RECLAMATION

*Managing Water in the West*

*Draft*

# Environmental Assessment and Biological Assessment

## Pecos River Restoration at the Overflow Wetlands, Area of Critical Environmental Concern

## Chaves County, New Mexico

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

December 2012

## 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.

Photo by: Marsha Carra, September 2010. Pecos River at the Overflow Wetlands Area of Environmental Concern

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

# DRAFT FINDING OF NO SIGNIFICANT IMPACT

## Pecos River Restoration at Overflow Wetlands, Chaves County, New Mexico

_____ _____

Manager, Environment Division Date

_____ _____

Area Manager, Albuquerque, New Mexico Date

FONSI Number: AAO-13-001

## BACKGROUND

The proposed restoration project is a Reasonable and Prudent Measure (RPM) for the Pecos bluntnose shiner resulting from the Biological Opinion on the selected alternative from the Carlsbad Water Operations Environmental Impact Statement (Reclamation 2006; USFWS 2006). Two sections of the Pecos River are designated critical habitat for the shiner. The upper section extends 64 miles from just above the confluence of Taiban Creek downstream to near the confluence with Crocket Draw. The lower section extends 37 miles from approximately US Highway 31 downstream to the US Highway 82 bridge near Artesia (OSE 2012b).The project area is not within mapped critical habitat for the Pecos bluntnose shiner; the closest critical habitat is more than 33 miles to the north and 11 miles south of the project area.

In 2009, Reclamation funded and completed a channel restoration project that reconnected Oxbow 4 at Bitter Lake National Wildlife Refuge (NWR) to the main stem of the Pecos River. The oxbow had been cut off by the United States Fish and Wildlife Service (USFWS) in the 1940s to control the river and protect infrastructure. The restoration also included removing invasive vegetation, lowering banks, reworking the channel morphology, and revegetating. The environmental assessment (EA) prepared for the Bitter Lake NWR project by United States (US) Department of the Interior, Bureau of Reclamation (Reclamation) also provided impact analysis and a Finding of No Significant Impact (FONSI) for additional phases of Pecos River restoration projects at the Bitter Lake NWR that were conducted by the USFWS with other cooperators.

Reclamation is proposing to conduct the second of these habitat improvement projects under RPM #1 at the US Department of the Interior, Bureau of Land Management (BLM) Overflow Wetlands ACEC, approximately nine river miles south of the Bitter Lake NWR restoration project. Lands in the proposed project area are managed by the Roswell Field Office of the BLM, the New Mexico State Land Office that manages State Trust Land in the project area, and private landowners.

## SUMMARY OF THE PROPOSED ACTION

Reclamation has prepared a draft environmental and biological assessment (EA/BA) on a proposal to improve the riparian and in-channel habitat along approximately three river miles of the Pecos River on BLM, State Trust, and private land. This restoration project is located within the overall boundaries of the BLM Overflow Wetlands Area of Critical Environmental Concern (ACEC), in Chaves County, New Mexico. The Proposed Action is a combination of restoration techniques that include mechanically removing nonnative vegetation, manually applying herbicide on nonnative vegetation, lowering and contouring banks, removing levees, and reseeding. These techniques would be designed to work within the current physical context of the river, which includes lower peak flood flows, irrigation withdrawals, channelized river segments, nonnative plant intrusion, and protection of farmland and floodplain infrastructure, thereby restoring river flows to dynamic conditions. The construction and effects of the restoration would be monitored, and measures would be included to protect existing wetlands.

The proposed project site was chosen in cooperation with representatives of other agencies and stakeholders after consideration of several other locations on the river. Because it is on the northern portion of the Farmlands reach, it is not far from established favorable habitat for all age classes of Pecos bluntnose shiner and the recent river restoration work in the Bitter Lake NWR. Thus, it may be close enough to provide refugia for shiner and their eggs to develop and

would extend the reach of good quality habitat favored by the species. The effectiveness of a restoration project farther south in the Farmlands reach may be limited without such way stations in between. The location is a "gaining reach," where there are perennial inflows to the river and little risk of drying.

Restoration is consistent with the management goals for the Pecos River in the Overflow Wetlands ACEC. There is very little federal land on the river. Siting the project primarily on BLM-administered land ensures short- and long-term access for construction, monitoring, and any maintenance work. The project site avoids many of the risks to private property, and the interagency cooperation with the BLM provides a mutually beneficial partnership. Because the BLM has already removed saltcedar from the surface land it manages and the river is not as deeply incised at this location as at others that were considered, Reclamation will be able to restore a longer reach than might have otherwise been possible. This location would allow Reclamation to meet the requirements of the Biological Opinion under RPM #1.

## ENVIRONMENTAL IMPACTS RELATED TO THE RESOURCES OF CONCERN

The effects of the Proposed Action and reasons for a FONSI are addressed in detail in the EA/BA and summarized below:

Land Use - Temporary construction disturbance and intermittent operations and maintenance disturbance to the project area and adjacent habitat would occur under the Proposed Action. There is there is potential for minor, short-term effects on surrounding land uses. Existing roads would be used for access with minimal improvements. Staging areas were selected in coordination with land owners and land managers to minimize impacts. Sites were selected for past disturbance and land owner preference. As a result, impacts on existing land uses would be minimized.

Geology and Soils - The proposed restoration techniques would disturb soil along the banks, floodplain, and terraces in the project site, access routes, storage areas, spoil areas, and staging areas. Abatement measures would be used to reduce dust, though most of the disturbed soils are likely to be unstructured sand. Mechanical clearing methods would be used to remove soil and vegetative cover, leaving soils temporarily exposed and subject to wind and water erosion and the potential for spread of invasive species. There would be short-term increases in sedimentation in the river associated with soil disturbance, erosion, and dust. Sediments would generally be redistributed within the river channel in the proposed project area. Shortly after restoration work is completed, dispersal of sediments within the river channel is expected to return to a more natural pattern that has been inhibited by the channelization.

Climate/Air Quality - Implementing the Proposed Action would result in short-term increases in coarse particulate matter ($PM_{10}$) and other pollutants due to truck traffic and construction-related fugitive dust, diesel exhaust emissions, and potential burning of woody debris. Visibility impacts due to dust would be reduced as soils stabilize and would be mitigated by use of water to reduce dust levels during construction. The Proposed Action is in a Class II air quality area, which allows for moderate amounts of air quality degradation.

Water Resources - The Proposed Action is designed to have a long-term positive effect on channel morphology and river function within the physical context of current conditions and river operations. Effects on other surface water features, such as the adjacent wetlands, should be negligible. Depletions to the water supply are expected to be approximately 1.5 acre-feet per year.

Reclamation proposes to offset the increased depletions from its Overflow Wetlands River Restoration Project to the Pecos River with water from its Carlsbad Project Water Acquisition Program. The depletion of the additional 1.5 acre-feet per year will be included in the "Annual Accounting Methodology (Version 26)" discussed in the 2008 Pecos Depletions Agreement between the New Mexico Interstate Stream Commission (NMISC) and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation as the current agreement is set to expire October 31, 2013.

Water Quality - The Proposed Action would cause short-term increases in sedimentation in the river associated with ground disturbance, river crossings, exposed soils, and erosion. There would also be a minor risk of inadvertent discharge of pollutants into surface waters from construction equipment and vehicles that would be used in the restoration. Chipped woody debris could be dispersed in to the river during flood events.

Biological Resources - The Proposed Action is designed to have beneficial effects on riparian vegetation. In previously untreated portions of the project area, nonnative invasive saltcedar has crowded out most of the other types of vegetation and understory. Removing the saltcedar would allow the development and expansion of more diverse riparian vegetation and habitat capable of supporting a greater variety of wildlife. Also, the plan to lower the riverbank would allow more natural connectivity between the river and the floodplain, improving river function. These actions would result in a higher water table, more diverse plant communities, and more areas where self-sustaining wetlands adjacent to the river could develop. Benefits of the improved wetlands include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, and maintaining surface water flow during dry periods. Effects on wildlife would not be immediate but would come with improved river function and the establishment of diverse native vegetation. The shallow aquifer overflow wetlands are not in the project area. There would be no impacts on these resources.

Threatened and Endangered Species - There is one listed species that has the potential to inhabit the project area, the Pecos bluntnose shiner (*Notropis simus pecosensis*). The interior least tern (*Sterna antillarum athalassos*) and southwestern willow flycatcher (*Empidonax traillii extimus*) may migrate through the area but are not likely to be residents within the project site due to lack of suitable habitat. Currently, there is one Pecos sunflower (*Helianthus paradoxus*) population near the project area, located approximately 0.25 miles west of the Pecos River at the northern extent of the proposed restoration area on privately owned land. All construction activities will avoid this area and there will be no direct or indirect impacts on this population.

*Pecos bluntnose shiner* - The proposed restoration is expected to have long-term beneficial effects on shiner by improving reproduction, recruitment rates, and survival at all of its life stages. Investigations of the native fishery within the Pecos River have revealed a preference of the native fishes for a wide sand substrate and active channel bed. An active channel allows for

the formation of backwaters, pools, and a variety of features that would provide additional habitat favorable to native fish species. The shiner spawns on flow events, such as spring runoff, summer storms, and irrigation releases. Females lay semi-buoyant eggs that drift downstream. In order to develop into adulthood, drifting eggs and larvae must be retained in quality habitat. Beneficial effects for the shiner and other native fishes are expected to begin in the runoff season following the restoration. Measures will be taken during construction to avoid activities that would impact the shiner.

Because construction effects are expected to be insignificant and effects from the restoration and improved channel function are expected to be beneficial in the long term to the shiner by increasing habitat diversity within the reach, the proposed habitat restoration project may affect but is not likely to adversely affect Pecos bluntnose shiner. The project area is outside the shiner's designated critical habitat and there will be no effect on critical habitat.

*Interior least tern* - The Interior least tern tends to nest on salt flats along the Pecos River, including the Bitter Lake NWR and Brantley Reservoir (OSE 2012b). The restoration is not expected to create any nesting areas along the river in the Overflow Wetlands project area but may provide attractive feeding and loafing areas among backwaters and small sandbars for least terns transiting through the area. In the short-term, interior least tern species are expected to avoid the project area during restoration and construction activities. The Proposed Action may beneficially affect, but is not likely to adversely affect, the interior least tern.

*Southwestern willow flycatcher*. Southwestern willow flycatchers are not known to nest along the Pecos River in New Mexico, though they have been observed migrating through the Bitter Lake NWR. Restoration may benefit this species during migration, thus providing an increased diversity of prey after saltcedar has been removed and native vegetation persists and recovers. Construction activities will occur outside of their nesting and breeding season. The Proposed Action may affect, but is not likely to adversely affect, the southwestern willow flycatcher.

Cultural Resources - The Proposed Action is not expected to have any effects on cultural resources. No cultural resources have been recorded or are expected to be present in the proposed restoration project area. Federally recognized tribes and pueblos with potential ties to the project area were notified via letter of the Proposed Action.

Visual Resources - Implementing the Proposed Action would have a short-term effect on visual resources in the project area. Visual impacts could occur from construction vehicles and equipment, dust, and the loss of vegetative cover. After restoration, impacts on visual resources would cease aside from the loss of vegetative cover where invasive species would be removed. In the long term, viewers may experience improved visual quality of the site and its surroundings consistent with natural riparian function and vegetation.

Noise - Implementing the Proposed Action would result in noise and ground-borne vibrations from construction vehicles and equipment. There are no nearby sensitive receptors. These impacts would be short term and variable but may exceed 80 A-weighted decibels in the immediate vicinity of the activity. After restoration, noise levels would return to current ambient levels.

Socioeconomics - The economic impacts of the Proposed Action would be negligible. The Proposed Action would result in minor temporary increases in federal spending in Chaves County for construction support materials, fuels, and labor.

Environmental Justice - Implementing the Proposed Action would not result in any disproportionate impacts on minority or low-income communities, so there would be no environmental justice impacts.

Indian Trust Assets - No Indian Trust Assets have been identified in the project area. There are no reservations or ceded lands present. Because resources are not present, no impacts are anticipated to result.

**ENVIRONMENTAL COMMITMENTS**

The environmental commitments to minimize potential adverse effects listed in detail in Chapter 5 of the EA/BA will be implemented during construction activities and as part of the post construction site restoration activities. All applicable permits have been obtained or will be obtained prior to implementation of each phase of the project. All required consultations will be completed prior to implementation of each phase of the project. These permits may include, but are not limited to:

- Clean Water Act, Section 404, Nationwide Permit 27
- Clean Water Act, Section 401, State Water Quality Certification
- National Pollutant Discharge Elimination System permit
- Storm Water Pollution Prevention Plan.

Environmental Commitments include:

- The specific permit conditions designed to protect vegetation, wildlife, and aquatic species and outlined in the Clean Water Act, Section 404, Nationwide Permit 27, and Section 401, State Water Quality Certification, will be implemented.

- The removal of saltcedar and other nonnative vegetation would include the chipping of the plant debris and redistributing it on site at a recommended thickness of three inches or less.
- No human activity (including this action) will take place near Pecos sunflower critical habitat or existing populations of the Pecos sunflower.
- A water truck will be used to reduce dust and particulate matter during construction. Water will be obtained from the City of Roswell.
- Best management practices will be used to reduce sediment input into the project area during construction activities.
- Reclamation will implement best management practices outlined in the EA/BA to protect aquatic habitat from spills.
- Herbicide use would be limited to hand treatment of saltcedar stumps during the restoration project and hand treatment of resprouts during the maintenance of the

restoration project. All herbicide application will follow guidance from the recommended protection measures for herbicide applications in Region 2 of the USFWS (White 2007).

- No activity in wetted areas will occur between March 1 and October 30. All project activities would be conducted outside of the normal breeding and nesting seasons for migratory birds from April 15 through August 15.

- River crossings will be limited to no more than six river crossings during the life of the project. Crossing would occur during low water periods and equipment would cross slowly to allow fish to avoid construction equipment.
- Reclamation will implement a monitoring program, as described in Appendix A, to determine the response of stream-channel geomorphology, hydrology, vegetation, and fish and wildlife communities to restoration activities. The restored areas would be monitored to assess if the reestablishment of saltcedar and other nonnative species is occurring.
- Anticipated project depletions will be included in the "Annual Accounting Methodology (Version 26)" discussed in the 2008 Pecos Depletions Agreement between the NMISC and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation as the current agreement is set to expire October 31, 2013.
- Prior to construction, workers would be briefed on the importance of immediately reporting findings of any archaeological materials to a designated individual with the authority to suspend construction until the discovery can be assessed.

**COORDINATION**

All required consultations will be completed prior to implementation of each phase of the project. Agencies, government entities, and tribal groups contacted or contributing to the development of the restoration project or the EA/BA or consulted during its preparation include the following:

- US Bureau of Land Management, Roswell Field Office
- US Army Corps of Engineers
- US Fish and Wildlife Service, Bitter Lake National Wildlife Refuge
- US Fish and Wildlife Service, New Mexico Ecological Services
- US Fish and Wildlife Service, New Mexico Fishery Resources
- New Mexico Department of Game and Fish
- New Mexico State Land Office
- New Mexico Interstate Stream Commission
- New Mexico State Historic Preservation Division
- New Mexico Environment Department
- Carlsbad Irrigation District
- Chaves County
- Chaves County Flood Control District
- University of New Mexico

- Pecos Valley Artesian Conservancy District
- Hopi Tribe
- Apache Tribe of Oklahoma
- Comanche Indian Tribe
- Fort Sill Apache Tribe of Oklahoma
- Pueblo of Isleta
- Kiowa Tribe of Oklahoma
- Jicarilla Apache Nation
- Pueblo of Jemez
- Navajo Nation
- Pueblo of Ysleta del Sur
- Mescalero Apache Tribe

**CONCLUSION**

In accordance with the National Environmental Policy Act of 1969, as amended, and based on the analysis in the EA/BA, the Bureau of Reclamation has determined that implementing the preferred plan presented in the EA/BA for Pecos River Restoration at Overflow Wetlands, Chaves County, New Mexico, would not result in a significant impact on the human environment and does not require preparation of an environmental impact statement.

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## ACRONYMS AND ABBREVIATIONS

| | Full Phrase |
|---|---|
| ACEC | area of critical environmental concern |
| APE | area of potential effects |
| AUM | animal unit month |
| BA | biological assessment |
| BLM | United States Department of the Interior, Bureau of Land Management |
| cfs | cubic feet per second |
| CEQ | Council on Environmental Quality |
| CWA | clean water act |
| DOI | United States Department of the Interior |
| EA | environmental assessment |
| ESA | Endangered Species Act of 1973 |
| °F | degrees Fahrenheit |
| FLPMA | Federal Land Policy and Management Act of 1976 |
| FONSI | Finding of No Significant Impact |
| ITA | Indian Trust Assets |
| NEPA | National Environmental Policy Act |
| NM | New Mexico |
| NMDA | New Mexico Department of Agriculture |
| NMED | New Mexico Environment Department |
| NMISC | New Mexico Interstate Stream Commission |
| NMDGF | New Mexico Department of Game and Fish |
| NPDES | National Pollution Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NWR | National Wildlife Refuge |
| PM10 | particulate matter less than 10 microns in diameter |
| PVACD | Pecos Valley Artesian Conservancy District |
| Reclamation | United States Bureau of Reclamation |
| RMP | Resource Management Plan |
| RERI | New Mexico River Ecosystem Restoration Initiative |
| RPM | Reasonable and Prudent Measure |
| ROD | Record of Decision |
| Shiner | Pecos bluntnose shiner |
| SWPP | Stormwater Pollution Prevention Plan |
| SWQB | Surface Water Quality Bureau |
| TMDL | Total Maximum Daily Load |
| USACE | United States Army Corps of Engineers |
| USDI | United State Department of the Interior |
| US EPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| VRM | visual resource management |
| WQCC | Water Quality Control Commission |

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# 1. Purpose of and Need for the Proposed Action

## 1.1 Introduction

This Environmental and Biological Assessment (EA/BA) has been prepared by the United States (US) Department of the Interior, Bureau of Reclamation (Reclamation) to evaluate the environmental, cultural, and socioeconomic impacts of Pecos River Restoration at the Bureau of Land Management's (BLM) Overflow Wetlands Area of Critical Environmental Concern (ACEC) in Chaves County, New Mexico. This analysis was carried out to meet requirements of the National Environmental Policy Act of 1969 (NEPA[1]) and the Endangered Species Act of 1973, as amended (ESA).

This document is both an environmental assessment (EA) to fulfill the requirements of NEPA and a biological assessment (BA) to fulfill the requirements of Section 7 consultation under the ESA. This combination EA/BA uses a scientific and analytical evaluation to compare the Proposed Action and the No Action Alternative.

The following sections describe the actions proposed to be implemented and the environmental resources within the affected environment and evaluate the direct, indirect, and cumulative impacts on these resources.

In July 2006, Reclamation issued a Record of Decision (ROD) for the Carlsbad Project Water Operations and Water Supply Conservation Final Environmental Impact Statement (EIS; Reclamation 2006a). The ROD mandated changes in water operations within the Pecos River in order to conserve the federally threatened Pecos bluntnose shiner (*Notropis simus pecosensis*; the shiner) and its designated critical habitat while conserving the Carlsbad Project water supply. As part of the consultation process under the ESA, the US Fish and Wildlife Service (USFWS) issued a Biological Opinion (2006 – 2016) on the selected alternative from the EIS (USFWS 2006; Reclamation 2006a). Under Reasonable and Prudent Measure 1 (RPM #1) of the Biological Opinion, Reclamation agreed to "partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014."

In 2009, Reclamation funded and completed a channel restoration project that reconnected Oxbow 4 at Bitter Lake National Wildlife Refuge (NWR) to the main stem

[1]42 USC, Section 4321 et seq., the Council on Environmental Quality (CEQ) regulations for implementing NEPA, 40 CFR, Parts 1500-1508, and the final revised procedures for implementing NEPA for actions by Reclamation (Chapter 14) in the Department of the Interior, Departmental Manual, 516 DM 6.

of the Pecos River. The oxbow had been cut off by the USFWS in the 1940s to control the river and protect infrastructure. The restoration also included removing invasive vegetation, lowering banks, reworking the channel morphology, and revegetating. Reclamation prepared an EA and a Finding of No Significant Impact (FONSI) for the Bitter Lake NWR restoration work, including compliance for additional phases conducted by the USFWS with other cooperators.

Reclamation is proposing to conduct the second of these habitat improvement projects under RPM #1 at the BLM Overflow Wetlands ACEC approximately nine river miles south of the Bitter Lake NWR restoration project. Lands in the proposed project area are managed by the Roswell Field Office of the BLM, the New Mexico State Land Office, and private landowners.

Reclamation is proposing to restore portions of the river channel beginning in 2013. Because the actions evaluated in this document would receive federal funding, would require federal permits and approvals, and portions would occur on federal land, environmental documentation under NEPA is required. In accordance with NEPA, Reclamation has prepared this EA/BA to address the environmental effects of the proposed river channel restoration. The EA/BA addresses direct, indirect, and cumulative effects of the proposed channel restoration and habitat enhancement activities.

Reclamation is considering an Action Alternative to improve in-channel and riparian habitat within the project area and a No Action Alternative. The alternatives are discussed commensurate with the current level of planning and proposed design.

Reclamation is the lead federal agency for this action. Its mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation is proposing to fund, design, and conduct channel habitat restoration. Reclamation is also responsible for ensuring compliance with all of the applicable federal environmental statutes and will assist in developing the monitoring program.

The BLM is a cooperating agency in the EA/BA. The BLM's mission is to sustain the health, diversity, and productivity of the public lands under agency management for the use and enjoyment of present and future generations. The Federal Land Policy and Management Act (FLPMA) requires that priority be given to the designation and protection of ACECs, defined in FLPMA Sec. 103(a) (43 United States Code [USC] 1702) and in 43 Code of Federal Regulations (CFR) 1601.0-5(a) as, "areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." The BLM is the primary land manager in the project area and has provided invaluable assistance in planning the restoration project.

The New Mexico Interstate Stream Commission (NMISC) and the New Mexico Department of Game and Fish (NMDGF) have also agreed to be cooperating agencies for the EA/BA. Reclamation is also coordinating with other federal, state, and local agencies

and Native American tribes and pueblos as outlined in **Chapter 6**, Consultation and Coordination.

### 1.1.1 Location

The 7,000-acre Overflow Wetlands ACEC is approximately 16 miles east of Roswell, south of US Highway 380, and next to the Bottomless Lakes State Park (**Figure 1-1**, Location). The ACEC supports a significant riparian wetland community and provides important habitat for threatened and endangered fish species. The Overflow Wetlands ACEC encompasses 1,720 acres of state land, 2,107 acres of private land, and 3,187 acres of public lands managed by the BLM. The project area is located in the western portion of the ACEC along and adjacent to the five-mile reach of the Pecos River flowing from north to south through the ACEC (**Figure 1-2**, Project Area). The Overflow Wetlands ACEC is designated as a National Natural Landmark and a Research Natural Area.

### 1.1.2 Background

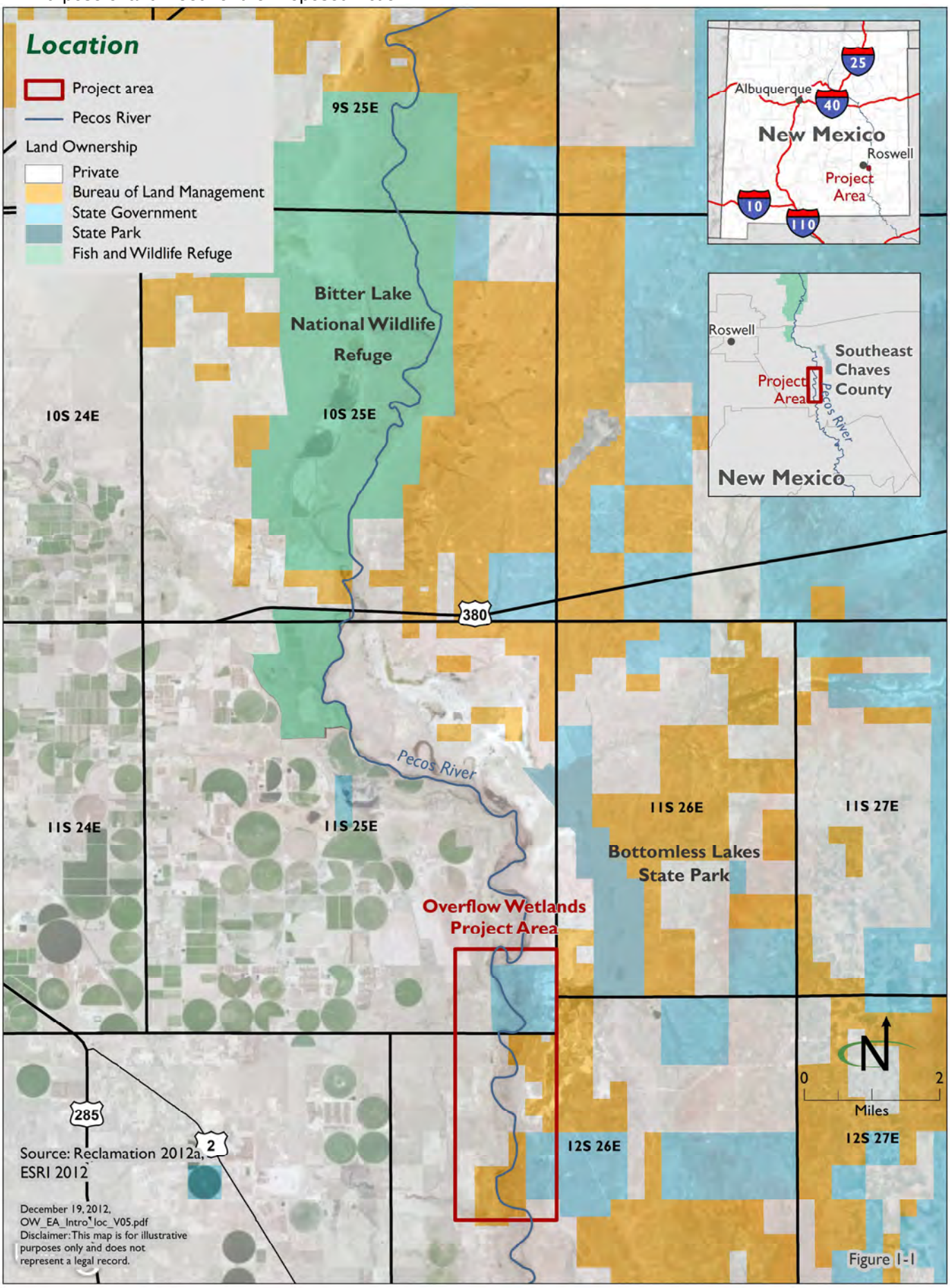
#### *Historic Changes to the Pecos River and Riparian Habitat*

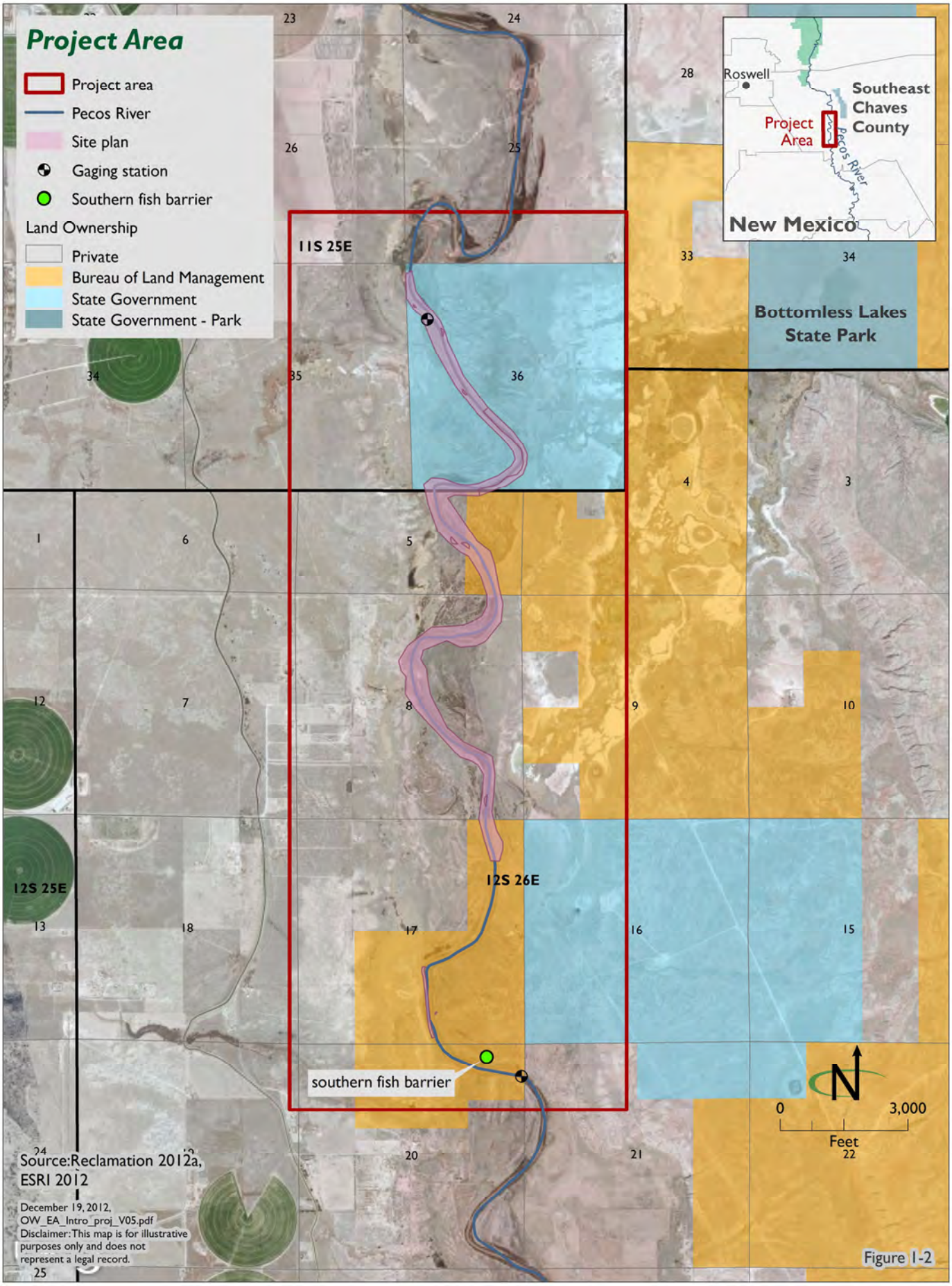
The Pecos River spans roughly 920 river miles, from its headwaters in the Sangre de Cristo Mountains of northern New Mexico to its confluence with the Rio Grande near Langtry, Texas. Under the natural river regime, periodic flooding changes the river course within the floodplain. Various species, especially fish, have adapted to this type of dynamic river channel and the variety of habitat that it provided. Water development and reclamation projects, including channelization, dam and levee construction, bank protection, diversions, and stream flow regulation, have altered the riparian system and contributed to vegetation loss. Native riparian vegetation along the Pecos River and its tributaries has been greatly reduced in the last 100 to 120 years. Riparian habitat is critically important for various threatened and endangered species, migratory birds, fish, native wildlife, and plants.

River systems and their associated wetland and riparian communities are important resources for both humans and wildlife in the semiarid western US. The earliest diversion of water and use of water management features along the Pecos River preceded Euro-American settlement of the region. Beginning in the 19th century, an extensive system of water retention and conveyance infrastructure, including diversion structures, dams, levees, drains, and ditches, was constructed for irrigation, flood, and sediment control. Supplemented by wells, this system allowed the growth of an agriculture-based economy and the expansion of cities along the river.

#### *Middle Pecos River*

The Middle Pecos River is the reach from Sumner Reservoir to Brantley Reservoir. It consists of 220 river miles of range and farmland on the plains of eastern New Mexico along with Bitter Lake NWR. Historically, the Middle Pecos River was a wide, sediment-laden, braided river with a diversity of habitats, ranging from low-velocity backwaters to swift main channel settings. These habitats were maintained by flooding, which moved sediments between the channel and the floodplain. This dynamic relationship sculpted a wide channel, moved sediment from the floodplain back into the channel, and formed new floodplains with channel sediment (FLO Engineering 1999).


Location
Project area
Pecos River
Land Ownership
Private
Bureau of Land Management
State Government
State Park
Fish and Wildlife Refuge
9S 25E
Bitter Lake
National Wildlife
Refuge
10S 24E
10S 25E
380
Pecos River
11S 24E
11S 25E
11S 26E
11S 27E
Bottomless Lakes
State Park
Overflow Wetlands
Project Area
285
2
12S 26E
12S 27E
Albuquerque
25
40
New Mexico
Roswell
Project
Area
10
110
Roswell
Southeast
Chaves
County
Project
Area
Pecos River
New Mexico
N
0
2
Miles
Source: Reclamation 2012a,
ESRI 2012
December 19, 2012.
OW_EA_Intro_loc_V05.pdf
Disclaimer: This map is for illustrative
purposes only and does not
represent a legal record.
Figure 1-1


Project Area
Project area
Pecos River
Site plan
Gaging station
Southern fish barrier
Land Ownership
Private
Bureau of Land Management
State Government
State Government - Park
11S 25E
12S 25E
12S 26E
Bottomless Lakes State Park
Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
southern fish barrier
N
0
3,000
Feet
Source:Reclamation 2012a, ESRI 2012
December 19, 2012, OW_EA_Intro_proj_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
Figure 1-2

The construction of Sumner Dam in 1937 allowed greater control of natural upstream flows to meet agricultural storage and irrigation delivery needs and to prevent flooding. Since that time, water has been typically released into the Pecos River from Sumner Dam in large block releases to minimize losses due to evaporation. Reservoir operations have dramatically altered flows in this reach of the Pecos River by reducing both the base flows and flood peak flows. The control of the natural flows alters the physical channel shape, the amount of sediment in the river and floodplain, and the associated riparian habitat (FLO Engineering 1999).

The encroachment of saltcedar (*Tamarix* spp.) in the region has also resulted in the growth of thick stands of these trees that stabilize river banks and induce sediment deposits, resulting in the formation of natural levees. The stable banks decrease the ability of the river to rework the floodplain, while the natural levees reduce the occurrence of overbank flows. Both of these conditions result in a more channelized river (FLO Engineering 1999).

For purposes of fish surveys and habitat considerations, the Middle Pecos River has been divided into three reaches (Hoagstrom 2003). The first is the Tailwater Reach, which extends from Sumner Dam to near the confluence of the Pecos River and Taiban Creek. The second is the Rangelands reach, which extends from Taiban Creek to the Middle Tract of the Bitter Lake NWR. The third reach, the Farmlands, extends south from the refuge to Brantley Reservoir. The stronghold for the shiner is in the Rangelands reach (Hoagstrom 2003) because habitat availability and suitability are the best within this reach. All size classes of shiner are found in the Rangelands reach, and population numbers are relatively stable (Hoagstrom 2003).

Today the most intact remaining riparian habitat on the river exists in the Rangelands reach above the US Geological Survey (USGS) Acme Gage, where the channel is wide and relatively dynamic. This stretch of the river is characterized hydraulically as a losing reach. Surface water is lost primarily through seepage and evaporation but can additionally be affected by climatic conditions such as wind, low humidity, high temperatures, and lack of storm inflows; transpiration by vegetation; river and ground water pumping; and the geomorphology (river slope) of the area. Thus, this area has been subject to drying and flow intermittently during summers. Downstream of the Acme Gage in the Farmlands reach, the river gains water from artesian aquifer inflows and irrigation returns in the Roswell Basin (FLO Engineering 1999; USFWS 2006).

The good quality habitat of the Rangelands reach contains some of the most diverse native fish communities in the southwestern United States. The Rangelands reach has been the focus of detailed fish community and habitat studies as part of a research and management program for the shiner. Investigations of the native fishery in the Rangelands reach show that the native fishes prefer a wide sand substrate and an active channel bed that creates a variety of favorable small instream features (Hoagstrom 1999; Kehmeier et al. 2004a; Tashjian 1997). Such habitats are common north of the Bitter Lake NWR but are rare south of the refuge where the river is generally incised and channelized. The investigations strongly suggest restoring poor quality habitats to quality habitats as critical to the long-term survivability of these native fish.

### *Pecos River in the Overflow Wetlands ACEC*

The Pecos River flows for approximately five miles along the western portion of the Overflow Wetlands ACEC (**Figure 1-2**, Project Area). The ACEC is in the northern part of the Farmlands reach and receives considerable groundwater inflows from the Roswell Underground Water Basin. The ACEC is next to Bottomless Lakes State Park, which includes a naturally occurring series of sinkhole lakes. These lakes are hydraulically connected to a shallow alluvial aquifer that provides a localized recharge area for the Overflow Wetlands. Measurable amounts of surface water flow west and southwest from an outlet at Lea Lake through wetlands and then concentrate into outlet channels that feed into the river. Increased discharge from Lea Lake has occurred from the rise of the groundwater table in the artesian aquifer. The rise in the groundwater table is partly attributed to an increase in groundwater flow into the lake due to the rockslide of 1975, rise in the groundwater table due to decreased groundwater pumping west of the Pecos River, the rise in the groundwater table from recharge from precipitation across the Pecos River Basin on both the east and west side, and the subsequent discharge into the Pecos River from west and east of the Pecos River. The submarine groundwater springs discharging into Lea Lake and regional groundwater flow has added to karst development in the area. A new karst sinkhole lake has developed on State Trust Land within the past few years, approximately 0.4-mile east of the river.

More recently, wetlands on Bottomless Lakes State Park have been restored and expanded. Much of the flow from Lea Lake has not entered the outlet channels to the river. The proposed project area does not include disturbing or impairing any of the shallow alluvial aquifer wetlands that the ACEC protects.

The BLM-managed portions of the river channel in the proposed project area have been treated to remove saltcedar and other nonnative vegetation. It is characterized by an open canopy, moderately sandy bed, and a relatively wide channel compared with other segments of the Farmlands reach. (**Figure 1-3**, Pecos River through lands with tamarisk removed). Portions of the river through private land and State Trust Land are tightly lined with tall mature saltcedar, and the channel is narrower and deeper with less sinuosity (**Figure 1-4**, Pecos River through untreated lands).

Two fish barriers have been constructed on the two main outflow channels of the overflow wetlands to impede the potential spread of sheepshead minnow (*Cyprinodon variegatus*) from the river into the wetlands. The sheepshead minnow, an introduced species, is a threat to the Pecos pupfish (*C. pecosensis*) found in the overflow wetlands. The ESA status of the Pecos pupfish is under review by the USFWS. The fish barriers are designed to protect Pecos pupfish populations in the overflow wetlands by preventing hybridization between the two species. The sheepshead minnow was possibly introduced into the Pecos River in the vicinity of Pecos, Texas, sometime between 1980 and 1984. 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.

**Figure 1-3**
Pecos River through lands with tamarisk removed

**Figure 1-4**
Pecos River through untreated lands

The proposed project site was chosen in cooperation with representatives of other agencies and stakeholders after consideration of several other locations on the river. Because it is on the northern portion of the Farmlands reach, it is not far from established favorable habitat for all age classes of Pecos bluntnose shiner and the recent river restoration work in the Bitter Lake NWR. Thus, it may be close enough to provide refugia for shiner and their eggs to develop and would extend the reach of good quality habitat favored by the species. The effectiveness of a restoration project farther south in the Farmlands reach may be limited without such way stations in between. The location is a "gaining reach," where there are perennial inflows to the river and virtually no risk of drying.

Restoration is consistent with the management goals for the Pecos River in Overflow Wetlands ACEC. There is very little federal land on the river in the Farmlands reach. Siting the project on and adjacent to BLM land within the ACEC may ensure future access. Interagency cooperation with the BLM provides a mutually beneficial partnership that stretches government resources. Because the BLM has already removed saltcedar from the surface land it manages and the river is not as deeply incised at this location as at others that were considered, Reclamation will be able to restore a longer reach than might have otherwise been possible. This location would allow Reclamation to meet and exceed the requirements of the Biological Opinion under RPM #1.

## 1.2 Proposed Action

As described in detail in **Chapter 2**, this EA/BA addresses a proposal to improve the in-channel and riparian habitat along approximately five river miles of the Pecos River on public, State Trust, and private land in the BLM Overflow Wetlands ACEC by restoring the river flows to dynamic conditions. The Proposed Action is a combination of restoration techniques that include mechanically removing nonnative vegetation, lowering and contouring river banks, limited use of herbicide on saltcedar stumps and reseeding. These techniques would be designed to work within the changed physical context of the river, which includes lower peak flood flows, irrigation withdrawals, channelized river segments, nonnative plant incursions, and protection of farmland and floodplain infrastructure. Reclamation would monitor the effects of the restoration as described in **Appendix A**, Annual Monitoring Plan for the Pecos River Restoration at Overflow Wetlands.

### 1.2.1 Decisions to Be Made

This EA/BA is an evaluation of the environmental impacts of the Proposed Action and the No Action Alternative and provides information to help Reclamation fully consider environmental impacts and any proposed mitigations. Using the analysis in this EA/BA, Reclamation will decide whether there would be any significant impacts associated with the Proposed Action that would require the preparation of an EIS.

## 1.3 Need for the Action

As part of the consultation process under the ESA, the USFWS issued a Biological Opinion (2006 – 2016) on the selected alternative from the Carlsbad Project Water Operations EIS (Reclamation 2006; USFWS 2006). The need for the restoration action is to satisfy federal requirements under the Biological Opinion to restore quality habitat on the Pecos River and to participate and assist in the completion of ongoing habitat improvement projects (USFWS 2006). Under RPM #1, Reclamation agreed to "assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014." According to the Biological Opinion, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows will be most successful in mitigating the observed displacement of shiner eggs and in providing a variety of channel conditions favorable to the life stages of the shiner.

## 1.4 Purpose of the Action

The purpose of the proposed restoration is to improve riparian and in-channel habitat and to extend the reach of good quality habitat for the benefit of native aquatic and riparian plant and animal communities. Reclamation would improve habitat for the Pecos bluntnose shiner by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime, including reconnecting the river to the floodplain. Improving riparian and in-channel habitat and removing invasive species would also provide benefits for the diverse plant, animal, and fish species that use the BLM Overflow Wetlands ACEC.

## 1.5 Relevant Statutes, Regulations, and Relationship to Other Projects, Plans, Agreements, and Agency Actions

In addition to NEPA, actions of Reclamation and the USFWS on the Pecos River are guided by a number of statutes, regulations, and agreements. These are described in detail in the Carlsbad Project Water Operations and Water Supply Conservation EIS (Reclamation 2006a). The regulatory requirements and plans that are most relevant to the Proposed Action are summarized here.

### 1.5.1 Required Compliance Actions, Agreements and Permits

The following compliance actions and permits are expected to be required for the Proposed Action. Mitigation measures and best management practices (BMPs) will be incorporated into the Proposed Action or detailed in **Chapter 5**, Environmental Commitments. Additional permitting and consultation before implementation may be required by other agencies and parties. Copies of relevant compliance documents and communications are included as appendices to this EA/BA.

Consultation under Section 7 of the ESA is required to determine effects on threatened or endangered species and designated critical habitat. This EA/BA provides the basis for Section 7 consultation with the USFWS for the proposed restoration project.

Coordination with the US Army Corps of Engineers (USACE) for Clean Water Act (CWA) Section 404 compliance and permitting is required for any work that involves discharge of dredged or fill materials into waters of the US or jurisdictional wetlands in the proposed project area. If a CWA Section 404 permit is necessary, then a Section 401 Water Quality Certification will also need to be obtained from the Surface Water Quality Bureau of the New Mexico Environment Department (NMED). A National Pollutant Discharge Elimination System Section 402 permit could be required if it is determined that construction or discharge of material into wetlands and other waters of the US would occur. Reclamation is coordinating efforts with the USACE and the NMED Surface Water Quality Bureau for these requirements.

Reclamation is required to consult with the State Historic Preservation Office about the effects of the project on historic properties (sites eligible for listing on the National Register of Historic Places) and to mitigate any adverse effects on these sites. The Section 106 process also requires the agency to provide the Advisory Council on Historic Preservation the opportunity to comment on any adverse effects on historic properties. Reclamation is also required to invite federally recognized tribes that have a traditional cultural affiliation or interest in the project area to consult on a government-to-government basis.

Reclamation has entered into required agreements and permits with the affected land owners and land managing agencies in the project area for site access, use of staging areas, and for conducting the project if approved.

Reclamation must also consult with the NMISC on addressing anticipated depletions to water supply in the Pecos River and confirm the source and methods for offsetting any losses. Reclamation proposes to offset the increased depletions from its Overflow Wetlands River Restoration Project to the Pecos River with water from its Carlsbad Project Water Acquisition Program. The depletion of the additional 1.5 acre-feet per year (ac-ft/year) will be included in the "Annual Accounting Methodology (Version 26)" discussed in the 2008 Pecos Depletions Agreement between the NMISC and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation as the current agreement is set to expire October 31, 2013.

### 1.5.2 Relationship to Other Projects, Plans, Agreements, and Agency Actions

#### *Biological Opinion*

In May 2006, the USFWS issued a final Biological Opinion on the effects on the interior least tern and on the shiner and its designated critical habitat[2] of Reclamation's Proposed

[2]In accordance with Section 7 of the ESA (16 USC, 1531 et seq.)

Carlsbad Project Water Operations, 2006-2016. Among the reasonable and prudent measures specified is the requirement that:

> Reclamation will partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014.
>
> The following implements RPM #1:
>
> 1.1) Reclamation will attend meetings and work with federal, state, and private entities as a cooperating agency to support and enhance shiner habitat restoration at the Bitter Lake National Wildlife Refuge.
>
> 1.2) Reclamation will attend meetings and work with federal, state, and private entities as a cooperating agency to support and enhance related hydro-geomorphic process improvements to the reach of the Pecos River north of Dexter Bridge and adjacent to the Bureau of Land Management waterfowl area.
>
> 1.3) Reclamation will partner with federal, state, and private entities to complete habitat improvement projects totaling two oxbow sequences 0.5-1 mile in length between Dexter and Hagerman. (Note: This refers to a suggested option and location for conducting the second required restoration project in two noncontiguous reaches.)
>
> 1.4) Reclamation will partner with federal, state, and private entities to monitor the success of habitat restoration projects in terms of winter and summer habitat conditions through the use of color infrared videography, at least 4 cross sections within the site, and fish population and habitat use data. Videography should be used to map riparian habitat within each restoration site, including in-channel and riparian habitats (USFWS 2006)."

***Carlsbad Project Water Operations and Water Supply Conservation Project EIS***

In July 2006, Reclamation signed a ROD implementing the preferred alternative identified in the Carlsbad Project Water Operations and Water Supply Conservation EIS and the 10-year Biological Opinion on Carlsbad Project operations. The goal of the preferred alternative is to conserve the shiner and its designated critical habitat, while conserving the Carlsbad Project water supply. The EIS addressed changes in the operation of Sumner Dam, target flows at the Taiban Gage and implementation of a water acquisition program. The preferred alternative includes such conservation actions as removing nonnative riparian vegetation and implementing channel restoration projects (Reclamation 2006a). The restoration actions considered in this EA/BA are consistent with the EIS purpose and need to conserve the shiner. The changes in operations could change the frequency and timing of block releases and base flows, which could affect long-term channel formation processes at the proposed restoration site.

### *Roswell Field Office, Resource Management Plan (RMP)*

The RMP, which the BLM prepared in 1997, established the Overflow Wetlands ACEC with the goal to "protect the biological and scenic values of the Overflow Wetlands Wildlife Habitat Area, which provides critical habitat for Threatened and Endangered fish species and supports a significant riparian/wetland plant community." The RMP outlined several management prescriptions restricting or excluding incompatible activities, authorizing land acquisitions if opportunities arise, removing saltcedar, and developing facilities for public access.

### *Overflow Wetlands ACEC Activity Plan and Activity Plan Implementation Environmental Assessment*

In 2003, the BLM prepared an activity plan for the ACEC that defined the management measures applicable to the ACEC in greater detail and analyzed the environment effects of full implementation. The management measures included 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 NMDGF, and location of recreation facilities, such as trails and road designations. The activity plan and EA also addressed water rights issues and obligations to the State of Texas for water via the Pecos River.

### *New Mexico Saltcedar Control Project*

The New Mexico Department of Agriculture (NMDA) coordinates state-funded nonnative phreatophyte control programs through local soil and water conservation districts along the Pecos River. This project primarily has used aerial spraying to kill saltcedar along the river banks in the hope of reducing the water loss associated with this invasive species through transpiration. The *New Mexico Non-Native Phreatophyte /Watershed Management Plan* (NMDA 2005) includes recommendations for saltcedar control, revegetation, rehabilitation, monitoring, and long-term maintenance throughout the state and specifically in the Pecos River Basin. The proposed restoration actions in this EA/BA are compatible with the management plan and past efforts by the state to remove nonnative riparian species.

### *Lower Pecos Valley Regional Water Plan*

The NMISC conducted regional planning to develop information, analyses, and documentation to address the region's available water supply and its means of meeting future demand. This planning was done at the regional level, bringing together such stakeholders as elected officials, public agencies, private citizens, and representatives of private industry. A part of the regional water planning effort is to compile and analyze information on water quantity and quality in their regions and to project population growth for 40 years. The objectives of the regional water plans are to answer questions about the water supply and the projected water requirements and to present a plan for meeting regional water requirements. Regional planning is intended to reflect the water-related goals and the knowledge of the public and the governing bodies of the region. The Lower Pecos Valley Water Planning Region includes Chaves County, Eddy County, and portions of De Baca, Lincoln, and Otero counties. The plan encourages the study and

implementation of riparian management, watershed management, and conservation programs in the Pecos River Basin.

#### *Pecos River Compact*

Interstate compacts are agreements developed and ratified by states and Congress and signed by the President that apportion surface waters of selected streams that cross state borders. Interstate compacts are governed by both state and federal requirements. The Pecos River Compact (entered into by New Mexico and Texas on December 3, 1948, and approved by Congress, effective June 9, 1949) requires delivery of water from the Pecos River into Texas. Compacts both protect each state's use of its waters and prescribe the amount of water that New Mexico must pass downstream to Texas. Compliance with the Pecos River Compact and the 1988 Supreme Court Amended Decree to the Pecos River Compact prohibits New Mexico from allowing a net shortfall in its deliveries to Texas. The NMISC has legal authority and a strong interest in ensuring that restoration actions do not reduce compact deliveries to Texas.

#### *Settlement Agreement*

The NMISC, Carlsbad Irrigation District, Reclamation, and the Pecos Valley Artesian Conservancy District executed a settlement agreement on March 25, 2003. Among other provisions, the settlement agreement is designed to ensure that New Mexico meets its interstate delivery obligation to Texas under the Pecos River Compact. The settlement agreement includes an acquisition program that authorizes the NMISC to purchase up to 6,000 acres of land and water rights in the Carlsbad Irrigation District and up to 12,000 acres of land and water rights upstream of Brantley Dam, which includes the Pecos Valley Artesian Conservancy District and the Fort Sumner Irrigation District. Land retirement is anticipated to increase base flows in the river and through the refuge to help state-line deliveries to Texas.

#### *River Ecosystem Restoration Initiative*

The New Mexico River Ecosystem Restoration Initiative was established as part of former Governor Richardson's "2007 Year of Water" legislative agenda. The initiative is designed to sustain, reestablish, and rehabilitate the integrity and understanding of New Mexico's river ecosystems by enhancing physical, chemical, and biological characteristics. Since 2007, 27 projects have been funded to restore 2,394 riparian acres and 33 river miles. River Ecosystem Restoration Initiative projects are conducted as collaborations between state, federal, nongovernmental entities, and volunteers. River Ecosystem Restoration Initiative projects have been conducted at Bitter Lake NWR and Bottomless Lakes State Park.

## 1.6 Issues Identification

### 1.6.1 Stakeholder Involvement

Reclamation is providing opportunities for the public and agencies to participate in the NEPA process to promote open communication and better decision making. All persons, agencies, and organizations having a potential interest in the Proposed Action and the No

Action Alternative, including minority, low-income, and Native American groups, are urged to participate in the NEPA environmental analysis process.

Reclamation conducted agency meetings in January, March, July, and September 2010 to discuss the potential locations for the restoration project, to determine site evaluation criteria, and to outline potential issues and concerns. Participants have included representatives of the BLM, the Carlsbad Irrigation District, the NMISC, the NMED, the NMDGF, the New Mexico State Land Office (NMSLO), Reclamation, Chaves County Flood Control District, contractor staff, and units of the USFWS, including Fishery Resources, Water Resources, and Ecological Services. During that time, an interagency subgroup visited several sites and reported their observations at the meetings. The September 2010 meeting was held at Bitter Lake NWR and included a visit to river segments previously restored by Reclamation and the USFWS and the proposed site at the Overflow Wetlands ACEC.

Formal project scoping was initiated in May 2011. Cooperating agency and tribal invitations and interested party letters were sent to agencies, Native American tribes, and other stakeholders (see **Chapter 6**). Additional opportunities to comment are the 30-day public review period of the draft EA/BA and a 30-day review period for the final EA/BA. If Reclamation determines that no significant impacts would result from the Proposed Action, they will issue and publish a FONSI.

### 1.6.2 Issues Raised During Project Planning

The issues and questions presented below were raised during scoping, agency planning, and previous reviews of the potential restoration actions. These are addressed in the appropriate sections of the EA/BA.

#### *Project Siting*

- Questions were raised about the screening of potential sites, with the suggestion made to conduct a geomorphic overview of the entire Farmlands reach.
- The USFWS indicated flexibility in determining the location for the restoration project under RPM #1. Its goals are to find an optimal location with the best combination of factors that would most benefit the shiner.
- Because much of the land along the river is private, concerns were expressed about access, long-term maintenance and monitoring, and other difficulties in doing a federal project on private land.
- Sites on private land were suggested and visited. Much of this land is not in production. It was suggested that relatively minor actions could be used to induce habitat at these kinds of locations where there is land available to allow the river to spread out without affecting crops or infrastructure.
- Several potential restoration projects were possible on Reclamation land at Karr Farms, but the benefits to the shiner of restoration at this southern location are questionable. There is a very limited age range in shiner found in lower reaches.
- A continuous stretch of restoration is preferred, if possible. The value of smaller isolated sites to the shiner is not known.

***Water Budget and River Flows***

- Reclamation should carefully examine the effects of the project on water supply and the potential for depletions to downstream users and state line water delivery.
- The NMISC may be able to help make up for any identified depletions through the use of the state Strategic Water Reserve.

***Sediment***

- A mobile sand bed is another component of the shiner's preferred habitat. There should be a consideration of sand availability and sediment transport within the project area and downstream.

***Impacts on the Overflow Wetlands***

- There is concern about flooding and the river encroaching on habitat in the Overflow Wetlands, perhaps resulting in effects on the Pecos pupfish or other species.

## 1.7 Scope of the Document

This EA/BA identifies, evaluates, and documents the environmental effects of the Proposed Action and the No Action Alternative. **Chapter 1** is a description of the purpose of and need for the proposed federal action, project background, applicable law and regulations, related plans, and issues raised by stakeholders.

**Chapter 2** is a description of the Proposed Action and the No Action Alternative. The proposed types of restoration actions and their locations are also described in detail.

**Chapter 3** is a description of the current condition of resources in the project area that would be affected if the Proposed Action were implemented. Along with information presented for the No Action Alternative, these conditions constitute the baseline for analyzing the effects of the Proposed Action and No Action Alternative. Only those resources that could be affected by the Proposed Action or the No Action Alternative are addressed in detail.

**Chapter 4** is a description and analysis of the environmental impacts of each alternative on the natural, physical, and human environment. Direct impacts (those caused by an action and occurring at the same time and place) and indirect impacts (those caused by an action but occurring later or farther away but at a reasonably foreseeable time or place) are considered. The cumulative impacts of the Proposed Action are also addressed. These are the impacts of an action when added to other past, present, and reasonably foreseeable future actions, regardless of whether the actions are federal or nonfederal. Actions or mitigations that could reduce identified impacts are discussed, where appropriate.

**Chapter 5** details the environmental commitments; **Chapter 6** is a description of the stakeholder consultation and coordination that was conducted; **Chapter 7** is a list of preparers; and **Chapter 8** is the references used in preparing this EA/BA. Appendices include relevant supporting information.

# 2. Description of the Proposed Action and Alternatives

## 2.1 Introduction

This section is a description of the affected river reach, restoration techniques, timing, and phasing of the Proposed Action and the No Action Alternative. The inclusion of the No Action Alternative is prescribed by the CEQ and serves as a benchmark against which project alternatives can be evaluated. This section also includes a short description of the alternative development process, alternatives that were considered but eliminated from further study, and a designation of the preferred alternative.

### 2.1.1 Restoration Site Description

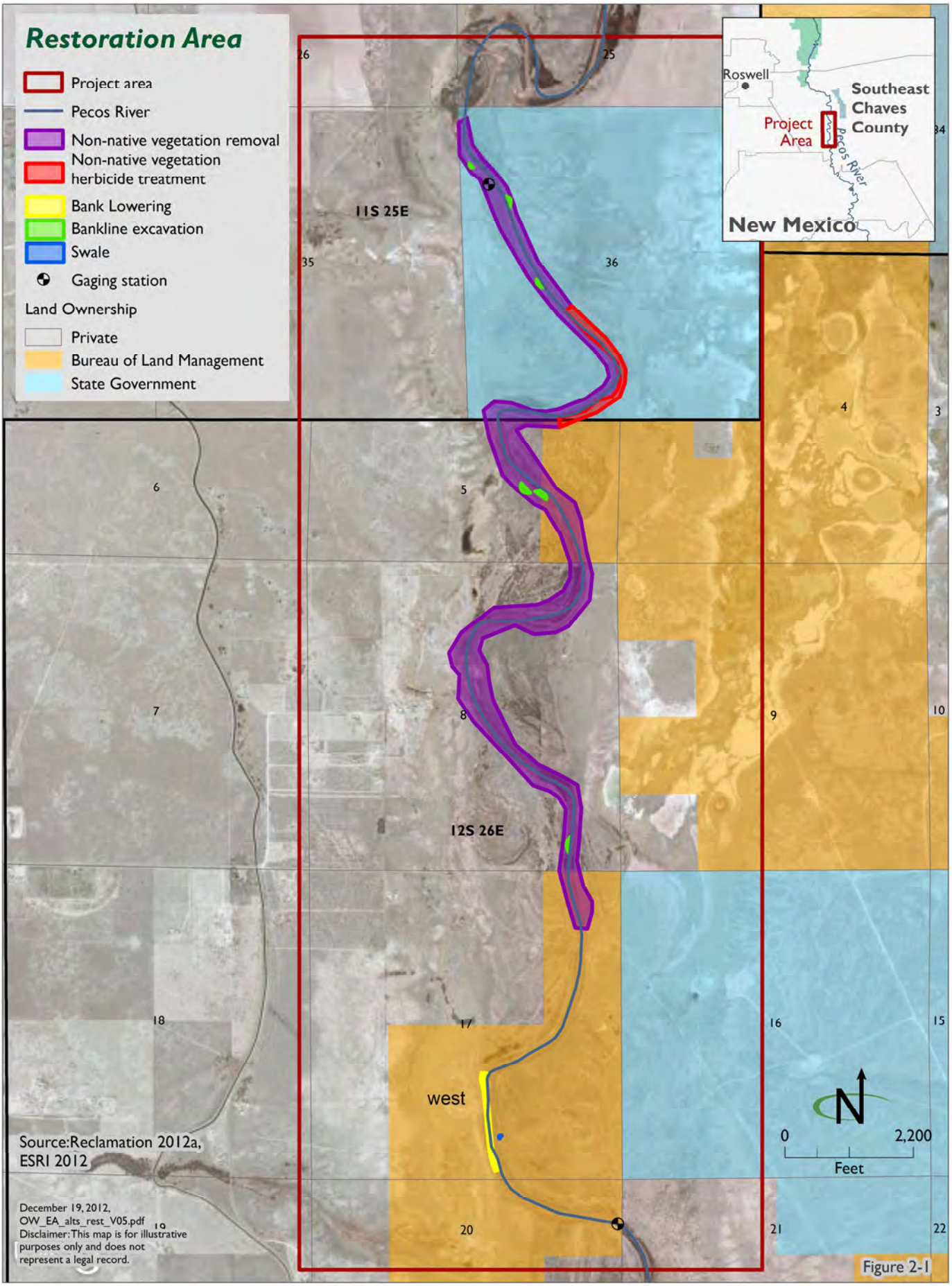
The restoration site on the Pecos River in Chaves County is bounded upstream by USGS Gage 08394024 (Pecos River North Boundary [BLM Wetlands] Near Dexter, New Mexico) and downstream by USGS Gage 08394033 (Pecos River South Boundary [BLM Wetlands] Near Dexter, New Mexico; **Figure 2-1,** Restoration Project). The restoration site spans approximately five river miles. The river reach is entirely within the BLM Overflow Wetlands ACEC, but land management and ownership includes State Land Office (Trust Land), private holdings, and public lands managed by the BLM.

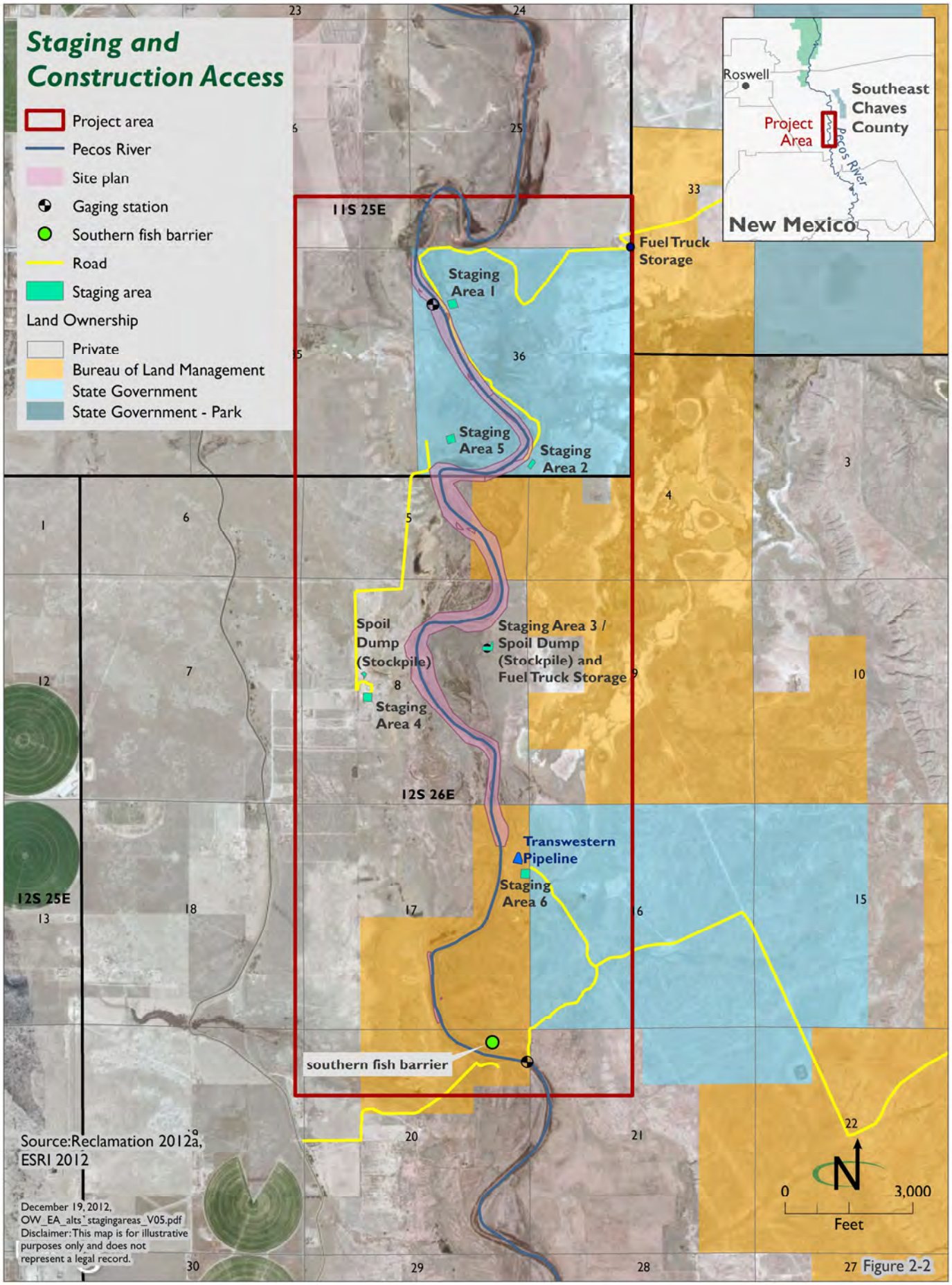
The BLM mechanically removed saltcedar on its lands next to the river in this reach over 10 years ago and has followed up with a maintenance program using approved herbicide to remove and treat regrowth. The treated BLM-administered lands are much more open, with a wider river channel and more diverse plant life than the untreated portion of the project area. The mechanical removal also tended to lower the banks in treated areas, but further bank work is needed to create more desirable channel habitat.

Untreated banks on adjacent private land and State Trust Land are thick with saltcedar, which has stabilized the banks, decreasing the erosion at the bends and locking straight sections in place above the river. Saltcedar grows on both banks of this reach in most locations. The growth of saltcedar varies from thick stands of mature trees lining the banks with thinner stands or grasslands behind them, to stands of young saltcedar, which have not yet become well established.

### 2.1.2 Restoration Project Staging, Spoil Areas, and Access

With the exception of drainages and low-lying areas, lands outside of the river corridor are generally devoid of large vegetation. In collaboration with the landowners and land managers, Reclamation has defined six potential staging areas, a fuel truck storage area, two spoil dumps, and construction access roads and routes (See **Figure 2-2,** Staging and Construction Access).


Restoration Area
Project area
Pecos River
Non-native vegetation removal
Non-native vegetation herbicide treatment
Bank Lowering
Bankline excavation
Swale
Gaging station
Land Ownership
Private
Bureau of Land Management
State Government
Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
11S 25E
12S 26E
west
Source:Reclamation 2012a, ESRI 2012
December 19, 2012, OW_EA_alts_rest_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
0
2,200
Feet
Figure 2-1


Staging and Construction Access
Project area
Pecos River
Site plan
Gaging station
Southern fish barrier
Road
Staging area
Land Ownership
Private
Bureau of Land Management
State Government
State Government - Park
Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
11S 25E
Fuel Truck Storage
Staging Area 1
Staging Area 5
Staging Area 2
Spoil Dump (Stockpile)
Staging Area 3 / Spoil Dump (Stockpile) and Fuel Truck Storage
Staging Area 4
12S 26E
Transwestern Pipeline
Staging Area 6
12S 25E
southern fish barrier
Source:Reclamation 2012a, ESRI 2012
December 19, 2012, OW_EA_alts_stagingareas_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
N
0
3,000
Feet
Figure 2-2

Access and staging areas for the restoration project are needed on both sides of the river. Criteria for determining these staging and spoil sites included reasonable proximity to the river, access via existing roads, previous disturbance, no potential environmental impacts, flat topography devoid of low-lying areas, and the preferences of the landowner or land manager. The staging areas range in size from approximately 100 by 100 feet to 400 by 400 feet and, when active, may include a portable toilet, a first aid station trailer, a fueling station, and possibly a portable storage container in addition to equipment used on site. Generally, the staging areas would be mowed, but not bladed, and would be used to park machines for short periods of time. The main part of the staging area would be the containment plastic pan for the fuel and lube truck. A portable containment pan would be used that would allow the workers to park the machine within the pan to prevent spills or contact of lubricants with soils. Excess spoil from the proposed bank-line excavation would be stockpiled outside the floodplain for future use by two of the landowners. These stockpile locations have been designated by the private landowners. Existing roads would be used for access with minimal improvements.

## 2.2 Description of the Alternatives

### 2.2.1 Alternative A: No Action Alternative

In accordance with CEQ regulations implementing NEPA (40 CFR, 1502.14), a No Action Alternative must be evaluated. This is the basis for comparison with other alternatives and is a description of the most likely future condition that could occur if the Proposed Action were not implemented.

Under the No Action Alternative, Reclamation would not improve the riparian habitat in the subject reach of the BLM Overflow Wetlands ACEC. The purpose and need for the Proposed Action would not be met. Reclamation would not complete federal requirements under the Biological Opinion to restore quality habitat on the Pecos River at a second location by 2014. Ongoing actions under other authorities and by other agencies to improve river habitat would likely continue.

Under the No Action Alternative, the growth of saltcedar would continue in untreated areas, further stabilizing the banks, decreasing the erosion at the bends, and locking the straight sections in place. The straight sections would become increasingly entrenched, reducing interaction with the floodplain. It is likely that this reach would continue to lose desirable habitat characteristics under existing conditions. The potential for downstream erosion and sediment movement would remain the same as current conditions.

### 2.2.2 Alternative B: Proposed Action

The Proposed Action is a combination of restoration techniques, including removing nonnative vegetation, hand treating nonnative vegetation with herbicide, lowering and excavating the bank-line, and reseeding. In addition, as funding permits, an off-channel swale would be created in the project area at one location near the river for riparian habitat enhancement. These techniques would be designed to work within the current physical context of the river, which includes upstream damming and diversions, lower peak flood flows, irrigation withdrawals and block releases, channelized river segments,

and nonnative plant incursions. The project design includes measures to protect the Overflow Wetlands ACEC and existing pipeline, gage, and fish barrier structures and avoid environmental impacts.

Goals of the Proposed Action are to provide better habitat in this reach to support the Pecos bluntnose shiner and incidentally benefit other aquatic and riparian species. The location would expand favorable habitat downstream of the previous restoration project at Bitter Lake NWR and would meet Reclamation's habitat restoration obligations under the Biological Opinion. The elements of the Proposed Action are described here in detail.

### *Restoration Techniques*

**Figure 2-1**, Restoration Project, displays the locations of the proposed restoration actions, and **Figure 2-2**, Staging and Construction Access, shows the location of staging and spoil areas and access routes. Precise locations of the techniques employed would be determined in the field. The restoration work would occur in the immediate vicinity of the river and avoid the overflow wetlands.

**Nonnative Vegetation Removal.** Nonnative vegetation along the river would be removed to decrease the stability of the banks and to enhance interaction with the floodplain. The thick growth of vegetation along the banks not only stabilizes the banks but also induces sediment deposition, resulting in the buildup of natural levees, which reduce the frequency of overbank flows. While saltcedar is the main source of bank stability, there are also seep willow, grasses, invasive phragmites, and cattails on the banks. Where present, the saltcedar stands crowd out most of the other types of vegetation and block sunlight next to the river channel.

The recommended procedure for mechanically removing the saltcedar has been developed and used successfully at the Bosque del Apache NWR near Socorro (Taylor and McDaniel 1998) and more recently at Bitter Lake NWR north of the restoration site. The removal consists of the following steps: bulldozing the area, eliminating the trunks, cutting off the roots below the root crowns, and removing and destroying the root crowns. An excavator with a special bucket is used to extract the plants from the soil with as much root mass intact as possible and without much soil attached to the root system.

With this method, most saltcedar are destroyed during a single growing season. A monitoring plan would be initiated in the restored areas to ensure that the saltcedar and other undesirable species do not reestablish themselves. Nonnative vegetation would be removed from the edge of the riverbank to a maximum distance of 100 feet as determined in the field and would encompass approximately three river miles.

Plant debris would be removed and stacked in the short term. Reclamation plans to chip the material and redistribute it on site. Chipping this material would eliminate the need for burning it or for hauling it off site. According to standard protocols, the thickness of the chipped material on the ground surface should not be more than three inches. However, chipping this material could inhibit revegetation and reseeding. Reclamation will determine a protocol for redistributing the debris to avoid inhibiting desired plant growth.

**Nonnative Vegetation Herbicidal Treatment.** A portion of the restoration on the east side of the river on State Trust Land would be addressed by cutting the saltcedar and treating the stumps with herbicide in order to leave some roots intact for bank stability. This river segment is approximately 2,200 feet long and coincides with a 90-degree turn. Reclamation wants to maintain additional protection here from extreme floods. Herbicide use would be in conformance with the Pecos District Noxious and Invasive Weed Spot Treatment EA (BLM 2009), Recommended Protection Measures for Pesticide Applications in Region 2 of the US Fish and Wildlife Service (White 2007) and the standards provided in the BLM Vegetation Treatments Using Herbicides, Final Programmatic EIS (BLM 2007). Hand herbicide use is also anticipated on resprouts as part of maintenance of the restoration project.

**Bank-Line Excavation.** Six locations are proposed for bank-line excavation (see **Figure 2-1,** Restoration Project). Bank-line excavation would immediately open up a wider floodplain by up to 30 feet, while containing the river in a defined channel (see **Figure 2-3,** Typical Bank Excavation Plan). When implemented in combination with nonnative vegetation removal, lowering the bank elevation would improve the ability of the river to shift course across the floodplain and to create more floodplain in the future by eroding into the terrace.

**Bank Lowering.** A linear segment of the southern portion of the restoration project area, measuring approximately 3,000 feet on the west side of the river would be restored by lowering the banks to increase the frequency of overbank flows. This improves the river's ability to rework the floodplain and fosters native plant growth and shallow aquatic habitat. Heavy equipment would be used to lower the natural levees that have built up along the edges of the channel and to lower the floodplain between these levees and the terrace. During both bank-line excavation and bank lowering, equipment may touch the water's edge, but bucket the will be operating slowly and minimal water disturbance is expected. The bucket will pull away from the river, and no sediments will be placed in the water. The banks would be lowered to the elevation corresponding to the existing incised channel (see **Figure 2-4**, Typical Bank Lowering Section). The existing bank-line would be gradually ramped from the current channel elevation to the current bank-line elevation over an approximate distance of 60 to 75 feet, as determined in the field.

**Reseeding.** Generally on the Pecos River where saltcedar has been removed outside of the active floodplain, native grasses have reestablished within a few years, depending on precipitation patterns and soil moisture. However, some areas may remain barren and some encroachment by invasive species can be anticipated, especially in active floodplains. Revegetation success appears to be associated with mechanical removal of saltcedar, lower soil salinity and pH, and coarser soil texture, as well as proximity to permanent water, sufficient precipitation, and good drainage (Bay and Sher 2006). Reclamation would reseed native perennial species as required to improve the success and speed of restoring riparian species and habitat, reduce undesired erosion, and to help keep the area free of noxious species. The extent of reseeding would be based on site requirements and the results of annual monitoring after construction is complete. Reseeding strategies would be developed for restored areas, adapting and using methods,

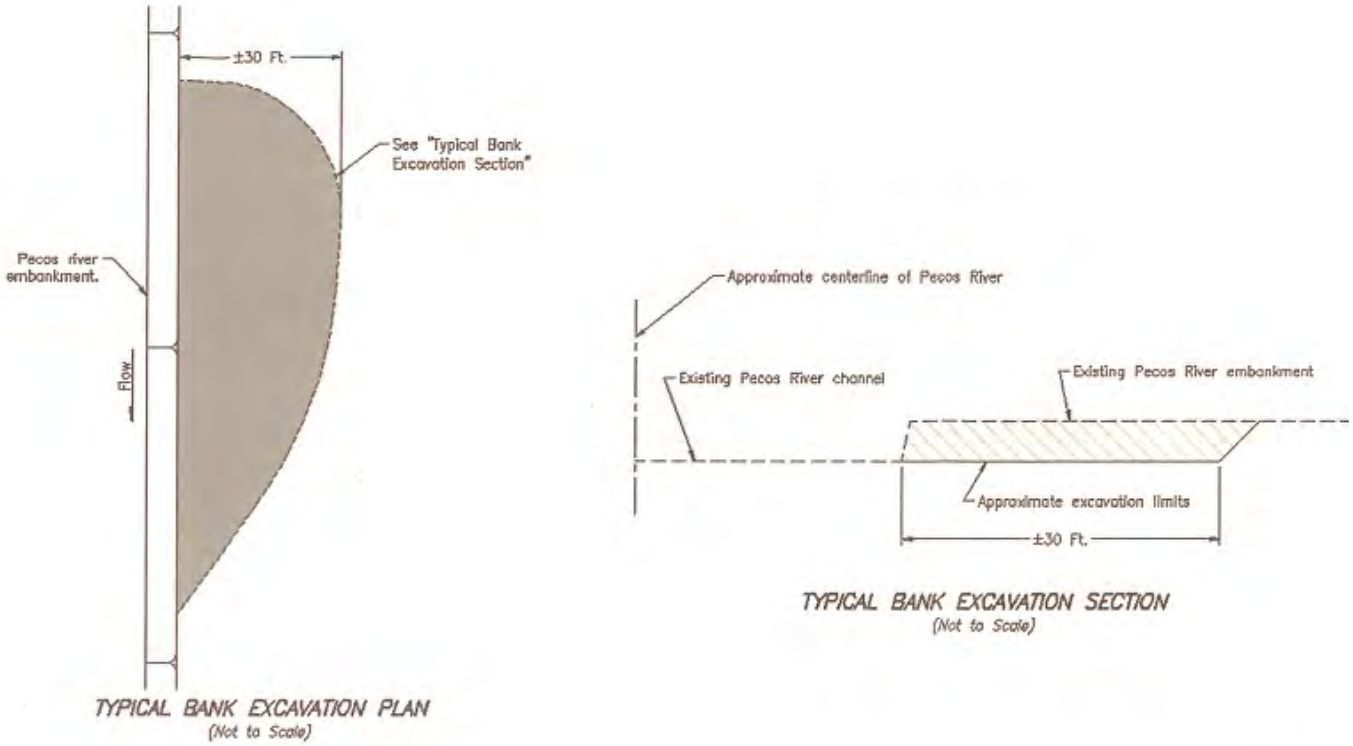



Figure 2-3

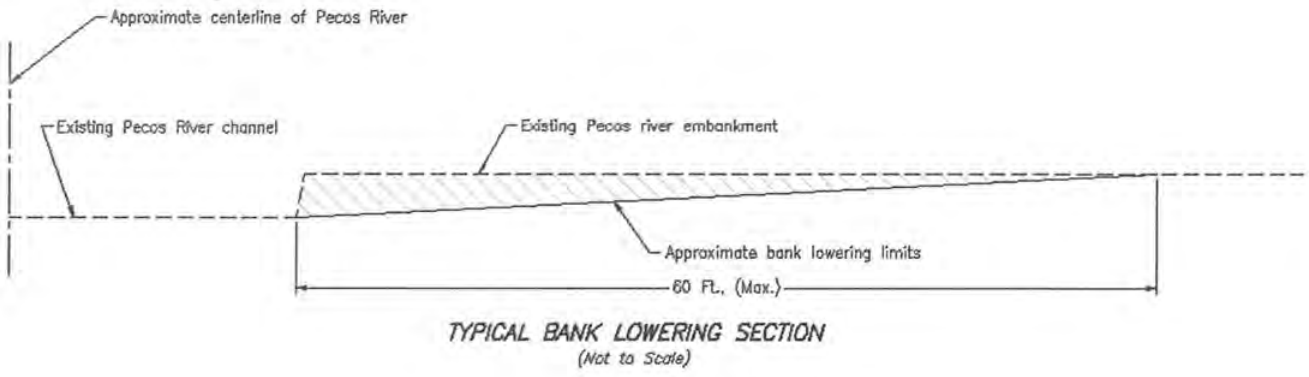



Figure 2-4

sources, and seed mixes that are most effective as determined by testing, monitoring, and experience with previous efforts.

### *Construction*

Restoration work is proposed to begin in February 2013. Vegetation removal and bank-line excavation will occur between February and April 15, 2013, with excavation following vegetation removal. Any work not completed may restart after September 1, 2013; no river crossings will occur between April 1 and November 1, 2013. The nonnative vegetation removal would be the highest priority and longest duration action.

Conventional excavation equipment would be used. Based on the current understanding of project activities under the Proposed Action, the following heavy equipment would likely be used for the main restoration work:

- Two 330 John Deere excavators
- A 4300 Link Belt excavator
- Two 300 series Caterpillar long-reach excavators
- A 772 John Deere road grader
- A 6415 John Deere agricultural tractor with a brush-hog
- A 3,500-gallon water-truck
- A pump trailer for the water truck
- A fuel service truck
- A Rayco drum-chipper (if material would be chipped on site)

#### ***Access and Staging***

As described previously, access roads, staging, fueling, and spoil areas have been designated for the restoration project on both sides of the river. Preparation of the access roads and other sites would be minimal and could include some clearing and mowing. Clearing involves the removal of vegetation with some amount of subsurface disturbances of the vegetation roots. Clearing won't be necessary in most areas. A typical impact range for clearing is 20 to 30 feet per lineal foot of access road. Mowing is the process of mechanically cutting vegetation while maintaining roots with the expectation that vegetation will return in a year or two. For access roads, the range of horizontal impact would be 5 to 10 feet on each side, for a total impact of 10 to 20 feet width per linear foot of access roads.

Some gates may need to be temporarily removed to accommodate heavy equipment. There are also two permanent public bridges on Lincoln Road that are rated as adequate for heavy equipment transport. Access from the south may involve between four and six river crossings in the lower project area at a single location during the course of the project. A crossing is typically 20 feet wide and 75 feet long, or 0.03 acres. The crossing would occur during low water periods and equipment would be moved slowly across the river. The equipment would remain on that side until all work is complete and then

return. Construction avoidance areas for protecting gas pipeline facilities, the fish barriers, and any sensitive resources would be clearly defined before construction starts.

A water truck would be used to reduce dust levels where necessary during construction. Water would be purchased offsite from Roswell municipal sources and accessed via a fire hydrant. The water would be trucked to the staging areas and project over established roads.

#### *Monitoring and Maintenance*

Reclamation will monitor the success of the restoration work and will adaptively manage the project area. The draft monitoring plan is provided as **Appendix A**, Annual Monitoring Plan for the Pecos River Restoration at Overflow Wetlands, of this EA/BA. The proposed plan incorporates baseline data collection, ongoing USFWS monitoring, and assesses future conditions within the restoration reach.

Reclamation will adaptively manage saltcedar recolonization and assess noxious weed establishment.

### 2.2.3 Alternatives Considered but Eliminated from Detailed Analysis

Informal discussions of potential alternative locations and restoration techniques have been ongoing for several years. The EA and alternative development process was initiated in early 2010 after the successful completion of the main elements of the restoration project conducted by Reclamation and the USFWS at the Bitter Lake NWR. Reclamation reconvened many of the agencies and individuals involved in the previous restoration project, as well as additional stakeholders, to help identify potential projects that would meet the purpose and need of the EA/BA, as described in **Sections 1.3** and **1.4**.

Participants in the initial discussions raised issues relevant to project siting. The proposed restoration techniques used would vary and would need to be tailored to the particular site or sites chosen. A suggestion was made to conduct a geomorphic overview of the entire Farmlands reach to assist in determining the best site for the restoration. While new data covering the whole reach would be desirable information to have, it was outside of the scope of Reclamation's obligations under the Biological Opinion to identify and conduct an overview study of the entire reach. Reclamation and the stakeholders had already identified a range of potential project sites throughout the reach, so this was not pursued at this time.

The USFWS indicated flexibility in determining the location for the restoration project under RPM #1. Their goals are to find an optimal location with the best combination of factors that would most benefit the Pecos bluntnose shiner. They considered two general strategies for restoration that would benefit the shiner population. One strategy would be to conduct multiple small projects to meet the requirement. This could provide refuge habitat throughout the reach for fish displaced from core population areas. This could be the most beneficial strategy biologically by providing habitat that would allow displaced fish to move upstream. However, the value of smaller isolated sites for increasing the population and survival of all age ranges of the shiner is not well known. There also

appear to be many smaller areas of diverse habitat along the river on private lands, which are evident in aerial photos. Logistically, work on multiple smaller projects could be expensive and could be hard to monitor in the long term.

The other strategy considered was to do a large project at a single location. This could have a larger beneficial effect on local fish populations and could create another area where the fish could maintain themselves and would not be as easily washed downstream during floods or block releases. The construction logistics would be easier and more economical at a single location. However, it is not known how large a restoration project would be needed to promote a self-sustaining population of all age classes.

Suggested alternative sites were compiled, visited where possible, and screened during 2010 by a subgroup of agency and stakeholder representatives. The sites considered from north to south were the BLM reach at the Overflow Wetlands ACEC below Bottomless Lakes State Park, the Hagerman Sluiceway above Dexter Bridge, the Grassey property, the Rio Felix confluence, the Langenegger property, Lake Arthur Falls, and Reclamation's Karr Farms, operated by the NMDGF.

In general, most of these properties are privately held, as is much of the land along the river. Much of the private land next to the river is not in production. It was suggested that there could be opportunities to perform relatively minor actions, such as bank lowering to induce habitat at these kinds of locations, where there is land available to allow the river to spread out without affecting crops or infrastructure. This action may not require much follow-on work to achieve desired habitat results.

Most of these sites represent areas where the river was fairly dynamic already, and conditions may already benefit shiner habitat. While additional restoration could have additional beneficial habitat effects, there would be concerns in some locations considered about potential damage to agricultural fields and other private and public infrastructure.

Concerns were also expressed about access, long-term maintenance and monitoring, and other difficulties in doing a federal project on private land. Ownership and landowner attitudes could not be easily determined during preliminary site screening. Ideally the chosen site or sites would be locations where long-term access could be assured and partnerships with other agencies and landowners could increase the effectiveness of the restoration project.

Because of the Reclamation ownership and NMDGF management, Karr Farms received special attention as a potential restoration site, including some conceptual restoration planning. The logistics of conducting a project there would be easier than on private property, there is on-site maintenance staff, and there are some water rights associated with property. The river corridor is in poor condition, so any management actions are likely to have positive effects. However, it is unknown how restoration in the area could benefit shiner population as a whole. This southernmost site is far downstream from reaches of the river that have historically had intact self-maintaining populations. While adult shiners are found there, the location is traditionally considered a population sink for

young-of-year fish being dispersed from upstream populations. The USFWS was not convinced that restoration at this location would benefit the shiner sufficiently for meeting the Biological Opinion requirements under RPM #1. Also, because the river is deeply entrenched, restoration at this location would be difficult and expensive.

## 2.3 Discussion of the Preferred Alternative

The northernmost potential restoration site that was assessed for restoration is the reach at the Overflow Wetlands ACEC below Bottomless Lakes State Park. Originally the work was limited to bank lowering entirely on BLM-administered land, but the preferred alternative has been expanded to include a much larger project encompassing adjacent private land and State Trust Land and multiple restoration techniques, as discussed in detail in **Section 2.2**. The advantages to conducting the restoration at this location are as follows:

- The proximity of the site to the recent restoration work at Bitter Lake NWR would extend the reach of restored habitat farther south without a large gap, potentially increasing the odds of success.
- The preferred alternative provides a continuous reach of restoration, employing multiple techniques that could help establish additional shiner habitat.
- The BLM has previous site-specific experience and relationships with other land managers and private landowners at this location.
- The project is compatible with the missions and goals of multiple agencies.
- There are existing good relationships with major landowners and land managers in the affected area whose lands would benefit.
- The river is not highly entrenched in the area, so restoration would not have to move as much material as more entrenched sites farther south.
- There is relatively good access and monitoring protocols and gage infrastructure.

The preferred alternative restores habitat in a reach where the benefits of restoration can be realized. No other alternatives were identified that met the purpose and need as well and could be implemented closer to the timeframe required by the Biological Opinion.

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# 3. Affected Environment

This section is a description of the environment in which the Proposed Action would take place. Each aspect of the environment that would be affected by the Proposed Action is discussed to the level of detail commensurate with the potential for environmental impact. Those aspects of the environment that would not be affected by the Proposed Action are discussed briefly.

## 3.1 Regional Setting

The Pecos River is the largest tributary of the Rio Grande and originates in the Sangre de Cristo Mountains of north-central New Mexico. The Pecos River meets the Rio Grande at what is now Amistad Reservoir near Laredo, Texas. At its origin, the river drains from crystalline rocks of the southern Rocky Mountains with high water quality. Below Fort Sumner, New Mexico, the river enters a naturally saline basin composed primarily of evaporitic sedimentary rocks, resulting in higher salinity loads. In the Roswell area and the Overflow Wetlands ACEC, there are inflows of near-surface groundwater, and the river is perennial in this reach.

Human activities have reduced the range and, in some cases, have extirpated native plants and animals. Saltcedar, introduced for bank stabilization in the 1940s, has significantly altered both the stream channel habitats and the native riparian plant communities. Channelization, groundwater withdrawals, and the construction and operation of dams for consumptive uses has further altered habitats and affected native aquatic and riverine communities. The environmental baseline for the Pecos River is the current altered environment, not the previously existing environment.

The Overflow Wetlands ACEC was established by the 1997 Roswell RMP. The goal of managing this area is to protect the biological and scenic values that provide habitat for threatened and endangered fish species and support a significant riparian/wetland community. The ACEC includes about 7,014 surface acres and 3,000 acres of federal mineral estate. The breakdown of ownership is 1,720 acres of New Mexico State Trust Lands, 2,107 acres of private land, and 3,187 acres of BLM-administered land. BLM management prescriptions apply only to public lands within an ACEC. The overflow wetlands and Pecos River are the focal points of the ACEC. Discharge from underground springs and overflow from sinkhole lakes at Bottomless Lake State Park have created a unique wetland environment. The project area does not include actions disturbing or impairing any of the shallow alluvial aquifer wetlands that the ACEC protects.

## 3.2 Land Use

The project area is located about 16 miles east of Roswell, Chaves County, New Mexico, within the Pecos River Valley. Lands in the project area consist of BLM-administered lands, New Mexico State Trust Lands, and private land. The area 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 Bitter Lake NWR. Surrounding land uses include residential property, farming and ranching, recreational, mining, and oil and gas development. The project area encompasses approximately 3,820 acres. The breakdown of land ownership is detailed in **Table 3.1**, Land Status in the Project Area.

**Table 3.1**
**Land Status in the Project Area**

| | **Acres** |
|---|---|
| Bureau of Land Management | 880 |
| Private | 2,040 |
| State Trust | 900 |
| **Total** | **3,820** |

Source: Reclamation 2012

The entirety of the project area is within the BLM-designated Overflow Wetland ACEC. This ACEC was established to protect critical habitat for threatened and endangered fish species and the significant riparian/wetland plant community. Details are provided in the *Overflow Wetlands ACEC Activity Plan and Activity Plan Implementation Environmental Assessment* (BLM 2003).

The project area includes portions of two State Trust Land leases. The New Mexico State Land Office administers state trust lands, which are leased to generate income dedicated to particular state schools, universities, and medical facilities. The northern lease (GM-1471) is on Township 11 South, Range 25 East, (T11S, R25E) Section 36, and the southern lease (GM-2486) includes T12S, R26E, Sections 15 (W½), 16, and 22 (NW¼NW¼).

There are no developed recreation facilities or off-highway vehicle designations within the project area, although access has been maintained for the general public (BLM 2012). Hunting, one the major consumptive uses of the ACEC, includes waterfowl, upland game bird, and deer hunting during their respective seasons. Duck blinds have been constructed near the water bodies. Fishing also occurs year-round along the Pecos River for warm-water fish. Sightseeing, bird watching, and nature study are other non-consumptive types of recreation that may occur in the project area; the Overflow Wetlands ACEC is a designated Watchable Wildlife Area. The ACEC action plan established a trail for wildlife viewing and hunting access in T12S, R26E, Section 9, just to the east of the project area (BLM 2003). Physical access to public lands located in the west portion of

the project area and west of the Pecos River crosses private land. The BLM has a legal easement across private land to access the public land in this portion of the project area.

Currently, there are portions of two active BLM-administered grazing allotments within the project area boundary. In addition, there is a private inholding associated with grazing on state and private lands (**Table 3.2**, Grazing Allotments in the Project Area). Range improvements in the project area consist of fencing, and stock tanks and troughs.

**Table 3.2**
**Grazing Allotments in the Project Area**

| Allotment Number | Allotment Name or Private Land Owner | Federal Animal Unit Months (AUMs) Permitted[1] |
|---|---|---|
| 65041 | overflow wetland unallotted, formerly Lasater & Souther | N/A[2] |
| 65060 | Bottomless Ranch | 36 |
| 65069 | Calumet Ranch | 1,785 |
| 65057 | Allensworth Ranch | 0 |

Source: BLM 2003
[1]AUMs permitted are for entire allotment, not the portion within the project area
[2]Grazing Lease for 65041 cancelled in 1997

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

The grazing permit on Allotment 65060 includes public and private lands (200 and 600 acres respectively for entire allotment). A small portion of the private land in the allotment (less than 80 acres) is within the project area. The public lands are not segregated from the private lands within the allotment boundary. Approximately 36 AUMs are permitted for this entire allotment.

Calumet Ranch Allotment 65069 covers approximately 31,000 acres (11,110 acres of BLM land, 14,562 acres of state trust land, and 5,399 acres of private land) located primarily outside of the project area. Less than 80 acres in the Spring and West #1 pastures of the allotment are located within the project area. The public lands in the Spring Pasture were removed from the allotment in 2003 as a result of the Overflow Wetlands ACEC activity plan. State trust lands within the West #1 pasture are located within the project area. The pasture has range improvements that include livestock water troughs, ranch roads, and fences.

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. There is no federal grazing associated with the Allensworth property.

There are portions of two existing oil and gas leases in the project area, covering 90 aces total in the eastern portion of the project area (**Table 3.3**, Oil and Gas Leases in the Project Area). None are located within the site plan area or within any of the proposed staging areas. Portions of the Overflow Wetlands ACEC, including the area where the current leases are located, are designated as open to leases with a no surface disturbance stipulation, per the 1997 RMP.

**Table 3.3**
**Oil and Gas Leases in the Project Area**

| Lease # | Acres within project area | Location | Land Status |
|---|---|---|---|
| NM 116567 | 13 | T12S R26E Section 9 | BLM |
| NM 114342 | 75 | T12S R26E Section 9 | BLM |
| NM 114341 | 0 | T12S R26E Section 4 | BLM/State |

Source: BLM 2012

No current right-of-way authorizations are located in the project area.

## 3.3 Geology and Soils

The project area is in the Lower Pecos Valley Subsection of the Great Plains Physiographic Province of southeastern New Mexico. Much of the Pecos Valley Section is underlain by Permian-aged bedrock units composed of gypsiferous and saline evaporites, limestone and dolomite, mudstone, shales, and sandstone. Dissolution of evaporite and carbonate units is an active geomorphic process affecting landscape evolution in much of the region, and various sizes of solution-subsidence depressions are common landforms. From the headwaters of the Pecos River, the sedimentary rocks of limestones, shales, and sandstones dip off the mountains in an easterly direction to form a large continuous regional aquifer system. The permeability of the aquifers varies considerably depending on the degree of dissolution or fracturing that has taken place. These processes have been most active in the southern part of the area and have resulted in the Roswell Artesian Basin. The limestone aquifer south of Roswell is the ancient Capitan Reef, in which the Carlsbad Caverns were formed by percolating groundwater.

Soils in the Overflow Wetlands ACEC are dominated by entisols, which are recently accumulated soils that do not show any profile development other than an A horizon (or topsoil). These soils can be fertile enough for agricultural use. Floodplain soils in the project area are Vinton-Glendale Association, Glendale Series, and Pecos Series. Wetland soils are Holloman Series and Holloman-Gypsum land complex, with 0 to 3 percent slopes. Upland soils are Holloman Series and Holloman-Gypsum land complex, with 30 to 50 percent slopes (BLM 2003; NRCS 2005).

In the project area, 2,400 acres (62 percent) are farmland of statewide importance. The site plan within this project area contains 10 acres of farmland of statewide importance, which cover 6 percent of the site plan (see **Figure 3-1**, Farmland of Statewide Importance).

## 3.4 Climate and Air Quality

Annual rainfall in Roswell and the project area averages 12.25 inches, and annual snowfall averages 7.4 inches. Annual temperatures typically range from near 0 degrees Fahrenheit (°F) in winter to 110°F in summer, with average lows of 41.2°F in January and average highs of 83.7°F in July. The wet season usually runs from mid-June to late August, and the average relative humidity is 48 percent. Prevailing winds are southwesterly. Late winter and spring are the seasons most closely associated with moderate to strong winds, which can bring blowing dust.

Mean annual temperatures have increased across New Mexico and the southwestern US since the early 20th century, and warming trends in the southwestern US have exceeded the global averages by nearly 50 percent since the 1970s. Long-term tree-ring records show severe droughts and mega-droughts to be part of the natural climate variability of the southwestern US. However, increased carbon dioxide and other greenhouse gas emissions in the earth's atmosphere are generally believed to be linked with worldwide climate trends, including the rapid melt of polar ice sheets, rise in sea levels, and the warming temperatures of the past century. Temperature and precipitation strongly influence the abundance and distribution of plant and animal life. Drought and climate change are likely to exacerbate the effects of natural and human disturbances, including wildfire, insect outbreaks, flooding, and erosion. The project area has experienced smaller increases in temperature and smaller decreases in precipitation than other parts of the state. However, warmer, drier climate trends in the headwaters of the Pecos River may affect the timing and availability of flows through the project area in the future (Enquist and Gori 2008).

The project area is in the Pecos-Permian Basin Intrastate Air Quality Control Region. Air quality can be affected by both near and distant sources of air pollution, including mobile sources (e.g., cars, trucks, off-road vehicles), stationary sources (e.g., power plants, industry), and area sources (e.g., oil and gas development, agriculture, fires, and road dust). The most common and abundant pollutant emissions include nitrogen oxides, ammonia, and sulfur dioxide. These air pollutants can affect air quality and natural resources, including vegetation, wildlife, soils, water quality, and visibility. High levels of ozone, for example, may affect vegetation as well as the health of ACEC visitors and staff. Nitrogen compounds from the atmosphere can affect water quality and biota, soil nutrient cycling, and plant species composition (Fenn et al. 2003). Pollutant particles in the air reduce visibility in the region. Atmospheric deposition of toxic organic compounds and metals, including mercury, may have a wide range of effects on fish and wildlife (USEPA 1997).

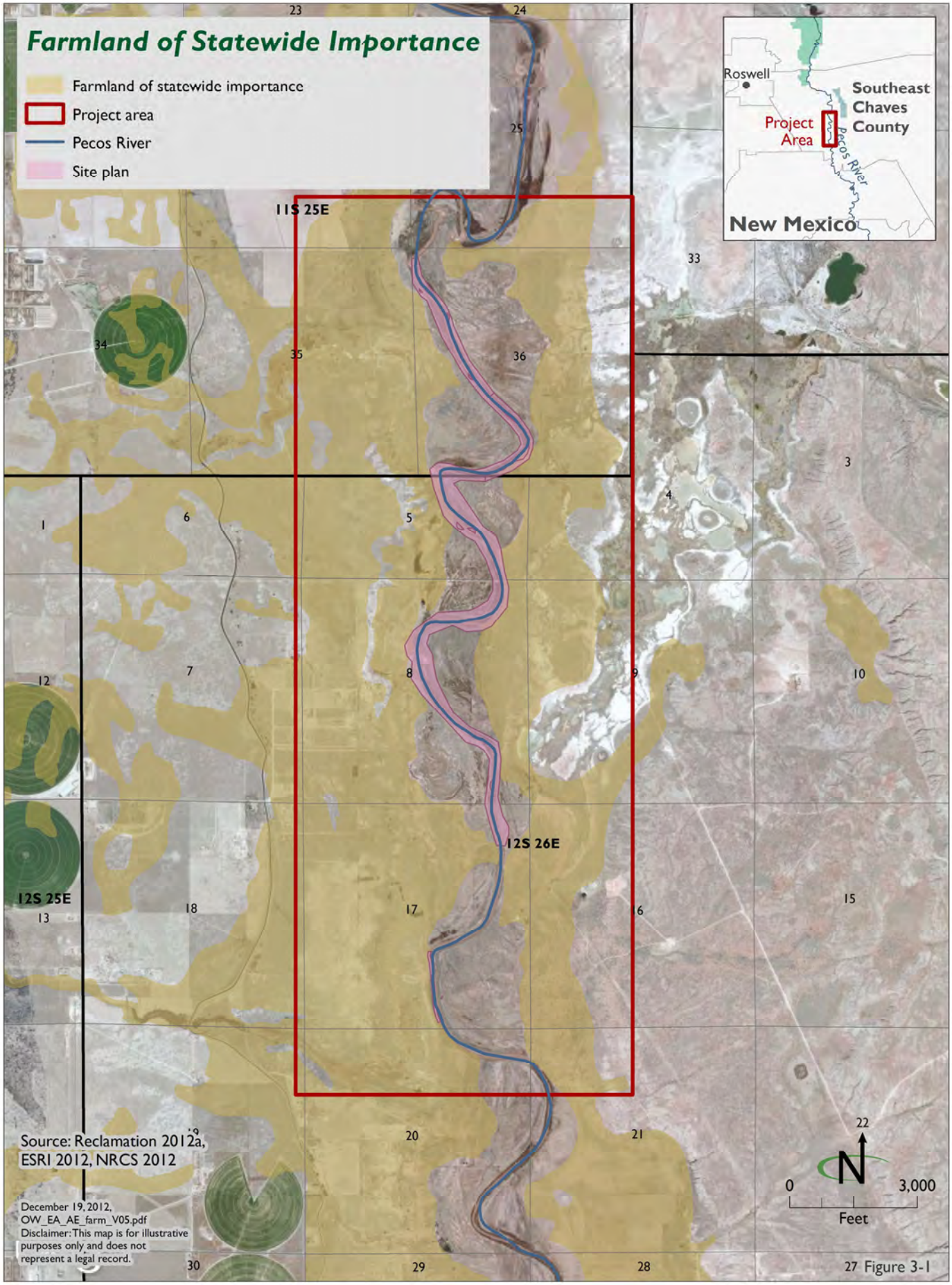
Farmland of Statewide Importance
Farmland of statewide importance
Project area
Pecos River
Site plan
Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
11S 25E
12S 26E
12S 25E
Source: Reclamation 2012a, ESRI 2012, NRCS 2012
December 19, 2012, OW_EA_AE_farm_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
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Figure 3-1

Under the Clean Air Act (42 USC 7401-7671q, as amended in 1990), the BLM has a responsibility to protect air quality and related values from the adverse effects of air pollution and to comply with federal, state, and local air pollution control laws and regulations. The Overflow Wetlands ACEC, including the project area, is considered a Class II air quality area. A Class II air quality area allows a moderate amount of degradation of air quality.

Air quality at the Overflow Wetlands ACEC is good. Chaves County is in attainment status for state and federal ambient air quality standards for criteria pollutants (particulate matter less than 10 microns, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead). The most immediate air pollution problem is blowing dust. The NMED records concentrations of particulate matter at a monitoring station at the city offices in Roswell. In 2003, a violation of the federal standard for particulate matter occurred due to a dust storm, requiring the creation of the Chaves County Natural Events Action Plan to avoid nonattainment for this pollutant. The action plan is a series of measures to reduce particulate matter in the county from construction sites, cleared lands, and other potential sources of human-caused windblown dust. The action plan does not require control of naturally occurring windblown dust (NMED 2004; NMED 2008).

## 3.5 Water Resources

The project is located on the Pecos River in the Roswell Groundwater Basin. The Roswell Groundwater Basin is in the lower Pecos Valley of southeastern New Mexico, on the northern fringe of the Chihuahua Desert. This natural hydrologic basin extends 6 to 18 miles west of the Pecos River and from 20 miles north of Roswell to 20 miles south of Artesia in Eddy County, a distance of approximately 80 miles. The Pecos River runs through the eastern side of the basin from north to south, and several large tributaries drain from the west to the east. There is a complex set of interactions between the surface water, groundwater, and geology in this area that accounts for the diversity of water resources in the general vicinity of the Overflow Wetlands ACEC, the Bottomless Lake State Park, and Bitter Lake NWR and provides the foundation for the habitats present.

### 3.5.1 Surface Water Hydrology

The Pecos River, which is a jurisdictional water of the US, flows for approximately five miles through the project area. Flows in the Pecos River are controlled by reservoir releases from Sumner Reservoir, agricultural return flows, inflows from tributaries that convey seasonally variable flows from rainfall and snow melt in the nearby mountains. The Overflow Wetlands ACEC is dominated by karst (limestone and gypsum containing large solution cavities), and lands bordering the river are relatively flat. The shallow water table fills sinkholes in the karst to form numerous small lakes, ponds, and wetlands (Land 2003).

The climate is semi-arid, with an average growing season of 195 days (April to October). During the growing season, average daily temperatures range from 55 to 80°F. Temperature frequently exceeds 100°F during the summer. Minimum winter

temperatures occasionally drop below 0°F. The average annual temperature is 61°F. High winds from the west and southwest are common from March to June (BLM 2003).

Annual precipitation averages 8 to 12 inches per year. Wide fluctuations from year to year are common, ranging from a low of about 2 inches to a high of over 20 inches. Of the annual precipitation, 80 percent occurs in the form of rainfall during the months of June through September. Snowfall averages less than four inches annually, may occur from November through April, and usually melts within a short time (BLM 2003).

Before Sumner Dam was constructed in 1938, floods were much more intense and base flows were higher than under post-dam conditions (FLO Engineering 1999). This is documented by a continuous record of peak and mean stream flows from 1906 to present from the Artesia Gage (USGS Gage 08396500, Pecos River near Artesia, New Mexico) located south of the project area (USGS 2012a). Under a natural river regime, periodic flooding changes the river course within the floodplain and creates a dynamic river channel with a variety of habitat benefits for migratory birds, fish, native wildlife, and plants. Lower peak and base flows and the armoring of banks with saltcedar have led to incised channels, reduced movement of sediment, and less the diversity of habitat. Native riparian vegetation along the Pecos River and its tributaries has diminished in the last 100 to 120 years.

The quantity of water released from Lake Sumner is determined by the irrigation needs of the Carlsbad Irrigation District and state-line water delivery requirements. Brantley Reservoir in Eddy County is the delivery point for Carlsbad Project water. Water is transported most efficiently to Brantley Reservoir using larger block releases to reduce losses in transit. The maximum release through the gates at Sumner Dam at normal reservoir levels is 1,400 cubic feet per second (cfs). The frequency and timing of these block releases depends on downstream irrigation needs, water availability, and river conditions. Releases usually begin in March. There can be several releases each year, each lasting up to two weeks. Current Pecos River operations are governed by the 2006-2016 Biological Opinion on the Pecos Bluntnose Shiner, which sets a year-round target flow of 35 cfs as measured at the Taiban Gage (USGS Gage 08385522, Pecos River below Taiban Creek, Fort Sumner, New Mexico).In recent years, Reclamation has worked with stakeholders and others to provide supplemental flows to meet this discharge target to support fish populations in the river; however, prolonged drought conditions have led to large reaches of intermittency in 2012.

Substantial instream flows can occur in the project area during storm events and from flows major tributaries south of Sumner Dam. The confluence with the Rio Hondo, a major tributary, is north of the project site, approximately two miles south of the Highway 380 Bridge. The Rio Hondo originates in the foothills of the Sacramento Mountains, at the junction of Rio Ruidoso and Rio Bonita. From this point, Rio Hondo flows eastward for approximately 85 miles to the Pecos River.

The Pecos River below Roswell in the project area is typically a gaining reach (i.e., groundwater contributes to the river flow). Flows through the project area are highly variable within the lower range established by the controlled river. There are gages at the

north and south boundaries of the Overflow Wetlands ACEC, but records are only available since 2004. The highest peak flow recorded at the North BLM Gage (USGS Gage 08394024, Pecos River North Boundary [BLM Wetlands] near Dexter, New Mexico) was 5,230 cfs. The highest peak flow recorded at the South BLM Gage (USGS Gage 08394033 Pecos River South Boundary [BLM Wetlands] near Dexter, New Mexico) was 4,570 cfs. These flows were associated with the same storm event and peak flows in the project area during all other years ranged between 1,320 cfs and 1,720 cfs. The annual mean flows recorded have ranged 101 cfs to 226 cfs. Under drought conditions during the last year, low flows have been recorded at below 3 cfs at both gages (USGS 2012b; USGS 2012c).

The Pecos River meanders through the west portion of the ACEC. A wide floodplain borders both sides of the Pecos River within the ACEC. The wetland area trends southwest from the Lea Lake area for about 3.5 miles before entering the Pecos River at the most southern point. Measurable amounts of surface water flows west and southwest from an outlet at Lea Lake, through wetlands and then concentrate into outlet channels into the river. Presently the overflow of water only occurs on the southwest portion of Lea Lake through the concrete outlet drain. There are four points along the river where water from the wetlands enters the Pecos River. Three outflows are located on public land and one on state trust land (BLM 2003).

Increased surface discharge from Lea Lake has occurred from the rise of the groundwater table in the artesian aquifer. More recently, wetlands on Bottomless Lakes State Park have been restored and expanded and much of the flow from Lea Lake has not entered the outlet channels to the river. The project area does not include actions disturbing or impairing any of the shallow alluvial aquifer wetlands that the ACEC protects.

The lands between Lea Lake and the Pecos River slope gently, about one to two degrees, toward the river. The surface waters also recharge and infiltrate the soils and rock formations beneath the wetlands, adding measurable base flow into the Pecos River. Springs on the west side of the Pecos River have also contributed to surface inflows into the river and wetlands. Other human-made surface water features include the Hagerman Canal, which parallels the river on the west and supplies water to approximately 9,000 acres using a combination of surface water diverted from the Rio Hondo and groundwater pumped from the Roswell Artesian Basin.

### 3.5.2 Groundwater Hydrology

As described above, some of the surface-water features in the Overflow Wetlands ACEC are manifestations of the shallow depth to groundwater. The discharge zone for the Roswell Groundwater Basin follows a north-south line with the river and is associated with the unique geologic and surface water features that characterize this area. The Yeso and San Andres Formations, the Artesia Group, the Glorieta Sandstone, and alluvium and terrace deposits are associated with the regional groundwater system. The two major aquifers that provide the largest local supplies of water and are relevant to the Overflow Wetlands ACEC are the Permian artesian aquifer formed principally in the San Andres limestone and the shallow-water aquifer, located in the alluvium deposits and terraces (Land 2003).

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 in the Overflow Wetlands ACEC and the Pecos River. The groundwater table has risen in the last 25 years due to decreased groundwater pumping west of the Pecos River. Subsequent to a rockslide in 1975, more water from the artesian aquifer has been discharged into Lea Lake, increasing water flowing from the lake (BLM 2003).

Alluvium and stream valley bottom deposits occur in quaternary alluvium, which is located on the western portion of the Overflow Wetlands ACEC. Groundwater in the shallow alluvial aquifer is less than 10 feet deep and on much of the property it is at or near the surface. The shallow system receives recharge from a zone to the west of the Pecos River. 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 river (BLM 2003).

### 3.5.3 Water Quality

Natural groundwater quality in the project region is impacted by dissolved salts from soluble mineral deposits, such as halite (rock salt), gypsum, and carbonate rocks in the Permian age rocks that underlie the region (Land 2003). Additional sources of contaminants in the area include irrigation return flows, grazing animals, and oil and gas production wells and pipelines.

Upstream of the project area, the Pecos River enters a basin dominated by evaporitic sedimentary rock (notably gypsum) and poorer quality groundwater inflows. Salinity in the Pecos River increases below this point due to geologic-based salt loading and high evaporation rates (Land 2003). Water quality in the river is also affected by return flows from upstream agricultural diversion. Return flows are usually more saline than native river waters because salts are concentrated when water is removed through transpiration. The river also carries runoff from fertilizer application and other upstream contaminants.

The project area is on the river segment between the Rio Peñasco and Salt Creek, which is identified as Segment NM-2206.A_00 by the New Mexico Water Quality Control Commission. Designated uses for this segment include irrigation, livestock watering, recreation, wildlife habitat, and warm water aquatic life.

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 for pollutants of these water-quality-limited stream segments. The presence of critical habitat on portions of this segment outside of the Overflow Wetlands ACEC for the threatened Pecos bluntnose shiner raised the Pecos River to priority one on the New Mexico 303(d) ranking system (BLM 2003).

The project area segment was assessed in 2010. The overall status of the waterbody is classified as impaired. The causes of the impairment are the presence of

dichlorodiphenyltrichloroethane (DDT) and polychlorinated biphenyls in fish tissue. The presence of these toxins impairs the designated use of the river as a warm water fishery and total maximum daily loads for these substances are needed. The status of the river for irrigation, livestock watering, and wildlife habitat uses was considered good, and secondary contact was not assessed (USEPA 2010).

Water flowing from the Lea Lake to the Pecos River is slightly alkaline, moderately saline, and has very low concentrations of suspended sediments (USACE 2006). Physical and chemical data collected during 2007 indicated that secondary contact, wildlife, habitat, and livestock watering are fully supported for Lea Lake (NMED 2007).

## 3.6 Biological Resources

The project area provides an opportunity for creating important habitat for threatened and endangered fish species. Details are provided below for vegetation, wildlife, and special status species known to occur or with potential to occur in the project area.

### 3.6.1 Vegetation

Vegetation within the Overflow Wetlands ACEC consists primarily of mixed Apacherian-Chihuahuan semi-dessert grassland and steppe with Great Plains sand, grassland, and shrubland . The riparian and wetland areas consist mainly of warm desert freshwater shrubland.

The Apacherian-Chihuahuan semi-desert grassland and steppe ecological system is a broadly defined desert grassland, with mixed shrub and succulent species typical of the borderlands of New Mexico, Arizona, and northern Mexico (Apacherian region). This landscape extends west to the Sonoran Desert, north into the Mogollon Rim, and throughout the Chihuahuan Desert. Vegetation that inhabits the Apacherian-Chihuahuan semi-desert grassland and steppe is characterized by diverse perennial grasses (*Bouteloua* spp.), succulent species of agave and yucca, as well as short- and tall-shrub species. Intensive grazing and other land uses have transformed the historical desert grassland and savanna areas to Apacherian-Chihuahuan mesquite-dominated (*Prosopis* spp.) upland scrub (NatureServe 2012).

About one-third of the Pecos River Overflow Wetlands ACEC is within the 100-year floodplain (BLM 2003). With the exception of a previously cleared segment, the riparian area is a narrow band along the riverbank dominated by a dense canopy of non-native saltcedar (*Tamarix ramosissima*) with a sparse understory. Other riparian vegetation includes seepwillow (*Baccharis salicifolia*), common reed (*Phragmites* spp.), cattail (*Typha* spp.), and sedge (*Carex* spp.).

The dry floodplain surrounding the wetlands supports a sparse saline soil plant community featuring iodinebush (*Allenrolfea occidentalis*), seepweed (*Suaeda* spp.), salt grass (*Distichlis spicata*), and trans-Pecos sea lavender (*Limonium limbatum*). In certain areas in the floodplain, vegetation can be sparse due to the highly alkaline soil type (BLM 2003). Goldenrod (*Solidago* spp.), 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 (*Sporobolus airoides*) is the dominant vegetation with mosaics of saltcedar and mesquite. A mesquite/black grama (*Bouteloua eriopoda*) habitat type is prevalent at the southern end of the ACEC. The escarpment features gypsiferous bedrock and soils and supports gypsophile plants, including gypsum grama (*Bouteloua breviseta*) and Nealley's dropseed (*Sporobolus nealleyi*). The topland of the escarpment is flat, moderately grazed shrubby grassland with mainly tobosagrass (*Pleuraphis mutica*), burrograss (*Scleropogon brevifolius*), fourwing saltbush (*Atriplex canescens*), creosote (*Larrea tridentata*) and mesquite (BLM 2003).

The major invasive species in the area include common reed, Russian thistle (*Salsola* spp.), kochia (*Bassia scoparia*), and saltcedar. Saltcedar is widely distributed throughout the region in thick riparian stands. Saltcedar within the BLM-administered portion of the project area was removed mechanically over ten years ago. Where not previously cleared, the height of the vegetation in the riparian corridor ranges from 10 to 25 feet and the width from 10 to 30 feet. Dense stands of saltcedar lead to effects on channel morphology, sedimentation, erosion, and flooding. Additionally, saltcedar can increase soil salinity, reduce biodiversity in riparian zones, impact special species habitat, and increase fire risk (NRCS 2005).

The New Mexico Department of Agriculture established the Non-Native Phreatophyte/Watershed Management Plan (NMDA 2005), which recommends imposing saltcedar control along the Pecos River. The proposed restoration actions in this EA/BA are consistent with the state's saltcedar management plan and eradication efforts. The BLM's Roswell Field Office included protection for biological resources within the Overflow Wetlands ACEC in its 1997 RMP. The RMP included management prescriptions to remove saltcedar and retreat sprouts.

### 3.6.2 Wetland Habitats

The Overflow Wetlands ACEC was created to protect the limestone and gypsum springs, seeps, and wetlands characteristic of this region that provide unique habitat for diverse assemblages of native fish, plants, aquatic invertebrates, and migratory birds. Wetlands range from relatively freshwater flowing streams and oxbow lakes to brackish impoundments and natural sinkholes to hypersaline playa lakes.

The restoration project would occur in the immediate vicinity of the Pecos River and would not impact the overflow wetlands. However, wetlands abutting the river are present within the project area. These wetlands are dominated by species that include three square sedge (*Schoenoplectus americanus*), large barnyard grass (*Echinochloa crus-galli*), and common reed. They are dynamic in nature and their presence is dependent on annual levels of flow and erosion conditions.

### 3.6.3 Wildlife

The Overflow Wetlands ACEC 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 (BLM 2003). The following species have been documented in the Overflow Wetland ACEC but would not necessarily be found in the project area.

Common mammal species using the ACEC include mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), common porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), jackrabbit (*Lepus* spp.), cottontail (*Sylvilagus* spp.), white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys* spp.), and woodrat (*Neotoma* spp.). In addition, a small black-tailed prairie dog (*Cynomys ludovicianus*) town has expanded from private lands to the west onto the ACEC outside of the project area. This species has been proposed for listing under the Endangered Species Act (ESA) and is a priority wildlife species for management and protection by the BLM (BLM 2003). Listing of the species was determined to not be warranted in 2009 (USFWS 2009).

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 (*Zenaida macroura*), mockingbird (*Mimus polyglottos*), white-crowned sparrow (*Zonotrichia leucophrys*), black-throated sparrow (*Amphispiza bilineata*), western meadowlark (*Sturnella neglecta*), Crissal thrasher (*Toxostoma crissale*), western kingbird (*Tyrannus verticalis*), northern flicker (*Colaptes auratus*), common nighthawk (*Chordeiles minor*), yellow-billed cuckoo (*Coccyzus americanus*) and roadrunner (*Geococcyx* spp.) Raptors include northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*) (BLM 2003).

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 (BLM 2003). The greatest impact on fish habitat has been the manipulation of water supply to meet irrigation needs. Dominant fish species currently found at the BLM ACEC monitoring site include: the red shiner (*Cyprinella lutrensis*), sand shiner (*Notropis stramineus*), Arkansas River shiner (*Notropis girardi*), Pecos bluntnose shiner (*Notropis simus pecosensis*), plains minnow (*Hybognathus placitus*), plains killifish *(Fundulus zebrinus*), mosquitofish (*Gambusia affinis*), speckled chub (*Macrhybopsis aestivalis*), Rio Grande shiner (*Notropis jemezanus*), and the fathead minnow (*Pimephales promelas*) (Davenport 2011). The Pecos pupfish (*Cyprinodon pecosensis*) is found in the ACEC wetlands.

A variety of herptiles also occur in the ACEC. Species include the yellow mud turtle (*Kinosternon flavescens*), box turtle (*Terrapene* spp.), eastern fence lizard (*Sceloporus undulatus*), side-blotched lizard (*Uta* spp.), horned lizard (*Phrynosoma* spp.), New Mexico whiptail (*Cnemidophorus neomexicanus*), Western hognose snake (*Heterodon nasicus*), coachwhip (*Coluber flagellum*), gopher snake (*Pityophis catenifer*), rattlesnake (*Crotalus* spp.), and New Mexico spadefoot toad (*Spea multiplicata*) (BLM 2003).

### 3.6.4 Special Status Species

Threatened, endangered, and sensitive species are those listed as threatened or endangered under provisions of the ESA, and those proposed or considered as candidates for such listing. Chaves County contains habitat for 18 federally listed (USFWS 2012). Many of the Chaves County listed species inhabit the neighboring Bitter Lake NWR (Reclamation 2009).

#### *Listed species potentially affected by the proposed action*

There is one listed species that has the potential to inhabit the project area, the Pecos bluntnose shiner (*Notropis simus pecosensis*). The interior least tern (*Sterna antillarum athalassos*) and southwestern willow flycatcher (*Empidonax traillii extimus*) may migrate through the area, but are not likely to be residents within the project site due to lack of suitable habitat. Currently, there is one Pecos sunflower population near the project area, located approximately 0.25 miles west of the Pecos River at the northern extent of the proposed restoration area, on privately owned land. All construction activities will avoid this area and there will be no direct or indirect impacts on this population; therefore, it will not be considered further.

Detailed descriptions of current population and habitat conditions of the Pecos bluntnose shiner, least tern, and flycatcher are presented below.

**Pecos Bluntnose Shiner.**

*Background*. The Pecos bluntnose shiner was federally listed as a threatened species under the ESA on February 20, 1987, by the USFWS (52 FR 5295 5303). The shiner is endemic to the Pecos River and is presently found only in eastern New Mexico. The Pecos bluntnose shiner was first collected by Cope and Yarrow, at San Ildefonso, Santa Fe County, New Mexico, in 1876 (Sublette et al. 1990). Confusion regarding taxonomic status of this species was resolved when Chernoff et al. (1982) determined that two subspecies existed, the Rio Grande form (*N. simus simus*) and Pecos form (*N. simus pecosensis*). The Rio Grande form was historically found in the Rio Grande drainage from the Chama River, north of Santa Fe, New Mexico, downstream in the Rio Grande to El Paso, Texas.

The Rio Grande form is now extinct (Bestgen and Platania 1990; Sublette et al. 1990). The final rule determined the shiner as threatened indicates historic occupation of the shiner in the Pecos River between the towns of Santa Rosa and Carlsbad, New Mexico (USFWS 1987). Collections of shiner during the 1990s indicate a current range from Sumner Dam, New Mexico, downstream to Brantley Reservoir (Brooks et al. 1991; USFWS 2001).

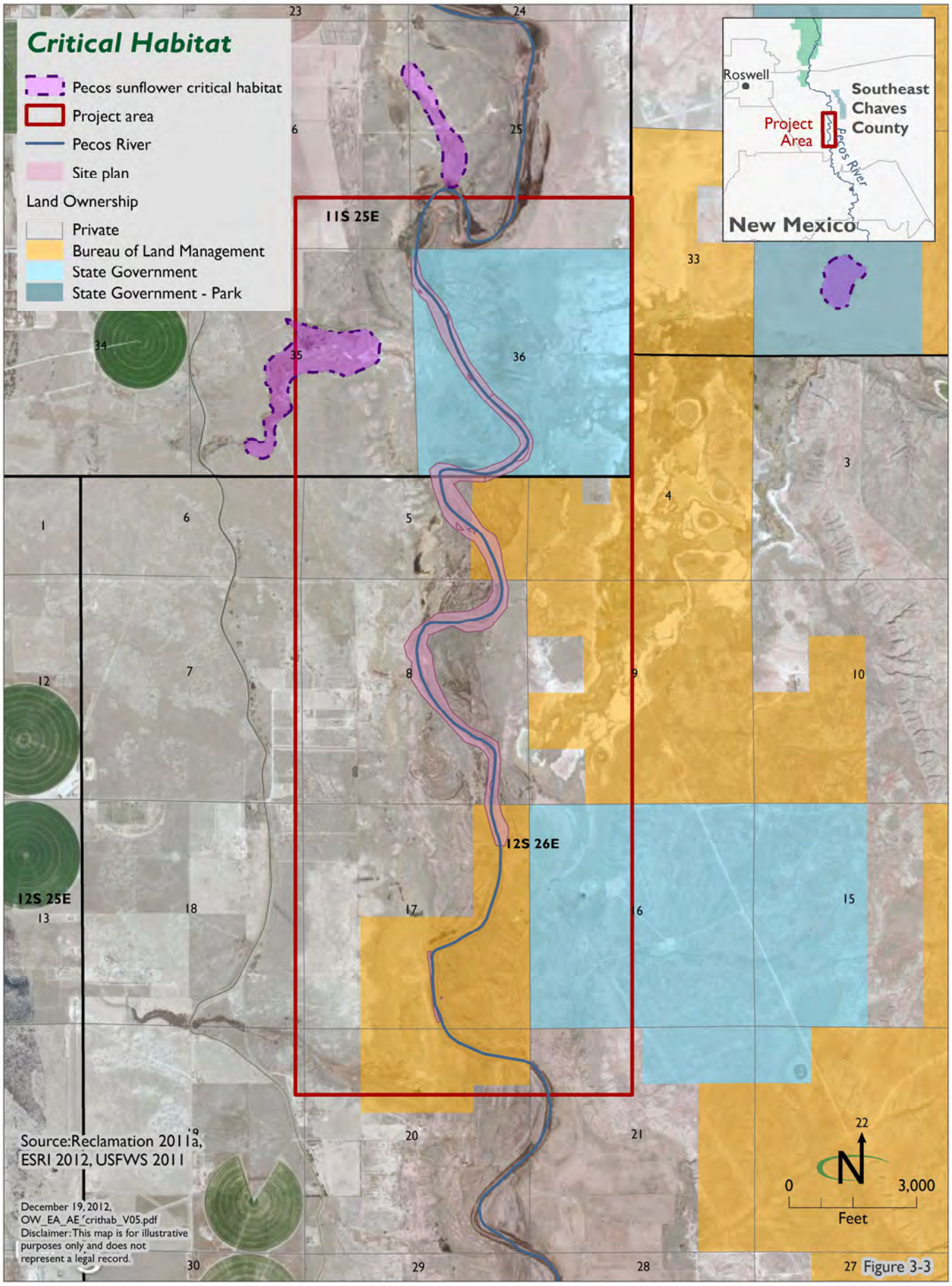
*Distribution and Abundance*. Historical collections indicate that the Pecos bluntnose shiner inhabited the Pecos River from approximately Santa Rosa, New Mexico, to Carlsbad, New Mexico, but its current range is restricted to the Pecos River between approximately Taiban Creek and Brantley Reservoir (Hatch 1982; Hatch et al. 1985; Sublette et al. 1990; Brooks et al. 1991). Two reaches of the Pecos River in New Mexico were designated as critical habitat for this species, totaling approximately 101 miles. The first starts about a 0.5 mile upstream from the Taiban Creek confluence and extends 65

miles downstream to the Crockett Draw confluence. The second section starts a point east of Hagerman, New Mexico, and extends 37 miles downstream to the Highway 82 Bridge, east of Artesia, New Mexico (USFWS 1987). Reclamation funds an interagency agreement with the USFWS for monitoring of the entire Pecos River fish community. Current data specific to the shiner in the Farmland section of the river found that the monthly mean percent abundance ranged from 1.3 to 31.1, and the mean catch rate ranged from 4.4 to 41.2 fish/100 square meters. The cumulative mean percent abundance was 10.8, and the cumulative mean catch rate was 21.8 fish/100 square meters (Davenport 2011). There are two sampling locations in the Farmland section of the river close to or within the project boundaries (Highway 380 and BLM ACEC). At those locations, mean percent abundance of Pecos bluntnose shiner was 11.3 and 8.7 respectively. The primary threat to the Pecos bluntnose shiner is channel drying (USFWS 1987). At low flows, stressors may include increased crowding, competition, and predation; the potential for decreased food availability; and an increased likelihood of poor water quality (i.e., high water temperatures, low dissolved oxygen, and nutrient loading [USFWS 2006]).

*Life Requirements*. The Pecos bluntnose shiner is a member of the minnow family (*Cyprinidae*). It is a small-bodied cyprinid reaching lengths of up to 3.5 inches and is endemic to the Pecos River. The mouth is large, appearing slightly subterminal, with an overhanging blunt nose. The average life span is two to three years. The shiner primarily feeds on detritus, filamentous algae, and terrestrial invertebrates, such as *Diptera*, a large order of flies, and midges. Habitats utilized by this species are characterized by sand substrate, low water velocities (0 to 2.9 feet per second), and water depths of 0.5 to 47 inches (Hoagstrom 2002). An analysis of mesohabitat use found the Pecos bluntnose shiner utilized perpendicular plunge and parallel plunge habitats located mid-channel, and actively avoided run and flat habitat types (Kehmeier et al. 2004).

*Reproduction of the Shiner*. This species has an extended spawning season, beginning in early summer and ending by October (Sublette et al. 1990). Spawning is stimulated by increases in flows associated with spring runoff, summer rainstorms, and/or managed irrigation releases (Hatch et al. 1985; Platania 1995; Dudley and Platania 1999; Dudley and Platania 2000). Pecos bluntnose shiner is a broadcast spawner, which produces non-adhesive eggs that are nearly neutrally buoyant (Platania and Altenbach 1998; Dudley and Platania 1999). Males and females look very similar, except in the breeding season when the females' abdomens becomes distended with eggs and the males develop fine tubercles (bumps) on the head and pectoral fin rays. Eggs and larvae remain suspended in the water column and drift passively until entrained in low velocity habitats (Kehmeier et al. 2004) or until their air bladders develop (three to five days after spawning) and they actively seek suitable rearing habitats (Platania and Altenbach 1998; Dudley and Platania 1999).

*Critical Habitat*. Critical habitat for this species was designated when originally listed by the USFWS in February 20, 1987 (52 FR 5295 5303). No critical habitat for Pecos bluntnose shiner occurs within the project area (**Figure 3-2,** Critical Habitat). Two separate reaches of Pecos bluntnose shiner critical habitat occur outside of the project area and are divided into upper and lower areas (USFWS 1987). Upper critical habitat is


Critical Habitat
Pecos sunflower critical habitat
Project area
Pecos River
Site plan
Land Ownership
Private
Bureau of Land Management
State Government
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Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
Source:Reclamation 2011a, ESRI 2012, USFWS 2011
December 19, 2012, OW_EA_AE_crithab_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
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Feet

Figure 3-3

a 64 mile reach extending 0.6 miles upstream from the confluence of Taiban Creek (river mile 668.9) downstream to the Crockett Draw confluence (river mile 610.4). A reach extending 36 miles downstream of the upper designated critical habitat is referred to as quality habitat, even though it is not designated as critical habitat. Lower critical habitat is a 37-mile reach extending from Hagerman to Artesia (USFWS 1987).

**Interior Least Tern.**

*Background*. The interior least tern was listed under the ESA as a threatened species on May 28, 1985 (73 FR 21643 21645). New Mexico is located on the extreme southern and western periphery of the interior least tern's historic range. The first recorded sightings of interior least tern in New Mexico occurred in 1949 on the Bitter Lake NWR (Jungemann 1988). This refuge was established adjacent to the Pecos River in 1939.

*Distribution and Abundance*. No known least tern populations exist in the Pecos River Overflow Wetlands ACEC. Approximately 7 miles north of the ACEC a small population of least terns has used the Bitter Lake NWR for over 60 years. The number of terns sighted in that area during peak abundance fluctuates annually, however, the average number of terns sighted on the peak use day and number of nests during the period of record indicates tern populations have remained low and production of young terns has been minimal (Reclamation 2000).

Until 2004, the Bitter Lake NWR was the only location in New Mexico where least terns have nested in recent history. In 2004, nesting was observed at Brantley Reservoir, approximately 60 miles south of the Bitter Lake NWR, which prompted Reclamation to consult with USFWS to identify RPMs. The RPMs Reclamation identified in the USFWS Biological Opinions included enhancement and maintenance of 84 acres of tern habitat, cooperation with land managers to maintain a one fourth mile buffer around breeding terns, and requirements to conduct annual surveys throughout the action area (Reclamation 2012b). The Carlsbad Irrigation District and Reclamation created the 84 acres of tern habitat by 2007 and installed a floating platform in 2009; however, terns have not ever been observed utilizing these areas and instead use the shoreline habitat on the northwestern side of Brantley Reservoir (Reclamation 2012). In May of 2006 surveys, 20 adults were observed, with an estimated 6 nesting pairs on the shore of Brantley Lake (Reclamation 2006). Terns have returned and have even nested sporadically in subsequent years, though nesting activity has yet to be successful again since 2004 (Reclamation 2012b).

*Life Requirements*. Interior least terns may utilize areas within the Pecos River basin for both nesting and feeding. The tern arrives at breeding sites from late April to early June where they typically spend four to five months. Throughout the interior least tern's range, the nesting period starts in mid-June and may last through August. Interior least terns typically nest in colonies.

There are two factors required for successful interior least tern nesting. Nesting sites, the first factor, normally occur on broad, unvegetated sand bars. The nest is scraped in sand or gravel and is normally unlined. As many as 4 eggs, usually 3, are laid in the nest; incubation takes 20 to 22 days. The peak of hatching is generally during the first week of

July. Chicks leave the nest after 1 or 2 days and are full- fledged at 2 to 3 weeks. There is a great deal of variability between the maximum nesting densities in tern colonies throughout its range. Terns nest in small colonies on exposed salt flats, river sandbars, or reservoir beaches. In recent years, least tern preferred nesting habitat in the Roswell area has been salt flats. This is probably due to the fact that salt flats are one of the few habitats with substrates that lack vegetation. The disadvantage of salt flats nesting habitat is the inability of precipitation to infiltrate the clay/silt soils, causing flooding of nest sites during rain events.

The second factor for successful interior least tern nesting is the adequacy of the food base. The primary food source of the interior least tern consists of non-spiny rayed fish less than 9.9 centimeters (3.9 inches) in length and with a body depth diameter less than 1.5 centimeters (0.6 inch; Reclamation 2000). The food base for interior least tern chicks consists of fish less than 1.5 centimeters (0.6 inch) in length. The type of fishery associated with providing an adequate food base for both adult and young-of-the-year appears to be common in the Pecos River.

*Critical Habitat.* No critical habitat rules have been published for the interior least tern (USFWS 2012).

**Southwestern Willow Flycatcher.**

*Background*. Loss and degradation of dense riparian habitats are the primary habitat threat to the flycatcher. Historically, water developments that altered flows in the rivers and streams were the primary threat. Now, with riparian areas limited and re-growth difficult due to changes in flows, fire is a significant risk to remaining habitats. In addition, human disturbances at nesting sites may result in nest abandonment.

*Distribution and Abundance*. No known southwestern willow flycatcher populations exist in the Overflow Wetlands ACEC. Although there is potential habitat in riparian areas along the Pecos River in eastern New Mexico, no nesting populations have been recorded. In general, the willow flycatcher prefers moist shrubby areas, often with standing or running water (Kingery 1998; Sedgwick 2000). Willows (*Salix* spp.) adjacent to forested areas often dominate these shrubby areas (Kingery 1998). Following modern changes in riparian plant communities, the southwestern Willow Flycatcher still places nests in native vegetation where available, but also nests in thickets dominated by the non-native tamarisk (*Tamarix* sp.) and Russian olive (*Eleagnus angustifolia*) and in habitats where native and non-native trees and shrubs are present in mixtures (Hubbard 1987; Brown 1988; Sferra et al. 1997; Sogge et al. 1997; Paradzick et al. 1999; Durst et al. 2008; Yong and Finch 1997).

During spring and fall migrations, habitats are similar to breeding sites (Sedgwick 2000). Willow flycatchers are found throughout riparian woodlands, which include shrub willows, cottonwoods, Russia olive, and woodlands adjacent to agricultural areas (Sedgwick 2000). The flycatcher is a summer breeder within its range in the US. The flycatcher leaves the area for wintering areas in Central America by the end of September. Nest territories are set up for breeding, and there is some site fidelity to nest territories (Sedgwick 2000).

*Life Requirements*. Flycatchers primarily eat flying insects. Nesting requires dense riparian habitats with microclimatic conditions dictated by the local surroundings. Saturated soils, standing water, or nearby streams, pools, or cienegas are a component of nesting habitat that also influences the microclimate and density of the vegetation component. Habitat not suitable for nesting may be used for migration and foraging.

The flycatcher arrives on breeding grounds from late April to early May. Nesting begins in late May and early June, with fledging from late June to mid-August. Typically, 3 or 4 eggs per clutch are laid at 1-day intervals and are incubated by the female for about 12 days. Young birds fledge 12 to 13 days after hatching. Flycatchers typically only raise one brood per year; however, some pairs will raise a second brood, or renest after a nest failure.

*Critical Habitat*. Critical habitat was designated for the southwestern willow flycatcher on October 19, 2005, in Grant, Hidalgo, Mora, Rio Arriba, Soccoro, Taos, and Valencia Counties in New Mexico (70 FR 60886 61009). On August 15, 2011, a revision to the flycatcher critical habitat designation was proposed to include Catron, Cibola, Dona Ana, McKinley, Santa Fe, San Juan, and Sierra Counties in New Mexico (76 FR 50542 50629). No critical habitat rules have been published for the southwestern willow flycatcher in the project area or Chaves County, New Mexico.

## 3.7 Cultural Resources

Cultural resources are locations of human activity, occupation, or use. The term includes archaeological sites, buildings, structures, and places associated with the traditional cultural practices or beliefs of a living community.

NEPA requires consideration of "important historic, cultural, and natural aspects of our natural heritage." Consideration of cultural resources under NEPA includes the necessity of independent compliance with the applicable procedures and requirements of other federal and state laws, regulations, and executive orders. The principal federal law addressing cultural resources is the National Historic Preservation Act of 1966, as amended (16 USC Section 470), and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for project proponents consulting with appropriate agencies to avoid, reduce, or minimize adverse effects. Historic properties are cultural resources that meet specific criteria for listing on the National Register of Historic Places. The Proposed Action is a federal undertaking, as defined by 36 CFR 800.3, and is subject to the Section 106 process and consideration under other federal and state requirements. The Section 106 process requires consultation with the State Historic Preservation Office and other parties.

Archaeological investigations in the Pecos River Basin indicate human use for as many as 11,000 years. Broad shifts in the archaeological evidence of native adaptations are observed from the Paleo-Indian through the Archaic and Ceramic to the Protohistoric

periods. Spanish contact and settlement came to this region later than to other parts of New Mexico along the Rio Grande. Attempts at Spanish and American settlement of this frontier were hindered by the lack of security from Apache and Comanche raiding that continued through much of the 19th century. As Spanish and American settlements were established, agriculture, and ranching provided the economic basis for the region.

Site and survey records were researched in March 2012 to determine the presence and potential for cultural resources to be present within the area of potential effects for the Proposed Action. Research was conducted through the Archaeological Records Management System of the New Mexico Historic Preservation Division in Santa Fe. Cultural resource locations are generally confidential, except in the case of historic structures, and are not published in order to prevent disturbance and unauthorized collecting.

No previous cultural surveys have been conducted in the immediate vicinity of the Proposed Action, and no sites have been recorded within the area of potential effects. Federally recognized tribes and pueblos with potential ties to the project area were notified via letter in May 2011 of the proposed project. The only responses received requested notification should archaeological resources or human remains be found during restoration. No concerns or traditional cultural properties were identified by the parties consulted.

A cultural resource survey was conducted in November 2012 by Reclamation and BLM staff of all project areas outside of the active floodplain, including staging areas and access roads. Much of the restoration work would be conducted in active or recently active floodplains and channels. The area of potential effects in the river area has experienced episodic flooding resulting in a disturbed setting. No structures or historic properties are present. No cultural resources were recorded, and there is little potential for intact cultural resources to be present. Although unlikely, consideration must also be given to the possibility of buried or undiscovered cultural resources that could be found during restoration. Reclamation will complete Section 106 process in consultation with the New Mexico State Historic Preservation Office prior to construction.

## 3.8 Visual Resources

Visual resources refer to both the natural and artificial landscape features that contribute to perceived visual images and the aesthetic value of a view. This value is determined by contrasts, forms, and textures exhibited by geology, hydrology, vegetation, wildlife, and human-made features. Individuals respond differently to changes in the physical environment, depending on prior experiences, expectations, and proximity and duration of views; therefore, visual effects analyses tend to be highly subjective. Because of the land use as an ACEC and primary visitor use as a location for wildlife observation, the project area is more visually sensitive than an area used for industrial, commercial, or residential purposes.

The project area consists of relatively flat topography. The color scheme is generally brown with spotted trees, though riparian areas are green. The river is flanked by dense vegetation in most of the project area; however, vegetation heights and densities are lower outside riparian areas.

The BLM has initiated a visual resource management (VRM) process to manage the quality of landscapes on BLM-administered land and to evaluate the potential impacts on visual resources resulting from development activities. Visual Resource Management class designations are determined by assessing the scenic value of the landscape, viewer sensitivity to the scenery, and the distance of the viewer to the subject landscape. These management classes identify various permissible levels of landscape alteration, while protecting the overall visual quality of the region. They are divided into four levels (Classes I, II, III, and IV). Class I is the most restrictive and Class IV is the least restrictive in terms of changes that are allowed to the characteristic landscape (BLM 1986).

The Visual Resource Management classification for BLM-administered land within the Overflow Wetlands ACEC is 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 on BLM-administered land in the ACEC, they should be painted to complement the surrounding colors of the environment.

Because there are no recreational trails or highly used roads in the project area, there are no visually sensitive receptors.

## 3.9 Noise

Noise is generally defined as unwanted or harmful sound. Noise may be intermittent or continuous, steady or impulsive. Vibration is an element of impulsive noise that can cause annoyance and structural damage. Human response to noise is extremely diverse and varies according to the type of noise source, the sensitivity and expectations of the receptor, the time of day, and the distance between the source and the receptor. Noise also can adversely affect and disturb wildlife. Noise analyses focus on the effects on sensitive receptors.

There are no noise studies in the project area, but noise levels are very low and typical of remote areas. Vehicle use and equipment use by residents and aircraft are the primary sources of occasional and intermittent noise.

## 3.10 Socioeconomic Resources

The project area is within Chaves County; therefore the socioeconomic planning area is defined as Chaves County. The population, demographic, and economic characteristics of Chaves County are detailed below, along with comparable data from the state of New Mexico and the US, as appropriate.

The estimated population of the Chaves County in 2010 was 65,645, an increase of 6.9 percent from 2000 (61,382). During the same period, New Mexico's population increased by 13.2 percent (from 1.8 million to 2.1 million), and the US population increased by 9.7 percent (from 281.4 million to 308.4 million; see **Table 3.4**, Planning Area Population 2000-2010).

**Table 3.4**
**Planning Area Population 2000-2010**

| | Chaves County | New Mexico |
|---|---|---|
| Population 2000 | 61,382 | 1,819,046 |
| Population 2010 | 65,645 | 2,059,179 |
| Population Change | 4,263 | 240,133 |
| Percent Population change | 6.9% | 13.2% |

Source: US Census Bureau 2000, 2010a

Roswell is the largest city in Chaves County, with a population of 48,366 in 2010. Total non-farm employment in the county increased by 10.5 percent from 2000 to 2010, compared with a 9.2 percent increase in New Mexico over the same time period (US Census Bureau 2010a). Per capita personal income increased in the area by 23.4 percent from 2000 to 2010. This compares with a 33 percent increase in New Mexico (US Census Bureau 2000, 2010a; see **Table 3.5**, Planning Area Income/Employment 2010).

**Table 3.5**
**Planning Area Income/Employment 2010**

| | Chaves County | New Mexico |
|---|---|---|
| Per capita income (2006- 2010) | $18,504 | $22,966 |
| Per capita income (2000) | $14,990 | $17,261 |
| Median Household Income (2006-2010) | $37,524 | $43,820 |
| Median Household Income (2000) | $28,513 | $34,133 |
| Annual Unemployment Rate (2010) | 7.7% | 7.9% |
| Annual Unemployment Rate (2000) | 5.0% | 4.4% |

Source: US Census Bureau 2010a, 2000

In 2010, major sectors of employment in the county include government, health care and social assistance, accommodations and food service, agriculture, and construction. Agriculture, forestry, fishing and hunting, and mining constituted approximately 8.5 percent of employment in Chaves County, compared with only 4.1 percent in New Mexico (US Census Bureau 2010b; see **Table 3.6**, Planning Area Employment Sectors 2006-2010).

**Table 3.6**
**Planning Area Employment Sectors 2006-2010**

| | Chaves County | New Mexico |
|---|---|---|
| Agriculture, forestry, fishing & hunting, mining | 2,292 (8.5%) | 36,726 (4.1%) |
| Construction | 2,097 (7.8%) | 75,349 (8.5%) |
| Manufacturing | 1,572 (5.9%) | 47,079 (5.3%) |
| Wholesale trade | 703 (2.6%) | 19.887 (2.2%) |
| Retail trade | 3,559 (13.3%) | 103,278 (11.6%) |
| Transportation, warehousing, and utilities | 1,368 (5.1%) | 40,748 (4.5%) |
| Information | 388 (1.3%) | 16,994 (1.9%) |
| Finance and insurance, and real estate | 1,269 (4.7%) | 45,111 (5.1%) |
| Professional, scientific, management, administrative, & waste management | 1,403 (5.3%) | 95,697 (10.8%) |
| Education, health care, & social assistance | 6,937 (25.8%) | 207,969 (23.4%) |
| Arts, entertainment, recreation, accommodation, & food | 2,593 (9.7%) | 91,649 (10.3%) |
| Other services, except public administration | 1,307 (5.1%) | 41,988 (4.7%) |
| Public administration | 1,312 (4.9%) | 66,286 (7.5%) |

Source: US Census Bureau 2010a
[1]American Community Survey estimates are based on data collected over a 5-year time period. The estimates represent the average characteristics of population and housing between January 2006 and December 2010 and do not represent a single point in time.

## 3.11 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. This executive order requires federal agencies to identify and address disproportionately high or adverse human health and environmental effects of federal programs, policies, and activities on minority and low-income populations. Consideration of environmental justice concerns includes race and ethnicity data and the poverty status of populations.

Persons are included in the minority category if they identify themselves as belonging to any of the following racial groups: (1) Hispanic, (2) Black or African American, (3) American Indian or Alaska Native, (4) Asian, or (5) Native Hawaiian or Other Pacific Islander. The CEQ guidance proposes that minority populations should be identified where either (1) the minority population of the affected area exceeds 50 percent, or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. Meaningfully greater is defined as 20 percentage points or more for this project.

The percentage of people of Hispanic or Latino decent of any race in Chaves County (52 percent) does exceed the 50 percent parameter, meaning that there is a minority population in the planning area based on CEQ standards. However, this distribution is reflective of the state of New Mexico as a whole (46.3 percent of people of Hispanic or Latino descent) and does not represent a significant departure from this reference population. Racial minorities do not represent a large portion of the study area population; approximately 73 percent of the total population of Chaves County is white (see **Table 3.7**, Planning Area Race and Ethnicity 2010).

Low-income populations are those individuals and families who fall below the federally defined poverty line. The poverty line takes into account family size and age of individuals in the family. In 2010, for example, the poverty line for a family of four with two children younger than 18 was $22,113 (US Census 2010c).

As of 2010, approximately 18.4 percent of individuals in the state of New Mexico were found to be at or below poverty level. In Chaves County, individuals below poverty constituted approximately 21 percent of the population (see **Table 3.8**, Planning Area Poverty 2010). The number of low-income individuals does not exceed the state average by 20 percentage points or more and does not exceed 50 percent of the total population in the area, which means that there are no low-income populations in the planning area, based on CEQ guidelines.

**Table 3.7**
**Planning Area Race and Ethnicity 2010**

| | Chaves County | | New Mexico | |
|---|---|---|---|---|
| **Total Population** | **number** | **percent** | **number** | **percent** |
| | 65,645 | 100% | 2,059,179 | 100% |
| Hispanic or Latino (any race) | 34,139 | 52.0 % | 953,403 | 46.3% |
| *White alone* | *34,139* | *27%* | *574,066* | *27.9%* |
| *Black or African American alone* | *244* | *0.5%* | *7088* | *0.3%* |
| *American Indian and Alaskan Native alone* | *356* | *.5%* | *17,854* | *0.9%* |
| *Asian alone* | *41* | *0.0%* | *1903* | *0.1%* |
| *Native Hawaiian and other pacific Islander alone* | *23* | *0.0%* | *564* | *0.0%* |
| *Some other race alone* | *14,279* | *21.8%* | *304,753* | *14.8%* |
| *Two or more races* | | | *29,835* | *1.4 %* |
| White | 48,334 | 73.6 % | 1,473,005 | 71.5% |
| Black or African American | 1692 | 2.6% | 57,040 | 2.8% |
| American Indian or Alaskan Native | 1,347 | 2.1% | 219,512 | 10.7% |
| Asian | 671 | 1.0% | 40,456 | 2.0 |
| Native Hawaiian or Other Pacific Islander | 138 | .2% | 4,698 | 0.2% |
| Some other race | 15,684 | 23.9% | 346,627 | 16.8% |

Source: US Census Bureau 2010c

**Table 3.8**
**Planning Area Poverty 2010**

| | Chaves County | New Mexico |
|---|---|---|
| Individuals below Poverty Level (2006-2010) | 21.0 % | 18.4% |
| Families below poverty level (2006-2010) | 15.9% | 13.9% |
| Individuals below Poverty Level (2000) | 21.3% | 18.4% |
| Families below poverty level (2000) | 17.6 % | 14.5% |

Source: US Census Bureau 2000, 2010a

## 3.12 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust for Indian tribes or individual Indians by the US through the Bureau of Indian Affairs. This trust responsibility requires that all federal agencies, including Reclamation, ensure their actions protect ITAs.

Assets are anything owned that has monetary value. The asset need not be owned outright but could be some other type of property interest, such as a lease or a right-of-way. They can be real property, physical assets, or intangible property rights. Common examples of ITAs include lands, minerals, hunting and fishing rights, water rights, other natural resources, and money. A legal interest is a primary interest for which a legal remedy, such as compensation or injunction, may be obtained if there is improper interference. ITAs do not include things in which a tribe or individual have no legal interest, such as off-reservation sacred lands in which a tribe has no legal property interest. It should be noted that other federal laws pertaining to religious or cultural laws should be addressed if impacts on such lands were to occur from Reclamation actions.

No issues involving Indian Trust or specific ITAs were identified in the Pecos River Basin during the preparation of the Carlsbad EIS (Reclamation 2006). Letters regarding the proposed restoration at the Overflow Wetlands ACEC were sent to representatives of 12 tribes and Native American pueblos on May 25, 2011 (See **Chapter 6**). No ITA issues have been identified to date.

# 4. Environmental Consequences

## 4.1 Introduction

This section is an evaluation of the potential environmental effects of the Proposed Action and the No Action Alternative. The Proposed Action is inclusive of the restoration techniques, construction, and monitoring and maintenance as described in **Chapter 2**. This analysis includes likely effects on the human environment, including those that are short term or long term, direct or indirect, and cumulative. The analysis of effects on resources focuses on environmental issues in proportion to their potential effects; resources that have a potential for environmental effects are discussed in detail. Interpretation of effects in terms of their duration, intensity, and scale are provided, where possible.

The actions outlined in the Proposed Action are designed to improve riparian and in-channel habitat, extending the reach of connected good-quality habitat for the benefit of native aquatic and riparian plant and animal communities. Some or all of these actions may eventually be implemented, and the individual actions may be implemented at different times. However, impacts are assessed on the basis that the actions would be implemented together so that the total impact on the environment can be evaluated. Implementation of all actions may require additional permits, approvals, and funding. Environmental commitments and mitigation measures are recommended, where appropriate, and summarized in **Chapter 5**.

### 4.1.1 Terminology

The impact analysis quantitatively and qualitatively describes the intensity and duration of effects. The following terms are used as needed to help provide context to the magnitude and timing of the impacts. Unless otherwise stated, the standard definitions for these terms are as follows:

*Short-Term Effect:* The effect occurs only during or immediately after implementation.

*Long-Term Effect:* The effect could occur for an extended period after implementation. The effect could last several years or more and could be beneficial or adverse.

*Negligible:* The effect is at the lower level of detection, and there would be no measurable change.

*Minor:* The effect is slight but detectable, and there would be a small, measurable change.

*Moderate:* The effect is readily apparent, and there would be a measurable change that could result in a small but permanent change.

*Major:* The effect is severe, and there would be a very noticeable, permanent, measurable change.

*Localized Impact:* The effect occurs in a specific site or area. When comparing changes to existing conditions, the effects are detectable only in the localized area.

## 4.2 Land Use

### 4.2.1 No Action

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would not have any effect on existing land use in the project area or surrounding lands. The lands in the project area would continue to be managed to protect the biological values.

### 4.2.2 Proposed Action

#### *Direct and Indirect Effects*

Efforts to improve riparian and in-channel habitat in the long term is consistent with the management goals for the Pecos River in the Overflow Wetlands ACEC.

Temporary construction disturbance and intermittent operations and maintenance disturbance to the project area and adjacent habitat would occur under the Proposed Action. There is potential for minor, short-term effects on surrounding land uses. Existing roads would be used for access with minimal improvements. Staging areas were selected in coordination with land owners and land managers to minimize impacts; sites were selected for past disturbance and land owner preference. As a result, impacts on existing land uses would be minimized.

Any impacts on adjacent recreation would be temporary and minor. Recreational opportunities, wildlife viewing and hunting access are located to the east and north of the project area and are not likely to be impacted by project activities. Roads would be more heavily used to move workers, supplies, and equipment, creating dust. The use of earth-moving vehicles and other equipment may also result in temporary alterations to the recreational experience.

After restoration, these impacts would cease. Abatement measures would be used to reduce dust. In the long term, changes are likely to enhance the naturalness of the setting and improve opportunities for wildlife viewing and waterfowl hunting.

The Proposed Action could result in temporary minor impacts on livestock grazing on the Allotments 65060 (Bottomless Ranch), 65069 (Calumet Ranch), and 65057 (Allensworth Ranch). Where allotments overlap with the proposed restoration, staging, or spoil areas, livestock could be temporarily excluded from these area. In addition, the increased use of planning area roads increases the possibility of unwanted dispersal of livestock, if present, should workers fail to properly close gates. Due to the small portion of

allotments within the project area and the coordination with private land owners, there would be negligible long-term effects on livestock grazing.

The Proposed Action would have negligible effects on lands and realty actions. Oil and gas leases are located outside of the project area, and any operations are not likely to be effected by restoration efforts.

## 4.3 Geology and Soils

### 4.3.1 No Action

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would have no effects on geology and soils. The existing conditions would continue.

### 4.3.2 Proposed Action

#### *Direct and Indirect Effects*

The proposed restoration techniques would disturb soil along the banks, floodplain, and terraces in the project site, access routes, spoil areas, and staging areas. Mechanical clearing methods would be used to remove soil and vegetative cover, leaving soils temporarily exposed and subject to wind and water erosion and the potential for spread of invasive species. Excavated soils would not be placed in the river channel but there would likely be short-term local increases in sedimentation in the river associated with soil disturbance, erosion, and dust. Sediments in the river would generally be redistributed within the proposed project area during higher flows.

The Pecos River is a dynamic system and naturally moves a great deal of sediment. Additional sediment would be mobilized by excavation activities, but it would be a small contribution relative to the load the river already carries. Some additional sediment would be eroded from the banks of the newly constructed channel as it widens during high flows, such as during block releases and summer storms. Consequently, it is difficult to predict the exact amount of sediment that would be mobilized for transport as a result of the project. Shortly after restoration work is completed, dispersal of sediments within the river channel is expected to return to a more natural pattern that has been inhibited by the channelization.

Soils would be subject to short-term compaction from heavy equipment use. There would be long-term improvement in soil quality, primarily through removal of salt deposition caused by saltcedar.

The Proposed Action would disturb land designated as farmland of statewide importance within the site plan and around staging areas and roads outside the site plan. However, only 10 acres of farmland of statewide importance lie within the site plan. Staging areas 2, 3, 4, and 6 also lie on farmland of statewide importance. None of these lands are in production and site preparation would be limited to mowing. Preparation and use of these

staging areas would temporarily disturb overlapping farmland of statewide importance. However, when restoration activities are concluded, these areas would be returned to current uses. Improvements to access roads would also disturb farmland of statewide importance; however, it is assumed that construction equipment and vehicles would not disturb the ground beyond 20 feet from the centerline of access roads.

## 4.4 Climate/Air Quality

### 4.4.1 No Action

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would have no impacts on air quality. The existing conditions would continue.

### 4.4.2 Proposed Action

#### *Direct and Indirect Effects*

Implementing the Proposed Action would result in short-term increases in coarse particulate matter ($PM_{10}$) and other pollutants due to truck traffic and construction-related fugitive dust, and diesel exhaust emissions. Visibility impacts due to dust would be reduced as soils stabilize and would be mitigated by use of water to reduce dust levels during construction. The Proposed Action is in a Class II air quality area, which allows for moderate amounts of air quality degradation.

Because of a violation in Chaves County of the federal standard for $PM_{10}$, measures to reduce particulate matter from human-caused sources would be incorporated into the project plans (NMED 2004; NMED 2008). The project would not violate any other air quality standard or contribute substantially to air quality degradation.

Because climate change is a global condition, it is impossible to link a specific Reclamation action to a specific climate change-related impact. Emission of greenhouse gases from construction vehicles would be small in the context of broader spatial-scale emissions, and the duration of these actions would be shorter than predicted changes in climatic conditions. Short-term direct and indirect impacts on climate from the proposed alternative would be negligible. However, over the long term, greenhouse gas emissions from Reclamation actions do contribute to total global emission levels. These, in turn, could contribute to future long-term, anticipated climate changes to a very minor degree. Overall, the contribution would be a very small portion of the total from other sources of a regional and global nature.

# 4.5 Water Resources

## 4.5.1 No Action

### *Direct and Indirect Effects*

Implementing the No Action Alternative would result in the continuation of current conditions. Reclamation would not improve the river channel and riparian habitat, as proposed, but ongoing actions by the BLM, in cooperation with other agencies and stakeholders, to remove nonnative species and improve habitat at the Overflow Wetlands ACEC would continue. Saltcedar would continue stabilizing the banks in areas that have not been treated, and the channel would become increasingly entrenched, reducing interaction with the floodplain and further reducing the dynamic nature of this reach and the quality of instream and riverine habitat. Habitat and water quality benefits from a restored dynamic channel for the Pecos bluntnose shiner and from restored riparian plant species would not be realized. Minor depletions of water supply associated with the project would not occur.

## 4.5.2 Proposed Action

### *Direct and Indirect Effects*

The potential impacts of the Proposed Action on water resources are discussed for surface water hydrology, groundwater hydrology, and water quality.

**Surface Water Hydrology.** The Proposed Action is designed to have a long-term moderate effect on channel morphology and river function within the physical context of current conditions and river operations. There would be no effect on other surface water features, such as the overflow wetlands. Depletions to the water supply are expected to be 1.5 acre-feet per year (See **Appendix E**, Overflow Wetlands Depletion Memo).

Vegetation removal and bank lowering would decrease the stability of the banks and would enhance the river's interaction with the floodplain. Where there is a thick growth of nonnative vegetation along the river banks, sediment is trapped and leads to the buildup of natural levees, which reduce the frequency of beneficial overbank flows. Vegetation removal would allow the river to develop meanders and backwater habitat when flows are sufficient to allow the river to develop lateral movement.

Bank lowering and bank-line excavation of vertical cut banks, along with the changes in channel morphology, would reduce the current bank cutting and improve sediment transport. Sediment transport has been reduced with the control of the river and the armoring of bank. Construction, soil disturbance, erosion, and dust would cause short-term increases in sedimentation in the river. Sediments would generally be redistributed within the river channel in the immediate vicinity and would be unlikely to have any discernible downstream negative effects on infrastructure or property. In the future, sediment loads would be regularly redistributed during flood and block releases. There would be a more natural balance between sediment supply and flow, leading to improved instream bed form features and a dynamic floodplain. A variety of depths, velocities,

substrates, and bed form features would be beneficial to instream habitat for the shiner and other species and river function.

The effects of the Proposed Action on flood control would be moderate and beneficial. The current channel allows the water to pass quickly, resulting in bank cutting and a rapid increase in peak flow downstream. Reconnecting the channel with the floodplain and returning sinuosity to its length would improve flood peak attenuation and flood flow storage. At locations where the channel is restored and slopes are reduced, water velocity would decrease and water would be stored in the floodplain, reducing damaging flood potential. As the water level recedes, the stored water in the floodplain would slowly reenter the stream. The potential for serious overbank flooding has been diminished due to the construction of Sumner Dam. While the river has adapted to less extreme floods, the channel would still remain capable of transmitting flood flows safely.

The proposed project is designed to avoid impacting the overflow wetlands or creating pathways for passage of undesirable fish species from the Pecos River to the wetlands.

The Proposed Action would increase areas subject to evaporation loss. The NMISC manages the state's limited water supply through a system of permits and licenses. In the Pecos River Basin, the NMISC is responsible for compliance with the Pecos River Compact (between New Mexico and Texas) and the Carlsbad Project Settlement Agreement. This requires that the water budget be quantified and water resources carefully managed using the best available science.

A conservative depletion estimate that the project may consume up to 1.5 acre feet per year has been developed by the NMISC (**Appendix E**). Reclamation proposes to offset the increased depletions from the project with water from its Carlsbad Project Water Acquisition Program. The depletion of the additional 1.5 acre-feet per year will be included in the "Annual Accounting Methodology (Version 26)" discussed in the 2008 Pecos Depletions Agreement between the NMISC and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation as the current agreement is set to expire October 31, 2013. Reclamation would establish a monitoring program to determine the river's response to restoration activities including depletions to the water supply (**Appendix A**). Because there are Pecos River gages at the northern and southern boundaries of the Overflow Wetlands ACEC and several years of records, quantification of losses would be possible. However, interactions of surface and groundwater in this reach and the effects of the prolonged drought add an additional level of complexity to this calculation.

Reclamation and the NMISC are committed to ensure that any net depletion of the water budget resulting from the project will be compensated for and that there will be no adverse effects on downstream water rights or interstate compact deliveries.

During construction an estimated 50,000 gallons of water could be also be used for dust abatement. This water would be purchased off site from Roswell municipal sources and would be trucked into the project site over established roads, as needed. The use of this

water source would avoid any potential impacts on surface or groundwater water supply in the project area.

**Groundwater Hydrology.** Although debated, removal of nonnative vegetation could raise the water table in the shallow aquifer adjacent to the Pecos River. Because of the head pressure of the artesian aquifer, the accrual location of any savings is expected to be in the shallow aquifer and the river rather than in the artesian aquifer. There would be no expected negative effects on the overflow wetlands.

**Water Quality.** The Proposed Action would cause short-term increases in sedimentation in the river associated with ground disturbance, river crossings, exposed soils, and erosion. There would also be a minor risk of inadvertent discharge of pollutants into surface waters from construction equipment and vehicles that would be used in the restoration. Chipped woody debris could be dispersed in to the river during flood events.

Herbicide use would be limited to hand treatment of saltcedar stumps during the restoration project and hand treatment of resprouts during the maintenance of the restoration project. All herbicide application will follow guidance from the recommended protection measures for pesticide applications in Region 2 of the USFWS (White 2007) and the BLM (BLM 2007; BLM 2009) reducing the potential for impacts on water quality.

Negligible and short-term effects on water quality are anticipated during restoration work. These impacts and risks would be minimized by implementing best management practices to control sediments and placement of chipped materials and to prevent spills during restoration actions and at the staging areas (See **Chapter 5**). All equipment fueling and lubing would be done in the staging areas outside the floodplain with the protection of a containment pan.

Only herbicides and methods approved for these applications in a riparian zone would be used, reducing the potential for impacts on water quality (BLM 2007; BLM 2009).

Negligible and short-term effects on water quality are anticipated during restoration work. These impacts and risks would be minimized by avoiding equipment crossings, implementing measures to control sediments, placing excavated and chipped materials outside of the channel and using best management practices to prevent spills (See **Chapter 5**). All equipment fueling and lubing would be done in the staging areas with the protection of a containment pan. Sediment would be mobilized by construction activities, but it would be a small contribution relative to the load the river already carries. As beneficial vegetative cover returns, water quality in this reach would improve in the long term with a better balance between flows and sediment loads, thereby restoring the sand beds and floodplain and reducing salt deposited by saltcedar. Better river function can also improve the ability of the river to contend with pollutants from other sources. The restoration would likely have a negligible effect on the causes of the impairment of this reach, as restoration is not likely to change the presence of dichlorodiphenyltrichloroethane and polychlorinated biphenyls in fish tissue.

Reclamation would apply for a CWA Section 404 permit for the proposed project work. Early coordination with the USACE Albuquerque District indicates that Nationwide Permit (NWP) #27 for Aquatic Habitat Restoration, Establishment, and Enhancement Activities would be appropriate. When the use of NWP 27 is authorized, Reclamation would also be required to meet the conditions of the 2012 NMED Section 401 water quality certification for nationwide permits. If needed, a National Pollution Discharge Elimination System permit for discharges into the waters of the United States and a Stormwater Pollution Prevention Plan would be prepared. The Stormwater Pollution Prevention Plan would detail specific sediment and erosion control measures for the project site during restoration.

## 4.6 Biological Resources

The analysis in this section is provided to fulfill the requirements of NEPA and a serve as a biological assessment (BA) to fulfill the USFWS requirements of Section 7 consultation under the ESA.

This combined EA/BA uses a scientific and analytical evaluation to compare the Proposed Action and No Action Alternatives. For each biological resource addressed in this assessment the direct and indirect impacts, as well as the short- and long-term impacts are discussed. A Section 7 determination is provided for each listed species and applicable critical habitat under the Proposed Action.

### 4.6.1 No Action Alternative

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would result in the continuation of current conditions. Channel and riparian habitat would not be improved as proposed. Treatment of land for invasive species would continue under existing programs and annual goals outlined in the Overflow Wetlands ACEC Activity Plan (BLM 2003). Some natural channel corrections may occur, but the trend of reduced interaction with the floodplain and negative impacts on functioning channel habitat would continue. Nonnative vegetation is expected to continue to crowd out native riparian species.

### 4.6.2 Proposed Action Alternative

#### *Direct and Indirect Effects*

The potential impacts of the Proposed Action on biological resources are discussed for vegetation, wetlands, and wildlife. Effects of the Proposed Action and a Section 7 determination for listed species and applicable critical habitat for Pecos sunflower, Pecos bluntnose shiner, interior least tern, and southwestern willow flycatcher are discussed in greater detail.

**Vegetation.** The Proposed Action is designed to have a major, long-term effect on riparian vegetation. Nonnative invasive saltcedar has crowded out most of the other types of vegetation and understory in portions of the project area. Removing the saltcedar

would allow the development and expansion of more diverse riparian vegetation and habitat capable of supporting a greater variety of wildlife. Removing the saltcedar would also decrease the risk of wildfire. Reclamation would seek to avoid desirable species during treatment, but other species, such as willows, grasses, and cattails on the banks, may be affected by mechanical removal. There would be a short-term loss of natural cover provided by vegetation. Reclamation anticipates the reestablishment of native species after saltcedar removal. The restoration would be monitored annually and reseeded with native grass and shrubs as needed. The seed mix would likely include alkali sacaton (*Sporobolus airoides*), blue grama (*Bouteloua gracilis*), tobosa var. Viva (*Pleuraphis mutica*), plains bristlegrass (*Setaria vulpesita*), and annual sunflower (*Helianthus annuus*). Staging areas would be mowed and vegetation is expected to regenerate naturally. Reseeding would improve the success and speed of restoring riparian species and habitat, reduce erosion, and help keep the area free of weedy species. On the sections of the Pecos River where saltcedar has been removed in the past, native grasses have been reestablished in the original habitat within a few years, and the return to native habitat seems to be permanent. The restored areas would be monitored (see **Appendix A**, Annual Monitoring Plan for the Pecos River Restoration at Overflow Wetlands) to evaluate the need for adaptive management.

**Wetlands.** There would be no impact on the shallow aquifer overflow wetlands, which are not in the disturbance area. However, wetlands abutting the river are present within the project area and may be disturbed by the restoration project. They are dynamic in nature, and their presence is dependent on annual levels of flow and erosion conditions. Reclamation would avoid disturbance of desired species, where possible, and no long-term effects are anticipated. As described above in the vegetation section, long-term effects for wetland vegetation and function would occur by removing saltcedar from the project area. Also, the plan to lower the riverbank would allow more natural connectivity between the river and the floodplain, restoring river function and creating the new meanders. These actions would result in a higher water table, more diverse plant communities, and more areas where self-sustaining wetlands would develop. Benefits of the improved wetlands include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, and maintaining surface water flow during dry periods.

**Wildlife.** Long-term beneficial effects are anticipated for wildlife species. Project activities would improve the quality of habitat for fish and other wildlife. The restoration and expansion of these habitats would benefit wildlife species in the long term. Effects for fish are expected to be immediate during the next runoff season. A wide active channel allows for the formation of backwaters, pools, and a variety of features that would provide additional habitat favorable to native fish species. Effects for other wildlife would not be immediate but would come in the future with improved river function and the establishment of diverse native vegetation.

Project work will be conducted outside the April 15 to August 15 time period (migratory bird breeding and nesting season). The overall benefits for wildlife and habitat that would

result from the Proposed Action would outweigh any minor, short-term impacts in areas of poor habitat.

**Threatened, Endangered, and Sensitive Species/Critical Habitat.**

*Pecos Bluntnose Shiner*. Impacts on the shiner are discussed in detail as this threatened species is the focus of multiple conservation efforts on the Pecos River, including this proposed restoration. The restoration project is an RPM for this species resulting from the Biological Opinion on the selected alternative from the Carlsbad Water Operations EIS (Reclamation 2006; USFWS 2006). Two sections of the Pecos River are designated critical habitat for the shiner. The upper section extends 64 miles from just above the confluence of Taiban Creek downstream to near the confluence with Crocket Draw. The lower section extends 37 miles from approximately US Highway 31 downstream to the US Highway 82 bridge near Artesia (OSE 2012b).The project area is not within Pecos bluntnose shiner critical habitat, which is over 33 miles to the north and 11 miles south of the project area.

The proposed restoration is expected to have long-term positive effects on shiner by improving habitat within the project area. The shiner spawns on flow events, such as spring runoff, summer storms, and irrigation releases. Females lay semi-buoyant eggs that drift downstream. In order to develop into adulthood, drifting eggs and larvae must be retained in quality habitat. Degraded channelized conditions are associated with relatively high egg and larval transport rates to Brantley Reservoir. Where the energy of a high flow event is dissipated by low-velocity floodplain habitats, such as flooded bottomlands, oxbow lakes, and secondary channels, there is better retention of drifting eggs and larvae (Kehmeier et al. 2004b). Restoring the Overflow Wetlands ACEC section of the Pecos River would potentially improve the available spawning habitat within the reach.

Recent studies have clarified the habitat and flow requirements of the shiner through its life stages. The subsegments of the Pecos River are occupied by the core population of the shiner. Pecos River subsegments have been buffered from the direct effects of dams and irrigation releases, substantial sediment inputs from uncontrolled tributaries, substantial base flow, and high channel width in relation to discharge and lower salinity (Hoagstrom et al. 2008a, 2008b). Channels with uniformly high velocities and high depth do not provide for the essential habitat needs of the shiner. Naturally functioning sand bed river channels are geomorphically complex and provide the shiner with a variety of depths, velocity, substrates, turbulence, cover, and food. The availability of lower-velocity areas, whether in plunge habitats or shoreline areas, appears to be important for shiner survival. As the juvenile shiners mature, they are less susceptible to downstream displacement but still need off-channel habitats for resting, food, and cover (Hoagstrom 2002; Kehmeier et al. 2004a). Backwaters and off-channel habitats are highly productive environments for maximizing the growth of larval and juvenile fish. Based on studies of other species, juvenile and adult fish use these habitats for different segments of their life history, variously moving between main channel and off-channel habitats as flood pulses move through the system (Kehmeier et al. 2004b). The Proposed Action would improve

degraded channel morphology in this reach and would allow the development and maintenance of habitat features that would support the shiner.

Mechanical vegetation removal will take place on the bank, outside of the wetted portion of the river, and thus, have no effect on the shiner. The majority of the bank-line excavation and lowering will occur in the dry. Equipment may infrequently touch the water's edge during operation, but the bucket will be operating slowly and minimal water disturbance is expected. The bucket will pull away from the river, and no sediments will be placed in the water. Shiners are expected to exhibit an avoidance response to these construction activities in the wetted portion of the channel and sustained avoidance during the duration of each construction activity. Pre-exposure behaviors are expected to resume after the shiners leave the area of disturbance. Conservation measures and best management practices, described in Section 5.6, for equipment operation will help to minimize the risk of adverse effects. Therefore, the avoidance response is not expected to lead to any long-term significant effects on shiner behavior. Furthermore, the main construction activity is scheduled for the winter months when eggs and larvae are not likely to be present in the river.

Construction equipment may cross the river up to six times during bank lowering in the lower project area at a single location. A crossing is typically 20 feet wide and 75 feet long, or 0.03 acres. The crossing will be done during low-water periods and will move slowly across the river. Equipment will cross the river to the work area and remain on that side until work is complete, then return. Fish will be able to avoid construction equipment and move outside of the crossing area.

A temporary increase in turbidity may occur in association with bank lowering activities and stream crossings (a total of six crossings will occur). Turbidity will dissipate quickly and impacts will be temporary and isolated to the immediate area. The increase in turbidity is expected to be a small contribution relative to the sediment load the river already carries. Again, shiners will exhibit an avoidance response to these construction activities, and therefore, effects are anticipated to be insignificant. Herbicide application would be limited to hand treatment of stumps and resprouts and will follow BLM guidance (BLM 2007; BLM 2009) and recommended protection measures for herbicide applications in Region 2 of the USFWS (White 2007). Consequently, herbicide application will have no effect on the shiner or critical habitat.

Since construction effects are expected to be insignificant and effects from the restoration and improved channel function are expected to be beneficial in the long term to the shiner by increasing habitat diversity within the reach, the proposed habitat restoration project <u>may affect, but is not likely to adversely affect,</u> Pecos bluntnose shiner. The project area is outside the critical habitat, and there will be <u>no effect on critical habitat</u>.

*Interior Least Tern.* The interior least tern tends to nest on salt flats along the Pecos River, including the Bitter Lake NWR (approximately 7 miles to the north of the project area) and Brantley Reservoir (approximately 50 miles to the south of the project area) (OSE 2012b). The restoration is not expected to create any nesting areas, nor is there any

suitable habitat available currently along the river in the project area. The restoration may provide attractive feeding and loafing areas among backwaters and small sandbars for least terns transiting through the area. Continued removal of dense saltcedar stands and dead saltcedar would remove habitat used by striped skunks or raccoons, which are potential predators of nesting terns. The Proposed Action would also enhance least tern prey (fish and invertebrate) abundance and accessibility in the long-term. Saltcedar removal and increased floodplain habitat could ultimately increase fish and invertebrate populations by improving the quantity and quality of their habitats. In the short-term, interior least tern species are expected to avoid the project area during restoration and construction activities. The Proposed Action may beneficially affect, but is not likely to adversely affect, the interior least tern.

*Southwestern Willow Flycatcher*. Southwestern willow flycatchers are not known to nest along the Pecos River in New Mexico, though they have been observed migrating through the Bitter Lake NWR. Restoration may benefit this species during migration, thus providing an increased diversity of prey after saltcedar has been removed and native vegetation persists and recovers. The Proposed Action would benefit this species in the long-term due to increased available acreages of native riparian habitat that could harbor flycatcher prey items. The nearest nesting pair was located in Rattlesnake Springs (Managed by Carlsbad Caverns National Park and the Nature Conservancy), approximately 80 miles southwest of the project area. Construction activities will occur outside the nesting and breeding season (April 15 to August 15); therefore, only positive effects are expected from this action. The Proposed Action may affect, but is not likely to adversely affect, the southwestern willow flycatcher.

## 4.7 Cultural Resources

### 4.7.1 No Action

#### *Direct and Indirect Effects*

The No Action Alternative would result in no change in existing conditions and would have no effect on cultural resources.

### 4.7.2 Proposed Action

#### *Direct and Indirect Effects*

The Proposed Action is not expected to have any effects on cultural resources. No cultural resources have been recorded or are expected to be present in the proposed restoration project area. Federally recognized tribes and pueblos with potential ties to the project area were notified via letter of the Proposed Action. The only responses received requested notification should archaeological resources or human remains be found during restoration. No concerns or traditional cultural properties were identified by the parties consulted.

With the exception of the staging and access road locations, work would be conducted in active or recently active floodplains, channels, or oxbows. The area of potential effects

has experienced episodic flooding and earthmoving activities over the years. Portions of the area of potential effects are inaccessible due to dense vegetation. Surveys have been conducted of the area of potential effects, but the possibility of finding intact cultural resource sites that retain integrity is low. Although unlikely, consideration must also be given to the possibility of buried or undiscovered cultural resources that could be found during restoration.

Reclamation would consult with the New Mexico State Historic Preservation Office on the proposed restoration project and complete the Section 106 process for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for consulting with appropriate agencies to avoid, reduce, or minimize adverse effects.

## 4.8 Visual Resources

### 4.8.1 No Action

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would have no impacts on visual resources.

### 4.8.2 Proposed Action

#### *Direct and Indirect Effects*

Implementing the Proposed Action would have a short-term effect on visual resources in the project area. Visual impacts could occur from construction vehicles and equipment, dust, and the loss of vegetative cover. As discussed in **Chapter 3**, the project includes lands administered by the BLM, which manages these lands as Visual Resource Management Class II. This classification requires that activities 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. Because permanent changes from the proposed restoration project would bring the landscape closer to a natural state, the project would satisfy Visual Resource Management Class II requirements upon completion. After restoration, impacts on visual resources would cease aside from the loss of vegetative cover where invasive species would be removed. In the long term, visitors may experience improved visual quality of the site and its surroundings consistent with natural riparian function and vegetation.

## 4.9 Noise

### 4.9.1 No Action

#### *Direct and Indirect Effects*

Implementing the No Action Alternative would retain current ambient noise levels.

### 4.9.2 Proposed Action

***Direct and Indirect Effects***
Implementing the Proposed Action would result in noise and ground-borne vibrations from construction vehicles and equipment. These impacts would be short term and variable but may exceed 80 A-weighted decibels in the immediate vicinity of the activity. While the Bottomless Lakes State Park is adjacent to the Project Area, all construction staging areas and activities would be at least 1.5 miles from the State Park. Noise levels in the State Park are not expected to increase noticeably. Increased noise levels associated with construction are not anticipated to affect wildlife species or nesting behavior in the project area. After restoration, noise levels would return to current ambient levels.

## 4.10 Socioeconomics

### 4.10.1 No Action

***Direct and Indirect Effects***
Under the No Action Alterative, the social and economic conditions of the planning area would continue to be influenced by trends described in the existing conditions section.

### 4.10.2 Proposed Action

***Direct and Indirect Effects***
The economic impacts of the Proposed Action would be negligible. The Proposed Action would result in minor temporary increases in federal spending in Chaves County for construction support materials, fuels, and labor. In the long term, there would be indirect positive impacts on local and regional economies that may result from the restoration.

## 4.11 Environmental Justice

### 4.11.1 No Action

***Direct and Indirect Effects***
Under the No Action Alterative, there would be no effect on the social and economic conditions of the planning area; therefore, there would be no impacts on environmental justice populations.

### 4.11.2 Proposed Action

***Direct and Indirect Effects***
Although Chaves County does contain an environmental justice population based on the percentage of people of Hispanic descent, per CEQ guidelines, this demographic is comparable with those for state of New Mexico, the reference population. The project is in a remote, sparsely populated area. Negligible impacts on social or economic conditions have been identified as a result of this project. There would be no disproportionate impacts on minority or low-income communities, thus no environmental justice impacts.

# 4.12 Indian Trust Assets

## 4.12.1 No Action

***Direct and Indirect Effects***

Implementing the No Action Alternative would not result in any impacts on ITAs.

## 4.12.2 Proposed Action

***Direct and Indirect Effects***

Implementing the Proposed Action would not result in any impacts on ITAs. No ITAs have been identified in the project area. There are no reservations or ceded lands present. Because resources are not believed to be present, no impacts are anticipated to result.

# 4.13 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that this use could have on future generations. Irreversible effects primarily result from the use or destruction of specific resources that cannot be replaced within a reasonable time frame, such as energy and minerals. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action, such as extinction of a threatened or endangered species or the disturbance of a cultural resource. Neither the Proposed Action nor the No Action Alternative would result in a large commitment of nonrenewable resources. Project construction would require the irretrievable commitment of fossil fuels (e.g., diesel, gasoline), oils, and lubricants used by construction equipment and vehicles.

# 4.14 Unavoidable Adverse Impacts

Unavoidable adverse impacts are those environmental consequences that cannot be avoided, either by changing the nature of the action or through mitigation. The use of large, heavy equipment during construction activities would have short-term unavoidable impacts on wildlife and vegetation from displacement; on air quality from increased pollutant levels; on soils from compaction; and on noise and visual resources.

# 4.15 Cumulative Impacts

Cumulative effects are the direct and indirect effects of a proposed project alternative's incremental effects when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action (40 CFR, Part 1508.7). Guidance for implementing NEPA recommends that federal agencies identify the temporal and geographic boundaries of the potential cumulative effects of a Proposed Action (CEQ 1997). The construction period will be 2013 to 2014 and the monitoring period will be 2014 to 2019.

The geographic boundaries of analysis vary depending on the resource and potential effects. For most resources, the planning area or Chaves County represents the analysis area. Impacts on resources with farther-reaching effects, such as those to surface water, are analyzed with a more regional perspective. The analysis area is described under each resource. Other projects, plans, agreements, and agency actions that may be relevant to the cumulative effects analysis are identified in **Table 4.1**, Current and Reasonably Foreseeable Future Projects, below.

**Table 4.1**
**Current and Reasonably Foreseeable Future Projects**

| Project | Description | Status |
|---|---|---|
| Pecos Supplemental Water and Exchange EA | Reclamation project to obtain supplemental water to provide adequate water to keep the river continuous | Completed 2009 |
| Land and water right acquisitions in the Pecos River Basin | Ongoing efforts by NMISC to acquire 18,000 acres of land with water rights in the Pecos River Basin to maintain water deliveries to Texas under the Pecos River Compact | Ongoing |
| Seven Rivers Pipeline | Water delivery pipeline from the Seven Rivers Augmentation Well field to Brantley Reservoir for use as Carlsbad Project Water | Completed in June 2008 |
| Bitter Lakes National Wildlife Refuge Restoration Project | Restoration of the Pecos River through Bitter Lakes NWR to create habitat for the Pecos bluntnose shiner | Completed |
| Overflow Wetlands Area of Critical Environmental Concern Activity Plan | Implements management measures with the goal of a properly functioning river, enhancing and creating habitat, and contributing to the biodiversity of the Pecos River valley | Ongoing |
| Bottomless Lakes State Park, Aquatic Restoration Project | Restore approximately 43 acres of wetland habitat near Lea Lake within Bottomless Lakes State Park | Completed 2010 |
| Oil and Gas development | Chaves and Eddy Counties Ongoing activity, leasing and development primarily east of the project area. The BLM is currently revising their Resource Management Plan. | Ongoing |

### 4.15.1 Land Use

The cumulative effects analysis area for land use is Chaves County. Implementing either of the alternatives would have no impact on land use in Chaves County and would not contribute to any cumulative impacts.

### 4.15.2 Geology and Soils

The cumulative effects analysis area for geology and soils includes the project area, downstream environments that may be affected by sediments and erosion resulting from this project, and other restoration or saltcedar removal projects, such as implementation of the Bitter Lakes NWR Restoration Project and the Overflow Wetlands ACEC Activity Plan. The minor increases in sediments resulting from this restoration project would be beneficial when combined with those resulting from other similar actions. Beneficial

downstream effects on erosion hazards would be expected from the dissipation of energy in a wider channel.

### 4.15.3 Air Quality/Climate

The cumulative effects analysis area for air quality is the area covered by the Chaves County Natural Events Action Plan. Other construction and maintenance projects in this area, including implementation of the Overflow Wetlands ACEC Activity Plan and ongoing oil and gas development, could contribute to short-term increases in $PM_{10}$ emissions from vehicles and equipment.

By its very nature, climate change is a cumulative impacts issue. Individual local greenhouse gas emissions cannot be considered outside of the larger context of global cumulative emissions. As discussed in **Section 4.4**, Climate/Air Quality, the precise link between potential emissions from Reclamation-proposed actions and specific impacts on or from global climate change is not known. However, emission of greenhouse gases from this Proposed Action would have a negligible cumulative impact on national and global greenhouse gas emission levels.

### 4.15.4 Water Resources

The cumulative impacts analysis area for water resources is defined as the Pecos River, the surface water features at the Overflow Wetlands ACEC and the shallow aquifer. The Proposed Action is anticipated to contribute minor beneficial effects when combined with past, present, and reasonably foreseeable future actions on the Pecos River. There are concurrent, past, present, and future actions to restore river segments or remove saltcedar for the benefit of the river channel morphology, flows, flood control, water quality, and riparian habitat. Depletions are expected to be minor. The water budget would be monitored, and Reclamation would work with the state to quantify and offset any changes to the water budget due to this project by including them the annual accounting discussed in the 2008 Pecos Depletions Agreement between the NMISC and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation. All parties are committed to ensure that any net depletion will be compensated for and that there will be no adverse impacts on water rights or interstate compact deliveries. No effects are anticipated on downstream users, property, and on state-line water deliveries.

### 4.15.5 Biological Resources

The cumulative impacts analysis for biological resources is defined as the Pecos River and the Overflow Wetlands ACEC. Effects of the Proposed Action are anticipated to contribute positively to cumulative effects in the area. Additionally, the continued eradication efforts to remove saltcedar and other invasive vegetation described in the state's Nonnative Phreatophyte/Watershed Management Plan (NMDA 2005) are complementary to the Proposed Action.

In compliance with the USFWS requirements of the Section 7 Consultation, a cumulative effects analysis will include the "effects resulting from future State or private activities, not involving Federal activities that are reasonably certain to occur within the action area of the Federal action subject to consultation." Ongoing regional projects are presented in

**Table 4.1**. Ongoing and future projects within the region include NMISC land and water rights acquisitions, the Overflow Wetlands ACEC Activity Plan, as well as oil and development.

The ongoing efforts of the NMISC to acquire land with water rights and efforts by Reclamation to maintain flow targets would positively affect Pecos bluntnose shiner populations in the short- and long-term. The BLM's Overflow Wetlands ACEC Activity Plan includes the potential for acquiring private wetland and riparian habitat which would have positive impacts on listed species associated with those habitats. Current and future oil and gas development could have long-term cumulative impacts on wildlife and plant habitat due to surface disturbances and water quality concerns. Impacts are avoided through implementation of best management practices and a habitat protection zone upstream. The Proposed Action would have a positive effect on instream and riparian habitats.

### 4.15.6 Cultural Resources

The cumulative effects analysis area for cultural resources minimally includes the ACEC and lands on each side of the river corridor. No direct or indirect effects on cultural resources are anticipated if the Proposed Action were implemented. No cumulative effects are expected.

### 4.15.7 Visual Resources

The cumulative effects analysis area for visual resources is the project area. Implementation of the Overflow Wetlands ACEC Activity Plan by the BLM could create additional impacts on visual resources in the project area through mechanical removal of vegetation and prescribed fire. However, the BLM would be required to comply with Visual Resource Management Class II standards, which would minimize impacts on visual resources in the project area.

### 4.15.8 Noise

The cumulative effects analysis area for noise is the project area. Implementation of other maintenance and construction projects, such as the Overflow Wetlands ACEC Activity Plan, could add to the short-term noise impacts of this restoration project, but the project would not have a cumulative net increase in local noise levels.

### 4.15.9 Socioeconomic Resources

The cumulative effects analysis area for socioeconomic resources includes Chaves County. The project would result in minor cumulative socioeconomic effects through increased expenditures and contributions to the local economy during construction. To the extent that the restoration is able to improve habitat for the shiner while not depleting water, the risk of other actions that would take money out of the local economy, such as forbearance or a priority call, would be precluded.

### 4.15.10 Environmental Justice

The cumulative effects analysis area for environmental justice is Chaves County. The project would not result in any environmental justice impacts and would not contribute to any cumulative impacts.

### 4.15.11 Indian Trust Assets

The cumulative effects analysis area for ITAs is the project area. No ITAs are present, and there would be no cumulative impacts.

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# 5. Environmental Commitments

## 5.1 Introduction

This chapter outlines the environmental commitments that Reclamation would implement as part of the Proposed Action. These measures are designed to be applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts.

## 5.2 Land Use

Dust suppression measures would be taken to minimize disturbance to adjacent local residences. The Proposed Action would have only temporary minor impacts on land use. No further measures to reduce impacts or environmental commitments would be required.

## 5.3 Geology and Soils

When restoration activities are concluded, the project area would be monitored and reseeded, if needed, to minimize long-term soil disturbance from the Proposed Action. Reclamation would also monitor the effects of the restoration during and after construction. If Reclamation determines that there would be a risk to infrastructure and property, it would take corrective actions through adaptive management.

## 5.4 Air Quality/Climate

Dust suppression measures would be taken to minimize airborne transport and avoid visible impairment due to dust in accordance with the Chaves County Natural Events Action Plan. Because of a violation in Chaves County of the federal standard for particulate matter less than 10 microns in diameter (PM10), measures to reduce particulate matter from human-caused sources would be incorporated into the project plans. No burning of waste material would occur. Reclamation would implement standard fire safety BMPs to avoid accidental fires from equipment use. The project would comply with all other applicable air quality laws and regulations.

## 5.5 Water Resources

Reclamation proposes to offset the increased depletions from its Overflow Wetlands River Restoration Project to the Pecos River with water from its Carlsbad Project Water Acquisition Program. The depletion of the additional 1.5 ac-ft/year will be included in the

"Annual Accounting Methodology (Version 26)" discussed in the 2008 Pecos Depletions Agreement between the NMISC and Reclamation. The increased depletion will be accounted for in future accounting methodologies agreed to by NMISC and Reclamation as the current agreement is set to expire October 31, 2013.

Reclamation will incorporate the provisions and requirements of the Section 404 permit from the USACE and those from the NMED Section 401 water quality certification.

If required, Reclamation would obtain a National Pollution Discharge Elimination System permit for discharges into the waters of the US and would prepare a Stormwater Pollution Prevention Plan. The Stormwater Pollution Prevention Plan would detail specific sediment and erosion control measures for the project site during restoration.

Reclamation would establish a monitoring program to determine the river's response to restoration activities. The monitoring plan includes assessment of surface flows using current USGS gages in the project area, monitoring of vegetation composition, continuation of current USFWS fish monitoring, and geomorphic monitoring via cross-section profiles.

Additional BMPs to avoid impacts on water quality include, but are not limited to:

- Minimize impact of hydrocarbons on water: To minimize potential for spills into or contamination of aquatic habitat:
  - Hydraulic lines will be checked each morning for leaks and periodically throughout each work day.
  - All fueling will take place outside the active floodplain. Fuel may be stored on site overnight, but not near the river or any location where a spill could affect the river.
  - All equipment will undergo high-pressure spray cleaning and inspection prior to initial operation in the project area.
  - Equipment will be parked on pre-determined locations on high ground away from the river overnight, on weekends, and on holidays.
  - Spill protection kits will be on site, and operators will be trained in the correct deployment of the kits.
- Steel-mesh guards will cover all external hydraulic lines.
- Water quality will be visually monitored at and below areas of river work before and during the work day.
- All project excess spoil from the bank-line excavation would be stockpiled in staging areas away from the river for future use by two of the landowners.
- Herbicide use would be limited to hand treatment of saltcedar stumps during the restoration project and hand treatment of resprouts during the maintenance of the restoration project. All herbicide application will follow guidance from the recommended protection measures for pesticide applications in Region 2 of the USFWS (White 2007).

- No activity in wetted areas will occur between March 1 and October 30.

## 5.6 Biological Resources

A BA is included as part of this document (see **Section 4.6**) for Section 7 consultation with the USFWS on the potential effects of the proposed restoration action on special status species and their critical habitat.

In addition to the BMPs already discussed, BMPs to avoid impacts include, but are not limited to:

- Reclamation will obtain all applicable permits prior to implementation of the project, to include Clean Water Act Section 404 and 401 permits as needed.
- Reclamation would seek to avoid potential impacts on birds protected by the Migratory Bird Treaty Act (16 USC 703) by conducting project activities outside of the normal breeding and nesting seasons, April 15 through August 15.
- The removal of saltcedar and other nonnative vegetation would include the chipping of the plant debris and redistributing it on site at a recommended thickness of three inches or less. Chipped vegetative debris will be redistributed on the ground surface so as not to inhibit reseeding and natural revegetation.
- No burning of waste material would occur. Reclamation would implement standard fire safety BMPs to avoid accidental fires from equipment use.
- No project activity will take place near Pecos sunflower critical habitat or existing populations of the Pecos sunflower.
- River crossings will be limited to no more than six river crossings during the life of the project. Crossing would occur during low water periods and equipment would cross slowly to allow fish to avoid construction equipment.
- Reclamation would establish a monitoring program to assess effects of restoration activities. The monitoring plan shall include assessments of surface flows, vegetation response, fish response, and channel morphology. The restored areas would be adaptively managed to prevent the reestablishment of saltcedar and other nonnative species.

## 5.7 Cultural Resources

No historic properties are known to be present. Reclamation has completed an archaeological survey and has invited the participation of relevant Native American groups on a government-to-government basis to identify any project concerns. Reclamation will complete consultation and the Section 106 process with the New Mexico State Historic Preservation Office on the proposed restoration project.

Prior to construction, workers would be briefed on the importance of immediately reporting findings of any archaeological materials to a designated individual with the

authority to suspend construction. Should unforeseen cultural resources be discovered during the course of restoration, provisions for halting work in the vicinity of any unanticipated discoveries will be incorporated. Maps of the restoration footprint and the following stipulations would be included in materials provided to restoration personnel:

- Archaeological Discoveries. Should evidence of possible scientific, prehistoric, historic, or archeological data be discovered during the course of this action, work shall cease at that location, and the Reclamation archaeologist shall be notified by phone immediately, with the location and nature of the findings. Care shall be exercised so as not to disturb or damage artifacts uncovered during construction, and the proponents shall provide such cooperation and assistance as may be necessary to protect the location and 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 human remains must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the Reclamation archaeologist who will report to the responsible agency official. The requirement is prescribed under the Native American Graves Protection and Repatriation Act (PL 101 601; 104 Stat. 3042) of November 1990 and National Historic Preservation Act, Section 110(a)(2)(E)(iii) (PL 102 575, 106 Stat. 4753) of October 1992. Should evidence of suspected human remains be discovered during the course of this action, work shall cease in the vicinity and the location protected until a decision is made regarding removal or other disposition by the Government.

## 5.8 Visual Resources

Dust suppression measures would be taken to minimize airborne transport and avoid visible impairment due to dust in accordance with the Chaves County Natural Events Action Plan.

## 5.9 Noise

Standard construction noise suppression measures would be taken to minimize disturbance and protect workers.

## 5.10 Socioeconomic Resources

No measures to reduce impacts or environmental commitments would be needed for socioeconomic resources.

## 5.11 Environmental Justice

The Proposed Action would not affect environmental justice groups in Chaves County. No measures to reduce impacts or environmental commitments would be needed.

## 5.12 Indian Trust Assets

The Proposed Action would not affect Indian Trust Assets. No measures to reduce impacts or environmental commitments would be needed.

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# 6. Consultation and Coordination

## 6.1 Consultation

All required consultations will be completed before the project begins. Consultation details are included in **Table 6.1**, Required Consultation, below.

**Table 6.1**
**Consultation Details**

| Required consultations | Agency | Status |
|---|---|---|
| Clean Water Act, Section 404 Permit | US Army Corps of Engineers | Underway- to be complete January, 2013 |
| State Water Quality Certification under CWA 401 | New Mexico Environment Department, Surface Water Quality Bureau | Underway- to be complete January, 2013 |
| Section 106, National Historic Preservation Act | New Mexico Office of Historic Preservation, Interested Tribes and Stakeholders | Underway- to be complete January, 2013 |
| Section 7, Endangered Species Act | US Fish and Wildlife Service | Underway- to be complete January, 2013 |
| National Pollutant Discharge Elimination System (NPDES) Permit and Storm Water Pollution Prevention Plan | Environmental Protection Agency | To be addressed before construction, as needed |

## 6.2 Coordination

Agencies, government entities, and tribal groups contacted or contributing to the development of the restoration project or the EA/BA and those consulted during its preparation include the following:

Formal cooperating agencies are identified in italicized font.

***Agencies and Local Governments***

- US Bureau of Land Management, Roswell Field Office
- US Army Corps of Engineers
- US Fish and Wildlife Service, Bitter Lake National Wildlife Refuge
- US Fish and Wildlife Service, New Mexico Ecological Services
- US Fish and Wildlife Service, New Mexico Fishery Resources
- New Mexico Department of Game and Fish

- New Mexico Interstate Stream Commission
- New Mexico State Historic Preservation Division
- New Mexico State Land Office
- New Mexico Environment Department
- Carlsbad Irrigation District
- Chaves County
- Chaves County Flood Control District
- University of New Mexico

***Pueblo and tribal Governments***

- Hopi Tribe
- Apache Tribe of Oklahoma
- Comanche Indian Tribe
- Fort Sill Apache Tribe of Oklahoma
- Pueblo of Isleta
- Kiowa Tribe of Oklahoma
- Jicarilla Apache Nation
- Pueblo of Jemez
- Navajo Nation
- Pueblo of Ysleta del Sur
- Mescalero Apache Tribe

# 7. List of Preparers

| NAME | EDUCATION / EXPERIENCE | RESPONSIBILITIES |
|---|---|---|
| **US Department of Interior, Bureau of Reclamation – Albuquerque Area Office** | | |
| Marsha Carra | BS Anthropology/Geography<br>18 Years | NEPA Project Manager; Interagency and Tribal Coordination |
| Ann Demint | BS Aerospace Engineering<br>MA Management; Master of Water Resources<br>12 Years | Biological resources; Section 7 |
| Matthew Dorsey | BS Geography<br>13 Years | GIS/Mapping |
| Mark Nemeth | PhD Civil Engineering<br>MS Civil Engineering<br>BS Civil Engineering<br>PE license, New Mexico<br>12 years | Restoration design |
| Kelly Oliver-Amy | BS Conservation Biology<br>11 Years | Biological resources; Section 7, Monitoring Plan |
| Yvette Paroz | MA Wildlife and Fisheries<br>12 Years | Biological resources; Section 7 |
| Lori Walton | BS Biology/Chemistry<br>12 Years | Wetlands; Section 404/401 |
| Susan Woods | BS Parks Recreation<br>12 Years | Realty issues |
| **NM Interstate Stream Commission** | | |
| F. Emile Sawyer | MS Hydrogeology<br>BS Environmental Geology<br>17 Years | Depletion memo |

| NAME | EDUCATION / EXPERIENCE | RESPONSIBILITIES |
|---|---|---|
| **EMPSi – Environmental Management and Planning Solutions** | | |
| David Batts | MS Natural Resource Management<br>17 years | Project manager; QA/QC |
| Zoe Ghali | MS Environmental Physiology<br>6 years | Multiple resources |
| Brandon Jensen | MS Environmental Science<br>5 years | Biological Assessment, biological impacts analysis |
| Kate Krebs | BA Environmental Studies and Spanish<br>7 years | Document review and production |
| Laura Long | MA Media and Communications<br>8 years | Technical edit |
| Katie Patterson | JD Environmental Law<br>BA Public Policy Studies<br>2 years | Multiple resources |
| Marcia Rickey | MS Conservation Biology<br>12 years | GIS |
| **Tetra Tech, Inc.** | | |
| Kevin Doyle | BA Sociology<br>27 years | Principal author; Chapters 1 and 2; multiple resources |
| Tom Whitehead | MS Hydrology<br>26 years | Water resources |

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# Appendix A

## Draft Annual Monitoring Plan for the Pecos River Restoration at Overflow Wetlands

RECLAMATION

*Managing Water in the West*

# Draft Annual Monitoring Plan for the Pecos River Restoration at Overflow Wetlands

## Chaves County, New Mexico

The detailed monitoring plan is currently in development.

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

**December 2012**

## 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.

Photo by: Marsha Carra, September 2010. Pecos River at the Overflow Wetlands Area of Environmental Concern

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2. Objectives ..... A-4
3. References ..... A-4

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A-2 Project Area ..... A-3

## ACRONYMS AND ABBREVIATIONS

| | Full Phrase |
|---|---|
| ACEC | area of critical environmental concern |
| BLM | United States Department of the Interior, Bureau of Land Management |
| ESA | Endangered Species Act of 1973 |
| FLPMA | Federal Land Policy and Management Act of 1976 |
| NWR | National Wildlife Refuge |
| Reclamation | United States Bureau of Reclamation |
| RMP | Resource Management Plan |

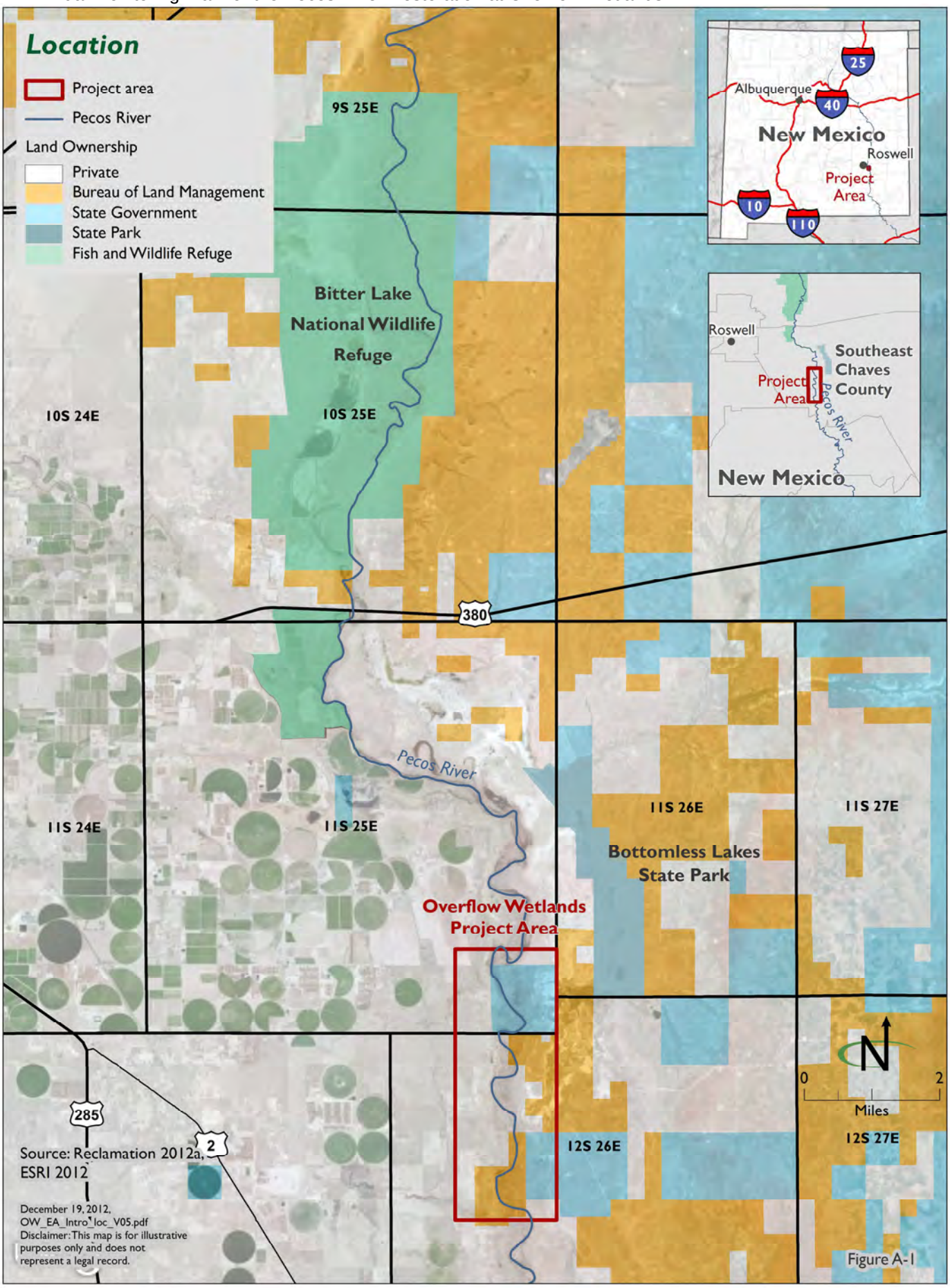
# 1. Introduction

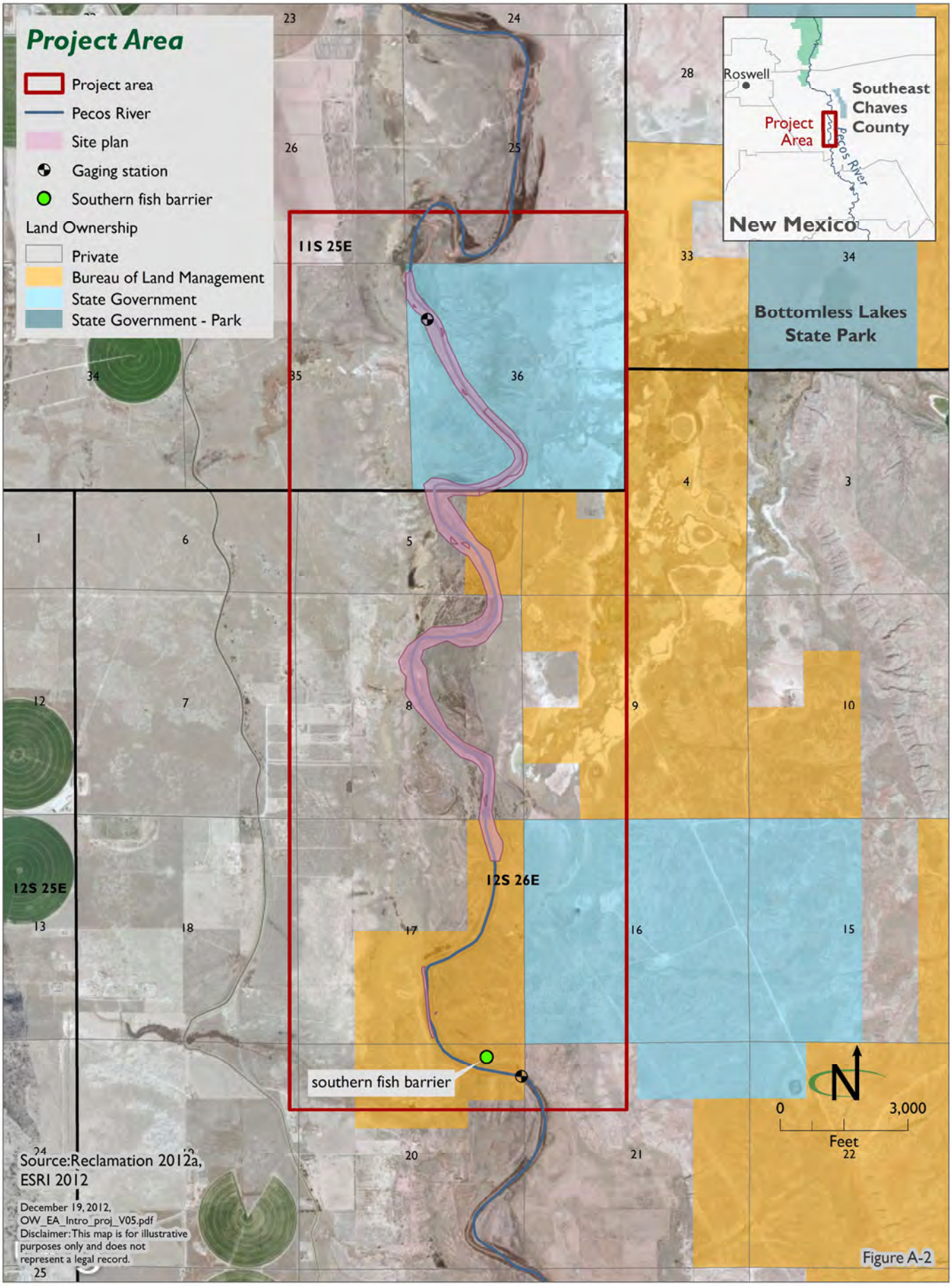
As part of the Section 7 consultation process under the Endangered Species Act (ESA), the US Fish and Wildlife Service issued a Biological Opinion (2006 – 2016) on the selected alternative from the Carlsbad Project Water Operations EIS (Reclamation 2006, US Fish and Wildlife Service 2006). The need for restoration action at this time is to satisfy federal requirements under the Biological Opinion to restore quality habitat on the Pecos River and to participate and assist in the completion of ongoing habitat improvement projects (US Fish and Wildlife Service 2006). Under Reasonable and Prudent Measures (RPM) #1, the Bureau of Reclamation (Reclamation) agreed to "assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014."

In 2009, Reclamation funded and completed a channel restoration project that reconnected Oxbow 4 at Bitter Lake National Wildlife Refuge (NWR) to the main stem. The next project is planned to be completed in 2013 and will be located at the 7,000-acre Overflow Wetlands Area of Critical Environmental Concern (ACEC) approximately 16 miles east of Roswell, south of US Highway 380, and adjacent to the Bottomless Lakes State Park (Figures 1, 2). More specifically, the project area is located in the western portion of the ACEC along and adjacent to the five-mile reach of the Pecos River flowing from north to south through the ACEC. According to the Biological Opinion, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows will be most successful in mitigating the observed displacement of shiner eggs and in providing a variety of channel conditions favorable to the life stages of the shiner.

Reclamation's mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation is proposing to fund, design, and conduct channel habitat restoration and will monitor the project results. Reclamation is the lead agency preparing the EA/BA and is responsible for ensuring compliance with all of the applicable federal environmental statutes.

The Bureau of Land Management (BLM) is a cooperating agency in this joint Environmental Assessment/ Biological Assessment. It is the mission of the BLM to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. The Federal Land Policy and Management Act (FLPMA) requires that priority shall be given to the designation and protection of ACECs. ACECs are defined in the FLPMA Sec. 103[43 U.S.C 1702] (a) and in 43 C.F.R. 1601.0-5(a) as, "areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards."


Location
Project area
Pecos River
Land Ownership
Private
Bureau of Land Management
State Government
State Park
Fish and Wildlife Refuge
9S 25E
Bitter Lake
National Wildlife
Refuge
10S 24E
10S 25E
380
Pecos River
11S 24E
11S 25E
11S 26E
11S 27E
Bottomless Lakes
State Park
Overflow Wetlands
Project Area
285
2
12S 26E
12S 27E
Albuquerque
25
40
New Mexico
Roswell
Project
Area
10
110
Roswell
Southeast
Chaves
County
Project
Area
Pecos River
New Mexico
N
0
2
Miles
Source: Reclamation 2012a,
ESRI 2012
December 19, 2012,
OW_EA_Intro_loc_V05.pdf
Disclaimer: This map is for illustrative
purposes only and does not
represent a legal record.
Figure A-1


Project Area
Project area
Pecos River
Site plan
Gaging station
Southern fish barrier
Land Ownership
Private
Bureau of Land Management
State Government
State Government - Park
11S 25E
12S 25E
12S 26E
Roswell
Southeast Chaves County
Project Area
Pecos River
New Mexico
Bottomless Lakes State Park
southern fish barrier
N
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3,000
Feet
Source:Reclamation 2012a, ESRI 2012
December 19, 2012, OW_EA_Intro_proj_V05.pdf
Disclaimer: This map is for illustrative purposes only and does not represent a legal record.
Figure A-2

# 2. Objectives

Monitoring will be conducted within the Pecos River restoration project area, and the results will be used to determine the effectiveness of the restoration project and the need for adaptive management, such as the additional removal of saltcedar. Fisheries habitat monitoring will be scheduled after high flows associated with spring run-off have receded.. Vegetation monitoring will be conducted at or near the end of the growing season. Reclamation annually funds an interagency agreement with the US Fish and Wildlife Service for monitoring of the entire Pecos River fish community. There are two sampling locations close to or within the restoration project boundaries (Hwy 380 and BLM ACEC).

Reclamation will document baseline conditions in the project area prior to restoration. To ensure effectiveness of the restoration, Reclamation will monitor the following components:

- Vegetation
- Fisheries
- Geomorphology
- Hydrology

The final monitoring plan will be developed in detail prior to project implementation.

# 3. References

Reclamation (United States Department of Interior, Bureau of Reclamation) 2006. Carlsbad Project Water Operations and Water Supply Conservation Environmental Impact Statement. Final Environmental Impact Statement Prepared for the United States Bureau of Reclamation, Albuquerque Area Office, Albuquerque, New Mexico July 2006.

USFWS (United States Fish and Wildlife Service). 2011. Published GIS data for USFWS critical habitat. Internet Web site: http://criticalhabitat.fws.gov/crithab/. Accessed on October 8, 2011.

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# Appendix B
## Consultation and Correspondence

MAY 17 2011

ALB-3.00
ENV-186

Mr. Estevan Lopez
Interstate Stream Commission, Director
407 Galisteo Street
Bataan Memorial Building
P.O. Box 25102
Santa Fe, NM 87504-5102

Subject: Invitation to Participate as Cooperating Agencies for the Environmental Assessment (EA) on the Pecos River Restoration at Overflow Wetlands, Carlsbad Project (Action by May 20, 2011)

Dear Mr. Lopez:

The Bureau of Reclamation invites the Bureau of Land Management, Roswell Field Office, to participate as a cooperating agency in the preparation of an EA concerning the restoration actions to correct or improve degraded ecological conditions, within a section of the Pecos River, caused by excavating straight channels, encroaching nonnative vegetation, and reservoir control of flows. As part of the consultation process under the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service issued a 2006 – 2016 Biological Opinion (BO) on the selected alternative from the 2006 Carlsbad Project Water Operations Environmental Impact Statement. One of the provisions of the BO was for Reclamation to partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River, and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014.

As a cooperating agency, Reclamation anticipates that your involvement would include providing background information, assisting with alternatives development, identifying potential effects of the alternatives from your agency's perspective, participating in key meetings, and reviewing the EA in draft and final form.

Thank you for your consideration. If you have any questions about the project, please contact Ms. Marsha Carra at Reclamation, 505-462-3602, or mcarra@usbr.gov for additional information. Please provide a written response to this request by May 20, 2011, to indicate your

interest in becoming a cooperating agency and your agency's representative during this process.

Sincerely,

MIKE A. HAMMAN

Mike A. Hamman
Area Manager

Identical Letters sent to:

Mr. Chuck Schmidt
Roswell Field Office
Bureau of Land Management
2909 W. Second Street
Roswell, NM 88201-2019

Mr. Wally Murphy
NMESFO-Supervisor
U.S. Fish and Wildlife Service
2105 Osuna NE
Albuquerque, NM 87113

WBR:MCarra:nball:05/10/2011:505-462-3602
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ORIGINAL

# United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Pecos District
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201-2019
www.nm.blm.gov

TAKE PRIDE IN AMERICA

In Reply Refer To:
6522 (P0120)

May 31, 2011

Your Reference:
Invitation to Participate as a Cooperating Agency for the Environmental Assessment (EA) on the Pecos River Restoration Project

Mr. Mike A. Hamman
Albuquerque Area Office
Bureau of Reclamation
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

Dear Mr. Hamman:

We appreciate the efforts your agency is undertaking along the Pecos River and the Overflow Wetlands area in Chaves County, NM. The Roswell Field Office accepts your offer to join as a cooperating agency in the preparation of the Environmental Analysis for activities to improve the resources.

Glen Garnand is our Planning and Environmental Coordinator and will be your primary contact for this effort. He can be reached at 575-627-0209, or ggarnand@blm.gov .

Sincerely,

Charles W. Schmidt
Field Manager

RECEIVED BOR
ALBUQUERQUE AREA OFFICE
OFFICIAL FILE COPY
JUN 01 '11
I-11-529 ltr

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|---|---|---|
| Prj | | |
| Cntr # | | |
| Fldr # | | |
| Date | Initial | To |
| 6/7 | | 100 |
| 6/16 | | 150 |
| 6/29 | PLG | 180 |
| 6/29 | MC | 186 |

ORIGIN

# NEW MEXICO INTERSTATE STREAM COMMISSION



OCT 07 PM
BATAAN MEMORIAL BUILDING, ROOM 101
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6160
FAX: (505) 827-6188

October 5, 2011

Mr. Mike A. Hamman, Area Manager
Albuquerque Area Office
U.S. Bureau of Reclamation
555 Broadway, NE, Suite 100
Albuquerque, New Mexico 87102-2352

**Re: Invitation to Participate as a Cooperating Agency**
**Pecos River Restoration Environmental Assessment**

Dear Mr. Hamman:

Thank you for your May 17, 2011 letter inviting the New Mexico Interstate Stream Commission to participate as a cooperating agency in the preparation of an Environmental Assessment concerning the Restoration of the Pecos River, as directed by the U.S. Fish and Wildlife Service's 2006 Biological Opinion. As you know, the NMISC was a cooperating agency on the successful habitat improvement project conducted pursuant to the BO in the Bitter Lake National Wildlife Refuge. The NMISC looks forward to continuing as a cooperating agency in this next phase of work.

Should you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Estevan R. López, P.E., Director
NM Interstate Stream Commisison

ERL/lmt

cc: Amy Haas
Greg Lewis
Emile Sawyer
Marsha Carra, Environmental Protection Specialist, BOR Albuquerque

GOVERNOR
Susana Martinez

DIRECTOR AND SECRETARY
TO THE COMMISSION
Tod W. Stevenson

# STATE OF NEW MEXICO
# DEPARTMENT OF GAME & FISH



One Wildlife Way
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Santa Fe, NM 87504
Phone: (505) 476-8008
Fax: (505) 476-8124

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For information call: (505) 476-8000
To order free publications call: (800) 862-9310



24 June 2011

Marsha Carra
Bureau of Reclamation
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

Re: Pecos River Restoration at Overflow Wetlands; NMDGF No.14371

Dear Ms. Carra,

The Department of Game and Fish (Department) has reviewed your letter dated 24 May 2011, regarding the above referenced project, and found no negative impacts to species. It is the Department's opinion that this project has the potential to create more productive fish habitat, improve watershed and riparian conditions, and increase local community involvement and awareness. We recommend minimizing in-stream work during the restoration process.

Thank you for the opportunity to review and comment on your project. If you have any questions, please Jill Wick, Aquatic Habitat Specialist, at (505) 476-8091 or jill.wick@state.nm.us.

Sincerely,

Matt Wunder, PhD
Chief, Conservation Services Division
MW/jw

xc: Wally Murphy, Ecological Services Field Supervisor, USFWS
Pat Baca, SW Area Operations Assistant Chief, NMDGF
Pat Mathis, SW Area Habitat Specialist, NMDGF

MAY 25 2011

ALB-186
ENV-1.10

Honorable Joe Shirley
Governor, Navajo Nation
P.O. Box 9000/Navajo Tribal Hill
Window Rock, AZ 86515

Subject: Request for Comments Regarding the Bureau of Reclamation's Environmental Assessment (EA) for the Pecos River Restoration at Overflow Wetlands, Carlsbad Project

Dear Governor Shirley:

In accordance with the National Environmental Policy Act of 1969 (NEPA), Reclamation is preparing an EA to evaluate the environmental and other impacts resulting from habitat restoration on the Pecos River. Reclamation will consider the results of the EA in deciding whether to issue a Finding of No Significant Impact or to require additional environmental analysis.

The purpose of the proposed restoration project is to improve riparian and in-channel habitat, extending the reach of connected good quality habitat for the benefit of native aquatic, and riparian plant and animal communities. Reclamation would improve habitat for the Pecos bluntnose shiner (shiner) by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime. A variety of restoration techniques may be used, such as removing vegetation and lowering banks. Some or all of these actions may be implemented, and work may be conducted in phases by agencies and entities other than Reclamation.

As part of the consultation process under the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service issued a 2006-2016 Biological Opinion (BO) on the selected alternative from the 2006 Carlsbad Project Water Operations Environmental Impact Statement. One of the provisions of the BO was for Reclamation to partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014. According to the BO, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows, will be most successful in mitigating the observed displacement of shiner eggs.

Scoping, as defined in the Council on Environmental Quality regulations, is "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." This scoping period is meant to provide interested members of the public, Native American tribes, local governments, and organizations an opportunity to comment on the proposed project and to obtain information that will focus the EA on important issues.

Through this letter, Reclamation is inviting your participation to inform us of any concerns you may have with the proposed restoration project. Reclamation wants to ensure that you have an opportunity to help us identify and address any important issues. Reclamation can provide any additional information as the planning stage proceeds. At this time, Reclamation also is offering to conduct government to government consultation with you and your staff. For any additional information you need or to set up a meeting, please contact Ms. Marsha Carra, Environmental Protection Specialist, at 505-462-3602 or mcarra@usbr.gov.

Sincerely,

MIKE A. HAMMAN

Mike A. Hamman
Area Manager

Identical Letters sent to:

Mr. Bobby Jay
Tribal Administrator
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

Honorable Wallace Coffey
Chairman, Comanche Indian Tribe
P.O. Box 908
Lawton, OK 73502

Honorable Johnny Wauqua
Chairman, Comanche Tribal Business Committee
P.O. Box 908
Lawton, OK 73502

Honorable Jeff Houser
Chairman, Fort Sill Apache Tribe of Oklahoma
Route 2, Box 121
Apache, OK 73006

Mr. Leigh Kuwanwisiwma
Director, Hopi Tribe Cultural Preservation Office
P.O. Box 123
Kykotsmovi, AZ 86039

Honorable Wayne Taylor, Jr.
Chairman, Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

Continued on next page.

Continued from previous page.

Honorable Robert Benavides
Governor, Pueblo of Isleta
P.O. Box 1270
Isleta, NM 87022

Honorable Raymond Gachupin
Governor, Pueblo of Jemez
P.O. Box 100
Jemez Pueblo, NM 87024

Mr. George Daingkau
Kiowa NAGPRA Coordinator
Route 2, Box 74
Ft Cobb, OK 73038

Honorable Mark Chino
Governor, Mescalero Apache Tribe
P.O. Box 227
Mescalero, NM 88340

Ms. Donna Stern-McFadden
Tribal Historic Preservation Office
P.O. Box 227
Mescalero, NM 88340

Mr. Rick Casada
Cultural Resources Coordinator
Pueblo of Ysleta del Sur
P.O. Box 17579-Ysleta Station
119 S. Old Pueblo Rd.
El Paso, TX 79917

Mr. John Sorrell
Hydrology
Pueblo of Isleta
P.O. Box 1270
Isleta, NM 87022

Honorable Levi Pesata
Governor, Jicarilla Apache Nation
P.O. Box 507
Dulce, NM 87528

Honorable Billy Evans Horse
Chairman, Kiowa Tribe of Oklahoma
P.O. Box 369
Carnegie, OK 73015

Mr. Lawrence Morgan
Speaker, Navajo Nation Council
P.O. Box 3390
Window Rock, AZ 86515

Honorable Arturo Senclair
Governor, Ysleta del Sur Pueblo
P.O. Box 17579-Ysleta Station
119 S. Old Pueblo Rd.
El Paso, TX 79917

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NA_TribalLettersPecos2ndRestorationProject 05092011Navajo Nation

COPY FOR YOUR INFORMATION

ORIGINAL

COPY FOR YOUR INFORMATION

# THE HOPI TRIBE

**LeRoy N. Shingoitewa**
CHAIRMAN

**Herman G. Honanie**
VICE-CHAIRMAN



June 6, 2011

Mike A. Hamman, Area Manager
Attention: Marsha Carra, Environmental Protection Specialist
Bureau of Reclamation, Upper Colorado Region, Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, New Mexico 87102-2352

Re: Pecos River Restoration Overflow Wetlands

Dear Mr. Hamman,

This letter is in response to your correspondence dated May 24, 2011, regarding the Bureau of Reclamation preparing and environmental assessment to evaluate impacts resulting from habitat restoration on the Pecos River. Because the Hopi Tribe claims cultural affiliation to prehistoric cultural groups in New Mexico, and the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites, we appreciate the Bureau of Reclamation's solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office considers the prehistoric archaeological sites of our ancestors to be Traditional Cultural Properties, and we are interested in consulting on any proposal with the potential to adversely affect prehistoric cultural resources in New Mexico. Therefore, if the cultural resources survey of the area of potential effect identifies prehistoric cultural resources that will be adversely impacted by project activities, please provide us with copies of the cultural resource survey report and any proposed draft treatment plans for review and comment.

In addition, we recommend that if any cultural features or deposits are encountered during project activities, the State Historic Preservation Office must be consulted to evaluate their nature and significance. If any Native American human remains or funerary objects are discovered during construction they shall be immediately reported as required by law. If you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office at 928-734-3619 or tmorgart@hopi.nsn.us. Thank you for your consideration.

Respectfully,

Stewart B. Koyiyumptewa for

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: New Mexico State Historic Preservation Office

ORIGINAL


# Ysleta del Sur Pueblo

Tribal Council – Javier Loera – (War Captain/Tribal Historic Preservation Officer) E-mail jloera@ydsp-nsn.gov

119 South Old Pueblo Road * P.O. Box 17579 * El Paso, Texas 79917 * (915) 859-8053 * Fax: (915) 859-4252


July 13, 2011

Mike A. Hamman
Upper Colorado Region
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

Dear Mr. Hamman:

This letter is in response to the correspondence received in our office in which you provide Ysleta del Sur Pueblo the opportunity to comment on the Bureau of Reclamation's Environmental Assessment (EA) for the Pecos River Restoration at Overflow Wetlands, Carlsbad Project.

While we do not have any comments on the Bureau of Reclamation's Environmental Assessment (EA) for the Pecos River Restoration at Overflow Wetlands, Carlsbad Project we believe that this project will not adversely affect Traditional, Religious, or culturally significant sites of our Pueblo and have no opposition to it; However, we would like to request consultation should any Human remains of Artifacts unearthed during this project be determined to fall under NAGPRA guidelines. Copies of our Pueblo's Cultural Affiliation Position Paper and Consultation Policy are available upon request.

Thank you for allowing us the opportunity to comment on this project.

Sincerely,

Javier Loera


Javier Loera
War Captain/Tribal Historic Preservation Officer
Ysleta del Sur Pueblo
E-mail: jloera@ydsp-nsn.gov

MAY 24 2011

ALB-186
ENV-1.10

Honorable Tom Udall
Senator
120 S. Federal Place Ste. 302
Roswell, NM 87501

Subject: Scoping Notice, Bureau of Reclamation's Environmental Assessment (EA) for the Pecos River Restoration at Overflow Wetlands, Carlsbad Project (Action by June 28, 2011)

Dear Senator Bingaman:

In accordance with the National Environmental Policy Act of 1969 (NEPA), Reclamation is preparing an EA to evaluate the environmental and other impacts resulting from habitat restoration on the Pecos River. Reclamation will consider the results of the EA in deciding whether to issue a Finding of No Significant Impact or to require additional environmental analysis.

The purpose of the proposed restoration project is to improve riparian and in-channel habitat, extending the reach of connected good quality habitat for the benefit of native aquatic and riparian plant and animal communities. Reclamation would improve habitat for the Pecos bluntnose shiner (shiner) by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime. A variety of restoration techniques may be used such as removing vegetation and lowering banks. Some or all of these actions may be implemented, and work may be conducted in phases by agencies and entities other than Reclamation.

As part of the consultation process under the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (Service) issued a 2006-2016 Biological Opinion (BO) on the selected alternative from the 2006 Carlsbad Project Water Operations EIS. One of the provisions of the BO was for Reclamation to partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014. According to the BO, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows, will be most successful in mitigating the observed displacement of shiner eggs.

The project would support Reclamation's need to satisfy federal requirements under the BO to restore quality habitat on the Pecos River and to participate and assist in the completion of ongoing habitat improvement projects. Scoping, as defined in the Council on Environmental Quality regulations, is "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." This scoping period is meant to provide interested members of the public, Native American tribes, local governments, and organizations an opportunity to comment on the proposed project and to obtain information that will focus the EA on important issues.

The scoping process helps us to identify the following:

- The important issues, resource concerns, and possible impacts to be addressed in the EA;
- Those issues that are not important, or that have been addressed by prior environmental review, eliminate from further study;
- Existing information sources;
- Other environmental review, permits, and consultation requirements; and
- Alternatives to be evaluated in the EA.

Please send written comments to Reclamation, Albuquerque Area Office, attention: Ms. Marsha Carra, 555 Broadway NE, Suite 100, Albuquerque, New Mexico 87102. We request your comments no later than June 28, 2011 in order for them to be considered in the preparation of the Draft EA. Comments may also be sent by fax to Ms. Carra at 505-462-3780 or by e-mail to mcarra@usbr.gov.

We make comments, including names and home addresses of respondents, available for public review. Individual respondents may request that we withhold their home address from public disclosure, which we will honor to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public disclosure in their entirety.

Following the scoping period, Reclamation will prepare a draft EA and will notify the public of its availability. The draft EA will be posted on Reclamation's environmental documents Web site: http://www.usbr.gov/uc/albuq/envdocs/index.html.

The EA will present an analysis of the physical, biological, social, cultural, and economic effects of the proposed action and no action alternative. Any mitigation needed to reduce impacts will be identified. A review period will begin when the draft EA is released to give the public an opportunity to review the document and to offer comments.
If you have any questions about the project, please contact Marsha Carra at Reclamation, telephone 505-462-3602, for additional information.

Sincerely,
MIKE A. HAMMAN

Mike A. Hamman
Area Manager

Identical Letters sent to:

Senator Jeff Bingaman
Attn: Lynn Ditto
105 W. 3rd Street, Suite 409
Roswell, NM 88201

Honorable Susanna Martinez
Governor, State of New Mexico
Office of the Governor
Santa Fe, NM 87501

cc: Mr. Leslie Armstrong
Chairman, Board of Directors
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cc: Lt. Col Jason D. Williams
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President, New Mexico Riparian Council
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bc: ALB-240, ALB-210, S-30

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NEW MEXICO
ENVIRONMENT DEPARTMENT

*Office of the Secretary*

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DAVE MARTIN
Cabinet Secretary
RAJ SOLOMON, P.E.
Deputy Secretary

June 23, 2011

Mike Hamman
Area Manager
Reclamation
555 Broadway NE, Suite 100
Albuquerque, NM 87102

**RE: Scoping Notice, Bureau of Reclamation's Environmental Assessment for the Pecos River Restoration at Overflow Wetlands, Carlsbad Project (NMED File No. 3470)**

Dear Mr. Hamman:

Your letter regarding the above named project was received in the New Mexico Environment Department (NMED) and was sent to various Bureaus for review and comment. Comments were provided by the Surface Water Quality Bureau and are as follows.

**Surface Water Quality Bureau**
The Surface Water Quality Bureau (SWQB) was forwarded a scoping letter soliciting input for development of an Environmental Assessment for the proposed "Pecos River Restoration at Overflow Wetlands, Carlsbad Project". SWQB has been participating in the NEPA process, including by attending planning meetings such as the meeting scheduled on August 3, 2011. SWQB is in support of the proposed project and feels it will be beneficial to the physical and biological integrity of the Pecos River at the proposed site location. Depending on the approach to conduct the restoration, short term impacts to water quality may be expected, but should be outweighed by long term benefits.

To allow for more timely review of a draft Environmental Assessment by SWQB technical staff, please ensure that the SWQB is included on your distribution list for NEPA-related documents. Please also continue to send NEPA-related documents to the NMED Environmental Review Coordinator (currently Julie Roybal), in the Office of the Secretary.

I hope this information is helpful to you.

Sincerely,

Julie Roybal
Environmental Impact Review Coordinator
NMED File #3470 ER

# Appendix C
## Landowner Agreements

**Landowner Agreements to be inserted in Final Draft**

# Appendix D
## 404 Permit Application

# 404 Permit Application to be inserted in Final Draft

US Army Corps of Engineers®
Albuquerque District

# Nationwide Permit Summary

**NATIONWIDE PERMIT 27**
**Aquatic Habitat Restoration, Establishment, and Enhancement Activities**
Effective Date: March 19, 2012
Expiration Date: March 18, 2017
(NWP Final Notice, 77 FR 10275, para. 27)

**Aquatic Habitat Restoration, Establishment, and Enhancement Activities.** Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to: The removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms, are removed; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to establish or re-establish wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; reestablishment of submerged aquatic vegetation in areas where those plant communities previously existed; reestablishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services.

Except for the relocation of non-tidal waters on the project site, this NWP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa) or uplands. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type. This NWP does not authorize stream channelization. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments.

Compensatory mitigation is not required for activities authorized by this NWP since these activities must result in net increases in aquatic resource functions and services.

Reversion: For enhancement, restoration, and establishment activities conducted: (1) In accordance with the terms and conditions of a binding stream or wetland enhancement or restoration agreement, or a wetland establishment agreement, between the landowner and the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), U.S. Forest Service (USFS), or their designated state cooperating agencies; (2) as voluntary wetland restoration, enhancement, and establishment actions documented by the NRCS or USDA Technical Service Provider pursuant to NRCS

Field Office Technical Guide standards; or (3) on reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the Office of Surface Mining Reclamation and Enforcement (OSMRE) or the applicable state agency, this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities). The reversion must occur within five years after expiration of a limited term wetland restoration or establishment agreement or permit, and is authorized in these circumstances even if the discharge occurs after this NWP expires. The five-year reversion limit does not apply to agreements without time limits reached between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS, or an appropriate state cooperating agency. This NWP also authorizes discharges of dredged or fill material in waters of the United States for the reversion of wetlands that were restored, enhanced, or established on prior-converted cropland or on uplands, in accordance with a binding agreement between the landowner and NRCS, FSA, FWS, or their designated state cooperating agencies (even though the restoration, enhancement, or establishment activity did not require a section 404 permit). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before conducting any reversion activity the permittee or the appropriate Federal or state agency must notify the district engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements are applicable to that type of land at the time. The requirement that the activity results in a net increase in aquatic resource functions and services does not apply to reversion activities meeting the above conditions. Except for the activities described above, this NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion.

Reporting: For those activities that do not require pre-construction notification, the permittee must submit to the district engineer a copy of: (1) The binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement, or a project description, including project plans and location map; (2) the NRCS or USDA Technical Service Provider documentation for the voluntary stream enhancement or restoration action or wetland restoration, enhancement, or establishment action; or (3) the SMCRA permit issued by OSMRE or the applicable state agency. The report must also include information on baseline ecological conditions on the project site, such as a delineation of wetlands, streams, and/or other aquatic habitats. These documents must be submitted to the district engineer at least 30 days prior to commencing activities in waters of the United States authorized by this NWP.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 31), except for the following activities:

(1) Activities conducted on non-federal public lands and private lands, in accordance with the terms and conditions of a binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement between the landowner and the U.S. FWS, NRCS, FSA, NMFS, NOS, USFS or their designated state cooperating agencies;

(2) Voluntary stream or wetland restoration or enhancement action, or wetland establishment action, documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or

(3) The reclamation of surface coal mine lands, in accordance with an SMCRA permit issued by the OSMRE or the applicable state agency.

However, the permittee must submit a copy of the appropriate documentation to the district engineer to fulfill the reporting requirement. (Sections 10 and 404)

Note: This NWP can be used to authorize compensatory mitigation projects, including mitigation banks and in-lieu fee projects. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition, since compensatory mitigation is generally intended to be permanent.

NATIONWIDE PERMIT GENERAL CONDITIONS

General Conditions: The following general conditions must be followed in order for any authorization by a NWP to be valid:

1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation.
(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects from Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100–Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. **Endangered Species.** (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the

non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at *http://www.fws.gov/*, or *http://www.fws.gov/ipac* and *http://www.noaa.gov/fisheries.html*, respectively.

19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. **Historic Properties.** (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-federal applicant that he or she cannot begin work until Section 106

consultation is completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h–2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. **Discovery of Previously Unknown Remains and Artifacts.** If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. **Designated Critical Resource Waters.** Critical resource waters include NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. **Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1⁄10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1⁄10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2)–(14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. **Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer

may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. **Water Quality.** Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. **Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: “When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

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(Transferee)

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(Date)

30. **Compliance Certification.** Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. **Pre-Construction Notification.** (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1⁄10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation

should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs(b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

**D. District Engineer's Decision**

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized

by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

**E. Further Information**

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed federal project.

**F. Definitions**

**Best management practices (BMPs):** Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

**Compensatory mitigation:** The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

**Currently serviceable:** Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

**Direct effects:** Effects that are caused by the activity and occur at the same time and place.

**Discharge:** The term “discharge” means any discharge of dredged or fill material.

**Enhancement:** The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

**Ephemeral stream:** An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

**Establishment (creation):** The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

**High Tide Line:** The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

**Historic Property:** Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

**Independent utility:** A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

**Indirect effects:** Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

**Intermittent stream:** An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

**Loss of waters of the United States:** Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

**Non-tidal wetland:** A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

**Open water:** For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

**Ordinary High Water Mark:** An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

**Perennial stream:** A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

**Practicable:** Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

**Pre-construction notification:** A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

**Preservation:** The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

**Re-establishment:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Reestablishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

**Rehabilitation:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

**Restoration:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: reestablishment and rehabilitation.

**Riffle and pool complex:** Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a

course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

**Riparian areas:** Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

**Shellfish seeding:** The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

**Single and complete linear project:** A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

**Single and complete non-linear project:** For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

**Stormwater management:** Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

**Stormwater management facilities:** Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

**Stream bed:** The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

**Stream channelization:** The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

**Structure:** An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

**Tidal wetland:** A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

**Vegetated shallows:** Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted

aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

**Waterbody:** For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent—meaning bordering, contiguous, or neighboring—to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)–(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

## ADDITIONAL INFORMATION

For additional information concerning the nationwide permits or for a written determination regarding a specific project, please contact the office below:

In New Mexico:

Chief, Regulatory Division
Albuquerque District, US Army Corps of Engineers
4101 Jefferson Plaza, NE
Albuquerque, NM 87109-3435
Telephone: (505) 342-3283

In Southeastern Colorado:

Southern Colorado Regulatory Office
200 S. Santa Fe Avenue, Suite 301
Pueblo, CO 81003
Telephone: (719) 543-9459

In Southern New Mexico and Western Texas:

Las Cruses Regulatory Office
505 S. Main St., Suite 142
Las Cruces, NM 88001
Telephone: (575) 556-9939

In Northwestern New Mexico and within the San Luis Valley of Colorado:

Durango Regulatory Office
1970 E. 3rd Avenue, Suite 109
Durango, CO 81301
Telephone: (970) 259-1582

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be accessed on our Internet page: http://www.spa.usace.army.mil/reg/

This nationwide permit is effective March 19, 2012, and expires on March 18, 2017.

Summary Version: March 19, 2012

NEW MEXICO
ENVIRONMENT DEPARTMENT

*Surface Water Quality Bureau*

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
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JAMES H. DAVIS, Ph.D.
Director
Resource Protection Division

April 13, 2012

***CERTIFIED MAIL NO. 700801830 0003 4175 8463***

Mr. Allan Steinle
U.S. Army Corps of Engineers
Albuquerque District, Regulatory Branch
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3434

**Re: Clean Water Act Section 401 Water Quality Certification**
**United States Army Corps of Engineers 2012 Nationwide Permits**

Dear Mr. Steinle:

The New Mexico Environment Department (NMED) has examined both the February 21, 2012 final notice of the Reissuance of Nationwide Permits (NWPs) under the Clean Water Act (CWA) §404, issued by the U.S. Army Corps of Engineers ("Corps") (*see* 77 FR 10184) and the February 23, 2012 Corps Albuquerque District public notice of the final NWPs and NMED's intent to consider certification of those permits under the CWA §401 (Certification). Certification is required by CWA §401 to ensure that the NWPs are consistent with state law, comply with the state Water Quality Standards (20.6.4 NMAC), the Water Quality Management Plan/Continuing Planning Process, including Total Maximum Daily Loads (TMDLs), and the Antidegradation Policy. Certification is also required to comply with General Condition 25 (Water Quality) and General Condition 27 (Regional and Case-By-Case Conditions) of the NWPs.

The following conditions are necessary to assure compliance with the applicable provisions of the Clean Water Act §§301, 302, 303, 306, and 307 and with applicable requirements of State law. Compliance with the terms and conditions of the permit and this certification will provide reasonable assurance that the permitted activities will be conducted in a manner which will not violate applicable water quality standards and the water quality management plan and will be in compliance with the antidegradation policy. The State of New Mexico certifies that the discharge will comply with these provisions and requirements upon inclusion of the following conditions in the permit:

**Conditional Section 401 Certification of NWPs:**

1. Activities in intermittent and perennial surface waters of the state require notification to the NMED Surface Water Quality Bureau. The notification must include: 1) detailed construction plans (including proposed in-channel excavations and temporary diversions); 2) a description of potential adverse water quality impacts (including turbidity, which is a measurement of the amount of suspended material in water, as well as oil, grease, or hydraulic fluid, and all other potential contaminants); 3) a description of methods to be used to prevent water quality impacts (including detailed Best Management Practices, which must be designed to minimize sediment, oil, grease, and other pollutants from entering the water); 4) any surface water monitoring procedures; and 5) for any unavoidable surface water impacts, conceptual mitigation plans.

2. Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must not be stored within the 100-year floodplain and must have a secondary containment system capable of containing twice the volume of the product. Appropriate spill clean-up materials such as booms and absorbent pads must be available on-site at all times during construction.

3. All heavy equipment used in the project area must be pressure washed and/or steam cleaned before the start of the project and inspected daily for leaks. A written log of inspections and maintenance must be completed and maintained throughout the project period. Leaking equipment must not be used in or near surface water. Refuel equipment at least 100 feet from surface water.

4. Work in the stream channel should be limited to periods of no flow. Work during low-flow periods must have prior approval by the NMED. Requests for such approval must describe planned methods to minimize turbidity and to avoid spills. Releases from dams must be incorporated into the work schedule to avoid working in high water.

5. Temporary crossings should be restricted to a single location and perpendicular to and at a narrow point of the channel to minimize disturbance. Heavy equipment must be operated from the bank or work platforms and not enter surface water, unless otherwise approved in writing by NMED. Heavy equipment must not be parked within the stream channel. Unless otherwise approved by NMED, directional borehole (horizontal) drilling must be used instead of open-cut trenching for the placement of utility lines or other buried structures crossing the channel. Requests for such approval of deviations must include a description of planned methods to minimize turbidity, to avoid spills, and to salvage any drilling equipment that cannot be withdrawn from beneath the channel.

6. Unless otherwise approved by NMED, flowing water must be temporarily diverted around the work area, but remain within the existing channel to minimize erosion and turbidity and to provide for aquatic life movement. Diversion structures must be non-erodible, such as sand bags, water bladders, concrete barriers, or channel lined with geotextile or plastic sheeting. Dirt cofferdams are not acceptable diversion structures. Requests for such approval of deviations must include descriptions of planned methods to minimize turbidity,

to avoid spills, and to provide a continuous zone of passage for aquatic life through or around the project area in which the water quality meets all applicable criteria including turbidity.

7. All asphalt, concrete, drilling fluids and muds, and other construction materials must be properly handled and contained to prevent releases to surface water. Poured concrete must be fully contained in mortar-tight forms and/or placed behind non-erodible cofferdams to prevent contact with surface or ground water. Appropriate measures must be used to prevent wastewater from concrete batching, vehicle wash-down, or aggregate processing entering the watercourse. Dumping of any waste materials in or near watercourses is prohibited.

8. Protective measures must be used to prevent blast, ripped or excavated soil or rock from entering surface water. Construction excavation dewatering discharges are to be uncontaminated and include all practicable erosion control measures and turbidity control techniques.

9. Work or the use of heavy equipment in wetlands must be avoided or minimized unless the impacts are to be mitigated. Construction activities in wetlands must be scheduled during low water or winter (frozen) conditions. Unless otherwise approved by NMED, wetland crossings must be restricted to a single location and constructed perpendicular to and at a narrow point of the wetland. Requests for such approval of deviations must include descriptions of planned methods to minimize turbidity and avoid spills. Wetland vegetation and excavated material (top soil) must be retained and reused to improve seeding success. Permeable fills should be designed and installed when practicable, and flows to wetlands must not be permanently disrupted. Fill materials must be clean and consist of coarse material with minimal fines. Ditches or culverts in wetlands must have properly designed, installed and maintained siltation or sedimentation structures at the outfall.

10. During repair, demolition, treatments, or cleaning activities of bridges or associated structures (e.g., deck, pier, abutment, and wing walls), materials must be kept out of the channel. Before removing a bridge or related structures, impermeable containment material (e.g., plastic sheet, canvas, tarpaulins or other catchment devices) must be secured under the bridge and on the banks to capture any debris that may fall into the stream channel. Sandblasting operations must include vacuum systems or the bridge and associated structures must be completely bagged to collect all lead paint and concrete debris. Any debris that falls onto the containment area or channel must be properly disposed in accordance with the New Mexico Solid Waste Regulations (20.9.1 NMAC). Applicable Material Safety Data Sheets of water repellants and surface finish treatments must be maintained at the project area.

11. Bridges, culverts and structures at stream crossings must be properly designed, installed and maintained to allow passage of sediment, bedload, and woody debris, and to prevent erosion problems or diversion of the stream from its natural channel. Unless otherwise approved by NMED, projects must not alter the natural stream channel size or shape (width, depth, gradient, direction or meander pattern), streamflow velocity (sediment transport rates), or water flow capacity. Requests for such approval of deviations must include descriptions of

planned methods to minimize turbidity and avoid spills, as well as to stabilize modified hydraulic geometry.

12. Culverts at stream crossings must be designed and installed to prevent upstream headcutting, downstream channel incision, and erosion of the streambanks or the crossing. Culverts should be designed to pass 100-year flow events. Culvert design must allow for the passage of fish and other aquatic organisms. The road grade at culvert stream crossings must prevent the diversion of the stream from its channel in the event of culvert failure due to plugging or the exceedance of capacity. If the flow overtops the road, it must return to its natural channel instead of running down the road into a new channel.

13. Excavated trenches must be backfilled and compacted to match the bulk density and elevation of the adjacent undisturbed soil.

14. Unless otherwise approved by NMED, all areas adjacent to the watercourse that are disturbed because of the project, including temporary access roads, stockpiles and staging areas, must be restored to pre-project elevations. Disturbed areas outside the channel that are not otherwise physically protected from erosion must be reseeded or planted with native vegetation. Stabilization measures including vegetation are required at the earliest practicable date, but by the end of first full growing season following construction. Native woody riparian and/or wetland species must be used in areas that support such vegetation. Measures to prevent damage by beavers, wildlife, or livestock are required until trees are established. Plantings must be monitored and replaced for an overall survival rate of at least 80 percent by the end of the second growing season. Once established, native plants adapted to the site must be able to thrive with no supplemental water or treatment. Requests for approval of deviation from this condition must include descriptions of planned methods to minimize turbidity and avoid spills, as well as final grading plans.

15. A copy of this Certification must be kept at the project site during all phases of construction. All contractors involved in the project must be provided a copy of this certification and made aware of the conditions prior to starting construction.

16. The NMED must be notified at least five days before starting construction to allow time to schedule monitoring or inspections. The NMED must be notified immediately if the project results in an exceedence of applicable Standards.

**Denial of Certification of NWPs**

NMED denies Certification of NWPs for any activities in Outstanding National Resource Waters (ONRW) designated in 20.6.4.9 NMAC, and NWP 16 (Return Water From Upland Contained Disposal Areas). Although state WQS provide for temporary and short-term degradation of water quality in an ONRW under very limited circumstances if approved by the Water Quality Control Commission as specified at 20.6.4.8.A NMAC, the approval process required for these activities does not lend itself for use for projects covered under these NWPs. This condition is necessary to ensure that no degradation is allowed in ONRWs by requiring proposed discharges

of dredged or fill material to be reviewed under the individual permit process. Also, in accordance with General Condition 25 of the Nationwide Permits, a project-specific Certification must be obtained (see 33 CFR 330.4(c)) for discharges authorized under NWP 16 prior to construction. The NMED requires a complete CWA §404 application prior to commencing the water quality certification review in these cases. This certification process will be conducted pursuant to NMAC 20.6.2.2002.

Please contact Neal Schaeffer of my staff at (505)476-3017 should you have any question.

Sincerely,

James P. Bearzi
Chief
Surface Water Quality Bureau

JPB: cns

xc: Tom Nystrom, Wetlands, Region 6, USEPA
Jill Wick, New Mexico Department of Game and Fish
U.S. Fish and Wildlife Service
401 Certification File 897

# Appendix E

New Mexico Interstate Stream Commission -
Overflow Wetlands Project Depletion Memorandum

New Mexico Interstate Stream Commission
Memorandum

Date: November 30, 2012

To: Estevan Lopez, ISC Director

Through: Greg Lewis, ISC Pecos Basin Manager

From: Emile Sawyer, ISC Environment Lead
Markus Malessa, ISC Pecos Bureau Staff

RE: Evaluation of Additional Net Depletions to the Pecos River as a result of the Overflow Wetlands River Restoration Project near Roswell, New Mexico

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## Purpose

This memorandum presents a quantitative evaluation of additional net depletions to the Pecos River resulting from the restoration project at the Overflow Wetlands near Roswell, New Mexico.

## Background

The US Fish and Wildlife Service issued their Biological Opinion on May 18, 2006 (USFWS, 2006) for the Carlsbad Project Environmental Impact Statement (Reclamation and ISC, June 2006), which provides three Reasonable and Prudent Measures (**RPM**) to support the EIS. RPM number 1 asks Reclamation to support two (2) habitat restoration projects on the Pecos River. The first project was completed in 2009 on the Bitter Lake National Wildlife Refuge. (Please see both the May 7, 2007 and October 20, 2008 Memoranda regarding these efforts.)

The second project, the subject of this memorandum, is scheduled to be completed during 2014, at the Overflow Wetlands area located on lands managed by Federal, State and private owners approximately 15 miles southeast of Roswell, New Mexico. The Bureau of Land Management in its 1997 Roswell Resource Management Plan (USBLM, 2003) established the Overflow Wetlands Area of Critical Environmental Concern (**ACEC**) to protect the biological and scenic values of the Overflow Wetlands Wildlife Habitat Area, which provide critical habitat for threatened and endangered fish species and supports a significant riparian-wetland community.

The ACEC includes about 7,014 surface acres and 3,000 acres of federal mineral estate. The breakdown of ownership is 1,720 acres of State Trust Lands, 2,107 acres of private land, and 3,187 acres of public land. Management prescriptions apply only to public lands within the ACEC.

The wetlands and Pecos River are the focal points of the ACEC. The Pecos River meanders south for about 5.0 miles through the west portion of the ACEC with about 2.5 miles traversing public land. A wide floodplain borders both sides of the Pecos

River within the ACEC. The wetland area trends southwest from the Lea Lake area, within the Bottomless Lakes State Park, for about 3.5 miles before entering the Pecos River at the most southern point. There are four points along the river where water from the wetlands enters the Pecos River; three outflow locations are present on Federal lands and one on State land. For many years the ISC has monitored these locations to account for inflow from the wetlands into the Pecos River.

**Project**

The purpose of this project is to the improve riparian and in-channel habitat for the Pecos bluntnose shiner (*Notropis simus pecosensis*) (**shiner**) along about five (5) river miles of the Pecos River on public, State Trust, and private land within the BLM Overflow Wetlands ACEC by restoring the river channel and flows to dynamic conditions in the reach. This multi-agency effort will use a combination of restoration techniques that include the mechanical removal of non-native vegetation, manual herbicide application to non-native vegetation, lowering and contouring river banks, removing levees, and revegetation.

The restoration project encompasses the removal of tamarix lined bank levees that prevent higher river flows from reaching wetland areas that could provide important habitat for shiner life cycle activities. Once removed, these levees will add 0.702 acres of permanent wetlands and 4.545 acres of surface water to the river during high flow events. Thus a total of 5.247 acres of land activities have been evaluated below.

Bank-line excavation is proposed for six sites. This activity will enhance floodplain formation by assisting river meandering. A total of 0.689 acres is to be affected. A Pecos Sunflower swale is planned for 0.013 acres, together these two (2) actions will increase wetting of an additional 0.702 acres year-round.

Bank lowering will occur along a 3,000 foot linear segment of the southern portion of the restoration project area, on the river's west bank. The banks are to be lowered to the existing incised channel. The existing bank-line would be gradually ramped from the current channel elevation to the current bank-line elevation over a maximum distance of 60 feet. This work will increase the frequency of overbank flows and increase the surface area during high flows to at least 4.545 acres (M. Nemeth, personal communication. July, 2012).

This increase in open surface water area has prompted this evaluation of potential additional net depletions to the Pecos River.

## Method of Calculations

To obtain the current condition, the Project Area Annual Average Evapotranspiration (**ET**) was calculated as a current consumption estimate (**CCE**). The project area size is five (5) river miles in length multiplied by the average streambed width of 70 feet (**ft**) or 41.8 acres. The project area vegetation that will be converted to permanent wetlands equals 0.702 acres and consists of 95% salt cedar (tamarix spp.) and 5% salt grass (*Distichlis spicata*) (M. Nemeth, personal communication. July, 2012). These species are calculated to consume 4.35 ft/year and 2.46 ft/year respectively of ET (Corps, 2006). The yearly average pan evaporation of 7.4 feet, as observed at BLNWR Station # 992 (NM Climate Center, 2012), Lat. 33 28'N, Long. 104 24'W, was multiplied with a pan to surface water evaporation coefficient of 0.77 (Boroughs and Stockton, 2005), to yield a yearly open surface water evaporation rate ($\mathbf{E_a}$) of 5.7 feet per year (Calculation 1).

Using Table 5.9 (See Exhibit 3; Mussetter, 2003) and the aforementioned percentages, it was determined that the total yearly ET rate for this acreage is 3.8 ft/year. To arrive at this quantity, the annual ET values were converted to monthly values, and then multiplied by the monthly ET factors (**mET**) (Table 1) -- for January through December – times the percentage of land cover. Then these values were summed for each species, then together and with the surface water value. The total current consumption estimate is determined to be a rate of 241.8 acre-feet/year (Calculation 2). Area for types of land changes values were obtained are provided in Table 2 (Reclamation, 2012).

### Table 1. Monthly ET factors

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.03 | 0.05 | 0.08 | 0.11 | 0.13 | 0.14 | 0.13 | 0.11 | 0.09 | 0.07 | 0.04 | 0.03 | 1.00 |

### Table 2. Land change activities

| Activity | Area (acres) | Future Status | Totals |
|---|---|---|---|
| Bankline Excavation | 0.689 | wet year round | |
| Sunflower Swale | 0.013 | wet year round | 0.702 |
| Bank Lowering | 4.545 | wet during high flow periods only | 4.545 |
| | 5.247 | total acreage change | 5.247 |

Calculation 1

$E_a$ = 7.4 ft/yr x 0.77
= 5.7 ft/yr

Calculation 2

CCE = Surface water area evaporation + Vegetation ET on future wetland area

Current surface water area evaporation = area x **Σ** ($E_a$ x mET)
= **Σ** (41.8 acres x 5.7 ft/year x mET)
= 7.89 + 10.96 + 19.29 + 26.31 + 30.69 + 33.76+ 29.81+ 26.74 + 21.04 + 15.78 + 9.21+ 6.58

= 238.1 acre-feet

Vegetation ET on future wetland area =
area x monthly species ET x percentage of species cover area

= 0.702 acres x **Σ** (salt cedar mET x 95% + salt grass mET x 5%)

= **Σ** 4.35 ft/yr (salt cedar) / 12 x mET x 0.95 + **Σ** 2.46 ft/yr (salt grass) / 12 x mET x 0.05

Total annual salt cedar ET = 2.90 acre-ft/yr

Total annual salt grass ET = 0.09 acre-ft/yr

2.9 + 0.9 = 3.8 acre-feet/year

= 238.1 + 2.9 + 0.09
= 241.1 acre-feet/year

CCE = 241.1 acre-feet/year

Calculation 3

To obtain the future average ET consumption quantity (**FCE**), the $E_a$ of 5.7 ft/yr was multiplied with each mET and the additional 0.702 acres of future year-round surface water area that the project is expected to create and then summed. In addition, 4.545 acres are expected to be wet during high flow events (Reclamation, 2012). Using the USGS 08386000 PECOS RIVER NEAR ACME, NM gage daily average stream flow

record (July 1937 to October 2012), shows that a flow rate 1,200 cubic feet/second or greater was obtained of 0.21% of the time in the project area. The high flow area was multiplied by the high flow factor, the mET and then summed. Then all of these values were summed to arrive at the FCE of 242.6 acre-feet/yr (Calculation 3).

FCE = Current Project Surface Water Area + **Σ** (Acreage of year-round wetland area evaporation x mET) + **Σ** (Acreage of surface water area evaporation during high flows only x mET x High-flow factor)

= **Σ** (Current surface water area evaporation + $Area_1$ x $E_a$ x mET)
+ **Σ** ($Area_2$ x $E_a$ x mET x High-flow factor)
= **Σ** (( 41.8 + 0.702) x 5.7 x mET)) + **Σ** ( 4.545 x 5.7 x mET x 0.021)
= **Σ** ( 42.5 acres x 5.7 ft/yr x mET) + (4.545 acres x 5.7 ft/yr x (mET x 0.021))
= (8.02 + 11.14 + 19.62 + 26.75 + 31.21 + 34.33 + 30.31+ 27.19 + 21.40
+ 16.05 + 9.36 + 6.69) + (0.02 + 0.03 + 0.04 + 0.06 + 0.07 + 0.08 + 0.07 + 0.06
+ 0.05 + 0.04 + 0.02 + 0.02)
= 242.1 + 0.5
= 242.6 acre-feet/yr

FCE = 242.6 acre-feet/yr

Calculation 4

Finally, to arrive at the Additional Net Depletions (**AND**) for this project the future condition estimated ET (FCE) was subtracted from current condition estimated ET (CCE).

AND = FCE subtracted by CCE

= 242.6 – 241.1
= 1.5 acre-feet/yr

Subtracting the current consumption estimate (**CCE**) from the FCE the restoration project therefore is expected to add additional net depletions (**AND**) of 1.5 ac-ft/yr (Calculation 4).

**Observations**

Whereas it is the responsibility of the State Engineer to be concerned about any depletions greater than 0.1 acre-feet/year in the Pecos River Basin (NMSA 1978 §1-15.6.4, OSE/ISC, 2006); and

Whereas it is the policy of the State Engineer to manage the waters of New Mexico for the benefit of the public and has the authority to permit any and all beneficial use of the state's waters; and

Whereas any increase in depletions in the Pecos River Basin is a concern for interstate compact delivery obligations; and

Whereas the dynamic nature of rivers and the uncertainties surrounding the geomorphic and hydrologic response of the Pecos River channel to the aforementioned project makes future river conditions difficult to predict.

It is therefore recommended that:

A depletion value of 1.5 ac-ft/yr should be assessed to the Overflow Wetlands River Restoration Project near Roswell, New Mexico and that appropriate water rights be designated or obtained for the project; and

An evaluation of the effects on depletions by this project be revisited five years from the completion date to determine if unforeseen circumstances have created a larger than expected surface area and if so, that a larger depletion assessment be required.

Although the project includes Tamarix spp. removal, the ISC does not recognize any credit for this type of water salvage activity at this time. While the current science surrounding ET measurement continues to evolve, the salvage of water through vegetation management has yet to be defensibly quantified. Thus such activities have not been evaluated within this memorandum.

## Exhibit List

Exhibit 1 is a project aerial view map with project activities descriptions noted at specified locations.

Exhibit 2 is a project aerial view map that provides land ownership by tract.

Exhibit 3 provides a table of monthly evapotranspiration (ET) rates for specific species of vegetation.

Exhibit 4 presents a summary of monthly calculation results for the estimated consumption for the current condition.

Exhibit 5 presents a summary of monthly calculation results for the estimated consumption for the future condition.

## References

Craig B. Boroughs, PHD, PE; Thomas B. Stockton, PE; Pecos River RiverWare Model Draft Report; September, 2005.

Mussetter Engineering, Inc.; Bottomless Lake State Park Aquatic Habitat Restoration Feasibility Study; Dec 29, 2003.

Mark S. Nemeth, PHD, PE; Personal communication via email July 25, 2012.

NM Climate Center; NMSU Weather Data; Bitter Lake Weather Station; Last updated: July 5, 2005; Accessed: September 12, 2012; http://weather.nmsu.edu/Pan_Evaporation/bitter_lakes_refuge_evap.htm

OSE/ISC; Rules and Regulations Governing the Appropriation and Use of Ground Water in New Mexico; Revised August 15, 2006.

U.S. Army Corps of Engineers Albuquerque District; Final Detailed Project Report and Environmental Assessment for Bottomless Lakes State Park, Roswell, New Mexico; Dec 12, 2006.

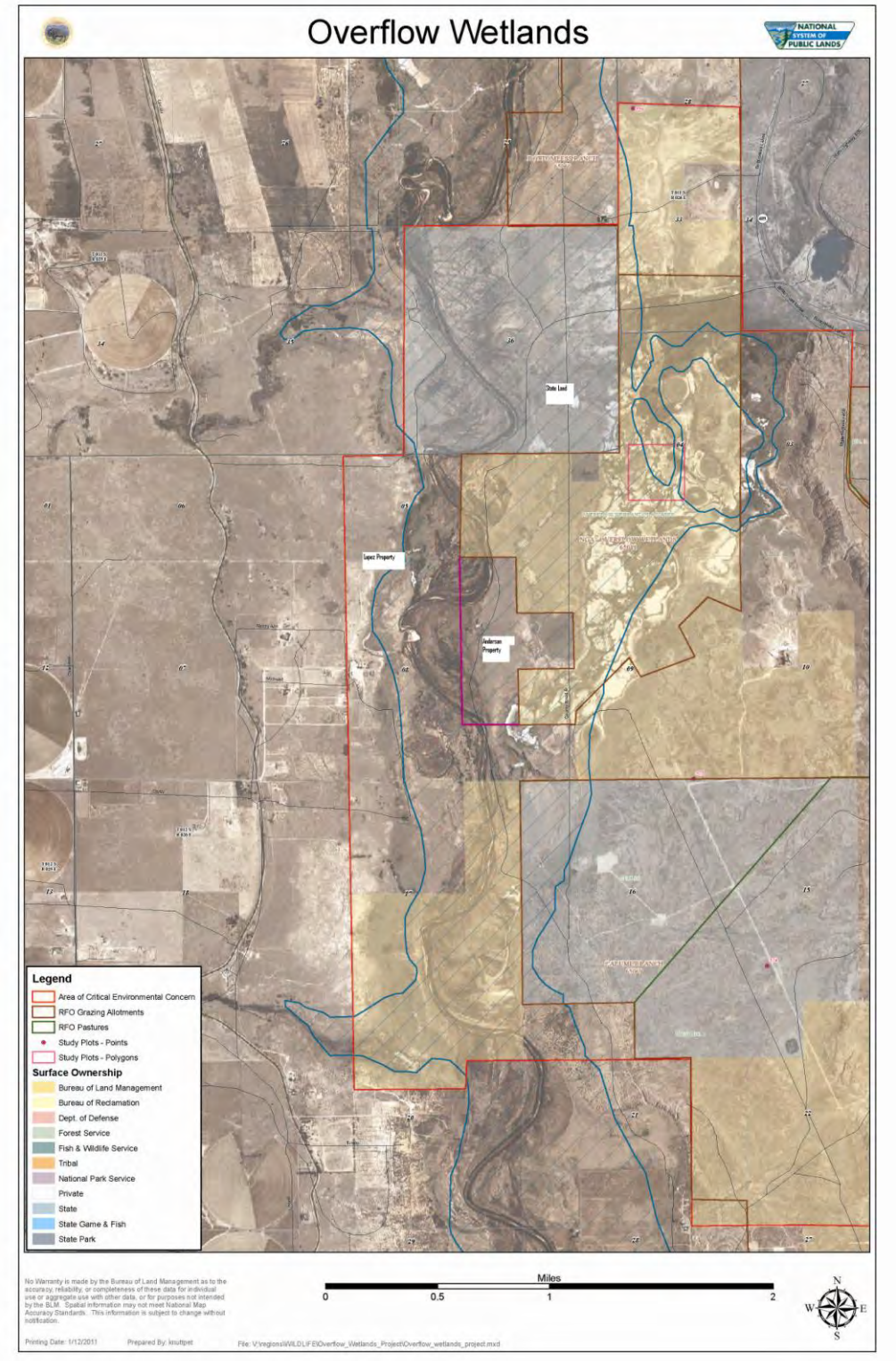
U.S. Bureau of Land Management, Roswell Field Office; Overflow Wetlands Area of Critical Environmental Concern; Activity Plan, September, 2003.
U.S. Bureau of Reclamation; Administrative Draft Environmental Assessment and Biological Assessment; Pecos River Restoration at the Overflow Wetlands, Area of Critical Environmental Concern, Chaves County, New Mexico; October, 2012.

U.S. Bureau of Reclamation and NM Interstate Stream Commission.
Carlsbad Project Water Operations and Water Supply Conservation, Final Environmental Impact Statement, June, 2006.

US Fish and Wildlife Service; Biological Opinion for the Bureau of Reclamation's Proposed Carlsbad Project Water Operations and Water Supply Conservation, 2006-2016. Cons. # 22420-2006-F-0096, May 18, 2006.

**Exhibit 1 – Project aerial view map with project activities at locations.**

**Exhibit 2 – Project aerial view map of land status.**



## **Exhibit 3 – Table of Monthly ET Rates for Types of Vegetation** (Mussetter, 2003)

| Mean monthly ET rates for each of the major plant species identified within Bottomless State Park wetland area. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Name | | | | | Monthly ET Rate (inch/month) | | | | | | | | Yearly ET |
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Rate (ft/yr) |
| iodine bush | 0.52 | 0.6 | 1.16 | 0.64 | 0.82 | 5.84 | 6.49 | 5.98 | 4.08 | 1.87 | 0.85 | 0.66 | 2.46 |
| ragweed | 0.52 | 0.6 | 1.16 | 0.64 | 0.82 | 5.84 | 6.49 | 5.98 | 4.08 | 1.87 | 0.85 | 0.66 | 2.46 |
| salt grass | 0.52 | 0.6 | 1.16 | 0.64 | 0.82 | 5.84 | 6.49 | 5.98 | 4.08 | 1.87 | 0.85 | 0.66 | 2.46 |
| southwestern sea-lavender | 0.49 | 0.56 | 1.08 | 0.6 | 0.77 | 5.46 | 6.07 | 5.59 | 3.81 | 1.75 | 0.79 | 0.62 | 2.3 |
| witch grass | 0.52 | 0.6 | 1.16 | 0.64 | 0.82 | 5.84 | 6.49 | 5.98 | 4.08 | 1.87 | 0.85 | 0.66 | 2.46 |
| sweet-scent | 0.49 | 0.56 | 1.08 | 0.6 | 0.77 | 5.46 | 6.07 | 5.59 | 3.81 | 1.75 | 0.79 | 0.62 | 2.3 |
| three-square bulrush | 2.46 | 2.46 | 2.46 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 9.34 | 2.46 | 2.46 | 2.46 | 5.9 |
| alkali sacaton | 0.49 | 0.56 | 1.08 | 0.6 | 0.77 | 5.46 | 6.07 | 5.59 | 3.81 | 1.75 | 0.79 | 0.62 | 2.3 |
| salt cedar | 1.11 | 1.03 | 1.65 | 1.7 | 4.85 | 9.06 | 9.36 | 8.99 | 7.26 | 4.53 | 1.41 | 1.23 | 4.35 |
| narrow leaf cattail | 1.11 | 2.68 | 4.97 | 5.46 | 10.06 | 13.64 | 14.87 | 14.47 | 9.85 | 4.22 | 2.21 | 1.66 | 7.1 |

**Exhibit 4 - Summary of current monthly calculation results**

| SUM OF CURRENT DEPLETIONS = | | 241.1 | AC-FT/YR | |
|---|---|---|---|---|
| **Current Consumption Estimate** | | | | |
| **Acres** | | **Consumption** | | |
| | | | | |
| **Current: Pecos River only** | | **Current: Pecos River only** | | |
| | **Acres** | | **Acre-feet** | |
| | **Open Water** | | **Open Water** | |
| **January** | 41.8 | **January** | 7.89 | |
| **Feb** | 41.8 | **Feb** | 10.96 | |
| **March** | 41.8 | **March** | 19.29 | |
| **April** | 41.8 | **April** | 26.31 | |
| **May** | 41.8 | **May** | 30.69 | |
| **June** | 41.8 | **June** | 33.76 | |
| **July** | 41.8 | **July** | 29.81 | |
| **August** | 41.8 | **August** | 26.74 | |
| **September** | 41.8 | **September** | 21.04 | |
| **October** | 41.8 | **October** | 15.78 | |
| **Nov** | 41.8 | **Nov** | 9.21 | |
| **Dec** | 41.8 | **Dec** | 6.58 | |
| | | | 238.07 | **238.1** |
| | | | | |
| **Overflow Wetlands** | | **Overflow Wetlands** | | |
| | **Acres** | | **Acre-feet** | |
| | **Riparian Land** | | **Riparian Land** | |
| **January** | 0.702 | **January** | 0.10 | |
| **Feb** | 0.702 | **Feb** | 0.14 | |
| **March** | 0.702 | **March** | 0.24 | |
| **April** | 0.702 | **April** | 0.33 | |
| **May** | 0.702 | **May** | 0.39 | |
| **June** | 0.702 | **June** | 0.42 | |
| **July** | 0.702 | **July** | 0.37 | |
| **August** | 0.702 | **August** | 0.34 | |
| **September** | 0.702 | **September** | 0.26 | |
| **October** | 0.702 | **October** | 0.20 | |
| **Nov** | 0.702 | **Nov** | 0.12 | |
| **Dec** | 0.702 | **Dec** | 0.08 | |
| | | | 2.99 | **3.0** |
| | | | **TOTAL CURRENT** | **241.1** |

**Exhibit 5 - Summary of future monthly calculation results**

| SUM OF FUTURE DEPLETIONS = | 242.6 | AC-FT/YR | |
|---|---|---|---|
| **Future Consumption Estimate** | | | |
| **Acres** | | **Consumption** | |
| Pecos River only | | Pecos River only | |
| | Acres | | Acre-ft | |
| Month | Open Water | Month | Open Water | |
| January | 42.5 | January | 8.02 | |
| Feb | 42.5 | Feb | 11.14 | |
| March | 42.5 | March | 19.62 | |
| April | 42.5 | April | 26.75 | |
| May | 42.5 | May | 31.21 | |
| June | 42.5 | June | 34.33 | |
| July | 42.5 | July | 30.31 | |
| August | 42.5 | August | 27.19 | |
| September | 42.5 | September | 21.40 | |
| October | 42.5 | October | 16.05 | |
| Nov | 42.5 | Nov | 9.36 | |
| Dec | 42.5 | Dec | 6.69 | |
| | | Subtotal | 242.07 | 242.1 |
| Riparian Land During High Flow | | Riparian Land During High Flow | | |
| | Acres | | Acre-ft | High Flow |
| Month | Open Water | Month | Open Water | Factor |
| January | 4.545 | January | 0.02 | 0.021 |
| Feb | 4.545 | Feb | 0.03 | |
| March | 4.545 | March | 0.04 | |
| April | 4.545 | April | 0.06 | |
| May | 4.545 | May | 0.07 | |
| June | 4.545 | June | 0.08 | |
| July | 4.545 | July | 0.07 | |
| August | 4.545 | August | 0.06 | |
| September | 4.545 | September | 0.05 | |
| October | 4.545 | October | 0.04 | |
| Nov | 4.545 | Nov | 0.02 | |
| Dec | 4.545 | Dec | 0.02 | |
| | | Subtotal | 0.54 | 0.5 |
| | | TOTAL FUTURE | = | 242.6 |
| | minus | TOTAL CURRENT | = | 241.1 |
| | | TOTAL NET DEPLETIONS | = | 1.5 |