

**United States Department of the Interior
Bureau of Land Management**

Environmental Assessment

DOI-BLM-NM-RPXX-2013-XXXX-EA

February 2014 Competitive Oil and Gas Lease Sale

Sandoval County, New Mexico



Rio Puerco Field Office
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Albuquerque, New Mexico 87107
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Environmental Assessment

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1.0 INTRODUCTION

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920 (MLA), as amended [30 U.S.C. 181 et seq.], and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to make mineral resources available for disposal and to manage for multiple resources which include the development of mineral resources to meet national, regional, and local needs.

The BLM New Mexico State Office (NMSO) conducts a quarterly competitive lease sale to offer available oil and gas lease parcels in New Mexico, Oklahoma, Texas, and Kansas. A Notice of Competitive Lease Sale (NCLS), which lists lease parcels to be offered at the auction, is published by the NMSO at least 90 days before the auction is held. Lease stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations are necessary, based on information available at the time, is made during the land use planning process. Surface management of non-BLM administered land overlaying Federal minerals is determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale the NMSO sends a draft parcel list to any field offices in which parcels are located. Field office staff then review the legal descriptions of the parcels to determine if they are in areas open to leasing; if new information has become available which might change any analysis conducted during the planning process; if appropriate consultations have been conducted; what appropriate stipulations should be included; and if there are special resource conditions of which potential bidders should be made aware. The parcels nominated for this sale, along with the appropriate stipulations from the Resource Management Plan (RMP), are posted online for a two week public scoping period. Comments received are reviewed and incorporated into the environmental assessment (EA).

Once the draft parcel review is completed and returned to the NMSO, a list of nominated lease parcels with specific, applicable stipulations is made available online to the public through the NCLS. On rare occasions, additional information obtained after the publication of the NCLS may result in deferral of certain parcels prior to the lease sale.

This EA documents the BLM's review of the 76 parcels nominated for the February 2014 Competitive Oil and Gas Lease Sale that involve public lands administered by the Rio Puerco Field Office. It serves to verify conformance with the approved land use plan as well as demonstrates the effectiveness of attaching the lease stipulations to specific parcels.

The parcels and applicable stipulations were posted online for a two week public scoping period starting on July 22, 2013. No comments were received.

In addition, this EA was made available for public review and comment for 30 days beginning September 3, 2013. Comments were received from Ojo Encino Chapter Government (Navajo Nation).

1.1 Purpose and Need

The purpose is to provide opportunities for private individuals or companies to explore for and develop oil and gas resources on public lands through a competitive leasing process.

The need of the action is established by the BLM's responsibility under the Mineral Leasing Act (MLA), as amended, to promote the exploration and development of oil and gas on the public domain. The MLA also establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with the Federal Land Policy Management Act (FLPMA), the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.), and other applicable laws, regulations, and policies.

1.2 Decision to be Made

The BLM will decide whether or not to lease the nominated parcels and, if so, under what terms and conditions.

1.3 Plan Conformance

The applicable land use plan for this action is the 1986 Rio Puerco Resource Management Plan (RMP), as amended. The 1986 RMP designated approximately 1.3 million acres of federal minerals open for fluid mineral leasing with moderate constraints, which include seasonal timing limitations and other controlled surface use stipulations designed to minimize or alleviate potential impacts to special resource values. Since the parcels under consideration fall within this area and the applicable constraints identified in the RMP would be attached to the parcels, if leased, leasing the parcels would be in conformance with the Rio Puerco RMP. Leasing the parcels would also be consistent with the RMP's goals and objectives for natural and cultural resources.

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA is tiered to and incorporates by reference certain information and analyses contained in the 1986 Rio Puerco RMP and its Final Environmental Impact Statement (EIS) as amended. The Final Resource Management was approved by the Record of Decision (ROD) signed January 1986. The RMP designated approximately 7.84 million acres of federal minerals open for continued oil and gas development and leasing under Standard Terms and Conditions. The RMP described specific stipulations that would be attached to new leases offered in certain areas.

In addition, FLPMA established guidelines to provide for the management, protection, development, and enhancement of public lands (Public Law 94-579). Section 103(e) of FLPMA defines public lands as any lands and interest in lands owned by the U.S. For split-estate lands where the mineral estate is an interest owned by the U.S., the BLM has no authority over use of the surface by the surface owner; however, the BLM is required to declare how the federal mineral estate will be managed in the RMP, including identification of all appropriate lease stipulations (43 CFR 3101.1 and 43 CFR 1601.0-7(b); BLM Manual Handbook 1601.09 and 1624-1).

Site specific analysis as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.) (8) was conducted by Rio Puerco Field Office resource specialists who relied on personal knowledge of the areas involved and/or reviewed existing databases and file information to determine if appropriate stipulations had been attached to specific parcels.

If a nominated lease parcels is sold, it is unknown when, where, or if future well sites or roads might be proposed. Also, at the time of this review, it is unknown whether a parcel will be sold and a lease issued. Analysis of projected surface disturbance impacts, should a lease be developed, was estimated based on potential well densities listed in the Reasonable Foreseeable Development Scenario used as the basis for the PRMP/FEIS. Detailed site specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD).

The Energy Policy Act of 2005 (9) categorically excludes certain oil and gas development activities from further NEPA analysis. However, excluded projects must still conform with the applicable RMP including any restrictions to development presented in the Plan.

The proposed project would not be in conflict with any local, county, or state plans.

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

Purchasers of oil and gas leases are required to comply with all applicable Federal, state, and local laws and regulations, including obtaining all necessary permits required should lease development occur.

The Resource Conservation and Recovery Act (RCRA) of 1976 (26) established a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any “discarded materials” subject to a number of exclusions. On July 6, 1988, EPA determined that oil and gas exploration, development and production wastes would not be regulated as hazardous wastes under RCRA.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980 (27) deals with the release of hazardous substances (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. Civil and criminal penalties may be imposed if the hazardous waste is not managed in a safe manner and according to regulations. The State of New Mexico Oil Conservation Division (NMOCD) administers hazardous waste regulations for oil and gas activities in New Mexico.

The professional opinion of BLM biologists, using BLM inventory and monitoring data, is that no federally listed threatened, endangered, or proposed species would be adversely affected by sale of the lease parcels. Effects of oil and gas leasing and development on threatened or endangered species were analyzed in Section 7 consultation (Cons. # 2-22-96-F-128 and Cons. #22420-2007-TA-0033). No new information has been uncovered which would change that analysis. Additional review and analysis would occur when site specific proposals for development are received.

Federal regulations and policies require the BLM to make its public land and resources available on the basis of the principle of multiple use. At the same time, it is BLM policy to conserve special status species and their habitats, and to ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as threatened or endangered by the USFWS.

Compliance with responsibilities under Section 106 of the National Historic Preservation Act is achieved by following the Protocol Agreement between New Mexico Bureau of Land Management and New Mexico State Historic Preservation Officer (Protocol Agreement), which is authorized by the National Programmatic Agreement between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks. A review of draft parcel locations was performed by the Rio Puerco Field Office to address the potential for areas of concern to be present [Report NM-110-2013(III)A]. The cultural section in Affected Environment analysis portion of this EA describes the general findings. It is, however, the responsibility of the leasee, or their designated consultants, to understand and implement all of the requirements of the National Historic Preservation Act and other pertinent legislation with regard to the management of cultural resources within their respective Areas of Potential Effect (APE). This responsibility includes the assumption of all costs related to compliance work and any mitigation issues that might arise through avoidance, relocation, or the implementation of other remedial actions.

Under Instruction Memorandum NM-2005-037 (13), consultation with Native American tribes to identify traditional cultural properties and sacred sites takes place when the resource management plan (RMP) is formulated or updated. If the RMP has not been updated, the Field Office determines whether Native American consultation has been sufficient. The Rio Puerco Field Office has determined that previous Native American consultation for this lease sale was not sufficient and consultation with the appropriate tribes was initiated by registered mail on April 3, 2013. One comment was received, and no sensitive properties are known to exist within the proposed lease parcels.

If responses are received, BLM cultural resources staff will discuss the information or issues of concern with the Native American representatives to determine if all or portions of a parcel need to be withdrawn from the sale, or if special requirements need to be attached as lease stipulations.

Compliance with the provisions of the 2009 Paleontological Resources Protection Act (PRPA; Public Law 111-011) requires that the Department of the Interior consider the potential impacts of development plans on significant fossil resources and allow for the implementation of mitigation measures where necessary. Initial compliance is an internal process where the potential for significant paleontological resources to be present is established by a review of the Potential Fossil Yield Classification System (PFYC) for the Area of Potential Effects (APE). Numerical ranking of the associated geological formations under the PFYC system in terms of fossil potential dictates the direction of additional compliance measures. These may range from a determination of no effect to the requirement that a paleontological survey be conducted by appropriate specialists and that further action adheres to any subsequent recommendations.

In Section 1835 of the Energy Policy Act of 2005 (43 U.S.C. 15801), Congress directed the Secretary of the Interior to review current policies and practices with respect to management of Federal subsurface oil and gas development activities and their effects on the privately owned surface. The Split Estate Report, submitted in December 2006, documents the findings resulting from consultation on the split estate issue with affected private surface owners, the oil and gas industry, and other interested parties.

In 2007, the Legislature of the State of New Mexico passed the Surface Owners Protection Act. This Act requires operators to provide the surface owner notice at least five business days prior to initial entry upon the land for activities that do not disturb the surface; and provide notice at least 30 days prior to conducting actual oil and gas operations. At the New Mexico Federal Competitive Oil and Gas Lease Sale conducted on October 17, 2007, the BLM announced the implementation of this policy. Included in this policy is the implementation of a Notice to Lessees (NTL), a requirement of lessees and operators of onshore federal oil and gas leases within the State of New Mexico to provide the BLM with the names and addresses of the surface owners of those lands where the Federal government is not the surface owner, not including lands where another federal agency manages the surface.

The NMSO would then contact the surface owners and notify them of the expression of interest and the date the oil and gas rights would be offered for competitive bidding. The BLM would provide the surface owners with its website address so they may obtain additional information related to the oil and gas leasing process, the imposition of any stipulations on that lease parcel, federal and state regulations, and best management practices. The surface owners may elect to protest the leasing of the minerals underlying their surface.

If the BLM receives a protest, the parcel would remain on the lease sale. However, the BLM would resolve any protest prior to issuing an oil and gas lease for that parcel. If the protest is upheld, the BLM would return the payments received from the successful bidder for that parcel. After the lease sale has occurred, the BLM would post the results on its website and the surface owner may access the website to learn the results of the lease sale.

1.5 Scoping and Issues

An internal review of the Proposed Action was conducted by an interdisciplinary team of Rio Puerco Field Office resource specialists on June 3, 2013 to identify and consider potentially

affected resources and associated issues—the scope of issues evaluated in this EA—presented below. The outcome of this meeting and subsequent review by the resource specialists was the identification of applicable lease stipulations that are appropriately applied to each respective parcel.

The parcels included in the Proposed Action, along with the appropriate stipulations from the RMP, were posted online at http://www.blm.gov/nm/st/en/prog/energy/oil_and_gas.html for a two week public scoping period beginning July 22, 2013.

In addition, appropriate consultations were initiated with Native American tribes and pueblos to solicit input on the proposed lease sale and any potential unresolved issues.

1.6 Resource Issues Identified

Areas of Critical Environmental Concern

What are the:

- Potentially adversely affects the Torreon Fossil Faunas ACECs
- Potential to adversely affect Canon Jarido Area of Critical Environmental Concern (ACEC)?

Recreation and Special Designation Areas

What is the:

- Potential to adversely affect Oh My God 100 Courses A, B, and C?
- Potential to adversely affect Continental Divide Trail?
- Potential to adversely affect the proposed San Juan Badlands Extensive Recreation Management Area (ERMA)?

Wildlife Habitat

What are the:

- Potential impacts to big game winter and spring range and migration corridor?
- Potential impacts to nesting raptors and bald eagle roosting sites?
- Potential impacts to prairie dog towns?

Cultural Resources

What is the:

- Potential to adversely affect National Register eligible sites?
- Potential to adversely affect or restrict Native American access to Traditional Cultural Properties?

Mineral Resources

What is the:

- Need for development of energy mineral resources?
- Potential to affect the disturbed land by development of the lease?

Paleontological Resources

What is the:

- Potential to impact significant paleontological resources?

Visual Resources

What is the:

- Potential for visual contrast inconsistent with Visual Resource Management classes I and II?

Soils

What is the:

- Potential for accelerated soil erosion on steeper slopes?
- Potential for poor reclamation success (revegetation) on certain soils if disturbed?

Livestock Grazing

What is the:

- Potential to impact livestock grazing operations?

Vegetation

What is the:

- Potential to disrupt and remove native/desirable vegetation?

Noxious Weeds and Invasive, Non-native Species

What is the:

- Potential to introduce and propagate noxious weeds and other invasive, non-native species?

Watershed Resources

What is the:

- Potential to affect watershed stability and associated resources such as riparian areas, wetlands, and floodplains?

- Potential to affect surface and ground water quality?

Areas of Human Occupancy and Development

What is the:

- Potential to impact land uses by local populations?
- Potential to disproportionately impact minority or low income populations (Environmental Justice)?

Air Resources

What is the:

- Potential for emissions of criteria and hazardous air pollutants?
- Potential for contributions to climate change?

Issues not Analyzed

The following elements are not present in the nominated parcel areas therefore there would be no potentially significant effects related to the issues resulting from any of the alternatives presented below: Prime or Unique Farmlands, Wild and Scenic Rivers, Wilderness, Wilderness Study Areas, Wild Horses and Burros and Threatened/Endangered Species.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Proposed Action is to lease the 76 parcels of federal minerals nominated by the public, covering approximately 74,650 acres administered by the Rio Puerco Field Office, for oil and gas exploration and development. A complete description of these parcels, including any stipulations, is provided in Appendix 1, while a map of the parcels, Figure 1, is included in Appendix 2.

Once sold, the lease purchaser has the exclusive right to use so much of the leased lands as is reasonably necessary to explore and drill for all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (43 CFR 3101). Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities. If a lease holder fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, exclusive right to develop the leasehold reverts back to the federal government and the lease can be reoffered in another lease sale.

Drilling of wells on a lease would not be permitted until the lease owner or operator meets the site specific requirements specified in 43 CFR 3162.

2.2 Alternative A - No Action Alternative

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 action would not take place. In the case of a lease sale, this would mean that an expression of interest to lease (parcel nomination) would be deferred, and the 76 parcels would not be offered for lease during the February 2014 Competitive Oil and Gas Lease Sale. Surface management and any ongoing oil and gas development on surrounding federal, private, and state leases would continue under current guidelines and practices. Selection of the no action alternative would not preclude these parcels from being nominated and considered in a future lease sale.

2.3 Alternative B- Lease Sale With No Deferments

Lease all 76 parcels with no deferments with standard terms and conditions as well as stipulations listed in the Rio Puerco 1986 RMP Table 8 and Draft RMP Appendix H would be applied where appropriate. Stipulations applied to all leases ensure compliance with Section 106 of the National Historic Preservation Act (NHPA) and Executive Order 13007 regarding the protection of cultural resources and Section 7 of the Endangered Species Act regarding plant and animal species or their habitats subject to its provisions. A complete description of these parcels, including any stipulations, is provided in Appendix 1, while a map of the parcels, Figure 1, is included in Appendix 2.

Once sold, the lease purchaser would have the exclusive right to use as much of the leased lands as would be necessary to explore and drill for all of the oil and gas within the lease boundaries, subject to: stipulations attached to the lease; restrictions deriving from specific, nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed (43 CFR 3101).

Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities. If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease; exclusive right to develop the lease reverts back to the federal government and the lease can be reoffered in another lease sale. Drilling of wells on a lease is not permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan specified under Onshore Oil and Gas Orders listed in Title 43 Code of Federal Regulation 3162. A permit to drill would not be authorized until site-specific NEPA analysis is conducted.

Drilling of wells on a lease is not permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan specified under Onshore Oil and Gas Orders listed in Title 43 CFR 3162. A permit to drill would not be authorized until site-specific NEPA analysis is conducted.

All parcels contain a special Cultural Resources Lease Notice stating that all development activities proposed under the authority of these leases are subject to compliance with Section 106 of the NHPA and Executive Order 13007. Standard terms and conditions, stipulations listed in the RMP, and any new stipulations developed through the parcel review and analysis process to

address site specific concerns or new information not identified in the land use planning process would apply as appropriate to each lease. In addition, site specific mitigation measures and Best Management Practices (BMPs) would be attached as Conditions of Approval (COAs) for each proposed exploration and development activity authorized on a lease.

2.4 Alternative C-BLM Preferred Alternative

The Preferred Alternative is to defer 76 parcels because leasing the parcels would harm resource values and may limit the choice of reasonable alternative actions being considered in the Rio Puerco Draft RMP/EIS.

Table 1.0 Summary of Alternatives

Parcel	Stipulations to be Applied under the Proposed Action and Alternative B		Preferred Alternative
	1986 RMP (As Amended)	2012 Draft RMP	
NM-201401-067 2073.300 Acres T.0200N, R.0010W, NM PM, NM Sec. 003 LOTS 1-4; 003 S2NW,SW,S2SE; 004 LOTS 3,4; 004 N2SW,SE; 005 LOTS 2-4; 005 SWNE,S2NW,N2SW,SE; 006 LOTS 6; 009 W2NE,S2NW,SW; 010 NE,E2NW,SW,N2SE,SWS E; 015 LOTS 1;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places LN-Sec. 5 contains the Cuba Fairgrounds R & PP and Sec. 6 contains the Cuba Soil and Water District Office R & PP. NM-6-NSO RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-068 2099.820 Acres T.0200N, R.0010W, NM PM, NM Sec. 007 LOTS 1,4,7-9;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places LN-Sec 7 contains the	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D)	Defer Pending RMP Completion

007 E2SW,SE; 008 N2NE,S2N2,S2; 017 ALL; 018 LOTS 2,5-8; 018 E2,E2W2;	State Highway Patrol headquarters and the former Cuba Village Landfill NM-6-NSO RP-6 NM-12	H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	
NM-201401-069 160.000 Acres T.0200N, R.0010W, NM PM, NM Sec. 015 S2SE; 022 NWNE,NENW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places PVT (Split Estate) RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-070 942.470 Acres T.0200N, R.0010W, NM PM, NM Sec. 019 LOTS 1-4,9- 12; 019 N2NE,SENE; 020 LOTS 2-6; 020 N2; 029 LOTS 2; 030 LOTS 3,11,12; ;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places NM-6-NSO RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-071 40.000 Acres T.0200N, R.0010W, NM PM, NM Sec. 021 NWNE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-072 40.000 Acres T.0200N, R.0010W, NM PM, NM Sec. 021 NWNW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places NL-Sec. 27 is included in a	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.2 -	Defer Pending RMP Completion

	humate withdrawal. RP-6	Paleontological Resource Values (application varies by area)	
NM-201401-073 1716.510 Acres T.0200N, R.0010W, NM PM, NM Sec. 021 NESW,S2S2,NESE; 022 LOTS 4; 022 W2SW,SESW,SWSE; 023 SESE; 026 NENE,S2N2,N2S2; 027 N2,E2SW,SWSW,N2SE; 028 N2,NWSE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-074 1064.510 Acres T.0200N, R.0010W, NM PM, NM Sec. 029 LOTS 8-10; 031 LOTS 1,2,6,7; 031 S2NE,SE; 032 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.2 - Paleontological Resource Values (application varies by area) NM-6-NSO	Defer Pending RMP Completion
NM-201401-075 797.400 Acres T.0200N, R.0010W, NM PM, NM Sec. 033 W2SE; 034 LOTS 1; 034 W2SW,E2SE; 035 NWSW,N2SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.3.1 (Alt. B/C) H.2.2.2 (Alt. C) H.2.3.2 (Alt. B/C/D) H.2.3.3 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-076 108.180 Acres T.0210N, R.0010W, NM PM, NM Sec. 017 LOTS 3,6,7;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU-	Defer Pending RMP Completion

		Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	
NM-201401-077 120.000 Acres T.0210N, R.0010W, NM PM, NM Sec. 018 SWNE,N2SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU-Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-078 225.990 Acres T.0210N, R.0010W, NM PM, NM Sec. 021 LOTS 4,5,6; 022 NWSW; 028 LOTS 1; 028 NENE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places LN-sections 21 and 28 includes an R & PP for the Cuba Independent School District. RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU-Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-079 379.620 Acres T.0210N, R.0010W, NM PM, NM Sec. 030 LOTS 1-5,7,8; 030 E2SW,NWSE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU-Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-080 42.230 Acres T.0210N, R.0010W, NM PM, NM Sec. 031 LOTS 10,11;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU-Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C) NM-6-NSO	Defer Pending RMP Completion

NM-201401-081 463.700 Acres T.0210N, R.0010W, NM PM, NM Sec. 032 LOTS 1,2,3,4; 032 S2S2; 033 LOTS 5; 033 S2SW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-082 49.290 Acres T.0210N, R.0010W, NM PM, NM Sec. 034 LOTS 7,8;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-083 514.650 Acres T.0200N, R.0020W, NM PM, NM Sec. 001 LOTS 1-7; 001 SWNE,S2NW,SW,W2SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C/D) H.2.3.2 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-084 1920.00 Acres T.0200N, R.0020W, NM PM, NM Sec. 009 ALL; 010 ALL; 015 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-085 640.00 Acres T.0200N, R.0020W, NM PM, NM Sec. 017 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C/D) H.2.6.1 CSU- Paleontological	Defer Pending RMP Completion

		Resources, PYFC Class IV and V Areas (Alts. B, C)	
NM-201401-086 560.000 Acres T.0200N, R.0020W, NM PM, NM Sec. 022 N2,SW,W2SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-087 640.000 Acres T.0200N, R.0020W, NM PM, NM Sec. 029 W2; 030 E2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-088 1936.840 Acres T.0210N, R.0020W, NM PM, NM Sec. 003 LOTS 1-4; 003 S2N2,S2; 004 LOTS 1-4; 004 S2N2,S2; 005 LOTS 1-4; 005 S2N2,S2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-089 1902.340 Acres T.0210N, R.0020W, NM PM, NM Sec. 006 LOTS 1-7; 006 S2NE,SENW,E2SW,SE; 007 LOTS 1-4; 007 E2,E2W2; 008 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-090 1920.000 Acres T.0210N, R.0020W, NM PM, NM	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C)	Defer Pending RMP Completion

Sec. 009 ALL; 010 ALL; 015 ALL;	RP-6	H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C) H.2.7 Recreation Stipulations	
NM-201401-091 1912.040 Acres T.0210N, R.0020W, NM PM, NM Sec. 016 ALL; 017 ALL; 018 LOTS 1-4; 018 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-092 1273.200 Acres T.0210N, R.0020W, NM PM, NM Sec. 019 LOTS 1-4; 019 E2,E2W2; 030 LOTS 1-4; 030 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-5 RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-093 1920.000 Acres T.0210N, R.0020W, NM PM, NM Sec. 020 ALL; 028 ALL; 029 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-094 1280.000 Acres T.0210N, R.0020W, NM PM, NM Sec. 022 ALL; 027 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-095 400.00 Acres T.0180N, R.0030W, NM	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C)	Defer Pending RMP Completion

PM, NM Sec. 022 S2; 027 W2NW;	RP-6	H.2.6.2 - Paleontological Resource Values (application varies by area)	
NM-201401-096 40.000 Acres T.0180N, R.0030W, NM PM, NM Sec. 029 SESE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places BIA-1 RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-097 80.000 Acres T.0180N, R.0030W, NM PM, NM Sec. 033 SWNE,SWSE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-098 160.000 Acres T.0180N, R.0030W, NM PM, NM Sec. 034 NW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-099 589.430 Acres T.0200N, R.0030W, NM PM, NM Sec. 006 LOTS 1-7; 006 S2NE,SENW,E2SW,SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-100 320.000 Acres T.0200N, R.0030W, NM PM, NM Sec. 025 E2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC	Defer Pending RMP Completion

		Class IV and V Areas (Alts. B, C)	
NM-201401-101 960.000 Acres T.0200N, R.0030W, NM PM, NM Sec. 026 ALL; 035 W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-102 626.600 Acres T.0200N, R.0030W, NM PM, NM Sec. 031 LOTS 1-4; 031 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-103 1200.000 Acres T.0200N, R.0030W, NM PM, NM Sec. 033 ALL; 034 N2,N2SW,SE;	Lease with the following Stipulations: Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Pending Paleontological Stipulation to be developed by the SO		Defer Pending RMP Completion
NM-201401-104 1774.480 Acres T.0210N, R.0030W, NM PM, NM Sec. 001 LOTS 1-4; 001 S2N2,S2; 002 LOTS 1-4; 002 S2N2,S2; 012 W2E2,W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Communications site, ERMA (NSO), Split Estate RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-105 1929.280 Acres T.0210N, R.0030W, NM PM, NM Sec. 003 LOTS 1-4; 003 S2N2,S2; 010 ALL; 011 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion

NM-201401-106 1939.640 Acres T.0210N, R.0030W, NM PM, NM Sec. 004 LOTS 1-4; 004 S2N2,S2; 005 LOTS 1-4; 005 S2N2,S2; 009 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area	Defer Pending RMP Completion
NM-201401-107 1442.880 Acres T.0210N, R.0030W, NM PM, NM Sec. 007 E2; 008 ALL; 006 LOTS 1-6; 006 S2NE,SE; 007 LOTS 1-4;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area	Defer Pending RMP Completion
NM-201401-108 2560.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 013 ALL; 014 ALL; 023 ALL; 024 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area	Defer Pending RMP Completion
NM-201401-109 2400.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 015 ALL; 016 N2,E2SW,SE; 021 E2,S2NW,SW; 022 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area	Defer Pending RMP Completion
NM-201401-110 640.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 017 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area	Defer Pending RMP Completion
NM-201401-111 2560.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 025 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D)	Defer Pending RMP Completion

026 ALL; 035 ALL; 036 ALL;		H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C) H.2.7 Recreation Stipulations	
NM-201401-112 1920.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 027 ALL; 028 ALL; 034 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-113 320.000 Acres T.0170N, R.0040W, NM PM, NM Sec. 006 LOTS 3-7; 006 SENW,E2SW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-114 1685.950 Acres T.0200N, R.0040W, NM PM, NM Sec. 001 LOTS 1-4; 001 S2N2,S2; 011 E2,SW; 012 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-115 160.000 Acres T.0200N, R.0040W, NM PM, NM Sec. 008 NE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Torreon Fossil Fauna and Torreon East RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-116 960.000 Acres T.0200N, R.0040W, NM PM, NM Sec. 013 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Partially in the ERMA	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values	Defer Pending RMP Completion

014 E2;	RP-6	(application varies by area)	
NM-201401-117 472.920 Acres T.0200N, R.0040W, NM PM, NM Sec. 018 LOTS 1-4; 018 NE,E2W2; 018 NE,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6 RP-10	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) LN-Sec. 18 includes two R & PP's, Oho Encino Assembly and Assembly of God. H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-118 1424.620 Acres T.0200N, R.0040W, NM PM, NM Sec. 019 LOTS 3,4; 019 E2SW; 030 LOTS 1-4; 030 E2,E2W2; 031 LOTS 1-4; 031 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-119 640.000 Acres T.0200N, R.0040W, NM PM, NM Sec. 019 NE; 020 N2; 021 NW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-120 2400.000 Acres T.0200N, R.0040W, NM PM, NM Sec. 025 ALL; 026 E2,SW; 035 ALL; 036 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.3.2 (Alt. B/C/D) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-121 640.000 Acres	Special Cultural Resource Lease Notice NM-11-LN	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C)	Defer Pending

T.0200N, R.0040W, NM PM, NM Sec. 028 NW,S2; 029 SE;	CSU—National Register of Historic Places RP-6	H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	RMP Completion
NM-201401-122 1282.480 Acres T.0210N, R.0040W, NM PM, NM Sec. 001 LOTS 1-4; 001 S2N2,S2; 002 LOTS 1-4; 002 S2N2,S2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-123 2459.040 Acres T.0210N, R.0040W, NM PM, NM Sec. 003 LOTS 5-8; 003 S2N2,S2; 004 LOTS 5-8; 004 S2N2,S2; 009 ALL; 010 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-124 T.0210N, R.0040W, NM PM, NM Sec. 005 LOTS 5-8 005 S2N2,S2 006 LOTS 8-14; 006 S2NE,SE,SE,SE; 007 LOTS 1-4 007 E2,E2W2 008 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Partially in the ERMA RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-125 1280.000 Acres T.0210N, R.0040W, NM PM, N Sec. 011 ALL; 012 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Within the Pelon Watershed SMA RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-126 1280.000 Acres T.0210N, R.0040W, NM PM, NM	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological	Defer Pending RMP Completion

Sec. 013 ALL; 014 ALL;	Within the Pelon Watershed SMA and ERMA RP-6	Resource Values (application varies by area)	
NM-201401-127 320.000 Acres T.0210N, R.0040W, NM PM, NM Sec. 017 E2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places SMA and ERMA RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-128 641.920 Acres T.0210N, R.0040W, NM PM, NM Sec. 018 LOTS 1-4; 018 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places SMA and ERMA RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-129 479.500 Acres T.0210N, R.0050W, NM PM, NM Sec. 005 LOTS 1,2; 005 S2NE,S2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Torreon Chapter Boundary RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-130 2400.000 Acres T.0210N, R.0050W, NM PM, NM Sec. 013 ALL; 014 ALL; 015 ALL; 023 N2,SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places SMA and ERMA RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-131 320.800 T.0210N, R.0050W, NM PM, NM Sec. 018 LOTS 3,4; 018 E2SW,SE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Torreon Chapter Boundary RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion

NM-201401-132 2120.000 Acres T.0210N, R.0050W, NM PM, NM Sec. 028 ALL; 029 N2,SESW,NESE,S2SE; 032 NWNW,W2; 033 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places SMA and ERMA RP-5 RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-133 639.200 Acres T.0210N, R.0050W, NM PM, NM Sec. 031 LOTS 1-4; 031 E2,E2W2;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-134 640.000 Acres T.0210N, R.0050W, NM PM, NM Sec. 035 ALL;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places SMA and ERMA RP-5 RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-174 140.640 T.0200N, R.0010W, NM PM, NM Sec. 020 LOTS 1,7; 021 SWNW,NWSW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-175 160.000 Acres T.0200N, R.0020W, NM PM, NM Sec. 022 E2SE; 023 W2SW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-176 160.000 Acres	Special Cultural Resource Lease Notice NM-11-LN	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C)	Defer Pending

T.0210N, R.0030W, NM PM, NM Sec. 012 E2E2;	CSU—National Register of Historic Places RP-6	H.2.6.2 - Paleontological Resource Values (application varies by area)	RMP Completion
NM-201401-177 160.000 Acres T.0210N, R.0030W, NM PM, NM Sec. 016 W2SW; 021 N2NW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-178 426.670 Acres T.0210N, R.0030W, NM PM, NM Sec. 033 E2,N2NW; 033 26.67 DESCRIBED BY M&B'S; 033 SEE EXHIBIT A FOR M&B;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-179 160.000 Acres T.0200N, R.0040W, NM PM, NM Sec. 026 NW;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Within the Torreon Chapter Boundary RP-6	H.2.3.3 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion
NM-201401-180 160.000 Acres T.0210N, R.0050W, NM PM, NM Sec. 029 N2SW,SWSW,NWSE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places RP-5 RP-6	H.2.3.3 (Alt. B/C) H.2.3.1 (Alt. B/C) H.2.6.2 - Paleontological Resource Values (application varies by area)	Defer Pending RMP Completion
NM-201401-181 160.000 T.0210N, R.0050W, NM PM, NM Sec. 032 SWNE,W2SE,SESE;	Special Cultural Resource Lease Notice NM-11-LN CSU—National Register of Historic Places Within the Torreon Chapter Boundary RP-6	H.2.2.1 (Alt. B) H.2.2.2 (Alt. C) H.2.3.3 (Alt. B/C) H.2.6.1 CSU- Paleontological Resources, PYFC Class IV and V Areas (Alts. B, C)	Defer Pending RMP Completion

2.5 Reasonably Foreseeable Development

At the leasing stage, it is uncertain if Applications for Permit to Drill on leased parcels would be received, nor is it known if or to what extent development would occur. Such development may include constructing a well pad and access road, drilling a well using a conventional pit system or closed-loop system, hydraulically fracturing the well, installing pipelines and/or hauling produced fluids, regularly monitoring the well, and completing work-over tasks throughout the life of the well. In Rio Puerco, typically, all of these actions are undertaken during development of an oil or gas well; it is reasonably foreseeable that they may occur on leased parcels. See Appendix 1 for a complete description of the phases of oil and gas development.

Drilling of wells on a lease would not be permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan as specified under Onshore Oil and Gas Orders (43 CFR 3162). A permit to drill would not be authorized until site-specific NEPA analysis is conducted.

Standard terms and conditions, stipulations listed in the Rio Puerco RMP, and any new stipulations would apply as appropriate to each lease. In addition, site specific mitigation measures and BMPs would be attached as Conditions of Approval (COAs) for each proposed exploration and development activity authorized on a lease.

3.0 AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on relevant major resources and issues. Certain critical environmental components require analysis under BLM policy. Only those aspects of the affected environment that are potentially impacted are described in detail.

The proposed lease parcels are located in Sandoval County, New Mexico. This environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Rio Puerco Resource Management Plan, November 1986 (maintained and reprinted, 1992) (6) and the Albuquerque District Oil and Gas Plan Amendment, December 1991 (7).

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

3.1 Air Resources

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. Much of the information referenced in this section is incorporated from the Air Resources Technical Report for BLM Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report, USDI BLM 2013). This document summarizes the technical information related to air

resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including six nationally regulated ambient air pollutants, known as criteria pollutants. These criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ & PM_{2.5}), sulfur dioxide (SO₂) and lead (Pb). EPA has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The NAAQS are protective of human health and the environment. Regulation of air quality is either delegated to or “state implementation plan-approved” to all states. 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.

3.1.1 Air Quality

At the present time, the counties that lie within the jurisdictional boundaries of the Rio Puerco Field Office Lease Sale Parcels are classified as in attainment of all state and national ambient air quality standards as defined in the Clean Air Act of 1972, as amended (15).

The area of the analysis is considered a Class II air quality area by the EPA. There are three classifications of areas that attain national ambient air quality standards, Class I, Class II and Class III. Congress established certain national parks and wilderness areas as mandatory Class I areas where only a small amount of air quality degradation is allowed. All other areas of the US are designated as Class II, which allow a moderate amount of air quality degradation. No areas of the US have been designated Class III, which would allow more air quality degradation. The primary sources of air pollution in the proposed lease sale region are dust from blowing wind on disturbed or exposed soil, exhaust emissions from motorized equipment, oil and gas development, agriculture, and industrial sources.

Current Pollution Concentrations

“Design Concentrations” are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. . The nearest air quality monitors to the proposed lease sale sites are in San Juan County. The 2011 design concentrations of criteria pollutants are listed below. There is no monitoring for CO and lead in San Juan County, but because the county is relatively rural, it is likely that the concentrations of these pollutants are not elevated. PM₁₀ design concentrations are not available for San Juan County. Table 2 summarizes monitored values for criteria pollutants in San Juan County.

Table 2.0 2011 Design Concentrations of Criteria Pollutants in San Juan County (EPA, 2012)

Pollutant	2011 Design Concentration	Averaging Time	NAAQS	NMAAQS
O ₃	0.071 ppm	8-hour	0.075 ppm ¹	
NO ₂	13 ppb	Annual	53 ppb	50 ppb

NO ₂	39 ppb	1-hour	100 ppb ²	
PM _{2.5}	4.5 µg/m ³	Annual	12 µg/m ^{3,3}	*60 µg/m ³
PM _{2.5}	14 µg/m ³	24 hour	35 µg/m ^{3,2}	150 µg/m ³
SO ₂	20 ppb	1-hour	75 ppb ⁴	

In 2005, the EPA estimates that there was less than 0.01 ton per square mile of lead emitted in the counties within the nominated parcels, which is less than 2 tons total (EPA, 2010b). Lead emissions are not an issue in this area, and will not be discussed further.

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

Mean AQI values for San Juan County were generally in the good range (AQI<50) in 2011 with 78% of the days in that range. The mean AQI in 2011 was 43, which indicates “good” air quality. The maximum AQI in 2011 was 140, which is “unhealthy for sensitive groups”.

Although the AQI in the region has reached the level considered unhealthy for sensitive groups on several days almost every year in the last decade, there are no patterns or trends to the occurrences (Table 2.1). On 8 days in the past decade, air quality has reached the level of “unhealthy” and on two days, air quality reached the level of “very unhealthy”. In 2009, there were no days that were “unhealthy for sensitive groups” or worse in air quality.

Table 2.1.1 Number of Days classified as “unhealthy for sensitive groups” (AQI 101-150) (EPA, 2012a)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Days	10	6	3	6 [*]	9	18	1	0	12 ^{**}	9

*in addition, there was 1 day that was “unhealthy” during the year.

** in addition, there were 5 “unhealthy” days that year and 2 “very unhealthy” days.

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI BLM 2013). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP emissions by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities. USEPA has identified 187 toxic air pollutants as HAPs.

3.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007) (17). 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.

Greenhouse gases that are included in the US Greenhouse Gas Inventory are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). CO₂ and methane (CH₄) are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of greenhouse gas emissions (including CO₂; CH₄; nitrous oxide (N₂O), water vapor; and several trace gasses) on global climate. Through complex interactions on regional and global scales, these greenhouse gas emissions cause a net warming effect of the atmosphere (which makes surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although greenhouse gas levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall climatic changes, typically referred to as global warming. Increasing CO₂ concentrations may also lead to preferential fertilization and growth of specific plant species.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels (18). National Academy of Sciences (2006) (19) 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 is more likely than increases in daily maximum temperatures. It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed lease parcels and subsequent actions.

Mean annual temperatures have risen across New Mexico and the southwestern U.S. since the early 20th century. 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. Recurrent research has indicated that predicting the future effects of climate change and subsequent challenges of managing resources in the Southwest is not feasible at this time (IPCC, 2007, CCSP, 2008). However, it has been noted that 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 affected by climate change (Enquist and Gori, 2008).

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 dependent 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.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere.

The planning area is located in a semiarid climate regime typified by dry windy conditions and limited rainfall. Summer maximum temperatures are generally in the 80s or 90s (Fahrenheit) and winter minimum temperatures are generally in the teens to 20s. Temperatures occasionally reach above 100 °F in June and July and have dipped below zero in December and January. Precipitation is divided between summer thunderstorms associated with the Southwest Monsoon and winter snowfall as Pacific weather systems drop south into New Mexico.

Table 2.2 1981-2010 Climate Normals for Navajo Dam, NM

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Precip (inches)	0.97	0.97	1.27	1.44	0.78	0.57	1.34	1.76	1.37	1.40	1.13	1.13
Min. Temp. (F)	20.1	24.0	30.0	35.5	44.4	53.3	60.4	59.6	51.4	39.9	29.0	20.8

Avg. Temp. (F)	30.1	35.4	43.1	50.2	59.9	69.4	75.4	73.6	65.4	53.5	40.3	30.5
Max. Temp. (F)	40.2	46.8	56.3	64.9	75.3	85.4	90.5	87.5	79.3	67.1	51.6	40.2

The Air Resources Technical Report summarizes information about greenhouse gas emissions from oil and gas development and their effects on national and global climate conditions.

3.2 Watershed Resources

Surface water occurrence on the parcels is in the form of ephemeral and intermittent streams, and impoundments of varying sizes for livestock and wildlife watering and for erosion control. The streams flow for brief periods only in response to rainfall and snowmelt. Runoff and stream flow may result from summertime thunderstorms, melting snow in higher terrain, and frontal system rainfall. Surface water drainage from the proposed parcels is eventually tributary to the Rio Puerco and Arroyo Chico, which are tributary the Rio Grande. Most annual maximum peak discharges and associated flooding concerns occur in the summer or early fall from summertime thunderstorms. No surface water bodies on the parcels are designated as Clean Water Act impaired water bodies.

Ground water is an important resource in the area, and its distribution and quality are complex and not completely defined. The principal aquifers within the area are the Rio Colorado Plateau aquifers (Robson and Banta 1995). Depth to ground water is variable.

The larger and more prominent Floodplains are designated by the Federal Emergency Management Agency (FEMA) as 100-year floodplains; these occur on twenty-five (25) of the proposed lease parcels. Of the 74,650 acres proposed for leasing, the 100-year floodplain designation occurs on a total of 1,290 acres. The designation is 12% or less of the total area for any individual parcel. No wetlands or riparian zones with permanent water are known to be present on the proposed parcels. Riparian areas in the form of scattered intermittent ponded areas or small playas with ephemeral water occur throughout the area, which are used as secondary livestock water and are used by aquatic bird species seasonally.

3.3 Soils

Important soil properties to consider for potential oil and gas development include 1) water erosion potential due to slope steepness and 2) inherently poor reclamation potential for certain soils that would be disturbed.

Of the 74,650 acres proposed for leasing, slopes within the 15-30% steepness range occur on 5,400 acres, and slopes of 30% or greater occur on 1,270 acres. There are only 5 individual parcels with more than 10% of their area with slopes greater than 30% steepness. There are 22

parcels with more than 10% of their area with slopes within the 15-30% steepness range; the average for these 22 parcels is about 20% of their total area in this steepness range.

Soils with “poor reclamation potential” are identified in the applicable NRCS published soil surveys (USDA NRCS 2011). This rating indicates that revegetation and stabilization are expected to be difficult and costly following drastic disturbances such as oil and gas field development, temporary road construction, or similar disturbances. This rating of the disturbed soil and its subsequent reclamation potential is based on the soil properties that affect erosion and stability of the surface and the vegetation productivity potential of the reclaimed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility. Of the 74,650 acres proposed for leasing, these soils occur as the dominant condition on approximately 40,800 acres.

3.4 Vegetation

The parcels are in the Great Basin Foothill-Piedmont Grassland, Lowland/Swale Grassland, and Broadleaf Deciduous Desert vegetation communities, which are part of the Southern Desert Basin, Plains, and Mountain vegetation type.

3.5 Invasive, Non-Native Species

Populations of invasive and non-native species, primarily cheatgrass, Russian knapweed, tamarisk and Russian olive are scattered throughout the proposed lease sale area. For all actions on public lands that involve surface disturbance or rehabilitation, reasonable steps are required to prevent the introduction or spread of noxious weeds, including power washing or air blasting of construction equipment to remove soil and vegetative parts, requirements for using certified weed-free seed and weed-free hay, mulch and straw. In addition, any actions that result in the introduction or spread of invasive non-native or noxious weeds will be mitigated by standard weed management guidelines under the direction of BLM personnel.

3.6 Livestock Grazing

The land within the nominated parcels is within grazing allotments administered by the BLM. All the allotments have year round grazing permits. The allotments have retention dams, water troughs, and fences for management and distribution of livestock.

PARCEL NO	ACRES	ALLOT NO	ALLOT NAME	Total allotment	Acres in	Percent of allotment in
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				acres	Parcel	parcel
67	2073.300	25420	Senorita	4,293.6	560.5	13.05%
67	2073.300	00012	Lagunitas Community	2,717.5	543.9	20.01%
67	2073.300	00014	Nacimiento Community	2,731.3	908.2	33.25%
68	2099.820	25420	Senorita	4,293.6	851.8	19.84%
68	2099.820	00012	Lagunitas Community	2,717.5	408.9	15.05%
68	2099.820	00018	Forty Four	4,734.0	739.1	15.61%
68	2099.820	00014	Nacimiento Community	2,731.3	7.8	0.29%
69	160.000	25420	Senorita	4,293.6	0.2	0.01%
70	942.470	25420	Senorita	4,293.6	319.3	7.44%
70	942.470	00018	Forty Four	4,734.0	527.5	11.14%
70	942.470	00019	Senorito Community	1,495.5	95.8	6.40%
71	40.000	00020	San Pablo Community	2,240.0	38.9	1.74%
72	40.000	00020	San Pablo Community	2,240.0	0.2	0.01%
72	40.000	25420	Senorita	4,293.6	38.6	0.90%
73	1716.510	00020	San Pablo Community	2,240.0	1,599.6	71.41%
73	1716.510	25420	Senorita	4,293.6	0.2	0.00%
73	1716.510	00014	Nacimiento Community	2,731.3	3.6	0.13%
73	1716.510	00017	Mesa Portales	2,813.6	0.1	0.00%
73	1716.510	00019	Senorito Community	1,495.5	0.0	0.00%

74	1064.510	00014	Nacimiento Community	2,731.3	2.2	0.08%
74	1064.510	00017	Mesa Portales	2,813.6	974.7	34.64%
74	1064.510	25423	La Ventana	3,642.0	4.4	0.12%
74	1064.510	00000	Unalotted	879.7	0.0	0.00%
74	1064.510	00019	Senorito Community	1,495.5	27.9	1.87%
75	797.400	00014	Nacimiento Community	2,731.3	160.1	5.86%
79	379.620	00375	Cuba Mesa	254.2	211.4	83.15%
80	42.230	00375	Cuba Mesa	254.2	34.9	13.74%
81	463.700	00012	Lagunitas Community	2,717.5	1.9	0.07%
82	49.290	00014	Nacimiento Community	2,731.3	0.7	0.02%
83	514.650	00012	Lagunitas Community	2,717.5	515.3	18.96%
83	514.650	00018	Forty Four	4,734.0	0.0	0.00%
83	514.650	00011	Dos Valles	22,244.2	0.0	0.00%
84	1920.000	00011	Dos Valles	22,244.2	1,929.3	8.67%
85	640.000	00011	Dos Valles	22,244.2	645.9	2.90%
86	560.000	00017	Mesa Portales	2,813.6	292.5	10.40%
86	560.000	00011	Dos Valles	22,244.2	259.0	1.16%
87	640.000	00011	Dos Valles	22,244.2	636.1	2.86%
87	640.000	25413	Smokey	3,397.2	4.8	0.14%
88	1936.840	00002	Shroyer Community	4,884.2	1,920.5	39.32%
88	1936.840	00007	Chiuilla	10,886.4	10.9	0.10%

			Community			
89	1902.340	00002	Shroyer Community	4,884.2	627.4	12.84%
89	1902.340	00006	Tres Hermanos	4,046.3	3.0	0.08%
89	1902.340	00007	Chiuilla Community	10,886.4	1,276.0	11.72%
90	1920.000	00007	Chiuilla Community	10,886.4	1,925.0	17.68%
91	1912.040	00006	Tres Hermanos	4,046.3	5.5	0.14%
91	1912.040	00007	Chiuilla Community	10,886.4	1,914.2	17.58%
92	1273.200	00011	Dos Valles	22,244.2	0.1	0.00%
92	1273.200	00006	Tres Hermanos	4,046.3	50.1	1.24%
92	1273.200	00008	Ojo De Los Pinos	6,516.9	154.9	2.38%
92	1273.200	00007	Chiuilla Community	10,886.4	1,077.3	9.90%
93	1920.000	00011	Dos Valles	22,244.2	1.2	0.01%
93	1920.000	00007	Chiuilla Community	10,886.4	1,918.0	17.62%
94	1280.000	00007	Chiuilla Community	10,886.4	1,272.2	11.69%
95	400.000	00033	Cebo Community	7,835.5	400.8	5.11%
96	40.000	06024	Castillo Community	31,740.9	39.2	0.12%
96	40.000	00033	Cebo Community	7,835.5	0.3	0.00%
96	40.000	06024	Castillo Community	31,740.9	0.2	0.00%

96	40.000	00033	Cebo Community	7,835.5	0.2	0.00%
97	80.000	00033	Cebo Community	7,835.5	80.5	1.03%
98	160.000	00033	Cebo Community	7,835.5	0.3	0.00%
99	589.430	00009	Horn Arroyo	4,741.4	1.8	0.04%
99	589.430	00004	Starr Community	16,159.7	582.3	3.60%
124	2433.020	00004	Starr Community	16,159.7	0.1	0.00%
124	2433.020	00001	Continental Divide	8,542.7	0.0	0.00%
124	2433.020	00001	Continental Divide	8,542.7	2.4	0.03%
124	2433.020	06015	Counselor Community	100,713.2	2.4	0.00%
125	1280.000	00068	South Divide Community	3,179.4	670.5	21.09%
125	1280.000	00001	Continental Divide	8,542.7	539.8	6.32%
125	1280.000	00068	South Divide Community	3,179.4	4.1	0.13%
126	1280.000	00068	South Divide Community	3,179.4	1,003.1	31.55%
126	1280.000	00004	Starr Community	16,159.7	1.4	0.01%
126	1280.000	00068	South Divide Community	3,179.4	4.1	0.13%
127	320.000	00004	Starr Community	16,159.7	317.8	1.97%
127	320.000	00004	Starr Community	16,159.7	0.1	0.00%

127	320.000	00001	Continental Divide	8,542.7	0.0	0.00%
128	641.920	00004	Starr Community	16,159.7	644.5	3.99%
128	641.920	00001	Continental Divide	8,542.7	0.0	0.00%
128	641.920	00004	Starr Community	16,159.7	1.1	0.01%
129	479.500	06015	Counselor Community	100,713.2	471.0	0.47%
130	2400.000	00003	Pelon Community	7,689.2	1,749.6	22.75%
130	2400.000	00004	Starr Community	16,159.7	635.7	3.93%
130	2400.000	00004	Starr Community	16,159.7	1.1	0.01%
131	320.800	06015	Counselor Community	100,713.2	317.3	0.32%
132	2120.000	06022	Casaus Brothers & Dura	4,066.6	2,062.3	50.71%
132	2120.000	06023	Star Lake Community	129,822.9	29.0	0.02%
132	2120.000	06015	Counselor Community	100,713.2	3.6	0.00%
132	2120.000	06022	Casaus Brothers & Dura	4,066.6	0.0	0.00%
132	2120.000	00003	Pelon Community	7,689.2	0.0	0.00%
133	639.200	06022	Casaus Brothers & Dura	4,066.6	624.6	15.36%
133	639.200	06023	Star Lake	129,822.9	10.5	0.01%

			Community			
133	639.200	06015	Counselor Community	100,713.2	0.4	0.00%
134	640.000	00003	Pelon Community	7,689.2	615.8	8.01%
134	640.000	06023	Star Lake Community	129,822.9	17.4	0.01%
134	640.000	00003	Pelon Community	7,689.2	17.4	0.23%
174	140.640	00020	San Pablo Community	2,240.0	2.5	0.11%
174	140.640	25420	Senorita	4,293.6	79.7	1.86%
174	140.640	00018	Forty Four	4,734.0	0.3	0.01%
174	140.640	00019	Senorito Community	1,495.5	60.6	4.05%
175	160.000	00017	Mesa Portales	2,813.6	152.9	5.44%
175	160.000	00011	Dos Valles	22,244.2	6.5	0.03%
176	160.000	00006	Tres Hermanos	4,046.3	147.0	3.63%
176	160.000	00007	Chiuilla Community	10,886.4	11.1	0.10%
177	160.000	00005	Dry Springs	7,063.5	158.1	2.24%
178	426.670	00008	Ojo De Los Pinos	6,516.9	438.0	6.72%
179	160.000	00023	Eagle Mesa	15,695.8	2.6	0.02%
179	160.000	00075	Valle (Chamisa)	3,525.7	158.3	4.49%
180	160.000	06022	Casaus Brothers & Dura	4,066.6	153.5	3.77%
180	160.000	06015	Counselor	100,713.2	4.5	0.00%

			Community			
181	160.000	06022	Casaus Brothers & Dura	4,066.6	148.4	3.65%
181	160.000	06023	Star Lake Community	129,822.9	9.8	0.01%

3.7 Wildlife

The proposed lease sale area provides habitat for a wide variety of wildlife species. Large ungulates in the area include mule deer and elk. Large predators include cougars and an occasional black bear. Smaller mammals include coyotes, bobcats, gray foxes, jackrabbits, cottontail rabbits, rock squirrels, woodrats, porcupines and a variety of bats and smaller rodent species. Reptiles include bullsnakes, rattlesnakes, whiptail lizards, and fence lizards. Bird species in the area include golden eagles, western bluebirds, great horned owls, piñon jays, mourning doves, Gambel's quail, scaled quail, Mearns' quail, red-tailed hawks, ferruginous hawks, kestrels, and a variety of migratory birds. Habitat quality is fair to good for wildlife. It is not possible to determine or even reasonably project at the leasing stage whether a parcel will be leased; and if it is leased whether or not it will be developed, or what the intensity level of that development may be.

Eagle Mesa and Fork Rock Mesa are within approximately two miles of the project area. These areas are likely to house raptors and other migratory birds. Although the action of the lease sale will not directly affect these faunal species, the action of drilling has the potential to. If drilling occurs, timing stipulations must be set to avoid drilling during important nesting and migratory periods.

Special Status Species

Section 7 of the Endangered Species Act (ESA) of 1973, as amended, requires that BLM land managers ensure that any action authorized, funded, or carried out by the BLM is not likely to jeopardize the continued existence of any Federally Designated Threatened or Endangered (T&E) species, and that the action avoids any appreciable reduction in the likelihood of recovery of affected species. The BLM Special Status Species Policy outlined in BLM Manual 6840 is to conserve listed species and the ecosystems on which they depend, while ensuring that actions authorized or carried out by BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any of these species. The BLM policy is intended to contribute to the survival of those species that are rare or uncommon, either because they are restricted to specific uncommon habitat or because they may be in jeopardy due to human or other actions. By BLM policy, species proposed for federal listing are to be managed with the same level of protection provided for threatened and endangered species. The policy for federal candidate species and BLM sensitive species is to ensure that no action that requires BLM approval should contribute to the need to list a species as threatened or endangered. All of the parcels identified as available for lease potentially contain habitat for sensitive species. At the

time of individual site specific project proposals, sensitive species surveys would be conducted by qualified biologists for analysis purposes.

3.8 Areas of Critical Environmental Concern (ACECs)

The Torreon Fossil Fauna ACEC as designated in the 1986 RMP (as amended) and carried forward in the Rio Puerco Draft RMP along with the proposed Bad Lands Extensive Recreational Management Area (ERMA) fall within several of the nominated parcels. This area, located near the head of Torreon Wash, is a major collecting area for fossil mammals. Wood et al (1941) formally defined this area as the type locality for the Torreon Fauna. A type locality is an important paleontological feature in that it represents the place at which a fossil assemblage is typically displayed and from which it derives its name. Type specimens of the Torreon Fauna were originally recognized and described from this locale. Thus, the area represents a unique and irreplaceable resource. Because of these important paleontological resources, this area meets the relevance (R-1, R-3) and importance (I-1, I-2, I-3) criteria. Cañon Jarido is a steep-sided sandstone canyon cut approximately 100 feet into Mesa Portales which provides raptor nesting sites. The vegetative community also provides good mule deer habitat. There are five springs in the canyon, two of which are associated with historic homesteads settled during the early 1900s. Additional historic and prehistoric cultural resources have also been identified in the canyon. Due to the presence of these scenic, wildlife, and cultural resources, the Cañon Jarido SMA possesses relevance and importance criteria (R-1, R-2, I-1, I-2). The same relevance and importance criteria are also present in an adjacent area, Mesa Portales, which is proposed to be included in the Cañon Jarido ACEC under some alternatives.

3.9 Recreation

The parcels are located in an area that experiences low impact dispersed use, primarily hunting. Parcels 044, 045, 047, and 051 have a portion of the Proposed CDT re-route and parcel 057 has a portion of the currently designated CDT. Several parcels fall partially, with parcel 067 completely, within San Juan Badlands ERMA (proposed in the Draft Rio Puerco RMP) and also within portion of OMG course A.

The San Juan Basin Badland ERMA is located in the northwest corner of the RPFO in an area with mesas and scenic badlands. The ERMA would consist of four zones: Torreon Fossil Fauna East and West zones, Oh-My-God 100 (A-C) zones, Ceja Pelon zone, and Chijuilla zone. The Torreon Fossil Fauna East and West zones correspond to the Torreon Fossil Fauna ACEC. Management decisions for the ACEC are described in the special designations section.

Three separate and unique loop trails were designed and implemented for the Oh My God competitive motorcycle race. Oh My God consists of three courses, race course A, B, and C, which are designed solely for event use once every three years. Race course A is twenty-two miles, B is twenty-eight miles, and C is thirty-six miles. All three courses are only two to three miles from each other and are located west of Cuba, New Mexico, and north of State Road 197.

The Continental Divide National Scenic Trail traverses the Planning area for approximately 135 miles; approximately fifty miles are located on BLM lands or BLM-owned easements. The majority of the trail is absent tread; instead it is marked across the landscape by posts and rock cairns. The nature of the trail means that travelers walk on live vegetation in many portions of the trail. The setting is a primitive, natural appearing route. Use on the trail is light, but is increasing closest to access points near towns. Portions of the trail are not rideable by horses or mountain bikes where it climbs up steep slopes. Water is very limited along its route. The trail is permanently located except for two areas where its location is not in close correlation with the purposes of the Trail. Those areas are the vicinity of the town of Cuba, and the area south of Grants where the trail is located on the shoulder of paved highways. The purposes of the Continental Divide National Scenic Trail are to connect people and communities to the Continental Divide by providing scenic, high-quality, primitive hiking and horseback riding experiences, while preserving the significant natural, historic, and cultural resources along the Trail.

3.10 Visual Resources

The parcels are in Visual Resource Management (VRM) Class IV. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. The area is tan-colored grassland interspersed with olive drab-colored juniper patches, covering buff to dark sandstones and dark-grey to black basaltic features. Some features, such as mesas, protrude from and otherwise smooth- to medium-textured, flat to rolling landscape.

3.11 Cultural Resources

Cultural resources within Sandoval County range from Paleoindian residential and special activity sites; through many kinds of Archaic residential and special activity sites; the full range of Ancestral Puebloan sites; colonial Spanish sites; Navajo, Apache and Ute sites; and later Hispanic and Anglo sites, including homesteads. More complete information can be found in *A Class II Cultural Resources Inventory of the Southern Portion of the Chaco Planning Unit, McKinley and Sandoval Counties, New Mexico* by Alan R. Dulaney and Steven G. Dosh, published in 1981 by the Bureau of Land Management; *A Class I and Class II Survey of the Rio Puerco Grazing Area* by Cheryl L. Wase, prepared in 1982 and on file at the Rio Puerco Field Office; and *Prehistory of the Middle Rio Puerco Valley, Sandoval County, New Mexico* edited by Larry L. Baker and Stephen R. Durand, published in 2003 by the Archaeological Society of New Mexico.

Oil and gas leasing is considered to be an undertaking for purposes of compliance with Section 106 of the National Historic Preservation Act. The lease sale itself causes no on the ground action; however, leasing transfers certain developmental rights to the lessee. In accordance with

BLM Instruction Memorandum NM-2005-037 (13), a staged approach is used in the identification and evaluation of cultural properties for oil and gas leasing. Identification of historic properties takes place at the APD stage of lease development. Cultural resource inventories will be undertaken and impacts to archeological sites will be assessed at the APD stage. Nevertheless, Instruction Memorandum NM-2005-037 (13) requires the Field Office to conduct a records check for each lease parcel to identify historic properties recorded or projected to fall within the area of potential effect of the lease. The records check was performed in April, May and June 2013 [Report NM-110-2010(II)B]. The cultural heritage staff uses the information from the records check to assess the likelihood that previously recorded properties and those likely to exist within the lease can be mitigated by standard archeological and historical recordation techniques. Only one such site was identified by the records check, a historic cemetery; no others are expected. The parcel containing the historic cemetery has been deferred from this lease sale.

3.12 Native American Religious Concerns

Under Instruction Memorandum NM-2005-037 (13), consultation with Native American tribes to identify traditional cultural properties and sacred sites takes place when the resource management plan (RMP) is formulated or updated. If the RMP has not been updated, the Field Office determines whether Native American consultation has been sufficient. The Rio Puerco Field Office has determined that previous Native American consultation for this lease sale was not sufficient and consultation with the appropriate tribes was initiated by registered mail on April 3, 2013. One comment was received, and no sensitive properties are known to exist within the proposed lease parcels.

If positive responses are received, BLM cultural resources staff will discuss the information or issues of concern with the Native American representatives to determine if all or portions of a parcel need to be withdrawn from the sale, or if special requirements need to be attached as lease stipulations.

3.13 Environmental Justice

Executive Order 12898 (25) 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 Rio Puerco Field Office.

The Lease Parcel Area within Sandoval County is unique for its high percentage of Hispanic residents and Spanish-speakers along with Native American Communities. The majority of the residents within this part of Sandoval County identify themselves as Hispanic or Latino and more than 55 percent speak Spanish at home. These figures are substantially higher than those state-wide. However, rather than a large immigration population—relatively few county residents are foreign-born—the Hispanic population has its roots in the Spanish and Mexican colonization of the sixteenth through the mid-nineteenth centuries. The Native American population of Sandoval County about 13.4 percent also well above the average for New Mexico of 10.2%.

3.14 Mineral Resources

It is the policy of the BLM to make mineral resources available for disposal and to encourage development of these resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable prices. At the same time, the BLM strives to assure that mineral development is carried out in a manner which minimizes environmental damage and provides for the reclamation of the lands affected.

Minerals are divided into three different class types; leasable, salable and locatable. Examples of leasable minerals are oil, gas coalbed methane and coal. Examples of salable minerals are sand, gravel, cinders and caliche. Examples of locatable minerals are gold, silver, copper and fluorspar.

The areas identified to be leased do not contain any development of leasable, salable or locatable minerals.

Currently there are 112 oil and gas leases covering approximately 107,763 acres in the Rio Puerco Field Office. These leases have a total of 170 producing, abandoned, and shut-in wells. Approximately 260 acres, or 0.24% of the leased area, are disturbed. If a parcel is leased and developed through drilling, a separate environmental document would be prepared. If full field development were to occur, additional NEPA analysis addressing cumulative impacts would be required.

3.15 Paleontology

BLM guidance (BLM Instruction Memorandum 2008-009) uses a Potential Fossil Yield Classification System (PFYC) for Paleontological Resources on Public Lands, it defines a classification system to provide a more uniform tool to assess the potential for Paleontological Resources occurrences and evaluate potential impacts. Five PFYC classes were developed, ranging from PFYC 1 to PFYC 5; Class 1 has very low potential for containing fossils while Class 5 has very high potential. The PFYC system is intended to be applied in a broad approach for planning efforts and as an intermediate step in evaluating specific projects.

Some of the parcels are located in a Class 3 Potential Fossil Yield Classification PFYC and some are located within a Class 5 PFYC.

Class 3—Moderate or Unknown. Fossiliferous or scientifically geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

Class 5—Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

All proposed actions that are planned to occur through geologic units that are assigned a PFYC 5 require a pre-disturbance paleontological survey and monitoring during ground disturbing activities. A written report of the initial survey will include recommendations stating the findings

of the pre-disturbance survey. Once this report is reviewed and accepted by the Authorized Officer construction may be allowed to proceed. During any surface-disturbance actions in PFYC 5 areas, monitoring shall take place by a BLM- permitted paleontologist for any paleontological resources. Monitoring may also be required in PFYC 3 and other areas where surface fossils have been discovered or found in the same geologic unit directly adjacent to the project area.

Exposed geologic units assigned as PFYC 3 should be surveyed prior to any ground disturbance especially for area where the presence or absence of fossils is unknown. If no paleontological resources are identified during the initial survey monitoring of ground disturbance, further monitoring may not be required. This determination can be made by the Authorized Officer after review of the paleontological report developed by a permitted paleontologist. All paleontological surveys and monitoring are required to be conducted by a qualified, BLM permitted paleontologist.

3.16 Lands and Realty

According to BLM's land records, there are 109 rights-of-ways authorized within the Lease Parcel area. Seven of the rights-of-ways are authorized by the Public Purposes and Recreation Act. All applicable requirements for protecting existing rights-of-ways will be carry forth on any lease sale along with appropriate best management practices such as those required by the Gold Book Standards to mitigate any potential impacts.

4.0 Environmental Consequences and Proposed Mitigation Measures

4.1 Assumptions for Analysis

The act of leasing parcels would, by itself, have no impact on any resources in the Rio Puerco Field Office planning area. All impacts evaluated in this analysis would be linked to an undetermined level of lease development. Air Quality estimates are however based on the regulatory spacing of wells within a section to determine a maximum potential for air emissions. Furthermore, the terms of the lease, if sold, would require the drilling of at least one exploratory well on the parcel over the life of the lease. It is therefore reasonable to assume one exploratory well would be drilled to comply with the terms of the lease. In addition, if lease parcels were drilled, short-term impacts would be stabilized or mitigated within 5 years and long-term impacts are those that would substantially remain for more than 5 years.

4.2 Effects from the No Action Alternative and the Preferred Alternative

Under the No Action Alternative and the Preferred Alternative the 76 proposed parcels would be deferred and not offered for sale in the February 2014 Competitive Oil and Gas Lease Sale.

There would be no subsequent impacts from oil and/or gas construction, drilling, and production activities. The No Action Alternative as well as the Preferred Alternative would result in the continuation of the current land and resource uses in the proposed lease areas.

4.2.1 Mineral Resources

There would be no new impacts from oil and gas production on the proposed parcel land. Oil and gas development of federal, state, private, and Indian minerals would continue on the land surrounding the proposed parcels. No additional natural gas or crude oil from the proposed parcels would enter the public markets and no royalties would accrue to the federal or state treasuries. An assumption is that the No Action Alternative (no lease option) and Alternative C would not affect current domestic production of oil and gas. However, this may result in reduced Federal and State royalty income, and the potential for Federal land to be drained by wells on adjacent private or state land. Oil and gas 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. If the BLM were to forego leasing and potential development of the proposed parcels, the assumption is that the public's demand for the resource would not be expected to change. Instead, the mineral resource foregone would be replaced in the short- and long-term by other sources that may include a combination of imports, using alternative energy sources (e.g. wind, solar), and other domestic production. This offset in supply would result in a no net gain for oil and gas domestic production.

4.2.2 Environmental Justice

By not leasing the proposed parcels under the No Action Alternative and the Preferred Alternative, there may be negative effects on the overall employment opportunities related to the oil and gas and service support industry, as well as a loss of the economic benefits to state and county governments related to royalty payments and severance taxes. However, there would be no increase in activity and noise associated with these proposed leases unless the land is used for other purposes.

4.2.3 All Other Resources

No other resources would be affected under the No Action Alternative and the Preferred Alternative, as there would be no surface disturbance that could detrimentally affect these resources. This would result in the continuation of the current land and resource uses on the parcels. However, the selection of the No Action Alternative or the Preferred Alternative would not preclude these parcels from being nominated and considered in a future lease sale, which would result in impacts as described under the action alternatives.

4.3 Analysis of the Action Alternatives

4.3.1.1 Air Quality Impacts from All Action Alternatives

4.3.1.1.1 Direct & Indirect Effects

Leasing the subject parcels would have no direct impacts on air quality. Any potential effects on air quality from sale of lease parcels would occur at such time that the leases were developed. Potential impacts of development would include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressor engines, vehicles, flares, and dehydration and separation facilities, and volatile organic compounds during drilling or production activities.

In order to reasonably quantify emissions associated with well exploration and production activities, certain types of information are needed. Such information includes a combination of activity data such as the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), the technologies which may be employed by a given company for drilling any new wells, area of disturbance for each type of activity (e.g. roads, pads, electric lines, compressor station), number of days to complete each kind of construction, number of days for each phase of drilling process, type(s), size, number of heavy equipment used for each type of construction (backhoe, dozer, etc.), number of wells of all types (shallow, deep, exploratory, etc.), compression per well (sales, field booster), or average horsepower for each type of compressor. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs. At this time, it is not feasible to directly quantify emissions from the proposed lease sale. What can be said is that exploration and production would contribute to incremental increases in overall air pollutant emissions associated with oil and gas exploration and production into the atmosphere.

The most significant criteria pollutants emitted by oil and gas development and production are VOCs, particulate matter and NO₂. VOCs and NO₂ contribute to the formation of ozone, which is the pollutant of most concern in northwestern New Mexico. The additional NO₂ and VOCs emitted from any oil and gas development on these specific leases are likely too small in quantity to have a significant effect on the overall ozone levels of the area.

There are three phases in the development of a well that result in different levels of emissions. The first phase occurs during the first year of development and may include pad construction, drilling, completion, interim reclamation, and operation of the completed well. The first year results in the highest level of emissions due to the large engines required during the construction and drilling, and the potential release of natural gas to the atmosphere during completion.

The second phase of the well begins after the well is completed and is put on line for production. Emissions during the production phase may include vehicle traffic, engines to pump oil if necessary, compressor engines to move gas through a pipeline, venting from storage tanks, and storage tank heaters. A work-over of the well may occasionally be required, but the frequency of work-overs is not predictable. The final phase is to plug and abandon the well and rehab the pad.

The reasonable and foreseeable development scenario for the 1991 Albuquerque District RMP Oil and Gas Amendment (7) estimated 3 to 5 wells would be drilled annually for federal minerals. Current APD permitting trends within the field office confirm that the 1991 RMP assumptions are still accurate. However, it is unknown whether the petroleum resources specific to these leases in the Proposed Action are gas or oil or a combination thereof, as well as the actual potential for those resources. In addition, oil wells are on a tighter spacing than gas wells,

therefore the specific number of wells that would be drilled as a result of issuing the leases is unknown.

In October 2012, USEPA promulgated air quality regulations for completion of hydraulically fractured gas wells (see Appendix 1). These rules require air pollution mitigation measures that reduce the emissions of volatile organic compounds during gas well completions.

4.3.1.1.2 Potential Mitigation

The BLM encourages industry to incorporate and implement “Best Management Practices” (BMPs), which are designed to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Typical measures include: adhere to BLM’s Notice to Lessees’ (NTL) 4(a) concerning venting and flaring of gas on Federal leases for natural gas emissions that cannot be economically recovered, flare hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion; water dirt roads during periods of high use in order to reduce fugitive dust emissions; co-locate wells and production facilities to reduce new surface disturbance; implement directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and perform interim reclamation to re-vegetate areas of the pad not required for production facilities and to reduce the amount of dust from the pads. In addition, the BLM encourages industry to participate in the Gas STAR program that is administered by EPA. The Natural Gas STAR program is a flexible, voluntary partnership that encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions.

An application for permit to drill (APD) is required for each proposed well to develop a lease. Onshore Oil and Gas Order No. 1 issued under 43 CFR 3160 authorizes BLM to attach Conditions of Approval (COA) to APDs during the permitting process. Additional analysis will be done at such time as an APD is requested and a determination will then be made on the need for mitigation based on the estimated level of emissions.

4.3.1.2 Climate

4.3.1.2.1 Direct & Indirect Effects

The assessment of GHG emissions, their relationship to global climatic patterns, and the resulting impacts is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. The BLM does not have the ability to associate a BLM action’s contribution to climate change with impacts in any particular area. The science to be able to do so is not yet available. 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 and determining the significance

of any discrete amount of GHG emissions is beyond the limits of existing science. When further information on the impacts to climate change from discrete projects is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO₂) and methane (CH₄). Because methane has a global warming potential that is 21-25 times greater than the warming potential of CO₂, the EPA uses measures of CO₂ equivalent (CO₂e) which takes the difference in warming potential into account for reporting greenhouse gas emissions. Emissions will be expressed in metric tons of CO₂ equivalent in this document.

Oil and Gas production in New Mexico is concentrated in the northwest corner, the San Juan Basin, and the southeast corner, the Permian Basin. Production in the San Juan Basin is mostly natural gas while production in the Permian Basin is mostly oil. Production statistics developed from EPA and New Mexico Oil Conservation Division for 2010 are shown in Table 3.1 for the US, New Mexico and for wells on federal leases in each basin.

Table 3.1: 2010 Oil and Gas Production

Location	Oil (bbl)	% U.S. Total	Gas (MMcf)	% U.S. Total
United States	1,999,731,000	100	26,836,353	100
New Mexico	65,380,000	3.27	1,341,475	5.00
Federal leases in New Mexico	31,533,000	1.58	824,665	3.07
Federal Leases in San Juan Basin	1,468,000	0.07	630,060	2.35
Federal Leases in Permian Basin	30,065,000	1.5	194,065	0.73

In order to estimate the contribution of federal oil and gas leases to greenhouse gases in New Mexico it is assumed that the percentage of total U.S. production is comparable to the percentage of total emissions. Therefore, emissions are estimated based on production starting with total emissions for the United States from EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010* (19), and applying production percentages to estimate emissions for the San Juan Basin. It is understood that this is a rather simplistic technique and assumes similar emissions in basins that may have very different characteristics and operational procedures, which could be reflected in total emissions. This assumption is adequate for this level of analysis due to the unknown factors associated with eventual exploration and development of the leases. However, the emissions estimates derived in this way, while not precise will give some insight into the order of magnitude of emissions from federal oil and gas leases administered by BLM, and allow for comparison with other sources in a broad sense.

Table 3.2 shows estimated greenhouse gas emissions for oil and gas field production for the U.S., New Mexico, and federal leases by basin. Because oil and gas leaves the custody and

jurisdiction of the BLM after the production phase and before processing or refining, only emissions from the production phase are considered here, which are a small fraction of overall emissions of CO₂e from the life cycle of oil and gas. For example, acquisition (drilling and development) for petroleum is responsible for only 8% of the total CO₂e emissions, whereas transportation of the petroleum to refineries represents about 10% of the emissions, and final consumption as a transportation fuel represents fully 80% of emissions (U.S.DOE, NETL, 2008). It should also be remembered that following EPA protocols, these numbers do not include fossil fuel combustion which would include such things as truck traffic, pumping jack engines, compressor engines and drill rig engines. Nor does it include emissions from power plants that generate the electricity used at well sites and facilities. The estimates are only for operations, not for construction and reclamation of the facilities, which may have a higher portion of a projects GHG contribution. CO₂e is the concentration of CO₂ that would cause the same level of radiative forcing as a given type and concentration of greenhouse gas.

Table 3.2: 2010 Oil and Gas Field Production Emissions

	Oil (Metric tons of CO₂e)		Gas (Metric tons of CO₂e)		Total O&G Production (Metric tons CO₂e)	%U.S. Total GHG missions
(Metric Tons CO ₂ e)	CO ₂	CH ₄	CO ₂	CH ₄		
United States	300,000	30,600,000	10,800,000	126,000,000	95,167,700,000	2.6
New Mexico	9,810	1,000,620	540,000	6,300,000	7,850,430	0.12
Federal leases in New Mexico	4,740	483,480	331,560	3,868,200	4,687,980	0.07
Federal Leases in San Juan Basin	210	21,420	253,800	2,961,000	3,236,430	0.05
Federal leases in Permian Basin	4,500	459,000	78,840	919,800	1,462,140	0.03

To estimate the potential emissions from the proposed lease sale, an estimate of emission per well is useful. To establish the exact number of Federal wells in northwestern New Mexico is problematic due to the ongoing development of new wells, the abandonment of unproductive wells, land sales and exchanges, and incomplete or inaccurate data bases. The most transparent and publicly accessible method of estimating the number of active federal wells in the New Mexico portion of the Permian Basin was to utilize the BLM New Mexico Geographic Information System (GIS) and the New Mexico Conservation Division ONGARD Data Search Page. ONGARD was searched for all Active, New, and Temporarily Abandoned wells in NM, then refined the search to include only Lea, Eddy, and Chavez counties (25,298), and finished

the search by limiting the results to Federal wells (11,216).

Table 3.3 Potential Greenhouse Gas Emissions Resulting from Proposed Lease Sale Referenced to Latest Available Estimates from 2010

Total U.S. GHG Emissions From All Sources	6,372,900,000 metric tons	100.00 %
Total U.S. GHG Emissions From Oil & Gas Field Production	167,700,000 metric tons	2.6%
Total San Juan Basin Emissions From Federal Oil & Gas Field Production (approx. 15,811 wells)	3,236,430 metric tons	0.05%
Total Potential GHG Emissions From Oil & Gas Field Production at Full Development For Proposed Action (470 Wells)	96,207 metric tons	.0015%
Total Potential GHG Emissions From Oil & Gas Field Production at Full Development For Preferred Alternative (211 Wells)	43,192 metric tons	.0007 %

The table above estimated that the total emissions from federal wells in the San Juan Basin in 2010 were 3,236,430 metric tons CO₂e. Therefore, the estimate of emission per well is 204.7 metric tons CO₂e annually (See Section 5: Cumulative Impacts for more information).

Environmental impacts of GHG emissions from oil and gas consumption are not effects of the proposed action as defined by the Council on Environmental Quality, and thus are not required to be analyzed under NEPA. Greenhouse gas emissions from consumption of oil and gas are not direct effects under NEPA because they do not occur at the same time and place as the action. They are also not indirect effects because oil and gas leasing and production would not be a proximate cause of greenhouse gas emissions resulting from consumption.

4.3.1.2.2 Potential Mitigation

The EPA's inventory data describes "Natural Gas Systems" and "Petroleum Systems" as the two major categories of total US sources of GHG gas emissions. The inventory identifies the

contributions of natural gas and petroleum systems to total CO₂ and CH₄ emissions (natural gas and petroleum systems do not produce noteworthy amounts of any of the other greenhouse gases). Within the larger category of “Natural Gas Systems”, the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. “Petroleum Systems” sub-activities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of waste (via leaks, spills and unauthorized flaring and venting).

The EPA data show that improved practices and technology and changing economics have reduced CO₂ emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006 (EPA, 2012b)). One of the factors in this improvement is the adoption by industry of the BMPs proposed by the EPA's Natural Gas Energy Star program. The Field Office will work with industry to facilitate the use of the relevant BMPs for operations proposed on Federal mineral leases where such mitigation is consistent with agency policy. While EPA data shows that methane emissions increased from oil and gas exploration and development from 1990-2010, reductions in methane emissions from oil and gas exploration and development should occur in future years as a result of EPA's recently finalized oil and gas air emissions regulations.

4.3.2 Watershed Resources

4.3.2.1 Direct and Indirect Effects

Watershed Stability / Water Quality. While the act of leasing the parcels would produce no impacts, subsequent development of the lease would result in long term and short term changes to the hydrologic response due to surface infrastructure development including the construction of well pads, access roads, pipelines, and power lines. Because of reduced water infiltration rates on well pads and roads, surface flows would move more quickly to stream channels, causing peak flow to occur earlier and to be higher than normal. Potential impacts would include increased surface water runoff, erosion, off-site sedimentation and dissolved constituents (salt loading) to downstream waters. This could result in degradation of surface water quality and groundwater quality from non-point source pollution, especially from potentially increased soil erosion and sedimentation. Increased runoff volumes and peak flows has the potential to cause stream channel widening through bank erosion, downward incision through bed erosion, disconnection of streams from the floodplain, or stream channel aggradation through sedimentation.

The potential effects would depend on the density of pad and road development within a watershed. Low density development may only affect the smaller tributary streams but not the larger ones, whereas more concentrated development within a watershed or catchment would tend to create potential effects further downstream to larger channels. Increased runoff volumes of water to streams, arroyos, and washes may actually increase groundwater recharge volumes.

The potential effects also would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration

and time within which construction activity would occur, and the timely implementation and success or failure of mitigation measures.

Potential effects would likely be greatest shortly after the start of construction activities and would decrease in time due to proper implementation, monitoring, and maintenance of Best Management Practices (BMPs) that would include proper design of facilities along with effective temporary stabilization measures that would promote permanent natural vegetative stabilization and reclamation of disturbed areas. Construction activities would occur over a relatively short period, and therefore the majority of the disturbance would be evident but short lived. Impacts to surface water quality would be managed (minimized) through the implementation, monitoring, and necessary adjustment of BMPs prescribed. However, short-term and minor impacts may occur during storm flow events.

Long-term effects to the watershed would continue for the life of wells and would decrease once all well pads and road surfacing material has been removed and reclamation of well pads, access roads, pipelines, and powerlines has taken place. Short-term effects to the watershed from access roads that are not surfaced with material would occur and would likely decrease in time due to reclamation efforts.

Petroleum products and other chemicals, accidentally spilled, could result in surface and groundwater contamination. Spills or produced fluids (e.g., saltwater, oil, and/or condensate in the event of a breach, overflow, or spill from storage tanks) also could result in contamination of the soils onsite or offsite. Similarly, possible leaks from reserve and evaporation pits could degrade soils and surface and ground water quality.

Floodplains. Potential impacts of lease development may include alteration of natural floodplain areas by surface disturbance or placement of oil and gas facilities. New access roads may be constructed across floodplains.

Wetlands/Riparian Areas. The proposed lease sale parcels do not contain any known permanent or protected riparian areas/riparian habitat. Based on existing available information, development of the parcels would not have adverse effects on riparian habitat, but the degree and location of effects cannot be predicted until the site specific APD stage of development.

4.3.2.2 Potential Mitigation

Watershed Stability / Water Quality. Potential effects would depend on site-specific location of future development and cannot be predicted or quantified at the leasing stage. General conditions of approval at the APD stage will specify Best Management Practices that will include reclamation of plant communities and water control measures to prevent and limit erosion and sedimentation, such as road and pad location and design, culverts, and silt traps. Existing regulations require operators ensure an adequate casing program is designed to protect ground water from contamination.

Stipulations to protect watershed resources include those that address development on steeper slopes (H.2.3.1, H.2.3.2) and reclamation opportunity (H.2.3.3) for applicable lease parcels in

Table 1.0. Stipulations to protect ephemeral, intermittent, and perennial streams (H.2.2.1 and H.2.2.2) are also shown by applicable parcel in Table 1.0.

Authorization of development projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection. Ground water protection also is achieved through State of New Mexico drilling regulations for oil and gas wells, and by controlling surface pollution that could migrate to ground water. The use of lined reserve pits would reduce or eliminate seepage of drilling fluid into the soil and prevent it from eventually reaching groundwater. The casing and cementing requirements imposed on proposed wells would reduce or eliminate the potential for groundwater contamination from drilling mud and other surface sources.

An orderly system of road locations and road construction requirements (including regular maintenance) would alleviate potential impacts to the environment from the development of access roads. General conditions of approval at the APD stage will specify Best Management Practices and include reclamation of plant communities and use of erosion control measures, water control measures, and sedimentation control measures, such as road and pad location and design, culverts, and silt traps to reduce erosion and sediment flow. Roads that are determined to be year-round use service roads will have short and long term impacts to the watershed and hydrologic response. Hardening of these roads and use of hardened low level crossings is highly recommended. Upon abandonment of the wells and/or when access roads are no longer in service, the Authorized Officer would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in the attached Conditions of Approval.

Floodplains. BLM is required to meet the objectives of federal floodplain policy. Executive Order 11988 (21), as amended, established this policy and directs agencies to “avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative.” The objectives of avoiding development and modification of floodplains are to 1) reduce the hazard and the risk of flood loss, 2) minimize the impact of floods on human safety, health, and welfare, and 3) restore and preserve the natural and beneficial floodplain values.

Therefore, stipulations to protect FEMA-designated 100-year floodplains include H.2.2.1 and H.2.2.2 for applicable lease parcels as listed in Table 2.0. Specific mitigation measures to avoid potential adverse impacts to floodplains that may exist in the proposed lease parcel would be taken into consideration during the APD stage. Generally, flood prone areas would be avoided when determining the placement of oil and gas infrastructure. Any new access roads crossing floodplains would be designed to minimize impact to natural floodplain functions.

Wetlands/Riparian Areas. No direct mitigation is needed, though mitigations that protect watershed response would indirectly benefit wetland/riparian areas downstream.

4.3.3 Soils

The magnitude and location of direct and indirect effects cannot be predicted until the site-specific APD stage of development. Soils vary in their suitability for use as road fill and road

beds. Road design to BLM standards and use of suitable fill would foster road stability and mitigate erosion and sedimentation. Increased traffic in the area with development could cause increased deterioration that could make travel by various road users difficult and worsen the loss of soil due to erosion by wind and/or water. Maintenance standards for constructed roads would also be specified in the APD stage.

Development of infrastructure and soil disturbance on steeper slopes (greater than 15% slope) generally increases the water erosion potential because of increased runoff volumes and velocities. This would be expected with long-term surface installations such as oil and gas production facilities including appurtenant management features such as roads and pipelines.

4.3.3.1 Direct and Indirect Effects

While the act of leasing a tract would produce no impacts, subsequent development of the lease would physically disturb the topsoil and would expose the substratum soil on subsequent project areas. Direct impacts resulting from the construction of well pads, access roads, and reserve pits include removal of vegetation, exposure of the soil, mixing of horizons, compaction, loss of topsoil productivity, and susceptibility to wind and water erosion. Wind erosion would be expected to be a minor contributor to soil erosion, with the possible exception of dust from vehicle traffic. These impacts could result in increased indirect impacts such as runoff, erosion, and off-site sedimentation. Activities that could cause these types of indirect impacts include construction and operation of well sites, access roads, gas pipelines, and facilities.

Contamination of soil from drilling and production wastes mixed into soil or spilled on the soil surfaces could cause a long-term reduction in site productivity.

Additional soil impacts associated with lease development could occur when heavy precipitation causes water erosion damage. When saturated segment(s) of the access road become impassable, vehicles driven over the segment(s) may develop deep tire ruts. Where impassable segments are created from deep rutting, unauthorized driving may occur outside the designated route of access roads.

4.3.3.2 Potential Mitigation

Some direct impacts can be reduced or avoided through proper design, construction and maintenance and implementation of best management practices.

Stipulations to protect soil due to steepness (H.2.3.1, H.2.3.2) and limited reclamation opportunity (H.2.3.3) are proposed on applicable lease parcels in Table 1.0 . As described in Conditions of Approval at the APD stage, operators could stockpile the topsoil from the surface of well pads which would be used for surface reclamation of the well pads. If the well produces, the top soil can be used for interim reclamation of the areas of the well pad not in use. If the well is a dry hole, the soil can be used for immediate reclamation. The soil should not be stockpiled for more than one year. Soil stockpiling and re-spreading should be carried out under the advisement of BLM personnel. The impact to the soil would be remedied upon reclamation of well pads when the stockpiled soil that was specifically conserved to establish a seed bed is spread over well pads and vegetation re-establishes.

Reserve pits must be recontoured and reseeded as described in Conditions of Approval at the APD stage. Upon abandonment of wells and/or when access roads are no longer in service, the Authorized Officer would issue instructions and/or orders for surface reclamation/restoration of the disturbed areas as described in Conditions of Approval at the APD stage.

An orderly system of road locations and road construction requirements (including regular maintenance) would alleviate potential impacts to the environment from the development of access roads. To protect soils on steeper slopes, surface disturbance would not be allowed on slopes over 30 percent.

4.3.4 Vegetation

4.3.4.1 Direct and Indirect Effects

Basic assumptions can be made that, if drilling occurs, vegetation will be removed for drill pad construction. This is a temporary disturbance that is reduced upon interim reclamation and mitigated upon final reclamation.

4.3.4.2 Potential Mitigation

Evaluation of mitigation measures for the effect on vegetation is deferred to the site specific APD stage of development. Best Management Practices would be incorporated into the Conditions of Approval.

4.3.5 Invasive, Non-Native Species

4.3.5.1 Direct and Indirect Effects

Any surface disturbance can increase the possibility of establishment of new populations of invasive non-native species. The likelihood of this happening at the APD stage cannot be predicted with existing information. Minimizing the potential for introduction of weeds into developed site is a primary objective.

4.3.5.2 Potential Mitigation

Construction equipment will be power washed or air blasted to remove soils and vegetative materials on the equipment prior to entering the project sites. Certified noxious weed-free seed will be used in any reclamation area. Weed-free mulches will be utilized. Specific site plans will be developed at APD stage. Best Management Practices would be incorporated into Conditions of Approval. Should noxious or invasive non-native weeds become established or spread due to the proposed action, operators will be required to eliminate the population using standard weed management practices under the direction of BLM personnel.

4.3.6 Livestock Grazing

4.3.6.1 Direct and Indirect Effects

The amount and location of direct and indirect effects cannot be predicted until the site-specific APD stage of development. Rangeland improvements can be impacted by road and pad development. In the proposed lease areas there are a number of retention dams and water troughs. In addition there are playas with seasonal water that are secondary livestock water areas. Placement of facilities close to water could increase potential for contamination of the water site during construction and operations. In addition closeness to water can increase potential for stock to use the pad areas for resting, and rubbing and potential exposure to ethylene glycol storage and spills.

4.3.6.2 Potential Mitigation

At the site-specific APD stage of development, watering facilities, playas and improvements will be avoided. Roads and pads will be planned so as to prevent sediment loads and contaminants. Cattle guards will be installed on fence lines. BLM currently consults with grazing permittees on a site-by-site basis as part of the APD process. Best Management Practices would be incorporated into the Conditions of Approval.

4.3.7 Wildlife

4.3.7.1 Direct and Indirect Effects

As previously stated, it is not possible to predict whether or not a parcel would be sold and if it is sold, whether or not it would be developed. Should a lease be developed and surface disturbing and/or disruptive activities occur on the parcels containing crucial big game winter range during the crucial wintering period, it could cause impacts to wintering mule deer, pronghorn, and elk, such as causing animals to move to less suitable winter habitat and conceivably causing fetal abortion by pregnant females. Well pad, road, and pipeline development into areas currently void of surface disturbing or disruptive activities would result in habitat fragmentation, which, depending on the intensity of the development, vegetative cover and terrain, could affect the habitat viability. Activities associated with development of oil and gas resources, is highly likely to experience displacement of wildlife. Although the direct and indirect effects on specific wildlife species cannot be determined until site-specific project proposals are analyzed at the APD stage of development. Various parcels offered are located in close proximity to Fork Rock Mesa and Eagle Mesa, which provide habitat for raptors and migratory birds. If these lease parcels are developed, the resulting disturbance and noise would have a negative impact on these species, particularly during nesting or migration periods.

4.3.7.2 Potential Mitigation

To mitigate the impacts of lease development on raptors and migratory birds, the Timing Limit Stipulation: Important Seasonal Wildlife Habitat (RP-2 TLS) will be applied to these leases. In addition, site-specific wildlife resource surveys could be required at the APD stage. If a proposed activity is foreseen to have an adverse impact on other wildlife habitat, appropriate Conditions of

Approval will be attached to the APD. Examples of Conditions of Approval that protect wildlife resources include fencing to exclude wildlife, noise abatement, and timing stipulations to protect bird nesting sites or seasonal game habitat.

4.3.8 Areas of Critical Environmental Concern

4.3.8.1 Direct and Indirect Effects

Four of the nominated parcels are either partially or fully located within the Torreon East and West Fossil Fauna ACECs. The Torreon Fossil Fauna is a major collecting area for fossil mammals. Type specimens of the Torreon Fauna were originally recognized and described from this locale. A type locality is an important paleontological feature in that it represents the place at which a fossil assemblage is typically displayed and from which it derives its name. Thus, the area represents a unique and irreplaceable resource. The direct lease sale itself has no direct effect on the unique resource, however if drilling is permitted under current management prescriptions strict adherence to the ACEC protection plans must be applied.

4.3.8.2 Potential Mitigation

Site-specific paleontological resource surveys would be required at the APD stage and, depending on location and nature of the proposed development and results of surveys, additional consultation could be required with Rio Puerco or State Office Paleontology Specialists. If sale lease would happen after the completion and final approval of the Rio Puerco Resource Management plan revisions, the area could be lease with No Surface Occupancy restrictions.

4.3.9 Recreation/Special Designations

Evaluation of mitigation measures for effects on recreation resources is deferred to the site specific APD stage of development. Best Management Practices would be incorporated into Conditions of Approval and protective stipulations would be attached to the lease. Potential noise impacts as a direct result of development will be short term. Long term noise impacts will be as a result of hydrocarbon development and transportation by truck compressors, pump jacks.

4.3.9.1 Direct and Indirect Effects

Potential effects could occur to dispersed recreation activities such as big game hunting in small areas but these effects cannot be determined until site-specific development proposals are received at the APD stage.

4.3.9.2 Potential Mitigation

Mitigation of the effects of noise would be achieved by requiring all facilities using internal combustion engines to have exhaust mufflers, sound barrier walls or earthen mound to quiet noise or direction of impacts. Cumulative adverse noise impacts can be avoided by moving facilities behind hills and away from ACEC, or other potential high use recreation areas. Further

evaluation of mitigation measures for effects on recreation is deferred to site-specific requirements determined at the APD stage.

4.3.10 Visual Resources

Visual resource management is broken into four VRM classes. In the tracts proposed for leasing only VRM Class IV is represented.

4.3.10.1 Direct and Indirect Effects

The VRM Class IV objective is to provide for management activities which require major modification of the existing landscape character. Every attempt, however, should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements. Facilities such as condensate and produced water or oil storage tanks that rise above eight feet would provide a geometrically strong vertical and horizontal visual contrast in form and line to the area's characteristic landscape and vegetation, which have flat, horizontal to slightly rolling form and line. The construction of access roads, well pads and other ancillary facilities would slightly modify the existing visual resources. Through color manipulation, for example, by painting well facilities with a color determined by the Authorized Officer at the time of development to blend with the rolling to flat vegetative and/or landform setting, developments are expected to favorably blend with the form, line, color and texture of the existing landscape.

4.3.10.2 Potential Mitigation

For VRM Class IV, all facilities, including meter buildings, would be painted a color determined by the Authorized Officer at the time of development to blend with the rolling to flat vegetative and/or landform setting. Cumulative adverse visual impacts can be avoided by gradually moving into a more appropriate vegetative/ landform setting color scheme.

4.3.11 Cultural Resources

4.3.11.1 Direct and Indirect Effects

The lease sale itself causes no on the ground action; however, leasing transfers certain developmental rights to the lessee. In accordance with BLM Instruction Memorandum NM-2005-037 (13), a staged approach is used in the identification and evaluation of cultural properties for oil and gas leasing. IM NM-2005-037 (13) requires the Field Office to conduct a records check for each proposed lease parcel to identify historic properties recorded or projected to fall within the area of potential effect of the lease. The records check was performed in June, 2013[Report NM-110-2013(III)A]. The cultural heritage staff uses the information from the records check to assess the likelihood that previously recorded properties and those likely to exist within the lease can be mitigated by standard archeological and historical recordation techniques. Based on this information, the Field Office cultural heritage specialist makes a Determination of Effect for the undertaking. A determination of "No Effect" has been reached for these parcels

based on the attachment of Special Cultural Resources Lease Notice NM-11-LN and Stipulation CSU—National Register of Historic Places to all parcels, as well as deferral of parcels with cultural resources conflicts. These stipulations would protect any cultural resources identified at the APD stage.

Identification of historic properties takes place at the APD stage of lease development since direct and indirect effects cannot be assessed without analysis of site-specific development proposals. Cultural resource inventories will be undertaken and impacts to archeological sites will be assessed at the APD stage. Potential impacts at that stage could include increased human activity and possibility of illegal removal of, or damage to, cultural resources. The increased human activity in the area increases the possibility of irretrievable loss of information pertaining to the heritage of the project region. Conversely, the benefits to heritage resources derived from the future development are the cultural resources surveys that add to literature, information, and knowledge of cultural resources.

4.3.11.2 Potential Mitigation

Specific mitigation measures, including, but not limited to, possible site avoidance or excavation and data recovery would have to be determined when site-specific development proposals are received. Special Cultural Resources Lease Notice NM-11-LN or Stipulation CSU—National Register of Historic Places will be attached to all lease parcels to protect any cultural resources identified at the APD stage.

4.3.12 Native American Religious Concerns

4.3.12.1 Direct and Indirect Effects

Consultation with the appropriate tribes was initiated on April 3, 2013. One comment was received. Sensitive properties are not known to exist within the proposed lease parcels. No direct or indirect effects from leasing the parcels are predicted based on existing information. Use of Special Cultural Resources Lease Notice NM-11-LN or Stipulation CSU—National Register of Historic Places would help ensure that new information is incorporated into lease development. Additional Native American consultation will be initiated at the APD stage of development.

4.3.12.2 Potential Mitigation

Special Cultural Resources Lease Notice NM-11-LN or Stipulation CSU—National Register of Historic Places will be attached. No other mitigation is necessary at the leasing stage. Use of NM-11-LN or Stipulation CSU—National Register of Historic Places assures that additional Native American consultation can be performed at the APD stage and that sensitive properties can be avoided.

4.3.13 Environmental Justice

4.3.13.1 Direct and Indirect Effects

Indirect effects could include 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. Other effects could include a small increase in activity and noise disturbance in areas used for grazing, wood gathering, or hunting. However, these effects would apply to all public land users in the project area.

4.3.13.2 Potential Mitigation

Mitigation of potential negative effects, such as noise and surface disturbance is addressed in current regulations. Should drilling occur, specific mitigation measures, such as noise abatement, will be considered at the APD stage.

4.3.14 Mineral Resources

4.3.14.1 Direct and Indirect Effects

The amount and location of direct and indirect effects cannot be predicted until the site specific APD stage of development. The lease parcels do not appear to present any conflict with the development of other mineral resources such as coal, sand, or gravel.

4.3.14.2 Potential Mitigation

Evaluation of mitigation measures for effects on mineral resources is deferred to the site specific APD stage of development.

4.3.15 Paleontology

4.3.15.1 Direct and Indirect Effects

Although the amount and location of direct and indirect effects cannot be predicted until the site-specific APD stage of development, the parcels offered are in a PFYC Class 5 the geological formations present have produced important fossils.

4.3.15.2 Potential Mitigation

Evaluation of mitigation measures for effects on paleontological resources is deferred to the site specific APD stage of development. Best Management Practices would be incorporated into Conditions of Approval and protective stipulations would be attached to the lease. Stipulations RP-11-CSU or NM-13-CSU may be applied to protect potential fossil resources on identified parcels.

In the event that a paleontological resource is identified, the lessee shall protect the discovery from damage or looting and will notify the BLM Authorized Officer prior to disturbing the site. If the discovery is made during construction activities, further disturbance will be halted and the Authorized Officer will be notified. The Authorized Officer will evaluate said discovery after being notified and appropriate measures to mitigate adverse effects to significant paleontological

resources will be determined by the Authorized Officer. Upon approval of the Authorized Officer, the operator will be allowed to continue construction through the site, or will be given the choice of either (1) following the Authorized Officer's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (2) following the Authorized Officer's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.

4.3.16 Lands and Realty

The level and location of direct and indirect effects cannot be predicted until the site-specific APD stage of development. Existing ROWs can be impacted by road and pad development. To avoid impacts to existing uses, BLM would contact the ROW holders and notify them of the site-specific APD stage of development. As a result of the environmental analysis of the proposed site-specific APDs, location and materials used for pads may be adjusted to minimize effects. BLM "Gold Book" road standards would be implemented on any new development including the incorporation of Best Management Practices to minimize effects on existing ROWs. Roads must be constructed to an appropriate standard no higher than necessary to accommodate the intended use. In many cases, the construction of a lower-class road will meet the operator's access needs, while minimizing the effects on other important resource values. Roads used to access oil and gas locations are typically constructed for that primary purpose, are rarely permanent, and exist only as long as necessary to complete exploration and production operations. They are authorized with an accompanying reclamation plan and are to be reclaimed after well and field operations are completed. (Reference: BLM "Gold Book" Page 19, Roads and Access Ways, Fourth Edition, Revised 2007).

4.4 Cumulative Effects

The NMSO manages approximately 41 million acres of Federal mineral estate. Of the 41 million acres, 35 million acres are available for oil and gas leasing. Approximately 16% of the 35 million acres is currently leased (73% of the leases are in production and 63% of the lease acres are in production). The NMSO received 236 parcel nominations (178,793 acres) for consideration in the February 2014 Oil & Gas Lease Sale, and is proposing to lease 106 (73,642 acres) of the 236 parcels. If these 106 parcels were leased, the percentage of Federal minerals leased would change by 1%. The Carlsbad, Farmington, Las Cruces, Oklahoma (Kansas, Texas and Oklahoma), Rio Puerco and Roswell Field Office parcels are analyzed under separate EAs.

Table 4A. Actual - Acres of Federal Minerals/Acres Available/Acres Leased:

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
KS	744,000	614,586	125,091	20%
NM	34,774,457	29,751,242	4,839,255	16%
OK	1,998,932	1,668,132	324,072	19%
TX	3,404,298	3,013,207	425,511	14%
Totals/Average	40,921,687	35,058,167	5,713,929	16%

Table 4B. Parcels Nominated & Offered in the February 2014 Oil & Gas Lease Sale:

Field Office	No. of Nominated Parcels	Acres of Nominated Parcels	No. of Parcels to be Offered	Acres of Parcels to be Offered
Carlsbad	34	12,302	20	4,981
Farmington	38	19,103	4	1,200
Kansas	1	120	1	120
Las Cruces	27	31,743	23	27,779
Oklahoma	11	657	10	617
Rio Puerco	76	74,650	0	0
Roswell	5	4,926	5	4,926
Texas	44	35,292	43	34,019
Totals	236	178,793	106	73,642

Table 4C. Foreseeable - Acres of Federal Minerals/Acres Available/Acres Leased:

State	Federal O&G Mineral Ownership	Acres Available	Acres Leased	Percent Leased
KS	744,000	614,586	125,211	20%
NM	34,774,457	29,751,242	4,878,141	16%
OK	1,998,932	1,668,132	324,689	19%
TX	3,404,298	3,013,207	459,530	15%
Totals/Average	40,921,687	35,067,167	5,787,571	17%

This environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Resource Management Plans. The RMPs designated federal minerals as open for continued oil and gas development and leasing under Standard Terms and Conditions and described specific stipulations that would be attached to new leases offered in certain areas. The parcels to be offered in the February 2014 sale are within areas open to oil and gas leasing.

Currently there are 112 oil and gas leases covering approximately 107,763 acres in the Rio Puerco Field Office. These leases have a total of 170 producing, abandoned, and shut-in wells. Approximately 260 acres, or 0.24% of the leased area, are disturbed. If a parcel is leased and developed through drilling, a separate environmental document would be prepared. If full field development were to occur, additional NEPA analysis addressing cumulative impacts would be required. Impacts from development would remain on the landscape until final abandonment and reclamation of facilities occurs at some unknown time in the future. Ongoing mitigation and reclamation procedures would continue to be used to limit effects.

It is unknown when, where or if future well sites or roads might be proposed within the proposed lease sale areas. Also, at the time of this review, it is unknown whether a parcel will be sold and a lease even issued. Analysis of projected surface disturbance impacts, should a lease be developed, was estimated based on potential well densities listed in the Reasonable Foreseeable

Development Scenario used as the basis for the 1991 PRMP Amendment/FEIS (7). Detailed site-specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD).

Air Quality

The small increase in emissions that could result from approval of the proposed action would not result in the area exceeding the NAAQS for any criteria pollutant. In October 2012, EPA regulations that require control of VOC emissions from oil and gas development became effective. These regulations will reduce VOC emissions from oil and gas exploration and production that contribute to ozone concentrations. Emission from any development of the leases is not expected to impact the 8-hour average ozone concentrations, or any other criteria pollutants in the area.

Climate Change

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

The EPA's Inventory of US Greenhouse Gas Emissions and Sinks found that in 2010, total U.S. GHG emissions were almost 7 billion (6,821.8 million) metric tons and that total U.S. GHG emissions have increased by 10.5% from 1990 to 2010 (EPA, 2012b). Emissions increased from 2009 to 2010 by 3.2.0% (13.5 million metric tons CO₂^e). The primary causes of this increase were an increase in economic output which increased energy consumption and warmer summer conditions which resulted in an increase in electricity demand for air conditioning (EPA, 2012b).

On-going scientific research has identified the potential effects of anthropogenic GHG emissions such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and several trace gasses; changes in biological carbon sequestration; and other changes due to land management activities on global climate. Through complex interactions on a global scale, GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although natural GHG atmospheric concentration 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.

The incremental contribution to global GHG gases from the proposed action cannot be translated into effects on climate change globally or in the area of this action. As oil and gas production technology continues to improve, and because of the potential development of future regulation or legislation, one assumption is that reductions in the rate or total quantity of GHG emissions associated with oil and gas production are likely. As stated in the direct/indirect effects section under climate change, the assessment of GHG emissions and the resulting impacts on climate is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on global or regional climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. Therefore, the BLM does not have the ability to associate an action's contribution in a localized area to impacts on global climate change. Further, an IPCC assessment states that difficulties remain in attributing observed temperature changes at smaller than continental scales. It is currently beyond the scope of existing science to predict climate change on regional or local scales resulting from specific

sources of GHG emissions.

Currently, global climate models are inadequate to forecast local or regional effects on resources (IPCC, 2007; CCSP, 2008). However, there are general projections regarding potential impacts to natural resources and plant and animal species that may be attributed to climate change from GHG emissions over time; however these effects are likely to be varied, including those in the southwestern United States (Karl et al., 2009). 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 dependent on historic water conditions (Karl et al., 2009).

The Inventory of New Mexico Greenhouse Gas Emissions: 2000-2007 estimates that 13.9 million metric tons of GHGs from the natural gas industry and 1.9 million metric tons of GHGs from the oil industry were emitted in 2007 as a result of oil and natural gas production, processing, transmission and distribution. Overall, greenhouse gas emissions in New Mexico decreased slightly from 2000 to 2007 (NMED, 2010). As of 2008, there were 23,196 oil wells and 27,778 gas wells in New Mexico (NMOCD, 2010b).¹

When compared to the GHG emission estimates from the total number of oil and gas wells in the State, the average number of oil and gas wells drilled annually in the Field Office and associated GHG emission levels represent an incremental contribution to the total regional and global GHG emission levels. The number of oil and gas wells that would eventually result from the proposed action would therefore likely represent an even smaller incremental contribution to GHGs emissions on a global scale.

The impact of climate change on BLM resources depends upon the location of the affected resource, its vulnerability and resiliency to change, and its relationship to the human environment. There will be positive and negative impacts of climate change, even within a single region. For example, warmer temperatures may bring longer growing seasons in some regions, benefiting farmers who can adapt to new conditions, but potentially harming native plant and animal species. In general, the larger and faster the changes in climate are, the more difficult it will be for human and natural systems to adapt.

Based on current assumptions for climate change, New Mexico could see effects to water quantity, quality, and seasonal availability; agriculture and grazing; disease and pest outbreaks; shifting of seasons; shifts in plant and animal population, range, species diversity, and migration

¹ In 2000, approximately 17 million metric tons and 2.3 million metric tons were respectively attributed to natural gas and oil activities. As of 2002, the Inventory indicates that there approximately 21,771 oil wells and 23,261 gas wells in the State. Significant uncertainties remain with respect to: the quality of historical field data, processing, and pipeline use of natural gas, does not factor in reclaimed wells and total number of new wells drilled per year; CO2 emissions from enhanced oil recovery, which have not been estimated; and refinery fuel use-EIA indicates less than half the refinery fuel use as indicated by refinery permit data.

patterns; forest quality; and frequency, duration, and location of extreme weather events. Within the RPFO itself, there may be local variations.

Climate change also is likely to exacerbate the effects of natural and altered disturbance regimes, including wildfire, insect outbreaks, flooding, and erosion, across all New Mexico's habitat types and may prompt abrupt ecological changes. This is particularly true in ecosystems such as grasslands, riparian areas, and forests where the effects of past management and land use change are substantial (McCarty, 2008).

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and life spans in the atmosphere.

5.0 Description of Mitigating Measures and Residual Impacts

Effects of the lease sale will be mitigated by attaching the Oil and Gas Leasing Stipulations to the lease parcels. The Albuquerque District Office's Surface Use and Occupancy Requirements, Conditions of Approval, and the Rio Puerco Field Office's Special Leasing Stipulations, which are in place at the New Mexico State Office, will provide adequate mitigation for all lease parcels.

Direct, indirect, cumulative and residual impacts of leasing and lease development are generally described in the approved Resource Management Plans and Record of Decisions. An environmental analysis will be prepared on a case-by-case basis upon receipt of future subsequent actions.

6.0 Consultation/Coordination

This section lists individual resource specialists located within the District as well as other individuals/agencies who were contacted during the development of this document.

6.1 Persons/Agencies Consulted

This section includes individuals or organizations that were contacted during the development of this document.

Table 5.1. Summary of Contacts Made During Preparation of Document

Contact	Title	Organization
J. Leroy Arquero	Governor	Cochiti Pueblo

LeRoy Shingoitewa Leigh Kuwanwisiwma	Hopi Tribal Council Chairman Hopi Cultural Preservation Office	Hopi Tribe
E. Paul Torres	Governor	Isleta Pueblo
Vincent A. Toya, Sr.	Governor	Jemez Pueblo
Richard B. Luarkie, Sr.	Governor	Laguna Pueblo
Marcelino Aguina	Governor	Ohkay Owingeh Pueblo
Jimmy Cimmaron Felice Lucero	Governor DNR Coordinator	San Felipe Pueblo
Terry L. Aguilar	Governor	San Ildefonso Pueblo
Victor Montoya	Governor	Sandia Pueblo
Myron Armijo Walter Cristobal	Governor Tribal Preservation Office	Santa Ana Pueblo
J. Bruce Tafoya	Governor	Santa Clara Pueblo
Felix Tenorio, Jr.	Governor	Santo Domingo Pueblo
Mark Mitchell	Governor	Tesuque Pueblo
Harold Reids	Governor	Zia Pueblo
Ben Shelly Tony H. Joe, Jr. Alan Downer	President Traditional Culture Program Historic Preservation Department	The Navajo Nation
Samuel Sage	President	Counselor Navajo Chapter
Roger Toledo	President	Ojo Encino Navajo Chapter
Billy Chiquito	President	Pueblo Pintado Navajo Chapter

Joe L. Cayadito, Jr.	President	Torreon Navajo Chapter
Andrew Jim	President	Whitehorse Lake Navajo Chapter
Wallace Coffey	Chairman	Comanche Indian Tribe
Ty Vicinti Jeffrey Blythe	President Tribal Historic Preservation Officer	Jicarilla Apache Nation
Jimmy R. Newton	Chairman	Southern Ute Tribe
Gary Hayes Terry Knight	Chairman Tribal Historic Preservation Officer	Ute Mountain Ute Tribe

6.2 List of Preparers

This section lists the Bureau of Land Management Personnel involved in completion of this environmental assessment.

Table 5.2. List of preparers. All preparers are staff of the Bureau of Land Management, Albuquerque District Office.

Name	Title	Role
Angel Martinez	Planning / Environmental Specialist	Coordinator / Writer
Matthew Atencio	Range	Lead
Martin Vissaraga	GIS	Specialist
Calvin Parson	Geologist/Paleo Coordinator/Hazmat Coordinator	Project Lead/ Specialist/Coordinator
Arlene Salazar	Realty	Specialist
David Mattern	Hydrologist	
Gretchen Obenauf	Archeologist	Cultural Resources and Native American Religious Concerns
Josh Freeman	Biologist	Specialist
Jamie Garcia	Outdoor Recreation Planner	Specialist

6.3 Public Involvement

The parcels and applicable stipulations were posted online for a two week public scoping period starting on July 22, 2013. No comments were received.

In addition, this EA was made available for public review and comment for 30 days beginning September 3, 2013. Comments were received from Ojo Encino Chapter Government (Navajo Nation). The comments are specific to parcels that are located within and directly adjacent Ojo Encino boundaries as well as parcels within and bordering the Southern Counselor Chapter Area. The comments raise concerns about the potential impacts leasing would have on the following:

- Ojo Encino Chapter's land use planning update;.
- Tribal Trust Assets;
- Tribal health and safety;
- Quality of life; and
- Subsistence resources;

Alternative C, Defer All Parcels, has been identified as the Preferred Alternative. Selection of this alternative would allow the Rio Puerco Field Office more time to evaluate the concerns raised. The Rio Puerco Field Office will be responding specifically to the Ojo Encino Chapter's comments by letter.

6.4 Authorities

Code of Federal Regulations (CFR)

40 CFR All Parts and Sections inclusive *Protection of Environment*, Revised as of July 1, 2001.

43 CFR, All Parts and Sections inclusive - *Public Lands: Interior*. Revised as of October 1, 2000.

Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 U.S.C. 4301)

U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. *The Federal Land Policy and Management Act*, as amended. Public Law 94-579.

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APPENDIX 1

Nominated Parcels for Rio Puerco (Albuquerque) for February 2014 Oil and Gas Lease Sale

NM-201401-067 2073.300 Acres

T.0200N, R.0010W, NM PM, NM

Sec. 003 LOTS 1-4;

003 S2NW, SW, S2SE;

004 LOTS 3, 4;

004 N2SW, SE;

005 LOTS 2-4;

005 SWNE, S2NW, N2SW, SE;

006 LOTS 6;

009 W2NE, S2NW, SW;

010 NE, E2NW, SW, N2SE, SWSE;

015 LOTS 1;

Sandoval County

NM-201401-068 2099.820 Acres

T.0200N, R.0010W, NM PM, NM

Sec. 007 LOTS 1, 4, 7-9;

007 E2SW, SE;

008 N2NE, S2N2, S2;

017 ALL;

018 LOTS 2, 5-8;

018 E2, E2W2;

Sandoval County

NM-201401-069 160.000 Acres

T.0200N, R.0010W, NM PM, NM

Sec. 015 S2SE;

022 NWNE, NENW;

Sandoval County

NM-201401-070 942.470 Acres

T.0200N, R.0010W, NM PM, NM

Sec. 019 LOTS 1-4, 9-12;

019 N2NE, SENE;

020 LOTS 2-6;

020 N2;

029 LOTS 2;

030 LOTS 3, 11, 12;

Sandoval County

NM-201401-071 40.000 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 021 NWNE;
Sandoval County

NM-201401-072 40.000 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 021 NWNW;
Sandoval County

NM-201401-073 1716.510 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 021 NESW, S2S2, NESE;
022 LOTS 4;
022 W2SW, SESW, SWSE;
023 SESE;
026 NENE, S2N2, N2S2;
027 N2, E2SW, SWSW, N2SE;
028 N2, NWSE;
Sandoval County

NM-201401-074 1064.510 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 029 LOTS 8-10;
031 LOTS 1, 2, 6, 7;
031 S2NE, SE;
032 ALL;
Sandoval County

NM-201401-075 797.400 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 033 W2SE;
034 LOTS 1;
034 W2SW, E2SE;
035 NWSW, N2SE;
Sandoval County

NM-201401-076 108.180 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 017 LOTS 3, 6, 7;
Sandoval County

NM-201401-077 120.000 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 018 SWNE, N2SE;
Sandoval County

NM-201401-078 225.990 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 021 LOTS 4, 5, 6;
022 NWSW;
028 LOTS 1;
028 NENE;
Sandoval County

NM-201401-079 379.620 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 030 LOTS 1-5, 7, 8;
030 E2SW, NWSE;
Sandoval County

NM-201401-080 42.230 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 031 LOTS 10, 11;
Sandoval County

NM-201401-081 463.700 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 032 LOTS 1, 2, 3, 4;
032 S2S2;
033 LOTS 5;
033 S2SW;
Sandoval County

NM-201401-082 49.290 Acres
T.0210N, R.0010W, NM PM, NM
Sec. 034 LOTS 7, 8;
Sandoval County

NM-201401-083 514.650 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 001 LOTS 1-7;
001 SWNE, S2NW, SW, W2SE;
Sandoval County

NM-201401-084 1920.000 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 009 ALL;
010 ALL;
015 ALL;
Sandoval County

NM-201401-085 640.000 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 017 ALL;
Sandoval County

NM-201401-086 560.000 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 022 N2, SW, W2SE;
Sandoval County

NM-201401-087 640.000 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 029 W2;
030 E2;
Sandoval County

NM-201401-088 1936.840 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 003 LOTS 1-4;
003 S2N2, S2;
004 LOTS 1-4;
004 S2N2, S2;
005 LOTS 1-4;
005 S2N2, S2;
Sandoval County

NM-201401-089 1902.340 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 006 LOTS 1-7;
006 S2NE, SENW, E2SW, SE;
007 LOTS 1-4;
007 E2, E2W2;
008 ALL;
Sandoval County

NM-201401-090 1920.000 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 009 ALL;
010 ALL;
015 ALL;
Sandoval County

NM-201401-091 1912.040 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 016 ALL;
017 ALL;
018 LOTS 1-4;
018 E2, E2W2;
Sandoval County

NM-201401-092 1273.200 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 019 LOTS 1-4;
019 E2, E2W2;
030 LOTS 1-4;
030 E2, E2W2;
Sandoval County

NM-201401-093 1920.000 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 020 ALL;
028 ALL;
029 ALL;
Sandoval County

NM-201401-094 1280.000 Acres
T.0210N, R.0020W, NM PM, NM
Sec. 022 ALL;
027 ALL;
Sandoval County

NM-201401-095 400.000 Acres
T.0180N, R.0030W, NM PM, NM
Sec. 022 S2;
027 W2NW;
Sandoval County

NM-201401-096 40.000 Acres
T.0180N, R.0030W, NM PM, NM
Sec. 029 SESE;
Sandoval County

NM-201401-097 80.000 Acres
T.0180N, R.0030W, NM PM, NM
Sec. 033 SWNE, SWSE;
Sandoval County

NM-201401-098 160.000 Acres
T.0180N, R.0030W, NM PM, NM
Sec. 034 NW;
Sandoval County

NM-201401-099 589.430 Acres
T.0200N, R.0030W, NM PM, NM
Sec. 006 LOTS 1-7;
006 S2NE, SENW, E2SW, SE;
Sandoval County

NM-201401-100 320.000 Acres
T.0200N, R.0030W, NM PM, NM
Sec. 025 E2;
Sandoval County

NM-201401-101 960.000 Acres
T.0200N, R.0030W, NM PM, NM
Sec. 026 ALL;
035 W2;
Sandoval County

NM-201401-102 626.600 Acres
T.0200N, R.0030W, NM PM, NM
Sec. 031 LOTS 1-4;
031 E2, E2W2;
Sandoval County

NM-201401-103 1200.000 Acres
T.0200N, R.0030W, NM PM, NM
Sec. 033 ALL;
034 N2, N2SW, SE;
Sandoval County

NM-201401-104 1774.480 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 001 LOTS 1-4;
001 S2N2, S2;
002 LOTS 1-4;
002 S2N2, S2;
012 W2E2, W2;
Sandoval County

NM-201401-105 1929.280 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 003 LOTS 1-4;
003 S2N2, S2;
010 ALL;
011 ALL;
Sandoval County

NM-201401-106 1939.640 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 004 LOTS 1-4;
004 S2N2, S2;
005 LOTS 1-4;
005 S2N2, S2;
009 ALL;
Sandoval County

NM-201401-107 1442.880 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 007 E2;
008 ALL;
006 LOTS 1-6;
006 S2NE, SE;
007 LOTS 1-4;
Sandoval County

NM-201401-108 2560.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 013 ALL;
014 ALL;
023 ALL;
024 ALL;
Sandoval County

NM-201401-109 2400.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 015 ALL;
016 N2, E2SW, SE;
021 E2, S2NW, SW;
022 ALL;
Sandoval County

NM-201401-110 640.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 017 ALL;
Sandoval County

NM-201401-111 2560.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 025 ALL;
026 ALL;
035 ALL;
036 ALL;
Sandoval County

NM-201401-112 1920.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 027 ALL;
028 ALL;
034 ALL;
Sandoval County

NM-201401-113 320.000 Acres
T.0170N, R.0040W, NM PM, NM
Sec. 006 LOTS 3-7;
006 SENW, E2SW;
Sandoval County

NM-201401-114 1685.950 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 001 LOTS 1-4;
001 S2N2, S2;
011 E2 ,SW;
012 ALL;
Sandoval County

NM-201401-115 160.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 008 NE;
Sandoval County

NM-201401-116 960.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 013 ALL;
014 E2;
Sandoval County

NM-201401-117 472.920 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 018 LOTS 1-4;
018 NE, E2W2;
Sandoval County

NM-201401-118 1424.620 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 019 LOTS 3, 4;
019 E2SW;
030 LOTS 1-4;
030 E2, E2W2;
031 LOTS 1-4;
031 E2, E2W2;
Sandoval County

NM-201401-119 640.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 019 NE;
020 N2;
021 NW;
Sandoval County

NM-201401-120 2400.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 025 ALL;
026 E2, SW;
035 ALL;
036 ALL;
Sandoval County

NM-201401-121 640.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 028 NW, S2;
029 SE;
Sandoval County

NM-201401-122 1282.480 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 001 LOTS 1-4;
 001 S2N2, S2;
 002 LOTS 1-4;
 002 S2N2, S2;
Sandoval County

NM-201401-123 2459.040 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 003 LOTS 5-8;
 003 S2N2, S2;
 004 LOTS 5-8;
 004 S2N2, S2;
 009 ALL;
 010 ALL;
Sandoval County

NM-201401-124 2433.020 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 005 LOTS 5-8;
 005 S2N2, S2;
 006 LOTS 8-14;
 006 S2NE, SENW, E2SW, SE;
 007 LOTS 1-4;
 007 E2, E2W2;
 008 ALL;
Sandoval County

NM-201401-125 1280.000 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 011 ALL;
 012 ALL;
Sandoval County

NM-201401-126 1280.000 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 013 ALL;
014 ALL;
Sandoval County

NM-201401-127 320.000 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 017 E2;
Sandoval County

NM-201401-128 641.920 Acres
T.0210N, R.0040W, NM PM, NM
Sec. 018 LOTS 1-4;
018 E2, E2W2;
Sandoval County

NM-201401-129 479.500 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 005 LOTS 1, 2;
005 S2NE, S2;
Sandoval County

NM-201401-130 2400.000 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 013 ALL;
014 ALL;
015 ALL;
023 N2, SE;
Sandoval County

NM-201401-131 320.800 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 018 LOTS 3, 4;
018 E2SW, SE;
Sandoval County

NM-201401-132 2120.000 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 028 ALL;
029 N2, SESW, NESE, S2SE;
032 NWNE, W2;
033 ALL;
Sandoval County

NM-201401-133 639.200 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 031 LOTS 1-4;
031 E2, E2W2;
Sandoval County

NM-201401-134 640.000 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 035 ALL;
Sandoval County

NM-201401-174 140.640 Acres
T.0200N, R.0010W, NM PM, NM
Sec. 020 LOTS 1, 7;
021 SWNW, NWSW;
Sandoval County

NM-201401-175 160.000 Acres
T.0200N, R.0020W, NM PM, NM
Sec. 022 E2SE;
023 W2SW;
Sandoval County

NM-201401-176 160.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 012 E2E2;
Sandoval County

NM-201401-177 160.000 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 016 W2SW;
021 N2NW;
Sandoval County

NM-201401-178 426.670 Acres
T.0210N, R.0030W, NM PM, NM
Sec. 033 E2, N2NW;
033 26.67 DESCRIBED BY M&B'S;
033 SEE EXHIBIT A FOR M&B;
Sandoval County

NM-201401-179 160.000 Acres
T.0200N, R.0040W, NM PM, NM
Sec. 026 NW;
Sandoval County

NM-201401-180 160.000 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 029 N2SW, SWSW, NWSE;
Sandoval County

NM-201401-181 160.000 Acres
T.0210N, R.0050W, NM PM, NM
Sec. 032 SWNE, W2SE, SESE;
Sandoval County

APPENDIX 2

OIL AND GAS LEASE STIPULATIONS

New Mexico Stipulations

NM 1 THRU 3	(None)
NM-4 ROW	Material Site Right of Way
NM-5	White Sands Safety Evacuation Area
NM-6-NSO	NSO - Continental Divide Trail
NM-7-NL	NO LEASING -Wilderness Protection (Deleted – no such stip)
NM-8-LN	Coal Reserves (applied after review)
NM-9-NSO	NSO - Unit Participation/Pooling Stipulation
NM-10	Drainage
NM-11-LN	LEASE NOTICE - Special Cultural Resource (2/9/04)
NM-12-NSO	No Surface Occupancy – Occupied Structures & Dwellings (02/06)

3500-1	Powersite Stipulation (FERC)
PLS-1	Protective Leasing Stipulation (drainage)
WO-ESA (Sec 7)	Endangered Species Act –Sec 7 Consultation
WO-BOR-7	NSO – Until Section 7 consultation is completed Use only on BOR lands where Sec 7 consultation is required

RIO PUERCO STIPULATIONS (1986 RMP AS AMENDED)

RP-1 TLS	TIMING LIMITATION STIPULATION - Important Seasonal Wildlife Habitat – (July 2 thru January 31)
RP-2 TLS	TIMING LIMITATION STIPULATION - Important Seasonal Wildlife Habitat – (May 15 thru November 15)
RP-3 NSO	NO SURFACE OCCUPANCY - Cultural Resources and Aviation Facilities
RP-4 NSO	NO SURFACE OCCUPANCY - Gas Storage Facility
RP-5 CSU	CONTROLLED SURFACE USE -Designated Critical Area of Environmental Concern (ACEC)
RP-6	National Register of Historic Places

RP-7	Santa Ana Exchange (Contact Rio Puerco)
RP-8 TLS	TIMING LIMITATION STIPULATION -Protection of recreational wildlife and cultural values – (February 1, to July 1)
RP-9 CSU	CONTROLLED SURFACE USE - Protection of recreational, wildlife and cultural values (Canon Jarido)
RP-10 NSO Cemetery	NO SURFACE OCCUPANCY - Location contains a Church and Cemetery
RP-11 CSU	CONTROLLED SURFACE USE - Torrejon Fossil ACEC

2012 Draft RMP Revisions

8.0 Fluid Mineral Special Lease Stipulations

1.1 Background

When the BLM offers a parcel of land for lease, the BLM can attach special lease stipulations that augment the protections offered by the standard lease terms and conditions (BLM Form 3100-11). A lease stipulation is an enforceable term of the lease contract and supersedes any inconsistent provisions of the standard lease form. Only lease stipulations that have been reviewed and approved via the land use planning process may be attached to fluid mineral leases. The stipulations currently used by the RPFO are described in the 1992 Oil and Gas Amendment. For the revision of this RMP, resource specialists have revised the current stipulations in order to provide protection of other resources and resource uses.

1.1.1 Standard Lease Terms and Conditions

Standard lease terms and conditions can be found on the “Offer to Lease and Sale for Oil and Gas” form, (BLM Form 3100-11), and in 43 CFR Part 3101—Issuance of Leases. The provisions most relevant to surface management of fluid mineral development are the following:

- 43 CFR Part 3101.1-2: “...measures shall be deemed consistent with lease rights granted provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year.”
- Sec. 6, BLM Form 3100-11: “Lessee must conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users...”

- Sec. 12, BLM Form 3100-11: “At such time as all or portions of this lease are returned to the lessor, lessee must...reclaim the land as specified by lessor...”

1.1.2 Types of Lease Stipulations

A “no surface occupancy,” or NSO, stipulation precludes any surface disturbance within the area specified in the stipulation. The fluid minerals within the lease may be accessed by directional drilling from areas outside the leasehold that are open to surface occupancy. NSO stipulations are considered to be a major constraint on fluid mineral leasing and development.

A “controlled surface use,” or CSU, stipulation allows surface disturbance within the specified area, but requires the lessee to comply with specific measures beyond standard terms and conditions in order to provide adequate protection for other resources or resource uses. The type of specific requirements will vary depending upon the resource being protected and are described in the text of each stipulation. CSU stipulations are a moderate constraint on fluid mineral leasing and development.

A “timing limit stipulation,” or TLS, precludes surface-disturbing activities during a particular time frame in order to protect a particular resource. The specified time frame and the location for which the time frame applies will vary depending upon the resource being protected. TLS stipulations are a moderate constraint on fluid mineral leasing and development. Overlapping moderate constraints (CSU or TLS) are also considered a major constraint to fluid mineral leasing and development.

A “lease notice,” or LN, may also be attached to a lease, but is only informational and has no legal consequences. A LN may be attached to a lease by the authorized officer to “convey certain operational, procedural, or administrative requirements relative to lease management within the terms and conditions of the standard lease form.” (43 CFR Part 3101.1-3)

1.1.3 Waivers, Exceptions and Modifications

Waivers, exceptions, and modifications provide a means by which adaptive management can be applied to oil and gas leasing and development. A stipulation may be subject to modification or waiver only if the authorized officer determines that the factors leading to its inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified or if proposed operations would not cause unacceptable impacts (43 CFR Part 3101.1-4). The stipulations listed in a land use plan should include the criteria for granting waivers, exceptions, or modifications, and whether public review is required. Waivers, exceptions, and modifications are described in detail in IM-2008-032, Exceptions, Waivers, and Modifications of Fluid Minerals Stipulations and Conditions of Approval, and Associated Rights-of-way Terms and Conditions.

Exception: A one-time exemption for a particular site within the leasehold; exceptions are determined on a case-by-case basis; the stipulation continues to apply to all other sites within the leasehold. An exception is a limited type of waiver.

Modification: A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

Waiver: A permanent exemption from a lease stipulation. The stipulation no longer applies anywhere in the leasehold.

In the past, waivers, exceptions, and modifications have been used to reduce restrictions on fluid mineral development. However, in accordance with IM-2010-117, Oil and Gas Leasing Reform, waivers, exceptions, and modifications should also now be used to allow for increased levels of resource protection, should changing circumstances warrant it. The stipulations below reflect this change.

It is the responsibility of the lessee to provide any surveys, environmental analyses, protection plans, or similar products required in lease stipulations. Any such products should be completed by an individual qualified to carry out the needed analysis.

1.1.4 Existing Leases

The lease stipulations proposed here cannot be retroactively applied to existing leases, although best management practices and/or conditions of approval may be utilized to address and minimize impacts to resources of concern. Leases expire after 10 years if not extended by production of oil or gas (or other various circumstances). If a lease expires and the parcel is offered again, the proposed lease stipulations approved in the RMP revision would apply. Leases issued prior to the approval of the revised RPFO RMP may have stipulations attached that came from the 1992 Oil and Gas Amendment. Those lease stipulations, if attached, will continue to apply to those leases until lease expiration.

1.2 RPFO Proposed Lease Stipulations

Lease stipulations proposed in Alternatives B, C, and D are listed below. For a complete description of the lease stipulations in Alternative A (No Action), please see the 1992 Oil and Gas Amendment.

1.2.1 Wildlife and Sensitive Species Stipulations

1.2.1.1 CSU—Designated Special Status Species Measures (Alts. B, C)

Surface-disturbing and disruptive activities may be controlled or excluded within 0.25 mile of special status species populations or the activity delayed 90 days within identified habitat (including designated critical habitat for threatened and endangered species) or active reproductive grounds of species with current or proposed federal, state, or BLM protection.

Objective: To maintain habitat for designated special status species and comply with the Endangered Species Act.

Exception: The authorized officer may grant an exception if an environmental review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for current or subsequent use by designated sensitive species. The exception may apply to either the boundary of the affected area or the duration of the restriction if an environmental analysis determines that the special status species use an area smaller, or larger, than the 0.25 mile radius, or if the species are present for a period shorter or longer than 90 days. The burden of providing information to support this determination will be borne by the lessee.

Modification: The authorized officer may modify the area subject to the stipulation, or the duration of the stipulation, if an environmental analysis finds that a portion of the CSU area is

nonessential, or that the proposed action could be conditioned so as not to impair the function or utility of the site for current or subsequent use by special status species. This modification could either reduce or expand the area and duration of the restrictions. The burden of providing information to support this determination will be borne by the lessee.

Waiver: The stipulation may be waived if, after consulting with the BLM Wildlife Biologist State Office Program Lead, the New Mexico Department of Game and Fish, and the U.S. Fish and Wildlife Service, it is determined that the described lands are incapable of serving as habitat for special status species and that these areas no longer warrant consideration as special status species habitat.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.2 CSU—Rare Plant Resource Values (alternatives vary by application)

Portions of the lease area contain rare plant species that require special protection to prevent further degradation or damage and to promote population viability. These protections may include, but are not limited to, conducting surveys for plant species prior to commencement of any surface disturbing activities; fencing or netting to protect plant populations; and timing restrictions.

Objective: To protect rare plant species population viability in areas managed for this resource value (including, but not limited to, ACECs managed for rare plant values), and to comply with the Endangered Species Act and BLM policy as they pertain to rare plant species.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that a portion of the lease area no longer contains rare plants. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for rare plant resources.

Waiver: The boundaries of the affected area may be modified if the authorized officer determines that the lease area no longer contains rare plant species. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for rare plant species.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.3 NSO—Rare Plant Resource Values (alternatives vary by application)

No surface occupancy will be allowed within the lease area in order to protect rare plant species

Objective: To protect rare plant species population viability in areas managed for this resource value (including, but not limited to, ACECs managed for rare plant values), and to comply with the Endangered Species Act and BLM policy as they pertain to rare plant species.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that a portion of the lease area no longer contains rare plants. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for rare plant resources.

Waiver: The boundaries of the affected area may be modified if the authorized officer determines that the lease area no longer contains rare plant species. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for rare plant species.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.4 TLS—Raptor Nests (Alts. B, C, D)

Prior to survey/flagging locations for pads, routes for roads, and any other preliminary activity, the project area will be surveyed for raptor nests. Surveys will be conducted by professional biologists approved by the Authorized Officer. All raptor nests and bald eagle wintering areas will be avoided within a distance and time frame appropriate for the species, as specified by the Authorized Officer. These distances range from 0.25 mile to 1.0 mile and the time restrictions range from January 1 to July 31.

Long-term surface use activities will not be allowed within the species-specific spatial buffer zone of active nests. Short-term activities will be avoided within the species-specific spatial buffer zones during the corresponding time restriction. All other raptor species nests will be avoided by the spatial buffer zone specified by the Authorized Officer, regardless of the duration of the activity.

A short-term activity is defined as an activity which would begin outside of a given breeding season and end prior to initiation of a given breeding season. A long-term activity is defined as an activity which would continue into or beyond a given nesting/breeding season. An active nest is defined as any nest that has been occupied in the last seven years. A nest will be determined active or inactive by the Authorized Officer.

Objective: To protect raptor nesting activity, and to comply with the Migratory Bird Treaty Act.

Exception: An exception to this condition may be granted by the authorized officer if the lessee submits a plan which demonstrates that the impacts from the proposed action can be adequately mitigated. The exception may apply to either the boundary of the affected area or the duration of the restriction if an environmental analysis determines that the buffer area required for a raptor nest is smaller or larger than the buffer radius specified in the original stipulation, or if the raptor nesting period is different than the period specified in the original stipulation. The burden of providing information to support this determination will be borne by the lessee.

Modification: The authorized officer may modify the area subject to the stipulation, or the duration of the stipulation, if an environmental analysis finds that a portion of the TLS area is

nonessential, or that the proposed action could be conditioned so as not to impair the function or utility of the area for current or subsequent use by nesting raptors. This modification could either reduce or expand the area and duration of the restrictions. The burden of providing information to support this determination will be borne by the lessee.

Waiver: The stipulation may be waived if, after consulting with the New Mexico Department of Game and Fish and the BLM Wildlife Biologist State Office Program Lead, it is determined that the described lands are incapable of serving as raptor nesting areas and that these areas no longer warrant consideration as raptor nesting habitat.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.5 CSU—Prairie Dog Towns (Alts. B, C, D)

Surface-disturbing and disruptive activities may be controlled or excluded (Alt. B: 0.5 mi. from; Alt. C: 0.25 mi. from; Alt. D: within) prairie dog towns, if an activity would adversely impact prairie dogs and/or associated species.

Objective: To protect prairie dog colonies and habitat for associated species.

Exception: An exception to this condition may be granted by the authorized officer if the lessee submits a plan which demonstrates that the impacts from the proposed action can be adequately mitigated. The exception may apply to the boundary of the affected area if an environmental analysis determines that the area required to protect a prairie dog colony is smaller or larger than the area specified in the original stipulation. The burden of providing information to support this determination will be borne by the lessee.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dogs. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for prairie dog populations.

Waiver: This stipulation may be waived if, after consulting with the New Mexico Department of Game and Fish and the BLM Wildlife Biologist State Office Program Lead, it is determined that the described lands are no longer occupied by prairie dogs and thus do not warrant consideration for protection.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.6 TLS—Big Game Winter Range (Alts. B, C)

Surface-disturbing and disruptive activities are prohibited from November 15 to April 30 within winter range for mule deer, elk and antelope. Travel on identified designated roads may include these timing restrictions or limited site visits.

Objective: To protect mule deer, elk, and antelope winter range from disturbance during the winter use season, and to facilitate long-term maintenance of wildlife populations.

Exception: An exception to this condition may be granted by the authorized officer if the lessee submits a plan which demonstrates that impacts from the proposed action can be adequately

mitigated. The exception may apply to either the boundary of the affected area or the duration of the restriction if an environmental analysis determines that the area required for big game winter range is smaller or larger than the area specified in the original stipulation, or if the time period when the range is occupied by big game is different than the period specified in the original stipulation. The burden of providing information to support this determination will be borne by the lessee.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that the area utilized as winter range by big game species has shifted. The dates for the timing restriction may be modified if new wildlife use information indicates that the November 15 to April 30 dates are not valid for the area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: This stipulation may be waived if, after consulting with the New Mexico Department of Game and Fish and the BLM Wildlife Biologist State Office Program Lead, it is determined that the described lands are no longer occupied by big game species and thus do not warrant consideration for protection.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.7 TLS—Big Game Fawning/Calving Range (Alts. B, C)

Surface-disturbing and disruptive activities are prohibited at the times specified below within fawning/calving habitat for mule deer, elk, and antelope. Travel on identified designated roads may include these timing restrictions or limited site visits.

- Mule Deer: May 1 to August 31
- Elk: May 1 to June 30
- Antelope: May 1 to July 15

Objective: To protect mule deer, elk, and antelope fawning/calving habitat from disturbance, and to facilitate long-term maintenance of wildlife populations.

Exception: An exception to this condition may be granted by the authorized officer if the lessee submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. The exception may apply to either the boundary of the affected area or the duration of the restriction if an environmental analysis determines that the area required for big game fawning/calving range is smaller, larger, or shifted relative to the area specified in the original stipulation, or if the time period when the range is occupied by fawning/calving big game is different than the period specified in the original stipulation. The burden of providing information to support this determination will be borne by the lessee.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that the area utilized by fawning/calving big game species has shifted. The dates for the timing restriction may be modified if new wildlife use information indicates that the specified dates are not valid for the area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: This stipulation may be waived if, after consulting with the New Mexico Department of Game and Fish and the BLM Wildlife Biologist State Office Program Lead, it is determined that

the described lands are no longer occupied by fawning/calving big game species and thus do not warrant consideration for protection.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.8 CSU—Wildlife Habitat Projects (Alts. B, C)

Surface-disturbing or long-term noise producing activities which exceed a noise level of 75dbA, measured at the perimeter of the 200-meter protective spatial buffer, will not be allowed within 200 meters of existing or planned wildlife habitat improvement projects. If the 75dbA noise level is determined to not provide adequate protection from the auditory impact created by lease operations, a stricter level shall be applied as a condition of approval for lease operations. A more restrictive spatial buffer may be applied where the 200-meter spatial buffer has been documented to not provide adequate protection. Use and occupancy within the 200-meter spatial buffer will be authorized only when lessee/ operator demonstrates that the area is essential for operations and when the lessee/operator submits a satisfactory surface use and operations plan, which adequately protects resources of concern.

Objective: Protection of wildlife habitat enhancement projects for purposes of preventing further habitat fragmentation and loss of use of otherwise suitable/effective habitat.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that portions of the area no longer contain wildlife habitat project areas. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife enhancement projects.

Waiver: This condition may be waived if the authorized officer determines that the affected area no longer contains wildlife habitat project areas. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife enhancement projects.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.9 CSU—Wildlife Resource Values (application varies by alternative)

All or portions of the lease area contain special wildlife habitat features that require special protection to prevent further degradation or damage. These protections may include, but are not limited to, conducting surveys for plant, animal, or other species prior to commencement of any surface disturbing activities; the inclusion of noise abatement structures, additional fencing or netting; and timing restrictions.

Applications for surface-disturbing or long-term noise producing activities, which exceed a noise level of 75dbA at the edge of the well pad, will be authorized only when lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a satisfactory surface use and operations plan that provides protection for these special resource values. If the 75dbA noise level is determined to not provide adequate protection from the

auditory impact created by lease operations, a stricter level shall be applied as a condition of approval for lease operations. The BLM Authorized Officer will work with the lease holder on a case-by-case basis to achieve an acceptable level of noise mitigation.

Objective: To protect wildlife habitat and maintain wildlife population viability in areas managed for this resource value (including, but not limited to, ACECs managed for this value).

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that portions of the lease area no longer contain wildlife resource values. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife resource values.

Waiver: The boundaries of the affected area may be modified if the authorized officer determines that the lease area no longer contains wildlife resource values. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife resource values.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.1.10 NSO—Wildlife Resource Values (application varies by alternative)

Within areas managed for wildlife resource values, surface-disturbing activities will be prohibited.

Objective: To protect wildlife habitat and maintain wildlife population viability in areas managed for this resource value (including, but not limited to, ACECs managed for this value).

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the affected area may be modified if the authorized officer determines that portions of the lease area no longer contain wildlife resource values. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife resource values.

Waiver: The boundaries of the affected area may be modified if the authorized officer determines that the lease area no longer contains wildlife resource values. The burden of providing information to support this determination will be borne by the lessee. The boundaries of the affected area may also be expanded if the authorized officer determines that such measures are necessary to provide adequate protection for wildlife resource values.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.2 Riparian Area Stipulations

1.2.2.1 NSO—Streams, riparian & wetland areas, & 100-year floodplains (Alt. B)

Surface-disturbing activities are prohibited within 100-year floodplains or within 0.25 mi. of the channels of ephemeral, intermittent, and perennial streams, or within 0.25 mi. of the outer margins of riparian and wetland areas.

Objective: To protect the unique biological and hydrological features associated with streams, riparian/wetland areas, and 100-year floodplains.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated. Mitigation may include a bunker or dual-walled drum to prevent/contain any potential spill. An exception may also be allowed when the surface of the site is 20 feet higher than the channel (out of the floodplain). The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Modification: The area affected by this condition may be modified by the authorized officer if it is determined that portions of the area do not include riparian/wetland areas. The burden of providing information to support this determination will be borne by the lessee. The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Waiver: This condition may be waived by the authorized officer if it is determined that the affected area does not include streams or riparian/wetland areas. The burden of providing information to support this determination will be borne by the lessee. The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.2.2 CSU—Streams, riparian & wetland areas, & 100-year floodplains (Alt. C)

Surface-disturbing activities should be avoided within 100-year floodplains or within 0.25 mi. of the channels of ephemeral, intermittent, and perennial streams, or within 0.25 mi. of the outer margins of riparian and wetland areas.

Long-term noise-producing activities which exceed a noise level of 75 A-weighted decibels (75dbA), measured at the perimeter of a 400-meter protective spatial buffer, will not be allowed within 400 meters of riparian areas (springs, seeps, tanks, rivers, streams, playas, canyon bottoms, and floodplains). If the 75dbA noise level is determined to not provide adequate protection from the auditory impact created by lease operations, a stricter level shall be applied prior to authorizing lease operations. The BLM Authorized Officer will work with lease holder on a case-by-case basis to achieve an acceptable level of noise mitigation. A more restrictive

spatial buffer may be applied where the 400-meter spatial buffer has been documented to not provide adequate protection.

Objective: To protect the unique biological and hydrological features associated with streams, riparian/wetland areas, and 100-year floodplains, and the protection of riparian habitat for purposes of preventing further habitat fragmentation and loss of use of otherwise suitable/effective habitat.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action on soil, water, and wildlife resources can be adequately mitigated. Mitigation may include a bunker or dual-walled drum to prevent/contain any potential spill, noise abatement, or other measures. An exception may also be allowed when the surface of the site is 20 feet higher than the channel (out of the floodplain). The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Modification: The area affected by this condition may be modified by the authorized officer if it is determined that portions of the area do not include riparian/wetland areas. The burden of providing information to support this determination will be borne by the lessee. The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Waiver: This condition may be waived by the authorized officer if it is determined that the affected area does not include streams or riparian/wetland areas. The burden of providing information to support this determination will be borne by the lessee. The boundary of the affected area may also be expanded if the authorized officer determines that a larger area than is specified in the original lease stipulation requires no surface occupancy in order to protect streams, riparian areas, wetland areas, and the 100-year floodplain from the impacts of development.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.3 Soil and Slope Stipulations

1.2.3.1 CSU—Steep slopes, 15-30% (Alts. B, C)

Prior to surface-disturbing activities on slopes between 15% and 30%, a certified engineering and reclamation plan must be approved by the authorized officer. This plan must demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- The site and adjacent areas will be protected from accelerated erosion, such as rilling, gully, piping, slope failure, and mass wasting.
- Nearby watercourses will be protected from sedimentation. Water quality and quantity will be in conformance with state and federal water quality laws.

- Surface-disturbing activities will not be conducted during extended wet periods.
- Construction or reclamation will not be allowed when soils are frozen.
- The operator must also provide an evaluation of past practices on similar terrain and be able to demonstrate success under similar conditions.

Objective: To maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes, and to avoid areas subject to slope failure, mass wasting, piping, and/or having excessive reclamation problems.

Exception: None.

Modification: The area affected by this condition may be modified by the authorized officer if it is determined that portions of the lease area do not include slopes between 15% and 30%. The burden of providing information to support this determination will be borne by the lessee.

Waiver: This condition may be waived by the authorized officer if it is determined that the lease area does not include slopes between 15% and 30%. The burden of providing information to support this determination will be borne by the lessee.

Modification or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.3.2 NSO—Steep slopes, greater than 30% (Alts. B, C, D)

Surface-disturbing activities are prohibited on slopes 30% and greater.

Objective: To maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes, and to avoid areas subject to slope failure, mass wasting, piping, and/or having excessive reclamation problems/failure.

Exception: The authorizing officer may grant an exception to this condition for short distances (less than 300 feet) for pipelines if the operator submits a certified engineering and reclamation plan that clearly demonstrates impacts from the proposed actions are acceptable or can be adequately mitigated. This plan must include and demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- The site and adjacent areas will be protected from accelerated erosion, such as rilling, gullyng, piping, and slope failure and mass wasting.
- Nearby water sources will be protected from sedimentation. Water quality and quantity will be in conformance with state and federal water quality laws.
- Site-specific analysis of soil physical, chemical and mechanical (engineering) properties and behavior will be conducted.
- Surface-disturbing activities will not be conducted during extended wet periods.
- Reclamation will not be allowed when soils are frozen.
- The operator must also provide an evaluation of past practices on similar terrain and be able to demonstrate success under similar conditions.

Modification: The area affected by this condition may be modified by the authorized officer if it is determined that portions of the area do not include slopes 30% and greater. The burden of providing information to support this determination will be borne by the lessee.

Waiver: This condition may be waived by the authorized officer if it is determined that the affected area does not include slopes 30% and greater. The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.3.3 CSU—Low Reclamation Opportunity (Alts. B, C)

Surface disturbing-activities occurring in areas designated by the USDA NRCS Soil Survey as having a low restoration opportunity listed as “poor” or “not rated” may require additional measures to stabilize construction sites and reclaim sites no longer in use. (“Not rated” areas are included because these are areas that do not have topsoil.) These additional measures may increase the cost and duration of stabilization and reclamation efforts.

Objective: To prevent soil erosion and waterway sedimentation, enhance reclamation success, and limit the cumulative impact of oil and gas development by ensuring that well pads are reclaimed to BLM standards.

Exception: No exceptions may be granted because the qualifications that would meet the criteria for an exception, such as submitting a detailed reclamation plan showing how the operator intends to comply with BLM reclamation standards, would likely meet the requirements of this stipulation.

Modification: A modification may be granted if the authorized officer determines that portions of the area do not include areas classified as low reclamation opportunity (according to the USDA NRCS definition). The burden of providing information to support this determination will be borne by the lessee.

Waiver: A waiver may be granted if the authorized officer determines that the affected area does not include areas classified as low reclamation opportunity (according to the USDA NRCS definition). The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.3.4 CSU—Biological Soil Crusts (Alt. D)

Surface-disturbing activities will be subject to limitations beyond those provided for in standard terms and conditions in areas managed for biological soil crust resources. These limitations may include, but are not limited to, restricting vehicle traffic to existing roads wherever possible, minimizing the size of well pad construction, and ceasing work when soils are wet. Any additional surveys, mitigation measures, or monitoring activities required as a result of surface-disturbing activities in these areas will be at the cost of the lessee.

Objective: The protection of biological soil crust structural integrity and diversity.

Exception: An exception may be granted if the lessee submits a plan demonstrating that the proposed action can occur without impacting biological soil crusts.

Modification: The boundary of the area affected by this stipulation may be modified if the authorized officer determines that there are no biological soil crusts within portions of the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundary of the area affected may also be expanded if the authorized officer determines that such an action is required to protect biological soil resources.

Waiver: The boundary of the area affected by this stipulation may be modified if the authorized officer determines that there are no biological soil crusts within the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundary of the area affected may also be expanded if the authorized officer determines that such an action is required to protect biological soil resources.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.3.5 NSO—Biological Soil Crusts (Alts. B, C)

Surface-disturbing activities will be prohibited in areas managed for biological soil crust resources.

Objective: The protection of biological soil crust structural integrity and diversity.

Exception: An exception may be granted if the lessee submits a plan demonstrating that the proposed action can occur without impacting biological soil crusts.

Modification: The boundary of the area affected by this stipulation may be modified if the authorized officer determines that there are no biological soil crusts within portions of the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundary of the area affected may also be expanded if the authorized officer determines that such an action is required to protect biological soil resources.

Waiver: The boundary of the area affected by this stipulation may be modified if the authorized officer determines that there are no biological soil crusts within the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundary of the area affected may also be expanded if the authorized officer determines that such an action is required to protect biological soil resources.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.4 Cultural Resource Stipulations

1.2.4.1 CSU—National Register of Historic Places (Alts. B, C, D)

Surface-disturbing activities will be subject to limitations in areas near cultural resource sites that are eligible for, or are listed on, the National Register of Historic Places.

Objective: To protect cultural resource sites that are eligible for, or listed on, the National Register of Historic Places.

Exception: An exception to this stipulation may be granted if the lessee submits a plan demonstrating that impacts from the proposed action can be adequately mitigated. The authorized officer may require the lessee to fund a cultural resources inventory to make this determination.

Modification: A modification may be granted if the authorized officer determines that portions of the lease area contain no NRHP-eligible or NRHP-listed sites. The authorized officer may require the lessee to fund a cultural resources inventory to make this determination.

Waiver: A modification may be granted if the authorized officer determines that the lease area contains no NRHP-eligible or NRHP-listed sites. The authorized officer may require the lessee to fund a cultural resources inventory to make this determination.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.4.2 CSU—Cultural Resource Values (application varies by area)

Surface disturbing activities will be subject to restrictions beyond standard lease terms and conditions within areas managed for cultural resource values. Access to the leases in these areas will be limited to routes designated in the approved permit for lease operations. Applications for surface disturbing aspects of lease development will be evaluated for potential proximity to sensitive nationally significant cultural resources (known and suspected) and could require expanded pre-field records search, subsurface testing and/or metal detector survey in addition to routine cultural resource surface inventory for compliance with Section 106 of the NHPA, the costs of which will be borne by the lessee. This could result in extended time frames for processing authorizations for development activities. All proposed surface-disturbing aspects of lease development will be located to avoid and/or protect the cultural resources present.

Objective: Protection of highly significant and sensitive historic and prehistoric resources that might not be detected by means of standard Class III cultural resource inventory from direct and indirect effects of lease development.

Exception: Requests for exception would be based on a case-by-case basis sensitivity evaluation and on available information regarding site-specific soil stability, site probability and any proposal for alternate forms of mitigation.

Modification: The boundaries of the affected areas may be modified if the authorized officer determines that there are no significant cultural resources present in portions of the lease. The burden of providing information to support this determination will be borne by the lessee.

Waiver: None

Exception or modification of this stipulation will require a NEPA analysis and 30-day public review.

NSO—Cultural Resource Values (application varies by area)

Surface disturbing activities will be prohibited within areas managed for cultural resource values.

Objective: Protection of highly significant and sensitive historic and prehistoric resources that might not be detected by means of standard Class III cultural resource inventory from direct and indirect effects of lease development.

Exception: None.

Modification: The boundaries of the affected areas may be modified if the authorized officer determines that there are no significant cultural resources present in portions of the lease. The burden of providing information to support this determination will be borne by the lessee.

Waiver: The boundaries of the affected areas may be modified if the authorized officer determines that there are no significant cultural resources present in the lease. The burden of providing information to support this determination will be borne by the lessee.

Modification or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.5 Geological Resource Stipulations

1.2.5.1 NSO—Cave & Karst (Alt. B)

All or portions of the lease are located in a potential cave or karst occurrence area. Surface occupancy is prohibited within 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features. Within this area, cave or karst features such as sinkholes, passages, and large rooms may be encountered from the surface to a depth of as much as 2,000 feet, within areas ranging from a few acres to hundreds of acres.

Objective: To protect the structural integrity of cave and karst geologic structures and the biological diversity therein from the impacts of oil and gas development.

Exception: An exception may be granted if the lessee submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: A modification may be granted if the authorized officer determines that there are no cave or karst features within portions of the lease area. The authorized officer may require the lessee to fund a survey to make this determination.

Waiver: A modification may be granted if the authorized officer determines that there are no cave or karst features within the lease area. The authorized officer may require the lessee to fund a survey to make this determination.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.5.2 CSU—Cave & Karst (Alt. C)

All or portions of the lease are located in a potential cave or karst occurrence area. Surface occupancy will be strictly controlled within 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features. Within this area, cave or karst features such as sinkholes, passages, and large rooms may be encountered from the surface to a depth of as much as 2,000 feet, within areas ranging from a few acres to hundreds of acres. Due to the sensitive nature of the cave or karst systems, special protective measures may be developed during environmental analyses and be required as part of approvals for drilling or other operations on this lease. These measures could include changes in drilling operations, special casing and cementing programs, modifications in surface activities, or other reasonable measures to mitigate impacts to cave or karst values.

Objective: To protect the structural integrity of cave and karst geologic structures and the biological diversity therein from the impacts of oil and gas development.

Exception: An exception may be granted if the lessee submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: A modification may be granted if the authorized officer determines that there are no cave or karst features within portions of the lease area. The authorized officer may require the lessee to fund a survey to make this determination.

Waiver: A modification may be granted if the authorized officer determines that there are no cave or karst features within the lease area. The authorized officer may require the lessee to fund a survey to make this determination.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.5.3 CSU—Geologic Resource Values (application varies by area)

In areas managed for special geologic resource values, surface-disturbing activities may be restricted beyond what is required in standard terms and conditions. These restrictions may include, but are not limited to, designing developments in such a way that special geologic features are not impacted directly or indirectly.

Objective: The protection of special geologic resource values in areas managed for this value (includes, but is not limited to, ACECs managed for this value).

Exception: An exception to this condition may be granted if the lessee submits a plan demonstrating that the proposed action will not adversely impact geologic resource values, or that any impacts can be adequately mitigated.

Modification: A modification of this condition may be granted if the authorized officer determines that there are not geologic resource values within portions of the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundaries affected by this condition may also be expanded if the authorized officer determines that such a measure is necessary to provide adequate protection of geologic resource values.

Waiver: A waiver of this condition may be granted if the authorized officer determines that there are not geologic resource values within the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundaries affected by this condition may also be expanded if the authorized officer determines that such a measure is necessary to provide adequate protection of geologic resource values.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.5.4 NSO—Geologic Resource Values (application varies by area)

In areas managed for special geologic resource values, surface-disturbing activities will be prohibited.

Objective: The protection of special geologic resource values in areas managed for this value (includes, but is not limited to, ACECs managed for this value).

Exception: An exception to this condition may be granted if the lessee submits a plan demonstrating that the proposed action will not adversely impact geologic resource values, or that any impacts can be adequately mitigated.

Modification: A modification of this condition may be granted if the authorized officer determines that there are not geologic resource values within portions of the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundaries affected by this condition may also be expanded if the authorized officer determines that such a measure is necessary to provide adequate protection of geologic resource values.

Waiver: A waiver of this condition may be granted if the authorized officer determines that there are not geologic resource values within the lease area. The burden of providing information to support this determination will be borne by the lessee. The boundaries affected by this condition may also be expanded if the authorized officer determines that such a measure is necessary to provide adequate protection of geologic resource values.

Exception, modification, or waiver of this condition will require analysis according to NEPA and a 15-day public review.

1.2.6 Paleontological Stipulations

1.2.6.1 CSU—Paleontological Resources, PFYC Class IV and V Areas (Alts. B, C)

In areas of paleontological sensitivity (Potential Fossil Yield Classification [PFYC] Classes IV and V), a determination will be made by the BLM as to whether a survey by a qualified paleontologist (Qualification identified in BLM Handbook 8270) is necessary prior to the disturbance. In some cases, construction monitoring, project relocation, data recovery, or other mitigation will be required to ensure that significant paleontological resources are avoided or recovered during construction. Any significant fossils or localities previously known or discovered during the survey will be avoided by the permitted activity, or fully mitigated prior to allowing the activity to proceed. Surface occupancy or use is subject to the following special operating constraints:

- Restrict vehicles to existing roads and trails.
- Require a paleontological clearance on surface disturbing activities.

Objective: To protect paleontological resources from the impacts of oil and gas development.

Exception: An exception may be granted if the lessee submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: A modification may be granted if the authorized officer determines that no sensitive paleontological resources would be impacted by proposed activities in portions of the lease area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: A waiver may be granted if the authorized officer determines that no sensitive paleontological resources are located in the lease area. The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this stipulation will require a NEPA analysis and 30-day public review.

1.2.6.2 CSU—Paleontological Resource Values (application varies by area)

Within areas managed for paleontological resource values, a pedestrian survey must be conducted for paleontological material, using a qualified paleontologist, prior to any surface disturbing activity (qualification identified in BLM Handbook 8270). The survey will be used to determine appropriate level of mitigation during construction activities and production stages of the lease. A report on the results of the paleontological survey must be submitted to BLM as part of the permit application for the proposed lease activity.

Objective: Protection of paleontological resource values in areas managed for these values (including, but not limited to, ACECs).

Exception: An exception may be granted if the lessee submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: A modification may be granted if the authorized officer determines that no sensitive paleontological resources would be impacted by proposed activities in portions of the lease area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: A waiver may be granted if the authorized officer determines that no sensitive paleontological resources are located in the lease area. The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.6.3 NSO—Paleontological Resource Values (application varies by area)

Within areas managed for paleontological resource values where extraordinary paleontological resources exist, no surface occupancy will be allowed.

Objective: Protection of paleontological resource values in areas managed for these values (including, but not limited to, ACECs).

Exception: An exception may be granted if the lessee submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: A modification may be granted if the authorized officer determines that no sensitive paleontological resources would be impacted by proposed activities in portions of the lease area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: A waiver may be granted if the authorized officer determines that no sensitive paleontological resources are located in the lease area. The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.7 Recreation Stipulations

1.2.7.1 NSO—Developed Recreation Areas (Alts. B, C)

Surface-disturbing activities are prohibited within 0.25 mile of designated recreation areas.

Objective: To protect developed recreation areas and undeveloped recreation areas receiving concentrated public use.

Exception: An exception to this condition may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the affected area may be modified by the authorized officer if the recreation area boundaries are changed.

Waiver: This condition may be waived if the authorized officer determines that the affected area no longer contains developed recreation areas.

Exception, modification, or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.8 Socioeconomic Stipulations

1.2.8.1 NSO—Aviation facilities (Alts. B, C, D)

No occupancy or other activity on the surface of areas within 0.25 mi. of an airport or aviation facility.

Objective: To preserve the safety of aviation activities in and near airports. This includes, but is not limited to, the following airports: Cuba Airport and Double Eagle Airport.

Exception: None.

Modification: The boundaries of the affected area may be modified by the authorized officer if the airport boundaries are changed.

Waiver: This condition may be waived if the authorized officer determines that the affected area no longer contains an airport.

Modification or waiver of this stipulation will require a NEPA analysis and 15-day public review.

1.2.8.2 NSO—Churches and cemeteries (Alts. B, C, D)

No surface occupancy will be allowed near churches or cemeteries. The lessee may be required to conduct surveys to verify the presence of churches and/or cemeteries.

Objective: To preserve the cultural, historical, and personal values contained within such areas.

Exception: None.

Modification: A modification may be granted if the authorized officer determines that there are no churches or cemeteries within portions of the lease area. The burden of providing information to support this determination will be borne by the lessee.

Waiver: A waiver may be granted if the authorized officer determines that there are no churches or cemeteries within the lease area. The burden of providing information to support this determination will be borne by the lessee.

Modification or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.8.3 CSU—Residential interface (Alts. B, C)

Areas of BLM mineral ownership intermingled with private lands may require screening, buffering, noise abatement, or site relocation beyond that which is allowed under the standard lease terms.

Objective: To protect the private residences from being impacted by oil and gas development. This stipulation gives the BLM the authority to relocate or modify the site more than it permitted in the standard lease terms.

Exception: An exception may be granted if the lessee provides a plan demonstrating that the impacts of the proposed action will not impact private residences or the impacts are acceptable.

Modification: A modification may be granted if the authorized officer determines that there are no private residences within portions of the lease. The burden of providing information to support this determination will be borne by the lessee.

Waiver: A modification may be granted if the authorized officer determines that there are no private residences within the lease. The burden of providing information to support this determination will be borne by the lessee.

Exception, modification, or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.8.4 LN—Split Estate (Alts. B, C)

APDs or project Plans of Development (PODs) on split-estate lands would not be approved unless the operator a) certifies that a surface owner agreement has been reached or b) certifies in a statement that an agreement could not be reached and that the operator would comply with the provisions of the law or the regulations governing the federal or Indian right of re-entry to the surface under 43 CFR 3814.

Objective: To ensure proper surface owner notification by operators.

Exception: None.

Modification: None.

Waiver: None.

1.2.8.5 NSO—Health & Safety (Alts. B, C, D)

Within areas managed for the maintenance of public health and safety, no surface occupancy will be allowed.

Objective: To protect public health and safety within areas managed for this value. These areas include, but are not limited to, the Legacy Uranium Mines ACEC.

Exception: None.

Modification: None.

Waiver: None.

1.2.9 Vegetation & Forestry Stipulations

1.2.9.1 CSU—Lease Reclamation (Alts. B, C)

The subject properties contain wells, roads and/or facilities that were not plugged and/or reclaimed to current standards. Unless the facilities (well pad and road) are put to a beneficial and direct use under the new lease within two years of lease issuance, the lessee shall plug, remediate and reclaim the facilities within two years of lease issuance. If an extension is requested, the lessee must submit a detailed plan (including dates) prior to the two year deadline. All plugging, remediation, and reclamation shall be performed in accordance with BLM requirements and be approved in advance by the Authorized Officer. The well(s) to be plugged and reclaimed are as follows: {*insert detailed location description*}. The facilities to be reclaimed are as follows: {*insert detailed location description*}.

Objective: Reduction of cumulative impacts of oil and gas development on public health & safety, vegetation, soils, wildlife, visual resources, and livestock grazing.

Exception: None.

Modification: A modification may be granted if it is found that parts of the reclamation needs identified have been resolved, or if the lessee can demonstrate that the cumulative impact of on other resources is not significant.

Waiver: A waiver may be granted if it is found that the reclamation needs identified have been resolved, or if the lessee can demonstrate that the cumulative impact of the incomplete reclamation on other resources is not significant.

Modification or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.9.2 NSO—Ponderosa Pine (Alts. B, C)

The subject properties contain Ponderosa pine (*Pinus ponderosa*) trees. For the purpose of preserving wildlife habitat, no surface occupancy for fluid mineral development will be allowed within vegetation types that contain Ponderosa pine.

Objective: The preservation of wildlife habitat and Ponderosa pine age class diversity.

Exception: None.

Modification: A modification may be granted if the authorized officer determines that there are no Ponderosa pine trees in portions of the lease area. The lessee may be required to demonstrate the absence of Ponderosa pine trees by conducting a forest inventory.

Waiver: A waiver may be granted if the authorized officer determines that there are no Ponderosa pine trees in the lease area. The lessee may be required to demonstrate the absence of Ponderosa pine trees by conducting a forest inventory.

Modification or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.2.10 Minerals Stipulations

1.2.10.1 CSU—Plan of Development (Alts. B, C)

A plan of development (POD) for the entire lease must be submitted for review and approval, including NEPA analysis, by the BLM authorized officer, PRIOR to approval of development (APD or Sundry Notice) actions. The POD must indicate planned access to well facilities (roads, pipelines, power lines), and the approximate location of well sites. Should it become necessary to amend the POD, the amendment must be approved prior the approval of subsequent development action. Deviations from a current POD are not authorized until an amended POD has been approved by BLM.

Objective: To limit the cumulative effects of oil and gas development by planning the development of oil and gas fields in such a manner that limits surface disturbance, and to promote a more efficient NEPA process.

Exception: A POD is not necessary if the lease is developed as part of a unitization agreement.

Modification: A modification may be granted if the lessee submits a plan for future submission of a POD (for instance, after the drilling of an initial test well).

Waiver: None.

Exception or modification of this condition will require analysis according to NEPA and a 30-day public review.

1.2.10.2 CSU—Orphan wells (Alts. B, C)

The subject parcel is known to contain an unplugged well. For the purpose of protection of public health and safety, the lessee shall provide for proper plugging of the following abandoned wells: {*provide specific location information here*}, unless the lessee will re-enter the well within two years of lease issuance.

Objective: To protect the health and safety of the human environment, wildlife, and subsurface geologic features, and to reduce the cumulative impact of oil and gas development.

Exception: None.

Modification: A modification may be granted if the lessee demonstrates that the subject wells are plugged to BLM standards.

Waiver: A waiver may be granted if the authorized officer determines that there are no unplugged wells within the lease.

Modification or waiver of this condition will require analysis according to NEPA and a 30-day public review.

1.3 State Office Stipulations

This section describes the stipulations created by the BLM New Mexico State Office. Because these stipulations are created at the State Office, the RPFO cannot revise these in this RMP. However, these stipulations are available for our use to protect resources and resource uses as appropriate and are provided here for reference.

1.3.1 LN—Coal Protection (NM-8-LN)

Federal coal resources exist on this lease. Operations authorized by this lease may be altered or modified by the authorized officer (at the address shown below) in order to conserve and protect the mineral resources and provide for simultaneous operations.

1.3.2 LN—Drainage (NM-10-LN)

All or part of the lands contained in this lease are subject to drainage by well(s) located adjacent to this lease. The lessee shall be required within 6 months of lease issuance to submit to the AO plans for protecting the lease from drainage. Compensatory royalty will be assessed effective the expiration of this 6-month period if no plan is submitted. The plan must include either an Application for Permit to Drill (APD) a protective well, or an application to communitize the lease so that it is allocated production from a protective well off the lease. Either of these options may include obtaining a variance to State-spacing for the area. In lieu of this plan, the lessee shall be required to demonstrate that a protective well would have little or no chance of encountering oil and gas in quantities sufficient to pay in excess the costs of protecting the lease from drainage or an acceptable justification why a protective well would be uneconomical, the lessee shall be obligated to pay compensatory royalty to the Minerals Management Service at a rate to be determined by the AO.

1.3.3 CSU—Highway Material Site Right-of-Way (NM-4-CSU)

The lessee/operator shall conduct operations in conformity with the following requirements:

1. The New Mexico State Highway Department will have unrestricted rights of ingress and egress to the right-of way.
2. The lessee/operator will not conflict with the right of the New Mexico State Highway Department to remove any road-building materials from the right-of-way.
3. The New Mexico State Highway Department reserves the right to set up, operate, and maintain such facilities as are reasonable to expedite the removal, production, and use of the materials; and the lessee shall not interfere with the Highway Department's use of the property for such purposes.
4. The lessee/operator will make no excavations and erect no structures on the right-of-way that might be adverse to the use and interest of the land by the New Mexico State Highway Department.

1.3.4 NSO—Continental Divide Trail (NM-6-NSO)

No occupancy or other surface disturbance will be allowed within 1000 feet of the Continental Divide National Scenic Trail Treadway. This distance may be modified when specifically approved in writing by the Bureau of Land Management.

1.3.5 NSO—Occupied Structures and Dwellings (NM-12-NSO)

Occupied Structures and Dwellings - All or a portion of the lease contains dwellings or structures occupied by one or more persons. No Surface Occupancy is allowed on the portion of the lease described below. These restricted lands may be developed by directional drilling from outside the restricted area. For the Purpose of: Lessening the impacts caused by mineral resource development on a place of residence and the occupants within.

1.3.6 NSO—Pooling Purposes Only (NM-9-NSO)

No surface occupancy or use is allowed on the lease. The purpose of this lease is solely for participation in a unit or for pooling purposes.

1.3.7 LN—Cultural Resources (NM-11-LN)

All development activities proposed under the authority of this lease are subject to compliance with Section 106 of the NHPA and Executive Order 13007. The lease area may contain historic properties, traditional cultural properties (TCP's), and/or sacred sites currently unknown to the BLM that were not identified in the Resource Management Plan or during the lease parcel review process. Depending on the nature of the lease developments being proposed and the cultural resources potentially affected, compliance with Section 106 of the National Historic Preservation Act and Executive Order 13007 could require intensive cultural resource inventories, Native American consultation, and mitigation measures to avoid adverse effects—the costs for which will be borne by the lessee. The BLM may require modifications to or disapprove proposed activities that are likely to adversely affect TCP's or sacred sites for which no mitigation measures are possible. This could result in extended time frames for processing authorizations for development activities, as well as changes in the ways in which developments are implemented.

1.4 Washington Office Stipulations

This section describes the stipulations created by the BLM Washington Office. Because these stipulations are created at the Washington Office, the RPFO cannot revise these in this RMP. However, these stipulations are available for our use to protect resources and resource uses as appropriate and are provided here for reference.

1.4.1 Endangered Species Act – Section 7 Consultation (WO-ESA-7)

The lease area may now or hereafter contain plants, animals or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 *et seq.*, including completion of any required procedure for conference or consultation.

1.4.2 Bureau of Reclamation – Section 7 Consultation (WO-BOR-7)

The lands encompassed by this lease are managed by the U. S. Bureau of Reclamation and contain riparian and aquatic habitat that may be suitable for special status species. No surface disturbing activities will be authorized on this lease unless and until a Biological Evaluation has been completed that meets requirements of the U. S. Fish and Wildlife Service. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat.

1.4.3 Cultural Resources and Tribal Consultation Stipulation

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect

any such properties or resources until it completes its obligations (e.g., State Historic Preservation Officer (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Appendix 1: Phases of Oil and Gas Development

Construction Activities

Clearing of the proposed well pad and access road would be limited to the smallest area possible to provide safe and efficient work areas for all phases of construction. First all new construction areas need to be cleared of all vegetation. All clearing activities are typically accomplished by cutting, mowing and/or grading vegetation as necessary. Cut vegetation may be mulched and spread on site or hauled to a commercial waste disposal facility.

Next, heavy equipment including but not limited to bulldozers, graders, front-end loaders, and/or track hoes are used to construct at a minimum the pad, but other features, as needed for development, may include, but is not limited to an access road, reserve pit, pipeline, and/or fracturing pond. Cut and fills may be required to level the pad or road surfaces. If a reserve pit is authorized, it would be lined using an impermeable liner or other lining mechanism (i.e. bentonite or clay) to prevent fluids from leeching into the soil. Access roads may have cattle guards, gates, drainage control, or pull-outs installed, among a host of other features that may be necessary based on the site specific situation. Long-term surfaces are typically dressed with a layer of crushed rock or soil cemented. Construction materials come from a variety of sources. Areas not needed for long-term development (i.e. portions of the pipeline or road right-of-way) are reclaimed by recontouring the surface and establishing vegetation.

If a pipeline is needed, the right-of-way would be cleared of all vegetation. The pipeline would be laid out within the cleared section. A backhoe, or similar piece of equipment, would dig a trench at least 36 inches below the surface. After the trench is dug, the pipes would be assembled by welding pieces of pipe together and bending them slightly, if necessary, to fit the contour of the pipeline's path. Once inspected, the pipe can be lowered into the trench and covered with stockpiled subsoil that was originally removed from the hole. Each pipeline undergoes hydrostatic testing prior to natural gas being pumped through the pipeline. This ensures the pipeline is strong enough and absent of any leaks.

Drilling Operations

When the pad is complete, the drilling rig and associated equipment would be moved onsite and erected. A conventional rotary drill rig with capability matched to the depth requirements of the proposed well(s) would be used. The well could be drilled as a vertical or horizontal well to target the desired formation. The depth of the well is entirely dependent on the target formation depth and could be several hundred feet vertical depth to over 20,000 feet vertical depth.

When a conventional reserve pit system is proposed, drilling fluid or mud is circulated through the drill pipe to the bottom of the hole, through the bit, up the bore of the well, and finally to the surface. When mud emerges from the hole, it enters into the reserve pit where it would remain until all fluids are evaporated and the solids can be buried.

A closed-loop system, operates in a similar fashion except that when the mud emerges from the hole, it passes through a series of equipment used to screen and remove drill cuttings (rock chips) and sand-sized

solids rather than going into the pit. When the solids have been removed, the mud would be placed into holding tanks, and from the tank, used again.

In either situation the mud is maintained at a specific weight and viscosity to cool the bit, seal off any porous zones (thereby protecting aquifers or preventing damage to producing zone productivity), control subsurface pressure, lubricate the drill string, clean the bottom of the hole, and bring the drill cuttings to the surface. Water-based or oil-based muds can be used and is entirely dependent on the site-specific conditions.

Completion Operations

Once a well has been drilled, completion operations would begin once crews and equipment are available. Well completion involves setting casing to depth and perforating the casing in target zones.

Wells are often treated during completion to improve the recovery of hydrocarbons by increasing the rate and volume of hydrocarbons moving from the natural oil and gas reservoir into the wellbore. These processes are known as well-stimulation treatments, which create new fluid passageways in the producing formation or remove blockages within existing passageways. They include fracturing, acidizing, and other mechanical and chemical treatments often used in combination. The results from different treatments are additive and complement each other.

Hydraulic Fracturing

Hydraulic fracturing (HF) is one technological key to economic recovery of oil and gas that might have been left by conventional oil and gas drilling and pumping technology. It is a formation stimulation practice used to create additional permeability in a producing formation, thus allowing gas to flow more readily toward the wellbore. Hydraulic fracturing can be used to overcome natural barriers, such as naturally low permeability or reduced permeability resulting from near wellbore damage, to the flow of fluids (gas or water) to the wellbore (GWPC 2009). The process is not new and has been a method for additional oil and gas recovery since the early 1900s; however, with the advancement of technology it is more commonly used.

Hydraulic fracturing is a process that uses high pressure pumps to pump fracturing fluid into a formation at a calculated, predetermined rate and pressure to generate fractures or cracks in the target formation. For shale development, fracture fluids are primarily water-based fluids mixed with additives which help the water to carry proppants into the fractures, which may be made up of sand, walnut hulls, or other small particles of materials. The proppant is needed to “prop” open the fractures once the pumping of fluids has stopped. Once the fracture has initiated, additional fluids are pumped into the wellbore to continue the development of the fracture and to carry the proppant deeper into the formation. The additional fluids are needed to maintain the downhole pressure necessary to accommodate the increasing length of opened fracture in the formation.

Hydraulic fracturing of horizontal shale gas wells is performed in stages. Lateral lengths in horizontal wells for development may range from 1,000 feet to more than 5,000 feet. Depending on the lengths of the laterals, treatment of wells may be performed by isolating smaller portions of the lateral. The

fracturing of each portion of the lateral wellbore is called a stage. Stages are fractured sequentially beginning with the section at the farthest end of the wellbore, moving uphole as each stage of the treatment is completed until the entire lateral well has been stimulated.

This process increases the flow rate and volume of reservoir fluids that move from the producing formation into the wellbore. The fracturing fluid is typically more than 99 percent water and sand, with small amounts of readily available chemical additives used to control the chemical and mechanical properties of the water and sand mixture (see discussion about Hazardous and Solid Wastes below). Because the fluid is composed mostly of water, large volumes of water are usually needed to perform hydraulic fracturing. However, in some cases, water is recycled or produced water is used.

Before operators or service companies perform a hydraulic fracturing treatment, a series of tests is performed. These tests are designed to ensure that the well, casing, well equipment, and fracturing equipment are in proper working order and will safely withstand the application of the fracture treatment pressures and pump flow rates.

To ensure that hydraulic fracturing is conducted in a safe and environmentally sound manner, the BLM approves and regulates all drilling and completion operations, and related surface disturbance on Federal public lands. Operators must submit Applications for Permit to Drill (APDs) to the agency. Prior to approving an APD, a BLM OFO geologist identifies all potential subsurface formations that would be penetrated by the wellbore. This includes all groundwater aquifers and any zones that would present potential safety or health risks that may need special protection measures during drilling, or that may require specific protective well construction measures.

Once the geologic analysis is completed, the BLM reviews the company's proposed casing and cementing programs to ensure the well construction design is adequate to protect the surface and subsurface environment, including the potential risks identified by the geologist and all known or anticipated zones with potential risks.

During drilling, the BLM is on location during the casing and cementing of the ground water protective surface casing and other critical casing and cementing intervals. Before hydraulic fracturing takes place, all surface casing and some deeper, intermediate zones are required to be cemented from the bottom of the cased hole to the surface. The cemented well is pressure tested to ensure there are no leaks and a cement bond log is run to ensure the cement has bonded to the casing and the formation. If the fracturing of the well is considered to be a "non-routine" fracture for the area, the BLM would always be onsite during those operations as well as when abnormal conditions develop during the drilling or completion of a well.

Production Operations

Production equipment used during the life of the well may include a 3-phase separator-dehydrator; flow-lines; a meter run; tanks for condensate, produced oil, and water; and heater treater. A pump jack may be required if the back pressure of the well is too high. Production facilities are arranged to facilitate safety and maximize reclamation opportunities. All permanent above-ground structures not subject to safety considerations are painted a standard BLM or company color or as landowner specified.

Workovers may be performed multiple times over the life of the well. Because gas production usually declines over the years, operators perform workover operations which involve cleaning, repairing and maintaining the well for the purposes of increasing or restoring production.

Hazardous or Solid Wastes Associated with Oil and Gas Development

Anticipated use or produced hazardous materials during the development may come from drilling materials; cementing and plugging materials; HF materials; production products (natural gas, condensates, produced water); fuels and lubricants; pipeline materials; combustion emissions; and miscellaneous materials. Appendix 1, Table 1 includes some of the common wastes (hazardous and non-hazardous) that are produced during oil and gas development.

Appendix 1, Table 1. Common wastes produced during oil and gas development.

Phase	Waste
Construction	<ul style="list-style-type: none"> Domestic wastes (i.e. food scraps, paper, etc.) Excess construction materials Used lubricating oils Solvents Woody debris Paints Sewage
Drilling	<ul style="list-style-type: none"> Drilling muds, including additives (i.e. chromate and barite) and cuttings Well drilling, completion, workover, and stimulation fluids (i.e. oil derivatives such as polycyclic aromatic hydrocarbons (PAHs), spilled chemicals, suspended and dissolved solids, phenols, cadmium, chromium, copper, lead, mercury, nickel) Equipment, power unit and transport maintenance wastes (i.e. batteries; used filters, lubricants, oil, tires, hoses, hydraulic fluids; paints; solvents) Fuel and chemical storage drums and containers Cementing wastes Production testing wastes Excess construction materials Scrap metal Sewage Rigwash Excess drilling chemicals Processed water Contaminated soil Domestic wastes
HF	See below

Production	<ul style="list-style-type: none"> Power unit and transport maintenance wastes (i.e. batteries; used filters, lubricants, filters, tires, hoses, coolants, antifreeze; paints; solvents, used parts) Discharged produced water Production chemicals Workover wastes (e.g. brines) Tank or pit bottoms Contaminated soil Scrap metal
Abandonment/Reclamation	<ul style="list-style-type: none"> Construction materials Decommissioned equipment Contaminated soil Insulating materials Sludge

Hydraulic Fracturing

Chemicals serve many functions in hydraulic fracturing, from limiting the growth of bacteria to preventing corrosion of the well casing. Chemicals are needed to insure the hydraulic fracturing job is effective and efficient. The fracturing fluids used for shale stimulations consist primarily of water but also include a variety of additives. The number of chemical additives used in a typical fracture treatment varies depending on the conditions of the specific well being fractured. A typical fracture treatment will use very low concentrations of between 3 and 12 additive chemicals depending on the characteristics of the water and the shale formation being fractured. Each component serves a specific, engineered purpose. The predominant fluids currently being use for fracture treatments in the shale gas plays are water-based fracturing fluids mixed with friction-reducing additives, also known as slickwater (GWPC 2009).

The make-up of fracturing fluid varies from one geologic basin or formation to another.

Because the make-up of each fracturing fluid varies to meet the specific needs of each area, there is no one-size-fits-all formula for the volumes for each additive. In classifying fracture fluids and their additives it is important to realize that service companies that provide these additives have developed a number of compounds with similar functional properties to be used for the same purpose in different well environments. The difference between additive formulations may be as small as a change in concentration of a specific compound (GWPC 2009).

Typically, the fracturing fluids consist of about 99 percent water and sand and about 1 percent chemical additives. The chemical additives are essential to the process of releasing gas trapped in shale rock and other deep underground formation.

NORM

Some soils and geologic formations contain low levels of radioactive material. This naturally occurring radioactive material (NORM) emits low levels of radiation, to which everyone is exposed on a daily basis. When NORM is associated with oil and natural gas production, it begins as small amounts of uranium and thorium within the rock. These elements, along with some of their decay elements, notably radium₂₂₆ and radium₂₂₈, can be brought to the surface in drill cuttings and produced water. Radon₂₂₂, a gaseous decay element of radium, can come to the surface along with the shale gas. When NORM is brought to the surface, it remains in the rock pieces of the drill cuttings, remains in solution with produced water, or,

Figure 1. Typical Chemical Additives Used In Fracturing Fluids (GWPC 2009)

Compound	Purpose	Common application	
Acids	Helps dissolve minerals and initiate fissure in rock (pre-fracture)	Swimming pool cleaner	
Sodium Chloride	Allows a delayed breakdown of the gel polymer chains	Table salt	
Polyacrylamide	Minimizes the friction between fluid and pipe	Water treatment, soil conditioner	
Ethylene Glycol	Prevents scale deposits in the pipe	Automotive anti-freeze, deicing agent, household cleaners	
Borate Salts	Maintains fluid viscosity as temperature increases	Laundry detergent, hand soap, cosmetics	
Sodium/Potassium Carbonate	Maintains effectiveness of other components, such as crosslinkers	Washing soda, detergent, soap, water softener, glass, ceramics	
Glutaraldehyde	Eliminates bacteria in the water	Disinfectant, sterilization of medical and dental equipment	
Guar Gum	Thickens the water to suspend the sand	Thickener in cosmetics, baked goods, ice cream, toothpaste, sauces	
Citric Acid	Prevents precipitation of metal oxides	Food additive; food and beverages; lemon juice	
Isopropanol	Used to increase the viscosity of the fracture fluid	Glass cleaner, antiperspirant, hair coloring	

under certain conditions, precipitates out in scales or sludges. The radiation is weak and cannot penetrate dense materials such as the steel used in pipes and tanks.