U.S. Department of the Interior

Bureau of Land Management

July 2018

September 2018 Competitive Oil and Gas Lease Sale

Environmental Assessment,

Pecos District Office

DOI-BLM-NM-P000-2018-0004-EA

Roswell Field Office
2909 West Second Street
Roswell, NM 88201-2019
Fax:
575-627-0276
Phone:
575-627-0272

Carlsbad Field Office
620 E. Greene Street
Carlsbad, NM 88220-6292
Fax:
575-885-9264
Phone:
575-234-5972

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

This Environmental Analysis (EA) analyzes 197 parcels nominated for the September 2018 Competitive Oil and Gas Lease Sale that are under the administration of the Pecos District. It serves to verify conformance with the approved land use plan, disclose environmental impacts from leasing these parcels, if needed develop alternatives to the Proposed Action for analysis, if applicable provide the rationale for deferring or dropping parcels from a lease sale and provide rationale for attaching lease stipulations to specific parcels.

During the land use planning process the Bureau of Land Management (BLM) decides which public lands and minerals are open for leasing and under what terms and conditions. In accord with Resource Management Plans, lands can be deemed open to leasing under standard terms and conditions, closed to leasing, or open under special operating constraints identified as lease stipulations at the lease stage. Lease stipulations are used to mitigate potential impacts to resources. Any 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.

The Mineral Leasing Act of 1920 (MLA), as amended [30 U.S.C. 181 et seq.], and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA), require the BLM New Mexico State Office (NMSO) to conduct quarterly, competitive lease sales to offer available oil and gas lease parcels in New Mexico, Oklahoma, Texas, and Kansas. Parcels are nominated for leasing by members of the public, typically industry representatives. Nominated parcels are then compiled and undergo a process of evaluation to determine if the lands are eligible for leasing.

In the process of preparing a lease sale the NMSO sends a draft nominated parcel list to any BLM 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.

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 through the Notice of Competitive Lease Sale (NCLS). The NCLS, which lists lease parcels to be offered at auction, is published by the BLM NMSO and must be published 90 days prior to the lease sale.

On rare occasions, additional information obtained after the publication of the NCLS may result in deferral of certain parcels prior to the lease sale.

1.2 Purpose and Need

The purpose of this action is for the BLM NM to consider 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 MLA , as amended, to promote the 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 (FLPMA), the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 iet seq.), and other applicable laws, regulations, and policies.

1.3 Decision to be Made

Following the completion of the NEPA process the BLM would determine whether or not to lease the nominated parcels and, if so, under what terms and conditions. In order to make an informed decision, the BLM is using this EA to identify the environmental impacts of the proposed action and its alternatives. This EA analyzes three alternatives. The first alternative analyzed is the Proposed, the second is Alternative B, followed by the No Action Alternative.

1.4 Conformance with BLM Land Use Plans, other Statutes, Regulations and Plans

It is the policy of the BLM as derived from various laws, including the (MLA 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.

Additionally, The FOOGLRA states lease sales shall be held for each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary.

The FLPMA requires the BLM to develop Land Use Plans or Resource Management Plans (RMPs). Under FLPMA the BLM must manage for multiple use of these public lands and their various resources in a combination that will best meet the present and future needs of the public. 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).

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this EA is tiered to and incorporates by reference the information and analysis contained in the current RMPs and RMP Amendments (RMPAs) and their Final Environmental Impact Statements. Specifically, this proposed actions aligns with the following BLM Land Use Plans:

<u>Carlsbad RMP/Environmental Impact Statement (EIS) 1986</u>

Under the Fluid Minerals Management Section of the Planning and Management Decisions approximately 3,907,700 acres were determined to be open to leasing and development. Approximately 77,700 acres were designated open to leasing, with a No Surface Occupancy (NSO) stipulation attached to new leases. Approximately 110,700 acres were closed to leasing to protect special resources or to support other public uses. The 1997 Carlsbad RMPA amended all oil and gas decisions made in the RMP.

<u>Carlsbad RMP Amendment/EIS 1997</u>

The decision section of this RMPA states public lands will remain open and available for mineral exploration and development unless withdrawal or other administrative action is necessary to protect

other resource values. They also are ensuring development in which national and local needs are met, environmentally sound exploration, extraction, and reclamation practices are used. In this plan, 2,456,715 are open to leasing under standard term and conditions, 252,630 acres will have special stipulations, and 11,680 acres were withdrawn from leasing. Of the total acreage with special stipulations, 45,197 will be under NSO and 982 acres will have seasonal stipulations attached to them.

Roswell RMP/EIS 1997
In this plan, approximately 9,316,200 acres will be open to leasing and development under the BLM's standard terms and conditions. The plan designates 398,089 areas closed to leasing, 31,811 open to leasing with NSO, while it designates 1,320 open to leasing with Controlled Surface Use (CSUs).

Pecos District Office Special Status Species RMPA/EIS 2008 (PDO SSS RMPA)
This 2008 plan shows 319,977 acres as "Unleased Federal Minerals" (pg. 8). The BLM will continue to require oil and gas lessees to conduct operations in a manner that will minimize adverse impacts to resources, land uses, and other users. To that end, the BLM will continue to apply reasonable mitigating measures to all oil and gas activities (pg. 7).

Carlsbad RMP/EIS Revision (Record Of Decision Anticipated ~August 2019)
The Carlsbad RMP is currently undergoing a revision with a draft EIS anticipated in late 2018.

Additional Regulations
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.

1.5 Scoping and Public Involvement

1.5.1 Internal Scoping

Internal Scoping began on April 20, 2018 when resource specialists had an Interdisciplinary (ID) Team Meeting in Carlsbad and Roswell Field Offices to discuss details on the project. Subsequent meetings with resource specialist helped refine issues with the proposed action as they arose.

1.5.2 External Scoping

The Pecos District Office (PDO) received the September 2018 lease sale parcel list on April 2nd, 2018. The list of parcels were subsequently posted online for a two-week public scoping period beginning on April 9, 2018. During the public scoping period, the BLM received approximately 1,200 form letters from the public, as well as a letter from Wild Earth Guardians. Issues raised included potential impacts to the Carlsbad Cavern National Parks area and associated subsurface geology, impacts to air quality, potential environmental risks of fracking, and potential increased hazards (spills and fire) from oil and gas leasing operations. These issues are discussed further below.

1.5.2 Issues Identified

Using the input received from internal and external scoping a list of issues were developed with the guidelines set forth in section 8.3.3 of the 2008 BLM NEPA Handbook. The key issues identified through the scoping process and the analysis of this EA are summarized in Tables 1.1. and 1.2. below.

Issues identified for detailed analysis are presented below in Table 1.1.

Table 1.1. Issues Identified for Detailed Analysis

Issue	Issue Statement	Impact Indicator
Issue 1	What are the potential impacts to Visual Resource Management (VRM)	VRM Class and Quality of Contrast
Issue 2	What are the potential impacts to the integrity of the cave and karst systems?	Location of parcels with regard to cave/karst features
Issue 3	• What are the potential impacts of oil and gas leasing to air quality within the PDO Planning Area? • What are the potential impacts of oil and gas leasing to GHGs and Climate Change within the PDO Planning Area? • What are the impacts of oil and gas leasing to AQRVs (visibility and deposition) at the Carlsbad Caverns National Park?	Air quality indices; Greenhouse gas (GHG) emission rates; proximity of lease parcels to CBCNP Air Quality Related Values
Issue 4	What are the potential impacts to water, to include potential impacts on water quality as it related to public health and safety?	Amount of water used; location of parcels in regard to water sources used by humans

Issues evaluated and not discussed in further detail in this EA are described below in Table 1.2.

Table 1.2 Issues not included in Further Detail in the Environmental Assessment

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
ELM-1	What are the potential impacts to threatened and endangered species habitats in areas related to Oil and Gas Development?	Endangered Species Act Section 7 Consultation Stipulation (WO- ESA-7) is applied across all lease parcels. This stipulation states that the lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. 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.

ELM-2	What are the potential impacts to wildlife habitat through and adjacent to nominated parcels?	Oil and Gas development operations in the proposed lease areas has the potential to impact habitat for some species. In order to reduce the impacts, the following stipulations will be applied to leases in areas of wildlife concern: SENM-S-31 Controlled Surface Use-Northern Aplomado Suitable Habitat and SENM-S-15 Controlled Surface Use Wildlife Habitat Projects. Additional mitigation measures may be applied at the APD NEPA stage if necessary in order to prevent impacts to wildlife populations and their habitats.
ELM-3	What are the potential impacts of O+G development on recreation opportunities through and near parcels nominated for leasing?	Within the Carlsbad Field Office (CFO) all of the proposed lease parcels are greater than 1,500 feet (0.28 miles) away from the nearest recreational trail or facility. Therefore, any oil and gas development within the parcels would not have any impact on developed recreational activities within the CFO. Within the Roswell Field Office (RFO) no recreation areas will be impacted by the proposed lease parcels save one parcel near Mescalero Sands OHV Area which is on private land and therefore will not interfere with recreational activities. Standard Visual Resource Management (VRM) stipulations shall be adhered to with all oil and gas development near this OHV area.
ELM-4	What are the potential impacts on the integrity of paleontological resources associated with O+G lease surface disturbance?	Fossils uncovered during ground disturbing activities would be protected owing to the standard discovery requirements. Additionally, should a parcel be located in an area that has high potential for paleontological resources, COAs would be applied at the APD stage. The proponent is required to notify the BLM of any discoveries they come across during construction following the APD stage.
ELM-5	What are the potential impacts of the lease sale on the socioeconomics of the area?	The oil and gas industry has been a substantial contributor to the social setting and economic basis of the BLM Pecos District for decades. Continuing to open new areas to oil and gas exploration and production will contribute to maintaining current social and economic conditions in the communities near the lease areas. These contributions would include stable, continued employment for area residents, continued demand for industry related goods and services, and continued demand for support goods and services, resulting in stability in employment in sectors outside of the oil and gas industry. To the extent that additional oil and gas development impacts recreational and tourism opportunities in the area of the lease parcels, there may be an associated decrease in these economic sectors due to industrial expansion. Continued expansion of the oil and gas industry may be perceived as having a negative effect on quality of life considerations for people who value undeveloped landscapes, opportunities for isolation, and activities such as wildlife viewing. However, there are a number of stipulations applied to leased parcels in the current sale that work to mitigate potential impacts to Visual Resources (SENMS32-VRM, SENMS21) and wildlife (SENMS15,SENMS31, SENMS16).
ELM-6	What are the potential impacts to existing Rights-of-Ways (ROW) or leases?	There are no existing ROWs or leases in the proposed project area. Thus, there will be no impacts to existing ROWs. *Supporting documentation for these statements are included in the project record.

ELM-7	What are the potential impacts to nesting migratory birds?	In accordance with the Migratory Bird Treaty Act of 1918 construction activities will be held outside of the migratory bird nesting season. In addition, impacts to raptors and heronies would be avoided owing to implementation of the stipulation *Controlled Surface Use Raptor Nests and Heronries* (*SENM-S-16*) which states that surface disturbance will not be allowed within up to 200 meters of active heronries or by delaying activity for up to 120 days, or a combination of both. Raptor nests on special, natural habitat features, such as trees, large brush, cliff faces and escarpments, will be protected by not allowing surface disturbance within up to 200 meters of nests or by delaying activity for up to 90 days, or a combination of both.
ELM-8	What are the potential impacts from ground disturbing oil and gas activities on cultural resources?	The Cultural Resources and Tribal Consultation Stipulation (WO-NHPA) is applied across all lease parcels. This stipulation states that the lease area 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. Moreover, prior to granting to APDs Class III cultural resource inventories are required. Any surface disturbance has the potential to affect cultural resources present in the areas of development. However, the parcels nominated were scanned for cultural resource concerns prior to finalizing the lease sale parcel list. Three parcels were identified as “traditional cultural properties” and proposed for deferral under Alternative B owing cultural resource concerns, as well as hydrological issues. However, the Cultural Resources and Tribal Consultation Stipulation (WO-NHPA) is applied across all lease parcels and, as such, potential impacts to these parcels would be addressed via this stipulation.
ELM-9	What are the potential increased hazards (i.e., spills and fire) from oil and gas leasing operations?	According to 43 CFR 3162.5-1, the operator is required to report all spills or leakages of oil, gas, produced water, toxic liquids, or waste materials, blowouts, fires, personal injuries, and fatalities and exercise due diligence in taking necessary measures, subject to approval by the authorized officer, to control and remove pollutants and to extinguish fires. Oil and gas leasing operations will not contribute significantly to an increase in potential hazards owing to Best Management Practices and any Conditions of Approvals required by the Authorized Officer as part of the Application for Permit to Drill and subsequent operations submitted as a Sundry Notice. According to Onshore Order Number 1, the operator must identify in the surface use plan of operations how they will provide for safe operations, adequate protection of surface resources, groundwater, and other environmental components. In addition, containment structures sufficiently impervious to prevent a discharge to waters of the United States, such as containment dikes, containment walls, drip pans, or equivalent protection actions are to be constructed and maintained around all qualifying bulk oil storage facilities, including tank batteries, consistent with the Environmental Protection Agency’s

Spill Prevention, Control, and Countermeasure (SPCC) regulation (40 CFR 112). The containment structure must have sufficient volume to contain, at a minimum, the content of the largest storage tank containing liquid hydrocarbons within the facility/battery and sufficient freeboard to contain precipitation, unless more stringent protective requirements are deemed necessary by the authorized officer.

In order to ensure minimal risk to public health and safety and the environment, the BLM will respond, investigate, remediate and monitor any illegal dumping of produced saltwater, petroleum or other hazardous substances as defined by the Comprehensive Environmental Response, Compensation and Liability Act that are transported from wells and associated facilities located within the leases and dumped on federal lands in coordination with applicable state and federal agencies.

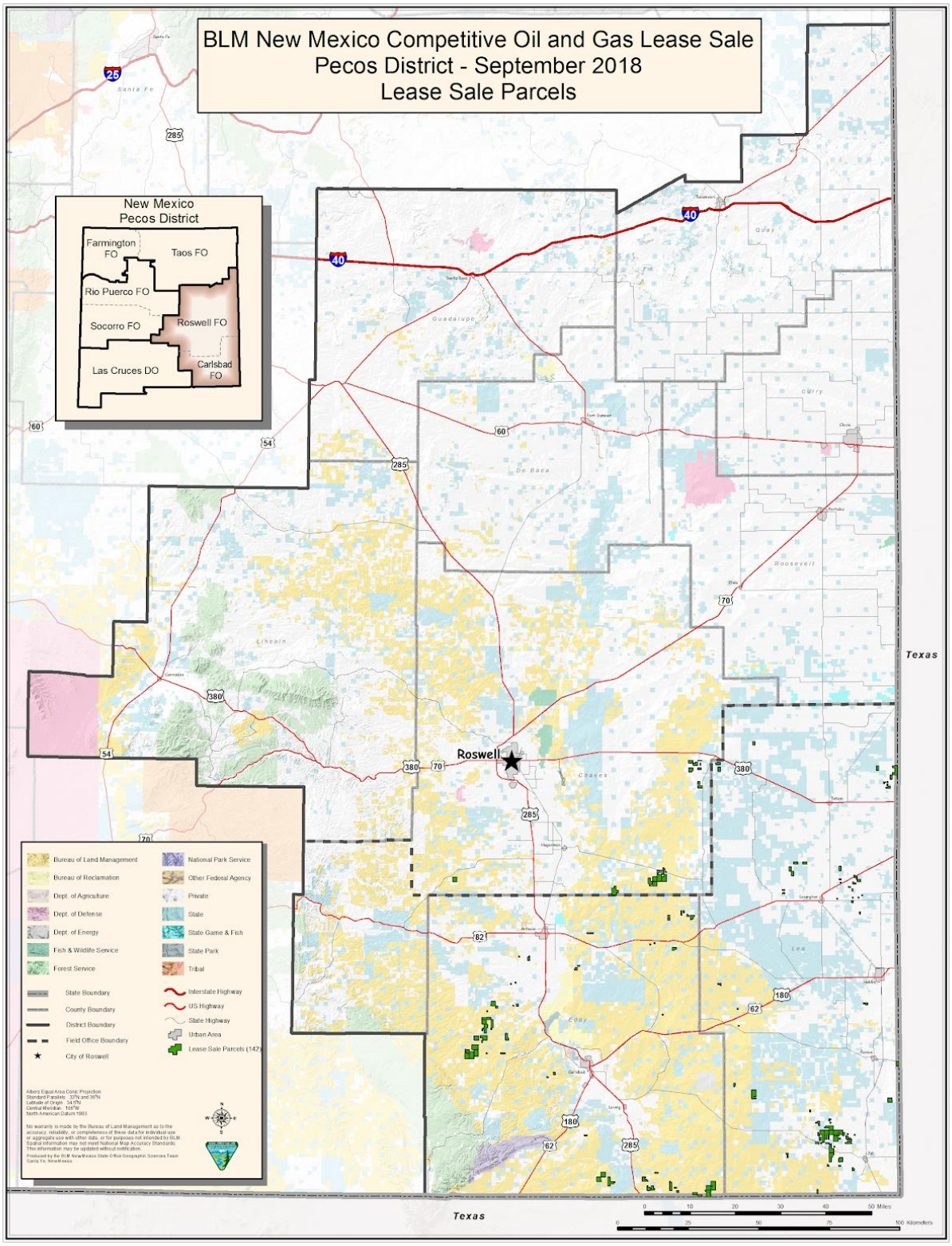
The New Mexico Oil Conservation Division of Energy, Minerals and Natural Resources Department requires that in areas where hydrogen sulfide (H2S) concentrations are greater than 100 ppm, companies are required to forewarn and safeguard people that have occasion to be on or near the area. Other safety devices are required to be installed and maintained on the well and facility sites if higher concentrations of H2S exist. Moreover, industry is required to take H2S training and carry H2S readers with them at all times when working in the field. These practices and requirements work to minimize hazards and ensure safe operations.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

Upon review of the 197 parcels (89,072.44 acres) nominated for the September 2018 Competitive Oil and Gas Lease Sale within the Pecos District, 23 parcels were found to be listed as closed (or withdrawn as depicted on Map 2.2) and not available for leasing in accord with the 2008 Pecos District SSS/RMPA and 1997 Carlsbad RMPA. In addition, one (1) parcel was found to be already leased. Thus, following the removal of these parcels, 173 parcels (75,528 acres) with associated stipulations (Appendix 1) are proposed for lease under the Proposed Action within the Pecos District (Map 2.1). See Appendix 3 for complete description of stipulations.

Map 2.1. Location of the 173 parcels proposed for lease under the Proposed Action.



At the leasing stage it is uncertain whether development on all leased parcels will move forward; however, for the purposes of this analysis, and in order to assess potential impacts, Reasonably Foreseeable Development (RFD) is assumed wherein all 173 of leased parcels will be developed.

Reasonable foreseeable development for the lease action within the area was calculated in reference to Engler & Cather (2012), Engler (2013) and Cather (2014), studies that provide a comprehensive assessment of existing plays, an analysis of activity, emerging plays for future potential, and completion trends. The parcels nominated for lease occurred within the following plays/formations: Bone Spring, Wolfcamp, Delaware, Yeso, and other. The BLM projected a well density of six (6) horizontal wells per section (640 acres) per play for the Bone Springs, Wolfcamp, Delaware Mountain, and Yeso/Leonard plays based on the horizontal well spacing rules established by the New Mexico Oil Conservation Division (NMOCD, 2016). In addition, the Abo, San Andres, Devonian, Glorieta, Grayburg, Pennsylvanian, Strawn, Mississippian, Blinebry, Atoka, Morrow, and Tubb plays were grouped as "Other", and this "Other" group was also assigned a density of 6 wells per section. EURs per well for the various plays were determined through decline curve analysis of existing oil and gas production data. Based on the spatial location of leases within play boundaries, projected well densities, and estimated ultimate recovery (EUR) per well for each play, the total number of wells and the total volume of oil production (in bbl) associated with Proposed Action was estimated (Table 2.0).

Table 2.0. Reasonable foreseeable development under the proposed action for leasing of 173 parcels. The estimated number of wells for potential full development is 1,463 with a total oil production (bbl) of 468,235,072.

Number of Parcels	173
Total Acreage	75,248.89
Total Number of Wells	1,463
Total Oil Production (bbl)	468,235,072
Total Gas Production (Mcf)	1,879,058,299

Development of the parcels under the Proposed Action can be conceived of in three phases and their associated activities: *Implementation phase* (pad construction, drilling of the well using a conventional pit system or closed-loop system, hydraulically fracturing the well, development of any needed access roads, or expansion of existing roads, installation of pipeline), *production phase* (vehicle traffic, engines to pump oil if necessary, compressor engines to move gas through a pipeline, venting from storage tanks, hauling produced fluids, regularly monitoring the well, and completing work-over tasks throughout the life of the well if and when necessary), *plug and reclamation phase* (plugging the well, reclaiming the well pad and other associated disturbances to include access roads and pipelines). See Appendix 4 for a complete description of the phases of oil and gas development.

Standard terms and conditions, stipulations listed in the Carlsbad and Roswell RMP 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. Additional site-specific impacts would be addressed in a subsequent NEPA document at the Application for Permit to Drill (APD) stage. 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 of operations as specified under Onshore Oil and Gas Orders (43 CFR 3162), nor until site-specific NEPA analysis is conducted.

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. However, it should be noted that if a leaseholder 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, the lease defaults back to the Federal Government and the lease can be re-offered in another lease sale.

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not carry out the proposed Oil and Gas Lease Sale of the nominated parcels for the 2018 Pecos District Sale and there would be no subsequent Reasonable Foreseeable Development of the parcels owing to the lease action. The BLM would continue to manage these lands under their current management practices. Parcels would have the potential to be nominated again in a future oil and gas lease sale.

2.3 Alternative B (Deferral Alternative)

Under Alternative B, thirty-one (31) parcels (24,452.01 acres) out of the 173 parcels proposed for leasing would be deferred. Thus, Alternative B is to lease 142 parcels with associated stipulations (Appendix 2) totaling 50,796.88 acres (Map 1.0). See Appendix 3 for complete description of stipulations.

Map 2.2. Location of the 31 parcels proposed for deferral under the Alternative B.

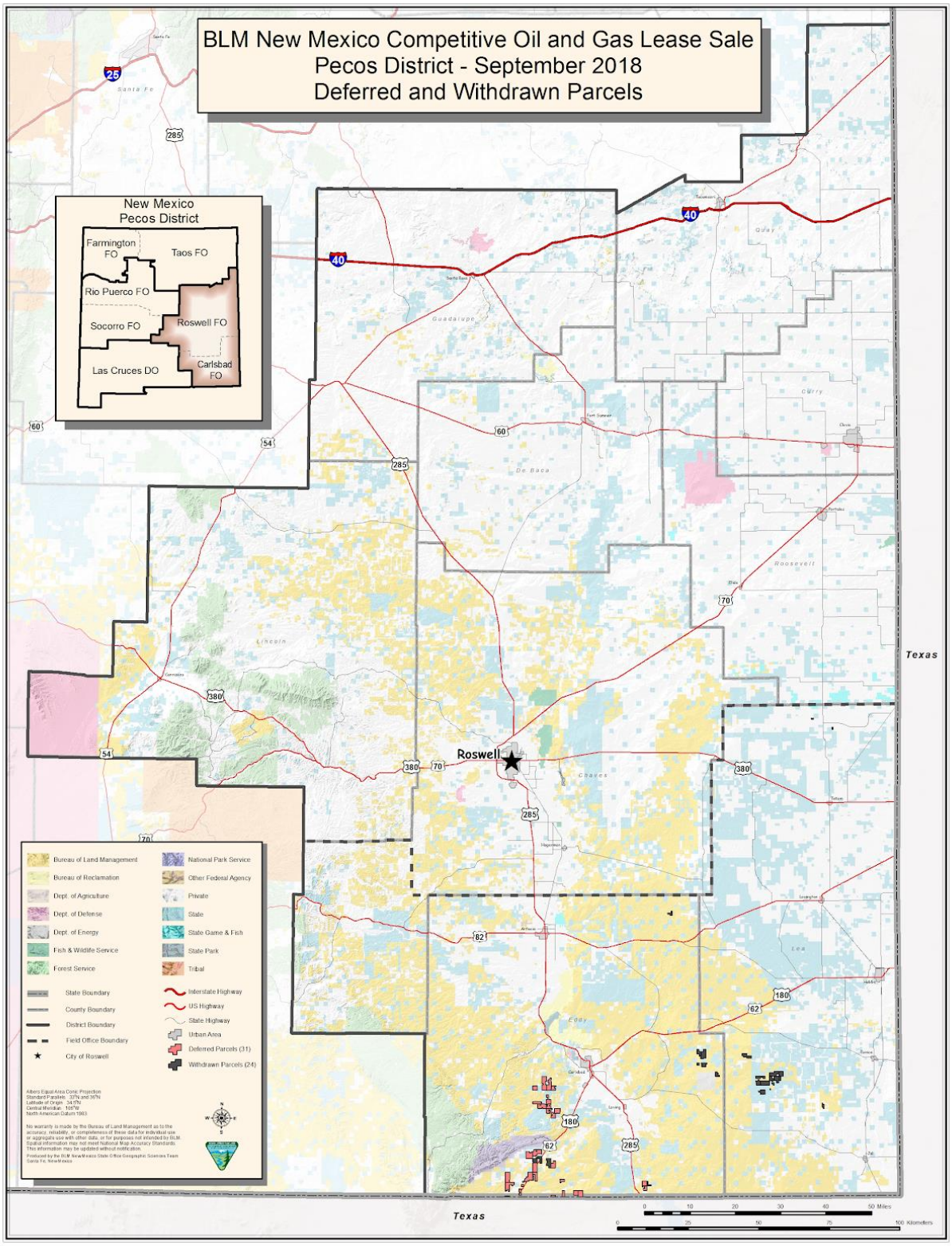

BLM New Mexico Competitive Oil and Gas Lease Sale
Pecos District - September 2018
Deferred and Withdrawn Parcels
New Mexico
Pecos District
Farmington FO
Taos FO
Rio Puerco FO
Socorro FO
Roswell FO
Las Cruces DO
Carlsbad FO
Roswell
Texas
Texas
Bureau of Land Management
Bureau of Reclamation
Dept. of Agriculture
Dept. of Defense
Dept. of Energy
Fish & Wildlife Service
Forest Service
National Park Service
Other Federal Agency
Private
State
State Game & Fish
State Park
Tribal
State Boundary
County Boundary
District Boundary
Field Office Boundary
City of Roswell
Interstate Highway
US Highway
State Highway
Urban Area
Deferred Parcels (31)
Withdrawn Parcels (24)
50 Miles
100 Kilometers

Table 3.3. Parcel number and correlated acreage of parcel of the thirty one (31) parcels proposed for deferral under the Alternative B.

Parcel Number	Acreage	Parcel Number (continued)	Acreage (continued)
20	1,360.000	44	600.000
21	1,674.930	45	680.000
22	1,465.050	46	1,375.330
23	155.030	49	800.000
24	1,520.960	50	1,271.920
25	408.880	51	161.440
26	94.640	52	800.200
34	1,773.780	53	250.600
35	1,320.000	55	360.340
37	640.960	56	893.920
38	600.000	57	640.000
39	927.150	58	445.910
40	630.450	73	640.800
41	1,159.410	74	40.310
42	560.000	75	400.00
43	800.000		

Alternative B defers thirty-one (31) parcels in order to complete additional analysis and coordination. A number of the parcels proposed for deferral under the Alternative B are thought to be connected to City of Carlsbad's primary drinking water supply, the Capitan Aquifer, by way of a permeable cave and karst system; moreover, a subset of parcels are also within the boundary of the City of Carlsbad's Water Supply Field, an area that contains wells used to pump groundwater from the Capitan Aquifer. Another subset of parcels proposed for deferral under Alternative B are located on cave or karst features and or lie within a mile of Carlsbad Cavern National Park (CCNP).

Reasonable Foreseeable Development (RFD) under Alternative B was calculated using the same methods as described above under the Proposed Action Alternative. The RFD for Alternative B is provided in Table 3.4.

Table 3.4. Reasonable foreseeable development under Alternative B for leasing of 142 parcels. The estimated number of wells for potential full development is 1,098 with a total oil production (bbl) of 342,571,372.

Number of Parcels	142
Total Acreage	50,796.88
Total Number of Wells	1,098
Total Oil Production (bbl)	342,571,372
Total Gas Production (Mcf)	1,421,724,039

Development of the parcels, and associated activities, under Alternative B is the same as described above under the Proposed Action. Moreover, the same standard terms and conditions, stipulations, site specific mitigation measures, BMPs, and permitting requirements described above apply to the leasing action of Alternative B.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 Introduction

This chapter provides a description of the environmental likely to be affected by the Proposed Action and Alternatives. It will describe the existing conditions related to the issues presented in Table 1.1 and discloses any potential direct, indirect and cumulative impacts on the resources identified as issues. Once issues are identified, impact indicators are selected to assess the impacts of alternatives and are used as a basis for future monitoring (Table 1.1).

Assumptions for analysis

The act of leasing nominated parcels in and of itself would have no immediate impacts on resources in the PDO. However, for the purposes of this analysis, a framework of Reasonable Foreseeable Development (RFD) is assumed wherein all parcels under each alternative are leased and developed. While an appropriate level of site-specific analysis of individual wells or roads would occur when a leaseholder submits an Application for Permit to Drill (APD) assumptions based on the full lease development will be used in the analysis of impacts in this EA.

Cumulative impacts include the combined effect of past projects, specific planned projects and other reasonably foreseeable future actions such as other infield wells being located within these leases. Potential cumulative effects may occur should an oil and gas field be discovered if these parcels are drilled and other infield wells are drilled within these leases or if these leases become part of a new unit.

3.2 Issue 1: What are the potential impacts to Visual Resource Management (VRM)?

3.2.1 Affected Environment

There are four categories of Visual Resource Management Objectives (Class I-IV). Across the four VRM categories, level of restriction diminish as you move from Class I (the most restrictive) to Class IV (the least restrictive). Refer to Manual H-8410-1 Visual Resource Inventory for a complete definition of VRM Classes and their attendant objectives. -

3.2.2 Environmental Consequences

While the act of leasing Federal minerals would produce no direct impacts to visual resources subsequent development of a lease would likely produce subsequent impacts owing to the establishment of infrastructure that can contrast to the landscape's natural form, line, color, and texture. Pads, tanks, roads, power lines, and pipelines introduce unnatural forms into the landscape. Tanks and poles can add vertical trends to generally flat landscapes. The more prominent these visual contrasts, the more a project will stand out and distract from the natural view of the landscape.

3.2.2.1 Impacts of the Proposed Action

In accord with the VRM classes for the area as designated in the Carlsbad and Roswell RMPS, none of the parcels proposed for lease fall under Class I or Class II VRM, while thirty one (31) parcels fall under Class III and 143 parcels fall under Class IV. As no parcels fall under Class I or II, there would be no impact to these classes. All VRM Class III parcels were assigned the attendant Lease stipulation SENM-

S-32 described below; thus impacts to VRM III would be mitigated. Therefore, impacts to VRM would be negligible under the Alternative A.

Cumulative visual impacts from oil and gas leasing were analyzed in 1997 Carlsbad RMP amendment (BLM 1997). Since the proposed leasing is in VRM III and VRM IV, and much of the surrounding parcels are already developed, the cumulative impacts to visual resources are expected to be minimal.

The proposed action would cause some short term and long-term visual impacts to the natural landscape. Short term impacts occur during construction operations and prior to interim reclamation. These include the presence of construction equipment vehicle traffic. However, interim reclamation, conducted within 6 months after well completion would reduce this area by re-contouring and revegetating.

Long term impacts would be visible to the casual observer throughout the life of the well. These include the visual evidence of storage tanks, piping, pump jacks, pads and roads, which cause visible contrast to form, line, color, and texture. Removal of vegetation due to construction exposes bare soil lighter in color and smoother in texture than the surrounding vegetation. The surfacing of these areas with caliche materials would cause further contrasts. Those contrasts would be visible to visitors in the area. After final abandonment and reclamation, the pad, road and associated surface infrastructure would be removed, reclaimed, re-contoured and revegetated, thereby eliminating visual impacts.

Short and long term impacts are minimized by best management practices such as color selection, reducing cut and fill, screening facilities with natural features and vegetation, interim reclamation and contouring roads along natural changes in elevation.

4.0 Distribution of parcels within Visual Resource Management Classes under the Proposed Action

Class I	None of the parcels occurred in this class
Class II	None of the parcels occurred in this class
Class III	5, 9, 10, 19, 20, 21, 22, 23, 24, 25, 26, 34, 35, 37, 38, 39, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 73,75,76,77
Class IV	1,2, 3, 4, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18, 27, 28, 29, 30, 31, 32, 33, 36,40,41, 54, 55, 56, 57, 58,59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71,74,78, 79, 80,81,82,84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94,95, 96, 97,98, 99, 100,101, 102, 103, 104, 105, 111, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122, 132, 133, 134, 135, 136, 139, 141, 142, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197

3.2.2.2 Impacts of the Alternative B

Under Alternative B, none of the parcels proposed for lease fall under Class I or Class II VRM, while six (6) parcels fall under Class III and 136 parcels fall under Class IV (See Table 4.0 below). All VRM Class III parcels were assigned the attendant Lease stipulation SENM-S-32 described below; thus impacts to

VRM III would be mitigated. Therefore, impacts to VRM would be negligible under the Proposed Alternative. Cumulative impacts for Alternative B will be slightly less than for the proposed action alternative.

Table 4.1.Distribution of parcels within Visual Resource Management Classes under Alternative B

Class I	None of the parcels occurred in this class
Class II	None of the parcels occurred in this class
Class III	5, 9, 10, 19, 76, 77
Class IV	1, 2, 3, 4, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18, 27, 28, 29, 30, 31, 32, 33, 36,54, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 78, 79, 80, 81, 82, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94,95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 111, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122, 132, 133, 134, 135, 136, 139, 141, 142, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197

3.2.2.3 Impacts of the No Action Alternative

Under the No Action Alternative, BLM would continue to manage these lands based on the objectives outlined in their class categories. No new attendant infrastructure associated with oil and gas development would be built under the No Action Alternative.

3.2.3 Design Features

Visual impacts would be limited under both alternatives outlined above by applying lease stipulations as well as BMPs (best management practices) and COAs (conditions of approval) at the APD stage. For all Class III parcels under both the Proposed and Alternative B, the lease stipulation SENM-S-32 VRM Class III Guadalupe Escarpment was applied to reduce impacts to VRM. See Appendix 2 for complete description of stipulations.

Conditions of approval (COAs) can be added at the site-specific APD stage of development to reduce impacts to VRM and maintain VRM Class Objectives such as: landform considerations such as locating projects away from prominent topographic features, changing road width and grade, changing alignment to follow existing grades, prohibiting dumping of excess material on downhill slopes, stockpiling and reusing topsoil, rounding or warping slopes, making use of retaining rocks, shaping cuts and fills to appear as natural forms, cutting rock areas so forms are irregular, designing to take advantage of natural screens (i.e., vegetation, landforms) and selecting type of equipment to be used and minimizing clearing size. Additional COAs for retaining vegetation may include using retaining walls on fill slopes, reducing surface disturbance, protecting roots from damage during excavations, mulching cleared areas, controlling planting times, furrowing slopes, planting holes on cut and fill slopes, choosing native plant species, fertilizing, mulching, and watering vegetation, utilizing existing roads, and limiting work within construction areas. In addition, to minimize the number of visibly contrasting structures, COAs will be applied, requiring use of earth-tone paints and stains and natural stone surfaces, burying all or part of the structure, selecting paint finishes with low levels of reflectivity (i.e., flat), redesigning structures to blend

with surroundings, and relocating structures. Interim reclamation measures for the working life of the pad may also be implemented to reduce visual impacts, such as partial revegetation of the pad after initial drilling is complete to allow only necessary surface use and access requirements. Finally, COAs may require utilities and rights-of-way related to the development of the proposed lease parcels to be stipulated by making crossings at right angles of corridors, setting structures a maximum distance from the crossing, leaving vegetation along the roadside, minimizing viewing time, and utilizing natural screening.

To minimize cumulative impact to visual resources all projects (regardless of VRM class) should be hidden, masked, and reclaimed as best as possible with Best Management Practices (BMPs) and Conditionals of Approvals (COAs). The cumulative impacts from the proposed lease are not expected to be significant as much of the area and the surrounding parcels are already developed for oil and gas and already have significant visual impact. Therefore the cumulative effects under either Alterative are also not expected to be significant.

3.3 Issue 2: What are the potential impacts to the integrity of the cave and karst systems?

3.3.1 Affected Environment

Portions of this project are located in limestone and gypsum karst terranes, a landform that is characterized by underground drainage through solutionally enlarged conduits. Karst terranes may contain sinkholes, sinking streams, caves, and springs. Sinkholes leading to underground drainages and voids are common. Moreover, caves/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 across areas ranging from a few acres to hundreds of acres. These karst features, as well as occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region. Sinkholes and cave entrances collect water and can accumulate rich organic materials and soils. The presence of water, rich organic soils, and specialized geology/topography, in conjunction with the stable microclimate near cave entrances, support a unique assemblage and diversity of plant life and wildlife such as raptors, rodents, mammals, and reptiles. The interior of the caves are known to support a large variety of troglobitic, or cave environment-dependent species. The troglobitic species have adapted specifically to the cave environment due to constant temperatures, constant high humidity, and total darkness. Many of the caves in this area contain fragile cave formations known as speleothems.

The BLM categorizes all areas within the PDO as having either low, medium, or high cave potential based on geology, occurrence of known caves, density of karst features, and potential impacts to freshwater aquifers. A ‘high karst zone’ is defined as an area occurring in known soluble rock types and containing a high frequency of significant caves and karst features such as sinkholes, bedrock fractures that provide rapid recharge of karst aquifers, and springs that provide riparian habitat. A ‘medium karst zone’ is defined as an area occurring in known soluble rock types but may have a shallow insoluble overburden. These areas may contain isolated karst features such as caves and sinkholes. Groundwater recharge may not be wholly dependent on karst features but the karst features still provide the most rapid aquifer recharge in response to surface runoff. A ‘low karst zone’ has a low likelihood for cave/karst features.

The CFO has also designated portions of the FO as ‘Critical Karst Resource Zones’. A ‘critical karst resource zone’ is an area within a ‘high karst area’ that provides critical drinking water to major communities, ranching operations, and/or springs that support rivers and vital riparian habitat. These areas include the Capitan Reef and associated Capitan Aquifer west of the Pecos River as well as the surface outcropping of the Castile gypsum formation in southern Eddy County.

3.3.2 Environmental Consequences

3.3.2.1 Impacts of the Proposed Alternative

Immediate and cumulative impacts of surface disturbance of oil and gas drilling in cave and karst terrains could include the following:

1) Decreased infiltration rates leading to slow subsidence and/or sudden collapse of subsurface voids.
2) Destabilization of the stable cave microclimate resulting in the disruption, displacement and/or extermination troglobites, troglophiles, and trogloxenes as well the diverse flora and fauna found within and around cave entrances.
3.) Increased potential of contaminating the Capitan Aquifer that supplies the City of Carlsbad and surrounding ranches with fresh drinking water.

Under the Proposed Action, following an in-house GIS exercise and field reviews, parcels identified as having either medium or high cave potential (78 parcels, totaling 45,535.97 acres) were assigned the attendant Cave and Karst Lease stipulation (SENM-S-21)**.** Thus impacts to cave and karst on these parcels would be mitigated.

Parcels identified as having low cave potential (95 parcels, totaling 29,712.85 acres) were not assigned attendant lease stipulations. Therefore, under the Proposed Action, although there may be slight impacts to parcels with low cave and karst potential, overall impacts to the integrity of cave/karst systems in the lease area are anticipated to not be significant.

Cumulative impacts are also anticipated to be below the level of significance owing to the application of lease stipulation (SENM-S-21) under the Proposed Action**.**

3.3.2.2 Impacts of Alternative B

Under Alternative B, 31 parcels that are known to occur on cave and karst would be deferred from leasing. Thus, potential impacts to cave and karst features within these 31 parcels would be avoided under this alternative.

For all remaining parcels under Alternative B, the same method was applied as described above under the Proposed Action wherein parcels identified as having either medium or high cave potential (47 parcels, totaling 21,083.96 acres) were assigned the attendant Cave and Karst Lease stipulation (SENM-S-21). Parcels identified as having low cave potential (95 parcels, totaling 29,712.85 acres) under Alternative B were not assigned attendant lease stipulations. Therefore, there may be slight impacts to parcels with low cave and karst potential (95 parcels, totaling 29,712.85 acres); however, overall impacts to the integrity of cave/karst systems in the lease area is anticipated to be below the level of significance under Alternative B.

Cumulative impacts are also anticipated to be below the level of significance owing to the deferrals as well as the application of lease stipulation (SENM-S-21) under Alternative B.

3.3.2.3 Impacts of the No Action Alternative

Under the No Action Alternative, BLM would not permit the leasing activity and there would be no change to the current management of the parcels. No additional, potential impacts would be accrued to cave and karst systems within the lease parcels as no drilling or oil and gas development would take place.

3.3.3 Design Features

As noted above, under both the Proposed Action and Alternative B, all parcels identified as occurring on locations with high to medium carve/karst potential were assigned the associated lease stipulation (SENM-S-21). Under this stipulation surface disturbance will not be allowed within up to 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features.

Additional, special protective measures may be developed at the APD stage 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. These measures may be imposed in accordance with 43 CFR 3101.1-2; 43 CFR 3162.5-1; Onshore Oil and Gas Order No. 1; and Section 6 of the lease terms.

3.4 Issue 3: Air

3.4.1 What are the potential impacts of oil and gas leasing to air quality within the PDO Planning Area?

3.4.1.1 Affected Environment

Air Resources

Air quality and climate are components of air resources which may be affected by BLM applications, activities, and resource management. 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. Additional information on air quality in this planning area is contained in Chapter 3 of the Carlsbad Resource Management Plan and Final Environmental Impact Statement (BLM 1988); the Carlsbad Resource Management Plan Amendment and Final Environmental Impact Statement for Oil and Gas Resources (BLM 1997); and the Roswell Resource Area Resource Management Plan and Final Environmental Impact Statement (BLM 1997), which this analysis tiers to and incorporates by reference. 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, 2017). This document summarizes technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

Air Quality

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including six nationally regulated ambient air pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM10 & PM2.5), sulfur dioxide (SO_2) and lead (Pb). EPA has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The NAAQS are protective of human health and the environment. The EPA has approved New Mexico's State Implementation Plan and the state enforces state and federal air quality regulations on all public and private lands within the state except for tribal lands and within Bernalillo County. The Pecos District Offices (PDO) area attains all national ambient air quality standards.

The Air Resources Technical Report describes the types of data used when analyzing the existing conditions of criteria pollutants, how the criteria pollutants are related to the activities involved in oil and gas development, and provides a table of current national and state standards. The U.S. Environmental

Protection Agency's (USEPA) Green Book web page reports that Chaves, Eddy and Lea counties are in attainment of all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act (USEPA, 2018a). The area is also in attainment of all state air quality standards (NMAAQS). Air quality can be measured and described in many different ways. In this analysis we use design values, air quality indexes and an existing emissions inventory of human-caused sources to evaluate existing air quality.

Design Values" are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. The 2016 design values for criteria pollutants are listed below in Table 3 (Air)There is no monitoring for carbon monoxide (CO), sulfur dioxide (SO2) and lead Pb) in the counties of the planning area, but because the county is relatively rural, it is likely that these pollutants are not elevated. No monitors are available in Chaves County; however Eddy and Lea counties are representative.

Air Table 5. 2016 Criteria Pollutant Monitored Values in Eddy and Lea Counties (USEPA, 2018b)

Pollutant	2016 Design Concentration	Averaging Time	NAAQS	NMAAQS
O3	0.067 ppm (Eddy County) 0.066 ppm (Lea County)	8-hour	0.070 ppm1	
NO2	2 ppb (Eddy County) 4 ppb (Lea County)	Annual	53 ppb2	50 ppb
NO2	19 ppb, (Eddy County)	1-hour	100 ppb3	
PM2.5[4]	7.1 µg/m3 (Lea County)	Annual	12 µg/m3,4	60 µg/m3,6
PM2.5[4]	19 µg/m3 (Lea County)	24-hour	35 µg/m3,3	150 µg/m3,6

1 Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years. 2015 standard
2 Not to be exceeded during the year
3 98th percentile, averaged over 3 years
4 Annual mean, averaged over 3 years
5 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
6 The NMAAQS is for Total Suspended Particulate (TSP)

Between 2014 and 2016 average estimated exceedances of PM_{10} in Lea County were not listed and it is assumed monitoring has been discontinued with approval from EPA because the affecting sources have been shut down.

While all of the PDO planning area is in attainment of all NAAQS including ozone, the site at 2811 Holland St in Eddy County is the most closely watched due to the current design value of 0.067 ppm. The

Carlsbad Caverns National Park is listed as having a monitor however the design value was not considered valid. While 0.067 ppm is below the attainment value of 0.070 ppm, it is the highest design value of the monitoring stations in Eddy and Lea counties. The potential amounts of ozone precursor emissions of NO_x and VOCs from the proposed lease sale are not expected to impact the current design value for ozone in Chaves, Eddy and Lea counties under the Proposed Action Alternative however more information at the development stage will provide more information to better estimate air emissions from a specific project.

Air quality in a given region can also be measured by its Air Quality Index value (AQI). The (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, therefore the air quality rating and the associated level of health concern is the same throughout the country. The AQI is an important indicator for populations sensitive to air quality changes (USEPA, 2018c)

AQI values for Chaves County were mainly in the good range (AQI <50) in 2017 with 94 percent of the days that had an AQI in that range. The median AQI in 2017 was 14, which indicates "good" air quality. The maximum AQI in 2015 was 112, which is "unhealthy for sensitive groups" and the 90th percentile was 31.5 which is "good" air quality (USEPA, 2018c).

AQI values for Eddy County were generally in the good range (AQI <50) in 2017 with 67 percent of the days in that range and 30 percent of the days in the "moderate" air quality range. The median AQI in 2017 was 45, which indicates "good" air quality. The maximum AQI in 2015 was 140, which is "unhealthy for sensitive groups" and the 90th percentile was 80 which is "moderate" air quality (USEPA, 2018c).

AQI values for Lea County were generally in the good range (AQI <50) in 2017 with 67 percent, as well, of the days in that range and 32 percent of the days in the "moderate" air quality range. The median AQI in 2017 was 45, which indicates "good" air quality. The maximum AQI in 2015 was 133, which is "unhealthy for sensitive groups" and the 90th percentile was 68 which is "moderate" air quality (USEPA, 2018c). Table 4 lists the days where the AQI were "unhealthy for sensitive groups" or worse for the last ten years. While there are some exceedances, the exceedances to not represent a trend of degrading AQI's.

Table 6 (Air). Number of Days classified as "unhealthy for sensitive groups" (AQI 101-150) or worse (USEPA, 2018c)

Location	**Year**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Chaves County	Days	0	0	0	0	0	1	0	0	0	1
Eddy County	Days	9	2	2	7	10	2	4	0	0	10

Lea County	Days	0	3	0	7	1	2	3	1	0	4

The primary sources of air pollution in the Pecos District area are dust from blowing wind on disturbed or exposed soil, exhaust emissions from motorized equipment, oil and gas development, agriculture, and industrial sources. Table 5 (Air) shows total human caused emissions for each of the counties in the PDO based on USEPA's 2014 emissions inventory in Tons/Year (USEPA, 2014).

Table 7 (Air) Human-Caused emissions in the counties of the Pecos District Planning Area (USEPA, 2014)

County	NOX (1)	CO (2)	VOC (3)	PM10 (4)	PM2.5 (5)	SO2 (6)
Chaves	4,708.4	27,393.2	75,285.4	15,566.9	2,105.7	71.9
Eddy	10,764.0	34,309.6	122,762.2	15,581.4	2,611.1	1,796.8
Lea	17,223.2	30,494.8	97,671.3	14,013.6	2,190.5	5,551.5
Total	32,695.6	93,217.6	295,718.9	45,161.9	6,907.3	7,420.2

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

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, 2017). 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 (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities. The EPA has identified 187 toxic air pollutants as HAPs. The 2005 NATA identifies census tracts with estimated total cancer risk greater than 100 in a million. There are no census tracts in New Mexico with estimated total cancer risk greater than 100 in a million. Southeastern

New Mexico has a total respiratory hazard index that is among the lowest in the U.S. (U.S. Environmental Protection Agency, 2012).

3.4.1.2 Environmental Consequences

Air Resources

The methodology and assumptions for calculating air pollutant and greenhouse gas emissions are described in the Air Resources Technical Report (USDI BLM, 2017). This document incorporates the sections discussing the use of calculators developed by the BLM to address emissions for one well. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national levels. Also incorporated into this document are the sections describing the assumptions that the PDO used in developing the inputs for the calculator (USDI BLM, 2017).

Air Quality

Leasing the subject tracts would have no direct impacts to air quality. Any potential effects to air quality from sale of lease parcels would occur at such time that the leases were developed. Although the hydraulic fracturing of wells for a lease parcel is hard to predict, it is anticipated that with more wells being drilled, there would be an increase in the amount of wells being hydraulically fractured and completed. Volatile organic compounds are emitted during the completion of hydraulically fractured wells. Potential impacts of development would also include increased air borne soil particles blown from new well pads or roads, exhaust emissions from drilling equipment, compressor engines, vehicles, flares, exhaust and fugitive dust emissions from operation and maintenance, and dehydration and separation facilities, and volatile organic compounds during drilling or production activities.

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.

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 equipment required during the construction and drilling, and the potential release of natural gas to the atmosphere during completion.

The second phase 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 workover of the well may occasionally be required, but the frequency of workovers is not predictable since they result from mechanical difficulties of the well bore.

The final phase is to plug and abandon the well and reclaim the well pad and other associated disturbances (i.e. access roads and pipelines). The life of the well is unknown and emission estimates for this phase are not presented.

The degree of impact will also vary according to the characteristics of the geologic formations from

which production occurs. Currently, it is not feasible to directly quantify emissions; however, the potential development scenarios that could result from selection of the proposed action or Alternative B are analyzed for in the calculators developed for the one-well scenario in the Air Resources Technical Report (USDI BLM, 2017). The Air Resources Technical Report provides an estimated emissions calculator for development of one oil or gas well. There are different assumptions made for various well development scenarios; however emissions are estimated for criteria pollutants, hazardous air pollutants and GHG's (USDI BLM, 2017).

It is important to note at the leasing stage, it is uncertain whether APD's 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 the PDO planning area, typically, all of these actions are undertaken during development of an oil or gas well; therefore it is reasonably foreseeable that they may occur on leased parcels.

Assumptions used in the analysis regarding resource impacts are based on past development knowledge and practices and resource concerns specific to each individual parcel. Site-specific impacts would be addressed in a subsequent NEPA document when an Application for Permit to Drill (APD) is received. 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 applicable PDO RMPs, 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.

If lease parcels were developed, short-term impacts would be stabilized or mitigated within five years and long-term impacts are those that would substantially remain for more than five years. Potential impacts and mitigation measures are described below.

Exploration and production would contribute to incremental increases in overall air quality 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 to the PDO. The additional NO2 and VOCs emitted from any oil and gas development on these leases are likely too small to have a significant effect on the overall ozone levels of the area.

Even though the Proposed Action as well as Alternative B of leasing would not contribute to cumulative effects on air resources, future foreseeable development could contribute to cumulative air quality emissions. Cumulative impacts include the combined effect of past projects, specific planned projects and other reasonably foreseeable future actions such as other infield wells being located within these leases. The following analysis of cumulative impacts of the proposed action on air quality will be limited to southeastern New Mexico. Note that the scope of the reasonable foreseeable development of Alternative B is less than the Proposed Action; thus, the scope of cumulative impacts outlined below encompasses Alternative B.

3.4.1.3 Design Features

The BLM requires industry to incorporate and implement 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: adherence to BLM's NTL 4(a) concerning the venting and flaring of gas on Federal leases for natural gas emissions that cannot be economically recovered, flare hydrocarbon gases at high temperatures to reduce emissions of incomplete combustion; water dirt roads during periods of high use to reduce fugitive dust emissions; collocate wells and production facilities to reduce new surface disturbance; implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores; suggest that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and perform interim reclamation to revegetate 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. The EPA has promulgated air quality regulations for completion of hydraulically fractured gas wells. These rules require air pollution mitigation measures that reduce the emissions of volatile organic compounds during gas well completions.

3.4.2 What are the potential impacts of oil and gas leasing to GHGs and Climate Change within the PDO Planning Area?

3.4.2.1 Affected Environment

Greenhouse Gases and Climate Change

Information about GHGs and their effects on national and global climate is presented in the Air Resources Technical Report (USDI BLM, 2017). Leasing the subject tracts under the Proposed Action Alternative would have no direct impacts to climate change as a result of GHG emissions. Any potential effects to air quality from sale of a lease parcel would occur when the lease is developed. Impacts to air quality as a result of lease development would be considered at the time of application for specific projects.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO_2) and methane (CH_4). Because methane has a global warming potential that is 25 times greater than the warming potential of CO_2, the USEPA uses measures of CO_2 equivalent (CO_2e) which takes the difference in warming potential into account for reporting greenhouse gas emissions. Emissions will be expressed in metric tons of CO_2e in this document. Nitrous oxide, a greenhouse gas normally considered, is not a significant contribution in field production activities and is therefore not included in estimating potential direct emissions.

3.4.2.2 Environmental Consequences

There is uncertainty with estimating emissions during the production stage, however some level of estimation can be provided using a top-down approach with various assumptions. BLM has used a top down approach to estimate greenhouse gas emissions. This approach provides a level of comparison for GHGs associated with oil and gas production managed by BLM to U.S. emissions from all oil and gas production and with total national emissions. 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- 2014 (EPA, 2016b), and applying production percentages to estimate emissions for the Permian

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 the BLM and allow for comparison with other sources in a broad sense. Greenhouse gas emissions, measured in metric tons of carbon dioxide equivalent (CO_2e) for New Mexico, federal leases in New Mexico and the Permian Basin are estimated for the Oil and gas production phase in Table 8 (Air).

Table 8 (Air). 2014 Oil and Gas Field Production Emissions (USEPA, 2014).

Source	Oil		Gas		Total Oil and Gas Production
	CO_2	CH_4	CO_2	CH_4	(Metric Tons CO_2e)
New Mexico	23,000	2,583,691	864,579	5,066,619	8,537,889
Federal leases in New Mexico	12,314	1,383,222	525,557	3,079,878	5,000,970
Permian Basin	11,461	1,287,406	167,892	983,886	2,450,645

To establish the exact number of federal wells in the Permian Basin 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. To determine the most transparent and publicly accessible method of estimating the number of active federal wells in the New Mexico portion of the Permian Base, PDO utilized BLM New Mexico Geographic Information System (GIS) and the New Mexico Conservation Division ONGARD Data Search. ONGARD was searched for all active, new, and temporarily abandoned wells in NM. Table 7 shows estimated annual oil and gas field production emissions from the Permian Basin federal leases at 2,450,645 metric tons CO_2e.

Assumptions based on the full lease development of the Proposed Alternative (1,464 wells) and Alternative B (1,099 wells) action will be used in the analysis of oil and gas field production GHG impacts in this EA. In the event that all separate wells were completed on the proposed and Alternative B lease actions, the maximum estimated potential direct emissions resulting from the proposed lease sale could be 201,581 and 151,324 metric tons CO2e per year. Therefore, the estimate of oil and gas field production emissions per well in the Permian Basin is 138 metric tons CO2e annually resulting from the actions of the Proposed Alternative and Alternative B lease sale. This represents 0.10 percent and 0.08 respectively of Total U.S. O&G Field Production GHG emissions and 2.4 and 1.8 percent of New Mexico Total U.S. O&G Field Production GHG emissions for both the proposed and Alternative B's actions.

Table 9 (Air). Potential Direct Greenhouse Gas Emissions Resulting from Proposed Lease Sale (USEPA 2014)

Oil and Gas Field Production	Metric tons (CO_2e) Annually
Total U.S. GHG Emissions From Oil and Gas Field Production	195,600,000
Total New Mexico Emissions From Oil and Gas Field Production	8,537,889
Total Federal Mineral Estate Permian Basin Emissions From Oil and Gas Field Production (17,798 wells)	2,450,645
Total Potential GHG Emissions From Oil & Gas Field Production at Full Development--Proposed Action (1,464 Wells)	201,581 138 MT CO2e/well
Total Potential GHG Emissions From Oil & Gas Field Production at Full Development-- Alternative B Action (1,099 Wells)	151,324 138 MT CO2e/well

Estimated Oil and Gas Production Volumes

Estimates of the oil and gas production volumes that may ultimately be produced from the Proposed Action or Alternative B parcels are needed to quantify any potential GHG emissions associated with end-use emissions from potential development of this proposed action. Based on the analysis provided in the RFD, in the New Mexico portion of the Permian Basin, for southeast New Mexico (Engler & Cather, 2012), the updated RFD in 2013 (Engler, 2013) and the most recent RFD in 2014 (Engler & Cather, 2014), the BLM PDO oil and gas production estimates were generated for the Proposed Action, one thousand four hundred and sixty four and Alternative B, one-thousand ninety-nine parcels using the following criteria:

1. The BLM projected a well density of six (6) horizontal wells per section (640 acres) per play for the Bone Springs, Wolfcamp, Delaware Mountain, and Yeso/Leonard plays.

2. The BLM grouped the Abo, San Andres, Devonian, Glorieta, Grayburg, Pennsylvanian, Strawn, Mississippian, Blinebry, Atoka, Morrow, and Tubb plays as "Other", and projected a well density of six (6) horizontal wells per section (640 acres) for the "Other" group.

3. The RFD predicts that horizontal drilling and completion will continue to increase and that gas prices will remain decreased in the foreseeable future. The one hundred-seventy six parcels lie within four main plays and the "Other" play as listed above and in Table 2.

4. EURs per well for the various plays were determined through decline curve analysis of existing oil and gas production data. The plays and the calculated EURs per well are listed in Table 2 (Air).

Potential indirect GHG emissions- downstream / end-use GHG emissions are usually not calculated for a particular subset of the cumulative / total oil and gas production (i.e., for a field office / planning area oil and gas Reasonable Foreseeable Development [RFD] scenario) but these downstream emissions are directly related to end-use energy consumption. The challenge for estimating these downstream emissions comes with understanding how the oil and gas will ultimately be distributed and used for energy. Because this information is not typically available during the planning stage, an alternate method of end use emissions estimation based on production data was developed. Indirect GHG emissions are estimated based on speculative oil and gas production. Total gas production for the seven parcels during the life of the well is 211,200,000 mcf and total oil production is 70,400,000 bbl. These production values were used to obtain the potential indirect GHG emissions, Table 8.

To estimate end-use GHG emissions, the oil and gas recovery volumes were applied to the Proposed (1,464) and Alternative B (1,099) Action production volumes for the life of well. GHG combustion emission factors and Global Warming Potentials (GWPs) were applied and converted to units of MT/mcf and MT/bbl and finally MT of CO_2e. GHG combustion emission factors and GWPs for natural gas and petroleum were obtained from 40 CFR Part 98, Subparts A and C. GHG end-use emissions from oil production is estimated to be higher than emission from gas production due to the higher carbon dioxide emission factor for oil. Total estimated end-use GHG emission contributions of the proposed and Alternative B actions, if all wells were developed is 300 million metric tons of CO2e and 225 million metric tons of CO2e respectively from oil and gas recovery, see Table 10.

Table 10 (Air). Estimated Indirect (End-Use) GHG emissions based on the Estimated Ultimate Recovery estimates. (EPA Environmental Protection Agency Greenhouse Gas Equivalencies Calculator, May 2016)

Product Category	Estimated Product Quantity Proposed Action	Estimated Product Quantity Alternative B	Emission Factors	Estimated Emissions (MT CO_2e of GHG) Proposed Action	Estimated Emissions (MT CO_2e of GHG) Alternative B
Crude Oil (Bbl)	468,235,076	342,571,374	0.43 MT CO2/bbl	201,341,082.69	147,305,690.83

Natural Gas (Mcf)	1,879,058,303	1,421,724,042	0.055 MT CO2/Mcf	102,818,565.76	77,794,087.96
Total				304,159,648.45	225,099,778.79

Cumulative

Cumulative effects of greenhouse gas emissions can be expected to occur. It is important to note that 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. Estimates were made based on readily available data and reasonable assumptions about potential future development. In addressing cumulative impacts, direct and indirect emissions are estimated.

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

The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Resources Technical Report (USDI BLM, 2017). Potential cumulative effects may occur should an oil and gas field be discovered if these parcels are drilled and other infield wells are drilled within these leases or if these leases become part of a new unit.

It is important to note that the BLM does not exercise control over the specific end use of the oil and gas produced from any individual federal lease. The BLM has no authority to direct or regulate the end use of the produced oil and/or gas. With respect to the rough estimates of indirect CO_2 emissions, it should be noted that it is a difficult to discern with certainty what end uses for the fuels extracted from a particular leasehold might be reasonably foreseeable. For instance, some end uses of fossil fuels extracted from Federal leases include: combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials.

Uncertainties regarding the numbers of wells and other factors result in a moderate to high degree of uncertainty and speculation with regard to GHG estimates at the leasing stage. At the APD stage, more site-specific information on oil and gas activities resulting in GHG impacts would be described in detail. Also at the APD stage, the BLM would review and evaluate operations, require mitigation measures, and encourage operators to participate in the voluntary STAR program.

The very small increase in GHG emissions that could result from approval of the action alternatives would not produce climate change impacts that differ from the No Action Alternative. This is because climate change is a global process that is impacted by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from the proposed action cannot be translated into effects

on climate change globally or in the area of this site-specific action. It is currently not feasible to predict with certainty the net impacts from the proposed action on global or regional climate.

3.4.3 What are the impacts of oil and gas leasing to AQRV's (visibility and deposition) at the Carlsbad Caverns National Park?

3.4.3.1 Affected Environment

Air quality related values (AQRVs) are resources sensitive to air quality and can include a wide variety of atmospheric-chemistry related indicators. Monitoring and modeling of AQRVs help to provide a level of protection to sensitive areas such as Class I park and wilderness areas. For purposes of this analysis the following AQRVs have been considered: visibility, nitrogen deposition, and sulfur deposition. Congress established certain national parks and wilderness areas as mandatory Class I areas where only a small amount of air quality degradation is allowed. Defined by the Clean Air Act, Class I areas include National parks greater than 6,000 acres, wilderness areas and National memorial parks greater than 5,000 acres, and International parks. These areas must have been in existence at the time the Clean Air Act was passed by Congress in August 1977.

There are three Class I areas in or near the planning area: Carlsbad Caverns, Guadalupe Mountains National Park and Salt Creek Wilderness. The most closely watched Class I area near the planning area is the Carlsbad Caverns National Park (CCNP) and the Guadalupe Mountains National Park (GUMO). GUMO has monitoring data representative of the CCNP. The U.S. Park Service is responsible for managing the CCNP and the GUMO. There are two parcels with boundaries within a half-mile of the CCNP, Parcel 20 and Parcel 46. Two parcels are within one-mile of the CCNP, Parcels 50 and 22. All other parcels are 2-miles or greater and some as far as 100 miles or more from CCNP.

The goal of Class I management is to protect natural conditions, rather than the conditions when first monitored. That is, if initial monitoring in a Class I area identifies human-caused changes, appropriate actions should be taken to remedy them, in order to move towards a more natural condition. The goal of Class I management is to protect not only resources with immediate aesthetic appeal (i.e., sparkling clean streams) but also unseen ecological processes (such as natural biodiversity and gene pools) (FLAG 2010). BLM's goals includes managing the PDO activities and development to protect and improve air quality and, within the scope of the BLM's authority, minimize emissions that cause or contribute to violations of air quality standards or that negatively impact AQRVs (e.g., acid deposition, visibility).

3.4.3.2 Environmental Consequences

Visibility

Visibility impairment is a result of regional haze which is caused by the accumulation of pollutants from multiple sources in a region. Emissions from industrial and natural sources may undergo chemical changes in the atmosphere to form particles of a size which scatter or absorb light and result in reductions in visibility.

A network of monitoring stations in or near Class I areas are operated by land management agencies under the Interagency Monitoring for Protected Visual Environments (IMPROVE) program. The network collects data to identify and evaluate patterns and trends in regional visibility and the pollutants which contribute to reductions in visibility. Visibility is quantified using either standard visual range (SVR) or deciviews. SVR is the farthest distance one can see a dark object against a light background as measured in kilometers or miles; higher values are better. Conversely, each change in deciview is roughly equivalent to just noticeable change in visibility; higher deciview values indicate hazier conditions while

lower values are clearer. Figure 1-1 shows visibility extinction trends for GUMO. The top line on each graph is for the 20% worst days and the bottom line is for the 20% best days. A downward sloping line means less reduction of visibility and therefore an improvement. Appendix F of the Air Resources Technical Report provides source categories for visibility impairment for the average of the worst 20% days at each Class I area near the Planning area and is tiered to in this analysis (BLM 2017).

Visibility on worst days at Guadalupe Mountains National Park may have diminished. A careful analysis of fire activity in the area would be necessary in order to draw conclusions about the cause of some peaks in recent years (Colorado State University, 2014). A study of Air Pollutant Emissions and Cumulative Air Impacts done for the Carlsbad Field Office indicates that pollutants contributing to reductions in visibility are largely coming from outside the region (Applied Enviro Solutions, 2011).

In most cases visibility trends have been flat or improving. Implementation of Best Available Retrofit Technology (BART) strategies as required under the federal Regional Haze Rule over the next few years should result in further improvements. Table 1-1 (Air) displays SVR visibility ranges in kilometers for the GUMO Park representing the CCNP in most recent years.

Figure 1-1 (Air)

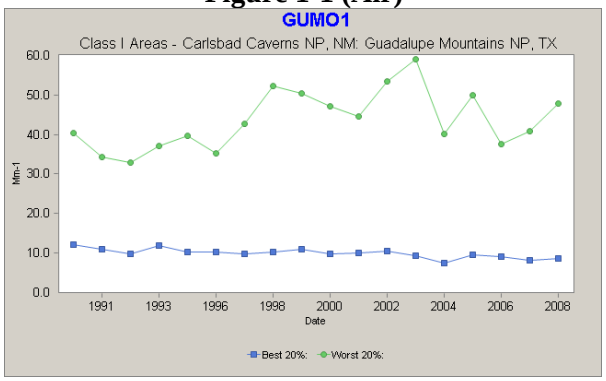


TABLE 1-1 (Air)
STANDARD VISUAL RANGES FROM "*IMPROVE*" MONITORS NEAR THE PLANNING AREA

MONITOR	STANDARD VISUAL RANGE (KM)[1]		
	AVERAGE OF HIGHEST VISIBILITY DAYS	AVERAGE OF INTERMEDIATE VISIBILITY DAYS	AVERAGE OF LOWEST VISIBILITY DAYS
Guadalupe Mountains National Park[2,3]	224	143	87

SOURCE: Interagency Monitoring of Protected Visual Environments, 2018.
[1]Standard visual range represents the maximum distance at which one can identify a black object against the horizon.
[2]The averaging period was 2006 to 2016 for monitoring data.
[3]This site also represents Carlsbad Caverns National Park which is within the Planning Area.

IMPROVE = Interagency Monitoring of Protected Visual Environments; km = kilometers

Visibility modeling was performed using the Pecos District RFD potential oil and gas well development scenario and with mitigation using EPA's on-the books emission controls and additional management controls. This analysis tiers to the modeling that was performed in the Air Resources Technical Support Document (ARTSD) for the Carlsbad Field Office for results of visibility impairment indicating that for the Carlsbad region visibility impacts to CCNP at the project and cumulative levels are minimal and not expected to be of concern for the CCNP (URS 2013, BLM 2012). The visibility screening analysis followed the recommendations in the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report - Revised Guidelines (FLAG 2010). The analysis relies on a 1.0 delta-dv (change in visibility) threshold, calculated for a base case of 2017 and future RFD years. Results of Table $-111 indicate that there are no days in which the threshold is exceeded at both the project and cumulative level for the CCNP. Any refinement down to a smaller scope of development or project specific level would likely reduce the number of days of total visibility impacts that would be likely closer to matching actual base and future visibility impacts/baseline conditions (URS, 2013).

Deposition

Deposition of pollutants through direct or dry atmospheric transport and precipitation can result in acidification of water and soil resources in areas far removed from the source of the pollution, as well as causing harm to terrestrial and aquatic species. The Acid Rain Program has resulted in greatly reduced levels of the most damaging pollutants. Monitors near the border at Guadalupe Mountains National Park may shed some light on conditions in New Mexico. Deposition data for nitrogen and sulfur deposition can be accessed through the National Atmospheric Deposition Network (NADP) website.

Deposition modeling was performed using the Pecos District RFD potential oil and gas well development scenario and with mitigation using EPA's on-the books emission controls and additional management controls. This analysis tiers to the modeling that was performed in the ARTSD for results of nitrogen and sulfur deposition impairment (URS 2013 & BLM 2012).

To access potential nitrogen and sulfur deposition impacts in the planning area, deposition impacts were compared to the National Park Service (NPS) screening deposition analysis thresholds (DATs), which are defined as 0.005 kilogram per hectare per year (kg/ha/yr) in the western United States for both nitrogen and sulfur. A DAT is the additional amount of nitrogen or sulfur deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered to be insignificant. The DAT is a screening threshold that was developed primarily to assess impacts from a single stationary source (FLAG 2008 & 2010). Modeling results showing deposition greater than a DAT do not strictly indicate the need for mitigation. If a DAT is exceeded, cumulative modeling may be required to demonstrate that cumulative deposition is below the level of concern (LOC). The LOC for the nitrogen and sulfur deposition values, defined by the NPS and USFS is 3 kg/ha/yr for N and 5 kg/ha/yr for S (Fox 1989).

Results of analysis showed that the maximum annual N DAT threshold at the project level was exceeded for CCNP but may be below the LOC at specific receptors. Cumulatively the LOC for nitrogen was found to be below the LOC value of 3 kg/ha/yr for CCNP (Tables 4-36). Deposition rates that are below the level of concern are believed to cause no adverse impacts. The maximum annual S DAT at the project and cumulative level was below the DAT and LOC thresholds respectively for CCNP (Table 4-37). Deposition rates that are below the level of concern are believed to cause no adverse impacts. Appendix R and S of the ARTSD provide detailed N deposition results for Project and cumulative impacts

respectively. It should be noted that for a large aggregate project that includes thousands of sources (such as oil and gas development in the CFO), deposition greater than the DAT is typical. For the parcels identified as being within closest proximity of the CCNP degradation of air quality related to nitrogen deposition could occur depending on the number of sources present during development and any mitigation applied.

In 2016, Chevron developed a Master Development Plan in which 436 oil and gas wells were projected to be developed on over 106 well pads. Although it is not anticipated that all wells will be developed concurrently during this lease sale; similar results of AQRVs can be expected for large well development projects. The Chevron analysis extends the URS 2013 modeling that was performed and updates nitrogen oxide (NOx) emissions in the project area. The results of acid deposition monitoring showed incremental exceedances of the N DAT threshold (DAT) of 0.005 kilogram per hectare-year (kg/ha-yr) in the Carlsbad Cavern National Park during drilling operations, but would be well below the DAT once drilling has completed (BLM, 2016).

It is expected that a refined analysis may be required at the APD stage for well development that could potentially impact nitrogen deposition at the CCNP. A refined analysis of acid deposition must address the following criteria:
• Is the affected area sensitive to deposition?
• Is the affected area currently impacted by deposition?
• Have critical loads or target loads been developed for the affected area?
• Does current deposition exceed the critical load or target load

This refined analysis should be in consultation with the National Park Service as prescribed in Federal Land Managers' Air Quality Related Values Work Group (FLAG) guidance (USFS et al. 2011). The FLMs will do their best to manage and protect resources at every area that they administer. Where possible, the most intrusive monitoring and instrumentation should be conducted adjacent to the Class I area - if such areas adequately represent the area of concern. FLMs believe that the need to minimize potential impacts on a Class I area should be a major consideration in the BACT determination for a project proposed near such an area. Therefore, if a source proposes to locate near a Class I area, additional costs to minimize impacts on sensitive Class I resources may be warranted, even though such costs may be considered economically unjustified under other circumstances (FLAG 2010).

Under the Prevention of Significant Degradation (PSD) provisions a FLM has several tools he/she may use to protect AQRVs. A state may not issue a PSD permit to allow construction or modification of a major emitting facility when the applicable Federal Land Manager files a notice alleging the facility may cause or contribute to a change in the Class I area's air quality and by identifying the potential adverse impact of such a change, unless: the facility owner demonstrates that the facility's emissions of particulate matter, sulfur dioxide, and nitrogen oxides will not cause or contribute to concentrations which will exceed the maximum allowable increases for that Class I area.

If the available information is insufficient for the FLM to determine if the proposed action will cause or contribute to an adverse effect to AQRVs, the FLM may ask for deposition and deposition effects monitoring and/or research in the FLM area. If the proposed action will likely cause or contribute to an adverse effect to AQRVs, the FLM may recommend permit conditions that ensure mitigation, including stricter emissions controls and effective emissions offsets. If no mitigation is possible, the FLM may recommend denial of the permit. Questions regarding these recommendations should be resolved through consultation with the appropriate FLM and the appropriate State and/or EPA modeling representative (FLAG 2010).

3.4.3.3 Design Features

3.5 Issue 4: What are the potential impacts to water, including potential impacts on water quality, as it relates to public health and safety?

3.5.1 Affected Environment

Surface water within the project area is located in perennial and ephemeral springs, ephemeral playas, and stock tanks. Groundwater within the PDO can be obtained from aquifers located within the Rustler, Castile, Tansill, Yates, Seven Rivers, Queen, Grayburg, Artesia, Ogallala, and Chinle Formations,- the Captain and San Andres Limestones, the Glorieta and Santa Rosa Sandstones, and the Dockum Group. Most of the groundwater exists in unconfined aquifers, although confined groundwater aquifers exist under artesian conditions in the San Andres Formation. The depth to shallow unconfined groundwater varies from 1 foot to 400 feet throughout the PDO (New Mexico Office of the State Engineer data). The depth to confined groundwater can be greater than 400 feet. Groundwater recharge within the PDO is affected by geology and precipitation. The Pecos River is the only water quality impaired stream presently found within the PDO (2008-2010 State of New Mexico Integrated Clean Water Act 303(d) and 305(b) Report).

Potential impacts to water related issues within the project area owing to the proposed lease action could include impacts to flood plains, rivers, streams, playas, surface water, infiltration rates, sedimentation, and runoff. (See associated stipulations at bottom of this section, which directly address impacts to these resources). Water availability in the area could also be impacted owing to water use/groundwater pumping associated with oil and gas development. In addition, there are potential impacts to public water sources as a number of parcels proposed for lease are connected to the City of Carlsbad water supply by way of the Capitan Aquifer lies within the boundary of the City of Carlsbad's Water Supply Field, an area that contains wells used to pump groundwater from the Capitan Aquifer.

The cumulative impacts of surface disturbance could lead to increased occurrence and magnitude of flood events, increased erosion, higher sediment loads in downstream surface waters, and decreased groundwater recharge and availability.

Following in-office GIS and desk-top exercises, all parcels (under the Proposed Action, as well as Alternative B) found to be located on/within floodplains, streams, rivers, seeks, tanks, or playas were assigned one or more of the following stipulations: SENM-S-19 *Controlled Surface-Use Playas and Alkali Lake*, SENM-S-18 *Controlled Surface Use- Streams, Rivers and Floodplains,* SENM-S-20 *Controlled Surface Use- Springs, Seeps and Tanks* (Refer to Appendix 3 for details on stipulations and Appendices 1 and 2 for parcels that were assigned these stipulations). Thus, impacts to these resources are addressed at the stipulation level. In addition, all parcels found to occur on slopes greater than 30 % were assigned the lease stipulation SNM-S-17 *Slopes and Fragile Soils.*

3.5.2 Environmental Consequences

3.5.2.1 Impacts of the Proposed Action

Impacts to floodplains, streams, rivers, seeps, springs, tanks, or playas have been reduced to levels below significance (under the Proposed, as well as Alternative B) owing to application of associated stipulations to all relevant parcels (see above).

Total amount of water use, under the framework of RFD, for the Proposed Action was calculated by taking the number of well projected to be established, and multiplying that number by the average amount of water use per well. For the purposes of this analysis, the average water use per horizontal well for the "Bone Spring" play is 7.3 acre-feet (AF), and was taken to be representative of the project area. The estimated number of wells for potential full development is 1,463. Thus, total water use for potential full development is 10,679.9 AF. It should be noted that water used in oil and gas operations is commonly brought in from other areas, and/or otherwise sourced from off-site. Therefore, water use associated with the Proposed Action may not necessarily be drawn down from on-site sources.

Under the Proposed Action, 31 parcels (9,692 acres) are included in the lease sale that are potentially connected to the public water supply for the City of Carlsbad, New Mexico (connected to the Capitan Aquifer). Appropriate BMPs and CFOs will be applied to mitigate risk.

3.5.2.2 Impacts of Alternative B

Impacts to floodplains, streams, rivers, seeks, tanks, or playas have been reduced to levels below significance (under Alternative B, as well as Proposed Alternative) by application of associated stipulations to all relevant parcels.

As the total number of parcels proposed for leasing is less under Alternative B (142 parcels) the degree of impact to water related resources is reduced, as compared to the Proposed Action. Projected water use under Alternative B is 8,015.4 AF.

Under Alternative B, 31 parcels (9,692 acres) are proposed for deferral. Under Alternative B, potential impacts to the City of Carlsbad water supply would be avoided.

Water Usage

The analysis of the water usage for Pecos District was taken from the New Mexico Office of the State Engineer (NMOSE), New Mexico Water Use by Categories Technical Report 54 (Longworth, Valdez, Magnuson, & Richard, 2013). This report (the report) is prepared every five years by the NMOSE and represents the most comprehensive, current, and useful water use data available. This analysis tabulates water usage for the BLM Pecos District by category, and then more closely examines the category of Mining (MI). This section concludes with a projection of water usage based on the RFD analysis and the water usage data in the report for the Mining category and its application to this lease sale.

Table 1 (Water) lists the total water withdrawals in the nine water use categories contained in *the report* for Pecos District (Lea, Eddy, and Chaves Counties) and figure 1 shows a pie chart for the total water withdrawals. Table 2 (Water) lists the water withdrawals for the Mining category and figure 2 (Water) shows a pie chart for this data.

The Mining category includes the following self-supplied enterprises that extract minerals occurring naturally in the earth's crust: Solids, such as potash, coal, and smelting ores; Liquids, such as crude petroleum; Gases, such as natural gas. The breakdown of the major industries in the Mining category are: Metals; Oil and Gas; Potash; Aggregate; Industrial; Coal; and Geothermal. Note that the unit for water volume used in this analysis is acre-feet (AF).

Table 1 (Water)

Water Usage for Pecos District, 2010

Water Usage for Pecos District, 2010 (AF)

	Lea County			Eddy County			Chaves County			
Category	WSW	WGW	TW	WSW	WGW	TW	WSW	WGW	TW	TW Total
Commercial	0	1,866	1,866	0	504	504	199	2,591	2,790	5,160
Domestic	0	1,498	1,498	0	203	203	0	1,120	1,120	2,821
Industrial	0	270	270	0	2,109	2,109	0	63	63	2,442
Irrigated Agriculture	0	172,297	172,297	78,488	109,738	188,226	15840	225,759	241,599	602,122
Livestock	75	2,111	2,186	88	1,246	1,334	231	8,112	8,343	11,863
Mining	0	2,006	2,006	0	9,303	9,303	0	225	225	11,534
Power	0	3,781	3,781	0	0	0	0	0	0	3,781
Public Water Supply	0	13,195	13,195	0	15,465	15,465	0	16,559	16,559	45,219
Reservoir Evaporation	0	0	0	13,540	0	13,540	0	0	0	13,540
Total	75	197,024	197,099	92,116	138,568	230,684	16,270	254,429	270,699	698,482

Note. WSW is withdrawal surface water, WGW is withdrawal ground water, TW is total withdrawals, and TW Total is the sum of TW for each county. The TW Total for Pecos District is 698,482 AF, or 18% of the state total withdrawals for all water use.

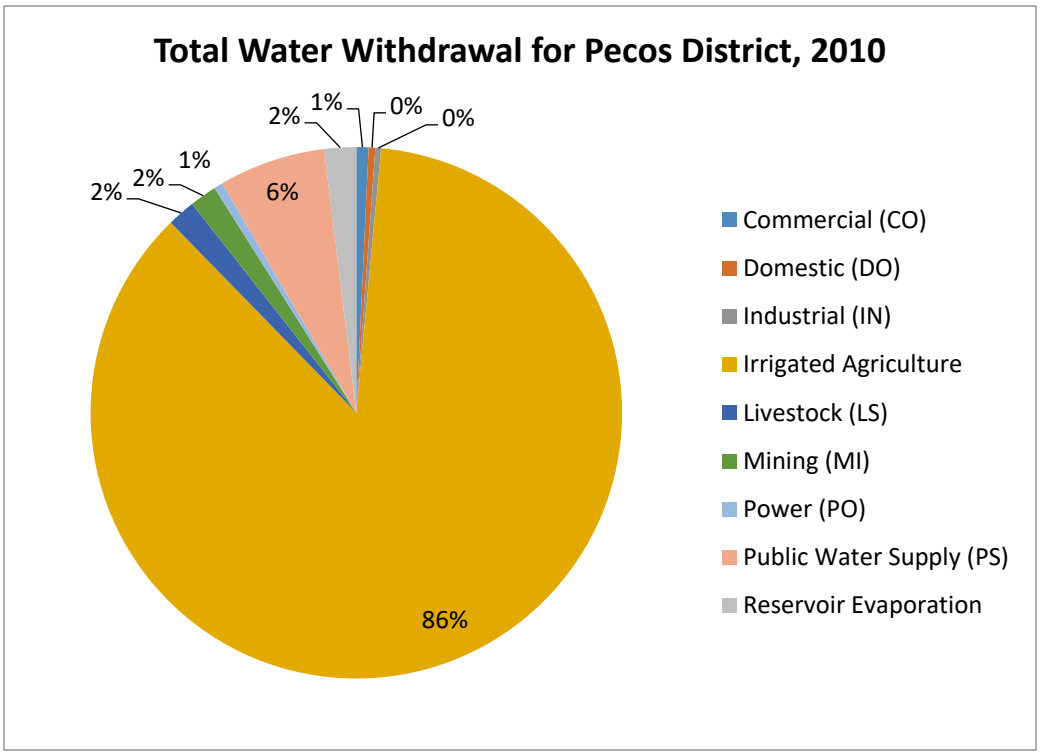


Figure 1(Water). Total water withdrawal for Pecos District, 2010. Categories are defined in the Report. Some 86% of the total water withdrawal for Pecos District is for Irrigated Agriculture and approximately 2% (1.66%) for MI.

Table 2 (Water)

Percent Water Use by Mining Category

Percent Water Use by Mining Category		
Industry	**% 2010 State**	**Calculated AF**
Metals	64	26598
Oil and Gas	5.4	2244
Potash	22	9143
Aggregate	3.8	1579
Industrial	2.5	1039
Coal	2.3	956
Geothermal	0	0
Total		41559

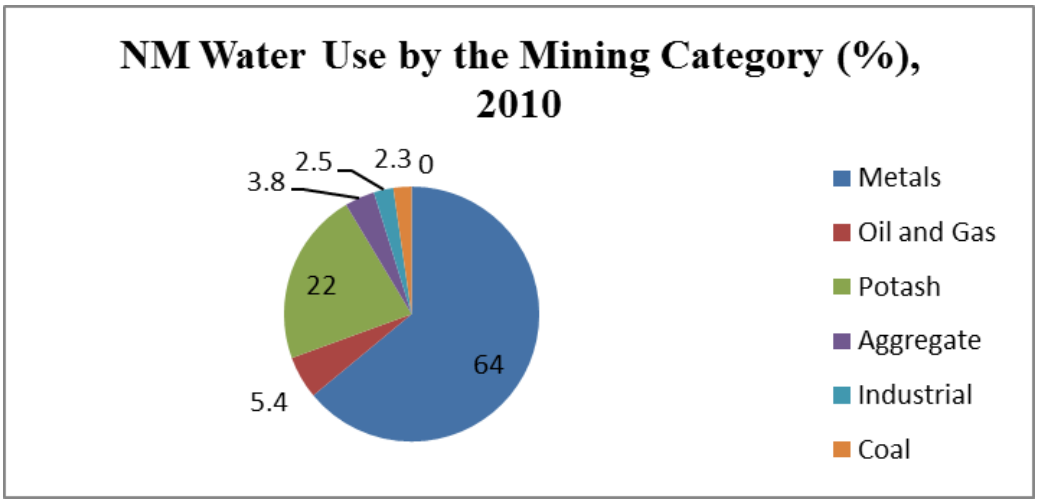


Figure 2 (Water). Oil and gas accounts for 5.4% of NM Water Use by Mining category (2,244AF).

Discussion

Pecos Distract water usage accounts for about 18% (698,482 AF) of the total withdrawals for the state. Irrigated Agriculture is the largest category accounting for about 86% (602,122 AF) of the total water withdrawal for Pecos District. Approximately 84% (698,482 AF) of the total water use for Pecos District is from groundwater, with 100%, 94%, and 60% groundwater use for Lea, Chaves, and Eddy Counties,

respectively.

The data presented for the Mining Category in *the Report* are for the state; however, water use in this category is most likely from the Permian Basin with some water use from the San Juan Basin. Figure 2 shows the state wide water use of the MI category. The largest user was Metals at 64% (26,598 AF). Oil and gas used approximately 5.4% (2,244 AF) of the total as compared to Potash at 22% (9,143 AF). It is possible to make a linear projection of water use for the RFD scenario using data from *the Report* and adding additional water use due to increased drilling predicted by the RFD to the "Oil and Gas" Industry row in Table 2 (Water), while keeping the other rows constant. This method will be used in the Reasonable Foreseeable Development section.

Reasonable Foreseeable Development

The RFD (Engler & Cather, 2012) is a reasonable estimate of development associated with hydrocarbon production in southeast New Mexico for the next 20 years in the New Mexico portion of the Permian Basin, BLM Pecos District. The RFD is a comprehensive study of all existing plays and an analysis of recent activity, historical production, emerging plays for future potential, and completion trends. The RFD was updated in 2013 (Engler T. , 2013), which changed the potential, in the Jal, NM area, from low potential to high potential. An update of the RFD for the BLM Pecos District was completed in November, 2014 (Engler, Thomas W.; Cather, Martha, 2014). The RFD is used to inform decision and policy makers about oil and gas development in the Pecos District.

Basically, two RFD scenarios will be considered here: the "Base RFD"*;* and the "Lease RFD." The Base RFD is the 2012 and 2014 update of the RFD as originally presented in (Engler, 2012&2014). The Lease RFD modified certain assumptions in the Base RFD based on current "professional judgement" of the engineering staff and resource specialists in the CFO. The main assumptions and differences between the Base RFD and the Lease RFD are contained in Table 3.

Table 3 (Water). *Planning Factors Based on the Base RFD and the Lease RFD*

Factor	Base RFD	Lease RFD
Average Water Use per Horizontal Well during a HF operation	7.3 AF (2.4 million gallons)	7.3 AF (2.4 million gallons)
Average Water Use per Vertical Well during a HF operation	1.53 AF (500,000 gal)	All wells assumed horizontal
Number of Wells Needed for Reservoir Development (play)	4 wells per section per play (Horizontal Wells)	6 wells per section per play (Horizontal Wells)
Percentage of horizontal wells in the Bone spring	84%	Assumed 100%
Percentage of horizontal wells in the Leonard	14%	Assumed 100%

Base RFD

The main results of the Base RFD are contained in Table 4 (Water). Note the total number of wells (NOWs) and Water Use (WU) is 5012 and 32,769 AF, respectively.

Table 4 (Water). *Base RFD BLM Surface Totals*

Play	NOWs		WU (AF)	
	V	H	V	H
Delaware		2213		16156
Bone spring	96	437	147	3192
Abo		1155		8429
Leonard	480	78	735	78
Vacuum		552		4032
Subtotal	576	4436	882	31887
Total	5012		32769	

Note. NOWs are the number of wells; WU is water use, in acre-ft (AF); V is the number of vertical wells; and H is the number of horizontal wells.

Figure 3 (Water) is a projection of WU taking into consideration the increase in WU from the Base RFD. The total WU for BLM is 32,769 AF for the Base RFD scenario. The RFD is a 20 year scenario. For any given year, the WU would be the total WU for BLM divided by 20 years, giving a 1638 AF increase over the 2244 AF in *the Report*, for a total of 3882 AF for the Oil and Gas Industry (see Table 2). Figure 3 (Water) shows that the WU for the Oil and Gas Industry would increase from 5.4% to 9% of the Mining category.

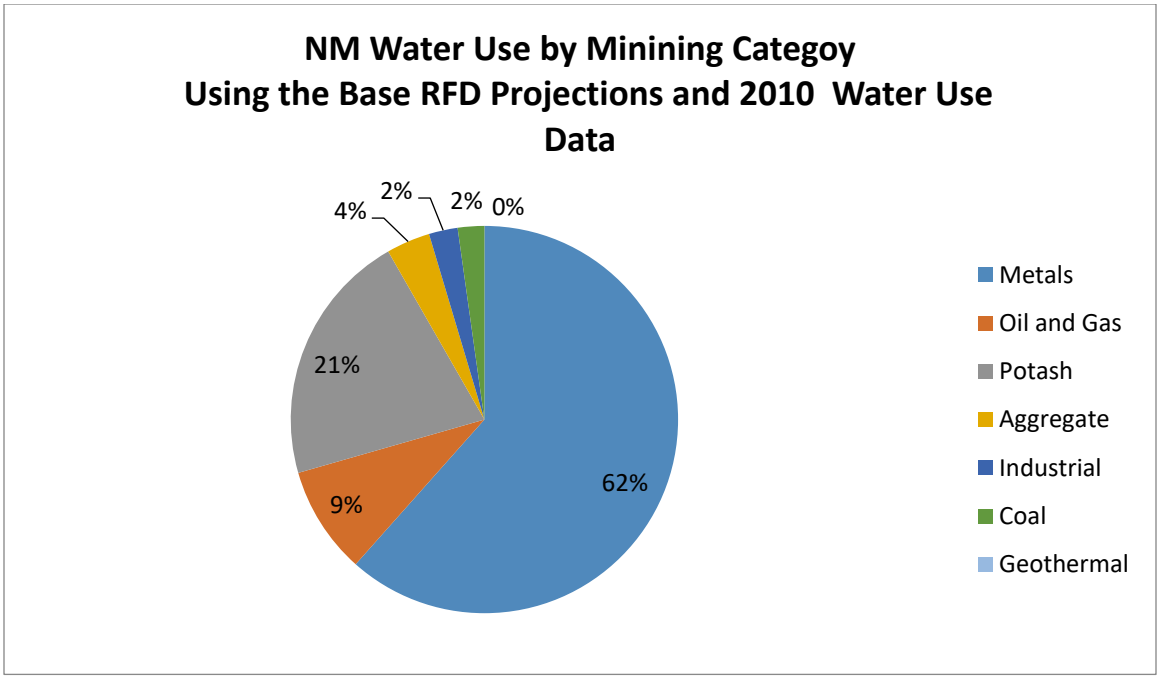


Figure 3 (Water). Lease RFD

The main results of the Lease RFD are contained in Table 5 (Water). Note the NOWs and WU is 7,517 and 54,878 AF, respectively.

Table 5 (Water). *Lease RFD BLM Surface Totals*

Play	NOWs	WU (AF)
Delaware	3320	24234
Bonespring	800	5840
Abo	1732	12644
Leonard	837	6113
Vacum	828	6048
Total	7517	54878

Note. NOWs are the number of wells and WU is water use, in acre-ft (AF).

Figure 4 (Water) is a projection of WU taking into consideration the increase in WU from the Lease RFD. The total WU for BLM is 54,878 AF for the Lease RFD scenario. The RFD is a 20 year scenario. For any given year, the WU would be the total WU for BLM divided by 20 years, giving a 2744 AF per year increase over the 2244 AF per year in *the Report*, for a total of 4,988 AF per year for the Oil and Gas

Industry (see Table 2). Figure 4 (Water) shows that the WU for the Oil and Gas Industry would increase from 5.4% to 11% of the Mining category.

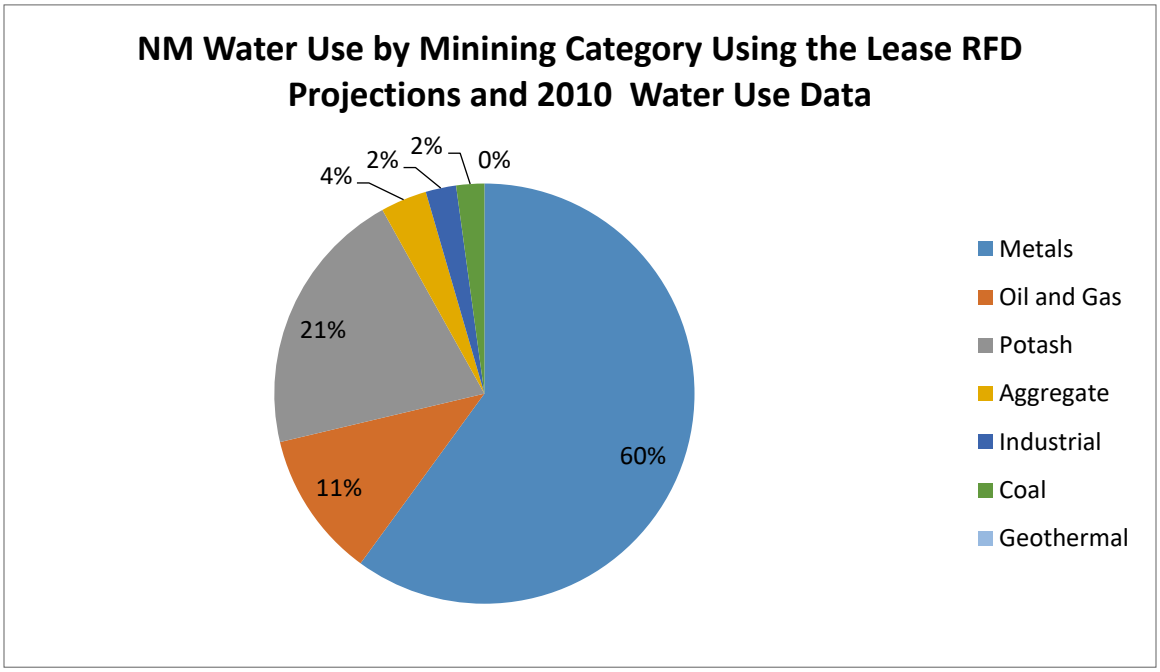


Figure 4 (Water).

Cumulative Impacts

Cumulative water use for the Lease Sale EA is shown in Table 6 (Water). The water use for the proposed action is 10680 AF, which is 33% of the total water use for the Base RFD and 19% of the Lease RFD. The proposed action would increase the "NM Water Use by Mining Category" from 5.4% to 7%. The total water use for Alternative B is 8015 AF, which is 24% of the total water use for the Base RFD and 15% of the Lease RFD. Alternative B would increase the "NM Water Use by Mining Category" from 5.4% to 6%.

Table 6 (Water). *Cumulative Water Use*

Lease Sale EA					
	NOWs	WU (AF)	Percent of Base RFD	Percent of Lease RFD	% Lease RFD Projection
Proposed Action	1463	10680	33	19	7
Alternative B	1098	8015	24	15	6

At the lease sale stage it is speculative to predict the actual source of water that will be used during HF operations. Potentially more information would be known about the actual source of water at the APD stage and impacts predicted therefrom. Approximately 84% of water use in Pecos District is from ground water. Table 7 (Water) shows the potential sources of water in Pecos District and Figure 5 (Water) is an idealized cross section of these aquifers.

Table 7 (Water). *Potential Sources of Water in Pecos District*

Aquifer Name	Description
Pecos Valley Alluvium	Surficial deposits along the Pecos River
Dewey Lake and Santa Rosa	Redbed sandstones. Inconsistent water source.
Rustler Formation (Culebra and Magenta)	Dolomite, fractured and dissolution zones. Good spatial distribution.
Capitan Reef	Limestone, Karstic formation. Good quality west of the Pecos, low quality towards the east.
Ogallala	Sand and gravel. Offsite aquifer where water imported to area.

The BLM CFO contracted Sandia National Lab on water sustainability in Pecos District related to Oil and Gas. The contract includes a study of wells in high potential areas, water chemistry, sources of potential water that will be used in HF, and a system dynamics model of the system. The CFO will have the capacity to apply this model during future NEPA actions. Unfortunately, the study and model are in draft and are not available to be applied at this time. The contract with SNL should complete this year. (Longworth, Valdez, Magnuson, & Richard, 2013)

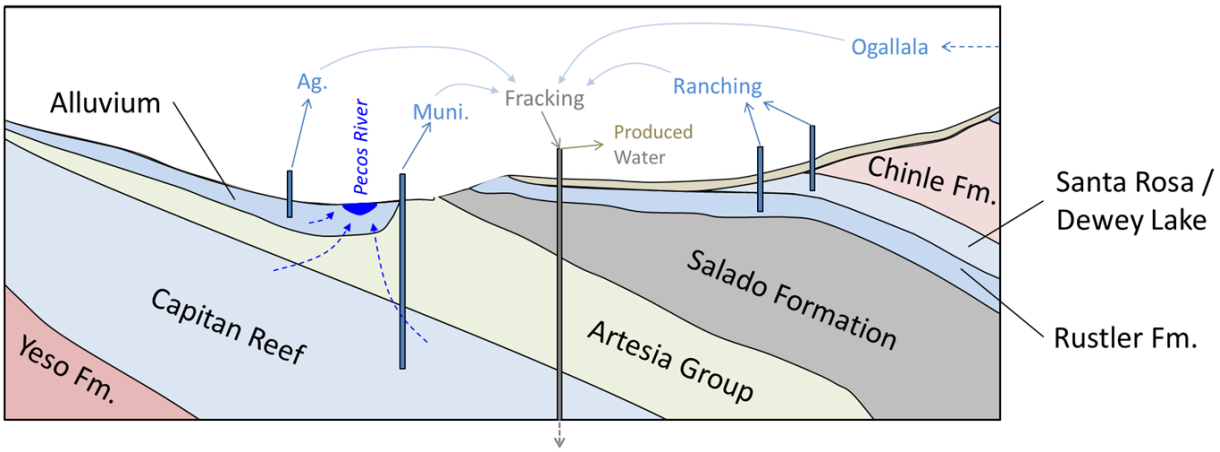


Figure 5 (Water). Idealized geologic cross-section of potential water sources in Pecos District.

Source: Summers, W.K., 1972, Geology and regional hydrology of the Pecos river basin, New Mexico, Open File Report #37, New Mexico Water Resources Institute, New Mexico State University, Las Cruces, New Mexico, 393 p .

The RFD scenario is a 20 year glance into Oil and Gas Development potential. Based on the maximum water usage scenario analysis above, water usage per year is expected to increase by 2,744 AF. This is .4% of the total water usage for the PDO (Table 1 (Water)). Since the percentage of water use for this lease sale is such a small portion of the overall usage in the PDO, BLM does not expect the lease sale to have a significant impact on ground and surface water resources in this area.

3.5.2.3 Impacts of the No Action Alternative

Under the No Action alternative, BLM would not hold the lease sale and lands would be managed as they are under their respective RMPs.

3.5.3 Design Features

In addition to the associated stipulations (described above), BMPs and Conditions of approval (COAs), which can be added at the site-specific APD stage of development, can work to further reduce impacts to water resources. Moreover, parcels that were identified as having high or medium potential to occur on cave/karst features were assigned correlated lease stipulations. This works to further reduce the potential impacts to water quality in the project area by removing from lease parcels that could be readily connected to underground water sources.

4.0 CONSULTATION AND COORDINATION

4.1 Endangered Species Act of 1973

The effects of Oil and Gas leasing development on T+E species were analyzed through Section 7 consultation completed for the 1997 RFO RMP and CFO RMPA (Cons. # 2-22-96-F-128). In April 2008, the BLM PDO SSS RMPA amended both of these land use plans in portions of Chaves, Roosevelt, Eddy and Lea Counties, to ensure continued habitat protection of two BLM special status species; the lesser prairie-chicken (Tympanuchus pallidicinctus) (LPC) and the dunes sagebrush lizard (Sceloporus arenicolus) (DSL). This action is in compliance with T+E species management outlined in the September 2006 (Cons. #22420-2007-TA-0033) Biological Assessments and in accordance with the requirements under the FLMPA and the NEPA.

While Federal regulations and policies require the BLM to make its public land and resources available on the basis of the principle of multiple-use, 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 T+E by the USFWS.

4.2 National Historic Preservation Act (NHPA) 1966

Compliance with Section 106 of the NHPA for routine undertakings are adhered to by following the Protocol Agreement between NM BLM and the New Mexico State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. The action is in compliance with the following BLM Instruction Memorandums

- NM-2004-035 *Consultations with Indian Tribes Regarding Traditional Cultural Properties and Sacred Sites in the Fluid Minerals Program*,
- WO-2012-061 *Revised Programmatic Agreement Regarding the Manner in which the Bureau of Land Management will meet its Responsibilities under the NHPA*, and
- WO-2012-062 *Implementation of the Department of Interior Tribal Consultation Policy*

Tribal consultation is initiated by certified mail notification regarding each lease sale activity. If Traditional Cultural Properties (TCP) or heritage-related issues are identified, such parcels are withheld from the sale. If the same draft parcels appear in a future sale, a second request for information is sent to the same recipients and the parcels will be held back again.

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

The RFO sent invitations to participate in government to government consultation to the following individuals on 10 April 2018:

Letters Sent by RFO on April 10, 2018		
Name of Individual	**Role of Individual**	**Native American Tribe**
Bobby Komardley	Chairman	Apache Tribe of Oklahoma
Seth Morgan	Tribal Historic Preservation Officer	Apache Tribe of Oklahoma
William Nelson, Sr.	Chairman	Comanche Indian Nation
Martina Callahan	Tribal Historic Preservation Officer	Comanche Indian Nation
Matthew Komalty	Chairman	Kiowa Tribe of Oklahoma
Arthur Blazer	President	Mescalero Apache Tribe
Holly Houghton	Tribal Historic Preservation Officer	Mescalero Apache Tribe
Carlos Hisa	Governor	Ysleta del Sur Pueblo
Javier Loera	Tribal Historic Preservation Officer	Ysleta del Sur Pueblo

As of July 2018, no responses have been received by the RFO.

The CFO sent invitations to participate in government to government consultation to the following individuals on April 2, 2018:

Letters Sent by CFO on April 2, 2018		
Name of Individual	**Role of Individual**	**Native American Tribe**
Jose R. Benavides	Governor	Pueblo of Isleta
Arthur Blazer	President	Mescalero Apache Tribe
Holly Houghton	THPO	Mescalero Apache Tribe
Carlos Hisa	Governor	Ysleta Del Sur Pueblo
Matthew Komalty	Chairman	Kiowa Tribe of Oklahoma
Bobby Komardley	Chairman	Apache Tribe of Oklahoma
William Nelson, Sr.	Chairman	Comanche Indian Nation
Tim Nuvangyaoma	Chairman	The Hopi Tribe

The CFO received one response from The Hopi Tribe.

5.0 LIST OF PREPARERS

Pecos District Office
Jim Stovall- District Manager
Bob Ballard- Natural Resource Specialist
Ricky Flores- Natural Resource Specialist
Glen Garnard- Planning and Environmental Coordinator
Chelsie Dugan- Hydrologist
Michael McGee- Hydrologist
Rolando Hernadez- Cartographic Technician
Hector Gonzalez- Carlsbad RMP Team Lead
Bruce Boeke- Archaeologist
Courtney Carlson- Archaeologist
Cassandra Brooks- Wildlife Biologist
Randy Howard- Wildlife Biologist
James Rutley- Solid Minerals Geologist (Potash)
Christopher Bolen- Geologist
Kyle Rybacki - Cave Specialist/Outdoor Recreation Planner

6.0 REFERENCES

Anderson, D.E. 1984. Military training and the ecology of raptor populations at Fort Carson, Colorado. M.Sc. thesis, University of Wisconsin, Madison, WI.

Anderson, D.E., O.J. Rongstad, and W.R. Mytton. 1990. Home-range changes in raptors exposed to increase human activity levels in southeastern Colorado. Wildlife Society Bulletin 18: 134-142.

Applied Enviro Solutions. (2011). *Southeast New Mexico Inventory of Air Pollutant Emissions and Cumulative Air Impact Analysis 2007.* Carlsbad: BLM Carlsbad Field Office.

BLM, 2012. Reasonable Foreseeable Development Scenario for the BLM New Mexico Pecos District. New Mexico Institute of Mining and Technology. January.

[CEQ 2016] Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effect of Climate Change in National Environmental Policy Act Reviews. Council of Environmental Quality, August 1, 2016 .

Colorado State University. (2014). *VIEWS 2.0*. Retrieved January 3, 2014, from Visibility Information Exchange Website: http://views.cira.colostate.edu/web/Trends/

Engler, T. Cather, M. (2014). Update to the Reasonable foreseeable Development (RFD) for the BLM Pecos District, NENM Final Report. Socorro: New Mexico Institute of Mining and Technology.

Engler, T. W. (2013, November 16) Response to comments on the DEIS for the Ocho Mine Project. Socorro, NM, USAEngler, T.W.&Cather, M. (2012) Reasonable Foreseeable Development (RFD) Scenario for the B.L.M. New Mexico Pecos District. Socorro: New Mexico Institute of Mining and Technology

FLAG, 2008. Guidance on Nitrogen and Sulfur Deposition Analysis Thresholds. National Park Service-Air Resources Division, U.S. Fish and Wildlife Service-Air Quality Branch. March 2008.

FLAG, 2010, Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report-Revised (2010)

Fox, Douglas, et. al, 1989. "A Screening Procedure to Evaluate Air Pollution Effects on Class I Wilderness Areas." General Technical Report RM-168. U.S. Department of Agriculture Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Fuhlendorf, Samuel D., Woodward, Alan J.W., Leslie Jr., David M., and Shackford, John S. 2002. Multi-scale Effects of Habitat Loss and Fragmentation on Lesser Prairie-Chicken Populations of the U.S. Southern Great Plains. Landscape Ecology 17: 617-628.

Hagen, Christian A., Pitman, James C., Loughlin, Thomas M., Sandercock, Brett K., Robel, Robert J., and Applegate, Roger D. Impacts of Anthropogenic features on Habitat use by Lesser Prairie-Chickens. Studies in Avian Biology No.39.

Hansen, A.J., R.P. Neilson, V.H. Dale, C.H. Flather, L.R. Iverson, D.J. Currie, S. Shafer, R. Cook, and P.J. Bartlein. 2001. Global change in Forests: Responses of species, Communities, and Biomes. BioScience 51(9): 765-779.

Hoadley, J., and Speilman, J. 2010. Estimating Greenhouse Gas Emissions from Oil and Gas Development on BLM Lands in New Mexico. Bureau of Land Management

Hogan, Patrick. 2006. Southeastern New Mexico Regional Research Design and Cultural Resource Management Strategy. Office of Contract Archeology, University of New Mexico, and Bureau of Land Management.

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Basis (Summary for Policymakers). Cambridge University Press. Cambridge, England and New York, New York.

Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007, Synthesis Report. A Report of the Intergovernmental Panel on Climate Change.

Jetz, W., D.S. Wilcove, A.P. Dobson. 2007. Projected Impacts of Climate and Land Use Change on the Global Diversity of Birds. PLoS 6: 1211-1219.

Karl, Thomas L., Jerry M. Melillo, and Thomas C. Peterson, (eds.). Global Climate Change Impacts in the United States, Cambridge University Press, 2009.

Longworth, J. W., Valdez, J. M., Magnuson, M. L., & Richard, K. (2013). *New Mexico Water Use by Categories 2010.* Santa Fe: New Mexico Offic of the State Engineer, Technical Report 54.

McCarty, P. D., C. A. F. Enquist, and G. Garfin. 2008. Mitigating Climate Change in the American Southwest, Eos Trans. AGU, 89(1), doi:10.1029/2008EO010004.

Morgan, J.A., D.G. Milchunas, D.R. LeCain, M. West, and A.R. Mosier. 2007. Carbon dioxide enrichment alters plant community structure and accelerates shrub growth in the shortgrass steppe. Proceedings of the National Academy of Sciences (USA) 104: 14724-14729. Woodhouse, C. 2004. A paleo perspective on hydroclimatic variability in the western United States. Aquatic Sciences 66: 346-356.

New Mexico Department of Agriculture (NMDA). (2009). New Mexico Noxious Weed List Update. Updated April 2009. Available at: http://www.nmda.nmsu.edu/apr/noxious-weed-information/.

New Mexico Environment Department--Air Quality Bureau. (2010). Air Dispersion Modeling Guidelines. Retrieved August 5, 2010, http://www.nmenv.state.nm.us/aqb/modeling/documents/NM_AirDispersionModelingGuidelines_Apr082010.pdf.

New Mexico Environmental Department (NMED). 2006. Appendix D New Mexico Greenhouse Gas Inventory and Reference Case Projections, 1990-2020. Center for Climate Strategies.

New Mexico Oil Conservation Division 2010. Statistics, Production Summary Report. Available at http://www.emnrd.state.nm.us/ocd/statistics/Production/ProductionSummaryReport.aspx

New Mexico Oil Conservation Division, 2016, Drilling and Production Definitions, New Mexico Administrative Code, Title 19 Natural Resources and Wildlife, Chapter 15 Oil and Gas, Part 16 Drilling and Production, 19.15.16.7, available at http://www.emnrd.state.nm.us/OCD/documents/SearchablePDFofOCDTitle19Chapter15-Revised10-5-16.pdf.

Newton, I. 1979. Population Ecology of Raptors. Buteo Books, Vermillion, SD.

Petroleum Recovery Research Center. All Wells Data. http://octane.nmt.edu/gotech/Petroleum_Data/allwells.aspx (Accessed 1/30/2014).

Peters, D.P.C., R.A. Pielke, B.T. Bestelmeyer, C.D. Allen, S. Munson-McGee, and K.M. Havstad. 2004. Cross-scale Interactions, Nonlinearities, and Forecasting Catastrophic Events. Proceedings of the National Academy of Sciences (USA) 101: 15130-15135.

Price, J., H. Galbraith, M. Dixon, J. Stromberg, T. Root, D. MacMykowski, T. Maddock, and K. Baird. 2005. Potential Impacts of Climate Change on Ecological Resources and Biodiversity in the San Pedro Riparian National Conservation Area, Arizona. Technical Report, U.S. Environmental Protection Agency, American Bird Conservancy.

Railey, J. A. 2016 The Human Landscape in Southeastern New Mexico: A Class I Overview of Cultural Resources Within the Bureau of Land Management's Carlsbad Field Office Region. SWCA Environmental Consultants, Albuquerque, New Mexico.

Schueck, L.S., J.M. Marzluff, and K. Steenhof. 2001. Influence of military activities on raptor abundance and behavior. The Condor 103: 606-615.

Sebastian, Lynne, and Larralde, Signa. 1989. Living on the Land: 11,000 years of Human Adaptation in Southeastern New Mexico. Bureau of Land Management, Santa Fe, NM.

Stalmaster, M. V., and J.L. Kaiser. 1997. Flushing Responses of Wintering Bald Eagles to Military Activity. Journal of Wildlife Management 61: 1307-1313.

Trewartha, Glenn T., Horn, Lyle H. 1980. An Introduction to Climate. 5th Edition, McGraw Hill, New York.

URS. 2013. Air Resources Technical Support Document, Carlsbad Field Office, Oil and Gas Resource Management Plan Revision, URS Group Inc., April 2013.

U.S. Bureau of Labor Statistics (BLS). (2015). Local area unemployment statistics maps—New Mexico. http://data.bls.gov/map/MapToolServlet.

U.S. Census Bureau. (2015). State and County Quick Facts: Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report. http://quickfacts.census.gov/qfd/index.html.

U.S. Census Bureau. (2010). American FactFinder. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

U.S. Department of the Interior, Bureau of Land Management. 2014. Air Resources Technical Report for BLM Oil & Gas Development in NM, KS, OK and TX. http://www.blm.gov/nm/st/en/prog/more/air_resources/air_resources_technical.html

United States Department of the Interior, Bureau of Land Management, Washington, D.C. 20240, PIM 2017-003, The Council on Environmental Quality Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, January 12, 2017. https://www.blm.gov/policy/pim-2017-003-0

U.S. Department of the Interior, Bureau of Land Management. 2008. Special Status Species Resource Management Plan Amendment and Record of Decision. Roswell, New Mexico.

U.S. Department of the Interior, Bureau of Land Management. (BLM 1997). Carlsbad RMP amendment. Carlsbad, NM.

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.

U. S. Department of the Interior, BLM (2008). Manual 6840 - Special Status Species Management.

U. S. Department of the Interior, BLM (1998). Manual and handbook for the management of paleontological resources. BLM Handbook 8270.

U.S. Department of Interior Bureau of Land Management. (2008, January). National Environmental Policy Act Handbook H-1790-1. Retrieved January 27, 2014, from U.S. Department of Interior Bureau of Land Management: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.24487.File.dat/h1790-1-2008-1.pdf

USDI BLM, 2016, Chevron U.S.A., Inc. Hayhurst Master Development Plan, Air Quality Technical Support Document, Pecos District Carlsbad Field Office. September 2016.

USDI BLM, 2017. Air Resources Technical Report for Oil and Gas Development, New Mexico, Oklahoma, Texas and Kansas. March 2017. USDI BLM, 2017. Air Resources Technical Report for Oil and Gas Development, New Mexico, Oklahoma, Texas and Kansas. March 2017.

USEPA. 2018a. Nonattainment Areas for Criteria Pollutants (Greenbook). Accessed from https://www.epa.gov/green-book Last updated April 30, 2018.

USEPA. 2018b. Air Quality Design Values. Accessed from https://www.epa.gov/air-trends/air-quality-design-values. Last updated February 5, 2018.

USEPA. 2018c. Air Quality Index Basics. Accessed from https://www.airnow.gov/index.cfm?action=aqibasics.aqi Last updated February 5, 2018.

U.S. Environmental Protection Agency, (2016). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. Washington: United States Government

USEPA, 2014. *The 2014 National Emissions Inventory*. Retrieved May 30, 2018, from U.S. Environmental Protection Agency: https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data

USFS, NPS, USFWS. 2011. Federal land managers' interagency guidance for nitrogen and sulfur deposition analyses: November 2011. Natural Resource Report NPS/NRSS/ARD/NRR – 2011/465. National Park Service, Denver, Colorado.

40 CFR 1508.7

40 CFR Part 98, Subpart A, Table A-1, 78 FR 71948, Nov. 29, 2013, Global Warming Potentials

40 CFR Part 98, Subpart C, Table C-2, 78 FR 71952, Nov. 29, 2013 (natural gas and Petroleum (all fuel types in Table C-1) emission factors for CH4 and N2O)

7.0 AUTHORITIES

Code of Federal Regulations (CFR) 3100

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.

US 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.

8.0 APPENDICES

APPENDIX 1. LEASE PARCELS INCLUDED UNDER THE PROPOSED ACTION, ALONG WITH ASSOCIATED STIPULATIONS AND LEASE NOTICES

Parcel	Comments	Acres
NM-201809-001 **T.0150S, R.0220E, 23 PM, NM** **Sec. 015 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-18 Streams, Rivers, and Floodplains NESE, SWSE, SESE Sec. 015. SENM-S-21 Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat	640.0
NM-201809-002 **T.0210S, R.0220E, 23 PM, NM** **Sec. 001 LOTS 1,2,3,4;** **001 S2N2,S2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	640.4
NM-201809-003 **T.0210S, R.0220E, 23 PM, NM** **Sec. 013 ALL;** **014 E2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	960.0
NM-201809-004 **T.0210S, R.0220E, 23 PM, NM** **Sec. 022** **N2,NWSW,S2SW,NWSE,E2SE;** **027 ALL;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1200.0**
NM-201809-005 **Acres** **T.0210S, R.0220E, 23 PM, NM** **Sec. 023 S2;** **026 ALL;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 Controlled Surface Use- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**960.0**
NM-201809-006 **T.0210S, R.0220E, 23 PM, NM** **Sec. 024 ALL;** **025 N2;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**960.0**
NM-201809-007 **T.0210S, R.0230E, 23 PM, NM**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils	**801.71**

Sec. 005 LOTS 1,2,3,4; **005 S2N2,S2;** **006 LOTS 1,2;** **006 S2NE;**	SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-008 **T.0210S, R.0230E, 23 PM, NM** **Sec. 007 E2NE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-009 **T.0210S, R.0230E, 23 PM, NM** **Sec. 020 SESE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-010 **T.0210S, R.0230E, 23 PM, NM** **Sec. 024 S2S2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-011 **T.0190S, R.0240E, 23 PM, NM** **Sec. 033 ALL;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-012 **T.0200S, R.0240E, 23 PM, NM** **Sec. 003 LOTS 3,4;** **003 S2NW;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**159.6**
NM-201809-013 **T.0200S, R.0240E, 23 PM, NM** **Sec. 008 NWNW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst	**40.0**

	SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-014 **T.0200S, R.0240E, 23 PM, NM** **Sec. 017 S2;** **018 LOTS 3,4;** **018 E2SW,SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**638.8**
NM-201809-015 **T.0200S, R.0240E, 23 PM, NM** **Sec. 019 LOTS 1,2,3,4;** **019 E2W2,E2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	**637.7**
NM-201809-016 **T.0200S, R.0240E, 23 PM, NM** **Sec. 021 W2;** **028 NW,N2SW,SWSW;** **033 NWNW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	640.0
NM-201809-017 **T.0200S, R.0240E, 23 PM, NM** **Sec. 029 W2NW,NWSW;** **030 E2,SESW;** **031 E2;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	800.0
NM-201809-018 **T.0200S, R.0240E, 23 PM, NM** **Sec. 031 LOTS 1,2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	79.2
NM-201809-019 **T.0210S, R.0240E, 23 PM, NM** **Sec. 006 LOTS 13, 17, 18, 21-24, 29-31;** **006 E2SW, W2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation	562.3

	WO- ESA-7 Endangered Species	
NM-201809-020 **T.0250S, R.0240E, 23 PM, NM** **Sec. 011 SE;** **012 S2S2,NESE,NWSW;** **013 ALL;** **014 E2;**	Lease with the following stipulations: Defer Parcel Due to Affecting Range of Alternatives SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	1360.0
NM-201809-021 **T.0260S, R.0240E, 23 PM, NM** **Sec. 001 ALL;** **010 SESE;** **011 LOTS 1,2,3,4;** **011 E2;** **012 N2,N2S2,SWSW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	1674.9
NM-201809-022 **T.0260S, R.0240E, 23 PM, NM** **Sec. 006 LOTS 5-20;** **007 LOTS 5-20;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	1465.0
NM-201809-023 **T.0260S, R.0240E, 23 PM, NM** **Sec. 015 LOTS 5,6,7,8;**	Lease with the following stipulations: ACEC Defer External Nominated SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	155.0
NM-201809-024 **T.0260S, R.0240E, 23 PM, NM** **Sec. 017 N2,NWSE;** **018 LOTS 1-4;** **018 E2,E2W2;** **019 LOTS 1-4;** **019 E2E2,W2NE,E2NW,NESW;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	1520.9
NM-201809-025	Lease with the following stipulations:	408.8

T.0260S, R.0240E, 23 PM, NM **Sec. 022 LOTS 11-14;** **027 LOTS 3,4,6,11-14;**	Acec Defer External Nominated SENM- S-8- NO Surface Occupancy- Yeso Hills (R32) SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-026 **T.0260S, R.0240E, 23 PM, NM** **Sec. 031 LOTS 6,7,8,9;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area SENM-S-25 VRM- Visual Resource Management WO-NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	94.6
NM-201809-027 **T.0180S, R.0250E, 23 PM, NM** **Sec. 009 NWNW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA- 7 Endangered Species Act	40.0
NM-201809-028 **T.0180S, R.0250E, 23 PM, NM** **Sec. 011 NENW,S2NW,SW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains WO- NHPA Cultural Resources and Tribal Consultation WO- ESA- 7 Endangered Species Act	280.0
NM-201809-029 **T.0190S, R.0250E, 23 PM, NM** **Sec. 005 SESW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	40.0
NM-201809-030 **T.0190S, R.0250E, 23 PM, NM** **Sec. 007 NENW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-031 **T.0190S, R.0250E, 23 PM, NM** **Sec. 031 SESE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-032 **T.0190S, R.0250E, 23 PM, NM** **Sec. 032 SE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-033 **T.0220S, R.0250E, 23 PM, NM** **Sec. 014 NE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains	**160.0**

	SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-034 **T.0220S, R.0250E, 23 PM, NM** **Sec. 021 ALL;** **028 LOTS 1-5,7-8;** **028 W2E2,SESE;** **033 ALL;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1773.7**
NM-201809-035 **T.0220S, R.0250E, 23 PM, NM** **Sec. 022 SENE,SESW,SE;** **027 E2,NENW,S2SW;** **034 ALL;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps, and Tanks SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1320.0**
NM-201809-036 **T.0220S, R.0250E, 23 PM, NM** **Sec. 022 N2NW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-037 **T.0220S, R.0250E, 23 PM, NM** **Sec. 031 LOTS 1-4;** **031 E2,E2W2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.9**
NM-201809-038 **T.0220S, R.0250E, 23 PM, NM** **Sec. 035** **NENE,W2E2,W2,E2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A OR B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-039 **T.0230S, R.0250E, 23 PM, NM** **Sec. 010 LOTS 1-2;** **010 NW;** **015 LOTS 1-16;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation	**927.1**

	WO-ESA-7 Endangered Species Act	
NM-201809-040 **T.0230S, R.0250E, 23 PM, NM** **Sec. 017 LOTS 9-16;** **018 LOTS 9-16;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**630.4**
NM-201809-041 **T.0230S, R.0250E, 23 PM, NM** **Sec. 020 LOTS 1,2-15;** **021** **E2,E2W2,W2NW,NWSW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**1159.4**
NM-201809-042 **T.0230S, R.0250E, 23 PM, NM** **Sec. 022 N2N2, SWNE, SENW, S2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**560.0**
NM-201809-043 **T.0230S, R.0250E, 23 PM, NM** **Sec. 025 ALL;** **026 E2E2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A OR B SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**800.0**
NM-201809-044 **T.0230S, R.0250E, 23 PM, NM** **Sec. 026 NWNW;** **027** **E2NE,NWNE,W2,W2SE,NESE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-045 **T.0230S, R.0250E, 23 PM, NM** **Sec. 026 S2SW;** **035** **E2,E2W2,NWNW,W2SW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**680.0**

NM-201809-046 **T.0250S, R.0250E, 23 PM, NM** **Sec. 007 LOTS 5-17;** **008 LOTS 1-8;** **008 E2;** **018 LOTS 1-2;** **018 NENE,W2NE,E2NW;**	Lease with the following stipulations: Defer SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface USE- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1375.3**
NM-201809-049 **T.0250S, R.0250E, 23 PM, NM** **Sec. 023 SE;** **026 ALL;**	Lease with the following stipulations: ACEC Defer SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface USE- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**800.0**
NM-201809-050 **T.0250S, R.0250E, 23 PM, NM** **Sec. 030 LOTS 1-4;** **030 E2,E2W2;** **031 LOTS 1-4;** **031 E2,E2W2;**	Lease with the following stipulations: Acec Defer SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface USE- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1271.9**
NM-201809-051 **T.0260S, R.0250E, 23 PM, NM** **Sec. 006 LOTS 4;** **007 LOTS 1-3;**	Lease with the following stipulations: Acec Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface USE- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**161.4**
NM-201809-052 **T.0260S, R.0250E, 23 PM, NM** **Sec. 006 LOTS 1-2;** **006 E2,E2NW;** **007 E2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface USE- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation	**800.2**

	WO- ESA-7 Endangered Species Act	
NM-201809-053 **T.0260S, R.0250E, 23 PM, NM** **Sec. 035 LOTS 1,2,3,4;** **035 N2N2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**250.6**
NM-201809-054 **T.0240S, R.0260E, 23 PM, NM** **Sec. 024 SESW, S2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface Use- Springs, Seeps, and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-055 **T.0260S, R.0260E, 23 PM, NM** **Sec. 007 LOTS 3,4;** **007 E2SW,SE;** **018 LOTS 1;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-5 No Surface Occupancy Threatened Plant Species (R16)(Gypsum Wild Buckwheat) SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**360.3**
NM-201809-056 **T.0260S, R.0260E, 23 PM, NM** **Sec. 026 ALL;** **035 LOTS 1,2,3,4;** **035 N2N2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**893.9**
NM-201809-057 **T.0260S, R.0260E, 23 PM, NM** **Sec. 027 ALL;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-058 **T.0260S, R.0260E, 23 PM, NM** **Sec. 030 E2;** **031 LOTS 1,2;** **031 N2NE;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-5 No Surface Occupancy Threatened Plant Species (R16)(Gypsum Wild Buckwheat) SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils	**445.9**

	SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-059 **T.0170S, R.0270E, 23 PM, NM** **Sec. 012 S2S2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**160.0**
NM-201809-060 **T.0180S, R.0270E, 23 PM, NM** **Sec. 021 SESW,SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**200.0**
NM-201809-061 **T.0180S, R.0270E, 23 PM, NM** **Sec. 022 N2NW;**	Lease with the following stipulations: SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**80.0**
NM-201809-062 **T.0260S, R.0270E, 23 PM, NM** **Sec. 003 ALL;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-15 Controlled Surface Use- Wildlife Habitat Projects SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.0**
NM-201809-063 **T.0260S, R.0270E, 23 PM, NM** **Sec. 009 ALL;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.0**
NM-201809-064 **T.0260S, R.0270E, 23 PM, NM** **Sec. 011 E2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils	**920.0**

013 NENE,W2NE,NW; 014 E2;	SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	
NM-201809-065 **T.0150S, R.0280E, 23 PM, NM** **Sec. 028 NE, S2;** **033 ALL;** **034 NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-18 Streams, Rivers and Floodplains: SENE,NESE,SESE Sec.33;S1/2NW,Sec. 34. SENM-S-21 Caves and Karst	**1280.0**
NM-201809-066 **T.0170S, R.0280E, 23 PM, NM** **Sec. 007 LOTS 4;** **007 SESW;**	Lease with the following stipulations: SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**83.0**
NM-201809-067 **T.0150S, R.0290E, 23 PM, NM** **Sec. 013 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**640.0**
NM-201809-068 **T.0150S, R.0290E, 23 PM, NM** **Sec. 014 S2NW, SW;** **023 N2, E2SW, W2SE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act	**720.0**
NM-201809-069 **T.0150S, R.0290E, 23 PM, NM** **Sec. 024 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development SENM-S-47 Reclamation Sulimar Queen Unit #1-02 API:3000560068	**640.0**
NM-201809-070 **T.0260S, R.0290E, 23 PM, NM** **Sec. 003 N2NW;** **004 NENE;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**120.0**
NM-201809-071 **T.0260S, R.0290E, 23 PM, NM** **Sec. 007 LOTS 1,2,3,4;** **007 NWNE,E2W2,SE;** **008 SWSW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**559.2**

NM-201809-073 **T.0260S, R.0290E, 23 PM, NM** **Sec. 018 LOTS 1,2,3,4;** **018 E2W2,E2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.8**
NM-201809-074 **T.0260S, R.0290E, 23 PM, NM** **Sec. 019 LOTS 1;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**40.3**
NM-201809-075 **T.0260S, R.0290E, 23 PM, NM** **Sec. 019 E2,E2SW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soil SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**400.0**
NM-201809-076 **T.0260S, R.0290E, 23 PM, NM** **Sec. 020** **SWNE,NWNW,S2NW,S2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**480.0**
NM-201809-077 **T.0260S, R.0290E, 23 PM, NM** **Sec. 021 W2,W2SE;**	Lease with the following stipulations: ACEC Defer SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**400.0**
NM-201809-078 **T.0150S, R.0300E, 23 PM, NM** **Sec. 005 SESE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-22 Controlled Surface Use Lesser Prairie-Chickens SENM-S-23 Controlled Surface Use Sand Dune Lizard	**40.0**

	SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	
NM-201809-079 **T.0150S, R.0300E, 23 PM, NM** **Sec. 005 LOTS 3;** **005 SWNE, SENW, SW;** **008 NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**440.3**
NM-201809-080 **T.0150S, R.0300E, 23 PM, NM** **Sec. 006 LOTS 6,7;** **006 E2SW, W2SE;** **007 LOTS 1;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-47 Reclamation Double L Queen #2 API:3000520341 Double L Queen #1 API:3000520320 Double L Queen #1L API:3000520303 Sue Federal #2 API:3000520330	**277.9**
NM-201809-081 **T.0150S, R.0300E, 23 PM, NM** **Sec. 007 LOTS 3,4;** **007 E2SW, SE;** **018 LOTS 1,2,3,4;** **018 E2W2, E2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development SENM-S-47 Reclamation Double L Queen Unit 1L API: 3000520355 Double L Queen Unit 2M API: 3000520369 Double L Queen #6 API: 3000520379 Double L Queen #7 API: 3000520385 Double L Queen #8 API: 3000520389 Double L Queen #9 API: 3000520395	**963.1**
NM-201809-082 **T.0150S, R.0300E, 23 PM, NM** **Sec. 008 SE;** **017 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**800.0**
NM-201809-084 **T.0160S, R.0300E, 23 PM, NM** **Sec. 025 N2NW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-085 **T.0160S, R.0300E, 23 PM, NM** **Sec. 025 SW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-086 **T.0170S, R.0300E, 23 PM, NM** **Sec. 028 NWNW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-087 **T.0170S, R.0300E, 23 PM, NM** **Sec. 029 SWNW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation	**40.0**

	WO- ESA-7 Endangered Species Act	
NM-201809-088 **T.0200S, R.0300E, 23 PM, NM** **Sec. 010 SESE;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area SENM-S-1 Potash SENM- LN-4 Hackberry Lake OHV Area SENM-LN-6 Lease Notice Potash Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-089 **T.0260S, R.0300E, 23 PM, NM** **Sec. 018 LOTS 1,2,3,4;** **018 SENW,E2SW;** **019 LOTS 1,2,3,4;** **019 E2W2;**	Lease with the following stipulations: ACEC Defer SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**600.9**
NM-201809-090 **T.0260S, R.0300E, 23 PM, NM** **Sec. 020 S2NW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-091 **T.0260S, R.0300E, 23 PM, NM** **Sec. 025 S2;**	Lease with the following stipulations: ACEC Defer SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-092 **T.0260S, R.0300E, 23 PM, NM** **Sec. 029 NE;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-093 **T.0110S, R.0310E, 23 PM, NM** **Sec. 003 LOTS 1,2,3,4;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-17 Slopes or Fragile Soils Lots 1, 2, and 3. Sec 003 SENM-S-20 Springs, Seeps and Tanks Lot 4, Sec. 003	**82.7**
NM-201809-094 **T.0110S, R.0310E, 23 PM, NM** **Sec. 004 S2SE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act	**400.0**

009 N2;	SENM-S-20 Springs,Seeps and Tanks NWNE, SWNE Sec. 009	
NM-201809-095 **T.0110S, R.0310E, 23 PM, NM** **Sec. 005 LOTS 1,2,3,4;** **005 S2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-20 Springs, Seeps and Tanks NESE Sec. 005 SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**408.6**
NM-201809-096 **T.0110S, R.0310E, 23 PM, NM** **Sec. 010 W2NE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act	**80.0**
NM-201809-097 **T.0110S, R.0310E, 23 PM, NM** **Sec. 015 W2NE,NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes SENE, SWNW Sec. 015	**240.0**
NM-201809-098 **T.0110S, R.0310E, 23 PM, NM** **Sec. 017 N2,SW,N2SE,SWSE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-20 Springs, Seeps and Tanks NENE, SENE, NWSW. Sec. 17	**600.0**
NM-201809-099 **T.0110S, R.0310E, 23 PM, NM** **Sec. 034 NW,N2SW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes SENW.Sec. 34	**240.0**
NM-201809-100 **T.0120S, R.0310E, 23 PM, NM** **Sec. 003 LOTS 1,2,3,4;** **003 S2N2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes SWNE, SENE Sec. 003	**319.8**
NM-201809-101 **T.0160S, R.0310E, 23 PM, NM** **Sec. 021 W2W2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-102 **T.0160S, R.0310E, 23 PM, NM** **Sec. 021 W2NE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-103 **T.0160S, R.0310E, 23 PM, NM** **Sec. 022 SESW;** **027 NWNE, NENW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**

NM-201809-104 **T.0160S, R.0310E, 23 PM, NM** **Sec. 026 N2NE, SWNE, W2, NWSE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**480.0**
NM-201809-105 **T.0170S, R.0310E, 23 PM, NM** **Sec. 031 LOTS 1, 2, 3;** **031 NE, E2NW, NESW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**379.9**
NM-201809-111 **T.0260S, R.0310E, 23 PM, NM** **Sec. 015 ALL;** **022 E2,E2NW,SWNW,SW;**	Lease with the following stipulations: ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**1240.0**
NM-201809-112 **T.0260S, R.0310E, 23 PM, NM** **Sec. 021 ALL;**	Lease with the following stipulations: ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-113 **T.0260S, R.0310E, 23 PM, NM** **Sec. 028 N2,SW,W2SE,SESE;** **029 NENE;** **033 LOTS 1,2,3,4;** **033 N2N2;**	Lease with the following stipulations: ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**901.2**
NM-201809-114 **T.0260S, R.0310E, 23 PM, NM** **Sec. 031 LOTS 1,2,3,4,5;** **031 N2NE,NENW;**	Lease with the following stipulations: ACEC Defer SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries	**259.6**

	SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-115 **T.0110S, R.0320E, 23 PM, NM** **Sec. 008 N2;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-116 **T.0110S, R.0320E, 23 PM, NM** **Sec. 017 E2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-117 **T.0190S, R.0320E, 23 PM, NM** **Sec. 011 W2NE,N2NW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-119 **T.0220S, R.0320E, 23 PM, NM** **Sec. 028 SW;** **033 NWNW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-33- NSO- Lesser Prairie Chicken/ Sand Dune Habitat SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-120 **T.0100S, R.0330E, 23 PM, NM** **Sec. 018 NE,N2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-121 **T.0200S, R.0330E, 23 PM, NM** **Sec. 004 NESW;**	Lease with the following stipulations: ACEC Defer SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-1- Potash SENM- LN-6 Lease Notice Potash WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-122 **T.0200S, R.0330E, 23 PM, NM** **Sec. 028 SWNE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-1- Potash SENM- LN-6 Lease Notice Potash WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-132 **T.0230S, R.0330E, 23 PM, NM** **Sec. 006 LOTS 1,2,3,4,5,6,7;** **006 S2NE,SENW,E2SW,SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation	**1179.4**

007 LOTS 1,2,3,4; 007 NE,E2W2,S2SE;	WO- ESA-7 Endangered Species Act	
NM-201809-133 **T.0150S, R.0340E, 23 PM, NM** **Sec. 001 LOTS 3,4;** **001 S2NW,SW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**329.8**
NM-201809-134 **T.0150S, R.0340E, 23 PM, NM** **Sec. 012 E2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-135 **T.0150S, R.0340E, 23 PM, NM** **Sec. 034 S2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-136 **T.0150S, R.0340E, 23 PM, NM** **Sec. 034 N2NE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-139 **T.0250S, R.0340E, 23 PM, NM** **Sec. 017 E2E2, NWNE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-141 **T.0140S, R.0350E, 23 PM, NM** **Sec. 031 LOTS 1,2;** **031 NE,E2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**321.0**
NM-201809-142 **T.0140S, R.0350E, 23 PM, NM** **Sec. 033 N2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-144 **T.0230S, R.0350E, 23 PM, NM** **Sec. 030 E2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-145 **T.0240S, R.0350E, 23 PM, NM** **Sec. 001 N2SW, SWSW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-146 **T.0240S, R.0350E, 23 PM, NM** **Sec. 009 E2E2, W2NE, S2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-147 **T.0240S, R.0350E, 23 PM, NM** **Sec. 012 SENW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**

NM-201809-148 **T.0240S, R.0350E, 23 PM, NM** **Sec. 013 ALL;** **014 NE, E2NW, SWNW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**920.0**
NM-201809-149 **T.0240S, R.0350E, 23 PM, NM** **Sec. 021 W2SE;** **028 N2NE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-150 **T.0240S, R.0350E, 23 PM, NM** **Sec. 022 ALL;** **027 E2;** **034 NE, N2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1200.0**
NM-201809-151 **T.0240S, R.0350E, 23 PM, NM** **Sec. 023 ALL;** **026 E2E2, W2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1120.0**
NM-201809-152 **T.0240S, R.0350E, 23 PM, NM** **Sec. 024 ALL;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-153 **T.0240S, R.0350E, 23 PM, NM** **Sec. 027 W2SW;** **028 E2SE;** **033 NENE;** **034 NWNW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-154 **T.0240S, R.0350E, 23 PM, NM** **Sec. 033 SW, W2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-155 **T.0240S, R.0350E, 23 PM, NM** **Sec. 034 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-156 **T.0240S, R.0350E, 23 PM, NM** **Sec. 035 SESW, S2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-157 **T.0250S, R.0350E, 23 PM, NM** **Sec. 001 LOTS 3, 4;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes	**921.2**

001 SENW, SW; 012 ALL;	SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-158 **T.0250S, R.0350E, 23 PM, NM** **Sec. 013 N2, SW, W2SE;** **024 W2;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**880.0**
NM-201809-159 **T.0250S, R.0350E, 23 PM, NM** **Sec. 026 W2SE, SESE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-160 **T.0260S, R.0350E, 23 PM, NM** **Sec. 028 E2W2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-162 **T.0150S, R.0360E, 23 PM, NM** **Sec. 002 LOTS 3,4;** **002 S2NW,SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-163 **T.0150S, R.0360E, 23 PM, NM** **Sec. 014 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-164 **T.0150S, R.0360E, 23 PM, NM** **Sec. 023 NESW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-165 **T.0240S, R.0360E, 23 PM, NM** **Sec. 019 LOTS 1, 2, 3, 4;** **019 E2, E2W2;** **020 E2, NW, SWSW, E2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1241.8**
NM-201809-166 **T.0240S, R.0360E, 23 PM, NM** **Sec. 021 SW;** **028 NWNW;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-167 **T.0240S, R.0360E, 23 PM, NM** **Sec. 022 SWSW;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-168 **T.0240S, R.0360E, 23 PM, NM** **Sec. 026 NWNE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-169 **T.0240S, R.0360E, 23 PM, NM** **Sec. 027 NWSW, S2SW, SWSE;** **028 SENE, E2SE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat	**280.0**

	WO- NHPA Cultural Resources and Tribal ConsultationWO- WO-ESA-7 Endangered Species Act	
NM-201809-170 **T.0240S, R.0360E, 23 PM, NM** **Sec. 029 NWNW, S2SW;** **030 LOTS 1, 2, 3, 4;** **030 NENE,W2NE,SENW,E2SW,SE;** **031 LOTS 1, 2;** **031 NE, E2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1006.3**
NM-201809-171 **T.0240S, R.0360E, 23 PM, NM** **Sec. 033 S2SE;** **034 NE, N2NW, SW, W2SE, SESE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-172 **T.0250S, R.0360E, 23 PM, NM** **Sec. 006 LOTS 6;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.8**
NM-201809-173 **T.0250S, R.0360E, 23 PM, NM** **Sec. 020 E2,E2W2,SWNW, W2SW;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-174 **T.0250S, R.0360E, 23 PM, NM** **Sec. 029 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-175 **T.0250S, R.0360E, 23 PM, NM** **Sec. 035 SWNW, SW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-176 **T.0150S, R.0370E, 23 PM, NM** **Sec. 017 S2NE,E2NW,E2SE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-177 **T.0150S, R.0370E, 23 PM, NM** **Sec. 020 W2SW,SESW,SWSE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-178 **T.0150S, R.0370E, 23 PM, NM** **Sec. 021 W2NE,NW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-179 **T.0150S, R.0370E, 23 PM, NM** **Sec. 030 LOTS 3;** **030 NESW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-180 **T.0150S, R.0370E, 23 PM, NM** **Sec. 031 E2NE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**

NM-201809-181 **T.0160S, R.0370E, 23 PM, NM** **Sec. 001 LOTS 8;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-182 **T.0160S, R.0370E, 23 PM, NM** **Sec. 001 LOTS 13;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-183 **T.0160S, R.0370E, 23 PM, NM** **Sec. 003 LOTS 16;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-184 **T.0160S, R.0370E, 23 PM, NM** **Sec. 006 NESW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-185 **T.0160S, R.0370E, 23 PM, NM** **Sec. 010 NE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-186 **T.0160S, R.0370E, 23 PM, NM** **Sec. 024 E2SW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-187 **T.0110S, R.0380E, 23 PM, NM** **Sec. 013 LOTS 1,2,3,4;** **014 N2,SE;** **023 NE,S2;** **024 LOTS 1,2,3,4;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1087.6**
NM-201809-188 **T.0110S, R.0380E, 23 PM, NM** **Sec. 018 E2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-189 **T.0110S, R.0380E, 23 PM, NM** **Sec. 025 LOTS 1,2,3,4;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**47.2**
NM-201809-190 **T.0110S, R.0380E, 23 PM, NM** **Sec. 027 E2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-191 **T.0110S, R.0380E, 23 PM, NM** **Sec. 033 N2SW,SWSW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-192 **T.0110S, R.0380E, 23 PM, NM** **Sec. 033 NESE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**

NM-201809-193 **T.0120S, R.0380E, 23 PM, NM** **Sec. 003 SW;** **004 S2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-194 **T.0120S, R.0380E, 23 PM, NM** **Sec. 004 LOTS 1;** **004 SENE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.1**
NM-201809-195 **T.0190S, R.0380E, 23 PM, NM** **Sec. 031 LOTS 3;** **031 NESW, SE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.8**
NM-201809-196 **T.0220S, R.0380E, 23 PM, NM** **Sec. 004 LOTS 1-5;** **004 SWNW,W2SW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**343.8**
NM-201809-197 **T.0230S, R.0380E, 23 PM, NM** **Sec. 018 ALL;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
	Totals Acres	

APPENDIX 2. LEASE PARCELS INCLUDED UNDER ALTERNATIVE B, ALONG WITH ASSOCIATED STIPULATIONS AND LEASE NOTICES

Parcel	Comments	Acres
NM-201809-001 **T.0150S, R.0220E, 23 PM, NM** **Sec. 015 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-18 Streams, Rivers, and Floodplains NESE, SWSE, SESE Sec. 015. SENM-S-21 Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat	640.0
NM-201809-002 **T.0210S, R.0220E, 23 PM, NM** **Sec. 001 LOTS 1,2,3,4;** **001 S2N2,S2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	640.4
NM-201809-003 **T.0210S, R.0220E, 23 PM, NM** **Sec. 013 ALL;** **014 E2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	960.0
NM-201809-004 **T.0210S, R.0220E, 23 PM, NM** **Sec. 022** **N2,NWSW,S2SW,NWSE,E2SE;** **027 ALL;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1200.0**
NM-201809-005 **Acres** **T.0210S, R.0220E, 23 PM, NM** **Sec. 023 S2;** **026 ALL;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 Controlled Surface Use- Visual Resource Management SENM-S-32 VRM/ Class III Guadalupe Escarpment Scenic Area LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**960.0**
NM-201809-006 **T.0210S, R.0220E, 23 PM, NM** **Sec. 024 ALL;** **025 N2;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**960.0**
NM-201809-007 **T.0210S, R.0230E, 23 PM, NM**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils	**801.71**

Sec. 005 LOTS 1,2,3,4; **005 S2N2,S2;** **006 LOTS 1,2;** **006 S2NE;**	SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-008 **T.0210S, R.0230E, 23 PM, NM** **Sec. 007 E2NE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-009 **T.0210S, R.0230E, 23 PM, NM** **Sec. 020 SESE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-21 Controlled Surface Use- Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-010 **T.0210S, R.0230E, 23 PM, NM** **Sec. 024 S2S2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-011 **T.0190S, R.0240E, 23 PM, NM** **Sec. 033 ALL;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-012 **T.0200S, R.0240E, 23 PM, NM** **Sec. 003 LOTS 3,4;** **003 S2NW;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**159.6**
NM-201809-013 **T.0200S, R.0240E, 23 PM, NM** **Sec. 008 NWNW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable	**40.0**

	Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-014 **T.0200S, R.0240E, 23 PM, NM** **Sec. 017 S2;** **018 LOTS 3,4;** **018 E2SW,SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-31 Controlled Surface Use- Northern Aplomado Falcon Suitable Habitat LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**638.8**
NM-201809-015 **T.0200S, R.0240E, 23 PM, NM** **Sec. 019 LOTS 1,2,3,4;** **019 E2W2,E2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	**637.7**
NM-201809-016 **T.0200S, R.0240E, 23 PM, NM** **Sec. 021 W2;** **028 NW,N2SW,SWSW;** **033 NWNW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	640.0
NM-201809-017 **T.0200S, R.0240E, 23 PM, NM** **Sec. 029 W2NW,NWSW;** **030 E2,SESW;** **031 E2;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	800.0
NM-201809-018 **T.0200S, R.0240E, 23 PM, NM** **Sec. 031 LOTS 1,2;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	79.2
NM-201809-019 **T.0210S, R.0240E, 23 PM, NM** **Sec. 006 LOTS 13, 17, 18, 21-24, 29-31;** **006 E2SW, W2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-17 Controlled Surface Use – Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers and Floodplains SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM-S-21 Controlled Surface Use - Caves and Karst SENM-S-25 VRM- Visual Resource Management LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species	562.3

NM-201809-027 **T.0180S, R.0250E, 23 PM, NM** **Sec. 009 NWNW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-20 Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA- 7 Endangered Species Act	40.0
NM-201809-028 **T.0180S, R.0250E, 23 PM, NM** **Sec. 011 NENW,S2NW,SW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains WO- NHPA Cultural Resources and Tribal Consultation WO- ESA- 7 Endangered Species Act	280.0
NM-201809-029 **T.0190S, R.0250E, 23 PM, NM** **Sec. 005 SESW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	40.0
NM-201809-030 **T.0190S, R.0250E, 23 PM, NM** **Sec. 007 NENW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-031 **T.0190S, R.0250E, 23 PM, NM** **Sec. 031 SESE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-032 **T.0190S, R.0250E, 23 PM, NM** **Sec. 032 SE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-19 Controlled Surface Use- Playas and Alkali Lakes SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-033 **T.0220S, R.0250E, 23 PM, NM** **Sec. 014 NE;**	Lease with the following stipulations: SENM-S-17 Controlled Surface Use- Slopes or Fragile Soils SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-036 **T.0220S, R.0250E, 23 PM, NM** **Sec. 022 N2NW;**	Lease with the following stipulations: SENM-S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM-S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-054 **T.0240S, R.0260E, 23 PM, NM** **Sec. 024 SESW, S2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains	**120.0**

	SENM- S-20 Controlled Surface Use- Springs, Seeps, and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA- Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-059 **T.0170S, R.0270E, 23 PM, NM** **Sec. 012 S2S2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternatives A or B SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**160.0**
NM-201809-060 **T.0180S, R.0270E, 23 PM, NM** **Sec. 021 SESW,SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**200.0**
NM-201809-061 **T.0180S, R.0270E, 23 PM, NM** **Sec. 022 N2NW;**	Lease with the following stipulations: SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-20 Controlled Surface Use- Springs, Seeps and Tanks SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**80.0**
NM-201809-062 **T.0260S, R.0270E, 23 PM, NM** **Sec. 003 ALL;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-15 Controlled Surface Use- Wildlife Habitat Projects SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.0**
NM-201809-063 **T.0260S, R.0270E, 23 PM, NM** **Sec. 009 ALL;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**640.0**
NM-201809-064 **T.0260S, R.0270E, 23 PM, NM** **Sec. 011 E2;** **013 NENE,W2NE,NW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils	**920.0**

014 E2;	SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	
NM-201809-065 **T.0150S, R.0280E, 23 PM, NM** **Sec. 028 NE, S2;** **033 ALL;** **034 NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-18 Streams, Rivers and Floodplains: SENE,NESE,SESE Sec.33;S1/2NW,Sec. 34. SENM-S-21 Caves and Karst	**1280.0**
NM-201809-066 **T.0170S, R.0280E, 23 PM, NM** **Sec. 007 LOTS 4;** **007 SESW;**	Lease with the following stipulations: SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**83.0**
NM-201809-067 **T.0150S, R.0290E, 23 PM, NM** **Sec. 013 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**640.0**
NM-201809-068 **T.0150S, R.0290E, 23 PM, NM** **Sec. 014 S2NW, SW;** **023 N2, E2SW, W2SE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act	**720.0**
NM-201809-069 **T.0150S, R.0290E, 23 PM, NM** **Sec. 024 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development SENM-S-47 Reclamation Sulimar Queen Unit #1-02 API:3000560068	**640.0**
NM-201809-070 **T.0260S, R.0290E, 23 PM, NM** **Sec. 003 N2NW;** **004 NENE;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**120.0**
NM-201809-071 **T.0260S, R.0290E, 23 PM, NM** **Sec. 007 LOTS 1,2,3,4;** **007 NWNE,E2W2,SE;** **008 SWSW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**559.2**

NM-201809-076 **T.0260S, R.0290E, 23 PM, NM** **Sec. 020** **SWNE,NWNW,S2NW,S2;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**480.0**
NM-201809-077 **T.0260S, R.0290E, 23 PM, NM** **Sec. 021 W2,W2SE;**	Lease with the following stipulations: ACEC Defer SENM- S-17 Controlled Surface Use- Slopes or Fragile Soils SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst SENM- S-25 VRM- Visual Resource Management SENM- S-39 POD- Plan of Development Stipulation LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**400.0**
NM-201809-078 **T.0150S, R.0300E, 23 PM, NM** **Sec. 005 SESE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-22 Controlled Surface Use Lesser Prairie-Chickens SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**40.0**
NM-201809-079 **T.0150S, R.0300E, 23 PM, NM** **Sec. 005 LOTS 3;** **005 SWNE, SENW, SW;** **008 NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**440.3**
NM-201809-080 **T.0150S, R.0300E, 23 PM, NM** **Sec. 006 LOTS 6,7;** **006 E2SW, W2SE;** **007 LOTS 1;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-47 Reclamation Double L Queen #2 API:3000520341 Double L Queen #1 API:3000520320 Double L Queen #1L API:3000520303 Sue Federal #2 API:3000520330	**277.9**
NM-201809-081 **T.0150S, R.0300E, 23 PM, NM** **Sec. 007 LOTS 3,4;** **007 E2SW, SE;** **018 LOTS 1,2,3,4;** **018 E2W2, E2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development SENM-S-47 Reclamation Double L Queen Unit 1L API: 3000520355 Double L Queen Unit 2M API: 3000520369 Double L Queen #6 API: 3000520379 Double L Queen #7 API: 3000520385 Double L Queen #8 API: 3000520389 Double L Queen #9 API: 3000520395	**963.1**
NM-201809-082 **T.0150S, R.0300E, 23 PM, NM** **Sec. 008 SE;** **017 ALL;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**800.0**
NM-201809-084	Lease with the following stipulations:	**80.0**

T.0160S, R.0300E, 23 PM, NM **Sec. 025 N2NW;**	Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-085 **T.0160S, R.0300E, 23 PM, NM** **Sec. 025 SW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-086 **T.0170S, R.0300E, 23 PM, NM** **Sec. 028 NWNW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-087 **T.0170S, R.0300E, 23 PM, NM** **Sec. 029 SWNW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-088 **T.0200S, R.0300E, 23 PM, NM** **Sec. 010 SESE;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area SENM-S-1 Potash SENM- LN-4 Hackberry Lake OHV Area SENM-LN-6 Lease Notice Potash Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-089 **T.0260S, R.0300E, 23 PM, NM** **Sec. 018 LOTS 1,2,3,4;** **018 SENW,E2SW;** **019 LOTS 1,2,3,4;** **019 E2W2;**	Lease with the following stipulations: ACEC Defer SENM- S-18 Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19 Controlled Surface Use- Playas and Alkali Lakes SENM- S-21 Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO- NHPA Cultural Resources and Tribal Consultation WO-ESA-7 Endangered Species Act	**600.9**
NM-201809-090 **T.0260S, R.0300E, 23 PM, NM** **Sec. 020 S2NW;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-091 **T.0260S, R.0300E, 23 PM, NM**	Lease with the following stipulations: ACEC Defer	**320.0**

Sec. 025 S2;	SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-092 **T.0260S, R.0300E, 23 PM, NM** **Sec. 029 NE;**	Lease with the following stipulations: ACEC Defer External Nominated SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-093 **T.0110S, R.0310E, 23 PM, NM** **Sec. 003 LOTS 1,2,3,4;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-17 Slopes or Fragile Soils Lots 1, 2, and 3. Sec 003 SENM-S-20 Springs, Seeps and Tanks Lot 4, Sec. 003	**82.7**
NM-201809-094 **T.0110S, R.0310E, 23 PM, NM** **Sec. 004 S2SE;** **009 N2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-20 Springs,Seeps and Tanks NWNE, SWNE Sec. 009	**400.0**
NM-201809-095 **T.0110S, R.0310E, 23 PM, NM** **Sec. 005 LOTS 1,2,3,4;** **005 S2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-20 Springs, Seeps and Tanks NESE Sec. 005 SENM-S-23 Controlled Surface Use Sand Dune Lizard SENM-S-34 Shinnery Oak Sand Dune Habitat Complex Plan of Development	**408.6**
NM-201809-096 **T.0110S, R.0310E, 23 PM, NM** **Sec. 010 W2NE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act	**80.0**
NM-201809-097 **T.0110S, R.0310E, 23 PM, NM** **Sec. 015 W2NE,NW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes SENE, SWNW Sec. 015	**240.0**
NM-201809-098 **T.0110S, R.0310E, 23 PM, NM** **Sec. 017 N2,SW,N2SE,SWSE;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-20 Springs, Seeps and Tanks NENE, SENE, NWSW. Sec. 17	**600.0**
NM-201809-099 **T.0110S, R.0310E, 23 PM, NM** **Sec. 034 NW,N2SW;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes SENW.Sec. 34	**240.0**
NM-201809-100 **T.0120S, R.0310E, 23 PM, NM** **Sec. 003 LOTS 1,2,3,4;** **003 S2N2;**	Lease with the following stipulations: WO-NHPA National Historic Preservation Act WO-ESA-7 Endangered Species Act SENM-S-19 Playas and Alkali Lakes	**319.8**

	SWNE, SENE Sec. 003	
NM-201809-101 **T.0160S, R.0310E, 23 PM, NM** **Sec. 021 W2W2;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-102 **T.0160S, R.0310E, 23 PM, NM** **Sec. 021 W2NE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-103 **T.0160S, R.0310E, 23 PM, NM** **Sec. 022 SESW;** **027 NWNE, NENW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-104 **T.0160S, R.0310E, 23 PM, NM** **Sec. 026 N2NE, SWNE, W2, NWSE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**480.0**
NM-201809-105 **T.0170S, R.0310E, 23 PM, NM** **Sec. 031 LOTS 1, 2, 3;** **031 NE, E2NW, NESW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**379.9**
NM-201809-111 **T.0260S, R.0310E, 23 PM, NM** **Sec. 015 ALL;** **022 E2,E2NW,SWNW,SW;**	Lease with the following stipulations: ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**1240.0**
NM-201809-112	Lease with the following stipulations:	**640.0**

T.0260S, R.0310E, 23 PM, NM **Sec. 021 ALL;**	ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-113 **T.0260S, R.0310E, 23 PM, NM** **Sec. 028 N2,SW,W2SE,SESE;** **029 NENE;** **033 LOTS 1,2,3,4;** **033 N2N2;**	Lease with the following stipulations: ACEC Defer SENM- S-15- Controlled Surface Use- Wildlife Habitat Projects SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**901.2**
NM-201809-114 **T.0260S, R.0310E, 23 PM, NM** **Sec. 031 LOTS 1,2,3,4,5;** **031 N2NE,NENW;**	Lease with the following stipulations: ACEC Defer SENM- S-16- Controlled Surface Use- Raptor Nests and Heronries SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-21- Controlled Surface Use- Caves and Karst LN-1 Potential Cave or Karst Occurrence Area WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**259.6**
NM-201809-115 **T.0110S, R.0320E, 23 PM, NM** **Sec. 008 N2;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers, and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-116 **T.0110S, R.0320E, 23 PM, NM** **Sec. 017 E2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO-NHPA Cultural Resource and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-117 **T.0190S, R.0320E, 23 PM, NM** **Sec. 011 W2NE,N2NW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-23- Controlled Surface Use- Sand Dune Lizard SEMN-LN-2 Protection of the Sand Dune Lizard SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-119 **T.0220S, R.0320E, 23 PM, NM** **Sec. 028 SW;** **033 NWNW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-33- NSO- Lesser Prairie Chicken/ Sand Dune Habitat SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**

NM-201809-120 **T.0100S, R.0330E, 23 PM, NM** **Sec. 018 NE,N2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-121 **T.0200S, R.0330E, 23 PM, NM** **Sec. 004 NESW;**	Lease with the following stipulations: ACEC Defer SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-1- Potash SENM- LN-6 Lease Notice Potash WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-122 **T.0200S, R.0330E, 23 PM, NM** **Sec. 028 SWNE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-1- Potash SENM- LN-6 Lease Notice Potash WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-132 **T.0230S, R.0330E, 23 PM, NM** **Sec. 006 LOTS 1,2,3,4,5,6,7;** **006 S2NE,SENW,E2SW,SE;** **007 LOTS 1,2,3,4;** **007 NE,E2W2,S2SE;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1179.4**
NM-201809-133 **T.0150S, R.0340E, 23 PM, NM** **Sec. 001 LOTS 3,4;** **001 S2NW,SW;**	Lease with the following stipulations: SENM- S-17- Controlled Surface Use- Slopes or Fragile Soils SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**329.8**
NM-201809-134 **T.0150S, R.0340E, 23 PM, NM** **Sec. 012 E2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-135 **T.0150S, R.0340E, 23 PM, NM** **Sec. 034 S2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-136 **T.0150S, R.0340E, 23 PM, NM** **Sec. 034 N2NE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-139 **T.0250S, R.0340E, 23 PM, NM** **Sec. 017 E2E2, NWNE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-141 **T.0140S, R.0350E, 23 PM, NM** **Sec. 031 LOTS 1,2;** **031 NE,E2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**321.0**
NM-201809-142 **T.0140S, R.0350E, 23 PM, NM** **Sec. 033 N2;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation	**320.0**

	WO- ESA-7 Endangered Species Act	
NM-201809-144 **T.0230S, R.0350E, 23 PM, NM** **Sec. 030 E2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-145 **T.0240S, R.0350E, 23 PM, NM** **Sec. 001 N2SW, SWSW;**	Lease with the following stipulations: Defer Parcel Affects Range of Alternative A or B SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-146 **T.0240S, R.0350E, 23 PM, NM** **Sec. 009 E2E2, W2NE, S2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-147 **T.0240S, R.0350E, 23 PM, NM** **Sec. 012 SENW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-148 **T.0240S, R.0350E, 23 PM, NM** **Sec. 013 ALL;** **014 NE, E2NW, SWNW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**920.0**
NM-201809-149 **T.0240S, R.0350E, 23 PM, NM** **Sec. 021 W2SE;** **028 N2NE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-150 **T.0240S, R.0350E, 23 PM, NM** **Sec. 022 ALL;** **027 E2;** **034 NE, N2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1200.0**
NM-201809-151 **T.0240S, R.0350E, 23 PM, NM** **Sec. 023 ALL;** **026 E2E2, W2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1120.0**
NM-201809-152 **T.0240S, R.0350E, 23 PM, NM** **Sec. 024 ALL;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
NM-201809-153 **T.0240S, R.0350E, 23 PM, NM**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken	**240.0**

Sec. 027 W2SW; **028 E2SE;** **033 NENE;** **034 NWNW;**	SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-154 **T.0240S, R.0350E, 23 PM, NM** **Sec. 033 SW, W2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-155 **T.0240S, R.0350E, 23 PM, NM** **Sec. 034 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-156 **T.0240S, R.0350E, 23 PM, NM** **Sec. 035 SESW, S2SE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-157 **T.0250S, R.0350E, 23 PM, NM** **Sec. 001 LOTS 3, 4;** **001 SENW, SW;** **012 ALL;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**921.2**
NM-201809-158 **T.0250S, R.0350E, 23 PM, NM** **Sec. 013 N2, SW, W2SE;** **024 W2;**	Lease with the following stipulations: SENM- S-18- Controlled Surface Use- Streams, Rivers and Floodplains SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**880.0**
NM-201809-159 **T.0250S, R.0350E, 23 PM, NM** **Sec. 026 W2SE, SESE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-160 **T.0260S, R.0350E, 23 PM, NM** **Sec. 028 E2W2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-162 **T.0150S, R.0360E, 23 PM, NM** **Sec. 002 LOTS 3,4;** **002 S2NW,SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-163 **T.0150S, R.0360E, 23 PM, NM** **Sec. 014 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-164	Lease with the following stipulations:	**40.0**

T.0150S, R.0360E, 23 PM, NM **Sec. 023 NESW;**	SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	
NM-201809-165 **T.0240S, R.0360E, 23 PM, NM** **Sec. 019 LOTS 1, 2, 3, 4;** **019 E2, E2W2;** **020 E2, NW, SWSW, E2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1241.8**
NM-201809-166 **T.0240S, R.0360E, 23 PM, NM** **Sec. 021 SW;** **028 NWNW;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**200.0**
NM-201809-167 **T.0240S, R.0360E, 23 PM, NM** **Sec. 022 SWSW;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-168 **T.0240S, R.0360E, 23 PM, NM** **Sec. 026 NWNE;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-169 **T.0240S, R.0360E, 23 PM, NM** **Sec. 027 NWSW, S2SW, SWSE;** **028 SENE, E2SE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal ConsultationWO- WO-ESA-7 Endangered Species Act	**280.0**
NM-201809-170 **T.0240S, R.0360E, 23 PM, NM** **Sec. 029 NWNW, S2SW;** **030 LOTS 1, 2, 3, 4;** **030 NENE,W2NE,SENW,E2SW,SE;** **031 LOTS 1, 2;** **031 NE, E2NW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1006.3**
NM-201809-171 **T.0240S, R.0360E, 23 PM, NM** **Sec. 033 S2SE;** **034 NE, N2NW, SW, W2SE, SESE;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-172 **T.0250S, R.0360E, 23 PM, NM** **Sec. 006 LOTS 6;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.8**
NM-201809-173 **T.0250S, R.0360E, 23 PM, NM** **Sec. 020 E2,E2W2,SWNW, W2SW;**	Lease with the following stipulations: SENM- S-20- Controlled Surface Use- Springs, Seeps and Tanks WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**600.0**
NM-201809-174 **T.0250S, R.0360E, 23 PM, NM** **Sec. 029 S2SW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-175 **T.0250S, R.0360E, 23 PM, NM** **Sec. 035 SWNW, SW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation	**200.0**

	WO- ESA-7 Endangered Species Act	
NM-201809-176 **T.0150S, R.0370E, 23 PM, NM** **Sec. 017 S2NE,E2NW,E2SE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-177 **T.0150S, R.0370E, 23 PM, NM** **Sec. 020 W2SW,SESW,SWSE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-178 **T.0150S, R.0370E, 23 PM, NM** **Sec. 021 W2NE,NW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-179 **T.0150S, R.0370E, 23 PM, NM** **Sec. 030 LOTS 3;** **030 NESW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-180 **T.0150S, R.0370E, 23 PM, NM** **Sec. 031 E2NE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-181 **T.0160S, R.0370E, 23 PM, NM** **Sec. 001 LOTS 8;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-182 **T.0160S, R.0370E, 23 PM, NM** **Sec. 001 LOTS 13;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-183 **T.0160S, R.0370E, 23 PM, NM** **Sec. 003 LOTS 16;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-184 **T.0160S, R.0370E, 23 PM, NM** **Sec. 006 NESW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-185 **T.0160S, R.0370E, 23 PM, NM** **Sec. 010 NE;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**160.0**
NM-201809-186 **T.0160S, R.0370E, 23 PM, NM** **Sec. 024 E2SW;**	Lease with the following stipulations: SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.0**
NM-201809-187 **T.0110S, R.0380E, 23 PM, NM** **Sec. 013 LOTS 1,2,3,4;** **014 N2,SE;** **023 NE,S2;** **024 LOTS 1,2,3,4;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**1087.6**

NM-201809-188 **T.0110S, R.0380E, 23 PM, NM** **Sec. 018 E2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-189 **T.0110S, R.0380E, 23 PM, NM** **Sec. 025 LOTS 1,2,3,4;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**47.2**
NM-201809-190 **T.0110S, R.0380E, 23 PM, NM** **Sec. 027 E2;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**320.0**
NM-201809-191 **T.0110S, R.0380E, 23 PM, NM** **Sec. 033 N2SW,SWSW;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-51- Controlled Surface Use- Farmland Stipulation WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**120.0**
NM-201809-192 **T.0110S, R.0380E, 23 PM, NM** **Sec. 033 NESE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**40.0**
NM-201809-193 **T.0120S, R.0380E, 23 PM, NM** **Sec. 003 SW;** **004 S2SE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.0**
NM-201809-194 **T.0120S, R.0380E, 23 PM, NM** **Sec. 004 LOTS 1;** **004 SENE;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**80.1**
NM-201809-195 **T.0190S, R.0380E, 23 PM, NM** **Sec. 031 LOTS 3;** **031 NESW, SE;**	Lease with the following stipulations: WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**240.8**
NM-201809-196 **T.0220S, R.0380E, 23 PM, NM** **Sec. 004 LOTS 1-5;** **004 SWNW,W2SW;**	Lease with the following stipulations: SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**343.8**
NM-201809-197 **T.0230S, R.0380E, 23 PM, NM** **Sec. 018 ALL;**	Lease with the following stipulations: SENM- S-19- Controlled Surface Use- Playas and Alkali Lakes SENM- S-22- Controlled Surface Use- Prairie Chicken SENM- S-34- POD/ Shinnery Oak Sand Dune Habitat WO- NHPA Cultural Resources and Tribal Consultation WO- ESA-7 Endangered Species Act	**640.0**
	Totals Acres	

APPENDIX 3. LEASE STIPULATIONS AND DESCRIPTIONS

The following stipulations are attached to at least one of the nominated parcels that appear under either the Proposed Action or Alternative B.

Stipulation	Description/Purpose
SENM-S-1	CONTROLLED SURFACE USE - POTASH All or a portion of the lease is located within the Secretary of Interior's Designated Potash Area as described in the Secretarial Order No. 3324, signed December 3, 2012. In order to protect potash resources, special protective measures may be developed during environmental analyses and be required as part of approvals for drilling or other operations on this lease.
SENM-S-15	CONTROLLED SURFACE USE- WILDLIFE HABITAT PROJECTS Surface disturbance will not be allowed within up to 200 meters of existing or planned wildlife habitat improvement projects. Large-scale vegetation manipulation projects such as prescribed burns will be excepted. This requirement will be considered for waiver with appropriate off-site mitigation, as determined by the Authorized Officer.
SENM-S-16	CONTROLLED SURFACE USE- RAPTOR NESTS AND HERONRIES Surface disturbance will not be allowed within up to 200 meters of active heronries or by delaying activity for up to 120 days, or a combination of both. Raptor nests on special, natural habitat features, such as trees, large brush, cliff faces and escarpments, will be protected by not allowing surface disturbance within up to 200 meters of nests or by delaying activity for up to 90 days, or a combination of both. Exceptions to this requirement for raptor nests will be considered if the nests expected to be disturbed are inactive, the proposed activity is of short duration (e.g. habitat enhancement projects, fences, pipelines), and will not result in continuing activity in proximity to the nest.
SENM-S-17	CONTROLLED SURFACE USE – SLOPES OR FRAGILE SOILS Surface occupancy or use is subject to the following special operating constraints: Surface disturbance will not be allowed on slopes over 30 percent. Exceptions will be considered for authorized mineral material extraction sites and designated OHV areas, for the installation of projects designed to enhance or protect renewable natural resources, or if a plan of operating and development which provides for adequate mitigation of impacts was approved by the Authorized Officer. Occupancy or use of fragile soils will be considered on a case-by-case basis.
SENM-S-18	CONTROLLED SURFACE USE – STREAMS, RIVERS, FLOODPLAINS Surface disturbance will not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains. On a case-by-case basis, an exception to this requirement may be considered based on one or more of the criteria listed below. The first three criteria would not be applied in areas of identified critical or occupied habitat for federally listed threatened or endangered species. -Additional development in areas with existing developments that have shown no adverse impacts to the riparian areas as determined by the Authorized Officer, following a case-by-case review at the time of permitting. --Suitable off-site mitigation if habitat loss has been identified. --An approved plan of operations ensures the protection of water or soil resources, or both. --Installation of habitat, rangeland or recreation projects designed to enhance or protect renewable natural resources.

Stipulation	Description/Purpose
SENM-S-19	CONTROLLED SURFACE USE- PLAYA'S Surface disturbance will not be allowed within up to 200 meters of playas or alkali lakes. Waiver of this requirement will be considered on a case-by-case basis for projects designed to enhance or protect renewable natural resources. An exception for oil and gas development will be considered if playa or lake loss was mitigated by the protection and development of another playa exhibiting the potential for improvement. Mitigation could include: installing fencing; developing a supplemental water supply; planting trees and shrubs for shelter belts; conducting playa basin excavation; constructing erosion control structures or cross dikes; or by improving the habitat in another area.
SENM-S-20	CONTROLLED SURFACE USE – SPRINGS, SEEPS, TANKS Surface disturbance will not be allowed within up to 200 meters of the source of a spring or seep, or within downstream riparian areas created by flows from the source or resulting from riparian area management. Surface disturbance will not be allowed within up to 200 meters of earthen tanks or the adjacent riparian areas created as a result of the presence of the tanks. Exceptions to this requirement will be considered for the installation of habitat or rangeland projects designed to enhance the spring or seep, or downstream flows.
SENM-S-21	CONTROLLED SURFACE USE – CAVES AND KARST Surface disturbance will not be allowed within up to 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features. Waiver of this requirement will be considered for projects that enhance or protect renewable natural resource values, or when an approved plan of operations ensures the protection of cave and karst resources.
SENM-S-22	CONTROLLED SURFACE USE – LESSER PRAIRIE-CHICKEN (LPC) Drilling for oil or gas, and 3-D geophysical exploration will not be allowed in LPC (*Tympanuchus pallidicinctus*) habitat from March 1 through June 15. During that period noise producing activities associated with these operations will not be allowed between 3:00 a.m. and 9:00 a.m. In addition, no new drilling will be allowed within up to 200 meters of leks, and exhaust noise from pump jack engines must not exceed 75 db measured at 30 feet from the source of the noise.
SENM-S-23	CONTROLLED SURFACE USE – DUNES SAGEBRUSH LIZARD (DSL) Surface disturbance will not be allowed in documented occupied habitat areas, or within up to 200 meters of suitable habitat associated with occupied habitat areas identified through field review. An exception to this restriction will be considered when an on-site evaluation of habitat extent, available species occurrence data, the proposed surface use, and proposed mitigations indicate the proposal will not adversely affect the local population.
SENM-S-25	CONTROLLED SURFACE USE -VRM Surface occupancy or use is subject to the following special operating constraint: Painting of oil field equipment and structures to minimize visual impacts is to be conducted according to the requirements of Notice to Lessees (NTL) 87-1, New Mexico. Low profile facilities also may be required, when needed to reduce the contract of a project with the dominant color, line, texture, and form of the surrounding landscape. Other surface facilities or equipment approved by the BLM, such as large-scale range improvements or pipelines, will be painted, when needed, to conform to the requirements of visual resource management to minimize visual impacts. Paint colors will be selected from the environmental color chart approved by the Rocky Mountain Coordinating Committee. The selected paint color will match as closely as possible the predominant soil or vegetation color of the area. Upon completion of the well and installation of the production facilities (if the well is a producer) the pad will be reclaimed back to a size necessary for production operations only. The edges will be recontoured and the extra caliche and pad material (excluding top soil) will be hauled off-site. The BLM may require additional reclamation depending upon vegetation recovery. The reclaimed area will be recontoured and reseeded according to vegetation and soil type.
SENM- S-31	CONTROLLED SURFACE USE- Northern Aplomado Falcon

Stipulation	Description/Purpose
	Surface disturbance will not be allowed within up to 200 meters of playas or alkali lakes. Waiver of this requirement will be considered on a case-by-case basis for projects designed to enhance or protect renewable natural resources. An exception for oil and gas development will be considered if playa or lake loss was mitigated by the protection and development of another playa exhibiting the potential for improvement. Mitigation could include: installing fencing; developing a supplemental water supply; planting trees and shrubs for shelter belts; conducting playa basin excavation; constructing erosion control structures or cross dikes; or by improving the habitat in another area.
SENM-S-32	CONTROLLED SURFACE USE -VRM GUADALUPE ESCARPMENT Proposed projects may be located within the Guadalupe Escarpment Scenic Area. The project will be built in a manner to minimize visibility from the National Parks Highway (US HWY 62/180). Special Operating Constraints: The following stipulations will apply to minimize impacts during construction, drilling and production. 1. The proposed pad size must be reduced to the minimum necessary for safe drilling operations. Final well pad dimensions will be determined during the permit approval process. Vehicle travel outside approved surface disturbance areas is prohibited and not authorized. 2. All above ground facilities, structures, appurtenances, and pipelines must be low profile (less than 8 feet in height), unless this requirement is waived or modified by the BLM authorized officer. 3. All above ground facilities, structures, appurtenances, and pipelines will be painted with a site-specific non-reflective (Flat) paint color in accordance with Notices to Lessees and Operators 87-1 (New Mexico). 4. Upon completion of the well and installation of the production facilities (if the well is a producer) the pad will be reclaimed back to a size necessary for production operations only. The edges will be recontoured and the extra caliche and pad material (excluding top soil) will be hauled off-site. 5. Reclaimed areas will be grid rolled and reseeded.
SENM-S-34	CONTROLLED SURFACE USE -PLAN OF DEVELOPMENT – LPC/DSL A plan of development (POD) for the entire lease must be submitted for review and approval, including NEPA analysis, by the BLM, prior to approval of development actions (APD, Sundry Notices). 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 to approval of subsequent development actions. Deviations from a current POD are not authorized until an amended POD has been approved by BLM. For the purpose of Managing habitat suitable for the lesser prairie-chicken (LPC) and sand dune lizard (SDL). The lease contains isolated blocks of unfragmented habitat suitable for LPC or SDL. Habitat parameters within this area are needed for the life cycle of the species (e.g., edge) or, with habitat manipulation, the area could become suitable habitat. To the extent possible, buffer zones around active LPC leks will be utilized to provide resource protection.
SENM-S-39	PLAN OF DEVELOPMENT (POD) A plan of development (POD) for the entire lease must be submitted for review and approval, including NEPA analysis, by the Bureau of Land Management (BLM) authorized officer, prior to approval of development (APD, Sundry Notices) 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 to the approval of subsequent development action. Deviations from a current POD are not authorized until an amended POD has been approved by BLM.
SENM-S-51	CONTROLLED SURFACE USE- Farmland Stipulation All or a portion of this lease contains private surface used for cultivation. Any surface-disturbing activities associated with oil and gas development will be excluded from the surface area used for cultivation. The BLM may consider on an individual application basis, an exception to this stipulation if the surface owner signs an agreement with the lessee or operator allowing the proposed surface-disturbing activity within the cultivated area. Each application submitted to the BLM must include a copy of any agreement signed by the surface owner.
SENM-LN-1	LEASE NOTICE – POTENTIAL CAVE OR KARST OCCURRENCE AREA All or a portion of the lease is located in a potential cave or karst occurrence area. Within this area, caves or karst features such as sinkholes, passages, and large rooms may be encountered

Stipulation	Description/Purpose
	from the surface to a depth of as much as 2,000 feet, within surface areas ranging from a few acres to hundreds of acres. Due to the sensitive nature of the cave or karst systems of this area, 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. These measures may be imposed in accordance with 43 CFR 3101.1-2; 43 CFR 3162.5-1; Onshore Oil and Gas Order No. 1; and Section 6 of the lease terms.
SENM-LN-2	LEASE NOTICE- Protection of Sand Dune Lizard This lease may encompass suitable and occupied habitat of the sand dune lizard (SDL) (Sceloporus arenicolous). The lizard can be found in active or semi-active sand dunes with shinnery oak vegetation. All or portions of the lease may contain suitable or occupied habitat of this special status species. The Bureau of Land Management through its NEPA process, is responsible for assuring that the leased lands are examined prior to any surface disturbing activities on the lands covered by this lease to determine potential impacts to the lizard and it's habitat. In accordance with Section 6 of the lease terms, the lessee may be required to conduct an examination of the lands to determine the occurrence of the lizard (peak activity is May – August). Protocol for these surveys can be found in the 2008 Pecos District Special Status Species Resource Management Plan Amendment. The survey would be conducted by a qualified biologist or herpetologist approved by the Bureau of Land Management. A report of the findings would be submitted to the authorized officer. Exploration and lease development activities may be limited to areas outside of suitable or occupied habitat within the lease. If the surface management agency determines that lease development activities may adversely impact suitable or occupied habitat, restrictions to the lessee's proposal or denial of any beneficial use of the lease may result.
SENM-LN-6	LEASE NOTICE – OIL AND GAS DEVELOPMENT WITHIN THE DESIGNATED POTASH AREA This lease is located within the Secretary of the Interior's Designated Potash Area. It is subject to Secretarial Order No. 3324, signed December 3, 2012, the Federal Land Policy and Management Act (FLPMA), the Mineral Leasing Act (MLA) and regulations, orders, and directives of the Bureau of Land Management. The Order provides procedures and guidelines for more orderly co-development of oil, gas and potash deposits owned by the United States within the Secretary's Potash Area. Pursuant to applicable laws; the terms, conditions and attached stipulations to the Lease; the Secretary of the Interior's formal orders; and regulations; drilling of an oil and gas well from a surface location within the Designated Potash Area will only be permitted if drilling occurs under the following conditions: 1. a Drilling Island associated with a Development Area established under this Order or a Drilling Island established under a prior Order; 2. a Barren Area and the Authorized Officer (AO) determines that such operations will not adversely affect active or planned potash mining operations in the immediate vicinity of the proposed drill-site; or 3. a Drilling Island, not covered by (1) above, or single well site established under this Order by the approval and in the sole discretion of the AO, provided that such site was jointly recommended to the AO by the oil and gas lessee(s) and the nearest potash lessee(s). In addition, the lessee may be required to participate in an approved Development Area. A Development Area is an area established by the BLM within the Designated Potash Area in consideration of appropriate oil and gas technology such that wells can be drilled from a Drilling Island capable of effectively extracting oil and gas resources while managing the impact on potash resources. A Development Area typically will contain a single Drilling Island from which all new oil and gas wells that penetrate the potash formations will be drilled. Drilling Islands will not be allowed within one mile of any area where approved potash mining operations will be conducted within three years consistent with a three-year mine plan without the consent of the affected potash lessee(s). Leases within a Development Area will be unitized or subject to an approved communitization agreement unless there is a compelling reason for another operating system. In addition, the drilling of new wells will be subject to safety Buffer Zones of ¼ mile for oil wells and ½ mile for gas wells from the perimeter of existing underground open mine

Stipulation	Description/Purpose
	workings within which oil or gas operations will generally not be allowed unless the Buffer Zones are adjusted in an individual case by the AO or revised by the BLM Director. Leases will be subject to applicable laws; the terms, conditions and attached stipulations; the Secretary of the Interior's formal orders in effect as of lease issuance; and to regulations and formal orders hereafter promulgated. Prior to submitting an application for permit to drill or to re-enter an existing well bore, the lessee should contact the Field Office to determine if a Development Area has been established for the area that includes this lease.
WO-NHPA	This stipulation states that the lease area 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.
WO-ESA-7	Endangered Species Act Section 7 Consultation Stipulation (WO- ESA-7) is applied across all lease parcels. This stipulation states that the lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. 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.

APPENDIX 4. 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 re-contouring 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 oil and 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.