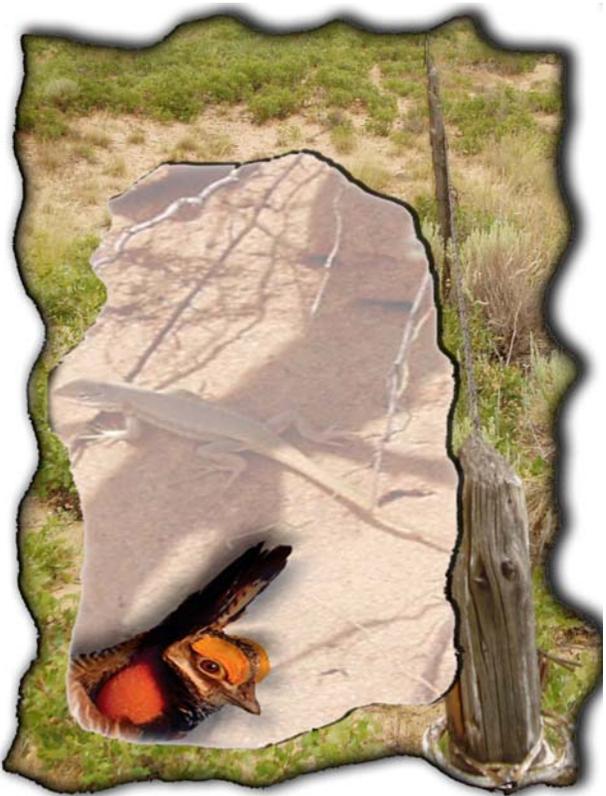


# Appendix 5



# APPENDIX 5

## RECLAMATION AND BEST MANAGEMENT PRACTICES

### INTRODUCTION

The BLM would incorporate appropriate Best Management Practices (BMPs) into proposed Applications for Permit to Drill (APDs) and associated rights-of-way (ROW) approvals after appropriate National Environmental Policy Act (NEPA) evaluation. BMPs are innovative, dynamic, and economically feasible mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts. BMPs are applied to management actions to aid in achieving desired outcomes for safe, environmentally sound resource development by preventing, minimizing, or mitigating adverse impacts and reducing conflicts.

The early incorporation of BMPs into APDs by the oil and gas operator helps to ensure an efficient and timely APD process. The BLM has developed BMPs specific to public land management in the Planning Area. The BMPs listed in this appendix are not inclusive and are expected to change as both BLM and operators gain experience. BMPs would be applied as Conditions of Approval (COAs) on APDs and as stipulations attached to ROW grants.

The BLM would link rehabilitation requirements to the native vegetative species that are growing adjacent to disturbed sites. This would be done at the Notice of Staking (NOS) or APD Pre-Drill onsite inspection stage. There would also be an assessment of the potential for successful reclamation of proposed well pad sites and ROWs, and relocation of these proposed locations would be considered as needed.

### RECLAMATION

The BLM has a statutory mandate to ensure reclamation and closure of oil and gas operations are completed in an environmentally sound manner. The BLM's requirements for reclamation are to shape, stabilize, revegetate, or otherwise treat disturbed areas in order to provide a productive use of the land which conforms to the approved land-use plan for the area. Short-term reclamation requirements are to stabilize disturbed areas and to protect both disturbed and adjacent undisturbed areas from unnecessary and undue degradation. The BLM reclamation practices are derived from the Solid Mineral Reclamation Handbook H-3042-1. This handbook provides reclamation information and guidance applicable to various situations and conditions.

The Roswell RMP and the Carlsbad RMP for Fluid Minerals Leasing places great emphasis on successful reclamation. A primary purpose of the BLM's reclamation program is to stabilize the surface against the long-term effects of erosion. Another major objective is to return the site to a productive post-operational use that reflects the pre-disturbance conditions.

A reclamation plan would be part of the Surface Use Plan of Operation (SUPO). This outcome-oriented reclamation plan could be amended to incorporate increased expectations based on the outcomes of similar reclamation activities. The BLM would monitor the effectiveness and success of reclamation activities during exploration, construction, production, and abandonment of oil and gas associated development. The BLM is also committed

to monitor and evaluate reclamation efforts and incorporate that information into future reclamation practices. This would be an ongoing process and would incorporate industry's successes and failures, as well as any information that is available from ranchers in the area of development and information provided by individuals, academia, or other agencies.

The BLM would continue to seek partnerships with academic and research institutions to refine and improve rehabilitation techniques and materials for the public lands that are arid or semiarid.

Reclamation would be considered successful when healthy, mature native perennials are established with a composition and density that closely approximates the surrounding vegetation as prescribed by the BLM, and the reclamation area is free of noxious weeds. All operations are covered by a bond as required by 43 CFR 3104.1.

The BLM believes that a result of the criteria developed through this planning effort industry would be required to ensure reclamation, even when climatic conditions make it difficult.

The BLM would tie rehabilitation requirements to historic and present knowledge of the native vegetative species that are growing adjacent to the disturbed sites.

A number of standard practices which have proven beneficial to successful reclamation have been identified by the Pecos District Office and are summarized below. These standards should be incorporated into an operator's reclamation plan as applicable to specific-site conditions.

### General Principles:

1. Total surface disturbance would be minimized.
2. Topsoil must be removed and stockpiled at the site or well pad prior to construction for reapplication during reclamation.
3. Closely match and restore original topographic contours prior to reapplication of topsoil.
4. Erosion control measures would be utilized as necessary (water bars, slope reduction, contouring, terracing, etc.).
5. Noxious weeds must be controlled at all times. In some situations an operator may be required to:
  - Control weeds on disturbed lands which include the roads, pads and associated pipelines and on adjacent lands affected by the establishment of weeds.
  - Clean all equipment and vehicles with either high pressure water or air prior to entering the site for maintenance and administration of the access roads, well pad, and resulting well.
6. Revegetation success would be evaluated using performance-based standards. Parameters would include the percent basal cover of mature approved species as compared to an adjacent undisturbed area. Operators would be required to use any means necessary within state and Federal laws to achieve acceptable revegetation including irrigation if rainfall during the growing season proves insufficient.

7. The BLM would continue to engage partners to leverage funding of approved practices including participation at on-site inspections, monitoring development activities, and evaluating the final reclamation of disturbed sites.

#### Well Pad Reclamation:

1. Following completion of a producing well, the well pad would be reduced in size to the minimum area required for actual operation of the well. Reclamation of native vegetation would be initiated prior to or by the beginning of the next growing season.
2. Reserve pits must be dry prior to backfilling.
3. Proper disposal methods of debris and other trash including all toxic products would be utilized.
4. The Oil Conservation Division's rules on pits and below grade tanks would be utilized in the Planning Area.
5. Seeded areas would be fenced to exclude cattle and sheep for the duration of the revegetation process. The fence would be removed from the site after it is revegetated to an acceptable condition. The reclamation would not be complete until the fence is removed.
6. The BLM or operators may establish pilot plots to evaluate different reclamation methods and seek improved reclamation techniques
7. During vegetative reclamation of a well pad, a BLM-standard four-strand barbed wire fence on cattle allotments and a woven wire fence on sheep allotments would be constructed to exclude livestock until revegetated to an acceptable condition.

8. Upon abandonment and reclamation of the well, the surface material (caliche/gravel) shall be removed from the well pad prior to seeding.

#### Road Reclamation:

1. Measures to prevent vehicle travel (such as fencing, barricades, signage, contouring, and hummocks) would be utilized on roads during the reclamation process.
2. Upon abandonment and reclamation of the well, the surface material (caliche/gravel) shall be removed from the access road prior to seeding.

#### Pipeline Reclamation:

1. Disturbed working-area width would be kept to a minimum and outside limits flagged prior to beginning construction.
2. Topsoil must be removed and windrowed for reapplication after backfilling.
3. Backfill in the trench would be compacted in lifts and topsoil reapplied to the surface.

#### Seed Mixes:

1. Operators would use the BLM-prescribed seed mixes, appropriate to soils and ecological site descriptions for the location.
2. BLM would experiment with different mixes to improve chances for successful reclamation.

## **SURFACE USE AND BEST MANAGEMENT PRACTICES**

### Introduction

The locations of well sites are dictated by the geologic target to be drilled and the need to avoid unnecessary surface

disturbance. Environmentally “ideal” locations for construction activities are not always coincident with the geologic target, and avoidance of damage to surface resources is not always possible. However, where well sites cannot be otherwise modified, special practices or construction techniques would be employed to minimize those impacts. This section describes various types of practices that are designed to minimize surface disturbance and effects on other resources and retain the reclamation potential of the disturbed area. These practices may be general and apply regionally, or may be more specific and apply to a particular area or site. The practices represent effective and practical means of accomplishing the requirements of the BLM and should be used as a guide when preparing plans and details that are specific to individual projects.

Generally, the practices described in this appendix have been accepted and employed by industry for similar projects and/or have been derived from this Resource Management Plan Amendment (RMPA) analysis in response to issues identified during scoping and to address impacts identified during analysis.

The standard practices in this appendix should not be construed as rigid requirements that would be applicable to every situation. Rather, the ideas presented in this section communicate philosophy, approach, and examples that have been successful from which site-specific applications can be developed. The operator and surface-management agency working together can develop the best approach to achieve the management objectives in each situation.

While operations of Federal fluid mineral leases are managed by the BLM, the operations are managed in cooperation with the surface-management agency or surface owner, if it is other than the BLM, in order to guide surface use and management. Where the surface is privately owned, the operator is responsible for attempting to reach an

agreement with the private surface owner. Surface use guidance and best management practices relevant to Federal fluid minerals are described briefly below.

## Surface Use Guidance

### **Onshore Oil and Gas Orders**

Every oil and gas operation authorized under a Federal fluid minerals lease must comply with Federally mandated regulations and orders. Procedures are established for exploration of Federal oil and gas reserves in a series of Onshore Oil and Gas Orders, which are authorized by Title 43, Code of Federal Regulations (CFR) Parts 3160 and 3180. These orders detail uniform national standards for minimum levels of performance expected from lessees and operators when conducting oil and gas activities on Federal and Indian lands. Two orders are particularly relevant to determining the potential for environmental impacts associated with a proposed project. These are Onshore Oil and Gas Order Nos. 1 and 2.

Onshore Order No. 1 requires lessees and operators to conduct their exploration, development, production, and abandonment operations in a manner as follows:

- conform with applicable Federal laws and regulations and with State and local laws and regulations to the extent that such State and local laws are applicable to operations on Federal or Indian leases
- conform with the lease terms, lease stipulations, and conditions of approval
- ensure diligent development and efficient resource recovery
- protect the lease from drainage
- afford adequate safeguards for the environment
- ensure proper reclamation of disturbed lands
- conform with currently available technology and practice

- ensure that underground sources of fresh water would not be endangered by any fluid injection or production operations
- otherwise ensure the protection of public health and safety

The order holds the lessee “fully accountable for their contractors’ and subcontractors’ compliance with the requirements of the approved permit and/or plan.” Onshore Order No. 1 specifically requires survey work and a related report if the surface management agency has reason to believe that properties listed or eligible for listing, in the National Register of Historic Places are present in the area of potential effect. The order also requires the surface-management agency to identify any threatened and endangered species and/or critical habitat problems and other environmental concerns (e.g., wilderness and wilderness study areas, known or potential surface geological hazards, etc.).

BLM Manual 3160 provides guidelines and procedures for processing Applications for Permits to Drill (APDs) and subsequent operations. BLM Manual Handbook 3160-1 provides guidelines for review of technical and environmental considerations for APDs and subsequent activities. Onshore Order No. 2 establishes specific and detailed requirements along with minimum standards for the following:

- well control during drilling
- casing and cementing
- drilling mud and circulating system
- drill-stem testing
- special drilling operations
- blowout preventer equipment to prevent the uncontrolled release of formation fluids to the surface
- related surface use
- abandonment of drilling operations

In some instances, Onshore Order No. 2 relies on existing standards prepared by the American Petroleum Institute, Occupational

Safety and Health Administration, and other organizations or agencies.

Onshore Order No. 6 addresses operations with hydrogen sulfide (H<sub>2</sub>S) associated when drilling, completing, testing, reworking, producing, injecting, gathering, storing, or treating operations are being conducted in zones that are known or reasonably could be expected to contain H<sub>2</sub>S or that when flared, could produce sulfur dioxide (SO<sub>2</sub>) in such concentrations that, upon release, could constitute a hazard to human life.

### **Standard Lease Terms**

Standard lease terms, which are disclosed on the standard lease forms, indicate that the operator is responsible for diligent development and for conducting operations in a manner that minimizes adverse impacts on resources anywhere within the leasehold. Copies of Standard Form 3100-11, Offer to Lease and Lease for Oil and Gas, and Form 3200-24, Offer to Lease and Lease for Geothermal Resources are available at the BLM offices.

In addition to the standard lease terms and conditions, the BLM Authorized Officer may require site-specific mitigation at the time of an APD at a specific site. These mitigation measures would be attached to the APD as conditions of approval (described below).

### **Lease Stipulations**

Constraints in the form of stipulations are conditions included in a lease when environmental and planning analyses have demonstrated that additional and more stringent environmental protection is needed. Stipulations are provisions that modify the standard lease rights and are attached and made part of the lease. The operator would be expected to comply with the stipulations specific to resource concerns that are attached to a lease.

## Surface Operating Standards

### **Conditions of Approval**

Additional constraints may be necessary if the authority to manage the activity on the lease does not already exist under laws, regulations, or orders.

Constraints in the form of conditions of approval of an APD are site-specific requirements or measures imposed to protect resources or resource values. Conditions of approval must be reasonable and consistent with lease rights. The Authorized Officer has the right to relocate proposed facilities, control timing of operations, and impose other mitigation in accordance with Sections 2 and 6 of the standard oil and gas lease terms (BLM Forms 3100-11 and 3200-24).

## **BEST MANAGEMENT PRACTICES**

More specific to a region or area, a surface-management agency may have standards, or best management practices, to which an operation should conform. While the goals and philosophies regarding surface management are similar in intent, the operator must be responsible for understanding the requirements of the pertinent surface-management agency. Knowledge of the management plans of the surface-management agency, as well as agency operational standards, procedures, and environmental protection requirements, would help an operator meet these standards. The best management practices described below were developed by the BLM, Pecos District Office for this RMPA/EIS.

## Best Management Practices For The Planning Area

The best management practices described below apply to any fluid minerals project on public land within the Planning Area, and supplement the standards and guidelines from sources described above.

### **Preliminary Investigations**

Activities occurring during preliminary investigations may include remote sensing; mapping of rock outcrops and seeps (either of which result in little or no surface disturbance); and seismic, gravity, and magnetic surveys. A lease is not required to conduct such preliminary investigations. However, the geophysical operator is required to file a completed Form 3150-4, "Notice of Intent to Conduct Oil and Gas Exploration Operations for all operations on public lands.

In general, the BLM requires an examination of resource values and development of appropriate surface protection and reclamation measures prior to the geophysical contractor beginning surface disturbing activities associated with preliminary investigations. The BLM would solicit involvement from public land users (e.g., grazing allottees) to develop site-specific protection measures and reclamation specifications. Compliance monitoring should occur during and after seismic exploration activities when necessary. Compliance inspections during the operation ensure that requirements and guidelines are being followed. Compliance inspections upon completion of work ensure that the lines are clean and drill holes are plugged properly.

The BLM would consider other BMPs on a case-by-case basis depending on their effectiveness, the balancing of increased operating costs vs. the benefit to the public and resource values, the availability of less restrictive mitigation alternatives, and other site-specific factors. Examples of typical case-by-case BMPs include, but are not limited to the following:

- Reclamation efforts are site-specific and initial requirements would be determined by the BLM Authorized Officer
- Minimizing well pad size by leveling or clearing only what is needed for the rig, pits, and tanks
- Installation of raptor perch avoidance on power poles
- Burying of distribution power lines and/or flow lines adjacent to access roads in certain habitat types.
- Centralizing production facilities
- Utilization of submersible pumps
- Belowground wellheads
- Drilling multiple wells from a single pad
- Noise reduction techniques and designs
- Wildlife monitoring
- Seasonal restriction of public vehicular access;
- Avoiding placement of production facilities on hilltops and ridgelines;
- Screening facilities from view;
- Bioremediation of oil field wastes and spills
- Use of common utility or right-of-way corridors
- Build the shortest road possible utilizing existing road networks. Select road routes that would create less overall surface disturbance. Construct a travel way which creates the smallest possible surface disturbance in width.
- Road surfacing should be limited to soils and topography that require surfacing to reduce soil erosion. As a general rule, if spur roads require surfacing, then the minimum compacted layer of surface material should be applied.
- Surfacing material may not be required on new access road travel ways.
- Reserve pits should be constructed so that upon completion of drilling operations, the dried pit contents would be a minimum of three feet below ground level. Also refer to New Mexico Oil Conservation Division (NMOCD) rules and regulations.
- Steel Tanks may be used in lieu of reserve pits where conditions prevent reserve pit construction such as shallow soils over solid rock where blasting is required and the operator does not want to perform blasting, or for other reasons such as a shallow groundwater table.
- Where possible, surface and buried pipelines should parallel existing roads.
- Clearing vegetation for pipelines, electric lines, and utilities should be kept to a minimum. In some locations, only trenching may be necessary.
- Reclaim any disturbed areas outside the radius of the guy line anchors and/or any land not necessary for well operations using the methods detailed in well abandonment for post well completion and intermediate reclamation.
- Road surface material removal.

- Road surface material burial on location.
- Returning the removed caliche (surface material) to mineral material pits and/or reusing and applying the removed caliche (surfacing material) to other roads and pads.
- Ripping of compacted soil surfaces to a depth determined by depth of soil shown in the Soil Conservation Service Survey Handbooks.
- Contouring
- Removing structures, such as production facilities, meters, power poles, and power lines, when they are longer in use.
- Utilizing berms, fences, or contoured moguls to control access
- Erosion control practices such as waterbars, terracing, ripping against contour, matting, mulching
- Application of fertilizer (chemical and organic)
- Application of mulch and or hydromulching
- Watering or irrigation of seeded areas
- Fencing around the reclaimed areas of the well pad which may be based on known distances to watering sources for cattle.
- BLM shall discuss reclamation requirements with the holder prior to starting reclamation (onsite meetings are encouraged). The BLM would notify the grazing permittee of the time for the onsite meeting, which would allow the grazing permittee the opportunity to participate.
- Dispose of hazardous and other refuse in a timely and appropriate manner.

The frequency of authorized seismic exploration would be dependent upon resource conditions and seasonal restrictions (timing limitations) that may be imposed to reduce conflicts with watershed conditions, wildlife, and hunting. Management practices specific to wildlife and vegetation resources include the following:

- Prior to surveying/flagging routes for geophysical surveys or other preliminary activities during the raptor-breeding season, the project area shall be surveyed for raptor nests.
- Surveys when necessary would be conducted by personnel approved by the BLM
- The Universal Transmercator grid (UTM) locations of all raptor nests would be reported to the Authorized Officer. All active raptor nests would be avoided by the required distances described under the Well Sites section of the Appendix. An “active raptor nest” is defined as any raptor, including burrowing owls, or corvid nest being occupied during the current nesting season.
- During operations at any time, large (greater than 6 feet in height) trees or shrubs containing or capable of containing a raptor nest would be avoided by vehicular traffic or other activities likely to destroy them.
- Geophysical exploration operations, drilling for oil and gas, and other development would not be allowed in special status species habitat during the period of March 1 through June 30, each year.
- Activities would be planned to avoid wet periods.
- Geophysical operations would minimize the off-road impact of large vehicles. Use wide, flat-tread, balloon tires (especially on seismic thumper trucks) where possible. Use all-terrain vehicles

rather than large vehicles where possible.

- Occupied habitat for special status species would be avoided in a manner similar to surface use requirements (see Chapter 2 Management Common to All Alternatives).

### **Measuring Reclamation Success**

The BLM revegetation goal is to approach or match the vegetation composition of the undisturbed surrounding area. Reclamation (efforts and success) would meet the satisfaction of the Authorized officer before the operator would be released from reclamation responsibilities. The Pecos District Office would use the Desired Plant Communities (DPC) as described in the Roswell RMP and the Carlsbad RMP for determining seed mixtures. The DPC also include a range of plants by percent composition that would be used to determine satisfactory reclamation. Pelletized seeds may be used. The Pecos District Office acknowledges some amount of subjectivity regarding successful reclamation. The Pecos District Office, however, would include scientifically acceptable sampling methods, such as pace transects, when making decisions quantifying reclamation success.

*NOTE: The above BMPs are not all inclusive. Circumstances may dictate other requirements as deemed necessary by the Authorized Officer.*

## **STANDARD OPERATING PROCEDURES**

BMPs are built upon operating procedures that have become the norm through time, legislation and regulation. In an area such as southeast New Mexico with a long history of oil and gas development, the petroleum industry and the agencies charged with regulating that industry are familiar with those procedures. The following is a description of the standard

operating procedures as they relate to reclamation and oil and gas development.

### **Administrative Requirements**

The operator and its contractors and subcontractors will conduct all operations in full compliance with all applicable Federal, State, and local laws and regulations; applicable lease stipulations; and guidelines specified in the APD unless a written modification, waiver, or exception from the Authorized Officer has been granted. A copy of the approved APD along with any conditions of approval (e.g., Lesser Prairie-chicken timing stipulation) shall be available at the drill site whenever active construction, drilling, or completion operations are under way.

Prior to commencing construction activities, the operator and its contractors and subcontractors may conduct a preconstruction conference with the BLM Authorized Officer. It is the responsibility of the operator to insure environmental and safety training is conducted with their contractors and subcontractors prior to construction. All employees would be familiarized with the resource protection policies of the BLM, requirements, and mitigating measures incorporated into each project.

The Authorized Officer approves the project during all stages of the project including construction of roads and well pad, drilling and completion of the well, reclamation, preparation for production, and abandonment.

### **Surface Use**

#### **Roads and Access Ways**

The BLM requires the use of existing roads to the maximum extent practical and minimizing new roads in unroaded areas. If existing roads are used or damaged they would be maintained at the appropriate level by the responsible parties. Where new

roads are needed, construction, maintenance, rehabilitation, abandonment, and closure of the roads on public land would be in accordance with the BLM Authorized Officer's prescription at the time of abandonment and reclamation. Two different types of roads are described below for the Planning Area.

## **Permanent Roads**

### Design Specifications

- Travel width is normally 14 feet unless the Authorized Officer approves a different width. The maximum width of surface disturbance shall not exceed 30 feet. The permanent surfaced road will be constructed to have a travel way width which creates the smallest possible surface disturbance.
- Surfacing with an appropriate amount of gravel should be required where all weather access is needed.

## **Non-Surfaced Roads**

- *Road travel way width* - A nonsurfaced access road would have a travel way which creates the smallest possible surface disturbance and would not exceed 14 feet in width.
- *Non-surfacing* - Surfacing material would not be required on the new access road travel way. The Holder would have the option to surface portions or the entirety of the access road if the Holder considers it necessary. Should the Holder elect to surface the access road, the Holder would submit a Sundry Notices And Reports On Wells requesting approval for a change in the conditions of approval to surface the access road. The Holder would obtain written approval from the Authorized Officer prior to surfacing. The surfacing material, depth and type, would be determined at the time of approval.
- No drive-arounds with the exception of turnouts, are allowed outside the travel way.

- The Authorized Officer would reserve the right to require surfacing of the access road at any time if deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material would be determined at the time of notification.
- If the new access road is not surfaced, no improvements shall be made on the access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.
- Crowning and ditching would not be required on non-surfaced roads.
- The holder will be required to perform maintenance of the non-surfaced road if the road is negatively affected by inclement weather.

## **Well Sites**

In siting facilities at the well site, the following measures must be followed:

- Disturbance would be minimized to existing fences and other improvements on public land.
- Residences, livestock facilities, and wildlife water supplies would be avoided within up to 200 meters.
- The construction of fence enclosures or barriers would be considered in crucial or critical habitat for Federal threatened and endangered, Federal candidate, or state-listed wildlife and plant species to protect all or portions of occupied habitat, specific populations, or to provide for scientific research on a species and its habitat. Fenced enclosures would also be considered to protect special habitat features such as wildlife waters, springs, significant lesser prairie-chicken booming grounds, or to provide for scientific research on a species and its habitat. The intent of using fences in this manner is to protect small areas, as opposed to fencing-out large areas of public lands. It is

- expected that enclosures or barriers, if used, would be small in size and associated with specific sites.
- Surface disturbance would not be allowed within up to 200 meters of active raptor nests, including burrowing owls, on special, natural habitat features, such as trees, large brush, cliff faces and escarpments.
  - Surface disturbance would not be allowed within up to 200 meters of playas and alkali lakes.
  - Prior to surveying/flagging locations for pads, routes for roads, and other preliminary activities, during the raptor-breeding season, the project area will be surveyed for raptor nests. Surveys will be conducted by professional biologists or personnel approved by the BLM. All active raptor nests will be avoided during the dates and by the distances listed below. An active raptor nest is defined as any raptor or corvid nest being used during the current nesting season including nesting sites utilized by burrowing owls.
  - Power lines would be constructed to standards outlined in the most recent version of "Suggested Practices for Raptor Protection on Power Lines" published by the Edison Electric Institute/Raptor Research Foundation, unless otherwise agreed to by the Authorized Officer. The holder is responsible for demonstrating that power pole designs not meeting these standards are raptor safe. Such proof would be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modifications or additions to power line structures constructed under this authorization, should they be necessary to ensure the safety of large perching birds. The modifications and/or additions would be made by the holder without liability or expense to the United States.
  - Facilities would be sited to minimize in-channel excavation.
  - Sites would be selected that provide topographic and vegetative screening when feasible.
- Well pads would not be located within drainages.
  - Pits containing oil, other hydrocarbons, salt water, or any toxic substances would not be allowed in drainages.
  - Fluid containers would be located on the upslope side of drilling pads whenever possible to facilitate early detection of leaks and spills.
  - Reserve pits would be netted to exclude birds and bats.
  - In constructing the site: Construction would conform to the approved well site and layout plan in the Surface Use Plan of Operations (SUPO).
  - Tree and vegetation clearing would be limited to the minimum area required.
  - Construction activities would be timed to avoid wet periods.
  - All reserve pits would be constructed in 100 percent cut material.
  - All reserve pits would be lined with approved materials.
  - Reserve pits would not be breached, to facilitate drying.
  - Reserve pits would be surrounded by a BLM-standard four-strand barbed-wire fence.
  - Above ground structures would be painted to blend with the natural color of the landscape.

### **Pipeline Siting**

- Location of pipeline routes would not be adjacent to live watercourses or in proximity to steep hillsides to the extent practical to minimize the risk of petroleum spills and silt from construction entering ephemeral streams and drainages.
- Pipelines would be located along, but not in existing linear facilities (other pipelines and roads) to the maximum extent practical. Minimize pipeline crossing of undisturbed areas.
- Uprooted vegetation, soil, and rocks left as a result of construction or maintenance activity would be randomly scattered over the project area and

would not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer, except that an earthen berm would be left over the ditch line to allow for settling back to grade.

### **Surfacing Material Source**

- The caliche/gravel pit would be constructed so that runoff and sediment does not drain into ephemeral streams and drainages. This may require the installation of sediment traps or barriers (slash or straw bales) to ensure that runoff is adequately filtered.
- During reclamation, the caliche/gravel pit would be regraded to closely match preconstruction conditions and revegetated.

### **Noxious Weed Control**

- The BLM would determine the size and density of the noxious weed infestations requiring implementation of a control program.
- Mechanical, chemical, biological, or other methods approved by the BLM would be used to control infestations of noxious weed in disturbed areas.
- The operator would include provisions for noxious weed prevention and treatment in the SUPO. These may include removal of weed sources that could be picked up and transported by passing vehicles.

### **Pollution Control and Hazardous Substances Management**

- Leaking equipment would be promptly repaired or removed from the site to prevent contamination from spills. Any soil or water that has been contaminated would be placed in appropriate containers and removed from the site. Disposal of vehicle fluids on public land would not be authorized.

- Copies of spill prevention, control, and countermeasure plans are required, and would be provided to the Authorized Officer.
- Use of pesticides and herbicides would comply with applicable Federal and State laws. Prior to use of pesticides, the BLM authorized officer would approve a plan for its use.
- Storage tanks would have a berm constructed around them, of sufficient dimensions to contain the contents of the largest tank, to serve as secondary containment should a spill occur.
- The concentration of hazardous substances in the reserve pit at the time of pit backfilling would not exceed the standards set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).
- All drilling-related CERCLA hazardous substances removed from the location and not reused at another drilling location would be disposed of in accordance with applicable Federal and State regulations.
- All pits and tanks containing liquids or semi-liquids would be covered to prevent the entrapment or contamination of wildlife.

### Drilling Operations

All proposed drilling operations and related surface-disturbing activities, as well as any change from an approved APD, would be approved before such activities are conducted. Approval occurs in accordance with (1) appropriate Onshore Oil and Gas Orders, (2) 43 CFR 3160, (3) Notices to Lessees, and (4) lease terms and conditions of approval.

### Producing Operations

Portable and temporary facilities located on the drill pad are used to initiate the production from the reservoir. As drilling proceeds and reservoir limits are established, permanent production facilities

are designed and installed. The type, size, and number of the facilities are determined by the number of producing wells, expected production rates, volumes of gas and water expected to be produced with the oil, and the number of separate leases involved. Any construction of new, permanent production facilities would conform to the best management practices described above and also must comply with the regulations (CFR), onshore orders, and applicable Notices to Lessees.

Additional considerations may arise from power systems that may be required for pumping (gas or electric) and generate noise; the siting and operation of facilities to separate water from oil, treatment and storage facilities; and the need to dispose of wastewater that may be saline via evaporation pits or fluid injection.

Fluid minerals operations are subject to the applicable laws, regulations, lease terms and stipulations, orders, notices, and instructions of the BLM Authorized Officer. These include, but are not limited to, conducting operations in a manner that ensures the proper handling, measurement, disposition, and site security of leasehold production; and protecting other natural resources (including groundwater and other mineral deposits, i.e. potash, coal), environmental quality, life, and property:

- All production equipment installed on Federal leases would be constructed to prevent birds and bats from entering them and, to the extent practical, to discourage perching and nesting.
- All unused portions of the drill pad (which are the disturbed areas no longer needed for production operations, would be reclaimed.

### Abandonment and Reclamation (Well Pads and Roads)

A reclamation plan would be part of the SUPO. Additional reclamation measures may be required based on the conditions existing at the time of abandonment, and included as part of the conditions of approval of the Notice of Intent to Abandon.

- All materials and equipment used in reclamation would be free of noxious weed seeds.
- The areas disturbed would be recontoured to the original contour or a contour which blends with the surrounding topography and minimizes erosion. The soil would be free of contaminants and would have adequate depth to provide for successful vegetation reclamation.
- Reestablishment of vegetation activities would be initiated prior to or during the next growing season after abandonment.
- Additional agronomic practices such as imprinting, mulching and irrigation would be required until reclamation is successful for areas where natural rainfall or other characteristics such as soil depth and structure are expected to limit seedling establishment.
- Vegetation reclamation would be considered successful when healthy, mature perennials are established with a composition and density that closely approximates the surrounding native vegetation as prescribed by the BLM, and the reclamation area is free of noxious weeds.
- The SUPO would include a restoration plan for habitat of special status species when the BLM determines it is appropriate. The restoration plan would be developed in consultation with the BLM and approved by the BLM. The NM BLM guidance is that affected parties and the grazing permittee would be invited when developing abandonment procedures.

## RESOURCES:

- Soil Conservation Service Survey Handbook
- Best Management Practices (BMPs) for Oil and Gas Development on Public Lands-  
<http://www.blm.gov/nhp/300/wo310/O&G/Ops/operations.html>  
<http://www.blm.gov/bmp/index.htm>
- New Mexico Oil Conservation Division - <http://www.emnrd.state.nm.us/ocd/>
- <http://www.emnrd.state.nm.us/OCD/Bureaus/Environmental/PIT/PITandBelowGradeTankGuidelines.pdf>
- Carlsbad Approved Resource Management Plan Amendment and Record of Decision, October 1997
- Roswell Approved Resource Management Plan and Record of Decision, 1997