Bureau of Land Management

Overflow Wetlands Area of Environmental Concern
Implementation Environmental Assessment

EA-NM-060-2003-168

Chaves County, New Mexico
September 2003

U.S. Department of the Interior
Bureau of Land Management
Roswell Field Office
Roswell, NM

T. 11 S., R. 26 E., NMPM
Section 33: Lots 1, 2, 3, 4, NE ¼ NE ¼ W ½ NE ¼

T 12 S., R. 26 E., NMPM
Section 4: Lots 1, 2, 3, 6, 7 and SE ¼ NE ¼, S ½ SW ¼, NW ¼ NE ¼ SW ¼
Section 5: Lot 1, SW ¼ SE ¼ ;
Section 9: E ½ , N ½ NW ¼ , SW ¼ NW ¼ , N ½ SW ¼ , SE ¼ SW ¼ ;
Section 10: SE ¼ NW ¼ , SW ¼ ;
Section 15: E ½ E ½ ;
Section 17: E ½ NE ¼ , E ½ S ¼ , SE ¼ ;
Section 20: NE ¼ NE ¼ , NW ¼ NE ¼ , N ½ SW ¼ NE ¼ , NE ¼ NW ¼ , N ½ SE ¼ NW ¼ ;
Section 21: SE ¼ NE ¼ , E ½ SE ¼ ;
Section 22: E ½ , E ½ NE ¼ , SW ¼ NW ¼ , SW ¼ .

3,016.44 Public Land Acres

FINDING OF NO SIGNIFICANT IMPACT/RATIONALE

FINDING OF NO SIGNIFICANT IMPACT: I have reviewed this ACEC activity plan and environmental assessment, including the explanation and resolution of any potentially significant environmental impacts. I have determined the proposed action will not have significant impacts on the human environment and that preparation of an Environmental Impact Statement (EIS) is not required.

Rational for Recommendations: The proposed action would not result in any undue or unnecessary environmental degradation. The proposed action will be in compliance with the Roswell Resource Management Plan and Record of Decision (October, 1997) and the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (January 2000).

T. R. Krueger,
Assistant Field Office Manager – Resources

9/30/03
Date

Introduction

Purpose and Need for the Proposed Action

The 1997 Roswell Resource Management Plan (RMP) established the Overflow Wetlands Area of Critical Environmental Concern (ACEC). While the RMP outlined management prescriptions for the ACEC, full implementation of some prescriptions needs further environmental analysis. The management prescriptions include maintenance of improvements such as roads and fences, possible adjustments in livestock grazing management, vegetation manipulation such as saltcedar and mesquite control, possible designation of waterfowl hunting areas within the ACEC in coordination with the New Mexico Department of Game and Fish, and location of recreation facilities such as trails and road designations. The need for this environmental assessment is also evident in the heightened awareness of the State of New Mexico's obligations to the State of Texas for water via the Pecos River.

Conformation with Land Use Plans

The proposed action conforms to the Roswell Resource Management Plan and Record of Decision (BLM 1997) as required by 43 CFR 1610.5-3.

Relationships to Statutes, Regulations, or Other Plans

The proposed action and alternatives are consistent with the Federal Land Policy and Management Act of 1976 (43 CFR USC 1700 et seq.; the Clean Water Act (33 USC 1251 et seq.), as amended; the Endangered Species Act (16 USC 1535 et seq., as amended; and the Mineral Leasing Act of 1920, as amended and supplemented by Acts. The proposed action and alternatives are consistent with the Federal Land Policy and Management Act.

The proposed action and alternatives are consistent with these laws and with the regulations in 43 CFR 3100, 4100, and 8100.

The proposed action and alternatives are consistent with the 1999 Conservation Agreement for the Pecos Pupfish between and among the Texas Parks and Wildlife Department; the New Mexico Department of Game and Fish; New Mexico Energy, Minerals and Natural Resources Department; the New Mexico Department of Agriculture; the New Mexico Environment Department; the New Mexico Office of the State Engineer; the U.S. Bureau of Land Management; and the U.S. Fish and Wildlife Service.

The proposed action and alternatives are also consistent with the 2000 New Mexico Standards for Rangeland Health and Guidelines for Livestock Grazing.

Proposed Action and Alternatives

Proposed Action

The proposed action includes projects designed to protect the biological and scenic values of the Overflow Wetlands ACEC, which provide critical habitat for threatened and endangered fish species and supports a significant riparian wetland community. The specific projects are:

Remove the public lands in Spring Pasture of Allotment No. 65069, Calumet Ranch, from the grazing allotment to serve as a buffer area for the wetlands proper. The public lands in the Spring Pasture total approximately 440 acres and are located in Section 9 and 10, Township 12 South, Range 26 east. See the map titled "Overflow Wetlands ACEC Grazing Allotments." In the same grazing allotment, negotiate with the State to re-align pasture fences to exclude a portion of state land in Section 16 to protect wetland-riparian resources in concert with ACEC overall management objectives.

Control saltcedar wherever it occurs within the ACEC by mechanical removal (chainsaws, heavy machinery), herbicide treatment with an approved herbicide by hand application, prescribed fires, and combinations of treatment methods. If needed to supplement natural plant succession, plant suitable vegetation cover in areas affected by treatment.

Conduct noxious and invasive weed control where needed.

Conduct mesquite control on the uplands using chemical or mechanical methods. The projects would include lands within Allotment No. 65069, Calumet Ranch.

Establish a trail for wildlife viewing and hunter access in T. 12 S., R. 26 E. Section 9.

Establish a 0.25-mile interpretive trail originating from the north access road where it crosses onto public land in T. 11 S., R. 26 E., Section 33:E1/2SE1/4. Construct the trail for the physically-impaired along an existing boundary fence between Bottomless Lakes State Park and public land.

The use of off-highway vehicles (OHV) on the lands within the ACEC acquired by BLM since the 1997 approval of the resource management plan (RMP), will be limited to designated roads and trails.

Nominate Joyce Road to be vacated by Chaves County and close unneeded roads within the ACEC.

In cooperation and consultation with the New Mexico Department of Game and Fish, designate the black-tailed prairie dog colony in T. 12 S., R. 26 E., Section 17 as closed to hunting.

No Action Alternative

Under this alternative all activities within the Overflow Wetlands ACEC would be conducted in accordance with the 1997 Roswell RMP. As a result, implementation actions would be conducted piece-meal and with no coordination with an overall ACEC activity plan or plans governing management on surrounding public lands.

Affected Environment and Environmental Consequences

General Setting

The Overflow Wetlands ACEC is located about 16 miles east of Roswell, NM, Chaves County, within the Pecos River valley. The ACEC is adjacent to the Bottomless Lakes State Park, established as New Mexico's first state park in 1934, and is several miles downstream of the U.S. Fish and Wildlife Bitter Lake National Refuge, one of the first national wildlife refuges established in the United States.

Topography

The common landforms of the ACEC include the Pecos River, floodplain, terraces, shallow depressions, karst topography, and the escarpment. Topography ranges from the relatively flat Pecos river floodplain to a steep, colorful escarpment averaging 100 feet in height and overlooking the bottomlands. Elevation ranges from 3,420 feet along the Pecos River up to 3,650 feet at the top of the escarpment. These elevation changes occur with the three-mile width of the ACEC. The 100-year floodplain provides the basis for floodplain management on public lands. It is based on maps prepared by the Federal Emergency Management Agency (1983). The majority of saline wetlands are on the east floodplain of the Pecos River.

Climate

The climate of the area is generally classified as semi-arid with an average growing season of 195 days (April to October). During the growing season, the daily temperatures average from 55 to 80 degrees Fahrenheit (F). There are frequent highs of 100 degrees F. or more during the summer. Minimum winter temperatures occasionally drop below 0 degrees F. The average annual temperature is 61 degrees F. High winds from the west and southwest are common from March to June.

Annual precipitation averages 8 to 12 inches a year. Wide fluctuations from year to year are common, ranging from a low of about two inches to a high of over twenty inches. Eighty percent of the annual precipitation occurs in the form of rainfall during the months of June through September. Snowfall averages less than four inches annually and may occur from November through April, and usually melts within a short time.

Surface Hydrology

The form and fluvial processes of the Pecos River have been modified by the construction of dams, which have drastically altered the streamflow and sediment regimes of the river. Flooding is less frequent and less severe than prior to dam construction, and sediment loads have been greatly reduced. The river channel is entrenched and slightly confined by the valley. The riverbed is sand with a mixture of silt and has a low gradient (0.1 percent). Streamflow in the Pecos River is basically influenced by Fort Sumner Dam and water releases dictated by the Carlsbad Irrigation District. Regulated flows range from no flow in the winter to a maximum of about 1100 cfs in late spring based on published U.S. Geological Survey stream gauging stations. Low flows are from October through February.

The Pecos River flows for a total of approximately 5.0 miles along the west portion of the ACEC. The ACEC is on the river reach between the Rio Peñasco and Salt Creek, which is identified as Segment 2206 by the New Mexico Water Quality Control Commission (WQCC).

Under the authority of the federal Clean Water Act, the WQCC (1995) designated uses for streams in New Mexico. Designated uses for Segment 2206 include irrigation, livestock watering, wildlife habitat, secondary contact (e.g., wading), and a warm water fishery.

The WQCC (1995) also established water quality standards to protect the designated uses, and directs periodic water quality assessments to ensure that standards are met. According to the New Mexico Environment Department (NMED), Segment 2206 is currently meeting the standards for all its designated uses (Hogge 1998, NMED 1998a).

Section 303(d) of the federal Clean Water Act requires that the State identify those waters for which existing required pollution controls are not stringent enough to meet State water quality control standards. The State must then establish total maximum daily loads (TMDLs) for pollutants of these water-quality-limited stream segments.[1] The presence of critical habitat for the threatened Pecos bluntnose shiner raised the Pecos River to a priority one on the New Mexico 303(d) ranking system.

Segment 2206 (Pecos River from Rio Peñasco to Salt Creek) had been listed for TMDL development because of concerns about stream bottom deposits, dissolved oxygen, total dissolved solids, metals, and un-ionized ammonia. Following a review of historical data and their survey, however, the NMED (1998a) concluded there was no basis for developing TMDLs on Segment 2206. The NMED (1998b) removed the segment of the Pecos River from the 1998-2000 303(d) list.

The ACEC lies at the center of the Roswell Underground Water Basin (New Mexico State Engineer 1995). Ground water in the alluvial aquifer is less than ten feet deep on much of the allotment (Welder 1983; Wilkins and Garcia 1995). On the property it is near the surface.

[1] The TMDL is defined as "the greatest loading or amount of the pollutant that may be introduced into a watercourse or stream reach from all sources without resulting in a violation of water quality standards."

Yields of 100 gallons per minute or more from the alluvium are common along parts of the river (Geohydrology Associates, Inc. 1978).

The concentration of chlorides in the ground water fluctuates annually. Generally, they are lowest in the spring, and highest in the fall following the irrigation season. Chloride concentrations are approximately 1000 milligrams per liter near the property (Welder 1983).

Hydrogeology

Lea Lake is a naturally occurring sinkhole lake that has naturally occurring ground-water discharging into the lake, which then overflows out of the lake and flows west and southwest across lands and empties into the Pecos River. The lands between Lea Lake and the Pecos River have a dip of 1 to 2 degrees. The surface waters also recharge and infiltrate the soils and rock formations beneath the Overflow Wetlands. Lea Lake is hydraulically connected to the Overflow Wetlands and the Pecos River. Surface water flow from Lea Lake outlet, Overflow Wetlands outflows into the Pecos River, and the ground-water base flow into the Pecos River are measurable. The ground-water base flow or ground water inflow into the stream channel from the saturated underlying Yates Formation adds to the volume of measurable water within the Pecos River. The overflow water out of Lea Lake flows continuously across state, private, and public lands in the form of a wetland area and then concentrates into outflow channels into the Pecos River. Some water loss can be expected through evapotranspiration, which is the process by which water is discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies, and transpiration by plants. Stream flow measurements have shown some water loss in water quantity that discharges from the wetlands into the Pecos River due to evapotranspiration, however, one measurement showed a gain in water quantity from the wetlands into the Pecos River. The surface and ground water flow located on Public Lands at the Overflow wetlands is following a natural course and has not been altered except in a few spots where roads have captured and directed some surface water flows.
The submarine ground water springs discharging into Lea Lake and regional groundwater flow has added to karst development in the area. A new developed karst sinkhole lake has occurred in the area within the past few years. Karst topography development is common in the area.

The Overflow Wetlands occurs in the Pecos River Basin. In late Tertiary time the Guadalupe-Sacramento-Padernal area was uplifted and long northeast-southwest trending structural zones developed (Summers, 1972). The west slope of the uplifted mountain was extremely steep, the east slope comparatively gentle. The Ogallala Formation was formed by the erosion of volcanics and sediments and the resulting aggrading eastward-draining streams which deposited the layer of sand and gravel of the Ogallala that covered the Pecos River Basin and into Texas (Summers, 1972). These eastward draining streams are the ancestor to the Pecos River. Erosion from the Pecos River extended northward and dissected the eastward draining streams by eroding the soft sands and gravels of the Ogallala Formation and then exposed the rocks beneath them (Summers, 1972). The rocks that were exposed were soluble and karst topography developed and increased the erosion by the Pecos River (Summers, 1972). The Pecos River originally followed a course parallel to but several miles west of its present location, but it eventually eroded eastward into unconsolidated sand and gravel deposits and poorly unconsolidated rocks (Summers, 1972). The removal of the underlying evaporates caused large areas to collapse (Summers, 1972). The

Pecos River Basin dips 1 to 2 degrees to the east or southeast direction. Structural features exist throughout the Basin such as synclines and anticlines.

The rocks that outcrop in the area of the Overflow Wetlands are Permian in age to recent. Several geologic formations are present on the surface of the area of the Overflow Wetlands. Alluvium and stream valley bottom deposits occur in Quaternary Alluvium, which is located on the western extant of the Overflow Wetlands. Gypsum and mudstone outcrop from the Yates Formation, which is located east of the Overflow Wetlands. Gypsum and mudstone outcrops from the Seven Rivers Formation, which is located beneath and to the east Overflow Wetlands. The Y – O Buckle trends in the NE direction and is located approximately seven miles to the northwest. A high-angle fault that has a strike in the NW direction begins in Section 2 of T. 13 S., R. 26 E., and ends in Section 32 of T. 10 S., R. 25 E., and is located approximately one quarter mile to the west of Lea Lake. Exposed outcrops of the Yates Formation around Lea Lake show a regional dip in the west and southwest direction

Summers (1972) defined the outer limit of the area contributing recharge to the Pecos River and called it the ground water basin of the Pecos River. Figure 1 shows the recharge and discharge areas of the groundwater of the Pecos River Basin (Summers, 1972). Evidence shows that a small amount of meteoric water circulates to great depths, and does not discharge to the Pecos River in New Mexico, but may discharge to rivers of west and central Texas (Summers, 1972). Summers (1972) shows that before pumping began groundwater moved from recharge areas on both sides of the river to the discharge area with a relatively shallow divide in the San Andres Formation (Figure 2). Summers (1972) also shows flow in the San Andres underflowing the river and moving in the regional flow system that discharges eastward. Summers (1972) shows three ground-water systems now exist: (1) The remnant of the initial system that recharges east of the river and provides ground-water flow to the river and which sustains the water level of the Bottomless Lakes and Bitter Lake wildlife area, which is called the East basin system., (2) The "shallow" system which receives recharge from the nearest part of the recharge area to the west., (3) The "artesian" system which receives recharge from the central part of the western recharge area (Figure 3). Summers (1972) shows that part of the water which was once underflow is now captured by the "artesian" wells.

Recharge to the artesian aquifer occurs from precipitation, storm-flood events, and infiltration that flow to the west and southwest across outcrops located east of the Pecos Rive. Recharge to the artesian aquifer occurs from precipitation, storm-flood events, and infiltration that flow to the east across outcrops located west of the Pecos River. Groundwater flows west and south from the east side of the Pecos River through leaky confining beds up into the shallow aquifer and then into the Pecos River (Figures 2 and 3). Groundwater flows east and south from the west side of the Pecos River through leaky confining beds up into the shallow aquifer and then into the Pecos River (Figures 2 and 3).

Increased discharge from Lea Lake has occurred from the rise of the ground-water table in the artesian aquifer. The rise in the ground-water table is partly attributed to increase in ground-water flow into the lake due to the rockslide of 1975, rise in the ground-water table due to decreased ground-water pumping west of the Pecos River, and the rise in the ground-water table from recharge from precipitation events across the Pecos River Basin on both the east and west

side of the Pecos River and the subsequent discharge into the Pecos River from west and east of the Pecos River.

Critical Elements

The following elements have been evaluated and either are not present or are not affected by the proposed action or alternatives in this environmental assessment: Prime and/or Unique Farmlands, Native American Religious Concerns, Cultural Resources, Wild and Scenic Rivers, Wilderness, Hazardous and/or Solid Wastes, and Minority or Low Income Populations Concerns.

Soils

Affected Environment

Floodplain Soils

Vinton-Glendale Association (VG) – Occur on the Pecos River floodplain with slopes of 0 to 1 percent. The soils are subject to occasional flooding. Runoff is slow and the hazard of water erosion is moderate. The rangesite is categorized a Bottomland SD-3.

Glendale Series (Ge) – Consists of deep, well-drained soils. These soils formed is stratified alluvium on floodplains. They are rarely or occasionally flooded. Slopes are 0 to 1 percent. Small areas of soils have salt accumulations and are in areas that have a high water table. Runoff is medium to slow. The hazard of water erosion is slight. Sufficient deep moisture is present to maintain bottomland vegetation. The rangesite is categorized as Bottomland SD-3.

Pecos Series – Consists of deep, moderately well-drained soils. These soils formed in alluvium on floodplains that are rarely flooded. Slopes are 0 to 3 percent. Permeability is very slow, and available water capacity is 6 to 9 inches.

Pecos silty clay loam (Pe) – This level soil occur on the part of the Pecos River floodplain that is rarely flooded. Slopes are 0 to 1 percent. Runoff is slow, the hazard of erosion is slight. Sufficient deep moisture is available to maintain bottomland vegetation. The rangesite is categorized as Salty Bottomland SD-3.

Wetland Soils

Holloman Series – Consists of well-drained soils that are very shallow and shallow over gypsum. These soils formed in alluvium over soft to hard gypsum on uplands.

Holloman-Gypsum land complex, 0-3 percent slopes (Hp) – This complex occurs on uplands west of the Pecos River. Much of this area is marshy or wet and has a layer of dark organic material from decayed marsh vegetation. For the Holloman soils, runoff is medium and the hazard of water and wind erosion is moderate. For the Gypsum land, runoff is rapid, the hazard of water erosion is moderate and the hazard of soil blowing is severe. The rangesite for

Holloman loam is Gyp SD-3, with thick solum Loamy SD-3. Gypsum land is not assigned to a rangesite.

Upland Soils

Holloman Series – Consists of well-drained soils that are very shallow and shallow over gypsum. These soils formed in alluvium over soft to hard gypsum on uplands.

Holloman-Gypsum land complex, 30-50 percent slopes (HSE) – This complex occurs on the breaks paralleling the east side of the Pecos River. Pecos soils are in the drainages. The Holloman soils has slopes of 5 to 9 percent. The steep Gypsum land and Rock outcrop are on the severely eroded and gullied parts of the mapped areas. Runoff is rapid. The hazard of water erosion is severe and the hazard of soil blowing is moderate.

For in depth soil information, please refer to the Soil Survey of Chaves County New Mexico, Southern Part, published by the Natural Resource Conservation Service (NRCS). A copy of this publication may be reviewed at the BLM Roswell Field Office or at a local NRCS office.

Environmental Consequences

The proposed action is expected to have minimum impact on the soils. New surface disturbance may increase the amount or erosion and deposition of the soils.

Cumulative Impacts

Previous surface disturbance within the project area is limited to road development, oil and gas development and livestock grazing. Greater surface disturbance could occur due to increased need for roads and parking areas. Permanent surface disturbance consists of areas that have numerous access roads leading into numerous oil and gas locations and home sites. The construction of roads may increase the erosion and deposition of the soils.

Cave and Karst Resources

Affected Environment

The Overflow Wetlands area is categorized as having high potential for caves and karst on about 4,871 acres and low potential for the remaining acres. The ACEC and surrounding area are in a very active karst zone where sink holes are currently forming.

Environmental Consequences

Extra precautions should occur when placing facilities in the ACEC to assure that the proposed area is stable and not on top of a potential sink hole formation. Induced polarization or other methods may be used to locate potential areas that could form into sink holes in the future.

Cumulative Impacts

No cumulative impacts are expected within the area.

Vegetation

Affected Environment

Much of the dry floodplain surrounding the wetlands support a sparse saline soil plant community featuring iodine bush, seepweed, inland saltgrass and Trans-Pecos sealavender. In certain areas in the floodplain, vegetation can be sparse due to the highly alkaline soil type. Goldenrod, a poisonous plant to cattle during the dormant season (frost to greenup), is found in scattered areas in the bottomlands. On slightly higher ground within the floodplain, alkali sacaton is the dominant vegetation with mosaics of saltcedar and mesquite. A mesquite/black grama habitat type is prevalent at the southern end of the ACEC. The escarpment features gypsiferous bedrock and soils. Gypsophile plants include gypsum grama, and Nealley dropseed. The topland of the escarpment is flat, moderately grazed shrubby grassland with mainly tobosa grass, burro grass, fourwing saltbush, creosote and mesquite.

About one-third of the ACEC is within the 100-year floodplain of the river. Riparian areas consist of a narrow band along the riverbank dominated by a dense canopy of saltcedar with a sparse understory. Other riparian vegetation includes seep willow, phragmites, cattail, and sedge.

<u>Special Status Plant Species</u>

Pecos (Puzzle) Sunflower *(Helianthus paradoxus)* - Federal Threatened

The Pecos sunflower is found along alkaline seeps and cienegas of semi-desert grasslands and short-grass plains (4,000-7,500 ft.). Plant populations are found both in water and where the water table is near the ground surface.

In the RFO area, the sunflower is found in only a few areas outside of the BLNWR. In 1994, a new population was found growing on the margins of Lea Lake and its outflow at Bottomless Lakes State Park. Lloyd's Draw and another unnamed draw, both east of the Pecos River, have the only known Pecos sunflower population on BLM land. It became evident at Lloyd's Draw following a prescribed fire. Potential habitat also occurs on BLM land within the Overflow Wetlands ACEC. A recently appearing sinkhole on State lands within the ACEC now supports an experimental population of sunflower planted by the State Land Office.

Potential habitat for the sunflower occurs on low-lying areas where the water table is near the ground surface. The low-lying areas are not necessarily along the existing river channel, but in old channel courses and oxbows. These areas are now invaded by saltcedar growing in dense stands due to the availability of ground water. The areas appear to be potential wetland-type sites for Pecos sunflower if saltcedar was not present. No Pecos sunflower populations have been found on the ACEC to date. Endangerment factors include dewatering of riparian or

wetland areas where the sunflower is found, surface disturbing activities, and excessive livestock grazing.

The U.S. Fish and Wildlife Service is in the process of producing a draft Recovery Plan for the Pecos sunflower. The recovery objective is to protect and manage Pecos sunflower so it will sustain itself indefinitely in selected portions of its habitat.

Environmental Consequences

The impacts to the vegetative resources from the implementation of the proposed action as outlined will be minimal. Minor amounts of vegetation will be permanently lost due to the construction of the parking area and trails. The mechanical or chemical treatments to control the salt cedar infestations will have minor initial impacts to the vegetative resources, but the vegetation is expected to recover after treatments. If plantings of native plant species are successful this will be a positive impact in that the plant diversity of the area will be increased.

Cumulative Impacts

No cumulative impacts to the vegetative resources are anticipated from this action. The loss of vegetation from the construction activities will be offset by the reduction of invasive species and the plantings of new vegetation.

Water Quality/Drinking Ground

Affected Environment

Fresh water for stock and irrigation use is obtained from the Quaternary Alluviums. Fresh water for stock and domestic use is obtained from the Artesia Group. Depths for fresh water range from 14 to 100'. The depth to groundwater in the vicinity of Section 36 of T. 11 S., R. 25 E., within the Quaternary Alluvium ranges from 14 to 100 feet. Chemical ground-water quality data in the vicinity of Section 36 of T. 11 S., R. 25 E., shows Chloride to range between 1,000 to 2,000 mg/l Cl- and Conductance to range from 8,900 to 10,000 micromhos.

The depth to groundwater in the vicinity of Section 33 of T. 11 S., R. 26 E., within the Artesia Group averages 250 feet. Chemical ground-water quality data in the vicinity of Section 33 of T. 11 S., R. 26 E., shows Chloride to average 100 mg/l Cl- and Conductance to range from 2,700 to 3,000 micromhos.

The BLM does not have water rights associated with the flows discharged from Lea Lake. The BLM had considered applying for rights from the State Engineer some years ago when conditions were favorable for such application. Since that time period, the concern for water delivery to Texas, and changes in state administration, had overshadowed the opportunity for acquiring water rights to support the wetlands. The opportunity for application has since passed.

There are two developed water wells on the 200-acre parcel of land recently acquired by the BLM. Three acre-feet per year per well is authorized by the State Engineer for domestic use. It

is the intent of the BLM to maintain these wells for wildlife use, and to allow the flexibility to provide off-river water to livestock, in the event livestock are allowed to temporarily graze lands within the ACEC.

Environmental Consequences

The proposed action is expected to have minimum impact on the surface water or ground water. New surface disturbance may increase the amount of total dissolved solids in the water. New Mexico Water Quality Control Commission water quality standards specific to the surface water and groundwater will be met.

Cumulative Impacts

Previous surface disturbance within the project area is limited to road development, oil and gas development and livestock grazing. Greater surface disturbance could occur due to increased need for roads or parking areas. Permanent surface disturbance consists of areas that have numerous access roads leading into numerous oil and gas locations and home sites. The construction of roads may increase the total dissolved solids in the water.

Floodplains

Affected Environment

A portion of the Overflow Wetlands area is located the 100-year floodplain of the Pecos River floodplain. (See map, "100-Year Floodplain.") The floodplain borders each side of the Pecos River channel and ranges in width from less than one-quarter mile to more than one mile in the area. Channel banks are generally stable, but are actively being cut in some locations. This is most likely due to entrenchment of the channel rather than disturbance associated with land use activities. The channel material is primarily a sand and gravel bed with small cobbles and silt. The stream gradient is relatively flat (0.25 percent).

For administrative purposes, the 100-year floodplain serves as the basis for floodplain management on public lands. It is based on Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (1983). Current development on the floodplain consists of two-track roads and several miles of boundary fence in the area.

Environmental Consequences

The proposed action is expected to have minimum impact on the floodplain. New surface disturbance may increase the amount or erosion and deposition of silt and soils on the floodplain.

Cumulative Impacts

Previous surface disturbance within the project area is limited to road development, oil and gas development and livestock grazing. Greater surface disturbance could occur due to increased need for roads. Permanent surface disturbance consists of areas that have numerous access roads

leading into numerous oil and gas locations and home sites. The construction of roads may increase the erosion and deposition of silt and soils on the floodplain.

Wetlands and Riparian Zones

Affected Environment

Historically water overflowed out of several of the lakes at Bottomless Lakes State Park and flowed into lands west of the lakes and into the Pecos River in the first half of the 20th century. The wetlands began forming on May 30, 1975 after a catastrophic rockslide of gypsum rock and mudstone occurred on the east side of Lea Lake located within the Bottomless Lakes State Park. This rockslide changed the hydrogeology and the resulting increase in groundwater flow into the Lea Lake and created an overflow of water out onto the dry land surface, which formed the Overflow Wetlands.

The increased groundwater flow into Lea Lake and the subsequent overflow of surface water formed surface waters that flowed west and southwest towards the Pecos River. The overflow water followed the slope gradient towards the Pecos River and filled the low-lying areas between the park and the Pecos River, including public lands managed by the BLM, hence the name Overflow Wetlands. Presently the overflow of water only occurs on the southwest portion of Lea Lake through the concrete outlet drain.

The wetlands became a significant contributor to waterfowl habitat and populations within the middle Pecos River valley, complementing the Bitter Lake National Wildlife Refuge managed by the U.S. Fish and Wildlife Service located several miles north of the area. The significance of the area as primarily waterfowl habitat resulted in the development of the Overflow Wetlands Habitat Management Plan in 1983 that also established the Wildlife Habitat Area boundary. The management emphasis was the maintenance and protection of current habitat conditions for wintering waterfowl. The influx of additional water beginning is the late 1990s dramatically enhanced wetland habitat within the ACEC, increasing aquatic habitat for waterfowl and shorebirds, endemic fish species including the Pecos pupfish, aquatic invertebrates and, of recent interest, dragonfly populations.

Environmental Consequences

The proposed action would have beneficial short and long-term impacts to wetland and riparian areas as they are designed to protect and improve the ecological condition of these significant resources. Impacts to the riparian area along the Pecos River resulting from saltcedar control are discussed under the Invasive, Nonnative Species section.

Cumulative Impacts

The long-term effects of the proposed action would benefit the wetlands and riparian areas within the ACEC. Negative impacts (soil erosion from bare ground during the transition from saltcedar to native vegetation) would be short lived and transitory.

Air Quality

Affected Environment

The Overflow Wetlands area is considered a Class II air quality area. A Class II air quality area allows a moderate amount of degradation of air quality. Primary sources of air pollution are wind-blown dust from disturbed or exposed soils and by exhaust emissions from motorized vehicles and equipment.

Environmental Consequences

Air quality would temporary be impacted with pollution from exhaust emissions, chemical odors, and dust that would be caused by motorized vehicles and equipment used in the area. Dust dissemination would discontinue when motorized vehicles and equipment leave the area. The winds that frequent the southeastern part of New Mexico generally disperse the odors and emissions. The impacts to air quality would be greatly reduced when motorized vehicles and equipment leave the area.

Cumulative Impacts

Previous surface disturbance within the Overflow Wetlands area is limited to road development, oil and gas development and livestock grazing. Greater surface disturbance could occur due to increased need for roads or parking areas. Permanent surface disturbance consists of areas that have numerous access roads leading into numerous oil and gas locations and home sites. The construction of roads will remain a visual disturbance until they are no longer used and abandoned. Less forage will be available to livestock and wildlife with an increase of new road construction.

Wildlife Habitat & Threatened and Endangered Species

Affected Environment

The allotment provides a variety of habitat types for terrestrial and aquatic wildlife species. The diversity and abundance of wildlife species in the area is due to the presence of open water, the drainage interconnecting upland habitats to the Pecos floodplain, a mixture of grassland habitat and mixed desert shrub vegetation, and riparian vegetation found within the floodplain of the river.

Common mammal species using the area include mule deer, coyote, gray fox, bobcat, striped skunk, porcupine, racoon, badger, jackrabbit, cottontail, white-footed mouse, deer mouse, grasshopper mouse and woodrat.

A small black-tailed prairie dog town has expanded from private lands to the west onto the ACEC. This species has been proposed for listing under the Endangered Species Act and is a priority wildlife species for management and protection by the BLM.

Numerous avian species use the Pecos River during spring and fall migration, including migratory birds (e.g., ducks, geese, cranes, waterbirds) and nongame migratory birds. Common bird species are mourning dove, mockingbird, white-crowned sparrow, black-throated sparrow, western meadowlark, Crissal thrasher, western kingbird, northern flicker, common nighthawk and roadrunner. Raptors include northern harrier, Swainson's hawk, and American kestrel.

The Pecos River once supported a wide variety of native fish species adapted to the flow regime that existed prior to dam construction, agriculture development, and the introduction of non-native fish species. The greatest impact to fish habitat is the manipulation of water supply to meet irrigation needs. Representative fish species include the red shiner, sand shiner, Arkansas River shiner, Pecos bluntnose shiner, Pecos pupfish, plains minnow, silvery minnow, plains killifish, mosquitofish, speckled chub, river carpsucker and channel catfish.

A variety of herptiles also occur in the area. Species include the yellow mud turtle, box turtle, eastern fence lizard, side-blotched lizard, horned lizard, whiptail, hognose snake, coachwhip, gopher snake, rattlesnake, and spadefoot toad.

The Pecos bluntnose shiner and Pecos gambusia are federally listed species that occur or have the potential to occur on the ACEC. Federally proposed species include the Pecos pupfish. The status and presence of these species in the Roswell Field Office area are discussed in the following section.

Pecos Bluntnose Shiner *(Notropis simus pecosensis)* - Federal Threatened

Historically, the Pecos bluntnose shiner inhabited the Pecos River from Santa Rosa to near Carlsbad, New Mexico. Currently, the subspecies is restricted to the river from the Fort Sumner area southward locally to the vicinity of Artesia, and seasonally in Brantley Reservoir (NMDGF 1988; USFWS 1992). Routine fish community monitoring conducted by the USFWS in the Pecos River between Sumner Dam and Brantley Reservoir show the fish remains generally abundant, especially in light of cooperative efforts between the Bureau of Reclamation and the USFWS to more closely mimic natural flows in the Pecos River.

There are two designated critical habitat areas on the Pecos River within the RFO area. The first is a 64-mile reach beginning about ten miles south of Fort Sumner, downstream to a point about twelve miles south of the DeBaca/Chaves county line. The second reach is from Highway 31 east of Hagerman, south to Highway 82 east of Artesia. The property lies about 20 river miles north of the second reach and there is the potential for Pecos bluntnose shiner to occur on the property.

The primary threat to the Pecos bluntnose shiner appears to be the manipulation of flows in the Pecos River to meet irrigation needs, and the subsequent drying of the river channel (Hatch et al. 1985). High flows in late winter-early spring before natural spring runoff appear to displace fish into marginal downstream habitats, including Brantley Reservoir. Cessation of reservoir releases after spring runoff and before the advent of summer rains desiccates long stretches of the Pecos River. Maintenance of water levels within the Pecos River and its tributaries is beyond the management authority of the BLM.

In addition to the manipulation of flows is the threat posed by non-native fish. The introduction and establishment of species such as the Arkansas River shiner offers direct competition with the Pecos bluntnose shiner.

Pecos Gambusia *(Gambusia nobilis)* - Federal Endangered

The Pecos gambusia (*Gambusia nobilis*) was listed as endangered under the Endangered Species Conservation Act of 1969, and became an endangered species under the Endangered Species Act of 1973 when that legislation was enacted. No critical habitat has been designated. It is endemic to the Pecos River basin in southeastern New Mexico and western Texas. Natural populations within the Roswell Field Office area occur in several springs and isolated gypsum sinkholes at BLNWR. Introduced populations occur in other sinkholes at BLNWR, and at the Salt Creek Wilderness Area in Ink Pot sinkhole. In addition to the Pecos gambusia, the protection of other special status species such as the Pecos pupfish, Koster's tryonia snail, Pecos assiminea snail, Roswell springsnail, and Noel=s amphipod remain a concern. Several of these species occur at the BLNWR.

The Pecos gambusia is a small fish 25-40 millimeters long and is endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Historically, Pecos gambusia occurred as far north as the Pecos River near Fort Sumner, New Mexico, and south to Fort Stockton, Texas. However, recent records indicate that its native range is restricted to sinkholes or springs and their outflows, on the west side of the Pecos River in Chaves County, New Mexico. In spite of population declines, the species remains locally common in a few areas of suitable habitat. In New Mexico, populations are present on the BLNWR and the Salt Creek Wilderness Area (both Chaves County). These areas constitute the key habitat of the species in the RFO area. Populations of Pecos gambusia occur in several springs and isolated gypsum sinkholes at the BLNWR Middle Unit (Lake St. Francis Research Natural Area) and the Ink Spot sinkhole in the Salt Creek Wilderness.

Endangerment factors include the loss or alteration of habitat (e.g., periodic dewatering) and introduction of exotic fish species (e.g., mosquitofish). Potential impacts to habitat may also occur from surface disturbing activities at sinkholes or springs and their outflows.

Conservation Measures: The following surface use and occupancy restrictions were developed in the Roswell RMP to protect streams, rivers, floodplains, and springs and seeps. No surface occupancy would be allowed within floodplains or within up to 200 meters of the outer edge of 100-year floodplains. No surface occupancy would be allowed within up to 200 meters of the source of a spring or seep, or within downstream riparian areas created by flows from the source or resulting from riparian area management. Produced water disposal pits on public lands would not be allowed on public land west of the Pecos River, within 100-year floodplains or within 200 meters of drainages or springs. OHV designations for the Pecos River floodplain include a combination of closed to OHV use and limited to designated roads/trails. Site-specific evaluations would be conducted on a case-by-case basis.

Pecos Pupfish *(Cyprinodon pecosensis)* - Federal Candidate

The Pecos pupfish is found in a variety of habitats from saline springs and gypsum sinkholes to desert streams with highly fluctuating conditions. Pecos pupfish populations are most dense in gypsum sinkholes on BLNWR. The species apparently thrives in these saline waters that support few other fish species. It occasionally occupies fresher waters in the Pecos River, but is uncommon in such habitats. In the river, the pupfish is most often found in backwater areas and side pools that lack sunfish or other predators (NMDGF 1988; Sublette et al. 1990; NMDGF 1997). The pupfish also inhabits the Overflow Wetlands ACEC adjacent to the Bottomless Lakes State Park. The pupfish may also occur in the Pecos River at this location due to the existing population at the ACEC. There are four points where water from the wetlands drain into the Pecos River on the east side of the river.

Endangerment factors include habitat loss caused by groundwater pumping and channel alterations, hybridization and/or replacement by the sheepshead minnow, and predation by non-native fish species. Potential impacts to habitat may occur from surface disturbing activities at or near springs or seeps. Other activities that severely impact habitat are not within the purview of the BLM, such as transportation and utilization of water associated with agricultural irrigation.

In 1999, several federal and state agencies developed a five-year conservation agreement for the pupfish. The BLM participated in the development of the plan that affirmed the mutual goal of the agencies of securing and protecting the Pecos pupfish within its currently occupied and known historic range in New Mexico and Texas. Each agency agreed to implement measures within their purview to conserve the species and its habitat in the Pecos River Basin. In 2000, the U.S. Fish and Wildlife Service withdrew its proposal to the pupfish as an endangered species based on the development of the Conservation Agreement.

Interior Least Tern *(Sterna antillarum athalassos)* - Federal Endangered

The interior least tern nests on shorelines and sandbars of streams, rivers, lakes, and man-made water impoundments. There are only three known nesting habitats in the Roswell Field Office (RFO) area. The primary areas are on the alkali flats on the east side of Unit 16 and around Bitter Lake on Bitter Lake National Wildlife Refuge. A secondary area is an alkali flat due north of the refuge on public lands on Allotment 64056. The third area is located on City of Roswell property at the old desalinization plant where terns once nested on the evaporation ponds behind the plant and have since abandoned. No other nesting terns have been found to date. BLNWR is considered essential to tern breeding habitat in the state.

Sporadic observations of least terns have been recorded elsewhere in the Pecos River valley. The tern may occur on public lands in Chaves County along the river because suitable nesting habitat is found on sites that are sandy and relatively free of vegetation (i.e., alkali flats). Other potential habitat sites are saline, alkaline, or gypsiferous playas that occasionally hold water. However, ephemeral playas do not support fish, the main staple for terns.

Specific surveys for nesting least terns have been conducted in potential habitat along the Pecos River and playas by the New Mexico Natural Heritage Program under a challenge cost share

agreement with the BLM. Surveys were conducted at eight designated survey sites in the RFO area during the June/July 1997 season. A flyover was noted at the Overflow Wetlands Wildlife Habitat Area, and two nesting pairs were observed on Allotment 64056 north of the BLNWR (NMNHP 1997). No other nesting terns have been found to date.

Channelization, irrigation, and the construction of reservoirs and pools have contributed to the elimination of much of the tern nesting habitat. Unpredictable flow patterns below reservoirs can pose problems for nesting terns. Increased human activity on river sandbars threaten nesting terns, including the use of recreational vehicles on previously unreachable habitat during periods of drought.

Conservation Measures: No new oil and gas leases will be sold within the 100-year floodplain of the Pecos River. Surface use and occupancy restrictions were developed in the Roswell RMP to protect streams, rivers, floodplains, and playas and alkali lakes. No surface occupancy would be allowed within floodplains or within up to 200 meters of the outer edge of 100-year floodplains. No surface occupancy would be allowed within up to 200 meters of playas and alkali lakes. OHV designations for the Pecos River floodplain include a combination of closed to OHV use and limited to designated roads/trails.

Pecos Assiminea Snail (*Assiminea pecosensis*) - Proposed Endangered with Critical Habitat
Roswell Springsnail (*Pyrgulopsis roswellensis*) - Proposed Endangered with Critical Habitat
Koster's Tryonia Snail (*Tryonia kosteri*) - Proposed Endangered with Critical Habitat
Noel's Amphipod (*Gammarus desparatus*) - Proposed Endangered with Critical Habitat

These three snails and one amphipod are found in the same locations and share the same threats and management needs. All have extremely limited distribution in the Roswell FO area. Significant populations of these species occur at sinkholes, springs and associated spring runs and wetland habitat at the Bitter Lake National Wildlife Refuge. The Roswell springsnail and Koster's tryonia (*Hydrobiid* snails) are known only from Bitter Creek, Lost River and Sago spring system at the refuge, and North Springs at the Roswell Country Club (private land, status uncertain). The Pecos assiminea (marine snail family) is known only from the refuge and Diamond Y Spring near Ft. Stockton, Texas. Noel's amphipod is known only from the refuge. If listed as endangered, BLNWR would be considered critical habitat for these species.

Potential impacts to the snails include local and regional groundwater depletion, surface and ground water contamination, oil and gas extraction activities within the supporting aquifer and watershed, and direct loss of their habitat. The septic tanks in the area could pose an increased risk of sewage contamination of local groundwater.

Conservation Measures: The following surface use and occupancy restrictions were developed in the Roswell RMP to protect streams, rivers, floodplains, and springs and seeps. No surface occupancy would be allowed within floodplains or within up to 200 meters of the outer edge of 100-year floodplains. No surface occupancy would be allowed within up to 200 meters of the source of a spring or seep, or within downstream riparian areas created by flows from the source or resulting from riparian area management. Produced water disposal pits on public lands would not be allowed on public land west of the Pecos River, within 100-year floodplains or within 200

meters of drainages or springs. OHV designations for the Pecos River floodplain include a combination of closed to OHV use and limited to designated roads/trails.

The New Mexico Department of Game and Fish is formulating a draft Recovery Plan for these four species, which are listed as endangered under the New Mexico Wildlife Conservation Act. All four of these species are restricted to aquatic and wetland habitats on the Bitter Lake National Wildlife Refuge.

Environmental Consequences

The most significant project under the proposed action is saltcedar control because of the extent of the area and the type of control method. Removal of salt cedar from the riparian community would remove the vertical structure of vegetation currently found along the river. This would likely affect bird species seeking cover and perches while traversing through the area either yearlong or seasonally. Closed in streambanks along the Pecos River is likely to be favorable to certain animal species and unfavorable to others. The change in vertical structural diversity may have an effect on mostly avian wildlife populations.

Mechanical treatment would have a temporary effect on all wildlife species in the area due to noise and physical removal of vegetation. Negative impacts would be lessened since the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife; for example, during critical reproductive periods (from April to June).

Impact to wildlife would naturally be short term following the prescribed burn. As with any fire, whether natural or man caused, some mortality of small animals, reptiles and birds would occur, especially if they seek salt cedar piles as cover. In most cases, wildlife would be displaced in the short term by the fire and the loss of surrounding vegetation and then would return when vegetation begins to grow back. Some piles would be left as habitat to mitigate the loss of vertical structure which adds to habitat diversity.

After treatment of salt cedar, the increase of forb and grass species would most likely lead to an increase in use of the treated areas by wildlife species that prefer a grassland type, such as mule deer and pronghorn antelope, and certain avian species.

There would be no direct effect to listed and proposed species or their habitat. An indirect and long-term effect may be an increase of groundwater availability to the Pecos River. This would be an immeasurable result but possible nonetheless as the reduction of salt cedar and improvement of range condition would improve the subwatershed condition within the ACEC.

The no prairie dog hunting designation would allow the continued existence of the colony on public lands within the ACEC. The surrounding private lands may be subject to treatment by the private landowners at their discretion, making the public lands a refuge for the colony in the event the colony on private lands are treated. The remaining colony may re-colonize the private lands once again which may have an economic impact to adjacent private lands by the reduction of preferred vegetation. Currently, poisoning prairie dog colonies on public lands, unless for reasons of public health, is not allowed in the Roswell Field Office.

Because of the potential beneficial impact to T/E species, a determination of May Affect But Not Likely To Adversely Affect is made for all listed species.

Cumulative Impacts

Any cumulative impact of the proposed project on wildlife would be dissipated by the condition of the surrounding areas outside of the proposed project area. Wildlife would be utilizing the different areas at varying levels of use for feeding, protection, cover and reproduction.

Invasive, Nonnative Species

Affected Environment

Exotic (Nonnative) Plants

The ACEC is in an area that is susceptible to the spread of invasive weeds because it borders the Pecos River. This linear feature is conducive to the proliferation of invasive species. Weeds can be defined as, "any plant that interferes with the management objectives for a particular site, and an invasive weed is one that is not native to a particular ecosystem" (Lee 1999).

Once established, invasive weeds have a negative impact on the environment and the economy. In accordance with the 1998 New Mexico Noxious Weed Management Act, the New Mexico Department of Agriculture assembled a Noxious Weed List for the state. Saltcedar is a Class C species found in dense stands on the ACEC.

Noxious Weeds - There are no known populations of invasive or noxious weed species in the Overflow Wetlands ACEC. However, saltcedar is listed by the State of New Mexico as a Class C weed, and populations of goldenrod, a species of concern. Species of concern are native plants that may be toxic to livestock. For both species, it's BLM's policy is to limit the spread of such species as much as possible.

The need for saltcedar control is to improve riparian condition along the Pecos River by removing salt cedar growing in a dense band along the west bank and floodplain of the river, and to improve upland conditions within the grassland community type. Both actions would contribute to improving watershed conditions along the Pecos River. Salt cedar has increased to the extent that it has taken over much of the immediate floodplain of the river, and has begun invading adjacent upland grassland habitat. There is the potential for salt cedar to proliferate throughout more of the grassland community and control is needed to remove salt cedar before it's density increases and control more expensive. Clearing salt cedar would allow for the development of open water habitat along the Pecos and would allow the channel to seek equilibrium through increasing sinuosity. Salt cedar has effectively stabilized the channel and is partly the cause of incision by limiting flows to the channel. The main cause for incision lies with river water management through controlled flows at dams for flood control and irrigation purposes. Salt cedar removal would also contribute to the availability of surface and groundwater resources in the long term.

Environmental Consequences

The control of invasive plant species with either mechanical or chemical methods will have overall positive impacts. The reduction in the amount of salt cedar within the area will enhance the establishment of other more desirable plant species.

Vegetation treatments would have beneficial and adverse effects on terrestrial vegetation within the project area. Densities of salt cedar would be significantly lowered within the Pecos River riparian community. Non-target vegetation, primarily grasses, would be crushed by the excavator while traversing the area and individual plants uprooted in the immediate site of salt cedar extrication. Vegetation would be crushed by piled and windrowed salt cedar. Most of these impacts would be mitigated by the time of year that the project would be conducted, at the end of the growing season.

By reducing the salt cedar component, herbaceous species would gain in densities after adequate precipitation occurs. Herbaceous species tend to have abundant seed which germinate and mature more rapidly than woody species or succulents. Disturbed sites would revegetate quickly.

All vegetation in the vicinity of brush piles would be temporarily negatively impacted after burning. The herbaceous species would respond within one growing season, and with adequate precipitation, to a level exceeding pre-burning levels. During the burn operation, surrounding vegetation would be consumed by fire, but would quickly recover except in a few areas that may burn hot and sterilize the soil. Forbs would likely dominate these sites first, and after a few growing seasons, grass over as well.

The change in composition of the vegetative community would have the effect of changing the area of treatment from a salt cedar-infested river streambank and floodplain to a more open floodplain within a grassland habitat type in a relatively short period of time (approximately two to three years).

Noxious Weeds - The movement of equipment to and from the site may unintentionally contribute to the establishment and spread of noxious weeds. Noxious weed seeds could be carried onto the project areas by equipment and transport vehicles. The main mechanism for seed dispersion is by equipment and vehicles that were previously used and or driven across or through noxious weed-infested areas. The potential for the dissemination of invasive and noxious weed seeds may be elevated by the use of equipment typically contracted out to different geographic areas in the region. Washing and decontaminating the equipment prior to transporting the equipment onto the construction areas would minimize this impact.

Impacts by noxious weeds would be minimized due to requirements for the company to eradicate the weeds upon discovery. Multiple applications may be required to effectively control the identified populations.

Exotic (Nonnative) Animals

Sheepshead Minnow (*Cyprinodon variegates*)

The sheepshead minnow, and introduced species, is the primary cause for recent range reduction of the Pecos pupfish. It was once confined to shallow, brackish coastal waters of the Gulf and Atlantic coasts of the U.S. The sheepshead minnow was introduced into the Pecos River possibly in the vicinity of Pecos, Texas, sometime between 1980 and 1984. Sheepshead minnow hybrids have moved upstream and downstream at a relatively rapid pace. The spread of hybrids occurred both naturally and presumably through bait bucket introductions. By 1984, surveys at four sites along the Pecos River below Red Bluff Reservoir, Texas, revealed evidence of hybridization between the Pecos pupfish and sheepshead minnow (Echelle 1985). At sites ranging from 31 miles further upstream to 156 miles downstream, the influence of sheepshead minnow was still apparent though less pronounced (Echelle and Connor 1989).

Environmental Consequences

Two fish barriers have been constructed on each of the two main outflow channels of the Overflow Wetlands. Fish barriers to impede the spread of sheepshead minnow into the Overflow Wetlands would have long-term beneficial impacts to the Pecos pupfish populations by preventing hybridization between the two species.

It is expected that large flood events would inundate the existing locations of the fish barriers and consideration for constructing additional barriers higher up on the channels may be necessary. Soil and vegetation disturbance on proposed locations would impact about 1,000 square feet in order to properly fit the barriers. After construction the disturbed area would naturally revegetate in a short period of time.

Cumulative Impacts

Any cumulative impact of the proposed project on aquatic species would be dissipated by the condition of the surrounding areas outside of the proposed project area. Aquatic species would be utilizing the different areas at varying levels of use for feeding, protection, cover and reproduction.

Livestock Grazing

Affected Environment

Currently, there are three BLM-administered grazing allotments with pastures located within the ACEC boundary. There is one private inholding associated with a state grazing lease, and two private inholdings not associated with any type of grazing permit or lease. See map, “Grazing Allotments.”

Allotment Number	Allotment Name or Private Land Owner	Affected Pasture	Animal Units	Remarks
65041*	Lasater & Souther	None	None	Grazing Lease Cancelled 1997
65060	Bottomless Ranch	BLM Pasture - 200 acres	3 AUs	Floodplain and Some Wetland
65069	Calumet Ranch	Spring Pasture River Pasture	11 AUs	Majority is State Grazing Lease, Seasonal Use, Wetlands and Outflow Channels

* Addressed in the Roswell RMP

In 1997, the grazing permit was cancelled on Allotment 65041 following approval of the RMP. No authorized grazing has occurred since 1990.

The grazing permit on Allotment 65060 includes about 200 acres of public land as part of an 800-acre pasture. The public lands are not segregated from the private lands within the allotment boundary. Flooded lands created by the steady increase of water flows out of Lea Lake has created additional wetland habitat on a portion of public lands. Only three animal units are tied with the lease.

The Slash G/Sorensen Allotment #65062 operated by Stonebridge Ranch lies east of Highway 409. Stonebridge Ranch holds private lands west of Highway 409 that lie within the boundary of the ACEC, however, these lands are not part of the Public Land grazing allotment.

These lands were included within the boundary of the ACEC as the highway served as an easily distinguishable boundary, and because of the potential for future acquisition of the private lands that make up the majority of the escarpment overlooking the wetlands below. Range improvements include livestock waters and associated pipelines, a spring source that supplies piped water for a portion of the allotment east of the highway, ranch roads and fences.

Only the Spring and West #1 pastures of the Calmuet Ranch Allotment #65069 lie west of Highway 409 and within the ACEC boundary. Each pasture has both private and NM State Lands as well as the Public Lands. The land status in Spring Pasture is approximately 440 acres of Public Land, 603 acres of State Land and 191 acres of private land and in the West #1 pasture 1,150 acres of Public Land, 476 acres of State Land and 1,310 acres of private land. Both pastures have range improvements that include livestock water troughs, pipelines, a windmill, ranch roads and fences.

The Spring Pasture is entirely within the ACEC boundary. Within the Spring Pasture the 100-year floodplain covers approximately 18 of Public Lands and 109 acres of State lands. Of the

Public Lands within the West #1 Pasture, approximately 869 acres lie within the ACEC boundary but not within the 100-year floodplain.

The state lands contain the majority of wetland habitat on the allotment, including a major outflow channel of the wetlands to the Pecos River. A small sinkhole appeared on state land in the year 2000. It was fenced off due to the inherent hazard of the feature and is now used as an experimental population site by the State for the federal threatened Pecos sunflower.

The 160-acre Allensworth private land inholding is entirely within the ACEC boundary. The two 40-acre parcels are segregated from the private land inholding and a 640-acre state grazing lease within the ACEC. There is no Federal grazing associated with the Allensworth property. The private land inholding has been identified for future acquisition.

Environmental Consequences

The potential impacts to livestock grazing on the Public Lands within the ACEC boundary are associated with Bottomless Ranch Allotment #65060 and the Spring and West #1 pastures of the Calumet Ranch Allotment #65069. The proposed action, if implemented as outlined, could impact the grazing on private and State Lands.

The RMP prescription for the ACEC did not preclude livestock grazing within the ACEC, therefore an alternate approach (as opposed to cancellation of the grazing privileges) must be used if the removal of the 440 acres of Public Land in Spring pasture is accomplished.

The public lands in the Spring Pasture total approximately 440 acres and are located in Section 9 and 10, Township 12 South, Range 26 east. See the map titled "Overflow Wetlands ACEC Grazing Allotments."

The current grazing permit authorizes 438 Animal Units (AU) at 34% Public Land. Approximately 22 AUs are attached to the Spring pasture and approximately 7 AUs are attached to the 440 acres of Public Land within the pasture. This represents about four percent (4%) of the permit. Using a conservative analysis of the long term monitoring data (1980 to present) the 440 acres of Public Land could be removed without an adjustment of the permit (CFR 4110.4-2 Decrease in land acreage). An agreement with the owners of the base properties (rather than the current lessee of the base properties) would need to be negotiated. This would not affect the current livestock grazing.

Removal of the 440 acres from grazing use would affect existing range improvements and would require the BLM to compensate for the improvements or authorize their removal. Additionally approximately two and one-half (2.5) miles of new fence would need to be constructed to exclude the acreage from the allotment.

The proposed action as outlined may affect the management of the State Lands within the pastures. Removal of the Public Land in Spring pasture would leave approximately 843 acres of State Land in a small trap. This may pose some management concerns to the operator. The proposed action calls for negotiations with the State Land Office on the realignment of fences and possible exclusion of grazing on a portion of these lands. This is an uncertain action and may

be outside of BLM's purview. It must be noted that the BLM prescription for the management of the ACEC has no effect on the management of the State or private lands within the boundaries of the ACEC area. If negotiations were successful, BLM may be responsible for all cost associated with the fence realignment and other improvements that may be affected.

Acquisition of the private lands (Stonebridge Ranch, Allensworth and possibly those associated with the Bottomless Lake Allotment #65060) would have minimum impacts to livestock grazing. Compensation for the existing range improvements would be included in the acquisition cost. Chaves County would lose a minimal amount of the tax base associated with the private grazing land and livestock; some of this loss (if not all) would be mitigated by the Pay in Lieu of Taxes that the County receives from the Federal government.

Cumulative Impacts

An increase in cumulative impacts from the proposed action is not anticipated. Disturbance from any new improvements will be balanced with the removal of existing improvements affected by the implementation of the proposed action.

Outdoor Recreation

Affected Environment

There are no developed recreation facilities within the ACEC boundary although access has been maintained for the general public for consumptive and non-consumptive recreation. The most used access routes are located on the east side of the ACEC.

Hunting is one the major consumptive uses of the ACEC to include waterfowl, upland game bird, and deer hunting during their respective seasons. Several duck blinds have been constructed near the water bodies. Fishing also occurs along the Pecos River yearlong for warm-water fish. Sightseeing, birdwatching and nature study are non-consumptive types of recreation that is expected to increase as the ACEC becomes known. The Overflow Wetlands is a designated Watchable Wildlife Area. Camping has occurred within the ACEC but is not compatible with the uses of the area.

Physical access to public lands located in the west portion of the ACEC and west of the Pecos River, is across private land. The BLM has a legal easement across private land to access the public land in this portion of the ACEC.

Environmental Consequences

Establishing the two trails would have little or no adverse impact on the wetland environment. Impacts are anticipated to be beneficial to visitors and environmental health. See map, "Proposed Trails."

The southern trail would be established on an existing road that would be closed to motorized traffic upon plan completion. Trail-related facilities that may be needed include innovative gates to facilitate passing of pedestrian. It is possible that some rehabilitation work would be needed

to narrow the road into a trail. A suitable color would be selected to favorably blend any trail-related facilities color pattern of the surrounding setting.

The northern accessible interpretive trail would be constructed with a durable all-weather material suitable to the location. The walkway would be at least 80 inches wide to facilitate passing of two wheelchairs and would be constructed overlying an old existing two-track road. The two-track road is inundated by overflow waters. A suitable color would be selected to favorably blend the boardwalk and necessary railing with the seasonal color pattern of the surrounding setting, preferably a gray-green color.

A possible adverse impact at both trails would be litter. This could be mitigated through education through various media, trail litter receptacles, volunteer docent activity/foot patrols and Leave No Trace signing, asking visitors to participate in minimum impact management.

Invertebrate species living in the mud could be killed or temporarily displaced due to construction necessary to build the walkway. Such an impact would ultimately favor wetland health by insuring the existing two-track would never be rutted due to foot or mechanized traffic.

Overnight camping would not be allowed within the ACEC. There is a full facility campground at Bottomless Lakes State Park which adjoins the ACEC. This campground is open year round and should be adequate for visitors who want to use the ACEC and camp close by. Conflicts between waterfowl hunting and wildlife viewing would probably occur during hunting seasons.

Cumulative Impacts

Negative cumulative impacts of the proposed action would be slight. Roads converted to rails would reduce soil erosion impacts by reducing the area of bare soil. Trail development, including interpretive signs, would reduce trash, impacts and trespass on both the ACEC and the surrounding lands. Visitors who wish to use the area for watchable wildlife might be disappointed because of the wariness of the avian species within the area.

Lands, Realty and Rights-of-way

Affected Environment

There are a total of 3,016.80 acres of public land within the Overflow Wetlands ACEC.

A review of the Master Title Plats and Oil and Gas Plats reveal the following title information:

Oil and Gas Leases: Oil and Gas Lease NM 92156 (in Sections 21 and 22, see map, "Existing Oil and Gas Leases.")

Rights-of-Way: NM 05472 Overhead Powerline,
NM 82238 Overhead Powerline,
NM 1088 Land Treatment
NM 067912 Buried Pipeline
NM 0558171 Buried Pipeline

NM 90312 Buried Pipeline

Environmental Consequences

Excluding major rights-of-way would cause proponents of new development to reroute projects, causing increases in the distance and construction costs. In some cases, the right-of-way project would be cost prohibitive.

Easements would be acquired, from a willing seller, to provide access to the ACEC. This would only occur when those roads are important for the management of the ACEC. Negative impacts caused by more public access would include an increase in vandalism and damage to the public lands.

Negative impacts would be associated with split estate, if the mineral and surface estate are not kept intact. Positive long-term impacts would be increased efficiency and lower costs in managing the public lands.

Cumulative Impacts

Cumulative impacts of the Proposed Action would be negligible within the ACEC. Existing rights-of-way would operate under their existing terms and conditions. Major projects, as defined in the Roswell Resource Management Plan (1997), would either avoid or be excluded from the ACEC. While it would be possible for private individuals to obtain an easement through the ACEC for powerlines or utilities, this is unlikely under current reasonable and foreseeable development scenarios.

Off Highway Vehicles

Affected Environment

Under the RMP off highway vehicle (OHV) use is designated as closed on 1,040 acres and limited to designated roads and trails on 2,100 acres within the original ACEC. (See map, "OHV Designations.") The proposed action would designate additional acres as limited to designated roads and trails for OHV use on lands acquired since 1997 that are within the ACEC. See map, "Proposed Road Designations" for roads on public lands within the ACEC, excluding state highways and county roads, proposed for closure

BLM would nominate Joyce Road be abandoned by Chaves County in coordination with the New Mexico State Land Office as portions of the road are located on State land. Joyce Road runs north-south through the west portion of the ACEC and has not been maintained for a number of years. Currently, the road captures some surface water flowing from Lea Lake across the ACEC and the new sinkhole on State lands. As a result, Joyce Road is impassable to motorists and all-terrain vehicle (ATV) riders. Joyce Road is not a major access route to and through the ACEC. See map, "Proposed Road Designations."

Environmental Consequences

Unwanted roads and trails left in place contribute to soil erosion within the ACEC. Vehicular use of these routes when soils are wet or the road inundated contributes to the sediment loads in the Pecos River. Designating roads and trails to remain within the ACEC would lessen the soil erosion impacts. Including the acquired lands in this designation would lessen soil erosion impacts to a greater degree. Closing unneeded road adds to this effect.

Consequences of this action would include a lessening of motorized vehicle traffic within the ACEC and speedier transition to revegetation of disturbed areas. The revegation, in turn, would improve habitat and the riparian watershed function within the ACEC.

Legal access to the public lands within the ACEC would not be affected by the road closures. Access to all parts of the ACEC would still be available to those on foot.

Cumulative Impacts

Cumulative impacts of closing these roads have a long-term positive effect within the ACEC regarding habitat, vegetation, watershed function, riparian areas and existing wetlands.

Visual Resources

Affected Environment

The Visual Resource Classification for the ACEC Class II. The Class II objective is to retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color and texture found in the predominant natural features of the characteristic landscape. If facilities are placed in the ACEC they should be painted to complement the surrounding colors of the environment.

Environmental Consequences

Salt cedar is a non-native species that has invaded many plant communities in the west to a point where it is part of the landscape, although unnatural when considering that it has invaded grassland habitat and riparian habitat to the exclusion of native plant communities. Removing the vertical structure of salt cedar would not change the color and texture of the original, natural character of the landscape. In the long term (in excess of one year following each treatment) increased lush plant growth and diversity would tend to change the visual character of the area in a positive manner.

Facilities proposed within the area should be painted to complement the natural colors of the surrounding vegetation and ground color.

Cumulative Impacts

No cumulative impacts should occur if VRM color schemes are used and facilities are placed in such as way as not to be obtrusive to the casual visitor to the ACEC.

Cultural Resources

Affected Environment

There is not much known about the archeological and historical record within the Overflow Wetlands ACEC. There have been approximately 20 project driven linear cultural inventory surveys either 50 or 100 feet in width and averaging ½ mile or so in length. One archeological site was recorded. The total area examined for cultural resources is far less than one per cent.

The potential for finding prehistoric sites in the floodplain is low due to periodic flooding which scatters cultural material. If sites are identified, the chances for finding in situ material are low. There is good potential for finding prehistoric sites above the floodplain within the ACEC. Historic sites may be found anywhere within the ACEC. Often, historic sites are manifested as trash dumps which usually have limited data potential.

Environmental Consequences

Of the list of actions planned, clearing saltcedar, the two areas described for road access maintenance or construction, parking lot construction and building the short interpretive trail could adversely affect cultural resources.

Cumulative Impacts

In order to avoid impacting significant archeological and historic sites, cultural inventory surveys will be undertaken to identify cultural resources in the area to be affected by project implementation. If significant cultural resources are identified, project redesign or archeological treatment will occur prior to project construction.

Socio-Economic Impacts

The economic impacts of the Proposed Action would be negligible at most. Removing the public land from the Spring Pasture of the Calumet Ranch, Allotment 65069, can be accomplished without reducing the overall livestock numbers as discussed previously in this document.

Information compiled by the Department of Commerce's Bureau of Census and Bureau of Economic Analysis demonstrates employment in Chaves County the Year 2000 could be ranked in the following categories:

1. Services and Professional – 57.4 percent of workers. This includes those people employed in transportation and public utilities; wholesale trade; retail trade; finance, insurance and real estate; and health, legal and business services.
2. Government employees at all levels – 17.5 percent. The largest of this group is state and local government employees, which is approximately eights times the number of federal employees.
3. Manufacturing – 8.3 percent
4. Farm and Agriculture Services – 7.9 percent
5. Construction – 4.8 percent
6. Mining – 4.1 percent. This category includes employment by oil and gas companies.

This trend is mirrored by the sources of personal income in Chaves County. In the Year 2000 the following personal income source categories ranked in this order:

1. Non-Labor Income – 39.7 percent. This category includes dividends, interest, rent, and transfer payments (retirement annuities, "welfare," medical payments, and veterans benefits).
2. Services and Professional – 26.3 percent
3. Government – 13.1 percent
4. Farm and Agricultural Services – 10.8 percent
5. Manufacturing – 6.2 percent
6. Mining – 3.3 percent
7. Construction – 3.3 percent

Given this trend the Proposed Action should benefit the local population by providing additional opportunities for recreation near Roswell, NM.

Overall Cumulative Effects

The results of the proposed action would not substantially change the plant and animal communities of the project area, however, decreasing livestock utilization levels in areas of habitual use, including the Pecos River, should aide in attaining increased plant vigor. The proposed action would result in beneficial effects to the soil and animal life. The construction of the project as proposed would not affect the environment as a whole, but would be site-specific in its effect. Therefore, the cumulative impact would not be significant when compared to existing disturbances created by utilization of the area, including the Pecos River, by adjacent private landowners for various activities.

Implementing the Proposed Action would enhance the watershed function within the ACEC, provide recreation opportunities to the public, enhance wildlife habitat, and maintain important wetlands adjacent to the Pecos River. Soil erosion from the ACEC would remain at current levels or decrease. Natural water flow across the ACEC would remain the same or increase.

Consultation and Coordination

BLM, Roswell Field Office staff -
Pat Flanary, archeologist
Joe Navarro, range conservation specialist
Irene Gonzales, realty specialist
Armando Lopez, petroleum engineer
Howard Parman, planning coordinator
Dan Baggao, wildlife biologist
Paul Happel, outdoor recreation planner
Michael McGee, hydrologist
John Smitz, geologist
Richard Hill, surface protection specialist
Helen Miller, range conservation specialist

Brent Bullock - PVACD

State of New Mexico agencies –
Ed Schott – Bottomless Lakes State Park
Dick Williford – State Land Office
Jennifer Parody – State Land Office
Steve Patterson - Bottomless Lakes State Park
Mark Naranjo – State Land Office
Jim Northcutt – State Land Office

Chaves County Public Lands Advisory Committee -
Bruce Stubbs

Cheryl Patterson
Rick Sadler
David Stuart
Cate Erbaugh
Art Creswell
Jim Montgomery
Sandy Sadler
Coy L. Dictson
Robert Larsen
Beverly Coors
Keith L. Schremple
Lewis Derrick
Mac McFerraz
Tim Jennings

References Cited

Kelley, V.C., 1971, Geology of the Pecos country, Southeastern New Mexico: New Mexico Bureau of Mines and Mineral Resources Memoir 24, 78 pp.

Summers, W. K., 1972, Geology and Regional Hydrology of the Pecos River Basin, New Mexico, 208 pp.

New Mexico Office of the State Engineer., Groundwater Data