources are often closely tied to the geologic units that contain them. This classification does not reflect rare or isolated occurrences of significant fossils or individual localities, only the relative occurrence on a formation- or member-wide basis. Although, it is recognized that local differences have to be taken into account. Using the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts.

The BLM FFO recognized eight Paleontological Special Designated Areas (SDA) in the current Resource Management Plan (more than 135,000 acres) in order to preserve important paleontological resources for scientific study, protection, and other public benefits (BLM 2003b:4-117). The BLM has determined that these areas require special management attention in order to protect, and prevent irreparable damage to important paleontological resources.

All BLM/FFO paleontological resource stipulations will be followed as indicated in the COAs, attached to the APD. These stipulations may include, but are not limited to altering the location or scope of the project or permanent fencing or other physical, temporary barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and fossil recovery. If the assessment of proposed action indicates a reasonable expectation of adverse impacts to significant paleontological resources, a field survey will be necessary to properly document and recover any fossil material and associated data. Upon review, a determination for final project clearance and stipulations shall be issued by the BLM/FFO.

The need for additional mitigation to protect paleontological resources will be determined on a case-by-case basis. The Paleontology Resource Staff, in collaboration with the Authorized Officer, will analyze the Survey Report for survey findings and determine any mitigation recommendations. If no further mitigation is needed, the Authorized Officer should promptly notify the project proponent that there will be no additional paleontological surveys or mitigation required, and the project may proceed, pending any other approvals.

If previously undocumented paleontological sites are encountered during construction, the project proponent will immediately stop all construction activities in the immediate vicinity of the discovery. The proponent with then immediately notify the paleontological monitor (if required), or the BLM/FFO paleontology resource staff. It is necessary to protect fossil material and their geological context upon discovered during construction. The BLM would then evaluate the site. Should the discovery be evaluated as significant, it will be protected in place until mitigation measures can be developed and implemented according to guidelines set by the BLM. Mitigation measures such as data and fossil recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

1.4.6 Wastes, Hazardous or Solid

The Resource Conservation and Recovery Act (RCRA), passed in 1976, establishes a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. The U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any "discarded materials" subject to a number of exclusions. A "hazardous waste" is a solid waste that is (1) is listed by the EPA as

a hazardous waste, (2) exhibits any of the characteristics of hazardous wastes (ignitability, corrosivity, reactivity, or toxicity) or (3) is a mixture of solid and hazardous waste.

A 1980 amendment to RCRA conditionally exempted from regulation as hazardous wastes, “drilling fluids, production waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas.” On July 6, 1988, EPA determined that oil and gas exploration, development, and production (ED&P) wastes would not be regulated as hazardous wastes under RCRA. A simple rule of thumb was developed for determining if an ED&P waste is likely to be considered exempt or non-exempt from RCRA regulations: If (1) the waste came from down-hole, or (2) the waste was generated by contact with the oil and gas production stream during removal of produced water or other contaminants, the waste is most likely to be considered exempt by EPA.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), passed in 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Despite many oil and gas constituent wastes being exempt from hazardous waste regulations, certain RCRA exempt contaminants could be subject to regulations as hazardous substances under CERCLA. The New Mexico the Oil Conservation Division (OCD) administers hazardous waste regulations for oil and gas activities in New Mexico.

Typical wastes associated with the proposed action would include trash, sewage, produced water, and produced hydrocarbons. During drilling and completion, a trash receptacle and a chemically treated portable toilet would be on location for trash and sewer disposal. All produced hydrocarbons would be put in tanks on location during completion work. Produced water would be put in onsite tanks or within lined reserve pits during completion work. All wastes would be disposed of in a proper manner as required by federal and state law, and as described in the COAs. No hazardous or solid waste materials are present within the project area. The notification of releases such as natural gas, natural gas liquids, and petroleum, outside a facility site is required under CERCLA and under BLM NTL-3A.

1.4.7 Public Health and Safety

All worker safety is governed by Occupational Safety and Health Administration (OSHA) safety laws and regulations. Worker safety incidents must also be reported to the BLM under the procedures of Notice to Lessee (NTL)-3A. Pipeline safety regulations are administered by OSHA as well as Department of Transportation (DOT) regulations. Pipeline safety regulations (49 CFR Parts 190 and 192) govern design, construction and operation of gas transmission lines. Any incidents involving DOT-regulated pipelines must be reported under these regulations (District 2003a).

Most substances and wastes generated at oil and gas facilities are exempt from regulation under the Resource Conservation and Recovery Act (1976). The Environmental Protection Agency (EPA) and DOT regulate materials associated with well construction and production activities that are classified as hazardous. When significant amounts of chemicals are stored on-site, governmental agencies will be notified as required under the Emergency Planning and Community Right to Know Act (1986). The notification of releases such as natural gas, natural gas liquids, and petroleum, outside a facility site is required under the Comprehensive Environmental Response Compensation and Liability Act, 1980 (CERCLA) and under BLM NTL-3A. A well location must have an informational sign, as directed under 43 CFR 3160.

Additional hazards to the general public in the project area include safety hazards associated with increased traffic during construction, drilling, and reclamation activities. General hazards around producing oil and gas fields such as accidental pipeline failure and moving equipment like pump jacks are potential/present in the project area. Hydrogen sulfide gas is not known to be or expected to be a problem within the project area.

1.5 Scoping, Public Involvement, and Issues

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). No public comments were received for this proposed action.

The project was circulated among FFO resource specialists. Internal scoping through a BLM (Interdisciplinary Team) IDT generated resource issues pertinent to the proposed project.

Potential issues include:

- What would be the effect of the alternatives on air resources/air quality?
- What would be the effect of the alternatives on archaeological/cultural resources?
- How would the alternatives affect soils?
- What would be the effect of the alternatives on the water resources within the analysis area?
- How would the alternatives affect the natural vegetation/plant communities in the analysis area?
- What would be the effect of the alternatives on threatened and endangered species?
- What would be the effect of the alternatives on migratory bird habitat?
- What would be the effect of the alternatives on FFO-designated SMS flora and fauna?

Additionally, the Operator is required to:
· Comply with all applicable Federal, State and Local laws and regulations.
· Obtain the necessary permits for the drilling, completion, and production of this well, including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.
· Certify that a Surface Use Agreement has been reached with private landowners where applicable.

2.0 Alternatives Including the Proposed Action

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.2 Alternative B – Proposed Action

XTO proposes to construct a well pad in order to directionally drill and develop federal minerals administered by the BLM/FFO. The proposed project area can be accessed by traveling west on U.S. Highway 64 from Farmington, New Mexico, then north on New Mexico Route 170 (La Plata Highway) to Piñon Hills Boulevard. The proposed project is located just south of the City of Farmington's sports complex in Section 6 of Township 29 North, Range 13 West, in San Juan County on BLM-managed and private surface. New surface disturbance for the proposed project would be approximately 4.7 acres.

To gain access to the proposed well location, XTO has proposed to construct a 349-foot road. The new road would have an average clearing width of 30 feet and would be constructed to BLM Gold Book standards. New surface disturbance as a result of access road construction would be approximately 0.24 acres on BLM-managed surface.

The proposed well pad would be 200 feet by 240 feet with an additional 50-foot construction buffer zone on three sides. There would be no construction zone on the east side of the location due to the presence of archaeological resources. The well pad would require between 0.7 and 2.6 feet of fill on the west side of the location, 1 foot of cut at laydown on the north side of the location, and 6.1 feet of cut at the northeast corner of the location (corner two). The construction buffer zone may be used to stockpile topsoil or vegetative material that would be utilized later during reclamation. Production pits, if used, would be lined and meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17. Cut and fill slopes would be returned to the original contour upon reclamation. New surface disturbance as a result of well pad construction would be approximately 1.95 acres on BLM-managed surface.

Following the final layout and construction of the well location, drainages and diversions would be established to drain potential surface water run-off around and away from the pad. A silt trap would be placed within the temporary construction zone in the southwest corner of the well pad area off of corner five. During interim reclamation, the placement of additional silt traps, diversion ditches, culverts, and other necessary hydrological BMP's would eliminate excessive erosion of exposed surfaces.

Once the proposed well is completed and is determined to be viable, an associated 2,730-foot well-tie pipeline would be constructed within 40-foot Right-of-Way (ROW) to transport produced natural gas to the Blanco/Fruitland Line No. 3200. The proposed well-tie pipeline would be constructed on both BLM-managed and private surface. The proposed well-tie pipeline ROW would consist of approximately 1.6 acres on private surface and 0.91 acres on BLM-managed surface.

Construction of the well-tie pipeline would consist of digging a trench with excavation equipment such as a wheel-ditcher or backhoe, laying pipe, and back filling the trench. The pipeline would be buried at least five feet deep. A 4.5-inch carbon steel pipeline manufactured to American Petroleum Institute 5L specifications would be used. The wall thickness of the pipe would be 0.156 inches. The pipe wall strength would be 42,000 pounds per square inch (PSI).

Production equipment used during the life of the well may include a 3-phase separator - dehydrator, a meter run, and 400-barrel (bbl) tanks and/or smaller fiberglass or galvanized tanks for water disposal. It is also likely that a compressor would be placed on the location during the life of the well. The use of

compressors provides an increase in the economic life of the well increases the ultimate recovery of gas from low-pressure reservoirs and prevents waste of the gas resource.

Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of the well site pad, pipeline tie, facility placement, or any other surface disturbing activity associated with this project. Bureau-wide standard BMP's are found in the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition-Revised 2007 (The Gold Book). Farmington Field Office BMP's are integrated into the general and site-specific stipulations.

For a detailed description of design features and construction practices associated with the proposed action, refer to the APD (attached as Appendix 7.1). Also see the subject APD for additional maps showing the proposed well location and associated facilities described above. Implementation of committed mitigation measures contained in the Conditions of Approval (COAs) are also listed in Appendix 7.1 and incorporated and analyzed in this alternative.

Table 2.2 – Proposed Action Information

Property Name	Well Number	Township	Range	Section	Surface Location	Bottom Hole Location	Lease Number
SE Mounds	3	29N	13W	6	170' FSL 610' FEL	700' FSL 700' FEL	NM SF-078977 (02/01/1948)

County: San Juan, New Mexico

Applicant: XTO Energy, Inc.

Surface Management/Ownership: Bureau of Land Management & private (fee)

Administrative Agency: Bureau of Land Management, Farmington (NM) Field Office

Prior to the development of this document, onsite inspections of the proposed project area were conducted by representatives of the BLM, XTO, City of Farmington, Adkins Consulting, Daggett Enterprises, and DCA archaeological consultants. Design features that were agreed upon during onsite inspections and surveys include the following:

- If used, pits would meet State of New Mexico, Oil Conservation Division (NMOCD) pit guidelines and requirements, NMAC 19.15.17.
- Construction design features and BMP's are intended to minimize effects on migratory birds. These measures include netting of any permanently open pits and vent caps on all open pipes to prevent bird entry and nesting. All construction activities would be confined to permitted areas only. Rapid and permanent vegetation and cover reestablishment would minimize impacts to migratory birds. All hazards associated with construction and operation of the proposed action would be fenced or contained in storage tanks. If any earth disturbing activities are scheduled to take place within the typical migratory bird breeding season of May 15 to July 31, an approved nest survey must be conducted if surface disturbance exceeds 4.0 acres. Project activities would not be authorized without approval from the FFO/BLM.
- Noise stipulations would be employed to protect potential Southwestern willow flycatcher and Yellow-billed cuckoo breeding habitat within the La Plata River Tract ACEC adjacent to the project area. Continual noise would not exceed 48.6 dBh (A) at the habitat boundary (noise receptor) from 1 May to 30 August. Stricter noise standards may apply. In addition, the proponent

would utilize standard BMP's such as berms, silt traps, diversions, and ditches, to prevent any sediment or excavated material from leaving the construction site. This would protect the ACEC adjacent to the project area.

- All disturbed areas not needed for production would be seeded with an FFO-specified seed mixture. The dominant vegetation community within the analysis area is greasewood.
- Above ground structures would be painted to blend with the natural color of the landscape. Paint color would be Juniper Green. Above ground tanks would be low profile.
- All FFO cultural resources stipulations will be followed as indicated in the Cultural Resource Records of Review, attached to the R-O-W/APD. These stipulations may include, but are not limited to temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and employee education. All employees, contractors, and sub-contractors of the project will be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment, and 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 the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm). In the event of a discovery during construction, the project proponent will 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., National Register, NAGPRA, ARPA), it will be protected in place until mitigating measures can be developed and implemented according to guidelines set by the BLM.
- Water acquired to construct, produce and maintain actions authorized by a permit to drill must be acquired from permitted water sources, or water authorized for use by the New Mexico Oil Conservation Division (OCD). Upon request, the Authorized Officer (AO) shall be provided with documentation of water sources.
- The proposed project is not located within an FFO-managed livestock grazing allotment. No impacts to this resource are anticipated as a result of the proposed action.
- 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). Construction design practices could include culverts, diversion ditches, berms, and other such soil erosion control structures (see attached COAs). Additional hydrological BMP's would be installed where needed to maintain drainages along access roads and within the action area (see attached COA's). Excavated materials from the cuts on the proposed well location would be used on the fill portions. Reclaimed slopes would be re-contoured to pre-construction topographical contours.
- The access road will be built up 18-24 inches.
- The operator proposes to set surface casing to a depth of 250 feet, or as specified by the BLM, to protect any shallow aquifers or ground water resources. An operation plan with the proposed casing program to protect these resources would be submitted with the APDs.
- Re-vegetation will reduce or minimize impacts created by water and/or wind erosion. Approximately half of the well location and the entire well-tie pipeline disturbances would be reclaimed, totaling approximately 4 acres. The remaining surface disturbance would remain disturbed for the life of the well for production equipment and vehicle travel surfaces. Following final down-hole plugging and abandonment of the well, the entire well pad and access road would be reclaimed.
- Proper permits for a gas well and other development must be obtained in accordance with the City of Farmington's requirements.
- Due to the project's proximity to the City of Farmington's sports complex and residential and industrial areas, no daylight drilling operations will be permitted. Additionally, no construction or drilling operations will be permitted during events at the sports complex.
- Additional special management constraints and mitigations may be applied during the life of the project, to protect the riparian area.

2.3 Alternatives Considered But Not Analyzed

An alternative to the proposed action was considered to place the well head at 495 feet from the south line (FSL) and 555 feet from the east line (FEL) of Section 6. This alternative well pad location would be on both BLM-managed and private surface. Additionally, this alternative action would shorten the proposed access road by approximately 300 feet and the well-tie pipeline by approximately 339 feet, decreasing potential new surface disturbance by approximately 0.52 acres. This alternative was eliminated from further analysis as the City of Farmington has proposed future development in the alternative action area. The proposed location was selected for the best drainage of subsurface resources while protecting surface resources to the maximum extent possible and accommodating future Farmington development plans in the project area.

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major resources or issues. Certain critical environmental components require analysis under BLM policy. These items are included above in Section 1.5.

3.1 Air Resources

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

Much of the information referenced in this section is incorporated from the Air Resources Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Quality Technical Report; USDI/BLM 2011b). 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 (PM10 & PM2.5), 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.

3.1.1 Air Quality

Criteria Air Pollutants

The Air Quality 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 (USDI/BLM 2011*b*). The EPA Green Book web page reports that all counties in the analysis area, San Juan, McKinley, Rio Arriba, and Sandoval Counties in New Mexico and La Plata County, Colorado, are in attainment of all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The area also does not violate any New Mexico Ambient Air Quality Standards (NMAAQS). The current criteria pollutant "design concentrations" in the analysis area are described below. Design Concentrations are the concentrations

of air pollution at a specific monitoring site that can be compared to the NAAQS. Table 1 shows monitored design values for ozone in recent years for each of the three San Juan County ozone monitoring stations.

Table 1. Reported Ozone Values for San Juan County Ozone Monitoring Stations

State Air Monitoring Station	8-hour Ozone Design Value (ppm[1])			NAAQS[2]
	2007-2009	2008-2010	2009-2011	2008
Substation	0.067	0.063	0.063	0.075
Bloomfield	0.061	0.060	0.061	0.075
Navajo Lake	0.069	0.066	0.068	0.075

Source: NMED 2012

[1] parts per million

[2] NAAQS – National Ambient Air Quality Standards

Table 2 summarizes monitored design values for other criteria pollutants in San Juan County.

Table 2. Criteria Pollutant Design Value Concentrations monitored in San Juan County (EPA, 2012)

Pollutant	Design Value	Averaging Time	NAAQS	NMAAQS
NO_2	13 ppb	Annual	53 ppb	50 ppb
NO_2	39 ppb	1-hour	100 ppb[1]	0.10 ppm (24-hour)
PM_{10}	Data incomplete	24-hour	150 µg/m[3,3]	150 µg/m[3,4]
$PM_{2.5}$	4.5µg/m[3]	Annual	12 µg/m[3,5]	60 µg/m[3,4]
$PM_{2.5}$	14µg/m[3]	24-hour	35 µg/m[3,1]	
SO_2	0.001ppm	Annual	None	0.02 ppm
SO_2	20ppb	1-hour	75 ppb[6]	None
SO_2	0.008 ppm	24-hour	None	0.10ppm

[1]98th percentile, averaged over 3 years

[2]Not to be exceeded more than once per year

[3]Not to be exceeded more than once per year on average over 3 years

[4]The NMAAQS is a standard for total suspended particulate matter

[5]Annual mean, averaged over 3 years

[6]99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

In 2005, the EPA estimated that there was less than 0.01 ton per square mile of lead emitted in the analysis area, which is less than 2 tons total (USDI/BLM 2011*b*). There is no monitoring conducted for lead and CO in northwestern New Mexico; however, concentrations of these pollutants are expected to be low in rural areas and are therefore not monitored.

Hazardous Air Pollutants

The Air Quality 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 (USDI/BLM 2011*b*). EPA has identified 187 toxic air pollutants as HAPs. In March 2011, the EPA published the fourth in a series of National Scale Air Toxics Assessments (NATA) that quantifies HAP emissions for 2005 by U.S. counties. The purpose of the NATA is to identify areas where HAP emissions result in high health risk. Computer models are used to develop estimates of risk of cancer or other health impacts. NATA presents risk hazard indexes for cancer, neurological, and respiratory problems for each county and census tract. Because techniques have changed over the years, each NATA is not comparable to those previously issued. EPA also cautions that because data availability varies from state to state, the results are not necessarily comparable from one geographic area to another. The 2005 NATA analysis estimated tract level total cancer risk for the analysis area as 25 to 50 per one million, and the estimated tract level total respiratory hazard index was zero to 1. The EPA estimates the average national cancer risk for 2005 was 50 per one million, meaning 1 person out of every 20,000 had an increased likelihood of contracting cancer from breathing air toxics from outdoor sources if exposed to 2005 emission levels over their lifetime. A respiratory hazard index below 1 indicates that exposures in the area do not exceed reference levels that would have adverse effects for human health.

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 3 shows climate normals for the 30-year period from 1981 to 2010 for the Farmington, New Mexico, area.

Table 3. 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: USDI/BLM 2011*b*; data collected at New Mexico State Agricultural Science Center - Farmington (1) degrees Fahrenheit				

Chapter 3Impacts from the Proposed Action

Methodology and assumptions for calculating air pollutant and greenhouse gas emissions are described in the Air Resources Technical Report (USDI/BLM 2011*b*). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one horizontal oil well. The calculators give an approximation of criteria pollutant, HAP, and greenhouse gas (GHG) emissions to be compared to regional and national emissions levels (USDI/BLM 2011*b*). Also incorporated into this document are the sections describing the assumptions used in developing the inputs for the calculator (USDI/BLM 2011*b).*

3.2 Areas of Critical Environmental Concern (ACECs)

Areas of Critical Environmental Concern (ACEC) were designated in the FFO/BLM 2003 RMP, under authority of the Federal Land Policy and Management Act of 1976 (FLPMA) allowing for multiple use of lands administered by the BLM. The ACEC designation pertains to "...areas within public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historical, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." (FLPMA 1976 Sec. 103, 43 U.S.C. 1702 et seq.).

The proposed action is located within the La Plata River Tract #9 ACEC. This ACEC is approximately 67 acres in size and has been designated to protect riparian habitat and potential threatened and endangered species habitat. Riparian habitat management by federal agencies across the west has become a priority for federal land management agencies because of the rarity and importance of this habitat for wildlife and recreation. Some riparian areas managed by the FFO support potential habitat for species that are federally listed as endangered, threatened, or are proposed for listing. BLM policy mandates that lands supporting habitat for endangered species should be retained in federal ownership and sensitive species should be managed so they will not need to be listed under the Endangered Species Act in the future.

3.3 Cultural Resources

The proposed action is located within the archaeologically rich San Juan Basin of northwestern New Mexico. In general, the prehistory 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 description of these various periods and select phases within each period is provided in the Bureau of Land Management Farmington Field Office Final Environmental Impact Statement (2003) and will not be reiterated here. Additional information is also included in an associated documented, Cultural Resources Technical Report (CRTR; SAIC 2002). Traditional cultural properties (Parker and King 1998) are a separate class of cultural resources which may occur in the EA analysis area, and are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites, and may or may not coincide with archaeological sites and artifact loci.

The entire area of potential affect for the proposed project was surveyed by the San Juan County Museum Association's Division of Conservation Archaeology (DCA) at a BLM Class III level (100%) and inventory reports were 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). For the Proposed Action, identification of traditional cultural properties were limited to reviewing existing published and unpublished literature (e.g. Van Valkenburgh 1941, 1974; Brugge 1993; Kelly et al 2006), and the site-specific cultural resources survey report conducted for the Proposed Action. In addition, the BLM's cultural resources program was contacted for information regarding the presence of TCPs identified through ongoing BLM tribal consultation efforts.

Two previously recorded archaeological sites (LA 120665, 120666) and two isolated occurrences were documented within the survey area (DCA report 10-DCA-022; BLM report2011(I)050F). The research potential of the isolates has been exhausted through recordation and they have been recommended not eligible for inclusion on the National Register of Historic Places (NRHP). The two sites have been recommended NRHP eligible, and measures to protect these sites have been recommended. No traditional cultural properties were identified in the area of potential effect.

3.4 Soils

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 ancient 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, soils in the analysis area are comprised of the Haplargids-Blackston-Torriorthents complex and Fruitland sandy loam.

The Haplargids-Blackston-Torriorthents complex is composed of approximately 45 percent Haplargids and similar soils, 30 percent Blackston and similar soils, and 20 percent Torriorthents and similar soils. This soil complex occurs on sideslopes of escarpments and hills, is well to excessively well drained, with moderately slow to moderately rapid permeability. Typically, the surface layer is a mix of dark brown cobbly sandy loam, yellowish brown gravelly loam, and light brownish gray cobbly loam, between 2 to 7 inches thick. The Blackston series consists of very deep, well drained soils that formed in alluvium and slope alluvium that may be underlain by residuum derived from mixed sources. Blackston soils are on edges of old high terraces, on fan remnants and on structural benches.

The Fruitland series consists of very deep, well drained and somewhat excessively drained soils that formed in eolian material and moderately coarse textured alluvium and stream alluvium derived from

sandstone and shale. Fruitland soils are on stream terraces on valley floors, alluvial fans on valley sides, and summits of mesas, and have slopes of 0 to 30 percent.

The different characteristics of these soil types are listed in the table below.

Table 3.4.1

Characteristic	Haplargids	Blackston	Torriorthents	Fruitland
Surface Layer	Cobbly sandy loam	Very pale brown very gravelly sandy clay loam	Cobbly loam	Brown sandy loam
Slope	8-50%	0-40%	8-50%	0-30%
Depth	More than 80”	More than 80”	10-20”	More than 80”
Surface Runoff	-	Negligible to high	-	Very low to medium
Typical Use	-	Native pastureland	-	Irrigated cropland and livestock grazing
Moisture Regime	-	Typic aridic	-	Typic aridic
Drainage Class	Well drained	Well drained	Well drained	Well drained
Available Water Cap.	Moderate	Low	Very low	Moderate
Permeability	-	Moderate	-	Moderate
Parent Material	Mixed alluvium	Mixed alluvium	Mixed alluvium	Fan alluvium derived from sandstone and shale

3.5 Water Resources

The San Juan Basin consists of broad mesas interspersed with many deep canyons with steep canyon walls, dry washes, entrenched narrow valleys, and alluvial fans and floodplains. The planning area is divided into watersheds based on the Hydrologic Units (4th level) delineated by the USGS. Principally, the administrative area under the jurisdiction of the Farmington Field Office consists of five of these 4th level hydrologic watershed units. These watershed units are: (1) Middle San Juan, (2) Animas, (3) Upper San Juan, (4) Blanco Canyon, and (5) Chaco. The proposed action is located within the Middle San Juan watershed.

There are no perennial surface water resources within the analysis area. The La Plata River, considered to be intermittent and flowing for two to three growing seasons annually, is located adjacent to the project area to the west. The project area is situated on an abandoned alluvial bench approximately 50 feet above the river bottom. No ground water resources are anticipated to be affected by the proposed development.

Under Section 404 of the Clean Water Act, 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. Determining jurisdiction and/or significant nexus can be a time consuming process, therefore the BLM/FFO assumes the USACE has jurisdiction over any U.S. Geological Survey (USGS) watercourse (i.e., “blue line” on USGS 1:24,000 topographic maps). The proposed action would

not impact a “blue line” watercourse as documented on the USGS Farmington South and Farmington North, NM 7.5-minute series topographic maps.

3.6 Vegetation

The analysis area contains a sparse Great Basin Desert scrub vegetation component. Dominant vegetation consists of rabbitbrush (*Chrysothamnus nauseosus*), Russian thistle (*Salsola australis*), greasewood (*Sarcobatus vermiculatus*), blue grama (*Bouteloua gracilis*), broom snakeweed (*Gutierrezia sarothrae*), and Indian ricegrass (*Achnatherum hymenoides*). Ground cover was estimated to be approximately 25 percent. No trees were documented within the analysis area. No invasive, non-native plants listed by the BLM/FFO were documented in the analysis area.

3.7 Threatened and Endangered Species

Under Section 7 of the Endangered Species Act of 1973 (as amended), the BLM is required to consult with the U.S. Fish and Wildlife Service on any proposed action which may affect federally listed threatened or endangered species or species proposed for listing. The proposed action has potential to affect Southwestern willow flycatcher and/or Yellow-billed cuckoo breeding habitat in riparian area adjacent to project site. FFO reviewed and determined that the proposed action alternatives are in compliance with listed species management guidelines outlined in the September 2002 Biological Assessment (Cons. #2-22-01-I-389). No further consultation with the Service is required.

Table 3.7: Federally Listed Species with Potential to Occur in San Juan County, New Mexico

Species	Status	Occurrence Within Region	Habitat	Potential to Occur within Project Area
PLANTS				
Mancos milk-vetch (*Astragalus humillimus*)	Endangered	Known from 20-square mile area in San Juan County.[2]	Occurs on Point Lookout and Cliff House sandstones, and tan Cretaceous sandstones of the Mesa Verde series.[2]	WOULD NOT OCCUR: Analysis area not located within the Mesa Verde series or within known population.
Zuni fleabane (*Erigeron rhizomatus*)	Threatened	McKinley and San Juan counties.[4]	Nearly barren detrital clay hillsides with soils derived from shales of the Chinle or Baca formations (often seleniferous); most often on north or east-facing slopes in open piñon-juniper woodlands at 7300-8000 ft.[4]	UNLIKELY: Marginal habitat within analysis area; below typical elevation range.
Knowlton cactus (*Pediocactus knowltonii*)	Endangered	One viable population along Los Piños River in San Juan County.[2]	Occurs on tertiary alluvial deposits that have formed gravelly, dark, sandy loams on slopes or hills. It is found under the shade of trees and shrubs and in open areas in dry piñon-juniper woodlands at 1800-2000 m elevation.[2]	WOULD NOT OCCUR: Analysis area not within known population along the Los Piños River.
Mesa Verde cactus (*Sclerocactus mesae-verdae*)	Threatened	Known from Hogback ACEC area and Navajo Nation in San Juan County.[2]	Dry low exposed hills and mesas in full sun of Mancos or Fruitland clays in the desert at about 1200-2000 m elevation.[2]	UNLIKELY: Analysis area ~12 mi. east of FFO-designated habitat in Hogback ACEC.
FISH				

Table 3.7: Federally Listed Species with Potential to Occur in San Juan County, New Mexico

Species	Status	Occurrence Within Region	Habitat	Potential to Occur within Project Area
Colorado pikeminnow (*Ptychocheilus lucius)*	Endangered with Designated Critical Habitat	Known to occur in San Juan River.[8]	Warm-water rivers and tributaries of the Colorado River basin.[8]	WOULD NOT OCCUR: No perennial surface waters within or in vicinity of analysis area.
Roundtail chub (*Gila robusta*)	Candidate	Known from San Juan and Rio Arriba counties.[2]	Rocky runs, rapids, and pools of creeks and small to large rivers; also large reservoirs in the upper Colorado River system.[2]	WOULD NOT OCCUR: No perennial surface waters within or in vicinity of analysis area.
Razorback sucker (*Xyrauchen texanus*)	Endangered with Designated Critical Habitat	Known to occur in San Juan River.[2]	Slow areas, backwaters, and eddies of medium to large rivers and their impoundments. Often associated with sand, mud, and rock substrate in areas with sparse aquatic vegetation, where temperatures are moderate to warm.[2]	WOULD NOT OCCUR: No perennial surface waters within or in vicinity of analysis area.

BIRDS				
Yellow-billed cuckoo (*Coccyzus americanus*)	Candidate	Possible rare summer/breeding occurrences.[3]	In the southwestern U.S., associated with riparian woodlands dominated by cottonwood or willow trees. In New Mexico, native or exotic species may be used.[3]	UNLIKELY: Riparian habitat adjacent to analysis area, however no large cottonwood galleries present.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered with Proposed Critical Habitat	Summer/breeding range.[3]	Breeds in dense riparian habitat.[3]	UNLIKELY: Riparian habitat adjacent to analysis area, however no dense willow/salt-cedar areas present; analysis area not within or in vicinity to designated critical habitat.
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened with Designated Critical Habitat	Year-round range.[2]	Mixed conifer forests. Typically where unlogged, uneven-aged, closed-canopy forests occur in steep canyons.[2]	WOULD NOT OCCUR: No mixed conifer forests present within analysis area; analysis area not within or in vicinity to designated critical habitat.
MAMMALS				
Black-footed ferret (*Mustela nigripes*)	Endangered	Likely extirpated from FFO management area. No known recent occurrences.[2]	Open habitat, including grasslands, steppe, and shrub steppe. Closely associated with prairie dog colonies. At least 40 hectares of prairie dog colony required to support one ferret.[2]	WOULD NOT OCCUR: No prairie dog colonies present within PPA.

Sources: [1] BLM No Date (b), [2] NatureServe 2010, [3] NMPIF 2007, [4] NMRPTC 2011, [5] Sibley 2000, [6] Valles Caldera National Preserve No Date, [7] Wheeler 2003, [8] USFWS Southwest Region Ecological Services, [9] BOR Navajo Reservoir Operations Biological Assessment 2003.

Riparian habitat is present adjacent to the analysis area to potentially support Southwestern willow flycatcher (*Empidonax traillii extimus*) and/or Yellow-billed cuckoo (*Coccyzus americanus*) breeding habitat. Both species are migratory and are most sensitive to increased noise and activity during their breeding season. No year round prairie-dog colonies occur within the analysis area to support black-footed ferret (*Mustela nigripes*). No perennial water resources are present within the analysis area to support Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), or roundtail chub (*Gila robusta*). The analysis area is located approximately 1 mile north of the La Plata River – San Juan River confluence. Designated critical habitat for the Colorado pikeminnow and razorback sucker is located within the San Juan River at the confluence. The analysis area is not located within designated critical habitat for the Mexican spotted owl (*Strix occidentalis lucida*).

3.8 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 701-715s, as amended), established protections for migratory birds and their parts (i.e. eggs, nests, and feathers) from taking, hunting, capture, transport, sale, or purchase. The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful.

Executive Order 13186 (EO) was signed on January 10, 2001 directing executive departments and agencies of the federal government to take certain actions to further implement the Migratory Bird Treaty

Act. Section 3 of the EO directed each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird populations. Section 3 (c) of the EO states that the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included them in each agency's formal planning process (such as revision of agency land management plans) including public participation and NEPA analysis, as appropriate.

A National MOU to promote the conservation of migratory bird populations between BLM and the Service was not completed during the development of the revised RMP. Consultation on the Biological Assessment (BA) with the Service for the RMP was completed on October 2, 2002, the Environmental Impact Statement (EIS) was completed in March 2003, and the Record of Decision (ROD) for the RMP was signed in September of 2003. There are no management constrains or mitigation measures pertaining to the Migratory Bird Treaty Act listed within the RMP, BA, EIS, or ROD. There are no applicable mitigation measures pertaining to the MBTA to attach to proposed actions.

A National MOU between BLM and the Service was signed on April 4, 2010. Section XI (I) of the MOU states that the BLM may not be able to implement all elements of this MOU upon signature of the MOU. Incorporation of all elements of the MOU into land use planning will be facilitated by land use plan maintenance, amendment, or revision. In February 2010, the BLM/FFO developed a Migratory Bird Policy (BLM/FFO Instruction Memorandum No. NM-F00-2010-001) in anticipation of the National MOU. This management policy establishes a consistent approach for addressing migratory bird populations and their habitat when making project level implementation decisions.

Information from the New Mexico Avian Conservation Partners website (http://nmpartnersinflight.org), the New Mexico Partners In Flight highest priority list of species of concern by vegetation type, and the 2002 Birds of Conservation Concern Report for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR) No. 16, have been used to develop a list of migratory bird species with potential to occur in the analysis area in the following table.

Table 3.8 Migratory bird Species of Concern with potential to occur in the analysis area.

Common Name (Scientific name)	Habitat Associations	Presence*
Sage sparrow (*Amphispiza belli*)	Sagebrush-grassland habitat.	S
Black-throated sparrow (*Amphispiza bilineata*)	Xeric habitats dominated by open shrubs with areas of bare ground.	S
Western scrub-jay (*Aphelocoma californica*)	Interior *woodhouseii* race shy, inhabits lower mountain woodland; all subspecies hold individual territories.	NS
Ferruginous hawk (*Buteo regalis*)	Inhabits dry, open country. Often hovers when foraging or soars in a dihedral. Perches in trees, on poles, on the ground.	S
Swainson's hawk (*Buteo swainsoni*)	Soars over open plains and prairie with uptilted wings in teetering, vulture-like flight. Gregarious, usually migrates in large flocks.	NS
Scaled quail (*Callipepla squamata*)	Barren mesas and plateaus, semidesert scrublands, and grasslands with mixed scrub.	NS
Piñon jay	Generally seen in large flocks, often numbering in	NS

(*Gymnorhinus cyanocephalus*)	hundreds; nests in loose colonies. Common in piñon-juniper woodlands of interior mountains and high plateaus; also yellow pine (ponderosa) woodlands.	
Loggerhead shrike (*Lanius ludovicianus*)	Relatively xeric habitats dominated by shrubs and grasses; occurs in many lowland habitats statewide.	S
Sage thrasher (*Oreoscoptes montanus*)	Summer residents in northwest NM, extending east to Taos and south to Mount Taylor and, locally, to the northern Plains of San Agustin. In winter, this species is present in desert scrub habitats in southern NM as well as piñon-juniper north to the Manzano mountains.	NS
Green-tailed towhee (*Pipilo chlorurus*)	Prefer high diversity of shrub species - sagebrush, greasewood or piñon-juniper. Breeds in Great Basin shrub in the northwest quadrant of the state.	NS
Vesper sparrow (*Pooecetes gramineus*)	Uncommon to fairly common in dry grasslands, farmlands, forest clearings, and sagebrush scrub.	NS
Mountain bluebird (*Sialia currucoides*)	Inhabits open rangelands, meadows, generally above 5,000 ft; in winter primarily found in open lowlands, desert. Nests in tree cavities and buildings.	NS
Western bluebird (*Sialia mexicana*)	Nests in holes in trees, posts: common in woodlands, farmlands, orchards; in desert areas during winter, fond in mesquite-mistletoe groves.	NS
Black-chinned sparrow (*Spizella atrogularis*)	Regularly occurs in appropriate habitat across the central and southern parts of NM, west of the plains. Breeding records extend north to Taos County, San Miguel County, and probably San Juan County. The species is uncommon at best in winter in southwest New Mexico	NS
Crissal thrasher (*Toxostoma crissale*)	Very secretive, hiding in underbrush. Found mainly in dense mesquite and willows along streams and washes; sometimes on lower mountain slopes.	NS
Cassin's kingbird (*Tyrannus vociferans*)	Breeds nearly statewide at elevations ranging from 1300 - 2400 m. It is most often found on plains with scattered trees, mountain foothills, riparian areas, and oases, but is rare on most of the southeastern plains	NS
Virginia's warbler (*Vermivora virginiae*)	Breeds throughout the western two-thirds of New Mexico. Summer populations of this species occur in the northern mountains, along the Mogollon Rim, throughout the Gila, and mountain ranges of central and western New Mexico.	NS
Plumbeous vireo (*Vireo plumbeus*)	Breeds in lower mountain canyons statewide, favoring areas with a mix of pines and deciduous trees. It is an uncommon spring and rare fall migrant through lowlands statewide.	NS
Gray vireo (*Vireo vicinior*)	In northwest New Mexico, found in broad-bottomed, flat or gently sloped canyons, in areas with rock outcroppings on near ridgetops.	S
Presence*		

K = Known, documented observation within project area. S = Habitat suitable and species suspected to occur within the project area. NS = Habitat suitable but species is not suspected to occur within the project area. NP = Habitat not present and species unlikely to occur within the project area.

Sources: New Mexico Avian Conservation Partners, New Mexico Partners-In-Flight (nmpartnersinflight.org); National Geographic Society, *Field Guide to the Birds of North America*. 1999.

3.9 Special Management Species

In accordance with BLM Manual 6840, BLM manages certain sensitive species 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. Included in this category are state listed endangered species and federal candidate species which receive no special protections under the Endangered Species Act. Special Management Species with potential to occur in the analysis area are listed in Table 3.9.

Table 3.9 – Special Management Species of the BLM/FFO and their potential to occur in the analysis area.

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Common Name (*Scientific name*)	Status*	Habitat Associations/Distribution	Presence**
BIRDS			
Golden eagle (*Aquila chrysaetos*)	SMS	Typically forage in open grassland or shrubland habitat, and tend to avoid agricultural areas. Resident in all western states, with a breeding range extending east into the Great Plains. U.S. populations increase in winter with the arrival of migrants from northern breeding areas. In the west, inhabit mostly open areas in mountainous, desert canyon terrain. Nest primarily on cliffs and in trees; breed locally in suitable habitat throughout NM.	S
Western yellow-billed cuckoo (*Coccyzus americanus*)	C SMS	Riparian woodlands dominated by Fremont cottonwood or dense mesquite; prefer mature or late-successional cottonwood/willow associations with a dense understory. Habitat in New Mexico may be primarily native, mixed native and exotic, or primarily exotic plant species, the latter including riparian salt cedar, orchards, and ornamental/shade plantings.	NS
Ferruginous hawk (*Buteo regalis*)	SMS	Occur in open areas containing broad expanses of prairie grassland or shrub-steppe vegetation. Breed in open country, usually prairies, plains and badlands across the northern two-thirds of the state, and may be found statewide during winter; also found in semi-desert grass-shrub, sagebrush-grass & piñon-juniper plant associations. Breeding generally occurs north from Clovis in the eastern plains, north from San Antonio in the Rio Grande valley, and north from the Plains of San Agustin in the western part of the state.	S
Prairie falcon	SMS	Inhabit arid plains and steppes at all elevations,	NS

(*Falco mexicanus*)		wherever cliffs or bluffs are present for nesting. Breeds across much of western North America, from southern Canada south to central Mexico and from interior portions of the Pacific states east to the Dakotas, eastern Colorado and New Mexico, and west Texas. In winter, the range extends further east, and west to the Pacific coast. Prairie Falcon is sparsely distributed in New Mexico, but may occur in appropriate habitat statewide.	
American peregrine falcon (*Falco peregrinus anatum*)	SoC SMS NM-T	Nest in ledges or potholes on cliffs in wooded/forested habitats; forage over riparian woodlands, coniferous & deciduous forests, shrublands, prairies; breed locally in mountains and river canyons of western New Mexico east to the Sangre de Cristo, Sandia/Manzano, and Sacramento mountains. The species is a rare winter visitor in lowlands statewide.	NS
Sources: BLM 2005, New Mexico Natural Heritage Program 2005, NM Rare Plant 1999, USFWS 2007			
Status* C = Federal Candidate NM-T = State of New Mexico Threatened SMS = FFO Special Management Species SoC = Federal Species of Concern		**Presence**** K = Known, documented observation within project area. S = Habitat suitable and species suspected to occur within the project area. NS = Habitat suitable but species is not suspected to occur within the project area. NP = Habitat not present and species unlikely to occur within the project area.	

The analysis area provides potential foraging habitat for the American peregrine falcon, golden eagle, and ferruginous hawk. The analysis area does not provide nesting habitat for the raptors. No birds of prey or signs of their presence were observed in the analysis area during onsite inspections. Although the analysis area is located within the FFO-designated La Plata River Tract #9 ACEC, no potential habitat for yellow-billed cuckoo was documented within the project area. The analysis area is situated on an abandoned river terrace above the active La Plata River channel. No riparian cottonwood galleries are located within the project area.

4.0 Environmental Consequences and Proposed Mitigation Measures

No Action

Under the No Action Alternative, the proposed well would not be drilled, nor would the proposed well-tie pipeline or access road be constructed. There would be no new impacts from oil and gas production to the resources in the analysis area. The No Action Alternative would result in the continuation of the current land and resource uses in the analysis area and is used as the baseline for comparison of alternatives.

Proposed Action

A summary of potential surface disturbance is presented in Table 4.0.1. Descriptions of potential effects on individual resources for the Proposed Action are presented in the following text. Also described are potential mitigation measures that could be incorporated by the BLM where appropriate as Conditions of Approval attached to the permit.

Table 4.0.1 – Summary of Disturbance

Facility		Disturbance	Proposed Development				Duration
			BLM		FEE		
			Feet	Acres	Feet	Acres	
SE Mounds No. 3	Well Pad	New	200 x 240	1.10			Short Term
			-	0.75*			Long Term
	Construction Zone	New	740 x 50	0.85			Short Term
	Access Road	New	349 x 30	0.24			Long Term
	Well-tie Pipeline	New	988 x 40	0.91	1,742 x 40	1.60	Short Term
Total New Disturbance				**3.10**		**1.60**	**Short Term**
				0.99		**-**	**Long Term**

* All well pads will have interim reclamation, average long-term disturbance has been determined by the BLM to be approximately 0.75 acres per well location.

Short-term impacts are those which can be stabilized or mitigated rapidly (within 5 years). Long-term impacts are those that would substantially remain for more than 5 years.

4.1 Air Resources

4.1.1 Direct and Indirect Effects

4.1.1.1 Air Quality

Criteria Pollutants

Table 4 shows estimated emissions from one proposed horizontal oil well for criteria pollutants, volatile organic compounds (VOC) and greenhouse gas (GHG). For comparison, Table 5 shows total human-caused emissions for each of the counties in the FFO and La Plata County, Colorado, based on USEPA's 2008 emissions inventory (USEPA 2011).

Table 4. Criteria Pollutant and VOC Emissions Estimated for Construction of One Horizontal Oil Well; Average 25 Days to Drill and Complete

Activity	NOx	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CH4	CO2
One time operations (tons)*								
Construction	5.5	1.5	0.5	2.5	0.25	0.1	0.007	598.85
Completion	0.5	0.1	0.03	0.025	0.025	-	-	55.00
Interim Reclamation	0.006	0.006	0.006	0.001	-	0.003	-	1.24
Final Reclamation	0.006	0.006	0.006	0.001	-	0.004	-	1.66
Ancillary Operations (tons)								
Workover	0.129	0.04	0.01	0.01	0.01	-	-	10.59
Road Maintenance	-	-	-	-	-	-	-	0.26
Road Traffic	-	-	-	-	-	-	-	0.06
Annual operations (tons/yr)								
Oil Haul Truck and small truck (100 bbl/day)	0.009	0.006	0.0012	0.0009	0.0008	-	0.0001	3.88
Total	6.13	1.64	0.55	2.54	0.29	0.11	0.01	671.54

Oil storage tanks on the well location may result in venting of VOC. Oil well production is generally presented as barrels per day produced. The emissions calculator estimated that for every barrel per day produced there may be 0.12 tons of VOC vented per year.
The average horizontal oil well in the planning area produces approximately 100 barrels per day. One hundred barrels per day is estimated to result in 12 tons of VOC emissions per year. Oil storage tanks would be subject to current EPA regulations regarding the capture or flaring of VOC emissions.

Table 5. Analysis Area Emissions in Tons/Year, 2008

County	NO_X (1)	CO (2)	VOC (3)	PM_{10} (4)	$PM_{2.5}$ (5)	SO_2 (6)
McKinley	12,595.0	31,885.2	37,509.0	66,590.7	6,977.5	1,659.8
Rio Arriba	4,276.6	27,352.9	45,841.5	46,321.6	4,746.2	89.1
San Juan	35,651.7	54,549.5	46,994.9	69,655.7	8,108.3	11,471.0
Sandoval	4,780.1	33,290.5	31,733.6	36,232.3	4,056.3	123.4

Total	**57,303.4**	**147,078.1**	**160,079**	**218,800.3**	**23,897.3**	**13,343.3**

Source: EPA 2008 National Emissions Inventory (http://www.epa.gov/ttn/chief/net/2008inventory.html)
(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 6 displays the percent increase in total emissions in the analysis area from the proposed action to construct and operate one horizontal oil well.

Table 6. Percent Increase in Analysis Area Emissions from the Proposed Action

	NOX (1)	**CO (2)**	**VOC (3)**	**PM_{10} (4,5)**	**$PM_{2.5}$ (5,6)**	**SO_2 (5,7)**
Total Emissions tons/year	57,303.4	147,078.1	160,079.0	218,800.3	23,897.3	13,343.3
Horizontal Oil Well Emissions tons/year	6.13	1.64	12.55(8)	2.54	0.29	0.11
Percent Increase	**0.011**	**0.0011**	**0.0078**	**0.0012**	**0.0012**	**0.00082**

(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
(8) Current EPA regulations require operators to reduce VOC emissions by 95% if their oil storage tanks emit over 6 tons of VOC emissions per year.

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 1.25 tons/year should be considered a very gross estimate. Most of the VOC emissions estimated for one horizontal oil well result from venting from oil storage tanks. Current EPA regulations require operators to reduce VOC emissions by 95% if their oil storage tanks emit over 6 tons of VOC emissions per year. A reduction of 95% of oil storage tank VOC emissions would reduce the estimated HAP emissions to 0.12 tons/year.

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; NMED 2010). The estimated CO_2e metric tons emissions from one horizontal oil well (609.2 metric tons) would represent a 0.0008 percent increase in New Mexico CO_2 emissions.

4.2 Areas of Critical Environmental Concern

4.2.1 Direct and Indirect Effects

The analysis area is located within the FFO-designated La Plata River Tract #9 ACEC. The project area is situated above the active river channel and riparian corridor on an abandoned river terrace. The proposed

actions within the project area would not encroach on potential habitat for threatened and endangered species. Noise would increase within the area during construction, drilling, and reclamation activities.

4.3 Cultural Resources

4.3.1 Direct and Indirect Effects

Direct effects normally include alterations to the physical integrity of a cultural resource. If a cultural resource is significant for other than its scientific information, direct effects may also include the introduction of audible, atmospheric, or visual elements that are out of character for the cultural site. A potential indirect effect from the proposed action is the increase in human activity or access to the area with the increased potential of unauthorized removal or other alteration to cultural resources in the area.

Based on a review of the archaeological reports and the assessment of the undertaking in this area, the BLM cultural resources staff has determined that the proposed action will have no effect on cultural resources. National Register eligible cultural resource sites are being avoided with the implementation of design features such as temporary barriers and site monitoring. The proposed action is not known to physically threaten any traditional cultural properties, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies/rituals.

4.4 Soils

4.4.1 Direct and Indirect Effects

Due to the nature of drilling for oil and gas there would be soil disturbance within the action area. All areas to be disturbed would be bladed as needed to create flat surfaces for operating equipment and vehicles. Depth of soil disturbance would increase with rougher topography. Available topsoil would be stockpiled for reclamation. The proposed action would require a maximum cut of 6.1 feet and a maximum fill of 2.6 feet on the well pad. The cut and fill slopes would be especially susceptible to wind and water erosion until vegetation has been re-established (one to two growing seasons). The potential impacts would be dependent, in part, on seasonal variation in rainfall and snowmelt run-off, terrain, soil type, prevailing winds, and vegetative cover. The heaviest amounts of erosion will be short-term (one to two growing seasons) until the vegetation has established. Effects to soils would likely be low to moderate for the proposed action.

4.5 Water Resources

4.5.1 Direct and Indirect Effects

The proposed action would comply with water quality, quantity, and ground water protection standards under the Clean Water Act of 1977 and the Safe Drinking Water Act of 1974, as amended. The proposed action would disturb approximately 5 acres; currently, a Storm Water Pollution Prevention Plan for the Environmental Protection Agency (EPA) under the Clean Water Act would not be required.

The Operator would be required to comply with any future changes to the National Pollutant Discharge Elimination System permitting process for storm water discharge from construction activities enacted by the EPA prior to the completion of well site construction and site stabilization.

There are no perennial water resources within the analysis area. The proposed action would not impact any USACE jurisdictional waters of the U.S., including wetlands. Effects to ground water resources would be low due to mitigation measures such as casing, and any pits would be lined to meet NMOCD requirements. Below casing depth, losses of produced water or mud may occur to differing degrees in various formations, but the losses are considered to be low and contained to within a few feet of the well

bore. These losses are not considered to be substantial because of the very small amount of groundwater that could be affected (BLM 2003a, p. 4-14).

4.6 Vegetation

4.6.1 Direct and Indirect Effects

The proposed action would result in the loss of approximately 4.7 acres of sparse Great Basin Desert scrub. No trees were documented within the analysis area. Following installation of the proposed well-tie pipeline and interim reclamation of unused portions of the well location, approximately 3.7 acres would be recontoured and reseeded with an FFO-designated seed mixture. There would be a long-term loss of approximately 1 acre of Great Basin Desert scrub within the action area.

4.7 Threatened or Endangered Species

4.7.1 Direct and Indirect Effects

Noise would increase in the area during construction, drilling, and reclamation activities. The operator would comply with all COAs attached to an approved APD and follow all bureau-wide standard BMPs for all activities associated with the proposed project. It is not anticipated that any increase in sediment load into the La Plata River would occur.

4.8 Migratory Birds

4.8.1 Direct and Indirect Effects

The proposed action would result in the removal of approximately 4.7 acres of potential migratory bird habitat. Adult migratory birds would not be directly harmed by the proposed action because of their mobility and ability to avoid areas of human activity. No active nests within the action area are expected to be directly impacted since any drilling and construction activity would likely occur outside of the breeding season. However, if construction or drilling does occur within the breeding season, a migratory bird nest survey would be conducted to minimize impacts to nesting birds. The increased human presence during construction, drilling, and reclamation activities may indirectly disturb or displace adults from nests and foraging habitats for a short period of time, three months or less. Following the reclamation of approximately 3.7 acres of the affected environment, long term production operations would result in only a slight increase in human activity in the immediate area. Effects to the population status of migratory birds are not anticipated due to the mobility of individuals and the abundance of adjacent habitat for these species. In consideration of these factors, there would be moderate short-term effects to migratory birds, and low long-term effects as a result of the action.

4.9 Special Management Species

4.9.1 Direct and Indirect Effects

The analysis area contains potential foraging habitat for the American peregrine falcon, golden eagle, and ferruginous hawk. There would be a temporary loss of approximately 4.7 acres of potential foraging habitat prior to rehabilitation and reseeding. There would be a long term impact to approximately 1 acre of potential foraging habitat as a result of the proposed action. The analysis area does not contain suitable nesting habitat for the raptor species and is not within a 1/3 mile buffer zone to any historically documented raptor nest sites.

5.0 Cumulative Impacts

The proposed project is located within the San Juan Basin of northwestern New Mexico, which has been industrialized with oil and gas well development since the 1950's. The surface disturbance for each project that has been permitted throughout the Basin has created a spreading out of land use fragmentation. The cumulative impacts fluctuate with the gradual reclamation of well abandonments and the creation of new additional surface disturbances in the construction of new access roads, well pads, and associated well-tie pipelines and larger distribution lines. The on-going process of restoration of abandonments and creating new disturbances for drilling new wells gradually accumulates as the minerals are extracted from the land. Preserving as much land as possible and applying appropriate mitigation measures will alleviate the cumulative impacts.

The FFO manages Federal hydrocarbon resources in San Juan, Sandoval, Rio Arriba, and McKinley counties. There are approximately 23,522 wells in the San Juan Basin. About 16,435 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 (USDI/BLM 2011*b*).

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 (USDI/BLM 2011*b*). 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 (USDI/BLM 2011*b*) 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.

6.0 Supporting Information

6.1 Tribes, Individuals, Organizations, or Agencies Consulted

Jeff Bowman – City of Farmington, Parks & Recreation

Cherylene Charley – XTO Energy, Inc.

Jim Hemm – City of Farmington, Parks & Recreation

Randy Nathan – DCA Archaeological Consultants

Malia Villers – XTO Energy, Inc.

Randy Watson – Daggett Enterprises

6.2 List of Preparers

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7.0 Appendices

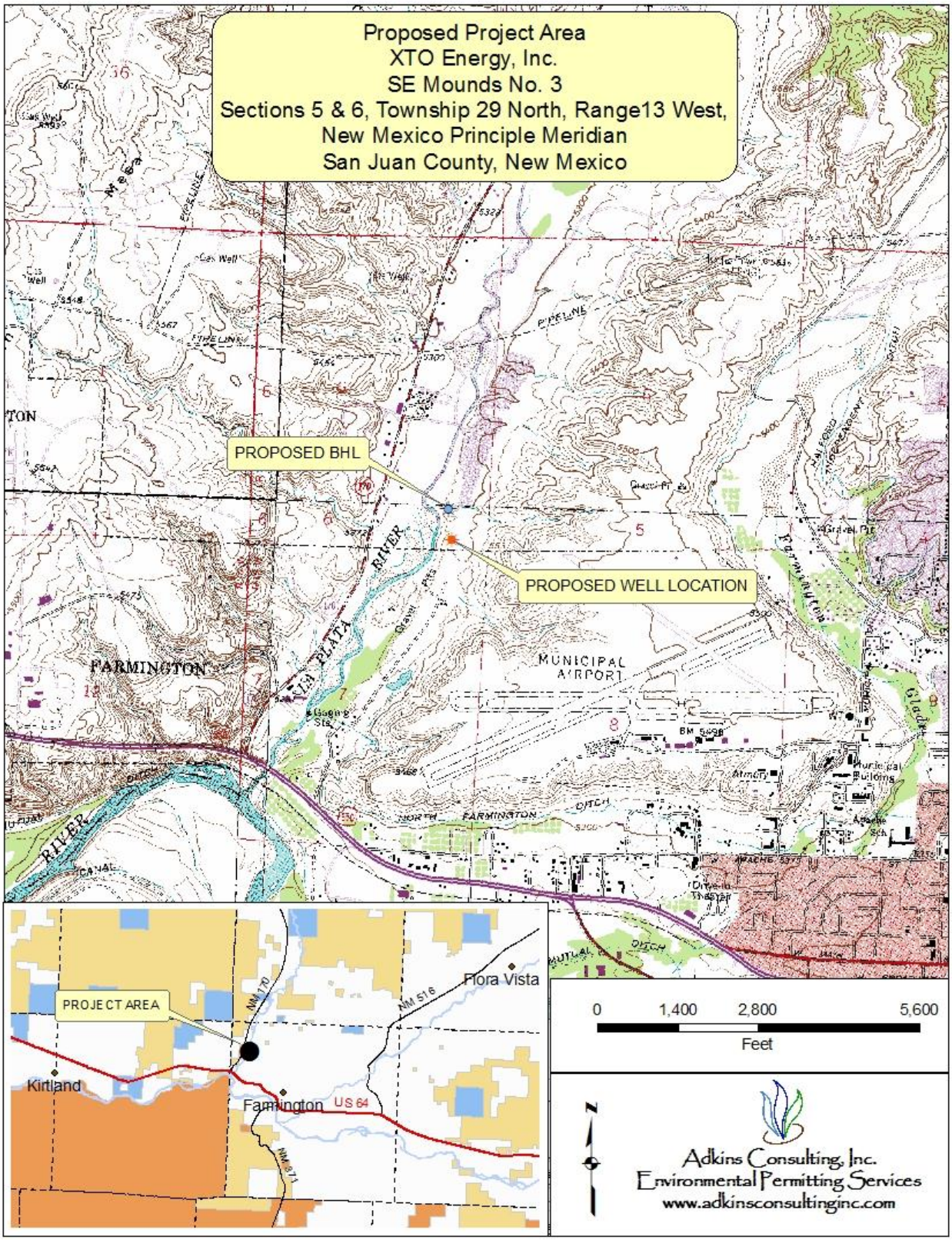
7.1 APD/COA

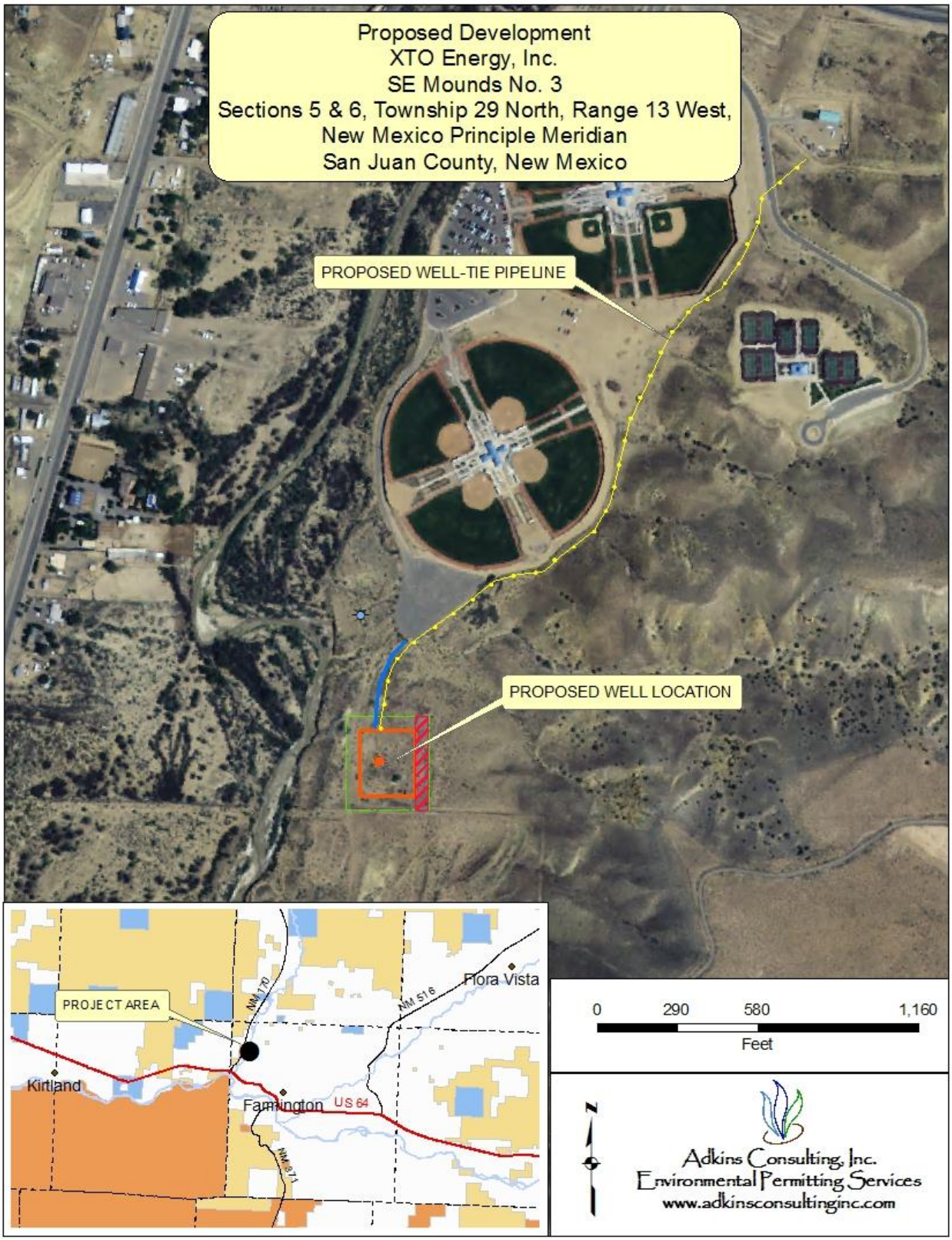
See attachment. The APD and COAs contain additional information about the proposed action including maps of all facilities, roads, pipelines, power lines, etc.

7.2 Authorities

Code of Federal Regulations (CFR)
40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2001.
43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.
U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. The Federal Land Policy and Management Act, as amended. Public Law 94-579.

7.3 Maps (USGS Farmington North and Farmington South, NM 7.5-minute Topographic)



7.4 Maps (Digital Aerial Orthophoto)

7.5 Maps (Digital Aerial Orthophoto)