ENVIRONMENTAL ASSESSMENT

EA # NM-FOl0-2011-85

BURLINGTON RESOURCES OIL AND GAS COMPANY LP PROPOSED BLANCO WASH FEDERAL #3M NATURAL GAS WELL AND PIPELINE LEASE USA SF-077107-A

Prepared for:

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1.0 INTRODUCTION

Burlington Resources Oil and Gas Company, LP (Burlington) has proposed drilling a natural gas well in San Juan County, New Mexico (NM). The proposed well would be twinned with an existing well in theSE 1;4 NW 1;4 of Section 27, Range 9 West, Township 28 North, New Mexico Principal Meridian (NMPM). The proposed project would be located on BLM managed lands with the federal mineral estate administered by the BLM/FFO.

Surface disturbance activities associated with drilling the natural gas well would include construction of a new well pad and installation of a new subsurface well-tie pipeline. The proposed project would be located on Harris Mesa approximately 2.5 miles west of Blanco Canyon and 19 miles southeast of Blanco, NM. Burlington has filed an Application for Permit to Drill (APD) for the natural gas well with the Bureau of Land Management Farmington Field Office (BLM/FFO). Enterprise Field Services, LLC (Enterprise) would file for right-of-way (ROW) grant with the BLM/FFO to construct and operate the proposed natural gas well-tie pipeline, ifthe well is productive.

1.1 Purpose and Need

The purpose of the proposed action is to allow the applicant to produce natural gas or oil from federal oil and gas mineral lease USA SF-077107-A issued by the BLM in 1947. The BLM's policy is 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, as amended (30 USC [United States Code] 181 et seq.), authorizes the BLM to issue oil and gas leases for the exploration of mineral resources and permits the development of those leases. The existing lease is a binding legal contract that allows development of the mineral estate by Burlington. An approved APD, issued by the BLM, would authorize Burlington to construct the pad and drill the proposed natural gas well.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this Environmental Assessment (EA) tiers into and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) (BLM 2003a), which was approved as the Final Resource Management Plan for the BLM/FFO by the Record of Decision signed September 29, 2003 (BLM 2003b). The PRMP/FEIS and ROD are available for review at the FFO, Farmington, New Mexico or electronically at http://www.nm.blm.gov/ffo/ffo_home.html. This project EA addresses site specific resources and/or impacts that are not covered within the PRMP/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended (Pub. L. 91-90, 42 USC 4321 et seq.). The proposed project would not be in conflict with any local, county, or state plans.

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

Under Section 402 of the Clean Water Act (CWA) (as amended), the U.S. Environmental Protection Agency (USEPA) regulates storm water discharges from industrial and construction activities under the National Pollutant Discharge Elimination System program. Additionally, Sections 404 of the Act, regulated by the U.S. Army Corps of Engineers, and Section 401 of the Act, regulated by the New Mexico Environment Department (NMED) or USEPA (depending upon surface ownership), protect wetlands and waters of the U.S. Operators are required to obtain all necessary permits and approvals for projects requiring CWA permits prior to any disturbance activities.

The New Mexico Energy, Minerals and Natural Resources Department requires oil and gas operators to follow "pit rule'· guidelines contained with NMAC 19.15.17 to reduce the potential for ground water contamination from industry related activities.

The Endangered Species Act (ESA) of 1973 requires all federal departments and agencies to conserve threatened and endangered 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.

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

Additionally, Burlington will:

- Comply with all applicable federal, state, and local laws and regulations.
- Obtain the necessary permits for the drilling, completion and production of the 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 the private landowner, where required.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the no action alternative generally means that the proposed activity would not take place. This option is provided in 43 CFR 3162.3-2 (h) (2). This alternative would deny the approval of the APD 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

Proposed Action Title/Type: Blanco Wash Federal #3M natural gas well project/Application for Permit to Drill and Right-of-Way Grant
County: San Juan County, New Mexico
Applicant: Burlington Resources Oil and Gas Company, LP and Enterprise Field Services, LLC Surface Owners: BLM
Mineral Estate: BLM

Burlington has filed APD for the proposed drilling of a natural gas well to access the federal mineral estate administered by the BLM/FFO in San Juan County, New Mexico. The proposed well would be twinned with the existing Hancock #SA. The proposed well pad would partially overlap previous disturbance associated with the existing Hancock #SA.

The proposed Blanco Wash Federal #3M natural gas well head would be located at 1,723 feet FNL (from the north line) and 1,547 feet FWL (from the west line) in Section 27, Range 9 West, Township 28 North, NMPM. The proposed natural gas well would be directionally drilled to a bottom hole location of 2,305 feet FSL and 1,890 feet FWL of Section 27, Range 9 West, Township 28 North to access the Basin Dakota/Mesaverde formations. A project vicinity map is provided as Figure 1. The proposed action is shown on the Blanco, New Mexico, U.S. Geological Survey (USGS) 7.5-minute quadrangle map as Figure 2.

Drilling of the proposed Blanco Wash Federal #3M natural gas well would require construction of a 300-foot by 230-foot well pad with a 50-foot wide construction zone around the perimeter of the pad that would disturb approximately 3.03 acres. The construction of the proposed pad would require a maximum of 7 feet of cut and a maximum of 8 feet of fill to provide a level pad for drilling (Appendix A). If the proposed natural gas well should prove productive, Enterprise would construct and operate the proposed well-tie pipeline. The pipeline would be approximately 55-ft in length and located entirely within the proposed well pad disturbance. Total disturbance resulting from the proposed project would be 3.03 acres. Approximately 46% (1.4 acres) ofthe proposed project area has been previously disturbed and reclaimed.

For a detailed description of design features and construction practices associated with the proposed action, refer to the project plats provided in the APD in Appendix A. Implementation of committed mitigation measures contained in the Conditions of Approval (COAs) and pipeline

stipulations are incorporated and analyzed m this alternative. The COAs are provided m Appendix B.

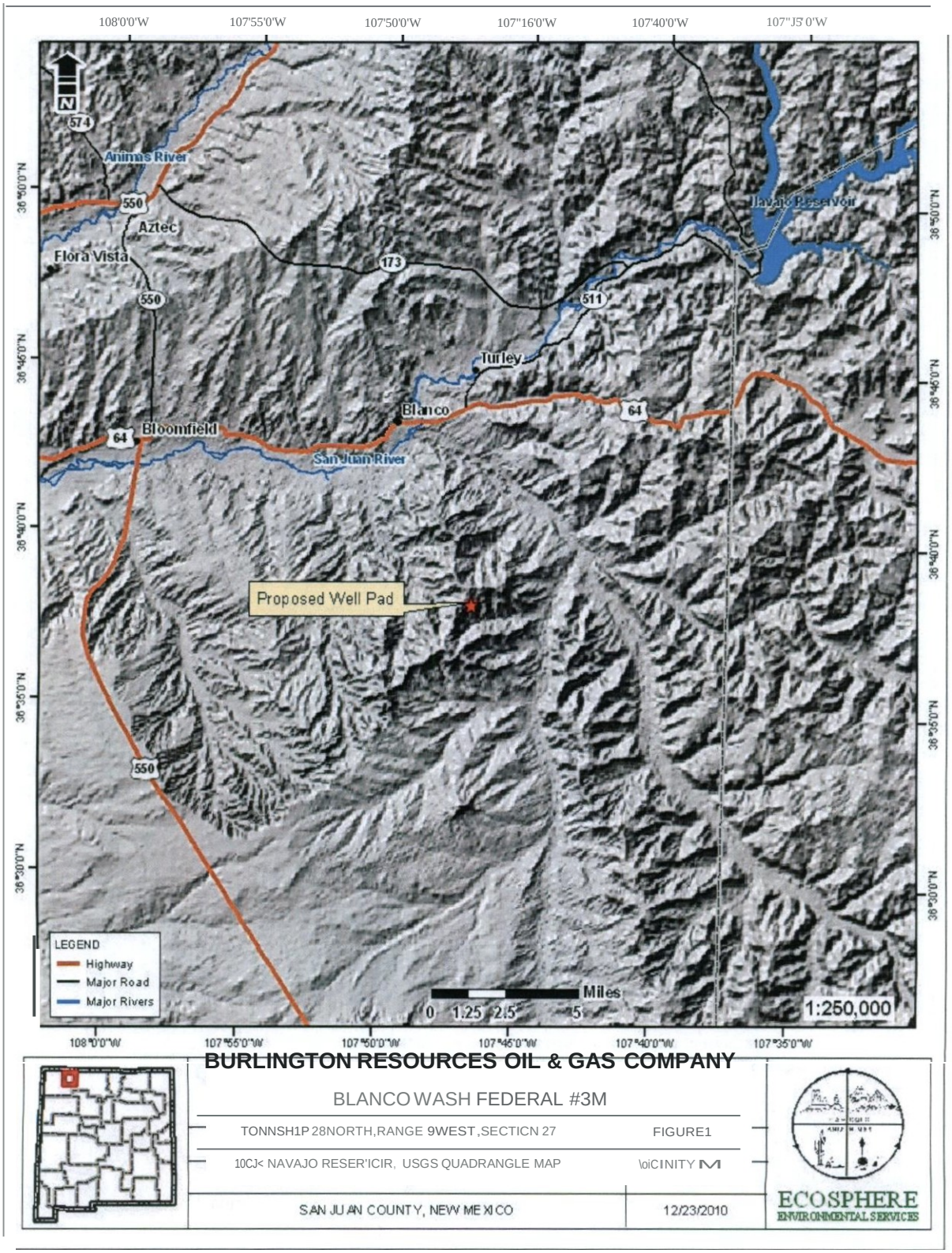
Construction activities associated with the proposed action would include drilling the proposed natural gas well and the installation of any surface equipment necessary for natural gas production. Construction of the proposed well pad would commence following BLM/FFO approval of Burlington's APD. In general, project development would follow the sequence listed below.

- Construction crews remove vegetation from the proposed natural gas well pad site. Excavated materials from the cuts would be used on the fill portion of the location to level the pad. Included in the pad construction would be excavation of the reserve and blow pits. Cut material from the reserve and bum pits would be stockpiled on the location or used to construct the back walls of the bum pit, which is where a gas flare is burned during drilling to relieve wellbore pressure.
- Natural gas well drilling facility assembly would occur on the well pad after site clearing and leveling. Associated facilities and equipment utilized in this phase would include a drilling rig, generators, diesel engines, water tanks, mud tanks, safety stations, equipment and material storage units, blowout preventers, an accumulator station, and a gas buster. Water for the drilling would be obtained from a commercial source and trucked to the site.
- The drill cuttings, drill water, and completion fluids would be placed in a lined reserve pit. The reserve pit would be fenced on three sides away from the pad during drilling and the fourth side fenced as soon as the rig moves out. The reserve pit would be allowed to dry or the free fluids removed or trucked to an approved disposal facility or reused in drilling operations at another well site. Pipeline construction activities include excavation of trenches, laying pipe, covering of pipe and leveling.
- After the well is completed, a portion of the pad not required for production equipment and vehicular access, would be re-contoured and seeded. Approximately 1 acre for access and production facilities on the well pad would remain in use for production and vehicle access. These areas would not be reclaimed until final abandonment of the well. Production equipment that would remain onsite would include the wellhead, production unit separator, and a meter run. Ancillary equipment such as a Christmas tree, compressor, pump jack, storage tank(s), dehydrator, and separator could also be installed at the well pad site. Equipment such as compressors or pump jacks would be powered by gas compression engines. No electric power line construction is proposed.

Burlington would comply with all applicable federal, state and local laws and regulations and obtain the necessary permits for the installation of the well pad and the pipeline. All areas of proposed surface disturbance were inspected in the field to ensure that potential impacts to natural resources would be minimized through the implementation of mitigation measures. These measures are described for all resources potentially impacted in Section 4.0 of this EA.

2.3 Alternatives Considered But Not Analyzed In Detail

The Blanco Wash Federal #3M well pad is proposed to be twinned with the existing Hancock #SA well. Twinned well pads and directional drilling are generally considered to be an alternative that creates the least amount of resource disturbance, impacts to the environment, and also achieves the purpose and need of the proposed action. No other alternatives were identified during pre and post onsite analysis that would create less disturbance and still achieve the purpose and need of the proposed action.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BURLINGTON RESOURCES OIL & GAS COMPANY
BLANCO WASH FEDERAL #3M
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FIGURE1
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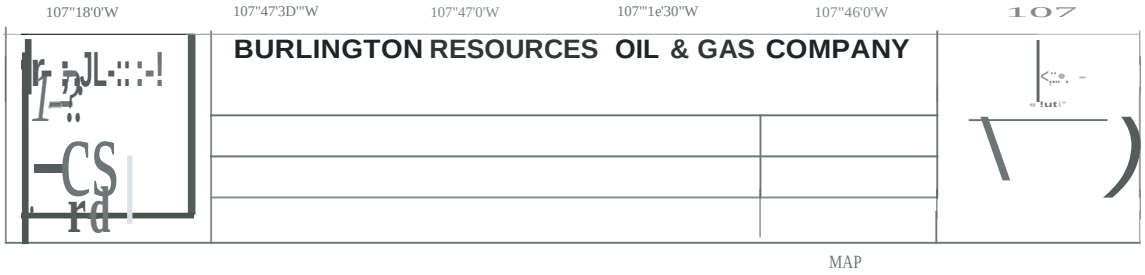
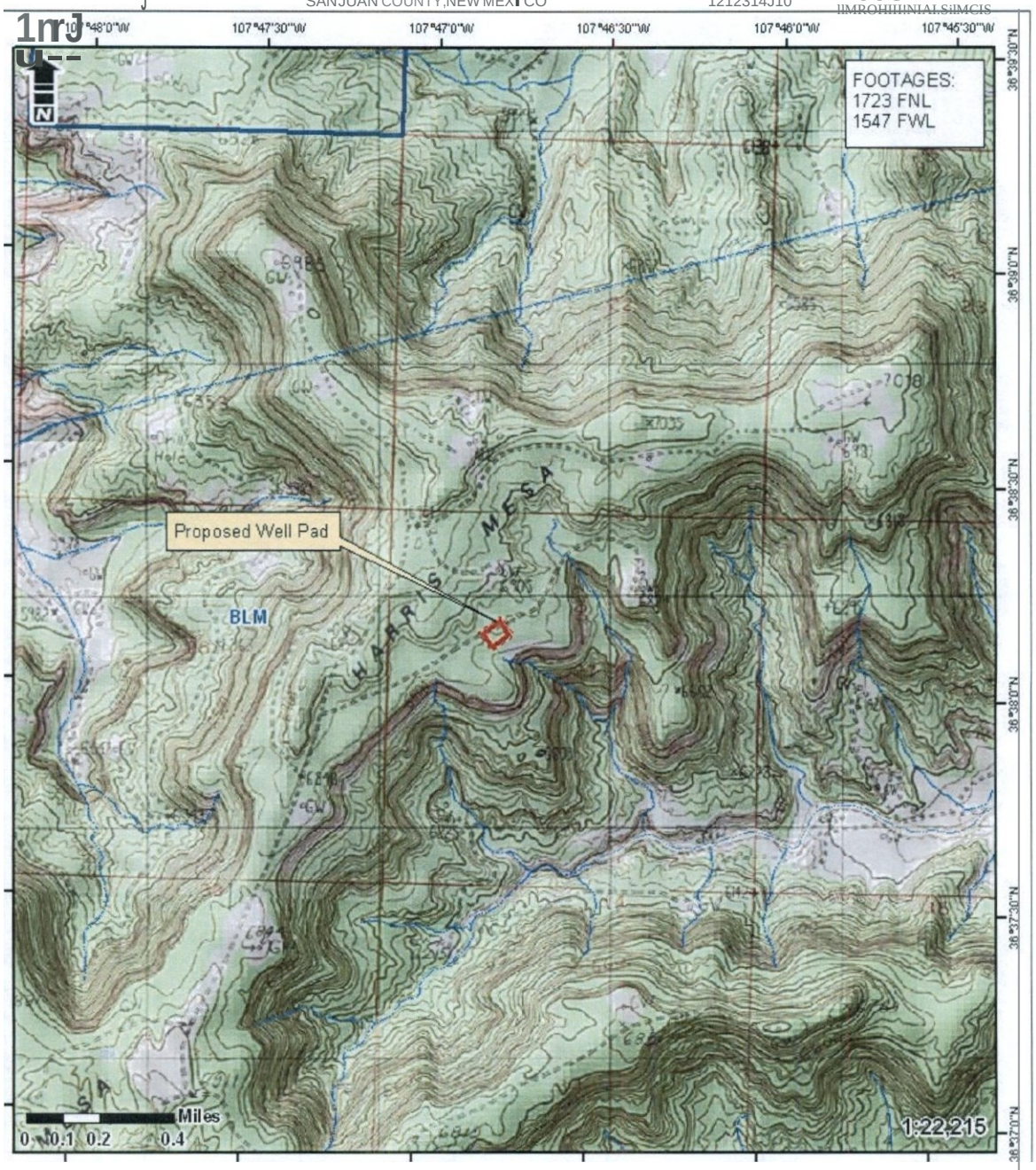
ECOSPHERE
ENVIRONMENTAL SERVICES



BLANCO WASH FEDERAL #3M

TCN'#NSHIP 28 NORTH,R.ANGE 9WEST, SECTION 27 FIGURE 2


FOOTAGES:
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Proposed Well Pad
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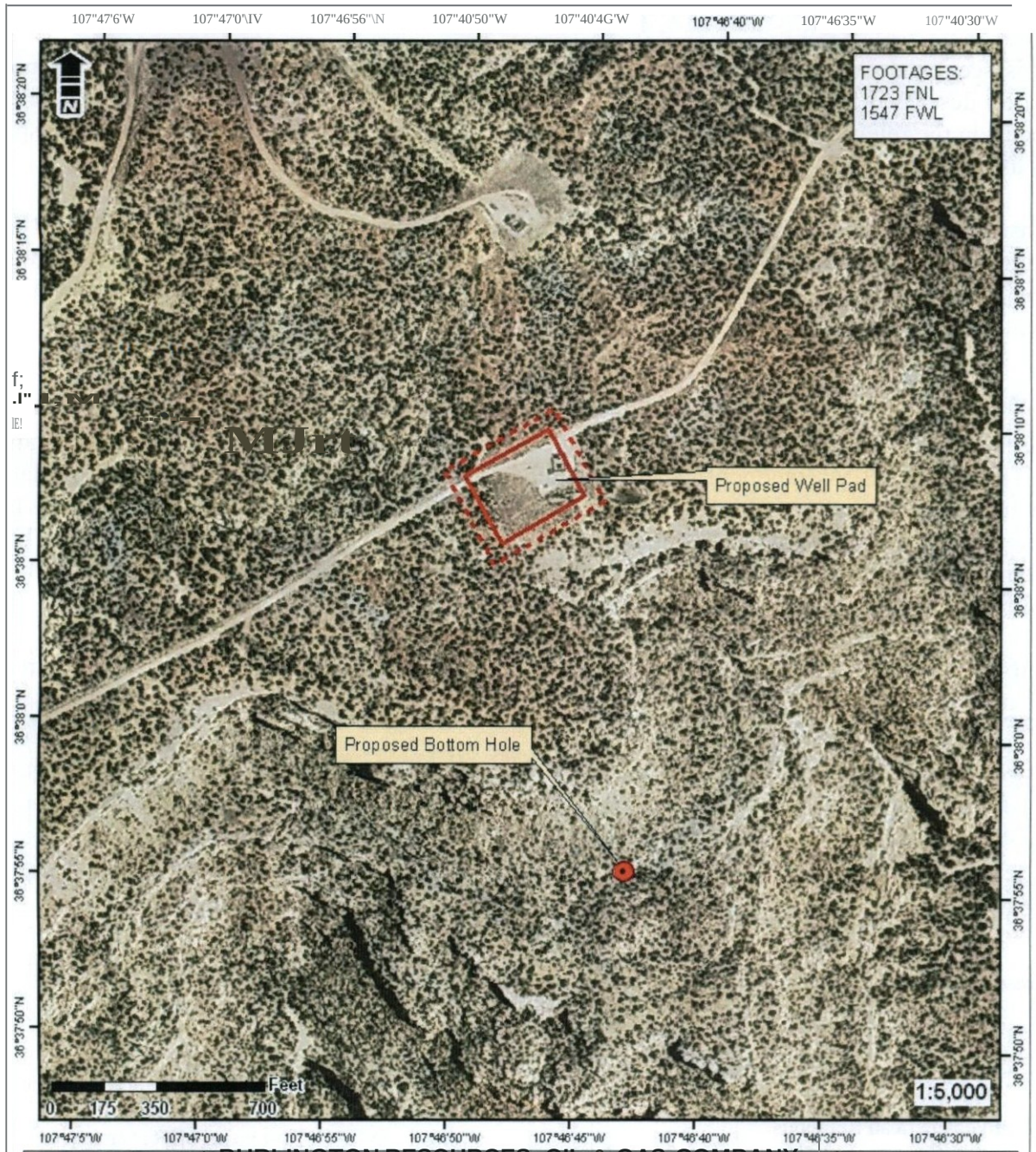

BURLINGTON RESOURCES OIL & GAS COMPANY

BLANCO WASH FEDERAL #3M

TOWNSHIP 28 NORTH, Rlo/IIOE 9WEST, SECTION 27	FIGURE 3
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ENVIRONMENTAL SERVICES

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementing the proposed action described in Section 2.0. Aspects of the affected environment described in this section focus on the relevant major resources or issues in the project area and vicinity. Only the aspects of the affected environment that are potentially impacted are described.

Onsite meetings and field resource investigations of the proposed action were conducted by a biologist from Ecosphere Environmental Services (Ecosphere) on October 27, 2010. Cultural resource surveys were conducted by Western Cultural Resource Management (WCRM) between September 14 and 18,2010.

3.1 Critical Elements

Certain critical environmental components require analysis under BLM policy (see Appendix 5 of H-1790-1, NEPA Handbook). These requirements, listed in Table I, are specified by statute, regulations, or executive order. Elements that do not exist in the project area or that do not have potential to be impacted are eliminated from further analysis as indicated in the table. Those elements potentially impacted by the proposed action or alternatives are described in the following sections.

Table 1. Affected Environment and Basis for Determination of No Further Analysis of Critical Elements.

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Air Quality	X		X	
Areas of Critical Environmental Concern (ACECs)		X		The proposed project is not located within an ACEC.
Cultural Resources		X	X	
Native American Religious Concerns	X		X	Traditional cultural properties are known to occur in the proposed project area. (Jim Copeland, pers. comm. 1/03/2011)
Environmental Justice	X		X	
Farmlands, Prime or Unique		X		No prime or unique farmlands located in project area or vicinity_.
Floodplains		X		No floodplains located in project area or vicinity.
Threatened or Endangered Species		X	X	

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Wastes, Hazardous or Solid		X	X	Due to the handling and storage of minor volumes of fuels and lubricants during construction, and due to the presence of existing oil and gas facilities in the project area, further analysis is warranted.
Water Quality, Surface/Ground	X		X	
Wetlands/Riparian Zones		X		No wetlands/riparian areas are located in the project area.
Wild and Scenic Rivers		X		There are no wild and scenic rivers in the FFO.
Wilderness		X		There are no designated Wilderness Areas within a 25 mile radius of the proposed project.

3.1.1 Air Resources

The proposed well would be located in San Juan County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington RMP/Environrnental Impact Statement. In addition to the air quality information in the RMP cited above, new information about greenhouse gases (GHGs), and their effects on national and global climate conditions has emerged since this RMP was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2) methane (C); nitrous oxide (N20); 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.

The 2003 RMP discussed ozone in the Baseline Air Quality and Impact Assessment sections. The National Ambient Air Quality Standard (NAAQS) at the time was 0.084 ppm. In March of 2008, the USEPA announced a new primary 8-hour standard of 0.075 ppm.

Increased development in the Four Corners area including a proposed new coal fired power plant, increased oil and gas development, and population growth are all contributing to air quality concerns. Many residents are concerned with potential health impacts from other pollutants. An overall haze and plume of nitrogen oxides can often been seen in the skies, which

impact visibility, and there are concerns for the ecosystem due to deposition of mercury and nitrogen.

ln addition, the USEPA, on October 17, 2006, issued a final ruling on the lowering of the NAAQS for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for $PM_{2.5}$, was lowered to 35 ug/m³ from the previous standard of 65 ug/m³. This revised $PM_{2.5}$ daily NAAQS was promulgated to better protect the public from short-term particle exposure.

This EA incorporates an analysis of the contributions of the proposed action to GHG emissions, and a general discussion of potential impacts to climate.

Air quality and climate are the components of air resources, which include applications, activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

The USEPA has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states of which New Mexico is one. 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. Greenhouse gases and the potential effects of GHG emissions on climate are not regulated by the USEPA, however climate has the potential to influence renewable and non-renewable resource management.

3.1.1.1 Air Quality

The area of the proposed action is considered a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. The primary sources of air pollution are dust from blowing wind on disturbed or exposed soil and exhaust emissions from motorized equipment. Air quality in the area near the proposed well is generally good and is not located in any of the areas designated by the USEPA as "non-attainment areas" for any listed pollutants regulated by the Clean Air Act. During the summers of 2000 through 2002, ozone levels in San Juan County were approaching non-attainment. Additional modeling and monitoring was conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transport and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region will be declining in the future. At the present time, the San Juan County is classified as in attainment with the revised federal ozone standard of 0.075 ppm.

Greenhouse gases, including carbon dioxide (CO_2) and methane (C), and the potential effects of GHG emissions on climate, are not regulated by the USEPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The USEPA's Inventory of US Greenhouse Gas Emissions and Sinks found that

in 2007, total U.S. GHG emissions were over 7 billion metric tons and that total U.S. GHG emissions have increased by 17% from 1990 to 2007. Emissions increased from 2006 to 2007 by 1.4 percent (99.0 Tg C02 Eq.). The following factors were primary contributors to this increase: (1) cooler winter and warmer summer conditions in 2007 than in 2006 increased the demand for heating fuels and contributed to the increase in the demand for electricity, (2) increased consumption of fossil fuels to generate electricity and (3) a significant decrease (14.2 percent) in hydropower generation used to meet this demand (USEPA 2009).

The levels of these GHGs are expected to continue increasing. The rate of increase is expected to slow as greater awareness of the potential environmental and economic costs associated with increased levels of GHG's result in behavioral and industrial adaptations.

3.1.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (l.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted a warming of about 0.2°C per decade for the next two decades, and then a further warming of about 0.1°C per decade. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed action and subsequent actions.

In New Mexico, a recent study indicated that the mean annual temperatures have exceeded the global averages by nearly 50% since the 1970's (Enquist and Gori 2008). Similar to trends in national data, increases in mean winter temperatures in the southwest have contributed to this rise. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95% of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state (Enquist and Gori 2008).

3.1.2 Cultural Resources

The project 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: Paleolndian (ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 BC to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (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. A detailed description of these various periods and select phases within each period is provided in the Farmington PRMP/FEIS (BLM 2003a).

The proposed Burlington Blanco Wash Federal #3M natural gas well would be located within the Blanco sub-watershed. Based on the Farmington PRMP/FEIS (BLM 2003a), a total of 595 sites representing Archaic Period, Basketmaker II, Basketmaker III, Unknown Anasazi, Pueblo I, Pueblo II, Pueblo III, Pueblo IV, Unknown Navajo, Dinetah/Gobernador Phase, Cabezon Phase, Reservation Phase, Hispanic, Euro-Anglo temporal/cultural components have been documented within the watershed. Of the 18 categories of sites defined based on temporal/cultural affiliation, 14 are represented. Lacking in the watershed are sites attributed to Paleo, Apache, Ute and Pueblo occupations. The most frequently occurring cultural affiliations recorded are Reservation Phase (23%), Unknown Navajo (10%) and Dinetah/Gobernador Phase (10%). Sites density is high with any apparent gaps most likely a factor of inventory lacking, not a lack of sites.

WRCM completed a cultural resources inventory of the proposed project under the BLM cultural Resources Use Permit #25-2920-09 LL. In conjunction with the field surveys of the project area, the investigation included a literature review of known resources within the project area. WRCM conducted the literature review prior to the cultural resource inventory. WRCM surveyed a total of7.30 acres between September 14 and 18, 2010.

There are two previously recorded sites within ½ mile of the proposed project. Neither of these two sites is located within or adjacent to the proposed area of disturbance. The cultural resources report has been submitted to the BLM under separate report cover WCRM(F)978.

3.1.3 Native American Religious Concerns

There are several pieces of legislation and executive orders that are considered in an evaluation of Native American Religious Concerns [i.e., American Indian Religious Freedom Act (AIRFA) of 1978, Executive Order 13007, The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, and the Archaeological Resources Protection Act (ARPA) of 1979].

Traditional Cultural Properties (TCPs) are a separate class of cultural resources that may occur in the EA analysis area, may or may not coincide with archaeological sites and artifact loci, and may fall under the purview of one or more of the cited legislation. The National Park Service has defined TCPs as follows:

> A traditional cultural property can be defined generally as one (a property) that is eligible for the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history,

and (b) are important in maintammg the continuing cultural identity of the community. (National Register Bulletin 38)

For the proposed action, identification efforts for Native American Religious Concerns were limited to reviewing existing published and unpublished literature and personal communications with Jim Copeland, BLM/FFO archaeologist. The proposed project area is located within a TCP called Dzil Ntsaa (aka Harris Mesa or Mesa Quartado). The Navajo name means Extensive Mountain. The area is associated with the Navajo Emergence story, with clan migrations, and with the origin stories of Nightway and Beautyway ceremonies and is home of a Holy Person (Jim Copeland, BLMIFFO, pers. comm. January 3, 2011).

3.1.4 Environmental Justice

Executive Order 12898 requires federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety effects on minority and low-income populations. Minorities comprise a large proportion of the population residing inside the boundaries of the BLM/FFO (see pages 3-106 to 3-107 of the PRMP/FEIS for more details on ethnicity and poverty rates).

3.1.5 USFWS Threatened and Endangered Species

Under section 7 of the ESA of 1973 (as amended), the BLM is required to consult with the USFWS on any proposed action that may affect federally listed threatened or endangered species or species proposed for listing. The project Biological Survey Report (BSR) is provided as Appendix C and addresses the potential for federally listed and other special status species to occur in the project area. Table 2 summarizes the potential for federally listed species to occur in the project area.

Table 2. Habitat Descriptions and Presence of USFWS listed Threatened (T), Endangered (E), Proposed Threatened (P) or Candidate (C) Species with Potential to occur in San Juan County, New Mexico (FWS 2010).

SPECIES	CONSERVATION STATUS	HABITAT ASSOCIATIONS	PRESENCE*
Black-footed ferret *(Mustela nigripes)*	E	Open grasslands with year-round prairie dog colonies.	NP
Southwestern willow flycatcher *(Empidonax traillii extimus)*	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	NP
Mexican spotted owl *(Strix occidentalis lucida)*	T	Nests in caves, cliffs, or trees in steep-walled canyons of mixed conifer forests.	NP
Yellow-billed cuckoo *(Coccy=us americanus* ssp. *occidentalis)*	C	Breeds in riparian woodlands with dense, understory vegetation.	NP
Mountain plover *(Charadrius montanus)*	p	Breeds in extremely dry , level shrublands, shortgrass prairie, barren agricultural fields, and other sparsely vegetated areas.	NP
Colorado pikeminnow *(Ptychocheilus lucius)*	E	Large rivers with strong currents, deep pools, and quiet backwaters	NP
Razorback sucker *(Xyrauchen texanus)*	E	Medium to large rivers with silty to rocky substrates. Prefers strong currents and deep pools.	NP
Knowlton's cactus *(Pediocactus knowltonii)*	E	Alluvial deposits that form rolling gravelly hills in pinon-juniper and sage brush communities (6,200-6,400)	NP
Mancos milkvetch *(Astragalus humillimus)*	E	Cracks of Point Lookout Sandstone of Mesaverde series (5,000 – 6,000 ft)	NP
Mesa Verde cactus *(Sclerocactus mesaeverdae)*	T	Highly alkaline soils in sparse shale or adobe clay badlands of the Mancos and Fruitland formations (4,000 – 5,550 ft)	NP

(USFWS 2010)

-K- KnO\\O. documented observation within project area: S – Suitable habitat and species suspected to occur within the project area: NS - llabitat suitable but species is not suspected to occur within the project area: NP - llabitat not present and species unlikely to occur\\ithin the project area.

No federally listed threatened, endangered, or candidate species, or potential habitats were identified within the proposed project area.

3.1.6 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 USEPA regulations define solid wastes as any "discarded materials" subject to a number of exclusions. A "hazardous waste" is a solid waste that (1) is listed by the USEPA as a hazardous waste, (2) exhibits any of the characteristics of hazardous wastes (ignitability, corrosiveness, 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, USEPA determined that oil and gas exploration, development and production (EDP) wastes would not be regulated as hazardous wastes under RCRA. A simple rule of thumb was developed for determining if an EDP waste is likely to be considered exempt or non-exempt from RCRA regulations: If (I) the waste came from down-hole, or (2) the waste was generated by contact with the oil and gas production strean1 during removal of produced water or other contaminants, the waste is most likely to be considered exempt by USEPA. 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 Oil Conservation Division (OCD) administers hazardous waste regulations for oil and gas activities in New Mexico.

3.1.7 Water Quality, Surface and Groundwater

The project area is located in the Upper Colorado River Hydrologic Region and is part of the San Juan River Basin. The project area is located within the Blanco subwatershed which is located entirely on BLM land in the center of the FFO administrative area (BLM 2003a). The nearest perennial water source is the Cutter Reservoir approximately 6.2 miles to the northeast of the project area. The San Juan River is located approximately 6.4 miles northwest of the proposed project.

The proposed project area does not contain any perennial water sources, wetlands or riparian areas. Two drainages flow off the south side of the proposed well. These small drainages range from Y2 to 2 feet deep by 2 feet wide, with an undefined ordinary high water mark. There are no springs located within a mile of the project area, but there is an unnamed ephemeral drainage that drains off the mesa and into Blanco Canyon. It is located approximately *160* feet southwest of the project area. A stock pond is located approximately 80 feet southeast of the proposed well pad.

The primary aquifers in the BLM/FFO area are the Uinta-Animas and the Mesaverde, which are sandstone based. Groundwater is readily available in most of the BLMIFFO area and is of fair to

poor quality. A search of the New Mexico State Engineers Office - Water Administration and Technical Engineering Resource System (WATERS) database for the proposed project area and vicinity (1-mile radius) was performed. According to the WATERS database no water wells are located within 1-mile of the proposed project area (NMOSE 2010).

3.2 Non-Critical Elements

Non-critical elements are resources that may be affected by the proposed action or alternatives, but are not necessarily required to be analyzed by statute, regulation, or Executive Order (EO). The non-critical elements listed in Table 3 are either eliminated from further analysis in the table or are brought forward in this EA for analysis because they pertain to management objectives outlined in the BLM/FFO PRMP/FEIS (BLM 2003a).

Table 3. Affected Environment and Basis for Determination of No Further Analysis of Non-Critical Elements.

NON-CRITICAL ELEMENTS				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Topography/Surface Geology	X		X	
Mineral Resources	X		X	
Paleontology	X		X	The project area is located within a PFYC designated Class 5 area.
Soils	X		X	
Vegetation, Forestry	X		X	
Invasive, Non-native Species		X	X	
Livestock Grazing	X		X	
Special Status Species		X	X	
Wildlife	X		X	
Migratory Birds	X		X	
Wild Horses and Burros		X		There are no wild horse or burro populations in or near the project area.
Recreation		X	X	
Visual Resources	X		X	
Public Health and Safety	X		X	

3.2.1 General Topography/Surface Geology

The topography surrounding the project area is characterized by mildly rolling terrain, mesa top and plateaus with steep terraced cliffs interspersed with deep, wide canyons. The proposed well pad would be located on the eastern periphery of Harris Mesa at an elevation of 6,840 feet. The proposed project area is bounded by Blanco Canyon to the east and Munoz Canyon to the west. The proposed project overlooks the mouth of an unnamed canyon that opens into Blanco Canyon, with the edge ofthe canyon rim occurring approximately 235 feet from the southeastern

construction zone boundary. Along the southern boundary, the canyon rim drops approximately 1,000 feet to the canyon bottom via a series of rocky slopes with steep terraces and sheer cliffs. The proposed well pad is located on a mesa top with slope ranging from 1 to 3 percent with a south-southeastern aspect.

Surface geology of the proposed project area is derived from the San Jose Formation.

3.2.2 Paleontological Resources

The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resources (IM 2008-009). This system has ranked all lands within the FFO management area as a Class 5 designation. Class 5 designations are described as being Very High Potential paleontological resource areas, thus requiring an assessment at the project level (IM 2008-011). The proposed project area is located within the paleontological-rich area of the San Juan Basin of northern New Mexico.

3.2.3 Mineral Resources

Natural gas production in the San Juan Basin is the highest in the state of New Mexico with approximately 650 to 700 million thousand cubic feet (Mcf) annually. The proposed natural gas well would produce natural gas from a valid existing federal lease for the minerals associated with the proposed development formation. The proposed well-tie pipeline would transport natural gas from the proposed natural gas well into the regional natural gas transmission system.

There are no coal mines or salable mineral extraction projects operating in the vicinity of the proposed project.

3.2.4 Soils

Soils in the San Juan Basin were formed primarily in two kinds of parent material: alluvial sediment and sedimentary rock. 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 is widely ranging in 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.

Minor cryptobiotic crusts were observed within the undisturbed portions of the proposed well pad. Soil throughout the proposed well pad is shallow with a sandy loam texture and is light brown to brown in color. The major soil mapping unit in the proposed project area is Travessilla-Weska-Rock outcrop complex, moderately deep (Keetch 1980). The following description for the soil mapping units is summarized from the Soil Survey of San Juan County, New Mexico, Eastern Part (Keetch 1980).

Travessilla, 0 to 30% slopes: This soil mapping unit is found on breaks and mesas at an elevation of 6,400 to 7,200 feet. Included in this unit are small areas of Buckle soils in upland valleys and on fans, Penistaja soils on mesas and plateaus, Twick soils on hills, and alluvial

deposits of gravel and cobbles in drainage ways. This soil mapping unit consists of very shallow, and shallow and well drained soil with moderately rapid permeability (Keetch 1980).

Weska complex, 0 to 30% slopes: This soil mapping unit is found on breaks and hills and formed from residuum derived dominantly from shale. Surface layer is usually grayish brown clay loam approximately 1 inch thick. This unit is composed of 30% Weska and the underlying material to depth of 9 inches is light olive brown clay loam with shale at a depth of 9 inches (Keetch 1980).

Rock Outcrop complex, 0 to 30% slopes: This soil mapping unit is found on benches, ridges and breaks and is formed of barren sandstone.

Table 4. Soil Mapping Units and Parameters in the Proposed Project Area.

Soil Mapping Unit	Soil Name	Permeability	Available Water Capacity	Surface Runoff	Hazard of Water Erosion	Hazard of Soil Blowing
Travessilla-Weska-Rock Outcrop, 0 to 30% slopes	Travessilla	moderately rapid	very low	medium	moderate	severe
	Weska	Moderately slow	very low	rapid	high	moderate
	Rock Outcrop					

Source: Keetch 1980

Minor cryptobiotic crusts were observed within the undisturbed portions of the proposed well pad. Outcrops of shale and sandstone fragments are scattered throughout the undisturbed portions of the project area.

3.2.5 Vegetation, Forestry

The proposed project area would be located within a desert scrub habitat with a pinon-juniper woodland interface. Generally, the eastern half of the proposed well pad (about 1.4 acres) has been previously disturbed by the use of the existing facility. Dominant species include rubber rabbitbrush *(Ericameria nauseosa)*, broom snakeweed *(Gutierrezia sarothrae)* and Indian ricegrass *(Achnatherum hymenoides)*. Other species of plants observed were crested wh atgrass *(Agropyron cristatum)*, western wheatgrass *(Pascopyrum smithii)*, hairy goldenaster *(Heterotheca villosa)* and needle and thread *(Hesperostipa comata)*. Overall vegetative cover was visually estimated at 50%. The undisturbed portions of the western proposed project area support open canopy pinon-juniper woodland. Canopy cover was visually estimated at 10% with approximately 50 trees. Understory species include primarily broom snakeweed, big sagebrush *(Artemisia tridentata)* and rubber rabbitbrush with a few scattered Mormon tea *(Ephedra viridis)*. A list of plants found during the field survey is included in the BSR in Appendix C.

3.2.6 Invasive, Non-native Species

The BLM/FFO maintains a list of invasive and non-native plant species of concern (BLM 2003a). None of the species listed by the BLM was observed in the proposed project area during the biological survey on October 27, 2010.

3.2.7 Livestock Grazing

The BLM/FFO manages 167 grazing allotments with 351 grazing authorizations that permit cattle *(Bos taurus)*, sheep *(Ovis aries)*, and horse *(Equus ferus cabal/us)* grazing within the resource area. Of the 351 grazing authorizations, 317 are permitted under Section 3 of the Taylor Grazing Act. Of the 167 grazing allotments, there are four authorizations issued under Section 15 of the Taylor Grazing Act to the Navajo Tribe that authorize grazing on 35 allotments. Additional Section 15 authorizations permit grazing on 30 allotments in the Lindrith, NM area.

The proposed project would be located on public lands within the BLM grazing allotment #5071 that is permitted between October 1 through February 28 for 563 cattle and March 1 through March 31 for 116 cattle. This grazing allotment and is permitted for a total of 679 animal unit months (AUMs). Table 5 summarizes the permitted grazing use on the allotment.

Table 5 BLM Range Management Allotment #5107

Allotment Number	Livestock Type and Number	Period of Use	Animal Unit Months (AUMs)
5071	Cattle – 126	10/01/2010 – 02/28/2011	563
	Cattle – 126	03/01/2011 – 03/31/2011	116

Evidence of cattle was observed within the proposed project area during the field surveys. A seasonal livestock water source is located approximately 80 feet from the eastern portion of the proposed well pad edge of disturbance.

3.2.8 Special Status Species

In accordance with BLM Manual 6840, the 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. Special status species and their potential to occur in the proposed project area are listed in Table 6. The BSR in Appendix C provides the basis for the findings listed in the table.

The action and project area include potential habitat for golden eagles *(Aquila chrysaeLos)*, peregrine falcon *(Falco peregrinus anatum)* and prairie falcons *(Falco mexicanus)*. Based on the field survey results, no nesting habitat occurs within the proposed area of disturbance. BLM/FFO has identified potential raptor nesting habitat within 113-mile of the proposed well pad on the terraced cliffs below Harris Mesa. According to the BLMIFFO raptor nest data (i.e., historic or currently active nests), there are 17 golden eagle nests documented from five to ten miles from the proposed project area (BLM 2009, unpublished data). No raptors or signs of consistent raptor use (e.g., whitewash or nests) were observed in the project area or within 1/3-mile radius during the biological surveys conducted by an Ecosphere biologist on October 27, 2010.

Table 6. Habitat descriptions, status, and presence of BLM/FFO special status species..

SPECIES	HABITAT ASSOCIATIONS	PRESENCE
Aztec gilia *(Aiiciel/a formosa)*	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	NP
Brack's hardwall cactus *(Sc/erocactus c/overiae* ssp. *brackii)*	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft).	NP
Golden eagle *(Aquila chrysaetos)*	In the west, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	S
Burrowing owl *(Athene cunicularia)*	Rarely dig their own burrows and are typically associated with prairie dog colonies.	NP
Ferruginous hawk *(Buteo regalis)*	Flat or rolling terrain in grasslands, shrub-steppes, and deserts; may occur in the periphery of pinon-juniper or other forests. Badlands. Prefers elevated nest sites (e.g., buttes, utility poles, trees) but also nests on the ground.	NP
Mountain plover *(Charadrius montanus)*	Breeds in flat, open grasslands; often associated with prairie dog towns and intensive grazing.	NP
Yellow-billed cuckoo *(Coccy=us americanus occidenta/is)*	Breeds in riparian woodlands with dense understory vegetation.	NP
Prairie falcon *(Falco mexicanus)*	Found in arid, open grasslands and shrub-steppe habitats. Prairie falcons require cliffs for nesting.	S
American peregrine falcon *(Falco peregrinus anatwn)*	Rugged terrain with rocky cliffs and canyons (30-I,000+ ft high), adjacent to rivers, lakes, or streams. Urban areas with towers and buildings are also inhabited.	S
Bald eagle *(Haliaeetus leucocephalus)*	Nests in forested areas adjacent to large bodies of water.	NP

K - Known, documented observatiOn w1thm proJect area; S - Hab1tat su1table and spec1es suspected to occur w1thm 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.

3.2.9 Wildlife

Big-game, and small and medium-sized mammals that could occur within the project area include mule deer *(Odocoileus hemionus)*, elk *(Cervus elaphus)*, mountain lion *(Puma concolor)*, black-tailed jackrabbit *(Lepus californicus)*, desert cottontail *(Sylvilagus audubonii)*, ground squirrel *(Spermophilus* spp.), deer mouse *(Peromyscus maniculatus)*, white-tailed antelope squirrel *(Ammospermophilus leucurus)*, wood rat *(Neotoma* spp.), coyote *(Canis latrans)*, badger *(Taxidea taxus)*, kangaroo rat *(Dipodomys* spp.) and pocket gopher *(Thomomys* spp.).

During the October 27, 2010 biological survey, signs of mule deer, black-tailed jackrabbit and elk were observed in the proposed project area. A list of wildlife species observed within the proposed project area is provided in the project BSR in Appendix C.

3.2.10 Migratory Birds

Under the Migratory Bird Treaty Act (MBTA) (16 USC §703-712) and EO 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds", federal agencies are required to consider management impacts to migratory nongame birds. While all migratory songbirds are protected by law, certain species have been determined to be at greater risk than others. More than 350 avian species occur in San Juan County and the surrounding area administered by the BLMIFFO. A total of 136 species have been confirmed as breeding in San Juan County with likely additional species if one considers the adjacent counties within the FFO area. Data collected through breeding bird surveys coordinated by the USFWS as well as other private sector efforts have provided the basis for the New Mexico Partners in Flight (NMPIF) organization to develop bird "Watch Lists" and the USFWS's "Birds of Conservation Concern List". The NMPIF organization has identified priority species of birds for the state of New Mexico by habitat type. The FFO area lies within the Colorado Plateau physiographic region as identified by the NMPIF. The proposed project area contains two of the habitat types addressed in these documents: Great Basin desert shrub (sage/grass) and pinon-juniper woodland. Some of the birds listed as "Highest Priority" by the PIF group as well as USFWS "Birds of Conservation Concern" includes the ferruginous hawk *(Buteo regalis),* gray vireo *(Vireo vicinior),* pinon jay *(Gymnorhinus cyanocephalus),* and juniper titmouse *(Baeolophus ridgwayi).*

The Bird Conservation Plan developed for the State ofNew Mexico by PIF lists the sage thrasher *(Oreoscoptes montanus)* and sage sparrow *(Amphispiza belli)* within the Great Basin desert shrub habitat type as "highest priority" species for conservation. The ferruginous hawk, mountain plover *(Charadrius montanus),* and long-billed curlew *(Numenius americanus)* are listed as a "highest priority" species under the plains and mesa grassland habitat type. Priority species in pinon-juniper woodland include gray vireo, pinon jay, and juniper titmouse. Most of the priority bird species identified by the NMPIF also occur on the USFWS Division of Migratory Bird Management "Birds of Conservation Concern 2008" within Bird Conservation Region 16 – Southern Rockies/Colorado Plateau. Birds included on this list are those "species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA of 1973" (USFWS 2008).

Pinon-Juniper: The pinon-juniper woodland habitat in and surrounding the proposed project area provides foraging and roosting habitat for large raptors, including golden eagles, prairie falcons, and red-tailed hawks *(Buteo jamaicensis).* A variety of bird species may be found in the proposed project area such as Bendire's thrasher *(Toxostoma bendirei),* loggerhead shrike *(Lanius ludovicianus),* and vesper sparrow *(Pooecetes gramineus).* Certain birds, including the juniper titmouse, western scrub jay *(Apelocoma californica),* and bushtit *(Psaltriparus minirnus),* nest almost exclusively in pinon-juniper habitats. Mountain chickadees *(Parus gambeli),* black-throated gray warblers *(Dendroica nigrescens),* and blue-gray gnatcatchers *(Polioptila caerulea)* also occur in this community (NMPIF 2007).

Sagebrush/Grasslands: The open sagebrush/grassland habitat in and surrounding the proposed project area provides foraging habitat for large raptors, including golden eagles, prairie falcons, and red-tailed hawks. A variety of bird species may be found in the proposed project area such as western kingbirds *(Tyrannus verticalis),* rock wrens *(Salpinctes obsoletus),* ash-throated

flycatcher *(Myiarchus cinerascens)* and mountain bluebirds *(Sialia currucoides)* also occur in this community. Certain birds, including the sage sparrow and sage thrasher, next almost exclusively in Great Basin Desert Shrub habitats. Birds with potential to occur in the proposed project area typically nest either in shrubs or on the ground in the sagebrush shrublands habitat, during the period from mid-April through mid-July (NMPIF 2007).

During the October 27, 2010 biological survey, no avian species were observed in or proximate to the proposed project area.

3.2.11 Recreation

Recreation in the area consists of dispersed activities such as hiking and hunting. There are no designated special recreation areas in proximity to the proposed action. The nearest designated recreational area, Angel Peak Scenic Area, is located approximately 5.7 miles southwest of the proposed project area.

3.2.12 Visual Resources

The proposed project area is within the San Juan Basin, an area visually characterized by steep colorful escarpments, narrow vistas and rugged canyons. The project area would be located on previous disturbed terrain on top of Harris Mesa. The vicinity of the project area is vegetated with pinon-juniper woodland habitat interspersed with Great Basin desert scrub..

The BLM has developed a Visual Resource Management (VRM) classification system designed to maintain or enhance visual qualities and describe the different degrees of modification to the landscape (BLM 2003a). VRM on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. Further details of the BLM/FFO VRM Program are contained on pages 2-9 to 2-10 and 3-61 to 3-63 of the Farmington PRMP/FEIS. Modifications to the visual resource must follow the guidelines for the types of change suitable for each class. The proposed project area is located within a designated Class III VRM area. This classification provides for partially retaining the existing character of landscape and the level of change may attract attention, but may not dominate the view of the casual observer (BLM 2003a).

3.2.13 Public Health and Safety

The proposed natural gas well would be twinned with an operational gas well in the general vicinity of other existing natural gas wells with pipelines, oil and gas facilities, and other developments. The project area is in an area connected by a network of dirt surface access roads. Public risk associated with natural gas development includes increased traffic on public roads, wildfire, pipeline leakage, rupture, fire and explosion. Additional public health and safety risks include spills of wastes, chemicals, or hazardous materials. Roads in the area are generally unimproved dirt surface and are used to access natural gas facilities. These roads may become hazardous or impassable during periods of inclement weather.

4.0 ENVIRONMENTAL CONSEQUENCES

Environmental resources can be affected in many ways during implementation of the proposed action. The effect, or impact, is defined as any change or alteration in the pre-existing condition of the environment produced by the proposed action, either directly or indirectly. This chapter analyzes the environmental consequences of the proposed action.

Impacts can be either long-term (permanent, residual) or short-term (incidental, temporary). Short-term impacts affect the environment for only a limited time period and the environment usually reverts rapidly to the pre-construction condition. Short-term impacts are often disruptive and obvious. Long-term impacts are substantial and permanent alterations to the pre-project environment. The BLM defines long-term impacts as those impacts whose results endure more than five years. Impacts may be irreversible or residual and affected resources irretrievable.

For the purpose of this EA, potential impacts have been divided into three categories:

High - as defined in CEQ guidelines (40 CFR 1500-1508), impacts which are substantial in severity and therefore should receive the greatest attention in decision-making.

Moderate - impacts which cause a degree of change that is easy to detect, but do not meet the criteria for significant impacts.

Low - impacts which cannot be easily detected and cause little change in the existing environment.

No Action Alternative

Under the no action alternative, the proposed natural gas well pad and pipeline would not be constructed, and the well would not be drilled. There would be no new impacts from oil and gas production to resources in the project area. The no action alternative would result in the continuation ofthe current land and resource uses in the project area. This alternative will not be evaluated further in Chapter 4.

Alternative B - Proposed Action

Under the proposed action, the Blanco Wash Federal #3M well pad would be constructed and the natural gas well would be drilled as proposed. Mitigation measures would be implemented to reduce potential impacts to the environmental resources. Total proposed, permitted surface disturbance would be 3.03 acres. There would be approximately 2 acres of new disturbance associated with the proposed action. Approximately 1 acre would be subject to long-term disturbance associated with the natural gas well. The potential environmental consequences and proposed mitigation measures for this alternative are described for both critical and non-critical elements in the following sections.

4.1 Air Resources

4.1.1 Direct and Indirect Effects

Air Quality

Air quality would temporarily be directly impacted with pollution from exhaust emissions, chemical odors, and dust that would be caused by the motorized equipment used to construct the well pad and by the drilling rig that will be used to drill the wells. Dust dissemination would discontinue upon completion of the construction phase of the well pad. Air pollution from the motorized equipment would discontinue at the completion of the drilling phase of the operations. The winds that frequent the northwestern part of New Mexico generally disperse the odors and emissions. The impacts to air quality would be greatly reduced as the construction and drilling phases are completed. Other factors that currently affect air quality in the area include dust from livestock herding activities, dust from recreational use, and dust from use of roads for vehicular traffic.

Over the last 10 years, the leasing of federal oil and gas mineral estate in the FFO has resulted in an average total of approximately 450 to 500 wells drilled on federal leases annually. These wells would contribute an incremental increase to the total emissions (including GHGs) from oil and gas activities in New Mexico.

Potential impacts of development could include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, as well as potential releases of GHG, NOx and VOCs during drilling or production activities. The amount of increased emissions cannot be quantified at this time since it is unknown how many wells might be drilled, the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), or what technologies may be employed by a given company for drilling any new wells. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs.

The reasonable and foreseeable development scenario developed for the FFO PRMP/FEIS demonstrated 522 wells would be drilled annually for federal minerals. Current APD permitting trends within the field office confirm that these assumptions are still accurate. This level of exploration and production would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs, NOx, and VOCs released into the planet's atmosphere. When compared to total national or global emissions, the amount released as a result of potential production from the proposed well would not have a measurable effect on climate change due to uncertainty and incomplete and unavailable information; therefore is not possible to determine the effects on climate change on a regional, national, or global scale.

Consumption of oil and gas developed from the proposed well is expected to produce GHGs, NOx and VOCs. Consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demography, and weather or climate. Regional and global transportation, metropolitan traffic, fires (including

wildfires, controlled burns and use of domestic fire places), and power plant emissions from the west are all parts of the equation. Regional air quality modeling conducted for the Northern San Juan Basin Coal Bed Methane FEIS Project in August 2006 determined that potential cumulative visibility impacts to Federal PSD Class I Areas (Mesa Verde National Park and the Weminuche Wilderness Area) could occur at some unspecified time in the future

The NAAQS are set for the most common and widespread pollutants. The standards are concentrations of air pollution above which the USEPA has determined that serious health and welfare consequences could occur. If the concentrations are below the NAAQS, there are no expected adverse effects to humans and the environment.

Climate

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the proposed action on climate. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

4.1.2 Mitigation Measures

The FFO has been a participant of the Four Comers Air Quality Task Force (FCAQTF) since its inception back in 2002 when it was known as the Four Comers 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 Comers region. The FCAQTF is comprised of a broad base of representatives including federal, state, Indian, and local governments, as well as industry, interest groups, and concerned community members. The FCAQTF has several working groups that 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 COA that 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 PRMP/FEIS. The impacts forecast by the RFD are still valid. At the time the 2003 PRMP/FEIS was written ozone readings did not represent a violation of the NAAQS for this pollutant. The new preliminary 8-hour ozone design value for Navajo Lake site is (2006-2008) is at 0.075 ppm while the other two federal regulatory design-value monitors in San Juan County are; Substation (2006-2008) at 0.065 ppm and Bloomfield (2006-2008) at 0.071ppm. A monitor design value must be greater than the revised 8-hour ozone standard of 0.075 ppm for a nonattainment designation.

The USEPA'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 C 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 USEPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" subactivities 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; revegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads; and water dirt roads during periods of high use in order to reduce fugitive dust emission. The significant threshold for particulate matter of 35 ug/m^3 daily PM_{25} NAAQS is not expected to be exceeded under the proposed action alternative.

The USEPA 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 USEPA's Natural Gas Energy Star program. The FFO 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.

4.2 Cultural Resources

Two previously recorded sites are located within Y,. mile of the proposed project. Neither site would be impacted by the proposed action, as they are not located within or near the area proposed to be disturbed. The cultural resources report has been submitted to the BLM under separate report cover WCRM(F)978.

4.2.1 Direct and Indirect Effects

The proposed action would have no direct impacts to cultural resources. A potential indirect effect from the proposed action is the increase in human activity in the area with the increased possibility of unauthorized removal or other alteration to cultural resources in the area. This impact would be temporary and localized. BLM/FFO archaeologists will issue a cultural resource determination of effect for the proposed action. This determination would be included in the BLM/FFO cultural resources stipulations attached to the APD.

4.2.2 Mitigation Measures

Final project clearance and stipulations will be issued by the BLM/FFO. If previously undocumented cultural sites are encountered during construction, all activities will stop in the vicinity of the discovery and the BLM will be immediately notified. The site would then be evaluated. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified cultural resources.

4.3 Native American Religious Concerns

The proposed action is located on Harris Mesa (Dzil Ntsaa) a known Navajo TCP. The BLMIFFO has consulted with the tribe concerning the proposed action. The proposed action would be twinned with an existing operational natural gas well. The proposed action is not known to physically threaten the TCP, prevent access to sacred sites, prevent the possession of sacred objects or interfere or otherwise hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act or EO13007. Currently, no known remains fall within the purview of the Native American Graves Protection and Repatriation Act or the Archaeological Resources Protection Act.

4.3.1 Direct and Indirect Effects

Impacts to Native American religious concerns are minimized by development of the proposed action on existing disturbance. Although none have been identified, any heretofore-unidentified effects of the proposed action to Native American Religious Concerns, direct and indirect, are expected to be low and long-term.

4.3.2 Mitigation

No site-specific mitigation measures for Native American Religious Concerns have been recommended. In the event of any discoveries during project implementation, the BLM will be notified.

4.4 Environmental Justice

4.4.1 Direct and Indirect Effects

Development of the proposed action would not result in negative impacts to minority or low-income populations. No minority or low income populations would be directly affected in the

vicinity of the proposed action. Indirect effects could include positive effects due to overall employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to state and county governments related to royalty payments and severance taxes. A more detailed description of potential impacts is contained in the PRMP/FEIS p.4-120 and 4-129.

4.4.2 Mitigation Measures

No mitigation measures for Environmental Justice are recommended.

4.5 USFWS Threatened and Endangered Species

No USFWS listed species, or potential habitats, were found in the project area.

4.5.1 Direct and Indirect Effects

The BLM/FFO staff reviewed the proposed action and determined that it is 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 USFWS is required.

4.5.2 Mitigation Measures

No mitigation measures for USFWS threatened and endangered species are needed.

4.6 Wastes, Hazardous or Solid

Typical wastes associated with the proposed action include trash, sewage, produced water, and produced hydrocarbons. No chemicals subject to the Superfund Amendments and Reauthorization Act (SARA) Title III in amounts greater than 10,000 lbs will be used during project activities. No extremely hazardous substances as defined in 40 CFR 355 in threshold planning quantities will be used.

4.6.1 Direct and Indirect Effects

The potential for littering and hazardous leaks exists during construction and operation of the proposed project. The impacts from hazardous or solid waste would be minimal to non-existent in both the short and long-term with adherence to the following mitigation measures.

4.6.2 Mitigation Measures

During drilling and completion, a trash receptacle and a chemically treated portable toilet will be on location for trash and sewer disposal. All produced hydrocarbons will be put in tanks on location during completion work. Produced water will be put in onsite tanks or within lined reserve pit during completion work. All wastes will be disposed of in a proper manner as required by federal and state law and as described in the COAs

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 the facility site is required under the CERCLA and under BLM NTL-3A. The well location will have an informational sign (43 CFR 3160).

4.7 Water Quality: Surface and Groundwater

The proposed project area does not contain any perennial water sources, wetlands or riparian areas. Two drainages flow off the south side of the proposed well. These small drainages range from Y2 to 2 feet deep by 2 feet wide, with an undefined ordinary high water mark.

4.7.1 Direct and Indirect Effects

The proposed action would temporarily expose (worst case) 3.03 acres of land as a sediment source entering local washes. Exposure of soils, particularly near washes and on slopes, would lead to an increase in an undetermined amount of sediment transport, particularly during and following storm events, due to moderate to high water erosion potentials. Slight alterations in project area drainage patterns may lead to an increase in sediment transport. These increases in sediment transport would persist for several years until the disturbed areas are stabilized. The potential for accidental spills or releases of hazardous materials (i.e., gas, diesel, etc.) used and stored on location exists and could impact local water quality.

The impacts to surface water quality due to short-term increases in sediment transport would be low as the surface water present at the project area is ephemeral. The potential for surface water quality impacts from accidental spills or releases of hazardous materials would be low and long-term. The impact of the proposed action on area water quality would be low in both the short and long-term. The proposed project is not expected to impact any groundwater resources. However, cross contamination between geological zones could occur without adequate cementing and casing of the proposed well bores.

4.7.2 Mitigation Measures

The potential for sediment transport into drainages will be minimized through mitigation measures; these will include BMPs and other preventive measures, such as reestablishment of vegetation and proper site hydrological diversions. Burlington will stockpile the top six inches of topsoil for redistribution during well pad reclamation. Burlington will implement aggressive re-vegetation following construction or at the direction of the BLM. Burlington will install culverts for proper drainage as needed and construct a diversion ditch around the well pad to prevent surface water from entering the proposed project area. The construction zone will be recontoured and reclaimed following well completion. The last approximately Y2 mile of the existing access road will be crowned and ditched to allow water to flow off the road surface and reduce water volume and velocity.

Burlington maintains a hazardous material response contingency plan to cover eventualities that could arise from an accidental release of hazardous materials. Adequate casing, cementing, mud

weights, blowout preventer and reserve pit volume will be stipulated in the COAs to mitigate any potential down-hole impacts to groundwater resources. Adherence to APD COAs and other mitigation measures will minimize impacts to water quality.

4.8 General Topography/Geology

The proposed well pad is located on a mesa top with slope ranging from 1 to 3 percent with a south-southeastern aspect. The mesa rim is located approximately 235 feet from the proposed well pad edge of disturbance.

4.8.1 Direct and Indirect Effects

A total of approximately 3.03 acres of disturbed and undisturbed land would be impacted from construction of the proposed project. The construction of the proposed pad would require a maximum of 7 feet of cut and a maximum of 8 feet of fill to provide a level pad for drilling. Alterations to current topography from the removal of soils and rock within the proposed well pad would be low during the construction phase and low after recontouring and reseeding the periphery of the well pad not needed for access. Changes in topographic relief would vary in extent and would likely not be noticeable. Recontouring has the potential for slightly altering drainage patterns, generally in the short-term. Impacts to project area topography as a result of the proposed action would be low and short-term during construction and low and long-term during operation. Impacts to topography are minimized by development of the proposed action on existing disturbance. With implementation of FFO standard drilling and completion requirements, potential short and long-term effects to mineral resources and geology are anticipated to be low.

4.8.2 Mitigation Measures

Following well completion, areas not needed for operation will be recontoured and reseeded. Once the proposed well is abandoned, Burlington will recontour and reseed the remaining portions of the well pad in accordance with the COAs and stipulations issued by the BLM.

4.9 Paleontological Resources

The proposed project would be assessed individually based on BLM's PFYC system, GIS/Remote Sensing based locality data, known paleontological locality information, existing reports, and data for the area. If preliminary analysis indicates that the proposed project area has a high probability to fall within an appropriately designated class area, additional surveys, reporting, and stipulations would be required.

The San Jose Formation found within the proposed project area is not known to contain any paleontological resources. No fossils are known to occur within or proximate to the proposed project area.

4.9.1 Direct and Indirect Effects

Although no paleontological resources are known to occur within the proposed project area, impacts to paleontological resources from the proposed project implementation could possibly occur. Direct impacts of the proposed project to fossil localities could result from the ground disturbing activities or the disturbance of the stratigraphic context in which they are located. This project could also create indirect impacts to areas by changing erosion patterns. An increase in human activity during construction and drilling in the area could increase the possibility of unauthorized removal or other alterations to paleontological resources in the area. Potential impacts to paleontological resources as a result of the proposed action would be low and long-term.

4.9.2 Mitigation Measures

All BLMIFFO paleontological resources stipulations will be followed as indicated in the COAs, attached to the APDs. 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. Upon review, a determination for final project clearance and stipulations shall be issued by the BLM/FFO.

If previously undocumented paleontological sites are encountered during construction, all activities shall stop in the vicinity of the discovery and the BLM will be immediately notified. The site will then be evaluated. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

4.10 Soils

The soil mapping unit in the proposed action is the Travessilla-Weska-Rock outcrop complex, moderately steep. Surface texture ranges from sandy loam to clay loam and a portion of the proposed project area has been extensively mixed and compacted from the construction and operation of the existing well.

4.10.1 Direct and Indirect Effects

Approximately 3.03 acres of soil would be exposed as a result of construction activities associated with the proposed action, resulting in temporary displacement, compaction, and mixing of soils. Approximately 1 acre of the well pad would remain as bare, compacted soil for the life of the project, approximately 30 years, and would be susceptible to an undetermined amount of wind and water erosion until the well is completely reclaimed.

The impact to project area soils as a result of the proposed action would be would be low to moderate and short-term during construction and low and long-term during operation. The hazard of water erosion is moderate to high. The hazard of soil blowing ranges from moderate to severe. The most susceptible period for soil erosion impacts is during construction when strong winds or precipitation events during soil disturbing activities could mobilize soils. Compaction

of the soils during construction and operation of the proposed project, coupled with the implementation of mitigation measures described below, would limit soil impacts from erosion.

4.10.2 Mitigation Measures

Industry related vehicle and pedestrian traffic will be restricted to proposed disturbance areas and existing roads. The top six inches of soil will be stripped and stockpiled during construction and respread over the area during reclamation. Implementation of proper soil salvage, storage, and reclamation will retain adequate infiltration and permeability rates that will allow for maintenance of soil moisture, which is necessary for plant growth and vigor, and minimize surface runoff. Following construction activities, unused areas will be reseeded with a BLM approved seed mix to stabilize soils and prevent erosion. Following construction, vehicle traffic will be restricted to existing bladed roads to prevent erosion, soil mixing, and compaction in adjacent areas. The final approximately 0.5 mile of existing access road will be crowned and ditched to allow water to flow off the road surface and reduce water volume and velocity. Culverts will be installed and as needed, directing drainage off of the road and into vegetated areas where it can infiltrate into the ground and/or sediment will settle out on the surface.

4.11 Vegetation, Forestry

The vegetation communities in the proposed project include Great Basin desert scrub and pinon-juniper woodland. A portion of the project area has been previously disturbed for the development of the Hancock #SA natural gas well.

4.11.1 Direct and Indirect Effects

Approximately 1.4 acres of Great Basin desert scrub and 1.6 acres of pinon-juniper woodland would be removed by the proposed action. Approximately 50 trees would be removed by the proposed action. Approximately 1 acre would be subject to long-term impacts with 2 acres of vegetation reclaimed following completion. Direct effects would include the short-term loss of vegetation and the long-term modification of species composition and extent of cover types. Approximately 1.6 acres of pinon-juniper woodland would be converted to a vegetation composition similar to Great Basin desert scrub. Impacts would include the short and long-term increased potential for soil erosion, shift in species composition and in plant density or diversity, and a reduction in the quality of wildlife habitat. Impacts to vegetation are minimized by development of the proposed action on existing disturbance.

4.11.2 Mitigation Measures

During construction, Burlington and their contractors' vehicles will only operate on areas identified in this EA as work areas and on existing roadways. Revegetation of the construction zone will be initiated by Burlington immediately following well completion or at the direction of the BLM. The area will be reseeded with a BLM approved seed mixture as shown in Table 7. All rates shown are for pure live seed (PLS). The amount of seed is for drilled rate, for broadcast applications the rate will be doubled. Monitoring for invasive plants and appropriate control/eradication measures will be done in conjunction with the BLM and other required permits/agencies. Trees that are greater than 6-inches diameter of breast height (dbh) will be cut,

stacked and stockpiled, and trees and slash less than 6-inches dbh will be mowed and incorporated into revegetation process.

Table 7. Farmington Field Office Seed Mix.

COMMON NAME	VARIETY	PERCENT FOR MIX	PURE LIVE SEED (lbs/acre)
Western Wheat!ITass	Arriba	23%	3.0
Indian Ricegrass	Paloma or Rimrock	23%	3.0
Slender Wheatgrass	San Luis	15%	2.0
Crested Wheatgrass	Hy-Crest	22%	3.0
Bottlebrush Squirreltail		15%	2.0
Four-wing Saltbush		2%	2.0

Source: BLM 2006

Alternative Species for Consideration:

Grass: Alkali sacaton (for clayey and salty bottoms)
Needle and thread
Pubescent wheatgrass
Intermediate wheatgrass
Smooth brome (for higher elevations)

4.12 Invasive, Non-native Species

No BLM listed invasive, non-native species of concern were identified in the project area.

4.12.1 Direct and Indirect Effects

Surface disturbance activities associated with the proposed project create potential for the establishment and spread of noxious weeds and invasive, non-native species. The proposed project would have low and long-term impact from the potential introduction of invasive, non-native species into the area.

4.12.2 Mitigation Measures

Appropriate washing of vehicles entering the project area will reduce the potential for invasive and non-native plant species infestations. Proper seeding and monitoring of the disturbed areas will reduce the potential for invasive species to establish. Adherence to BLM reclamation measures will minimize impacts from invasive, non-native species. Monitoring for invasive plants and appropriate control/eradication measures will be done in accordance with standard and project specific BLM stipulations.

4.13 Livestock Grazing

The proposed action is located within BLM grazing allotment #5071, which allows a total of 679 AUMs annually.

4.13.1 Direct and Indirect Effects

Surface-disturbing activities associated with construction of the proposed action would initially remove a limited amount of forage. A total of approximately 1.4 acres of Great Basin desert scrub and 1.6 acres of pinon-juniper woodland vegetation communities would be directly impacted by the proposed action, resulting in a minor reduction in forage and a change in the herbaceous species composition. Limited herbaceous and woody species would be absent during construction and in limited quantities one to two years after revegetation.

The direct short-term loss and impact to grazing is estimated to be approximately 0.12 federal AUMs (at an estimated 25 acres per AUM). This impact would last until successful reclamation of the disturbed area has occurred. There would be a long-term loss of an estimated 1 acres of potential forage resources (less than 0.05 AUM) for areas needed for operation and maintenance.

Cattle grazing could continue in the project area during construction, drilling, and operations. The reclaimed areas associated with the proposed action would typically recover to the level before disturbance in about three to five years. Reseeded sites often produce more livestock forage then nature vegetation habitat. Potential indirect impacts to livestock include an increase in human activity, noise, and traffic. Road construction and drilling activities are not expected to conflict with grazing use of the area.

4.13.2 Mitigation Measures

Reseeding will reduce impacts to livestock grazing. Control of invasive weeds during construction and operation of the proposed project will be important for minimizing further habitat degradation to the affected allotment. Burlington will fence around the reserve pit during drilling and around produced water tanks during operations, precluding livestock and big game from utilizing these water sources.

4.14 Special Status Species

In accordance with BLM Manual 6840, the 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. The BSR in Appendix C provides the basis for the findings listed in the table.

Three BLM special management status species have the potential to occur in the project and action area: golden eagles, peregrine falcon and prairie falcon.

4.14.1 Direct and Indirect Effects

Direct impacts to golden eagles, peregrine falcon, and prairie falcon as a result of the proposed project would include the removal and modification of approximately 3.03 acres of potential foraging habitat. Approximately 1 acre of the total would not be reclaimed following construction of the proposed project. The proposed action would not result in any disturbance or modification to potential raptor nesting habitat. Impacts to raptor foraging habitat are minimized

by construction of the proposed project on existing disturbance. Additional impacts may include avoidance of the project area by golden eagles and prairie falcons during construction, drilling, and operation due to human activity, vehicles. and noise. Impacts from increased human activity and associated noise would be low and long-term. Indirect impacts may include a change in vegetation species composition and density due to surface disturbance and reclamation, which could affect the prey base for golden eagles, peregrine falcons, and prairie falcons. Indirect impacts would be low and long-term.

4.14.2 Mitigation Measures

Adherence to COAs and stipulations provided by the BLM will minimize effects to all raptors that may utilize the project" and action areas for foraging. Should any nesting raptors be identified before or during construction activities, the BLM biologist will be immediately contacted in order to evaluate whether additional resource protection measures are warranted.

4.15 Wildlife

The proposed action would be located within Great Basin desert scrub and pinon-juniper woodland communities that are used year-round by big-game, and small and medium-sized mammals.

4.15.1 Direct and Indirect Effects

During construction activities, wildlife in the proposed project and adjacent areas would be temporarily displaced and would vacate the area due to human and vehicular activity and the associated noise. At that time, wildlife such as mule deer and elk would continue to pass through the proposed project area, yet are also likely to modify movement patterns around the proposed project to avoid humans and traffic. Some burrowing animals may be killed or displaced and their burrows destroyed during construction activities. Once the proposed project is completed, wildlife would likely return to the proposed project area, though habitat utilization may be altered by the change in vegetation communities.

Construction of the proposed action would result in the removal of approximately 3.03 acres of and Great Basin desert scrub and pinon-juniper woodland, including about 50 trees. Since the vegetation removed would not necessarily be replaced with the same species and in the same percentage, some habitat modification is anticipated. A minor loss of big game foraging and cover habitat would result from the implementation of the proposed action.

Impacts to wildlife would be low to moderate in the short-term during construction and drilling. Impacts during operation would be low and long-term. Impacts to wildlife habitat are minimized by construction of the proposed action on previous disturbance.

4.15.2 Mitigation Measures

Construction activities will be confined to the permitted area to avoid further disruption to wildlife. All open pits or stacks will be covered. Adherence to BLM reclamation and sanitation measures will also minimize potential impacts to wildlife. The area will be reseeded with the

standard FFO seed mix. Any spills will be promptly cleaned up and Burlington will prepare a hazardous material response contingency plan to cover eventualities, which could arise from an accidental release of hazardous materials. Reserve pits will be fenced and any open cavities will be covered.

4.16 Migratory Birds

Executive Order 13186 dated January 17, 2001 calls for increased efforts to more fully implement the MBTA. In keeping with this mandate, the BLM/FFO has consulted the PIF Bird Conservation Plan for the State of New Mexico and the USFWS list of Birds of Conservation Concern. A review of these documents, specifically as they pertain to the Colorado Plateau physiographic area, indicates there are three "priority" avian species (with a known range of distribution in the FFO area) that utilize the pinon-juniper woodland habitat type and eight "priority" species that utilize the sagebrush/grass within the Great Basin desert shrub habitat type that occur on the NMPIF "Highest Priority" and USFWS "Birds of Conservation Concern 2008" lists. Nine of these species occur on both lists. These species and a brief assessment of the effects of the proposed action on their habitat are provided in Table 8.

Table 8. Migratory Bird Species of Concern occurring within the BLM/FFO and potential impacts.

Species	Habitat Type	Effects	Impact Rating None/Low/Moderate/High
Grasshopper sparrow *(Ammodramus savannarum)*	sage/grass	May be positively affected due to conversion to grassland.	Low
Sage sparrow *(Amphispiza belli)*	sage/grass	Minor loss of nesting and brood rearing habitat.	Low
Burrowing owl *(Athene cunicularia)*	sage/grass	Little effect, nests in abandoned prairie dog burrows.	Low
Ferruginous hawk *(Buteo regalis)*	sage/grass/ pinon-juniper interface	Loss of nesting and foraging habitat; decrease in prey (small mammals) abundance likely.	None
Mountain plover *(Charadrius montanus)*	sage/grass	May be positively affected due to conversion to grassland; may produce more prey (i.e., arthropods).	None
Long-billed curlew *(Numenius americanus)*	sage/grass	May be positively affected due to conversion to grassland.	Low
Sage thrasher[1] *(Oreoscoptes montanus)*	sage/grass	May be some loss of sage/nesting habitat.	Low
Bendire's thrasher *(Toxostoma bendirei)*	sage/grass	Little effect anticipated some loss of nesting habitat; increase in prey (i.e., arthropods) likely.	Low
Juniper titmouse *(Baeolophus ridgwayi)*	pinon-juniper	Secondary cavity nester; some loss of nesting habitat.	Low
Pinon jay *(Gymnorhinus*	pinon-juniper	Colony nester in pinon; loss of pinon may impact.	Low

Species	Habitat Type	Effects	Impact Rating None/Low/Moderate!Higb
cyanocephalus)			
Gray vireo *(Vireo vicinior)*	pinon-juniper	Nests in juniper; reduction of juniper may be detrimental.	Low

I – "H1gh Pnonty" b1rd specles that are hsted on the NMPIF "H1ghest Pnonty' b1rds of conservation concern hst but not on the USFWS "Birds of Conservation Concern 2008" Jist.

4.16.1 Direct and Indirect Effects

Direct and indirect impacts to migratory birds of concern would be low and short to long-term given the level of previous disturbance in the project area. Impacts to those species associated with Great Basin desert scrub and pinon-juniper woodland communities would occur from the removal of 3.03 acres of vegetation, including removal of approximately 50 trees. Impacts to migratory birds could be greater should construction occur during the breeding season of April 15 through July 15 when construction activities may result in nest destruction or cause nest abandonment in adjacent areas.

4.16.2 Mitigation Measures

Construction activities will be confined to the proposed project area to avoid further disruption to migratory birds. All open pits or stacks will be covered. Adherence to BLM reclamation and sanitation measures will minimize potential impacts. Following construction activities, disturbed areas will be reseeded with the appropriate BLM seed mix. Any spills will be promptly cleaned up and Burlington will prepare a hazardous material response contingency plan to cover eventualities, which could arise from an accidental release of hazardous materials. Reserve pits will be fenced and any open cavities will be covered. Any bird nests found within the proposed project area must be reported to a BLMIFFO biologist for appropriate mitigation prior to construction activities.

4.17 Recreation

There are no designated recreational areas within the proposed project area or immediate surroundings. The proposed project area does offer opportunities for dispersed recreational activities.

4.17.1 Direct and Indirect Effects

During construction and drilling, recreationists may experience an increase in traffic, fugitive dust, and sound levels, as well as nighttime lighting. The proposed action would have low and short-term impacts to recreation opportunities during construction and drilling of the well. Impacts would be low for the long-term during operation.

4.17.2 Mitigation Measures

Suspended dust during construction activities will be reduced through the application of fresh water to disturbed areas and heavy vehicle traffic areas. Construction activities will be confined to the proposed project area. Adherence to BLM reclamation and sanitation measures will

minimize potential impacts. Following construction activities, disturbed areas will be reseeded with the appropriate BLM seed mix. Any spills will be promptly cleaned up and Burlington will prepare a hazardous material response contingency plan to cover eventualities, which could arise from an accidental release of hazardous materials.

4.18 Visual Resources

The proposed project is located within the boundary of an area designated as Class III VRM.

4.18.1 Direct and Indirect Effects

During construction and drilling operations, the effect of disturbed ground, machinery emissions, and the presence of the drill rig and construction equipment would result in low to moderate short-term visual impacts. After construction, the presence of above ground equipment associated with well operation and natural gas production would result in residual low long-term visual impacts.

4.18.2 Mitigation Measures

A rapid construction schedule will minimize impacts to visual resources that result from construction activities. Mitigation measures that will minimize the visual impact of the project include revegetation and above-ground facility paint color requirements established by the BLM. Low profile equipment will be installed to minimize impacts to visual resources.

4.19 Public Health and Safety

The proposed project may impact public health and safety in a number of ways. The primary activities associated with public health and safety includes traffic and transportation to/from the site, and handling, storage, and operation of equipment associated with construction activities. Health and safety issues for construction workers include operation of heavy equipment, welding activities, and working in the vicinity of other utilities (primarily other oil and gas gathering pipelines).

4.19.1 Direct and Indirect Effects

Direct and indirect impacts on public health and safety will be low to moderate and short-term during construction and drilling. Impacts during operation would be low and long-term.

4.19.2 Mitigation Measures

Adherence to company safety policies and BLM COAs will provide mitigation for public health and safety. In addition, hauling equipment and materials for the project on public roads would comply with all Department of Transportation regulations. All drilling and equipment operation would be performed in compliance with appropriate Occupation Health and Safety Administration (OSHA) regulations.

4.20 Cumulative Effects

The leased area of the proposed action has been industrialized with oil and gas well development. The surface disturbance for each project that has been permitted 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 and well pads. 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.

Due to the absence of regulatory requirements to measure GHG emissions and the variability of oil and gas activities on federal minerals, it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of approving this application for permit to drill. A general assumption, however, can be made: drilling this well may contribute to GHG emissions.

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to natural resources and plant and animal species due to climate change are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated.

Due to loss of habitat or competition from other species whose ranges may shift northward, the population of some animal species may be reduced or increased. Less snow at lower elevations would likely impact the timing and quantity of snowmelt, which, in turn, could impact water resources and species dependant on historic water conditions. Forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten-year period. Should the trend continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be more affected by climate change.

5.0 CONSULTATION/COORDINATION

This section includes individuals or organizations from the public, public land users, the interdisciplinary team, and permittees that were contacted during the development of this document.

Table 9. Summary of Public and Interdisciplinary Team contacts Made During Preparation of the Document.

PUBLIC CONTACT	TITLE	ORGANIZATION	PRESENT AT ONSITE
Brandie Blakley	Regulatory Technician	Burlington	No
Steven Merrell	Construction Supervisor	Burlington	Yes
Mike Flaniken	Environmental Protection Specialist	BLM/FFO	Yes
Harry Begay	Enterprise Pipeline Construction Supervisor	Enterprise	Yes
Jim Copeland	Archaeologist	BLM/FFO	No
Theresa Ancell	Biologist	Ecosphere	Yes
Toinette Slowman	Biologist	Ecosphere	Yes
Michael J. Proper and Shannon M. Brown	Archaeologists	Western Cultural Resource Management	No

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APPENDIX A

APPLICATION FOR PERMIT TO DRILL (APD)

APPENDIXB

CONDITIONS OF APPROVAL (COA)

APPENDIX B

CONDITIONS OF APPROVAL (COA)

APPENDIXC

BIOLOGICAL SURVEY REPORT