

RECLAMATION

Managing Water in the West

BRANTLEY AND AVALON RESERVOIRS RESOURCE MANAGEMENT PLAN AMENDMENT FOR MINERALS LEASING AND DEVELOPMENT



U.S. Department of the Interior
Bureau of Reclamation
Albuquerque Area Office
Albuquerque, New Mexico

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

The Bureau of Land Management is responsible for stewardship of our public lands. The BLM is committed to manage, protect and improve these lands in a manner to serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife habitat, wilderness, air and scenic quality, as well as scientific and cultural values.

Prepared by:

**BIO-WEST, Inc.
1063 West 1400 North
Logan, Utah 84321-2291
435.752.4202
www.bio-west.com**

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CHAPTER 1: BACKGROUND

1.1 INTRODUCTION

The U.S. Department of the Interior (USDI), Bureau of Reclamation (Reclamation) has prepared this Resource Management Plan Amendment (RMPA) to address future Federal leaseable (e.g., geothermal, oil, gas) minerals development on Reclamation-administered lands in Eddy County, New Mexico (Figure 1-1). The lands encumbered by the RMPA are part of Reclamation's Carlsbad Project, which is authorized under the Reclamation Act of June 17, 1902, and the Brantley Project Acts of 1972 (P.L. 92-514) and 1980 (P.L. 96-375). The Minerals Leasing Act of 1920, as amended, provides the Secretary of the Interior with authority to issue leases on lands where the mineral rights are held by the Federal government. This authority has been delegated to the USDI, Bureau of Land Management (BLM), a Cooperating Agency for the preparation of this RMPA. This RMPA amends Reclamation's 2003 Resource Management Plan for Brantley and Avalon Reservoirs (Reclamation 2003) and immediately affects those lands identified as containing existing *Unleased Federal Minerals*, as well as any future unleased mineral estate.

1.2 PROJECT LOCATION AND SETTING

Brantley and Avalon Reservoirs are located on the Pecos River, approximately 15 miles and 5 miles, (24 kilometers and 8 kilometers) respectively, upstream from the City of Carlsbad, New Mexico (Project Area). The Project Area includes Brantley Dam and Reservoir, Avalon Dam and Reservoir, the historic McMillan Dam (now breached) and the McMillan Dam Tender's Quarters, the original McMillan Reservoir area, and the section of the Pecos River between the two reservoirs, along with the lands subject to water inundation and a surrounding buffer of land at elevations higher than maximum reservoir storage (Figure 1-2). Avalon Dam and Reservoir, the historic McMillan Dam (now breached), the original McMillan Reservoir Area, and all associated buildings are listed on the National Register of Historic Places (NRHP). The Project Area is surrounded by a mosaic of mostly BLM, State of New Mexico, and private lands. At Brantley Reservoir, the Project Area boundary encompasses almost 45,000 acres (18,211 hectares) of land that were acquired by Reclamation through fee purchase, condemnation, or withdrawal from public domain. At Avalon Reservoir the Project Area includes approximately 4,000 acres (1,619 hectares) of land that were acquired using similar methods. Within the Project Area boundary there are approximately 5,600 acres (2,266 hectares) of lands that were transferred to the Carlsbad Irrigation District (CID) in 2001.

In 1905 the Reclamation Service was authorized to purchase an existing storage and irrigation system, together with its water rights, in the Pecos River Basin. The original system was constructed by a series of private entities; however, private operation of the project ended in 1904 when a flood on the Pecos River destroyed most of those facilities. The original Carlsbad Project was authorized by the Secretary of the Interior on November 28, 1905. Since that time, project facilities have been

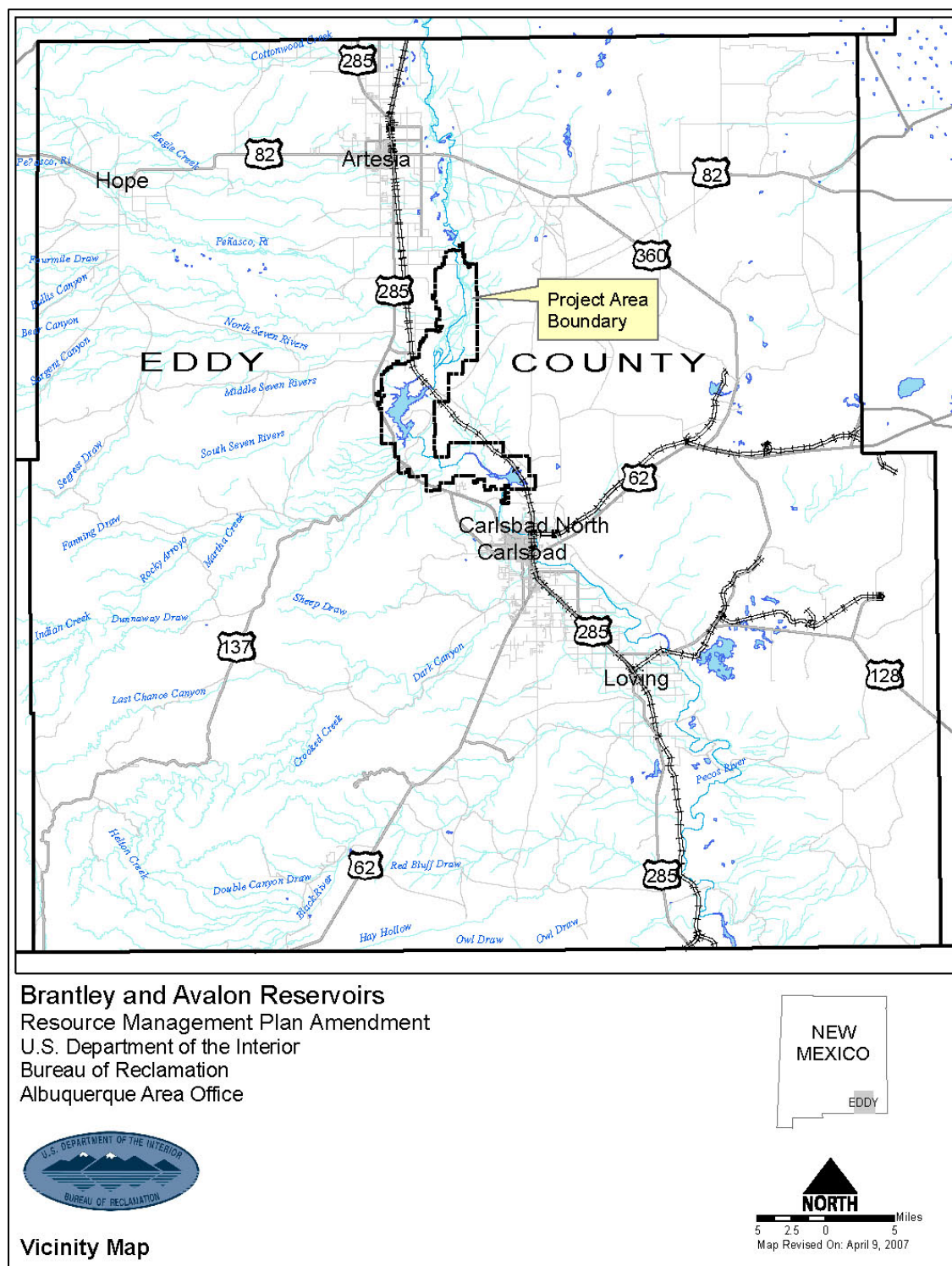


Figure 1-1. Brantley and Avalon Reservoirs Resource Management Plan Amendment (RMPA) Project Area Location Map.

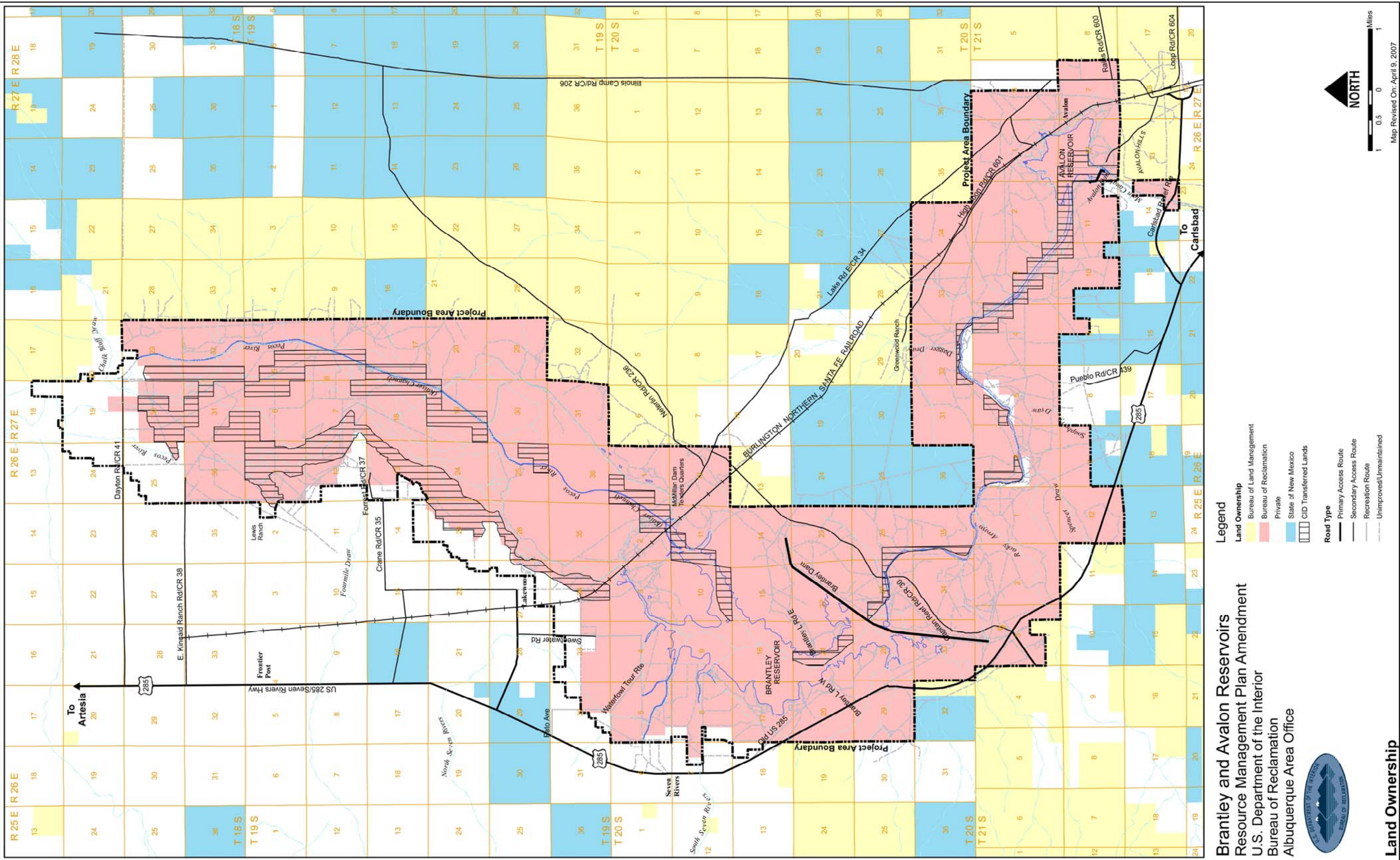


Figure 1-2. Brantley and Avalon Reservoirs Resource Management Plan Amendment (RMPA) Project Area Map.

rehabilitated, enlarged, and improved under subsequent authorizations which provide for irrigation, flood control, river regulation, fish and wildlife, recreation, and other beneficial uses.

Today, the two reservoirs are managed primarily for agricultural irrigation, but they also provide secondary flood-control, recreation, and fish and wildlife habitat benefits. Brantley Lake State Park, located on the east and west sides of Brantley Reservoir, is managed by the New Mexico State Parks Division and serves approximately 80,000 visitors annually by providing recreational activities such as camping, picnicking, boating, fishing, and swimming. Eddy County is responsible for managing lands surrounding Champion Cove at Brantley Reservoir for primitive recreational uses with no specific recreational facilities provided. The New Mexico Department of Game and Fish manages the remaining lands around Brantley Reservoir as a Wildlife Management Area, which provides hunting and fishing opportunities and improved habitat for fish and wildlife. The Seven Rivers Wildlife Management Area, located on the northwest side of Brantley Reservoir, is also managed by the New Mexico Department of Game and Fish. The lands surrounding Avalon Reservoir are managed by the CID, although there are no specific recreational facilities provided.

The oil and gas industry is a significant part of the State of New Mexico's economy, including Eddy County, and represents a major land use activity within the State. With the Project Area located above the Permian Basin, which is a rich resource for oil and gas reserves, increased interest has been expressed in exploration and production of these resources within the Project Area in recent years.

1.3 PURPOSE AND NEED FOR THE RMPA

Mineral leasing on Reclamation lands is administered by the BLM under provisions of Title 43, Subpart 3100 of the Code of Federal Regulations (CFR). Leasable minerals (e.g., oil and gas) are under discretionary authority, meaning that they are open to development through application and permitting by the BLM with concurrence by Reclamation. Except for those minerals and conditions meeting the provisions of Section 10 of the Reclamation Projects Act of 1939, leases for mineral and geothermal resources on all land acquired or withdrawn by Reclamation are issued by the BLM per an Interagency Agreement between Reclamation and BLM dated December 1982. Under this agreement the BLM will, in all issues involving mineral and geothermal leases, request that Reclamation determine whether leasing is permissible and, if so, provide any stipulations required to protect the interests of the United States.

Through the 1982 Interagency Agreement, Reclamation and the BLM agreed to coordinate on land use planning, land resource management, land conveyance and exchange, and cooperative services. The agreement brings coordinated agency efforts into compliance with existing laws and policies and provides that Reclamation will, when requested, provide expertise in the area of water resources conservation, development, and management, to be utilized by the BLM in preparing its RMPs. The agreement further provides that the BLM will, when requested, provide expertise in the areas of

land, resource, forest, range, oil, gas, and mineral management, to be utilized by Reclamation when preparing its RMPs and in managing Reclamation-administered acquired or withdrawn public lands.

In further consideration of oil and gas activities on Federal lands, Section 365 of the Energy Policy Act of 2005 was signed by President George W. Bush on August 8, 2005, and a Memorandum of Understanding (MOU) executed to improve the efficiency of processing oil- and gas-use authorizations on Federal lands. The Energy Policy Act and MOU require the Secretary of the Interior and various Federal agencies to work together to further the objectives of Section 365 of the Energy Policy Act, with specific emphasis on developing measures to aid in the streamlining and coordinating of Federal permit processing for onshore oil and gas operations on Federal lands. In compliance with that requirement and to consider cumulative impacts, Reclamation is amending its existing RMP (Reclamation 2003) to appropriately evaluate future oil and gas leasing and development activities within the Project Area in order to comply with existing guidelines and laws.

The proposed RMPA would immediately affect those lands currently identified as containing ***Unleased Federal Minerals***, or about 16 percent of the Project Area, as well as any lands within the Project Area that in the future would contain Unleased Federal Minerals (e.g., expired leases).

1.3.1 Need for the RMPA

Reclamation, in its 2003 RMP, evaluated the conditions for existing mineral leasing and development within the Project Area, developed additional oil and gas leasing stipulations, and recommended that such stipulations be adopted (Reclamation 2003). These recommended oil and gas leasing stipulations were consistent with the BLM's existing mineral leasing stipulations at the time. However, Reclamation did not evaluate the cumulative impacts of reasonably foreseeable future mineral leasing and development on Project Area resources in the 2003 RMP. The RMPA is needed to establish oil and gas leasing stipulations on Reclamation lands to ensure full consideration of requirements necessary to appropriately protect Project Area resources.

1.3.2 Purpose for the RMPA

In recent years the BLM has experienced a tremendous increase in interest from oil and gas development companies for new lease nominations throughout Eddy County, including the Project Area. Applications for oil and gas drilling activities on existing lease areas are reviewed on the ground and approved if negative effects to natural and cultural resources can be mitigated. The purpose of the RMPA is to develop appropriate guidance that will allow Reclamation and BLM to make informed decisions about oil and gas leasing and development on Reclamation-administered lands in order to comply with existing guidelines and laws. The result is an RMPA that identifies the lands within the Project Area that will be subject to the proposed stipulations and made available for oil and gas development through leasing and what requirements or stipulations are needed to manage those lands and protect other resource values.

Decisions on all subsequent site-specific minerals leasing and development actions on Project Area lands will be tiered to the RMPA Final Environmental Assessment (FEA) document (Reclamation 2011). That is, additional compliance with all applicable laws and regulations, such as NEPA, Section 106 of the National Historic Preservation Act, the Clean Water Act, and the Endangered Species Act, will occur on site-specific lease/drilling proposals. However, the scope of the site-specific approval process will be streamlined and facilitated by the planning and programmatic evaluation of impacts in the FEA document. Any lands identified for development will need to follow the Section 106 National Historic Preservation Act process before work begins. This includes all Federal mineral estates within the Project Area and future leases on lands conveyed to the CID in 2001. Stipulations that will be attached to future Federal mineral leases and future CID mineral leases may include, but are not limited to, controlled surface use, timing limitations, or no surface occupancy. The RMPA also identifies the circumstances necessary for granting waivers, exceptions, or modifications to leasing stipulations.

CHAPTER 2: EXISTING MINERALS LEASING FRAMEWORK

2.1 INTRODUCTION

This chapter describes continuing management directives and the current minerals leasing framework for the Resource Management Plan Amendment (RMPA) document. Continuing management directives refers to the guidance provided by legislation, the existing Brantley and Avalon Reservoirs Resource Management Plan (RMP) (Reclamation 2003), and other relevant authority on U.S. Department of the Interior, Bureau of Reclamation (Reclamation)-administered lands within the Project Area. Those Reclamation land resources and programs not addressed in this document will continue to be managed as provided under the existing RMP (Reclamation 2003), which is outlined below.

2.2 CONTINUING MANAGEMENT DIRECTIVES AND ACTIONS

This section describes the existing resource management directives and actions that will continue within the Project Area based on the more detailed discussions provided in the RMP document (Reclamation 2003). The more detailed General Management Directives and Site-Specific Management Directives are provided in Chapter 5 of the RMP Document. The information in the following section provides a summary description of the Existing Management Strategy in the RMP and pertains only to Reclamation-administered lands within the Project Area.

2.2.1 Description of the Existing Management Strategy

The Existing Management Strategy (Figure 2-1) provides for a variety of land uses within the RMPA Project Area (Project Area) including expanded developed recreation areas, improved Primitive Recreation Areas (designated sites, some limited facilities), and Wildlife Management Areas. New facilities and roads will be developed, as funding allows, including boating, camping, picnicking, hiking, and biking facilities. Facilities that improve or protect environmental quality are included, as well as regulation and information systems that inform the public. Land use cooperative agreements with jurisdictions for management of surrounding lands will be pursued. Grazing leases may be limited, reduced, increased, or maintained, based on the capability of the resources to sustain grazing, and grazing will be regulated in a more effective manner through development of an allotment-specific Grazing Management Plan by Reclamation, with assistance from the U.S. Department of the Interior, Bureau of Land Management (BLM). Under the Existing Management Strategy, some new recreational facility development will occur. Existing recreational developments will be maintained. Figure 2-1 shows the types and location of facilities proposed under the Existing Management Strategy, and Table 2-1 provides a facility summary.

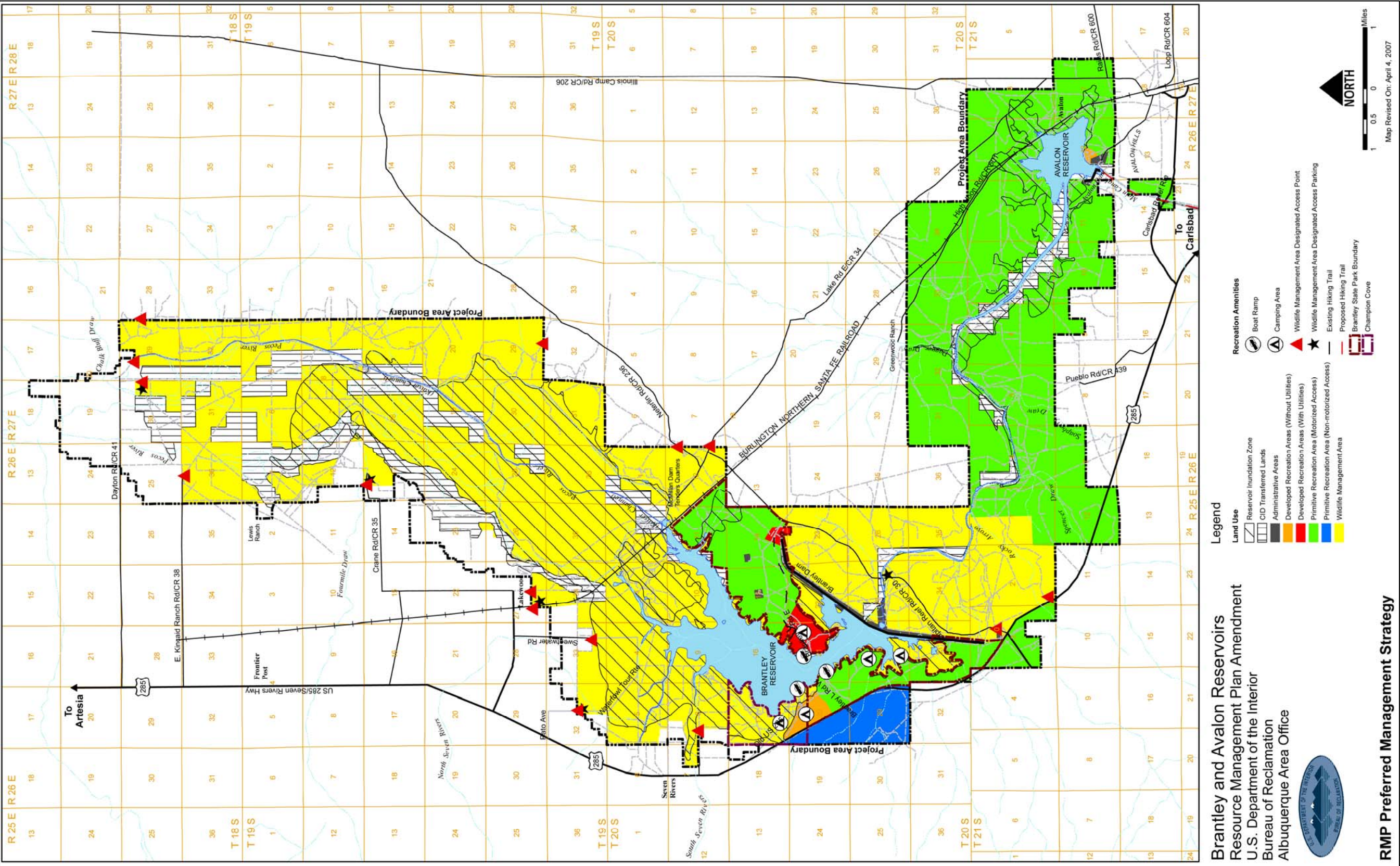


Figure 2-1. Brantley and Avalon Reservoirs Resource Management Plan (RMP) Existing Management Strategy.

Table 2-1. Land Use Categories and Recreation Facilities Summary for the Resource Management Plan (RMP) Existing Management Strategy.

LAND USE CATEGORIES AND RECREATION FACILITIES	EXISTING MANAGEMENT STRATEGY: MULTI-USE PURPOSE EMPHASIS
Land Use Categories	
Developed Recreation Area (with utilities)	346 acres (140 hectares)
Developed Recreation Area (without utilities)	200 acres (81 hectares)
Primitive Recreation Area (motorized access)	16,354 acres (6,618 hectares)
Primitive Recreation Area (non-motorized access)	816 acres (330 hectares)
Wildlife Management Area	24,729 acres (10,007 hectares)
Administrative Area	398 acres (161 hectares)
Recreation Facilities	
Total Number of Dispersed Campsites ^a	1,717
Total Number of Developed Campsites	150
Total Number of Boat Ramps	3
Total Number of Developed Campgrounds	3
Total Number of Primitive Campgrounds	2
Approximate Facility Capacity ^b (Persons at One Time)	7,468
Approximate Boating Capacity (Boats at One Time)	Brantley = 113, Avalon = 20

^a Dispersed Campsites are calculated as 0.10 campsite per acre (0.04 campsite per hectare) in Primitive Recreation Areas (motorized access).

^b Calculated as total number of campsites multiplied by four persons; capacity will vary with water elevations.

2.2.2 Facility Management

Within existing Project Area constraints, Reclamation will explore the possible reduction of water level fluctuations and recommend beneficial water operations to enhance resources under the Existing Management Strategy. If deemed to be legal, feasible, and practical, those organizations that receive water from the Carlsbad Project will be contacted and involved in the planning process. Any changes to water operations will be consistent with the original project authorization, existing international treaties, established Federal and State laws, and Pecos River Compact regulations. In addition, Reclamation will pursue an agreement with the Carlsbad Irrigation District (CID) for maintaining and protecting historic facilities and sites within the Project Area.

Reclamation completed the Pecos River Supplemental Water Project EA in 2009 in accordance with the National Environmental Policy Act (NEPA) to evaluate the impacts from a proposal to obtain supplemental water for the Pecos River (Reclamation 2009), which may affect future water operations and facility management within the Project Area. The project is needed to comply with the 2006–2016 Biological Opinion (BO) for the Carlsbad Project Water Operations and Water Supply Conservation Environmental Impact Statement (EIS) (Reclamation 2006). The BO and EIS commit Reclamation to operate the Carlsbad Project with a target flow of 35 cubic feet per second (cfs) at the Taiban Gage and keep the river in continuous flow in order to conserve the Federally protected Pecos bluntnose shiner (*Notropis simus pecosensis*). The purpose of the project is to provide adequate water to keep the river continuous, meet the contracted irrigation needs of the Carlsbad Project, avoid hindering New Mexico delivery requirements to Texas, and to establish partnerships in the basin. Reclamation obtained supplemental water to provide the operational ability to release approximately 2,500 acre-feet of water out of Sumner Lake per year, while also ensuring that there is enough water at Brantley Reservoir to meet the contracted irrigation needs of the Carlsbad Project.

2.2.3 Land Use

Under the Existing Management Strategy, Reclamation and New Mexico State Parks Division (State Parks) will implement a public education and information program at Brantley and Avalon Reservoirs regarding waste disposal, existing regulations, recreational opportunities, recreational use guidelines, Project Area signing, and Project Area mapping. The current “no wake” designation for shoreline areas at Brantley Reservoir will remain in force. Avalon Reservoir will be managed as a “no wake” lake under the Existing Management Strategy. Four new Developed Recreation Areas (without utilities) will be developed; one each at Avalon Reservoir, McMillan Dam Tender’s Quarters, Champion Cove, and West Side Brantley Lake State Park.

Reclamation will continue to implement oil and gas leasing stipulations under the Existing Management Strategy in an effort to prevent or reduce impacts to other Project Area resources. Oil and gas leasing stipulations include No-Surface Occupancy Zones to reduce resource conflicts within the Project Area. Reclamation has developed and implemented an agreement between management agencies to notify and coordinate oil and gas activities within the Project Area. Reclamation’s proposed oil and gas leasing stipulations are included in Appendix A.

Under the Existing Management Strategy, Reclamation will develop and implement an access management plan to define public access sites, indicate agency jurisdiction, and prepare access regulations for the Project Area. Roads accessing existing Developed and Primitive Recreation Areas will be maintained and improved as needed. However, approximately 133 miles (214 kilometers) of currently unmanaged and unmaintained roads will be closed and revegetated.

Four new primitive access sites with small gravel parking areas will be developed in the Brantley Wildlife Management Area north of Brantley Reservoir. These include the Seven Rivers North Access Site, Lakewood Access Site, Fourmile Draw Access Site, and North Access Site. Motorized access to Wildlife Management Areas will be limited to existing travel routes, and non-motorized access could be restricted on a seasonal basis, if necessary, for the benefit of specific wildlife species.

State Parks will continue to implement access-control points within Brantley Lake State Park, and shoreline vehicular access will be prevented except at designated areas such as existing boat ramps and shoreline access points. Public and private access points to the Project Area will be clarified and restricted to designated routes. Reclamation will control access to sensitive areas (e.g., wildlife habitat, archaeological sites, Project facilities) and pursue an agreement among State Parks, New Mexico Department of Game and Fish (NMDGF), and State and local governments for management and jurisdiction of Project Area roads.

Permitted grazing will continue on approximately 12,762 acres (5,165 hectares) of Reclamation-administered lands under the Existing Management Strategy. Reclamation will pursue an agreement with the BLM for coordinated management of grazing within the Project Area. Agreements with surrounding property owners and Eddy County will be sought in order to assure that surrounding land uses are compatible with and complementary to recreation development and wildlife management within the Project Area.

2.2.4 Recreation

Under the Existing Management Strategy, the number of potential dispersed campsites found within Primitive Recreation Areas (motorized and non-motorized access) will decrease from the existing 1,737 to a total of 1,717 as a result of increased Developed Recreation Areas (both with and without utilities). The number of developed campsites will increase from 51 (existing) to 150 as a result of adding 99 potential camping units in several new campgrounds. However, the actual number of camping units developed may vary given site-specific resource considerations. Hunting and fishing will still be allowed within the Project Area as specified by the NMDGF. Recreational facilities not currently meeting Americans with Disabilities Act (ADA) standards will be improved to meet ADA requirements.

A capacity limit regarding the number of boats at one time (BAOT) on the reservoir will be established and enforced. Under the Existing Management Strategy, BAOT capacity will be established at 33 acres (13 hectares) per boat. Using this figure, approximately 113 BAOT will be allowed at Brantley Reservoir, and 20 BAOT will be allowed at Avalon Reservoir when the reservoirs are full. A new, non-motorized, multi-use trail system will be constructed under the Existing Management Strategy to connect Avalon Reservoir with the Flume in the City of Carlsbad.

Based on the number of available campsites, boat ramps, and BAOT, the Existing Management Strategy is designed to accommodate up to 7,468 persons at one time (PAOT) (i.e., maximum daily capacity). It is expected that yearly attendance will gradually increase over current levels because of the increased capacity of Developed Recreation Areas (with and without utilities), the improved condition of the facilities, the broadened recreation opportunities that will be provided, and regional population growth. Primitive recreation visitation will be expected to remain about the same as under current conditions. Annual visitation to Brantley Lake State Park will be expected to grow moderately (by less than 5 percent annually) with the addition of proposed developed and primitive recreational facilities.

2.2.5 Natural and Cultural Resources

Reclamation, State Parks, the State of New Mexico Environment Department/Surface Water Quality Bureau, and other agencies (as appropriate) will protect and/or enhance the water quality of Brantley and Avalon Reservoirs. This action will include completing additional baseline quality studies and monitoring water quality.

In cooperation with State Parks and the NMDGF, Reclamation will determine the need to develop and implement an Integrated Pest Management Plan for vegetation and rodents. Control methods could include mowing, bulldozing, applying chemicals, burning, removing, pulling, and trapping. This plan would update and improve the vegetation management program currently being implemented.

The NMDGF, State Parks, and Reclamation will determine the need to develop and implement a Fishery Management Plan that would seek to enhance recreational fishing opportunities where feasible within existing operating criteria. The Fishery Management Plan would evaluate the need for catch limitations or other management modifications and implement such management actions as appropriate. In addition, fishing regulations will be established for certain bay areas to protect the fishing experience for anglers and reduce conflicts with recreational boaters. An interpretive display highlighting fish and wildlife found within the Project Area will be developed at the Visitor Center.

Reclamation currently has a wildlife management plan on the Reclamation Albuquerque Area Office website (Reclamation 2010). This plan is titled “Lower Pecos River Waterfowl and Wildlife Areas Management Plan for the Brantley Project Mitigation Lands 2005–2010.” State Parks, NMDGF, and the U.S. Fish and Wildlife Service (USFWS), and other agencies (as appropriate) will develop and implement a Wildlife Management Plan for protection and enhancement of wildlife species within Wildlife Management Areas. The Wildlife Management Plan will specify management responsibilities, designate sensitive habitats, and recommend enhancement opportunities. These same entities will develop and implement a wetlands management plan that may identify restrictions of recreational activities in wetland areas and will increase protection and enhancement opportunities within the Project Area.

Integral to the recommended mitigation measures and resource planning will be the development and use of interpretive signage. These features will promote a better public understanding of the Project Area's natural and cultural resource issues and how they relate to reservoir use. The success of a mitigation or enhancement program is often connected to the type and amount of public interpretation and communication. Reclamation and State Parks will be encouraged to develop an Interpretive Master Plan for the Project Area.

Consistent with Federal and State laws and regulations, cultural and paleontological sites will continue to be protected from the unauthorized collection and excavation of artifacts and all other ground-disturbing activities. However, protection of archaeological and paleontological resources will be emphasized, and the existing cultural resources program will be enhanced. A permit and compliance with the National Historic Preservation Act will be required for any professional excavation of archaeological or historic sites.

2.3 LANDS AFFECTED BY THE RMPA

This RMPA will update existing management directives that pertain to energy and mineral development in the previous RMP (Reclamation 2003). It should be noted that development of existing Federal mineral leases would continue according to the terms of the lease at the time of execution, until such time as the lease expires and becomes subject to the terms in place upon expiration. As such, of the approximately 43,745 acres (17,703 hectares) of Federal (Reclamation) lands within the Project Area boundary, less than 9,361 acres (3,788 hectares), or 21 percent, are currently identified as ***Unleased Federal Minerals*** that would be immediately subject to this RMPA (Table 2-2). Figure 2-2 shows the location of various minerals leasing categories within the Project Area including Federal minerals.

Table 2-2. Leased and Unleased, Federal and Private Minerals within the Resource Management Plan Amendment (RMPA) Boundary.

MINERALS CATEGORY	AREA IN ACRES
Federal Minerals (Reclamation) Leased Lands	25,242 (10,215 hectares)
Federal Minerals (Reclamation) Unleased Lands	9,361 (3,788 hectares)
Reclamation Flowage Easement Lands (non-Federal lands)	3,349 (1,355 hectares)
Reclamation Minerals Subordinate Lands (Federal lands)	3,553 (1,438 hectares)
Carlsbad Irrigation District Lands	5,589 (2,262 hectares)
Private (non-Federal) Minerals	2,085 (844 hectares)
Non-Reclamation Lands	314 (127 hectares)
Total Area	49,493 (20,029 hectares)

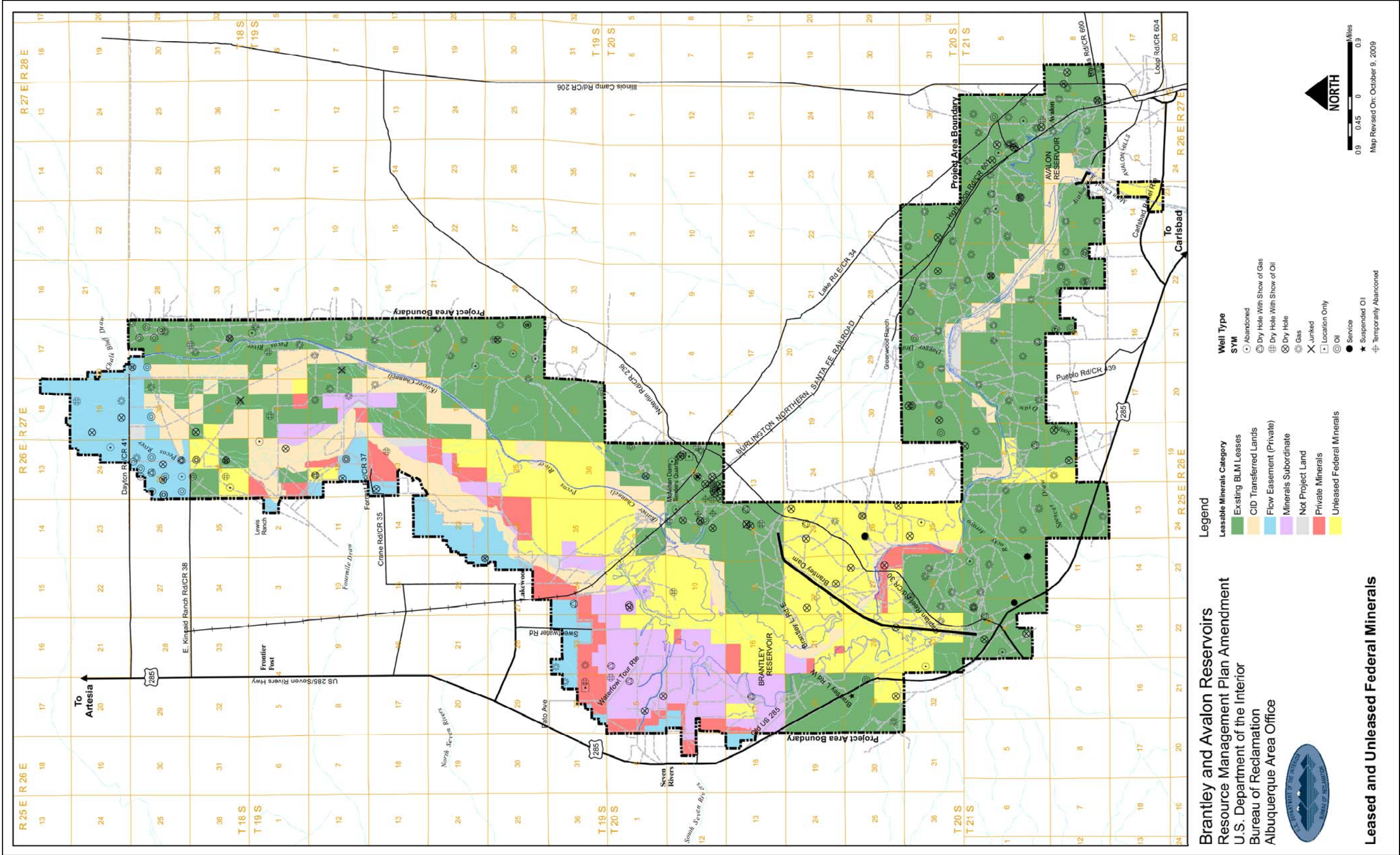


Figure 2-2. Brantley and Avalon Reservoirs Resource Management Plan Amendment (RMPA) Project Area Leased and Unleased Federal Minerals.

Of the 49,493 acres (20,029 hectares) of land within the Project Area, only 43,745 acres (17,703 hectares) will be subject to the proposed oil and gas leasing stipulations presented in Appendix A. These lands comprise four minerals categories identified in Table 2-2. Federal Minerals Leased Lands, which account for 25,242 acres (10,215 hectares) of the Project Area, include Federally owned minerals that are currently leased and subject to the lease stipulations in place at the time those minerals were leased. Federal Minerals Unleased Lands comprise 9,361 acres (3,788 hectares) of the Project Area, while Reclamation Minerals Subordinate Lands comprise 3,553 acres (1,438 hectares) of the Project Area. Although the Reclamation Minerals Subordinate Lands involve private minerals that cannot be leased by the United States, Reclamation acquired and retains the right to restrict the development of the mineral estate to conform to Reclamation stipulations.

The fourth category involves CID Lands. In 2001 the United States conveyed the surface and mineral estate of 5,589 acres (2,262 hectares) of Project Area lands to the CID. The lands conveyed to CID are subject to management consistent with the management by Reclamation on adjacent lands, including the rights and obligations related to the mineral estate. The CID mineral estate is considered private and subject to the laws and regulations of the State of New Mexico. However, the CID mineral estate can only be leased in compliance with the stipulations in place by Reclamation for the leasing of Federal minerals at the time of lease issuance. Currently, the majority of the CID mineral estate is leased and subject to the stipulations in place at the time those minerals were leased.

There are 2,085 acres (844 hectares) of Reclamation lands within the Project Area that contain Private (non-Federal) Minerals that are not subject to Federal Mineral stipulations, but are subject to the surface use stipulations as permitted by Reclamation. Reclamation also obtained flowage easements on 3,349 acres (1,355 hectares) of non-Federal land that are also not subject to Federal stipulations (Reclamation Flowage Easement Lands). And there are 314 acres (127 hectares) of private surface and private minerals lands that are not subject to the jurisdiction of the United States.

2.4 ALTERNATIVE ENERGY DEVELOPMENT

Neither Reclamation's 2003 RMP nor BLM's 1988 RMP address alternative (e.g., solar, wind, geothermal) energy development within the Project Area. Current agency policy regarding solar energy development is to facilitate environmentally responsible commercial development of solar energy projects. Commercial concentrated solar power or photo-voltaic generating facilities must, however, comply with Reclamation and BLM planning, environmental, and current right-of-way application requirements, as do other similar uses.

The 2005 Wind Energy Development on BLM-administered Lands in the Western United States Programmatic EIS (BLM 2005) evaluated the potential impacts associated with the proposed action to develop a Wind Energy Development Program, including the adoption of policies and BMPs. Similarly, the 2008 Geothermal Leasing in the Western United States Programmatic EIS

(BLM 2008) will evaluate the potential impacts associated with the proposed action to facilitate geothermal leasing decisions on existing and future lease applications and nominations to the Federal mineral estate. These programmatic EISs amend existing BLM land use plans to address wind and geothermal energy development proposals, respectively.

As programmatic evaluations, the wind and geothermal EISs do not evaluate site-specific issues associated with individual development projects. A variety of location-specific factors and variations in project size and design would determine the magnitude of the impacts from individual projects. Therefore, based on current land use plans and policy guidance, any proposals to locate either solar, wind, or geothermal energy generating facilities within the Project Area would be evaluated on a case-by-case basis using the assessment criteria in current RMP documents for similar uses. A discussion of alternative energy potential in the Project Area can be found in Chapter 3.

CHAPTER 3: EXISTING MINERALS LEASING CONDITIONS

3.1 INTRODUCTION

This chapter describes the existing conditions for minerals leasing and development within the Project Area in 2010. Minerals leasing and development conditions were identified by on-site inspections; literature searches; contacts and coordination with local, State, and Federal agencies and personnel; and, in some cases, detailed technical reports. The following information provides an overview of the regional landscape characteristics, existing minerals leasing conditions, and reasonable foreseeable minerals development projections that affect minerals leasing and development conditions within the Project Area.

3.2 REGIONAL MINERALS LEASING CHARACTERISTICS

Brantley and Avalon Reservoirs are located within the geologic region known as the Permian Basin, so titled because much of the notable geology of the region had its origins in the Permian Period (245 to 286 million years ago [mya]), and because it centers on a reef and basin that existed in a shallow sea late in that period (Chronic 1987). In late-Permian times, in what is now southeast New Mexico and northwest Texas, Capitan Reef surrounded the Delaware Basin. Capitan Reef was east of the Ouachita Mountain Range, which blocked the prevailing easterly trade winds, putting the reef, basin, and surrounding shallow seas in a “rain shadow” (Stanley 1989). A rain shadow refers to the drier side of a mountain range resulting from moisture-laden clouds precipitating before crossing over the ridgeline. Over time the Capitan Reef developed upward and somewhat inward, while the Delaware Basin deepened. By the end of the Permian Period, the Delaware Basin was cut off from regular circulation with the ocean, and evaporites precipitated within and filled the basin (Hendrickson and Jones 1952, Kelly 1971, Stanley 1989).

Most of the economically important geologic resources were also formed or originated in the Permian Period. Within the Project Area oil and gas are found predominantly to the north of the Capitan Reef area, in the shallow, water-deposited sediments that occurred on the shoreward side of the reef front. In this “northwestern shelf” area (referring to the continental shelf on the northwest of the supercontinent Pangaea), later geologic movements resulted in a complex of small faults, anticlines, and synclines that created structures trapping oil and gas between impermeable strata (Chronic 1987). Oil and gas are also found among the buried Capitan Reef sediments and within the Central Basin Plateau east of the Delaware Basin (Stipp and Haigler 1956, BLM 1986a). Gas beds occur in the Delaware Basin, but they are so deep that it is presently not economically feasible to extract them (BLM 1994). As shallow seas evaporated during the Permian Period, evaporate minerals were deposited. Many of these remaining minerals have high economic values in today’s market. These minerals include gypsum, anhydrite, salt, potash, and calcite (BLM 1994).

During the late Cenozoic Period (up to 12 mya), geologic activity in the region consisted mainly of uplift of Capitan Reef in the Guadalupe and Glass Mountains. The regional uplift and consequent dissolution of evaporites within the Pecos Valley created a complex of collapsed caverns, slumped materials, alluvium, and river deposits (Hendrickson and Jones 1952, Kelly 1971, Reclamation 1982).

Currently, the north-south-oriented Middle Pecos Valley is bound to the west by broad, uplifted mountains and mesas, such as the Guadalupe and Sacramento Mountains. To the east of the valley is the low, gently sloping Llano Estacado Plain (Kelly 1971). The Guadalupe Ridge/Seven Rivers Hills and McMillan Escarpment cut across the valley in a northwestern direction, exposing the remnants of the ancient reef system that rimmed the Delaware Basin. The valley is mainly covered by terrace sediments and river alluvium deposited during the Quaternary Period (0 to 2 mya). The other major rock exposures in the Guadalupe Ridge/Seven Rivers Hills and McMillan Escarpment consist of the Tansill, Yates, and Seven Rivers Formations. Rocks within these formations are mainly clastic and reef-deposited sedimentary rocks and evaporites including limestone, dolomite, sandstone, mudstone, siltstone, and gypsum. Anhydrite, salt, and potash are also found within these formations, but are not often exposed as a result of weathering and dissolution patterns.

Most of the Pecos River tributaries drain the western highlands and include the Penasco, Fourmile Draw, North Seven Rivers, South Seven Rivers, and Rocky Arroyo. Very few drainages meet the Pecos River from the east, with only the Chalk Bluff Draw being notable.

The Project Area is part of the Permian Basin which overlaps western Texas and eastern New Mexico. The first oil well drilled in the New Mexico portion of the Permian Basin dates from the 1920s and the area continues to produce oil and natural gas. That production includes lands within the Project Area where the first well was drilled in 1926. The boundary of the Carlsbad Field Office of the BLM encompasses both Lea and Eddy Counties, as well as the southern portion of Chaves County, an area consisting of approximately 6,381,000 acres (2,582,391 hectares). Within this boundary are approximately 2,197,000 acres (889,126 hectares) of BLM land where the Federal government owns both the surface and subsurface mineral estate, as well as an additional 1,898,000 acres (768,121 hectares) of Federal mineral estate where the surface is not administered by the BLM (e.g., lands administered by Reclamation, National Park Service, Forest Service, Department of Energy). The 43,745 acres (17,703 hectares) of Federal mineral lands and lands subject to Federal mineral leasing stipulations within the Project Area fall within this latter category and represent approximately 1 percent of the Federal mineral estate within the Carlsbad Field Office area.

In the Carlsbad Field Office, some 15,400 wells were drilled as new well completions during the 30-year period between 1975 and 2004 (BLM 2007). This represents an average of 513 well completions per year. The 1997 Carlsbad RMPA (BLM 1997) analyzed surface disturbance as nine acres (4 hectares) of initial surface disturbance for each well, which included well pads, access roads, and pipeline right-of-ways. The analysis also included reclamation in the amount of 5 acres (2 hectares) per well within two years. Using this analysis, the amount of surface disturbance from

existing Federal wells within the Carlsbad Field Office ranges from 61,600 to 138,600 acres (24,930 to 56,091 hectares). There are also active wells on State and private lands adjacent to the Project Area and throughout the Carlsbad Field Office area.

The Project Area contains less than 2 percent of the more than 21,000 oil and gas wells in Eddy County. About half of those are in operation. In 2009 the Project Area contained a total of 330 wells permitted to more than 50 companies. Of these wells 32 percent (107) are dry, junked, suspended, service, or location only. About 8 percent (25) are permanently abandoned and an additional 3 percent (10) are temporarily abandoned. About 57 percent of the wells (188) are currently in operation: 141 of these wells are gas wells and 47 are oil wells.

3.3 EXISTING MINERALS LEASING CONDITIONS

Mineral resources are divided into three categories: locatable, leasable, and saleable. Locatable minerals include gold, silver, lead, zinc, and other “high value” metallic ores subject to the Mining Law of 1872, as amended by 30 U.S.C. Ch. 2. Leasable minerals are oil and gas, oil shale, coal, potash, phosphate, sodium, gilsonite, and geothermal resources. These are subject to lease under: the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181, et seq.); the Mineral Leasing Act for Acquired Lands as amended (30 U.S.C. 351-359); the Federal Coal Leasing Amendments Act, 1997 (30 U.S.C. 184, et seq.); and the Geothermal Steam Act of 1970 (30 U.S.C. 1001-1025).

Saleable minerals are of the common variety and include sand, stone, gravel, pumice, cinders, clay, and other minerals extracted in bulk. These minerals are subject to sale and disposal at the discretion of Reclamation under: the Act of July 31, 1947, as amended (30 U.S.C. 601 et seq.); the Act of July 23, 1955 (30 U.S.C. 601); the Act of September 28, 1962 (30 U.S.C. 611); and Section 10 of the Reclamation Projects Act of 1939 (43 U.S.C. 387). Mineral leasing on Reclamation lands is administered by the BLM under provisions of Title 43, Subpart 3100 of the CFR. Leasable minerals (i.e., oil and gas) are under discretionary authority, meaning they are open to development through application and permitting by the BLM with concurrence by Reclamation. Except for those minerals and conditions meeting the provisions of Section 10 of the Reclamation Projects Act of 1939, leases for mineral and geothermal resources on all land acquired or withdrawn by Reclamation are issued by the BLM per an interagency agreement between Reclamation and BLM dated December 1982.

Under this agreement the BLM will, in all issues involving fluid mineral and geothermal leases, request that Reclamation determine if leasing is permissible and if so, provide any stipulations required to protect the interests of the United States. Current Reclamation stipulations and conditions of approval for oil and gas leasing within the Project Area are provided in Appendix A. Additional Reclamation stipulations are developed and included as part of any permit to use Reclamation-withdrawn lands. The current stipulations primarily address oil and gas leasing and do not address other Project Area mineral resource developments.

3.3.1 Alternative Energy

In February 2003, the Department of Energy and the Department of Interior released the report “*Assessing the Potential for Renewable Energy on Public Lands*” (BLM 2003). The report weighed factors for producing energy from concentrated solar power (CSP), photo-voltaic (PV), wind, biomass, and geothermal facilities. The report indicates the potential for producing energy from biomass and geothermal resources is low in southeast New Mexico, although a portion of the Project Area north of Brantley Dam is within a region of known or potential geothermal resources.

The report indicates the potential for producing wind energy in the Project Area is poor to fair. Poor is defined as Class 2 with wind speeds of 12.5 to 14.3 miles per hour measured at an altitude of 50 meters. Fair is defined as Class 3 with wind speeds of 14.3 to 15.7 miles per hour measured at an altitude of 50 meters. Most of the Project Area falls within the Class 2 category. The report indicates the potential for CSP and PV in the Project Area are good, with an average of 5.5 to 6.5 kilowatt hour per square meter per day (kWh/m²/day).

3.3.2 Fluid Minerals

Since 1926, 330 wells have been drilled within the Project Area. Of the total known wells, 188 wells (57 percent) are in operation, 3 wells (1 percent) are suspended, 10 wells (3 percent) are temporarily abandoned, and 25 wells (8 percent) are permanently abandoned. In addition, 104 wells (31 percent) are dry, junked, service, or location only.

In 2009 nine wells were in production within Brantley Reservoir’s inundation zone, but they were above the maximum conservation pool (current reservoir level). If any wells are operational when the Brantley Reservoir floodgates are raised to the point that they are within the actual flood pool, adequate berming will be required to prevent inundation and potential water contamination (Reclamation 1982). Non-operational wells are closed according to the Carlsbad Resource Area RMP (BLM 1994).

Exact information about the production of Project Area wells is not available. Of the more than 21,000 wells estimated in Eddy County, less than 2 percent are located within the Project Area (GO-TECH 2009). Thus, it is not possible to determine what amount of oil and gas production comes directly from the Project Area. Because production numbers are not available on specific wells, it is not possible to evaluate the effect of increasing or decreasing the number of wells. Similarly, it is difficult to evaluate the impact on specific operators.

Oil and gas exploration and production operations typically produce some hazardous materials. These materials include drilling fluids, drilling muds, water, and crude oil. Additional hazardous materials typically associated with drilling and production operations include new and used motor oil, gasoline, diesel fuel, and other materials related to motor and machinery maintenance.

Exploration and production wastes are regulated by Code 43 of the Federal Regulations Part 3160 and are not considered hazardous waste materials. A number of management practices for oil and gas exploration and production operations were specified in the Brantley Reservoir Project National Environmental Policy Act (NEPA) documents (Reclamation 1971, 1972, 1981, 1982) and the Carlsbad and Roswell District BLM NEPA documents (BLM 1986b, 1994). These practices should be sufficient to prevent adverse impacts from oil operations. The BLM is responsible for monitoring compliance with the specified practices.

3.3.3 Other Extractive Resources

Minerals

New Mexico leads the nation in potash production by providing more than 70 percent of total sales in the United States. The Carlsbad District in Southeast New Mexico is the largest potash producing area in the nation with Mosaic Potash, Inc., and Intrepid Potash, Inc., operating mines in the district. While potash mining and processing was once the number one regional industry, oil and gas have surpassed it. Competition with foreign sources and a lower demand for the region's potash have resulted in an uncertain future for this industry. It is, therefore, unlikely that potash exploration would occur within or near the Project Area in the near future. However, if market conditions change, this relatively rare resource may spur an exploration boom for potash minerals within the Project Area (BLM 1994). Reclamation's current stipulations do not address potash mining.

Aggregate Resources

A variety of aggregate resources are found within the Project Area, including gravel, sand, and caliche. Currently, neither sand nor gravel resources are used within the Project Area. These resources exist, however, and greater demands for them may occur in the future. Caliche, a calcareously cemented layer common near the surface of Project Area soils, is used as well pad and road base. This resource currently is not being extracted. Reclamation's current stipulations do not address removal of aggregate resources. No other extractable or saleable geologic resources are known to occur within the Project Area.

3.4 REASONABLE FORESEEABLE MINERALS DEVELOPMENT

This section provides a summary of the exploration history, current lease status, and the 20-year projections for reasonable foreseeable development (RFD) in the Project Area. The RFD is a projection of the Federal minerals actions and activities, including development, that are likely to occur in the Project Area over the life of the RMPA (i.e., 20 years). Attention is focused on projecting Federal minerals leasing, exploration, development, production, and abandonment activities likely to occur on land managed by the Federal government within the Project Area. This projection includes the number, density, and type of wells likely to be drilled and the surface use requirements to project the amount of surface disturbance.

3.4.1 Exploration History

Well data for the Project Area, obtained from the BLM, indicates that the first well was drilled in 1926 and the oldest active well dates back to approximately 1938. To date, 330 wells have been drilled in the Project Area. A summary of current well information is provided in Table 3-1. Of the 330 wells, 188 (57 percent) are in operation, 3 (1 percent) are suspended, 10 (3 percent) are temporarily abandoned, and 25 (8 percent) are permanently abandoned. There are also approximately 104 wells (31 percent) within the Project Area that are dry, junked, service, or location only.

Table 3-1. Status of Oil and Gas Wells in the Project Area (2009).

WELL TYPE AND STATUS	NUMBER
Active Gas Well	141
Active Oil Well	47
Dry Well	61
Dry Hole with Show of Gas	16
Dry Hole with Show of Oil	19
Suspended Oil Well	3
Temporarily Abandoned Well	10
Permanently Abandoned Well	25
Junked Well	3
Service Well	3
Location Only	2
Total Wells	330

3.4.2 Development Projections

Using the past 83 years of data to determine the average rate of drilling, approximately 4.0 wells per year were drilled within the Project Area. Given a planning period of 20 years, one might project that 80 wells would be drilled within the Project Area during that time. Another scenario might be to assume that the next 20 years would be similar to the most active 10-year period for the Project Area, which was the decade from 1973 to 1982 with 77 wells drilled (or 7.7 wells per year). Conversely, another scenario might be to assume that the next 20 years would be similar to the least active 10-year period for the Project Area, which was the decade from 1987 to 1996 with 25 wells drilled (or 2.5 wells per year). Therefore, the potential RFD could range from 50 to 150 wells drilled on Reclamation lands over the 20-year planning period. The RFD does not imply any drilling restrictions or limitations; it is simply a forecast of anticipated activity based on history. The actual number of wells drilled would vary from year to year.

3.4.3 Surface Disturbance Assumptions

The assumptions for surface disturbance from access roads, drill pads, pipelines, power lines, and seismic activity were derived from Appendix 7 of the Special Status Species Proposed Resource Management Plan Amendment/Final EIS (BLM 2007). The following surface disturbance assumptions were used to estimate impacts associated with oil and gas exploration and development drilling activities within the Project Area:

- Stabilization of surface disturbance is expected to occur within 3 years.
- Access Roads: 14-foot-wide travel way, 1.5 acres (0.6 hectare) of initial disturbance per access road (0.75 acre [0.03 hectare] of disturbance stabilized per access road) per well.
- Drill Pads: 1.4 acres (0.6 hectare) of disturbance per average well pad (i.e., 250 feet by 250 feet [61 hectares by 61 hectares]), 1.0 acre (0.4 hectare) stabilized per abandoned well.
- Pipelines: 1.6 acres (0.6 hectare) initial disturbance per producing well (i.e., 30-foot [9 hectare] right-of-way width), 0.75 acre (0.03 hectare) stabilized per producing well, 0.5 acre (0.2 hectare) stabilized per abandoned producing well.
- Power Lines: 0.5 acre (0.2 hectare) initial disturbance per producing well, 0.25 acre (0.10 hectare) stabilized per well.
- Geophysical Lines: 1.0 acre (0.4 hectare) of disturbance per mile of geophysical line. Reclamation of disturbance is expected to occur within 3 to 5 years.

An average of 5.0 acres (2.0 hectares) per well was used to determine initial (i.e., short-term) surface disturbance. This is a total acreage value and includes initial surface disturbance from roads, pipeline, power lines, and other activities associated with exploration and development of oil and gas resources. An average of 2.5 acres (1.0 hectare) per well was used to determine stabilized (i.e., long-term) surface disturbance of active wells.

3.4.4 Development Estimates

The RFD history indicates that approximately two to eight wells have been drilled per year and that up to two wells per year have been plugged and abandoned, on average, in the Project Area. Direct impacts included surface disturbances of approximately 10 to 40 acres (4 to 16 hectares), of which approximately 5 to 20 acres (2 to 8 hectares) would have been reclaimed and stabilized by the end of 3 years. Successful reclamation and stabilization of the plugged and abandoned wells would have totaled approximately 3 acres (1 hectare) per year.

Over the next 20 years the RFD this RMPA document projects that between 60 and 80 wells would likely be drilled in the Project Area, and up to 40 wells would likely be plugged and abandoned. During that period approximately 300 to 400 acres (121 to 162 hectares) of surface area would be disturbed, while approximately 210 to 260 acres (85 to 105 hectares) would be reclaimed and stabilized within three years of the initial disturbance. Approximately 60 acres (24 hectares) would be reclaimed and stabilized from plugged and abandoned wells over the next 20-year planning period.

The estimated number of wells drilled per year over the next 20 years was determined by evaluating potential well locations based on proposed drilling restrictions (e.g., no surface occupancy areas, well spacing) presented in Chapter 4. Because of the relatively small geographic extent of the Project Area and over 85 years of oil and gas development history, the remaining area available for new wells will limit the number of wells that could be developed in the future compared with the past.

CHAPTER 4: MINERALS LEASING AND DEVELOPMENT MANAGEMENT STRATEGIES AND DIRECTIVES

4.1 INTRODUCTION

This chapter describes the minerals leasing and development requirements adopted as part of this Resource Management Plan Amendment document. Site-specific special-lease stipulations are summarized. Standard lease terms and conditions are detailed in Appendix A.

4.2 ENERGY, MINERALS, AND OTHER EXTRACTIVE RESOURCES

The basic assumption for mineral resources development within the Project Area is that there would be demand for the resource regardless of the action taken and that some level of exploration and development of resources would be allowed. Reclamation and BLM planning guidance for oil and gas leasing directs these agencies to make land use plan decisions (such as this RMPA) at the following four levels:

- Lands open for leasing subject to existing laws, regulations, formal orders, and the conditions of the standard lease form;
- Lands open to leasing subject to moderate constraints such as seasonal and controlled surface use restrictions;
- Lands open to leasing subject to major constraints such as NSO stipulations; and
- Lands closed to leasing.

Decisions to open lands to leasing represents Reclamation's determination, based on the information available at the time, that it is appropriate to allow development consistent with the terms of the lease, laws, regulations, and orders, and subject to reasonable conditions of approval. Much of the Project Area is within or near well-developed fields. Exploration and development of resources in well-developed areas reduces the distance required for roads, pipelines, and power lines. Therefore, the actual amount of ground disturbance within the Project Area of the 20-year planning horizon may be less.

Reclamation and BLM have the authority to control the density and location of surface-disturbing activities affecting public land and those activities associated with Federal mineral exploration and development. Reclamation and BLM have the authority to designate areas as closed or open to oil and gas leasing, attach a NSO stipulation to leases, and attach other

conditions of approval (COA) that are included in approved applications for permit to drill (APDs). Reclamation and BLM can also attach other conditions of surface use (CSU) stipulations such as requirements for wildlife surveys or plans of development (PODs). Use of these designations, stipulations, or COAs provides effective tools for development of mineral resources and management of the accompanying surface disturbance.

Restrictions to leasing of Federal minerals and Surface Occupancy may result in an increase in development of private and State minerals adjacent to leased and unleased Federal lands. Conditions of Approval are tools to be used in the effort to return areas that have had surface disturbance (such as drill pads and roads) to natural conditions. For a description of the COAs, see Appendix A. Implementation of COAs would reduce initial surface disturbance (direct impacts) and increase opportunities for reclamation success.

The RFD projections for oil and gas activities developed for this RMPA are based on drilling statistics for the Project Area during the past 83 years from 1926 to 2009 (see Section 3.3). The RFD does not imply any drilling restrictions or limitations but is simply a forecast of anticipated activity. The actual number of wells drilled per year varies from year to year.

Leasing with a NSO stipulation could dissuade bidders from purchasing lease parcels. When applied to permits for drilling, proponents may have to relocate drilling projects, thereby increasing construction costs on the project. Some lands may have to be developed through directional well drilling. Of the proposed lands open to oil and gas leasing with the NSO stipulation, all are in areas of high or moderate hydrocarbon potential. Some lease on these lands with the NSO stipulation could also be subject to drainage of hydrocarbons by non-Federal wells. In this situation, the lessee would not be responsible for payment of lost royalties unless an economic directional well can be drilled.

Complying with existing or proposed mineral leasing stipulations may in effect mean that some areas previously open to exploration and development with limited restrictions would be closed to protect sensitive resources. Over time this may result in increased costs associated with exploration and development, a decrease in oil and gas production, and reduced profits and associated economic benefits for entities extracting such Project Area resources. To the degree that NSO restrictions remove property from future oil and gas drilling, or make drilling significantly more difficult, some mineral resources may be unavailable for future extraction.

When the notice of a competitive sale of oil and gas leases clearly provides that a lease would be subject to a NSO stipulation, by making a bid for the indicated parcel the bidder is bound to accept the stipulation. Lessees would be advised that issuance of a lease in the Project Area with the NSO stipulation does not guarantee that a suitable surface location would be available for drilling or that the lease would be developed. Prospective lessees should take this into consideration prior to obtaining a lease with the NSO stipulation. If a lessee acquires a lease with an NSO stipulation attached, then it would be the responsibility of the lessee to locate a

suitable surface location that meets existing requirements. The immediate and long-term effects of NSO restrictions could include lost production opportunities, increased drilling and production costs, and loss of royalties.

There are existing oil and gas leases in areas where NSO stipulations would be applied to newly issued leases. Development of resources covered by these leases would continue under the terms of the lease and appropriate conditions of approval in these areas. Plans of Development (PODs) and COAs would be used to guide orderly development on existing Federal leases in the Project Area. Abandoned well pads and the caliche roads that serve them would be cleaned of caliche, raked, contoured, and reclaimed.

Oil and gas wells and storage facilities would include safety measures to ensure operations that minimize the potential for habitat pollution in the form of oil leaks or spills. Such measures would include, but not be limited to, replacement of worn or out-of-date materials and equipment, construction of spill-containment structures, removal of contaminated materials, and protection of well sites. These are standard operating procedures and have no additional impact. The RFD indicates that approximately 3 to 4 wells per year would be drilled and up to two wells per year would be plugged and abandoned in the Project Area. Direct impacts include surface disturbances of approximately 15 to 20 acres (6 to 8 hectares), of which approximately 8 to 10 acres (3 to 4 hectares) would be reclaimed and stabilized by the end of 3 years. Successful reclamation of the plugged and abandoned wells would total approximately 3 acres (1 hectare) per year.

Over the next 20 years, a total of 60 to 80 wells would be drilled in the Project Area and approximately 40 wells would be plugged and abandoned. During that period, approximately 300 to 400 acres (121 to 162 hectares) of surface would be disturbed and approximately 210 to 260 acres (85 to 105 hectares) would be reclaimed and stabilized within three years of initial disturbance. Approximately 60 acres (24 hectares) would be reclaimed and stabilized from plugged and abandoned wells over the 20-year planning period.

4.3 MINERALS LEASING AND DEVELOPMENT REQUIREMENTS

Federal mineral leasing and development may occur on lands where the surface is managed by Federal, State, Native American agencies, or private individuals. For minerals development on Federal (Reclamation) lands within the Project Area, management objectives are defined in terms of the availability of land for leasing (i.e., closed or open to minerals leasing) and the management of lands that are open to leasing (i.e., with standard terms and conditions or with special leasing stipulations). Federal mineral lands and lands subject to Federal mineral leasing stipulations account for 43,745 acres (17,703 hectares), or 88 percent, of the Project Area. All Federal mineral lands and lands subject to Federal mineral leasing stipulations within the Project Area are considered open for minerals leasing.

Lands open for minerals leasing may be open with no specific development restrictions defined in the original RMP or in this RMPA. However, these areas are subject to the *Standard Lease Terms and Conditions* as defined on the lease form. Or, lands open for leasing may be managed with constraints in the form of *Special Lease Stipulations*, which are provisions that modify the standard lease rights and conditions included in a lease when environmental and planning analyses have demonstrated that additional and more stringent environmental protection is needed. The three types of special lease stipulations defined for the Project Area are (1) *no surface occupancy*, (2) *no storage facilities*, and (3) *surface occupancy on a case-by-case basis*. A stipulation of no surface occupancy does not allow the surface of a given area to be occupied by oil and gas development facilities. A stipulation of no storage facilities does not allow storage facilities within a given area. A stipulation of surface occupancy on a case-by-case basis allows for a site-specific evaluation of proposed activities to determine the appropriateness of surface occupancy and storage facilities. Under certain conditions, Reclamation may grant waivers, exceptions, or modifications to lease stipulations. Table 4-1 provides a detailed summary of special lease stipulations implemented by this RMPA for the Project Area while Figure 4-1 illustrates their geographic locations.

Table 4-1. Detailed Area Summary of Special Lease Stipulations for the Brantley and Avalon Reservoirs Resource Management Plan Amendment (RMPA).

LEASABLE MINERALS CATEGORY	NO SURFACE OCCUPANCY	NO STORAGE FACILITIES	SURFACE OCCUPANCY ON A CASE-BY-CASE BASIS ^a	NO SPECIAL LEASE STIPULATIONS
Federal Minerals (Reclamation) Leased Lands	9,799 acres (3,966 hectares)	1,354 acres (548 hectares)	6,392 acres (2,587 hectares)	7,697 acres (3,115 hectares)
Federal Minerals (Reclamation) Unleased Lands	4,898 acres (1,982 hectares)	1,584 acres (641 hectares)	1,876 acres (759 hectares)	1,003 acres (406 hectares)
Reclamation Flowage Easements (non-Federal lands)	26 acres (11 hectares)	903 acres (365 hectares)	1,147 acres (464 hectares)	1,273 acres (515 hectares)
Reclamation Minerals Subordinate (Federal lands)	2,424 acres (981 hectares)	439 acres (178 hectares)	690 acres (279 hectares)	0 acre (0 hectare)
Carlsbad Irrigation District Lands	1,551 acres (628 hectares)	1,424 acres (576 hectares)	2,523 acres (1,021 hectares)	91 acres (37 hectares)
Private (non-Federal) Minerals	310 acres (125 hectares)	762 acres (308 hectares)	753 acres (305 hectares)	260 acres (105 hectares)
Non-Reclamation Lands	147 acres (59 hectares)	20 acres (8 hectares)	146 acres (59 hectares)	0 acre (0 hectare)
Total Area	19,155 acres (7,752 hectares)	6,486 acres (2,625 hectares)	13,527 acres (5,474 hectares)	10,324 acres (4,178 hectares)

^a No wells permitted.

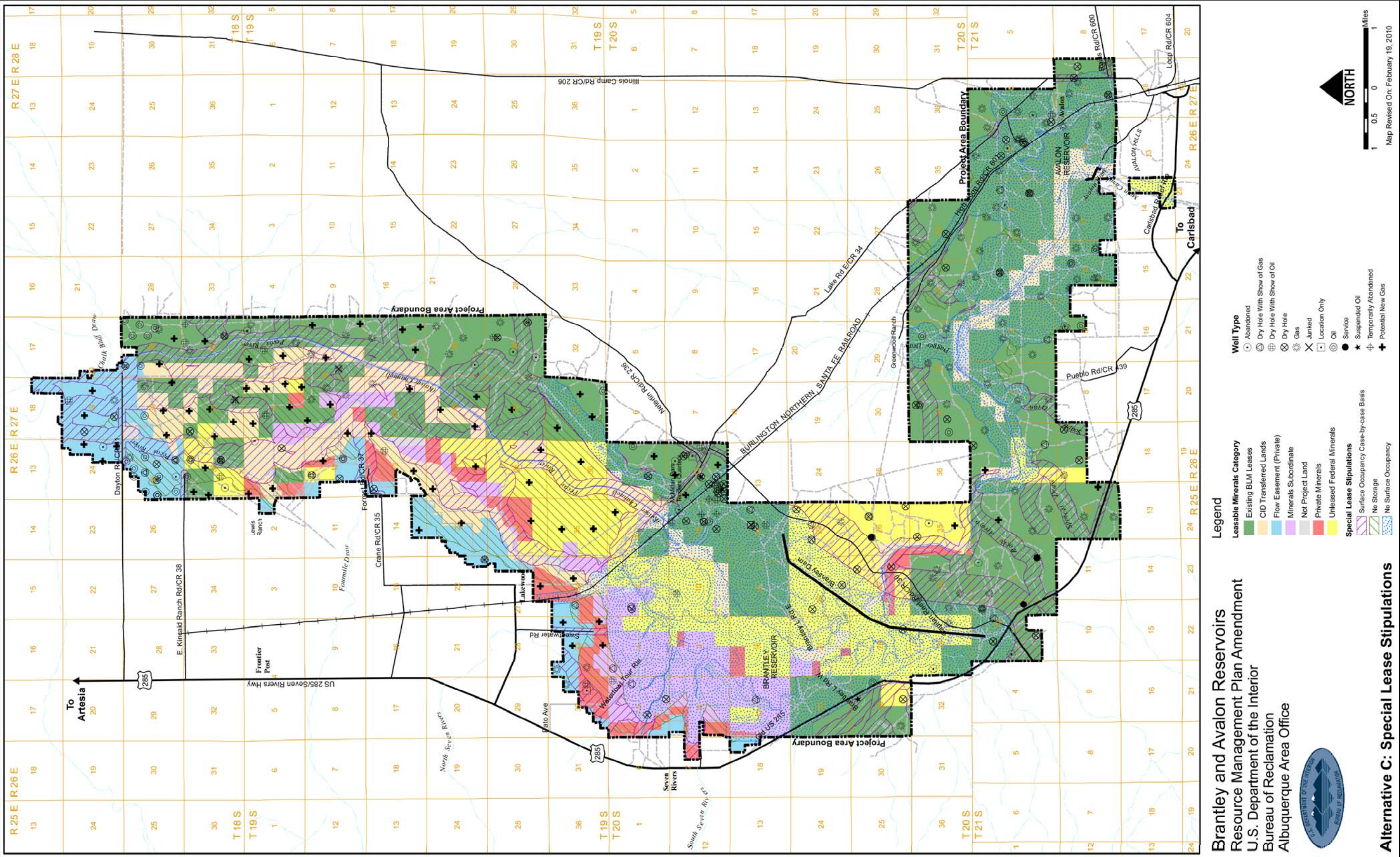


Figure 4-1. Brantley and Avalon Reservoirs Resource Management Plan Amendment (RMPA) Special Lease Stipulations.

Although Brantley Dam was first filled in 1988, the original 100-year sediment deposition estimate for Brantley Reservoir was completed in the 1950s based on limited water and suspended sediment data. New estimates by Reclamation use a longer period of flow and sediment gage records, which incorporate regulation of flood peaks since the 1950s, reduction of tributary sediment sources to the Pecos River, and the amount of sediment being trapped in upstream reservoirs (Reclamation 2008). As a result, the maximum water surface elevation at Brantley Reservoir has been revised from 3,271 feet (997 meters) to 3,263 feet (995 meters), and a no surface occupancy special lease stipulation has been applied below that elevation. Additionally, a no storage facilities special lease stipulation has been applied to areas within 660 horizontal feet (200 horizontal meters) of the 100-year floodplain elevation and below at both Brantley and Avalon Reservoirs.

The specific, special lease stipulations applied to meet the management objectives of this RMPA are summarized below and shown on Figure 4-1. These specific stipulations replace and/or supplement the General Surface Use and Occupancy Requirements found in Appendix C, Section C-1 of the 2003 RMP document.

- No surface occupancy within 2,640 horizontal feet (805 horizontal meters) of dam embankments, appurtenant structures, and tunnels at Brantley Dam or Avalon Dam Sites.
- Surface occupancy on a case-by-case basis for wells proposed between 2,640 horizontal feet (805 horizontal meters) and 5,280 horizontal feet (1,609 horizontal meters) of Brantley Dam Site.
- No surface occupancy within 660 horizontal feet (200 horizontal meters) of maximum water surface at Brantley Reservoir (elevation 3,263 feet [995 meters]) or Avalon Reservoir (elevation 3,190 feet [972 meters]).
- No storage facilities within 660 horizontal feet (200 horizontal meters) of the 100-year floodplain at Brantley Reservoir (elevation 3,283 feet [1,001 meters]) or Avalon Reservoir (elevation 3,200 feet [975 meters]).
- Surface occupancy on a case-by-case basis within 300 horizontal feet (91 horizontal meters) of all publicly maintained (e.g., State of New Mexico, Eddy County), designated roads and highways for construction of access roads and pipelines. No wells will be permitted within these areas.
- Surface occupancy on a case-by-case basis within 660 horizontal feet (200 horizontal meters) of normal high water line of streams, rivers, and arroyos for construction of roads and pipelines. Construction of access roads and pipelines will be restricted in high-value riparian and sensitive areas along streams, rivers, and arroyos. No wells will be permitted within these areas.

- No surface occupancy within 300 horizontal feet (91 meters) of all areas leased for recreational purposes (e.g., Brantley Lake State Park and Champion Cove).
- Surface occupancy on a case-by-case basis within 500 horizontal feet (152 meters) of any improvements either owned, permitted, leased, or otherwise authorized by Reclamation within the leased areas for construction of access roads and pipelines. No wells will be permitted in these areas.
- No surface occupancy within 200 horizontal feet (61 meters) of all designated, improved, and permitted trails.
- Surface occupancy on a case-by-case basis within 200 horizontal feet (61 meters) of established crops for the construction of access roads and pipelines. No wells will be permitted within these areas.
- Surface occupancy on a case-by-case basis within slopes steeper than 2:1 and within 200 horizontal feet (61 meters) of slopes steeper than 2:1 for the construction of access roads and pipelines. No wells will be permitted within these areas.
- Surface occupancy on a case-by-case basis within established right-of-ways of human-made canals, laterals, aqueducts, pipelines, or drainages for the construction of access roads and pipelines. No wells will be permitted within these areas.
- No surface occupancy within Critical or Occupied Habitat for Federally listed threatened or endangered species, and access may be restricted seasonally in other important wildlife areas.
- Surface occupancy on a case-by-case basis for the construction of wells, pipelines, roads, overhead electric distribution lines, and any other surface disturbance within the Carlsbad Irrigation District National Historic Landmark.

This RMPA incorporates legislative and regulatory requirements and/or management objectives that currently were not included under the 2003 RMP. The amount of land open to leasing with a special lease stipulation of no surface occupancy is 19,155 acres (7,752 hectares), or 39 percent of the Project Area. The amount of land open to leasing with a special lease stipulation of no storage facilities is 6,486 acres (2,625 hectares), or 13 percent of the Project Area. The amount of land that could be leased with standard lease terms and conditions is 10,324 acres (4,178 hectares), or 21 percent of the Project Area. The amount of land designated for surface occupancy on a case-by-case basis, but with no wells allowed, is 13,527 acres (5,474 hectares) or 27 percent of the Project Area.

APPENDIX A: OIL AND GAS LEASING STIPULATIONS

**A-1: GENERAL SURFACE USE
AND OCCUPANCY
REQUIREMENTS**

**A-2: GENERAL CONDITIONS OF
APPROVAL**

**A-3: PRACTICES FOR OIL AND GAS
DRILLING AND OPERATIONS
IN CAVE AND KARST AREAS**

APPENDIX A: OIL AND GAS LEASING STIPULATIONS

APPENDIX A-1: GENERAL SURFACE USE AND OCCUPANCY REQUIREMENTS

This appendix describes practices intended to be applied, when needed, to minimize surface disturbance.

The intent of the Surface Use and Occupancy Requirements is to best manage mechanical surface disturbance and other effects on specified natural resources. Mechanical surface disturbance is created by the use of such things as tools and machinery. Circumstances for waivers of the requirements have been included so that they will not be applied needlessly. Exceptions to the requirements will be considered in emergency situations involving human health and safety and the protection of the environment.

The basis for the “200 meter rule” used in the Surface Use and Occupancy Requirements is 43 CFR 3101.1-2, which states that, at a minimum, mitigation measures are deemed consistent with oil and gas lease rights if they do not require “...relocation of proposed operations by more than 200 meters...” The intent of the actions described in this Appendix is to comply with the regulations and allow the relocation of proposed activities to mitigate impacts, but by no more than 200 meters, without undertaking additional NEPA analysis. The opportunity exists through the NEPA process to design mitigation of impacts that would require relocation greater than 200 meters. The “200 meter rule” simply allows relocation of an activity, such as during on-site meetings prior to APD approval, without the need for detailed NEPA analysis.

The Surface Use and Occupancy Requirements identify minimum use standards for activities around certain natural and man-made features to ensure protection of those features.

- **Wildlife Habitat Projects:** Surface disturbance will not be allowed within 200 meters of existing or planned wildlife habitat improvement projects. Large-scale vegetation manipulation projects such as prescribed burns will be excepted. Access may be restricted seasonally in other important wildlife areas. This requirement will be considered for waiver with appropriate off-site mitigation, as determined by the Authorized Officer.
- **Threatened or Endangered Species:** Surface disturbance will not be allowed within 200 meters of critical or occupied habitat for Federally listed threatened or endangered species.
- **Raptor Nests and Heronries:** Surface disturbance will not be allowed within 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 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.

- **Slopes or Fragile Soils:** Surface disturbance will not be allowed on slopes over 30 percent. Exceptions will be considered for projects designed to enhance or protect renewable natural resources, or if a plan of operations 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.
- **Streams, Rivers, Arroyos, and Floodplains:** Storage facilities will not be allowed within 200 meters of the outer edge of the 100-year floodplain (As Defined by the Federal Emergency Management Agency FEMA), to protect the integrity of the floodplain. 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.

Surface occupancy will be considered on a case-by-case basis within 200 meters of the normal high water line of streams, rivers, and arroyos for construction of access roads and pipelines. Construction of access roads and pipelines will be restricted in high-value riparian and sensitive areas along streams, rivers, and arroyos. No wells will be permitted within these areas.

- **Playas and Alkali Lakes:** Surface disturbance will not be allowed within 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 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.

- **Springs, Seeps, and Tanks:** Surface disturbance will not be allowed within 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 200 meters of earthen tanks or the adjacent riparian areas created as a result of the presence of 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.
- **Caves and Karst:** Surface disturbance will not be allowed within 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, when the proposed activity is of a short duration, or when an approved plan of operations ensures the protection of the cave and karst resources. Also see Appendix A-3 for cave and karst drilling practices.
- **Visual Resource Management:** Painting of oil field equipment and structures to minimize visual impacts will 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 contrast of a project with the dominant color, line, texture, and form of the surrounding landscape. Other surface facilities or equipment approved by Reclamation, such as large-scale range improvements or pipelines, will be painted, when needed, to conform with the requirements of visual resource management to minimize visual impacts. Paint colors will be selected from the ten standard environmental colors 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.
- **Recreation Areas:** Facilities must be located so that they are not visible from designated recreation areas such as campgrounds, picnic areas, boat launch ramps, etc.
- **Publicly Maintained Roads:** Surface occupancy will be considered on a case-by-case basis within 90 horizontal meters of all publicly maintained (e.g., State of New Mexico, Eddy County), designated roads and highways for construction of access roads and pipelines. No wells will be permitted within these areas.
- **Established Crops:** Surface occupancy will be considered on a case-by-case basis within 60 horizontal meters of established crops for the construction of access roads and pipelines. No wells will be permitted within these areas.

- **Carlsbad Irrigation District National Historic Landmark:** Surface occupancy will be considered on a case-by-case basis for the construction of wells, pipelines, roads, overhead electric distribution lines, and any other surface disturbance within the Carlsbad Irrigation District National Historic Landmark.
- **Spacing Requirements:** The lease or portion of a lease for an area within and below the full conservation pool elevation may be issued for the sole purpose of assisting the orderly development of the Federal mineral estate. This lease will only be used to maintain state well-spacing requirements on the lands noted above. With the exception of providing access, determined on a case-by-case basis, this lease does not grant surface occupancy.

The specific stipulations listed below are designed to protect the dams, water conveyance facilities, recreational facilities, and the water quality in the Project Area.

1. Permittee agrees to provide written notice to the Bureau of Reclamation (Reclamation) 15 days prior to any and all intended surface activities in connection with exploration, drilling, or any other activity associated with, or leading to, oil and gas, geothermal or other leasable mineral production including seismic activity on any lands which Reclamation has jurisdiction as the surface agency.
2. Permittee agrees to no surface occupancy within 800 horizontal meters (~1/2 mile) from dam embankments, appurtenant structures, and tunnels at the Brantley or Avalon Dam sites. Drilling proposed within 800 to 1600 meters (~1/2 to ~1 mile) of either dam will be considered on a case-by-case basis after review of the geology of the proposed site. This stipulation is to ensure the integrity of the structures.
- 3a. Permittee agrees to no surface occupancy within 200 horizontal meters (~1/8 mile) or below the maximum conservation pool elevation (Brantley maximum conservation pool surface elevation is 3,263 feet above sea level) and no storage facilities within 200 horizontal meters or below the maximum flood zone elevation at Brantley Reservoir (Brantley maximum flood surface elevation is 3,286 feet above sea level). This stipulation is to reduce the possibility of contamination (pollution) affecting the reservoir waters.
- 3b. Permittee agrees to no surface occupancy within 200 horizontal meters (~1/8 mile) or below the maximum conservation pool elevation (Avalon maximum conservation pool surface elevation is 3190 feet above sea level) and no storage facilities below the maximum flood zone elevation at Avalon Reservoir (Avalon maximum flood surface elevation is 3,200 feet above sea level). This stipulation is to reduce the possibility of contamination (pollution) affecting the reservoir waters.

4. Permittee agrees to no surface occupancy within the established right-of-ways of any constructed or proposed Reclamation tunnel, canal, aqueduct, pipeline, lateral, drain, transmission line, telephone line, roadway, building, or other permanent structures or facilities under the administration, jurisdiction, or ownership of Reclamation. Surface occupancy will be considered on a case-by-case basis within 150 meters of any improvements either owned, permitted, leased, or otherwise authorized by the Reclamation within the leased areas for construction of access roads and pipelines. No wells will be permitted in these areas. Reclamation operation and maintenance roads will not be used for access without prior approval of Reclamation.
5. Permittee agrees to no surface occupancy within 200 horizontal meters of Critical or Occupied habitat for Federally listed threatened or endangered species.
6. Permittee agrees to no surface occupancy within 90 horizontal meters of all areas leased for recreational purposes (e.g., Brantley Lake State Park, Champion Cove, or other designated public recreation areas) and no surface occupancy within 60 horizontal meters of all designated, improved, and permitted trails. Permittee further agrees to locate production facilities so they are not visible from the reservoir or public recreation facilities (campgrounds, etc.).

APPENDIX A-2: GENERAL CONDITIONS OF APPROVAL

This appendix describes standard conditions of approval. When appropriate, conditions of approval may be selected from this list and attached to use authorizations. A check-list or other suitable means may be used to identify applicable conditions of approval. The emphasis is primarily on oil and gas operations and rights-of-way, but these conditions may be applied to other activities, as well.

General Conditions

1. Reclamation does, through the duly authorized officer executing this Permit, hereby consent to Permittee's request to enter onto lands of the United States for the purpose of; establishing, constructing, placing, operating and maintaining an oil and gas well head and appurtenant facilities approved _____ by the State of New Mexico's Energy, Minerals and Natural Resources Department (_____) and constructing, improving and maintaining an access road to that site, subject to the terms and conditions herein written:

said lands located in the XX (XX) of Section XX and the XX of the XX (XX) of Section XX of Township XX South, Range XX East, New Mexico Principal Meridian in Eddy County, New Mexico. The area is shown in the attached "Exhibit A," and made a part hereof.

2. This permission given herein will neither constitute nor be construed as any surrender of the jurisdiction and supervision of the United States over the lands described herein.
3. The Permittee hereby agrees to indemnify and hold harmless the United States, their employees, agents, and assigns from any loss or damage and from any liability on account of personal injury, property damage, or claims for personal injury or death arising out the Permittee's activities under this Permit.
4. The Permittee will comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the Permittee will comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et. seq.) with regard to any toxic substances that are used, generated by or stored on United States lands or on facilities authorized by this permit. (Re: 40 CFR, Part 702-799 and particularly provisions on polychlorinated biphenyls, 40 CFR, Part 761.1 - 761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 will be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of the reportable release or spill of toxic substances will be furnished to Reclamation concurrent with the filing of the reports to the involved Federal agency or State government.
5. The Permittee agrees to indemnify and hold harmless the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601 et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on United States lands unless the release is wholly unrelated to the Permittee's activities on United States lands. This agreement applies without regard to whether a release is caused by the Permittee, its agent or unrelated third parties.
6. If, during any phase of the construction, operation, maintenance, or termination of the facilities authorized by this permit, any oil or other pollutant should be discharged, impacting United States lands, the control and removal, disposal, and cleaning up of such oil or other pollutant, wherever found will be the responsibility of the Permittee, regardless of fault. Upon failure of the Permittee to control, repair all damages to United States lands resulting therefrom, Reclamation may take such measures as deemed necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the Permittee. Such action by Reclamation will not relieve the Permittee of any liability or responsibility.

7. The Permittee will comply with all applicable water, ground, and air pollution laws and regulations of the United States, the State of New Mexico and local authorities. In addition the Permittee will comply with the following hazardous materials restrictions:
 - A. The Permittee will comply with all applicable Federal, State, and local laws and regulations, and Reclamation policies and instructions, existing or hereafter enacted or promulgated, concerning any hazardous material that will be used, produced, transported, stored or disposed of on or in lands, waters or facilities owned by the United States or administered by Reclamation.
 - B. “Hazardous material” means any substance, pollutant or contaminant listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601, et seq., and the regulations promulgated pursuant to that Act.
 - C. The Permittee may not allow contamination of lands, waters or facilities owned by the United States or administered by Reclamation by hazardous materials, thermal pollution, refuse, garbage, sewage effluent, industrial waste, petroleum products, mine tailings, mineral salts, pesticides (including, but not limited to, the misuse of pesticides), pesticide containers or any other pollutants.
 - D. The Permittee will report to Reclamation, within 24 hours of its occurrence, any events which may or does result in pollution or contamination adversely affecting lands, water or facilities owned by the United States or administered by Reclamation.
 - E. Violation of any of the provisions of this Article will constitute grounds for immediate termination of this Permit and will make the Permittee liable for the cost of full and complete remediation and/or restoration of any Federal resources or facilities that are adversely affected as a result of violation.
 - F. The Permittee agrees to include the provision contained in paragraphs (a) through (e) of this Article in any subcontract or third party contract it may enter into pursuant to this Permit.
 - G. Reclamation agrees to provide information necessary for the Permittee, using reasonable diligence, to comply with the provision of this Article.
8. The holder shall be responsible for maintaining the site in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. “Waste” means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

9. The Permittee will minimize disturbance to existing fences and other improvements on United States lands. The Permittee is required to promptly repair improvements to at least their former condition. Functional use of these improvements will be maintained at all times. The Permittee will make a documented good-faith effort to contact the owner of any improvements prior to disturbing those facilities. When necessary to pass through a fence line, the fence will be braced on both sides of the passageway prior to cutting the fence.
10. This Permit is granted subject to the existing rights in favor of the public or third parties for highways, roads, railroads, telegraph, telephone and electrical transmission lines, canals, laterals, ditches, flumes, siphons, and pipelines on, over, and across said land.
11. This Permit is personal, revocable, and nontransferable and will become effective on the date hereinabove written and unless otherwise sooner terminated, will continue for ten (10) years so long as in the opinion of Reclamation it is considered expedient and not detrimental to the public interest, and will be revocable upon sixty (60) days written notice to the Permittee in accordance with Article 11. Upon such revocation or termination, the aforesaid structure or structures and all accessories will be removed without delay at the expense of the Permittee. The Permittee will leave the site(s) in a condition satisfactory to Reclamation and the Bureau of Land Management.
12. This Permit may be revoked by Reclamation upon sixty (60) days written notice to the Permittee if:
 - A. The Permittee's use of the land interferes with existing or proposed facilities; or
 - B. The land contained in the Permit is needed for any United States purpose; or
 - C. The United States disposes of its interest in the land contained in this Permit; or
 - D. The Permittee fails to comply with any other terms or conditions of this Permit and upon notification of the violation, Permittee fails to adequately cure the violation in a timely manner. Reclamation will have the final determination regarding the adequacy of the cure.
13. Reclamation has appraised the fair market value of the right-of-use fee in accordance with 43 CFR, Part 429.3. Said appraisal has established the fee for the right-of-use as \$_____, and is due prior to the United States executing this Permit.
14. The Permittee will comply with Section 106 of the National Historic Preservation Act (P.L. 89-665, 80 Stat.915 [16 USC 470] as amended, the New Mexico Cultural Properties Act (NMSA 1978, 18-6-1 through 18-6-23), and the Prehistoric and Historic Sites Preservation

Act (NMSA 18-8-1 through 18-8-8) and their implementing regulations for all registered cultural properties on Reclamation lands, specifically including all properties and lands within the Carlsbad Irrigation District National Historic Landmark. The New Mexico State Cultural Properties Act requires that survey work for archaeological sites be conducted prior to any development on State or Federal lands. The Permittee will get written authorization before any work is started within the Carlsbad Irrigation District National Historic Landmark. Any cultural resources discovered shall be immediately reported to the authorizing officer.

Pursuant to the Memorandum of Agreement with the Bureau of Reclamation, the Advisory Council on Historic Preservation and the New Mexico State Historic Preservation Officer, the Carlsbad Irrigation District will ensure compliance with the New Mexico Cultural Properties Act (NMSA 1978, 18-6-1 through 18-6-23), and the Prehistoric and Historic Sites Preservation Act (NMSA 18-8-1 through 18-8-8) and their implementing regulations for all registered cultural properties conveyed to the CID by the Bureau of Reclamation.

In the event cultural resources (including architecture, artifacts, and/or cultural debris of bone, shell, charcoal, or wood) are discovered during activities authorized herein, Permittee will immediately cease work in proximity of the discovery location and contact the Reclamation archaeologist immediately at (505) 462-3644, giving location and nature of the findings. The Permittee will exercise care so as not to disturb or damage the cultural materials discovered, and will provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Government.

Discovery of Human Remains: Any person who knows or has reason to know that he or she has inadvertently discovered possible human remains on Federal lands, must provide immediate telephone notification of the inadvertent discovery to the Reclamation archaeologist at (505) 462-3644.

If the discovery occurred in connection with an activity, including (but not limited to) construction, mining, logging, and agriculture, the person will cease the activity in the area of the discovery, make a reasonable effort to protect the items discovered, and wait for approval from the Reclamation archaeologist before resuming such activity. The requirement is prescribed under the Native American Graves Protection and Repatriation Act (Public Law 101-601; 104 Stat. 3042) of November 1990 and National Historic Preservation Act, Section 110(a)(2)(E)(iii) (Public Law 102-575, 106 Stat. 4753) of October 1992.

Destruction of Archaeological Resources: Any person who excavates, removes, damages, alters or defaces or attempts to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian land is subject to a maximum of five years in prison and \$250,000 fine, as prescribed under Sections 6 and 7 of the

Archaeological Resources Protection Act of 1979 (Public Law 96-95, 93 Stat. 721), as amended.

15. No member of or delegate to Congress or the Resident Commissioner will be admitted to any share or part of this Permit or to any benefit to arise therefrom, but this restriction will not be construed to extend to this Permit if made with a corporation or company for its general benefit.
16. The Permittee warrants that no person or agency has been employed or retained to solicit or secure this Permit upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee except bona fide employees and bona fide commercial agencies maintained by the Permittee for the purpose of securing business. For breach or violation of this warranty, Reclamation will have the right to revoke this Permit without liability or in its discretion to require the Permittee to pay the full amount of such commission, percentage, brokerage, or contingency fee to the United States.

Road Construction, Improvement, and Maintenance

17. The road will have a driving surface of 14 feet. The maximum grade is 10 percent unless agreed to by Reclamation in writing. If Reclamation does permit grades in excess of 10 percent for a distance of more than 300 feet, that segment will be designed by a professional engineer. Maximum width of surface disturbance from construction, improvement and maintenance activities will be 30 feet.
18. Crowning with materials on site and ditching on one side of the road of the uphill side will be required. The crown will have a grade of approximately 2 percent; i.e., 1 inch crown per 12 feet of width. If conditions dictate, ditching may be required for both sides of the road; if conditions permit, flat-bladed road may be considered.
19. Drainage control will be ensured over the entire road through the use of borrow ditches, outsloping, insloping, natural rolling topography, lead-off (turnout) ditches, culverts, and/or drainage dips. All lead-off ditches will be graded to a 3 percent maximum ditch slope. The spacing interval for lead-off ditches will be determined according to the following table, but may be amended depending upon existing soil types and centerline road slope in percentage.

SPACING INTERVAL FOR TURNOUT DITCHES

<u>Percent Slope</u>	<u>Spacing Interval</u>
0 – 4	400 feet – 150 feet
4 – 6	250 feet – 125 feet
6 – 8	200 feet – 100 feet
8 – 10	150 feet – 75 feet

A typical lead-off ditch has a minimum depth of one foot below and a berm 6 inches above the natural surface elevation. The berm will be on the downslope side of the lead-off ditch. The ditch will tie into vegetation wherever possible.

Culvert pipes will be used for cross drainage dips where low water crossings are not feasible. The minimum culvert diameter must be 18 inches. Any culvert pipe installed will be of a sufficient diameter to pass the anticipated flow of water. Culvert location and diameters will be submitted to Reclamation by Permittee for Reclamation approval.

On road slopes exceeding 2 percent, drainage dips will drain water into an adjacent lead-off ditch. Drainage dip location and spacing will be determined by the following formula:

$$\text{spacing interval} = 400 \text{ ft} / \text{road slope percent} + 100 \text{ ft.}$$

example 2% slope: $400/2 + 100 = 300 \text{ feet}$

20. The road or those portion identified by Reclamation may, as determined by Reclamation, be required to be surfaced with caliche, gravel, or other surfacing material which will be approved by Reclamation. When surfacing is required, surfacing material will be compacted to a minimum thickness of six inches with caliche material. The width of surfacing will be no less than the driving surface. Prior to using any mineral materials from any existing or proposed source, authorization must be obtained from Reclamation.
21. Where used, all Cattleguard grids and foundation design and construction will meet the American Association of State Highway and Transportation Officials (AASHTO) Load Rating H-20, although AASHTO U-80 rated grids will be required where heavy loads (Exceeding H-20 loading), are anticipated. Cattleguard grids will not be less than 8 feet in length nor less than 14 feet in width. A wire gate, 16 foot minimum width will be provided on one side unless otherwise requested by the surface user.
22. Permittee will maintain the road in a safe, usable condition. A maintenance program will include, but not limited to blading, ditching, culvert cleaning, drainage installation, cattle guard maintenance and surfacing.

23. Unless otherwise approved by the Authorized Officer, vehicle turnouts will be required. Turnouts will be located at 2000-foot intervals, or the turnouts will be intervisible, whichever is less.
24. Unless otherwise determined by Reclamation, the road will not be used as an access for the public. Reclamation withdrawn lands are established for project purposes and are not subject to the use by the general public. Permittee will be responsible to ensure that the public use is restricted from the withdrawn lands under management by Reclamation.
25. The area will be kept free of the following plant species: Malta starthistle, African rue, Scotch thistle, and Saltcedar.
26. Reclamation will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction and no further construction will be done at that point until clearance has been issued by Reclamation. Special restoration stipulations or a realignment may be required at such intersections, if any. Roads and pipelines will be routed around sinkholes and other karst features when practical. Turnout ditches and drainage leadoffs will not be constructed in such a manner as to increase or decrease the natural flow of water into or out of cave or karst features.

Road Rehabilitation

27. When the road is abandoned, it will be ripped at least sixteen inches deep, including all turnouts. The caliche may be reclaimed for re-use before ripping. The caliche will be removed and topsoil placed over the impacted area, and the surface disced before seeding. All culverts or other structures will be removed. All fill material will be replaced into the cut areas; borrow and lead-off ditches, drainage dips, or other erosion control earthwork will be filled or smoothed, and the abandoned road returned to the natural contours, as closely as possible. Traffic barriers will be installed at all vehicular access points to prevent further use of the road. Water breaks at least 8-inches high will be constructed as directed by Reclamation.
28. Permittee will reseed the entire area with the following mixture:

<u>Seed</u>	<u>Rate (lbs. per acre PLS)</u>
Alkali sacaton (<i>Sporobolus airoides</i>)	3 lbs. per acre
Sideoats grama (<i>Bouteloua curtipendula</i>)	5 lbs. per acre

Pounds of pure live seed (PLS): (Pounds of seed) * (percent of purity) * (percent of germination).

All disturbed areas are to be seeded with the seed mixture listed above. The seed and fertilizer are to be applied together by broadcasting with a seed spreader, than harrowed for seed coverage. Use of a seed drill is acceptable. Appropriate measures will be taken to insure that the seed/fertilizer mixture is evenly and uniformly planted. There will be no primary or secondary noxious weeds in the seed mixture. Seeds will be tested for viability and purity in accordance with State law(s) within nine months prior to purchase. Commercial seed will be either certified or registered and the seed mixture container will be tagged in accordance with State law(s). The seed will be available for inspection by Reclamation. The seeding will be repeated until a satisfactory stand is established as determined by Reclamation. Evaluation of growth will not be made before completion of the growing season after seeding.

29. Normally the best time for seeding is between June 15 and September 15. However, the Permittee may reseed immediately after completing surface abandonment procedures. In any event, Reclamation reserves the right to require reseeding at a specified time if the seed does not germinate after one complete growing season.
30. Permittee will contact Reclamation at 505.462.3599 at least three working days prior to the start of reseeding activities.

Drilling Surface Requirements: Standards

31. The approval of this action does not in any way grant or imply approval of any off-lease or off-unit action. It is the responsibility of the applicant to obtain any such approvals from the appropriate surface managing agency, including the Reclamation, and/or any private landowners.
32. Prior to commencing construction of the road, pad, or other associated developments, the operator shall provide the dirt contractor with a copy of the approved Surface Use Plan and the attached Conditions of Approval.
33. All topsoil and vegetation encountered during the construction of the drill site areas shall be stockpiled and made available for resurfacing of the disturbed areas after completion of the drilling operations. Topsoil on the (well name and number) is approximately (specify) inches in depth. A minimum of approximately (specify) Cubic yards of topsoil material shall be stockpiled on the (specify) edge / at the (specify) corner of the location for reclamation of the pad and pit area.

34. The Permittee shall post signs identifying the location permitted herein in accordance with the requirements contained in 43 CFR 3162.6. The following data is required on the well sign:

Operator's Name: _____

Well Name and No.: _____

Lease No.: _____

Location: xx' fxl & xx' fxl - Sec. nn T nn S, R nn E NMPM

35. All vehicles and equipment associated with the drilling, completion, or production phases of this well shall be confined to the approved road, pad and other areas approved herein.
36. The drill pad and access road for this well must be surfaced with 6 inches on compacted caliche, gravel or other approved surfacing material. Caliche, gravel or other related materials from new or existing pits on Federal mineral estate shall not be taken without the approval of Reclamation and the Bureau of Land Management. Payment for Federal mineral materials to be used for construction is required prior to construction of the pad and road.
37. Reserve or mud pits shall not be constructed within the Project Area. The Permittee will use the Closed Loop System with no reserve pits. The entire well pad will be bermed to prevent oil, salt, and other contaminants from leaving the well pad. Topsoil shall not be used to construct any of the berms. The berms shall be maintained throughout the life of the well.
38. Stockpiling of topsoil is required. The topsoil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. Any water erosion that may occur during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. The surface material for the road and well pad shall be removed before reclamation can begin.
39. Firewalls/Containment Dikes are to be constructed and maintained around all storage facilities/batteries. A 20-millimeter, permanent liner will be installed with a 4-ounce felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1.5 times the capacity of the largest tank. Automatic shut-off check valves, or similar systems, will be installed to minimize the effects of catastrophic line failures used in production or drilling. Exhaust noise from pump jack engines must be muffled or otherwise controlled.

40. If during any drilling or construction activities any sinkholes or cave openings are discovered, all drilling or construction activities shall cease immediately and Reclamation will be notified. Within one working day, Reclamation will evaluate the situation and determine if construction can continue or provide mitigation measures to lessen damage to the karst environment. Reclamation will coordinate this activity with the Bureau of Land Management and a verbal recommendation to proceed or stop the operation will be issued.
41. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Waste burial on site is not permitted.
42. All above ground structures not subject to safety requirements shall be painted by the Permittee to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project will be provided within thirty days following the execution of this permit.
43. All open-vent exhaust stacks associated with heater-treater, separator and dehydrator units shall be modified to prevent birds and bats from entering them and to the extent practical to discourage perching and nesting.

New production equipment installed on federal leases after November 1, 1993, will have the open-vent exhaust stacks constructed to prevent the entry of birds and bats and, to the extent practical, to discourage perching and nesting.

Buried Pipelines

44. The holder shall conduct all activities associated with the construction, operation, and termination of the pipeline within the authorized limits.
45. The pipeline shall be buried with a minimum cover of _____ inches between the top of the pipe and ground level.
46. Blading of all vegetation shall/shall not be allowed. Blading is defined as the complete removal of brush and ground vegetation. Clearing of brush species shall be allowed. Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface. In areas where blading and/or clearing is allowed, the maximum width of these operations shall not exceed _____ feet.

47. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair impacted improvements to at least their former state. The holder shall contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates shall be allowed unless approved by the Authorized Officer.
48. Vegetation, soil, and rocks left as a result of construction or maintenance activity shall be randomly scattered over the project area and shall not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer, except that an earthen berm shall be left over the ditch line to allow for settling back to grade.
49. The holder shall seed all surface disturbed by construction activities. Seeding shall be done according to the attached seeding requirements (Exhibit _____), using the attached seed mixture (as determined to meet Desired Plant Community objectives).
50. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is _____, Munsell Soil Color Chart Number _____.
51. The holder shall post signs designating the Reclamation serial number assigned to this authorization at the following locations: the points of origin and completion, or entry to and exit from public lands, of the pipeline and at all major road crossings. These signs shall be posted in a permanent, conspicuous manner, and shall be maintained in a legible condition for the term of the authorization.
52. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder shall take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

Surface Installed Pipeline

53. No surface pipeline will be placed within/below the 100-year floodplain at Brantley Reservoir (elevation 3,283 feet [1,000 meters]) or Avalon Reservoir (elevation 3,200 feet [975 meters]).

54. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2803/2883. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from fire or soil movement (including landslides and slumps as well as wind and water caused movement of particles) caused or substantially aggravated by any of the following within the permit area:

A. Activities of the holder, including but not limited to, construction, operation, maintenance, and termination of the facility.

B. Activities of other parties including but not limited to:

1. Land clearing.
2. Earth-disturbing and earth-moving work.
3. Blasting.
4. Vandalism and sabotage.

C. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction of in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from the negligent acts of the United States.

55. The holder shall conduct all activities associated with the construction, operation, and termination of the pipeline within the authorized width of _____ feet.

56. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

57. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be “snaked” around hummocks and dunes rather than suspended across these features.

58. The pipeline shall be buried a minimum of _____ inches under all roads, including “two-tracks” and trails. Burial shall continue for 20 feet on each side of each crossing. The condition of the road, upon completion of the construction, shall be returned to at least its former state, with no bumps, dips, or soft spots remaining in the road surface.

59. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair impacted improvements to at least their former state. The holder shall contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates shall be allowed unless approved by the Authorized Officer.
60. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain five-State Interagency Committee. The color selected for this project is _____, Munsell Soil Color Chart Number _____.
61. The holder shall post signs designating the Reclamation serial number assigned to this pipeline at the following locations: the points of origin and completion, or entry to and exit from public lands, of the pipeline and at all major road crossings. These signs shall be posted in a permanent, conspicuous manner, and shall be maintained in a legible condition for the term of the authorization.
62. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder shall take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

Overhead Electric Distribution Lines

63. The holder shall conduct all activities associated with the construction, operation, and termination of the power line within the authorized limits.
64. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.
65. Power lines shall be constructed to standards outlined in "Suggested Practices for Raptor Protection on Power lines," Raptor Research Foundation, Inc., 1981, unless otherwise agreed to by the Authorized Officer in writing. The holder is responsible for demonstrating that power pole designs not meeting these standards are "raptor safe". Such proof shall be provided by a raptor expert approved by the Authorized Officer. The Reclamation 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. These modifications and/or additions shall be made by the holder without liability or expense to the United States.

66. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair impacted improvements to at least their former state. The holder shall contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence will be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
67. Construction holes left open overnight shall be covered. Covers shall be secured in place and shall be strong enough to prevent livestock or wildlife from falling through and into a hole.
68. The holder shall evenly spread the excess soil excavated from pole holes in the immediate vicinity of the pole structure.
69. The Reclamation serial number assigned to this authorization grant shall be posted in a permanent, conspicuous manner, and be maintained in a legible condition for the term of the authorization at all major road crossings and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.
70. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures prescribed in the grant or determined at the time of abandonment.
71. All surface structures (poles, lines, transformers, etc.) Shall be removed within _____ days of abandonment, relinquishment, or termination of use of the serviced facilities or within _____ days of abandonment, relinquishment, or termination of this authorization, whichever comes first. This will not apply where the power line extends to serve an active, adjoining facility or facilities.

Communication Sites

72. The authorization is conditioned upon the submission of a copy of an approved license and/or renewal license granted by the Federal Communication Commission (FCC) or the Interdepartmental Radio Advisory Committee (IRAC) for each electronic station installation authorized or future amendments of this authorization. A copy of the FCC or IRAC authorization shall be submitted with 90 days of issuance of this authorization or within 90 days following approval of an amendment to this authorization. Failure to submit the FCC or IRAC authorization copy within the time specified shall be grounds for termination of this authorization or cancellation of an amendment to this authorization. The Authorized Officer may grant an extension of up to 90 days, if requested in writing by the holder.

73. The holder and its sublessees shall at all times operate their radio-electronic equipment in such a manner as not to cause interference with radio-electronic operations of existing users in the vicinity. If such interference results from holder's or sublessee's operations, holder shall promptly, at its own expense, modify the equipment and operations, or shut down if necessary to eliminate or reduce the interference to the satisfaction of the FCC, IRAC, and/or the Authorized Officer.
74. The holder shall notify the Authorized Officer of any intent to locate additional users within or upon their existing facilities, not less than 45 days prior to occupancy of holder's facilities. Information that must included is:
- A. Name, current address, and phone number of the third party user(s).
 - B. Expected date of occupancy.
 - C. A photo or sketch of the type of antennas to be installed, as well as any other planned physical changes to the exterior facilities operated by the holder. If the proposed use is not specified in the original authorization shall be required.
75. No less than 45 days prior to occupancy of the holder's facility, the holder shall notify existing users within a 1-mile radius that the holder intends to accommodate a new communication user in its facility. Existing users can then file any comments pertaining to potential frequency or electromagnetic problems with the Federal Communications Commission, 1919 M Street NW, Washington, DC 20554, with a copy to the Authorized Officer.
76. The holder shall be responsible for the actions and operations of any third party users associated with this facility. All such use shall be subject to the applicable terms, conditions, and stipulations of this authorization.
77. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is _____, Munsell Soil Color Chart Number _____.
78. The holder shall post signs designating the Reclamation serial number assigned to this facility at the points of entry to and exit from the site. These signs shall be posted in a permanent, conspicuous manner, and shall be maintained in a legible condition for the term of the authorization.

79. The holder agrees to share road maintenance costs with all present and future users of the access road. At such future time as a Users Association for this communication site is formed, the holder shall join the Users Association and remain a member in good standing. Within 30 days of the creation of such Users Association the holder shall provide the authorized officer with evidence of membership. Failure of the holder to join the Users Association and remain a member in good standing shall constitute sufficient grounds for termination of this authorization.

Mineral Material Sites (Gravel, Sand, Saleable Type Minerals)

80. All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices, and include Storm Water Pollution Prevention Plans that address erosion and sediment control as well as other potential pollutants.
81. The holder shall conduct all activities associated with the construction, operation, and termination of the material pit within the authorized limits.
82. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair impacted improvements to at least their former state. The holder shall contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates shall be allowed unless approved by the Authorized Officer.
83. The holder shall be responsible for the actions and operations of any third party users associated with this authorization. All such use shall be subject to the applicable terms, conditions, and stipulations of this authorization.
84. The road proposed as part of this authorization shall be constructed and maintained in accordance with Reclamation road standards, including the New Mexico Roads Policy.
85. The holder shall seed all surface disturbed by construction activities. Seeding shall be done according to the attached seeding requirements (Exhibit _____), using the attached seed mixture (as determined by DPC).
86. Suitable topsoil material removed in conjunction with clearing and stripping shall be conserved in stockpiles (within the material site) (at the following staked locations: specify location). Topsoil shall be stripped to an average depth of (specify) inches. A total of (specify) cubic yards of topsoil shall be stockpiled.

87. Excess excavated, unsuitable, or slide material shall be disposed of as directed by the Authorized Officer.
88. No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of (designate) inches deep, the soil shall be deemed too wet to adequately support construction equipment.
89. Existing roads and trails on public lands that are blocked as the result of the material pit activities shall be rerouted or rebuilt as directed by the authorized officer.
90. The holder shall recontour the disturbed area and obliterate all earthwork by removing embankments, backfilling excavations, and grading to reestablish the approximate original contour of the land as determined by the Authorized Officer.
91. The holder shall uniformly spread topsoil over all unoccupied disturbed areas. Spreading shall not be done when the ground or topsoil is frozen or wet.
92. Reclamation will monitor construction on this material pit site. Notify the appropriate Reclamation Resource Area Office at least _____ working days prior to commencing excavation at _____.

Floodplain Development

93. If a threat of flooding by the Pecos River occurs during drilling operations, the _____ Resource Area Manager will issue a shut-in order. Toxic substances and, possibly, drilling equipment will be removed from the floodplain.
94. A drilling pad will be elevated at least _____ (inches, feet) and surfaced according to Condition of Approval 36.
95. All riparian habitat will be protected according to instructions provided by the Authorized Officer. Trees will not be cut down unless authorized.
96. No storage facilities will be allowed within 660 horizontal feet (200 horizontal meters) of the 100-year floodplain at Brantley or Avalon Reservoirs.
97. Pits containing oil, tank bottoms or other hydrocarbons, salt water, or any toxic substances will not be allowed in the floodplain.

98. Provision for containing salt water flow must be made prior to beginning drilling, without resorting to reserve pits constructed in the ground. Metal tanks or tank trucks must be in place to collect salt water. Salt water storage will not be allowed in the floodplain.
99. Production facilities will be located outside the floodplain.
100. Flow lines from the wellhead to production facilities will be buried, if soil conditions permit burial.
101. Special precautions will be taken to reduce damage from flooding:
 - A. The well will be equipped with a down-hole shut-in device, rated at working pressure of 1,500 psi; or
 - B. The wellhead will be buried below ground in a concrete cellar with a grate over it: or,
 - C. Three steel posts will be set in concrete. Horizontal steel cross bars will connect the posts. Heavy gauge chain link fencing will be welded or bolted to the post and cross bars. The V must point upstream or in the direction specified.
102. Chemical toilets will be used instead of latrines.

Drilling Rig Storage

103. The holder shall conduct all activities associated with the operation, and termination of the rig storage within the authorized limits. All activity will be limited to _____ (describe authorized area of activity) and the immediate perimeter _____ (describe distance; maximum of 20 feet).
104. If the storage of this rig should interfere with the producer's operations, the holder shall be required to remove it immediately.
105. Should the well be plugged and abandoned during the term of this permit, the permittee will be required either to remove the drilling rig within 30 days or assume all responsibility for restoration of the well pad and access road.

106. The Reclamation will be notified in writing within 30 days after removal of the drilling rig. Address correspondence to:

Bureau of Reclamation
Carlsbad Project Office
620 East Greene
Carlsbad, NM 88221-1356

Geophysical Exploration

107. All large, hummocky sand dunes encountered during geophysical operations shall be avoided by driving around the sand dunes.
108. Any large trees (e.g., soapberry, elm or large mesquite) encountered in the area of operations shall be avoided and shall not be disturbed.
109. Playas shall be avoided by using re-routes or skips.
110. Wildlife watering facilities shall be avoided by using re-routes or skips.
111. Archaeological sites shall be avoided by adhering to the re-routes flagged in the field, which are listed in the attachment to the NOI. Additional cultural resources protections provided in cultural report _____, which are listed in the attachment, shall be followed.
112. Any fence needing to be cut during operations to allow access shall be immediately repaired to a condition as good as or better than the condition in which the fence was found. No fence shall be removed.
113. Where appropriate, disturbed areas shall be rehabilitated as directed by the Authorized Officer. Rehabilitation techniques may include, but are not limited to: ripping, discing, or other seed bed preparation; reseeding; placement of erosion control devices; and berming, barricading, and/or signing geophysical routes where they cross roads.
114. Operations shall be suspended when, in the judgment of the Authorized Officer, they have the possibility of unduly harming the surface during periods of wet weather or drought.

APPENDIX A-3: PRACTICES FOR OIL AND GAS DRILLING AND OPERATIONS IN CAVE AND KARST AREAS

This appendix describes practices for detecting and avoiding significant caves and significant karst features with respect to oil and gas drilling, and for mitigating impacts to significant caves and karst when they cannot be avoided. These mitigations are predicated on the Reclamation's responsibilities for resource management and protection derived from the Federal Land Policy and Management Act, the Federal Cave Resources Protection Act, and the National Environmental Policy Act. The practices described here supersede those of the Draft "Interim Guide for Oil and Gas Drilling and Operations in Cave and Karst Areas" (February 1993).

Potential for Caves or Karst

A map of cave or karst potential will be maintained to provide the public with current information about the likelihood of the presence of cave or karst resources. The map will serve as an indicator of the potential for encountering caves or karst for which special practices could be required, following NEPA analysis, to mitigate drilling impacts. The primary use of the map is as a source of information for individuals or companies contemplating the leasing of federal minerals.

Three zones of cave or karst occurrence have been identified and categorized: high potential; medium potential; and low potential. Areas that contain known cave or karst features are in the high potential zone. Areas containing known soluble rock formations with the potential for cave or karst development are in the medium potential zone. These zones were identified using geological maps and existing information on caves and karst. All other lands fall into the low potential zone. These zones were identified using geologic maps and existing information on caves and karst. All other lands fall into the low potential zone. These zones may be increased or decreased in size as new information from drilling, cave exploration or other sources becomes available.

The cave or karst occurrence zones have been further divided into smaller geographic areas to provide an additional means of identification of a specific area. An estimate has been made for each of these areas as to the lowest likely depth at which caves might be expected. Again, this is simply a source of information for individuals or companies contemplating the leasing of Federal minerals. The lease notice "Potential Cave or Karst Occurrence Area" (Roswell 46), will be applied to leases when all or part of the lease is located in a high or medium potential cave or karst occurrence area. An example of the lease notice is included below. The purpose of the lease notice, as with maps of cave or karst potential, is to provide information to the purchasers of federal oil and gas leases.

Table C3-1. Cave or Karst Occurrence Areas, Brantley and Avalon Project Area.

AREA NAME	DEPTH ^b	POTENTIAL ^b
Burton Flats	350	High

Because the identification of cave or karst potential zones is only informational, the mitigations described below will be applied, when and where appropriate, irrespective of any identified zone of cave or karst potential. However, the emphasis of management will be on caves presently designated significant or on those designated in the future as significant, and on significant karst features.

Lease Notice

Potential Cave or Karst Occurrence Area

All or portions of the lease are 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 from the surface to a depth of as much as 2,500 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 relocation of the proposed well; changes in drilling operations; special casing and cementing programs; modifications to surface facilities; 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 (Roswell 46 February 1991).

Mitigation of Drilling Impacts

The need to relocate drilling locations to avoid caves or karst, and any special drilling or production practices employed to mitigate impacts to caves or karst, will be determined during the NEPA analysis of APDs or other applications.

The practices described below will be applied where needed, and to the extent necessary, to ensure that the potential impacts of drilling oil or gas wells, or of constructing other facilities, in cave or karst areas would be minimized according to the following process:

1. Detect potential cave or karst resources and determine their significance.
2. Avoid cave or karst resources where possible.
3. Mitigate impacts to caves or karst that cannot be avoided.

The result of any detection efforts will be addressed in the NEPA analysis and appropriate mitigations will be developed, if needed as part of the analysis.

Depending on the results of detection, avoidance will be considered as a means of mitigating potential impacts. In most cases, avoidance will be accomplished by relocation of the proposed well location, which is often done in consultation with the operator at the time of a field examination. Moving a proposed location up to 200 meters is a commonly employed avoidance measure. The need to move a location more than 200 meters will be addressed in the NEPA analysis of an APD. If the construction of a pipeline, road, power line or other facility is proposed, rerouting or relocation will be required to accomplish avoidance.

The management of oil and gas operations in cave or karst areas, including approvals for drilling oil or gas wells, will be guided by procedures described below, Surface Use and Occupancy Requirements (Appendix A-1), and Conditions of Approval (Appendix A-2). These practices will be modified as new and cost effective technologies for cave and karst protection become available.

Detection Methods

The primary detection method will be the review of Reclamation or other records on the presence of caves or karst features in the area of interest, in conjunction with a field exam by a Reclamation employee or cave inventory contractor to determine the presence of unrecorded cave or karst features. Depending on the results of initial detection efforts and a determination of potential significance by the Reclamation, cave exploration could be employed to gain additional information.

As various geophysical techniques are proven useful for cave detection and become generally available for use, they may be considered on a case-by-case basis as a means of locating unrecorded cave or karst features.

Surface Mitigation

Whether or not a proposed activity has been relocated to reduce potential impacts on caves or karst, surface mitigations will be applied, when needed to minimize the risk of impacts during construction, drilling or production. Appropriate surface mitigations will be developed during the NEPA analysis of a proposal and could include one or more of the following practices, most of which have long been employed to mitigate impacts.

Practices to minimize potential impacts from reserve pit spill or leakage:

- The use of a Closed Loop System or steel tanks.

Practices to minimize potential impacts from leaking tanks or pipelines:

- The construction of berms around storage tanks sufficient to contain spills, in accordance with Conditions of Approval (Appendix A-2);
- The installation of leak detection systems for pipelines or tanks;
- The use of permanent liners in storage tank areas;
- The use of differential pressure shut-off valves;
- The use of corrosion-inhibiting coatings and cathodic protection.

Practices to minimize the potential impacts of vented or escaping gases settling in caves:

- The flaring or venting of gas to protect human safety and to better disperse the gases and eliminate possible gas ignitions;
- The use of stock tank vapor recovery systems.

Subsurface Mitigation

Applicable and reasonable subsurface mitigations will be applied where the presence of caves or karst is obvious or expected, based on the results of detection efforts, and in lost circulation zones. The options could include, but are not limited to, the following practices:

Drilling

- Cable tool drilling techniques will be used when possible in areas where encounters of caves or karst are expected at depths not greater than 350 feet.
- Rotary drilling techniques in cave or karst areas will include the use of either fresh water mud, foam, or compressed air as a circulating medium in zones where caves or karst are expected. Below those zones, the operator may use whatever drilling fluid is appropriate.

Casing and Cementing

- All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run according to American Petroleum Institute and Reclamation standards.

- A “cave protection” casing could be required in instances when a designated significant cave would be jeopardized. The cave-protection casing string would be set at least 100 feet below the deepest known cave-bearing zone as determined by drilling or other pertinent methods.
- Regardless of the type of drilling machinery used, if bit drops of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the Reclamation will be notified by the Operator. The Reclamation will assess the consequences of the situation and work with the Operator on corrective actions to resolve the problem. If corrective actions fail, the well will be plugged.
- The casing will be cemented in place using one or a combination of any of the following methods that are environmentally sound, as determined by the Reclamation and the Operator:
 1. If a large void or severe lost circulation zone is encountered, isolation from above and below rather than complete cement coverage of these zones could be employed. This would be accomplished by using stage cementing equipment, external casing packers, cement baskets, and one-inch remedial cementing techniques.
 2. For a less severe lost circulation zone encountered while drilling, the operator would attempt to circulate cement to the surface using a single or multistage cementing job composed of a “lead” and “tail” slurry for each stage.
 3. Foam cementing techniques may be used.

Any corrective actions proposed to resolve problems related to bit drops or lost circulation will require Reclamation concurrence before implementation. A decision on how to proceed will be reached within 24 hours of notification.

Monitoring Drilling Operations

Where the presence of significant caves or significant karst features are obvious or expected based on the results of detection efforts, and in lost circulation zones, constant monitoring of drilling operations by the Reclamation could be required.

Monitoring Production Operations

On wells within one-half mile of significant caves, annual pressure tests will be performed by the Operator on all casing annuli. If the test results indicated a casing failure, remedial actions approved by the Reclamation will be undertaken to correct the problem.

Plugging and Abandonment

The BLM standards for plugging and abandonment in Onshore Oil and Gas Order No. 2 will be applied to protect or isolate all useable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, caves, and any prospectively valuable deposits of minerals. This includes any zones encountered during drilling that contain fluids with a potential to migrate.

Record Keeping

The Operator will track the customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence or absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

The Reclamation may review data held by companies on wells drilled in cave or karst areas, to gain information about impacts to caves and karst. This information will be used to categorize lost-circulation zones on the basis of depth, relative volume, and severity, and to evaluate and compare the relative success or failure of different remedies attempted to combat lost-circulation problems while drilling and cementing casing in these zones. This information also will be used to update information about the occurrence of cave and karst features. Information concerning cave resources gathered during drilling will be submitted, as well, to be retained by Reclamation in accordance with the regulations implementing the Federal Cave Resources Protection Act.