

RECLAMATION

Managing Water in the West

**DRAFT FINDING OF NO SIGNIFICANT IMPACT AND DRAFT
ENVIRONMENTAL ASSESSMENT
FOR
THE COCHITI PRIORITY SITES RIVERMILE 231.3 AND 228.9**



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

August 2007

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.

Front Cover Photo Caption – Photo showing Cochiti Priority Site 231.1, Arriba County, NM; October, 2005

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BUREAU OF RECLAMATION
Albuquerque Area Office
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Finding of No Significant Impact

THE COCHITI PRIORITY SITES RIVERMILE 231.3 AND 228.9

Manager, Environment Division

Date

Area Manager, Albuquerque Area Office

Date

AAO-07-008
FONSI Number

BACKGROUND

The Bureau of Reclamation has authority for river channel maintenance on the Rio Grande between Velarde, New Mexico, and the headwaters of Caballo Reservoir. As a result, Reclamation monitors changes in the river channel in order to identify sites that require maintenance. Monitoring includes channel and levee capacity evaluations in an effort to keep track of river maintenance priority sites that may provide damage to riverside facilities.

There are two priority sites on the Pueblo of Cochiti that require extensive maintenance: River Mile 231.3 about one mile down stream of the Cochiti Dam and River Mile 231.3 about three miles downstream of the dam (see map Page 2). The maintenance activities of these priority sites have been analyzed in the environmental assessment subsequent to this Finding of No Significant Impact.

SUMMARY OF THE PROPOSED ACTION

At River Mile 231.3, Reclamation proposes to protect a road and agricultural fields on the west side of the Rio Grande from damage caused by migration of the river and sinkhole formation. In addition, Reclamation also proposes to protect the east levee at River Mile 228.9 from damage caused by eastward migration of the river's secondary channel (see figure 1, page 3).

ENVIRONMENTAL IMPACTS RELATED TO THE RESOURCES OF CONCERN

As a result of analyzing the effects of the proposed action in this EA, the following summarizes the reasons why there would be a Finding of No Significant Impact:

Vegetation

Native trees (such as Cottonwoods or New Mexico Olive trees) or shrubs removed at the beginning of construction would be replaced. These new trees and shrubs would be spaced irregularly throughout the project area in appropriate locations to improve their potential for survival and to create a more natural condition.

Native grasses and wildflowers would be seeded in areas disturbed by construction to re-establish vegetation. Only the amount of the proposed staging and stockpiling areas needed would be used or disturbed. Upon completion of stabilization activities, all work areas would be cleaned up and all materials and equipment removed. The re-establishment of vegetation would be monitored and irrigation water would be brought in by truck, if necessary, to ensure the successful establishment of seeded areas

Wildlife Including Threatened and Endangered Species

Although construction activities may scare existing wildlife away temporarily, most animal species in the project area would be able to return after project completion. Some mortality of less mobile species would be expected but not in quantities that would damage local populations. The improved quality of the habitat after new vegetation becomes established would offset these losses over time.

Rio Grande Silvery Minnow is considered to be extirpated from the Cochiti reach or possibly persist at undetectable population densities, the Fish and Wildlife Service considers the likelihood of silvery minnows being present in either construction area to be small and discountable (J. Parody pers. comm.). The construction of the proposed action would not result in the adverse effects on minnow critical habitat. The project would result in an increase in potential habitat for the species, anticipating future re-introduction efforts in cooperation with the pueblos or a rebound by the local population.

The proposed action would have no adverse effects on the Southwestern Willow Flycatcher or its designated critical habitat based on the distance to occupied habitat and the fact that minimal existing vegetation would be disturbed by the proposed activity. Additionally, the proposed action would result in the planting of riparian/wetland communities in newly created areas that could eventually mature and create potentially suitable Southwestern Willow Flycatcher habitat.

The Bald Eagle has been delisted as a threatened species as of July 9, 2007 (Federal Register 72(130): 37345-37372). However, precautions will continue in the project areas during construction. Potential roosting and perching structures would not be impacted by the proposed action, since existing native vegetation would be protected. Additionally, implementation of the proposed river maintenance activities would likely create suitable conditions for the Bald Eagle's prey base by creating a secondary channel with slower water velocities and planting riparian and wetland vegetation on newly created areas. Newly created habitat for its prey base may attract Bald Eagles to the project area.

Noxious Weeds

Whenever land is disturbed, the potential exists for the intrusion and establishment of noxious weeds. River Mile 231.3 portion of the project could disturb up to 21 acres and River Mile 228.9 could disturb up to 32 acres. To minimize the potential for the continued establishment and spread of State-listed and other noxious weeds, an aggressive revegetation plan would be implemented. This plan, as described in Section 2.3.1 of this EA, would allow native species to become re-established more rapidly than they otherwise might. Past experience has shown that, over time, any noxious weeds that manage to gain a foothold in the project area would likely be crowded out by the more competitive native vegetation.

In addition to reseeding and planting, the introduction of noxious weed seeds would be minimized by a requirement that all equipment used on the project be pressure washed before arriving and leaving the site. Reclamation, in cooperation with the Pueblo of Cochiti, would monitor the project area following construction (5 years) for noxious weeds and treat them as necessary. By preventing the introduction of noxious weed seeds and pursuing an aggressive revegetation plan, the potential for noxious weeds becoming established in the project area over time would be minimal.

Water Resources

During construction, the removal of vegetation in the project area could potentially result in erosion and contribute to additional turbidity in the river downstream of the project area; however, standard construction best management practices (BMP) would be used to minimize runoff during this period. Consequently, most runoff would be contained within the active

construction site. The re-establishment of native riparian vegetation in the project area following construction would ultimately reduce the project area's contribution to turbidity in the river. The Pueblo of Cochiti and Region 6 of the Environmental Protection Agency would specify project requirements for certification and compliance with Section 401 of the Clean Water Act (CWA).

Environmental Justice

No effects of any kind to the local population are expected under the proposed action. No adverse effects to low-income or minority populations are anticipated.

Indian Trust Assets (ITAs)

There are no ITAs within the project area or within the vicinity to be affected.

Cultural Resources

There are no structures eligible for the National Register of Historic Places that would be affected by the proposed action. In addition, no sacred sites or traditional cultural properties are expected in the project area; however, should consultation with the tribes result in the identification of any such sites or properties, then Reclamation would consult with tribe(s) concerned to ensure no adverse effects result from the proposed action.

Air Quality and Noise

Fugitive dust generation from excavating and grading activities in the project area, along with exhaust emissions from heavy equipment and vehicles working on the project, are the only anticipated effects to air quality during construction. These temporary effects would not be expected to be significantly adverse. There would be no effects to air quality following completion of construction activities and re-establishment of vegetation in disturbed areas.

ENVIRONMENTAL COMMITMENTS

- Construction of the stabilized bankline would be implemented during low flows to minimize the area of disturbance at the construction site.
- All construction debris and waste would be disposed of at an approved landfill facility.
- Best Management Practices would be implemented and utilized to prevent stormwater runoff and water pollution from entering the Rio Grande during construction activities.
- Even though the Bald Eagle has been delisted as a threatened species as of July 9, 2007 (Federal Register 72(130): 37345 – 37372), precautions will continue in the project area as follows: In the morning before construction activities start or following breaks in construction activities, any sighting of a Bald Eagle in the project area would be reported to a Reclamation Biologist. If a Bald Eagle arrives during construction activities, construction would not be interrupted. If Bald Eagles are found consistently in the immediate project area during the construction period, Reclamation would contact the

Service to determine whether formal consultation is necessary.

- Should evidence of possible scientific, prehistorical, historical, or archeological data be discovered during the course of this action, work shall cease at that location and the Area 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 or fossils uncovered during operations, and the proponents shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Government.
- Any person who knows or has reason to know that he or she has inadvertently discovered human remains on Federal or tribal lands, must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the responsible Federal agency official with respect to Federal lands, and, with respect to tribal lands, to the responsible Indian tribe official. The requirement is prescribed under the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3042) of November 1990 and National Historic Preservation Act, Section 110(a)(2)(E)(iii) (P.L. 102-575, 106 Stat. 4753) of October 1992.
- During the construction period, Reclamation would use an exclusion cage with ¼-inch hardware cloth enclosing the sides to screen the pump intake. The ¼-inch hardware cloth would exclude small silvery minnows and other fish from the pump intake. The cage would be sized (larger than 2'L x 2'W x 2'D) to allow sufficient water for pumping and avoid pressure differential (suction) along the sides of the cage that could injure small fish.
- During construction, Reclamation would obtain water for dust abatement from drains, canals, and the river (not during the minnow spawning season).
- Monitoring and maintenance of vegetation seeded or planted for reestablishment shall occur for a period of five years.
- The introduction of noxious weed seeds would be minimized by a requirement that all equipment used on the project be pressure washed before arriving and leaving the site. Reclamation, in cooperation with the Pueblo of Cochiti, would monitor the project area following construction (5 years) for noxious weeds and treat them as necessary. By preventing the introduction of noxious weed seeds and pursuing an aggressive revegetation plan, the potential for noxious weeds becoming established in the project area over time would be minimal.

COORDINATION

The U.S. Fish and Wildlife Service (Service) participated in a field review of the project site and were informally consulted about any species of concern. The U.S. Army Corps of Engineers (ACOE) and New Mexico Environment Department (NMED) were consulted with regarding CWA Section 404 and 401, respectively. New Mexico Department of Game and Fish (NMDG&F) was consulted with through their website regarding any state protected animal species that could potentially occur in the project area. The New Mexico State Historic Preservation Office (NMSHPO) was consulted with by Reclamation to determine project compliance with state and federal laws (Section 106 of the National Historic Preservation Act (NHPA) regarding cultural resources in the project area. A government to government consultation was conducted with the Pueblo of Cochiti on August 24, 2006, to provide the governor and tribal counsel an opportunity to make comments or voice any issues or concerns regarding the proposed project. On October 25, 2007, a field trip to the priority sites was conducted with the Pueblo, Reclamation, and a representative from the Corps of Engineers.

CONCLUSION

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and based on the analysis in the EA, Reclamation has determined that implementing the proposed action would not result in a significant impact on the human environment and does not require the preparation of an environmental impact statement.

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Acronyms and Abbreviations

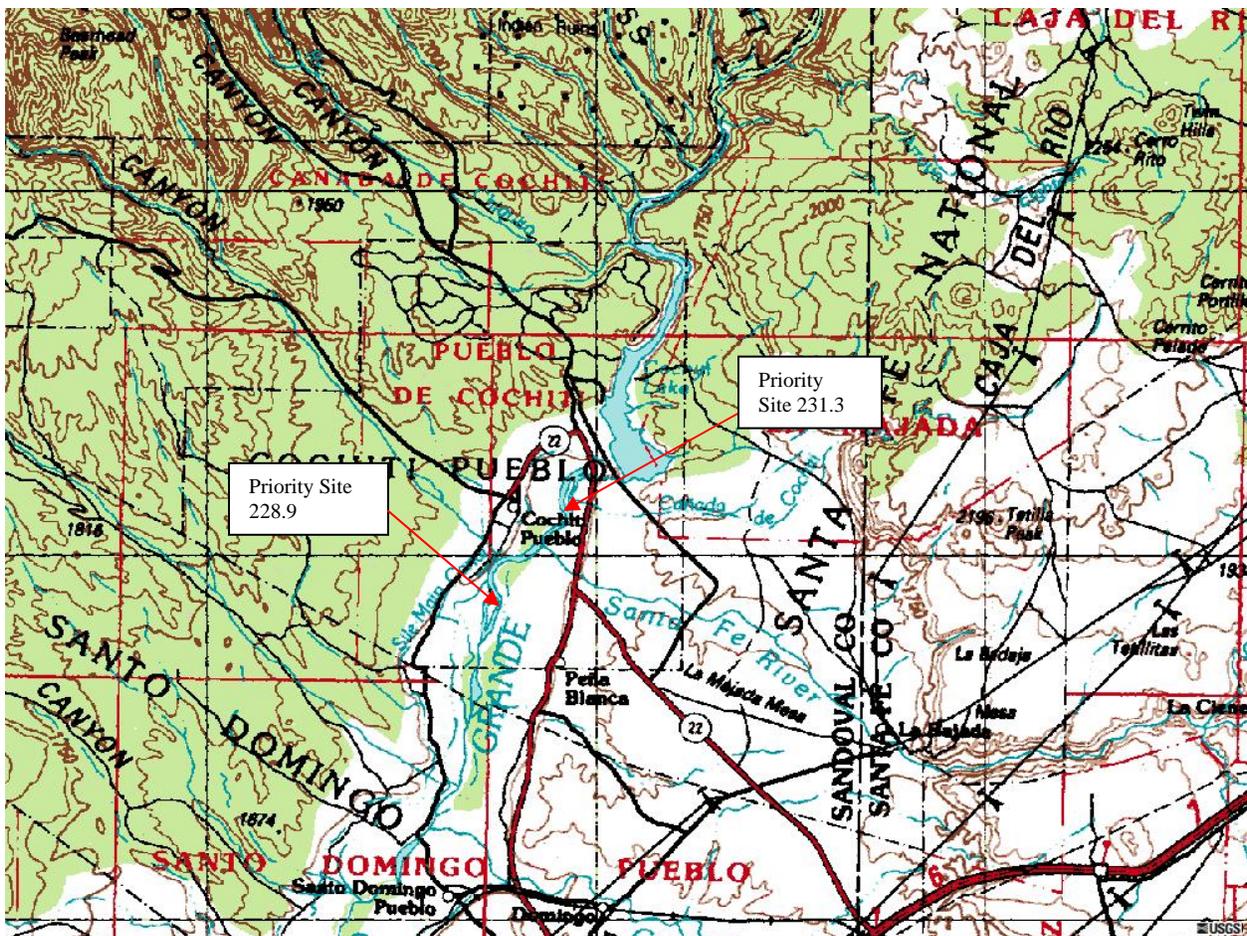
ACOE	U.S. Army Corps of Engineers
AQCR	Air Quality Control Region
MPs	Best Management Practices
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ITAs	Indian Trust Assets
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMED	New Mexico Environment Department
NMDG&F	New Mexico Department of Game and Fish
NMRPTC	New Mexico Rare Plant Technical Council
NMSHPO	New Mexico State Historic Preservation Officer
MRGCD	Middle Rio Grande Conservancy District
NPDES	National Pollution Discharge Elimination System
O & M	Operations and Maintenance
Reclamation	Bureau of Reclamation
Service	U.S. Fish and Wildlife Service
U.S.C.	United States Code
USGS	United States Geological Survey

Chapter 1 PURPOSE AND NEED FOR ACTION

1.1. Introduction:

The Bureau of Reclamation has authority for river channel maintenance on the Rio Grande between Velarde, New Mexico, and the headwaters of Caballo Reservoir. Reclamation monitors changes in the river channel. The evaluations include channel and levee capacity in an effort to keep track of river maintenance priority sites that may provide damage to riverside facilities.

There are two priority sites on the Pueblo of Cochiti that require extensive maintenance: River Mile 231.3 about one mile down stream of the Cochiti Dam and River Mile 228.9 about three miles downstream of the dam (see map below). The maintenance activities of these priority sites are the focus of this environmental assessment.



1.2. Proposed Action

At River Mile 231.3, Reclamation proposes to protect a road and agricultural fields on the west side of the Rio Grande from damage caused by migration of the river and sinkhole formation. In addition, Reclamation also proposes to protect the east levee at River Mile 228.9 from damage caused by eastward migration of the river’s secondary channel (see figure 1, page 3).

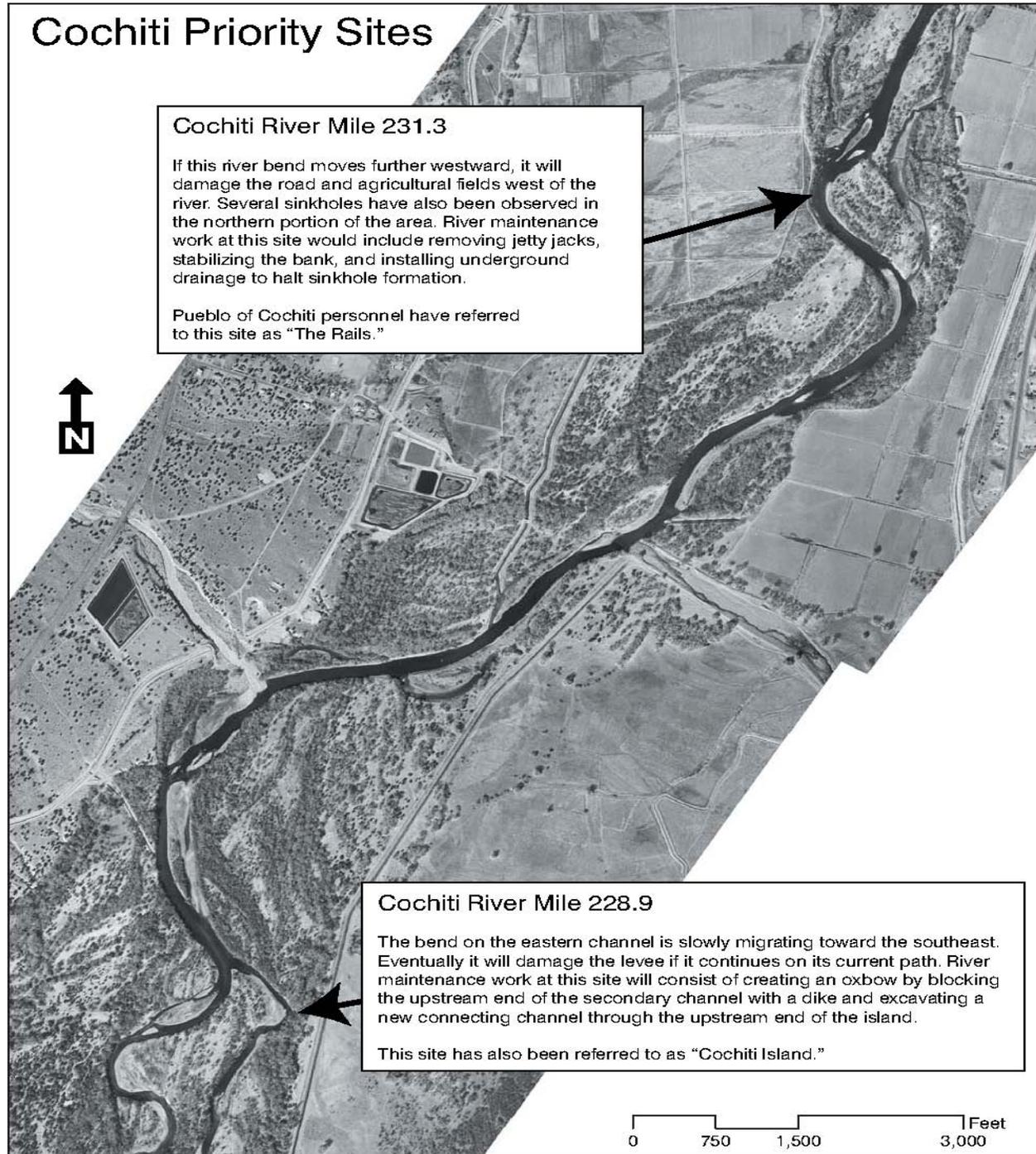


Figure 1. Locations of Cochiti priority sites

1.3. Need for the Action

The primary concern at River Mile 231.3 is on the west bank of the Rio Grande. The river is only about 30 feet away from a dirt road that runs parallel to the channel. The edge of an agricultural field is about 80 feet away from the channel; it is believed that this field may have an underground drainage system that could be damaged if the river migrates further westward. Additionally, several sinkholes, probably caused by flow of groundwater, have been observed between the river and the agricultural fields. Some sinkholes have formed in the road, and sinkholes near the channel have the potential to encourage erosion of the bankline.

At River Mile 228.9, the main concern is that the bend in the secondary channel could migrate toward the levee, causing a levee breach and possible flow of river water into the adjacent drain. The bend in the secondary channel has an unusually small radius of curvature, and there is evidence that the secondary channel could abruptly become the main channel because of its steeper gradient, as compared to the western channel (Bio-West, Inc., 2005c). The distance from the channel to the levee toe is about 200 feet.

1.4. Purpose of the Action

In order to fulfill the need (described in section 1.3) for the action, Reclamation proposes to strengthen the west bank at Priority Site 231.3. At Priority Site 228.9, Reclamation proposes to protect the east levee from eastward migration of the River. The following are objectives of the proposed action:

- 1.4.1. At River Mile 231.3, the proposed action would be to remove the jetty jacks, install bio-engineered bank protection, and move the nearby road farther away from the river.
- 1.4.2. At River Mile 228.9, the proposed action would be to block the upstream end of the secondary channel with a berm and excavate a new channel through the island that will connect the main channel to the secondary channel downstream of the priority site.
- 1.4.3. Both objectives above must meet the habitat needs specified in the Biological Opinion addressing Reclamation's river maintenance activities (U.S. Fish and Wildlife Service, 2003).

1.5. Relevant Statutes, Regulations, and other Plans

The proposed action would be required to conform to the provisions of following regulations and associated federal and state agencies:

- 1.5.1. Section 7 of the Endangered Species Act (ESA) administered by the U.S. Fish and Wildlife Service (Service).
- 1.5.2. Section 106 of the National Historic Preservation Act (NHPA) administered by the New Mexico State Historic Preservation Officer (SHPO).
- 1.5.3. Section 401 Certification of the Clean Water Act (CWA) administered by the New Mexico Environment Department Surface Water Quality Bureau (NMEDSWQB).
- 1.5.4. Section 404 of the CWA administered by the Corps of Engineers.
- 1.5.5. Section 402 of the CWA administered by the Environmental Protection Agency (EPA).

- 1.5.6. Cochiti Priority Sites Biological Assessment dated April 2007, prepared by the Albuquerque Area Office Environment Division Staff.

1.6. Issues, Public Scoping

Public scoping, for the purpose of defining the issues regarding the implementation of the proposed action, was limited to the following:

- 1.6.1. Two technical meetings were held with the Pueblo to discuss various alternatives. One of the meetings was with the Service and the Corps of Engineers to discuss CWA issues and ESA issues.
- 1.6.2. Three informal field trips with the Pueblo's environmental manager to discuss the scope of work and to understand any issues the pueblo might have regarding the proposed action.
- 1.6.3. One government to government consultation with the Pueblo's governor to understand any issues the Pueblo may have regarding the proposed action.

The following are a list of issues that have been identified:

- 1.6.3.1. Effects of the project on the Silvery Minnow, Bald Eagle, and the Southwestern Willow Flycatcher.
- 1.6.3.2. The potential introduction of State-listed noxious weeds.
- 1.6.3.3. Erosion-related water quality impacts during construction and after construction.
- 1.6.3.4. Avoidance of cultural and archaeological resources, as well as potential sacred sites in the project area.
- 1.6.3.5. Avoidance of Indian Trust Assets (ITAs)
- 1.6.3.6. The potential for any adverse effects to low-income and minority populations.
- 1.6.3.7. Air quality and noise from construction activities
- 1.6.3.8. Native vegetation

Chapter 2 ALTERNATIVES

2.1. Introduction

This chapter will be devoted to describing and comparing the alternatives including a summary of environmental consequences. The chapter has four sections as follows:

- 2.1.1. Description of Alternatives
- 2.1.2. Process Used to Consider, Select, and Eliminate Alternatives
- 2.1.3. Discussion of Proposed Alternative
- 2.1.4. Summary Comparison of the Activities, the Predicted Achievement of the Project Objectives, and the Predicted Environmental Effects of All Alternatives (see page 21).

2.2. Description of Alternatives

- 2.2.1. Description of the No Action Alternative

If this action were selected, the priority sites would continue to degrade their respective banks. At River Mile 231.3, the river may continue to migrate west and damage the road and agricultural fields. Sinkholes that exist may continue to become more severe and contribute to the erosion of the west side.

At River Mile 228.9, the river could continue to migrate east toward the levee and subsequently damage the levee which may cause it to breach and damage private property.

2.2.2. Description of the Proposed Alternative

At River Mile 231.3, the planned action would be to remove the jetty jacks, install bioengineered bank protection, and move the nearby road farther away from the river. At River Mile 228.9, the planned action would be to block the upstream end of the secondary channel with a berm and excavate a new channel through the island that will connect the main channel to the secondary channel downstream of the Priority site.

2.3. Process Used to Consider, Select, and Eliminate Alternatives

An alternatives analysis was prepared by the Reclamation engineering department for the purpose of selecting a preferred alternative. At River Mile 231.3, five alternatives were evaluated and eight at River Mile 228.9. Each alternative was evaluated using the following five criteria:

- Design considerations
- Environmental impacts
- Reliability and design life
- Financial costs
- Adaptive management needs such as monitoring and maintenance requirements with costs

The following summarizes the alternatives considered at each priority site:

River Mile 231.3:

1. Install Bioengineering Controls and Move a Road
2. Place Riprap
3. Install Bendway Weirs
4. Realign Channel
5. Realign Channel with Split Flow

River Mile 228.9

1. Install Bioengineering Controls
2. Place Riprap
3. Install Bendway Weirs
4. Realign East Channel A or Realign East Channel B
5. Enhance West Channel using Deflection Vanes
6. Levee Setback

7. Install Vegetated Crib Wall
8. Create Oxbow

The proposed alternative for River Mile 231.3 included the combination of moving a road and Bioengineering Controls (number one). In addition, creation of an oxbow (number eight) was selected for River Mile 228.9.

2.3.1. Discussion of Proposed Alternative

2.3.1.1. Proposed actions at River Mile 231.3 would include seven parts to be successful.

- A temporary dike and pilot channel for dewatering
- Removal of Jetty Jacks and vegetation
- Bio-engineering Bank Stabilizations
- Road Relocation
- Construction of a French Drain
- Vegetation Planting
- Wildlife habitat enhancements

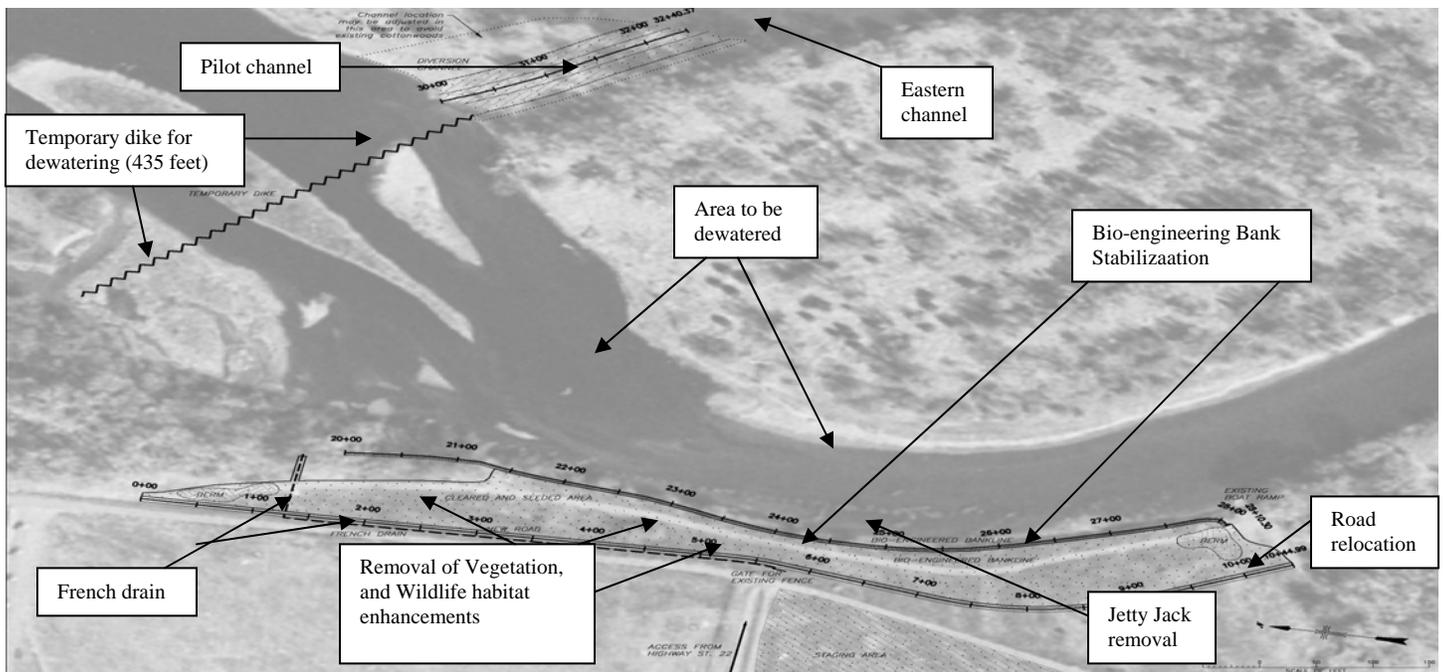


Figure 2, Rivermile 231.3 priority site project area

The following table separates out the areas of surface disturbance for Priority Site 231.3:

Location	Acres of disturbance	Comments
Bio-engineering bank/road relocation	3.0	Some of the bio-engineering may be below the ordinary high water mark of the river.
Diversion Channel/Temporary dike	2.5	This disturbance is below the ordinary high water mark. Composed of excavated earth material deployed as a dike in the river
Staging area	5	Above the ordinary high water mark
Other potential disturbed areas	10.5	Roads and other areas disturbed by heavy equipment during construction

Temporary dike and pilot channel for dewatering

Dewatering would be required to remove river water, local surface and groundwater during construction. A temporary dike would be installed in the main (western) side channel upstream of the priority site as shown in Figure 2. A diversion channel between the western and eastern channels would be built prior to the construction of the temporary berm to allow diverted flows to bypass the construction area. The temporary dike diversion channel would divert most of the flow down the eastern side channel during construction. After the bio-engineering bankline has been completed, the temporary dike would be removed, and the diversion channel would remain.

Removal of Jetty Jacks and Vegetation

All existing jetty jacks, including both tieback and main lines, located within the project area would be removed from the site. The jetty jacks would be removed concurrent with bank stabilization activities and require a construction access of 30 feet left and right of the centerline of each jetty jack line. Removal of jetty jacks would promote safer conditions during construction.

All non-native vegetation would be removed within the disturbed area of the project site. The removal of existing cottonwood trees and other native plants would be avoided or minimized during all project phases. All removed vegetation would be mulched within the project site and spread out evenly on the ground surface, not to exceed a height of 3 inches.

Bio-engineering Bank Stabilizations

The preferred alternative at this site involves using coir fabric to encapsulate the soil, creating a bio-engineered bank protection system. The design would also include the construction of a toe trench and installation of toe stone to prevent toe scour. Figure 3 shows a plan view of the bio-engineered bankline.

The main objective of the bio-engineered bankline would be to provide long term stability through establishment of deep rooted native vegetation on the bankline. Coir fabric would be used to provide temporary stability (approximately 3 years) while the trees and shrubs become established. The design would include the installation of toe stone buried below the bio-engineered bankline to prevent toe scour.

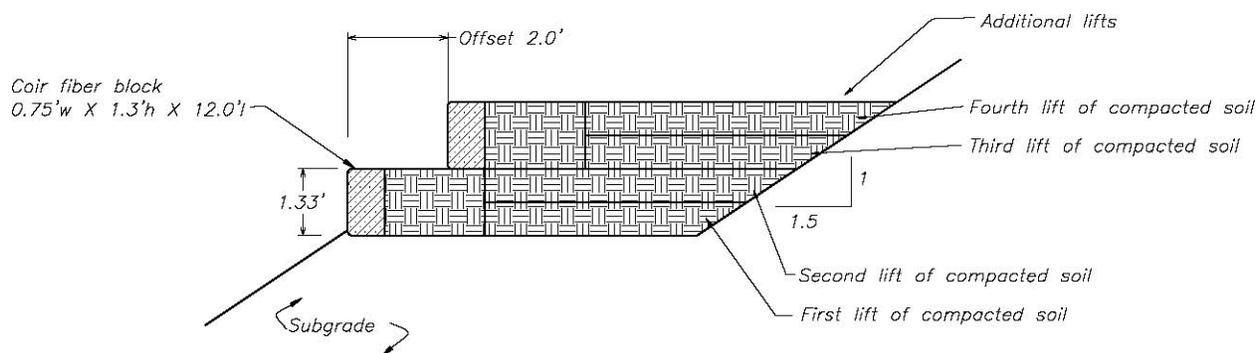


Figure 3. Typical cross-section of coir fabric lift. All dimensions are approximate.

The construction of the bio-engineered bankline would occur above the toe stone. The bio-engineered bankline would be designed such that at flows greater than 1,500 cfs the first lift would be expected to flood, and at flows between 1,500 and 5,000 cfs the second lift would become flooded. It is expected that flows greater than 5,000 cfs would flood the third lift and cause flooding to go over the bank within the general project vicinity.

Approximately three lifts would be placed, with each lift offset to the west by 2 feet. This final sloped area would be seeded (see “Vegetation Planting and Seeding”) and protected against erosion caused by rainfall and runoff.

Fill material would be provided for the bioengineered bankline from regrading of the existing bankline and construction of the toe stone trench.

Road Relocation

A two-track dirt road that is used periodically by members of the Pueblo of Cochiti lies immediately to the west of the priority site. The road through this area would be relocated to the west as shown in Figure 2. The new dirt road location would establish a path of similar width to the existing location by constructing an area approximately 14 feet wide. The existing road location would be ripped to soften the compacted soil. The soil would then be contoured to fit in with the bank bio-engineering and discourage vehicular traffic from continuing to follow the existing road location. This area would subsequently be planted with native vegetation suitable for an upland habitat (see “Vegetation Planting”).

Construction of a French Drain

A trench would be dug following a path west from one of the sinkholes towards the agricultural fields to investigate the source of the water causing the piping. If it is determined that the source is primarily a broken drainage tile, then this would be repaired. If the source is unchecked, seepage from Cochiti Dam or the nearby agricultural fields may occur. The underground flow would be intercepted by digging a trench perpendicular to this flow and filling it with rock, gravel packed perforated pipe, solid pipe, or some combination of these three to create a French drain (see Figure 4).

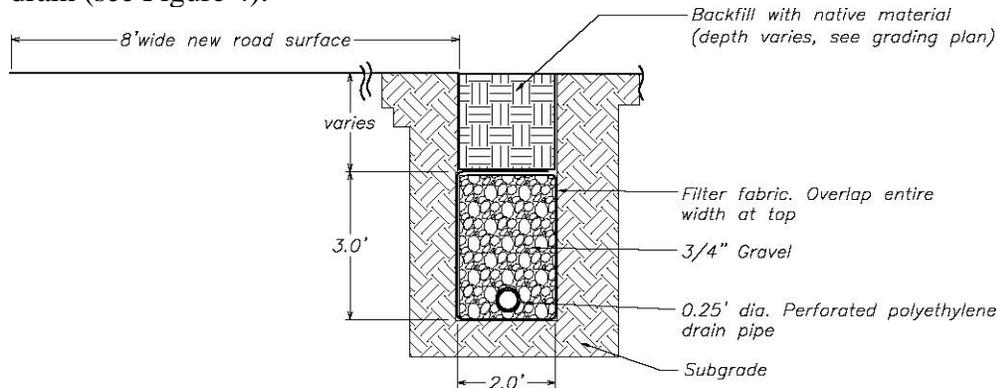


Figure 4, Cross-section of typical French drain. All dimensions are approximate.

A filter fabric would be placed between the French drain and the native material to prevent the clogging of the French drain (Gorven, 2006). The expected location of this drain would be immediately to the west of the two-track dirt road relocation in the vicinity of the project area that is known to have potential seepage problems.

Vegetation Planting and Seeding

The following would be procedures for plant species to be used, for planting, and a seed mix:

- Plant species would be planted in groups, approximately 5 feet on center, as shown in Figure 4.
- Areas denuded of vegetation would be seeded as a result of constructions operations.
- Seeding would take place during suitable conditions such as fall, spring, or rainy season.
- Previously stockpiled topsoil would be placed just before seeding operations to eliminate competition from weeds.
- Seed would be close to 100 per cent pure live seed.
- Seed would be broadcast at the rate of 15 pounds per acre or less depending upon the conditions of site.

The following table shows the proposed plants species to be planted and seeded:

Vegetative species	Containerized, pole, or pounds of pure live seed per acre	Method of planting
<i>Populus deltoides</i> (Rio Grande cottonwood)	pole	pole
<i>Salix exigua</i> (coyote willow)	pole	pole
<i>Amorpha fruticosa</i> (false indigo)	In containers	containerized
<i>Artemisia filifolia</i> (sand sage)	“	“
<i>Atriplex conescens</i> (fourwing saltbrush)	“	“
<i>Chrysothamnus nauseosus</i> (rubber rabbitbrush)	“	“
<i>Forestiera pubescens</i> (New Mexico olive)	“	“
<i>Ribes aureum</i> (golden currant)	“	“
<i>Achnatherum</i> or <i>Oryzopsis hymenoides</i> (Indian ricegrass)	3.4	Broadcast
<i>Agropyron smithii</i> (western wheatgrass)	4.36	“
<i>Bouteloua gracilis</i> (blue grama)	0.79	“
<i>Distichlis stricta</i> (saltgrass)	1.01	“
<i>Eleocharis palustris</i> (common spikerush)	0.84	“
<i>Juncus balticus</i> (Baltic rush)	0.20	“
<i>Scirpus pungens</i> (threesquare bulrush)	2.74	“
<i>Sporobolus airoides</i> (alkali sacaton)	0.99	“
<i>Sporobolus cryptandrus</i> (sand droopseed)	0.33	“

Native vegetation shall be planted throughout disturbed areas of the project. It is expected that cottonwood poles will be planted near the river on surfaces which will be flooded at flows of 5,000 cfs or higher, while coyote willows shall predominant at elevations between the 1,000 cfs and 5,000 cfs water surface elevations. Shrubs and grasses suitable for wetland and upland communities shall also be planted, interspersed with the cottonwood and willow pole plantings. Figure 5, Page 12, illustrates a plan view of the plantings and seedings.

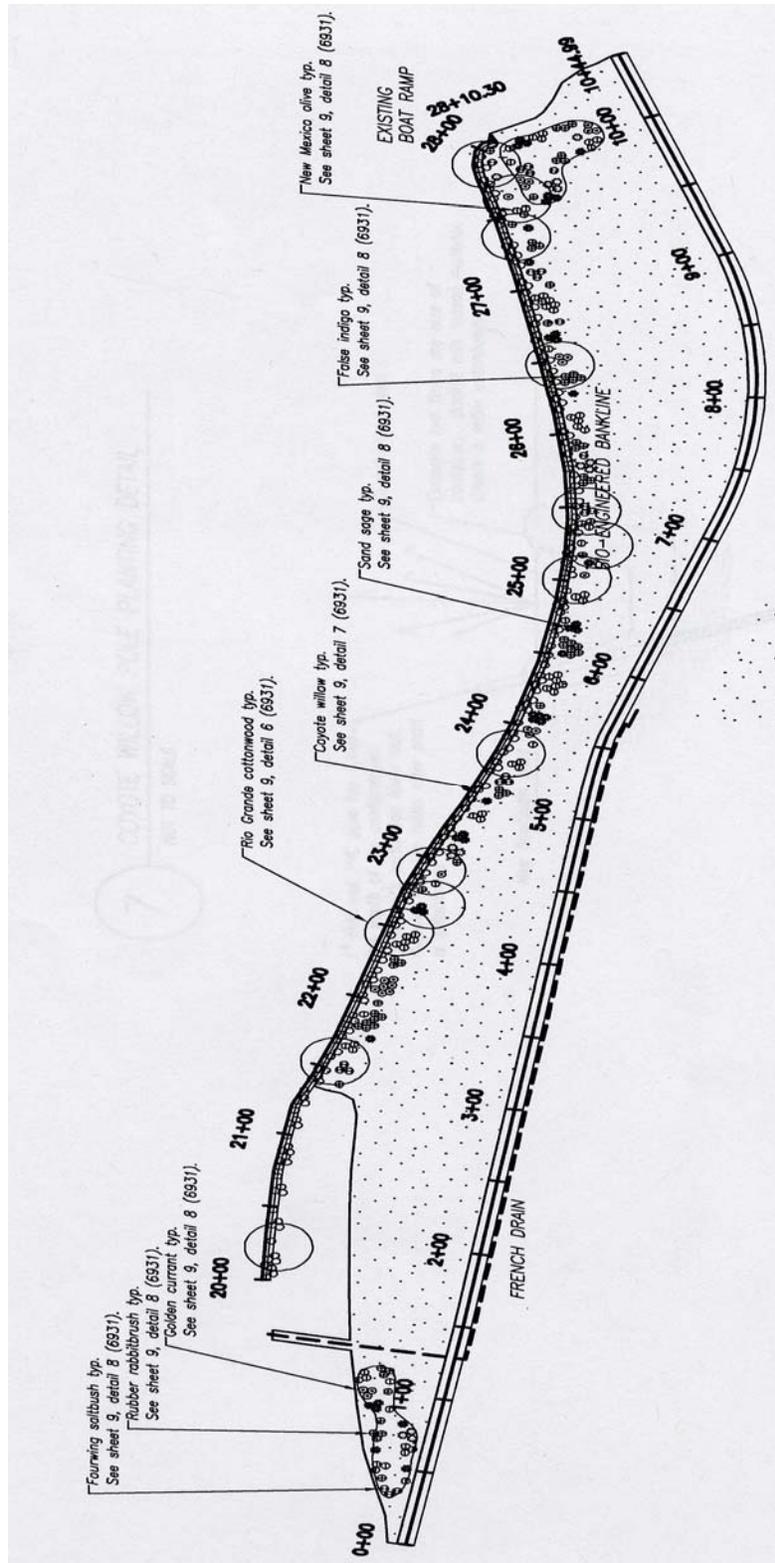
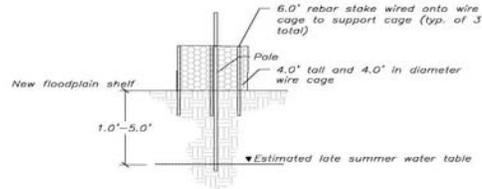
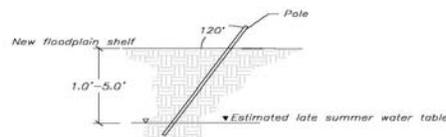


Figure 5, Planting Illustration/drawing

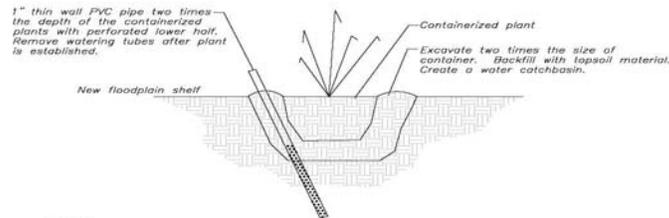
Wildlife habitat enhancements The following shows planting details of pole and containerized planting:



7 COTTONWOOD POLE PLANTING DETAIL
NOT TO SCALE



8 COYOTE WILLOW POLE PLANTING DETAIL
NOT TO SCALE



9 CONTAINERIZED PLANTING DETAIL
NOT TO SCALE

Replacing the existing vertical bank with a bio-engineered bankline would increase the preferred habitat of the silvery minnow. The bio-engineered bankline would create a bank surface with variable heights that would be subject to flooding at different river stages. This alternative may provide habitat improvements for the Rio Grande silvery minnow by improving the overall habitat conditions through this reach.

Native vegetation would be planted throughout the project area. As the size of the planted area is relatively small, it is not expected that the established vegetation would significantly improve the habitat for the Southwestern Willow Flycatcher or the Yellow-Billed Cuckoo (Bio-West, Inc., 2005c). However, as the woody vegetation becomes established at this site, there would be the potential to connect existing tracts of riparian habitat, which may improve the overall habitat conditions in this reach for both of these bird species.

2.3.1.2. Proposed actions at River Mile 228.9 would also include seven parts to be successful. The following is a list of these parts (see Figure 6):

- Removal of Vegetation
- Diversion Berm and Oxbow Creation
- Dewatering and Construction Operations
- Cross-Island Channel Alignment
- Berm and Bank Restructuring
- Vegetation Planting
- Wildlife Habitat Enhancements

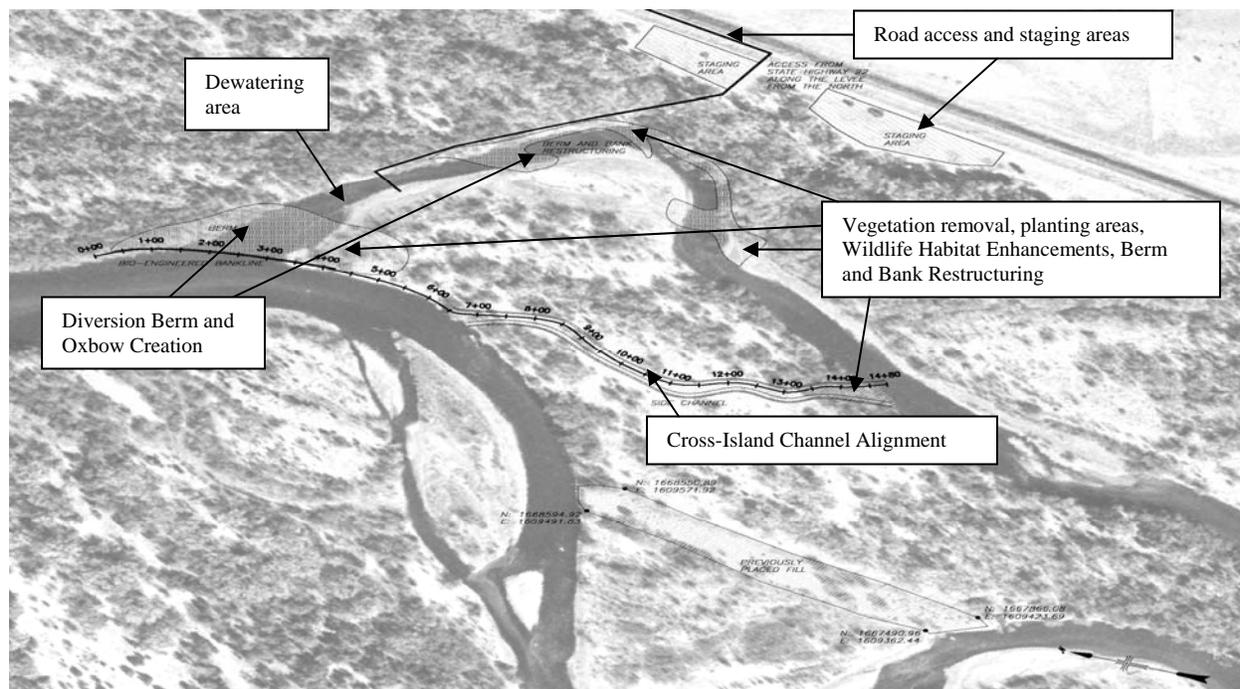


Figure 6, Priority Site 228.9, Project Elements

The following table separates out the areas of surface disturbance for Priority Site 228.9:

Location	Acres of disturbance	Comments
Diversion Berm	2.5	Below ordinary high water mark (OHWM).
Berm & Bank restructuring	4	Part of area above and part below OHWM
Side Channel	1.5	below OHWM
Previously Placed Fill	1.47	Above OHWM
Staging area	3	Above OHWM
Other potential	19.53	Roads and other areas disturbed by heavy equipment during construction

Removal of Vegetation

All vegetation would be removed from the project site. The removal of existing cottonwood trees and other native plants would be minimized to the extent practical during all project phases.

All removed vegetation would be mulched within the project site and spread out evenly on the ground surface, not to exceed a height of 4 inches.

Diversion Berms and Oxbow Creation

The preferred alternative would protect the priority site through installation of a berm at the entrance to the eastern side channel, thereby diverting all of the flow to the western side channel. By cutting off flow from the eastern side channel, the diversion berm would create an oxbow in the location of the priority site. It is estimated that a small amount of flow (3 to 5 cfs) may still enter the eastern side channel due to seepage through the diversion berm (Bio-West, Inc., 2005c). This seepage may provide sufficient oxygenation of the water to improve the fishery habitat value of the created oxbow (see "Other Habitat Enhancements") and create and maintain a wetlands.

To accommodate future changes in the riverbed elevation, a bed of rip rap would be placed in the channel to hardened the bottom of the river prior to the construction of the diversion berm. The rip rap stone would be placed as a mound with a top width of 14 feet along the channel bed immediately upstream of the proposed diversion berm. The diversion berm would be composed of fill material from existing spoil piles on Cochiti Island or excavated from the cross-island channel alignment design feature (see "Cross-Island Channel Alignment"). After the fill is placed, additional stabilization would be provided by installing a bio-engineered bankline above the rip rap stone on the west side of the berm. The main objective of the bio-engineered bankline would be to provide long term stability through establishment of deep rooted native vegetation on the bankline. Coir fabric would be used to provide temporary stability while the trees and shrubs become established.

The following figure 5 shows a typical cross-section of the diversion berm with bio-engineered bankline and toe stone (rip rap in the channel).

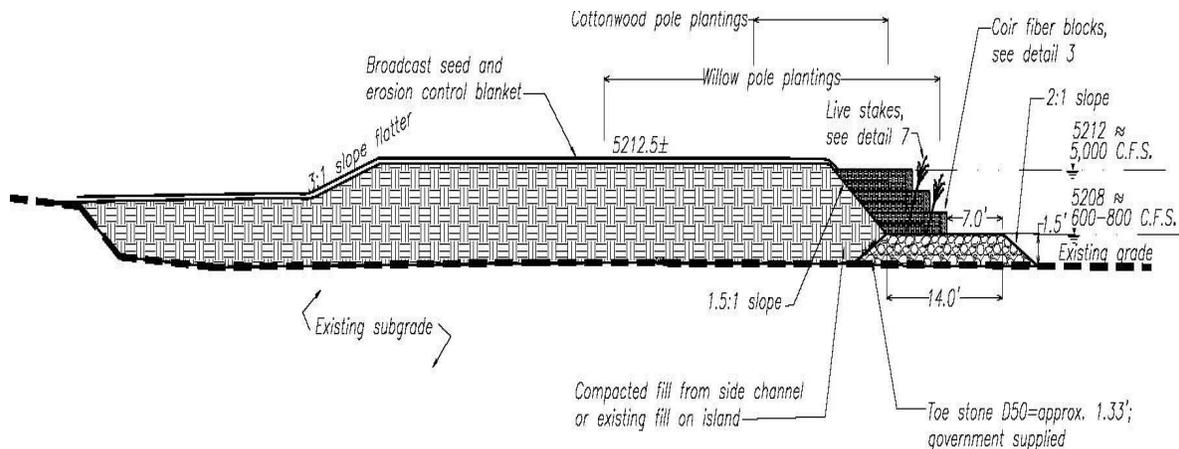


Figure 5 Cross-section of the Diversion Berm

Cross-Island Channel Alignment

The preferred alternative also calls for the excavation of a cross-island channel across Cochiti Island. This channel would run from the existing western side channel through Cochiti Island and connect with the abandoned eastern side channel downstream of the priority site location. The east bank of the east side channel is much lower at the proposed outlet location of the new cross-island channel alignment than the current priority site location. It is expected that this decreased bank height will make the exposed eastern bank less vulnerable to erosion and bend migration than the eastern bankline at the priority site. Figure 5 shows a plan view of the cross-island channel.

Fill excavated from this channel would be used to construct the diversion berm and for providing fill for the berm and bank restructuring around the priority site. The design purpose of this cross-island channel is to allow flows back into the eastern side channel to avoid eliminating potential habitat (see "Other Habitat Enhancements").

Berm and Bank Restructuring

As the diversion berm reduces the risk of exposure to high river flows at the priority site, no engineered structure would be built along this bankline. To facilitate vegetation regrowth in this area, however, the bank would be graded at a reduced slope. The following Figure 7 shows a plan view of the berm and bank restructuring:

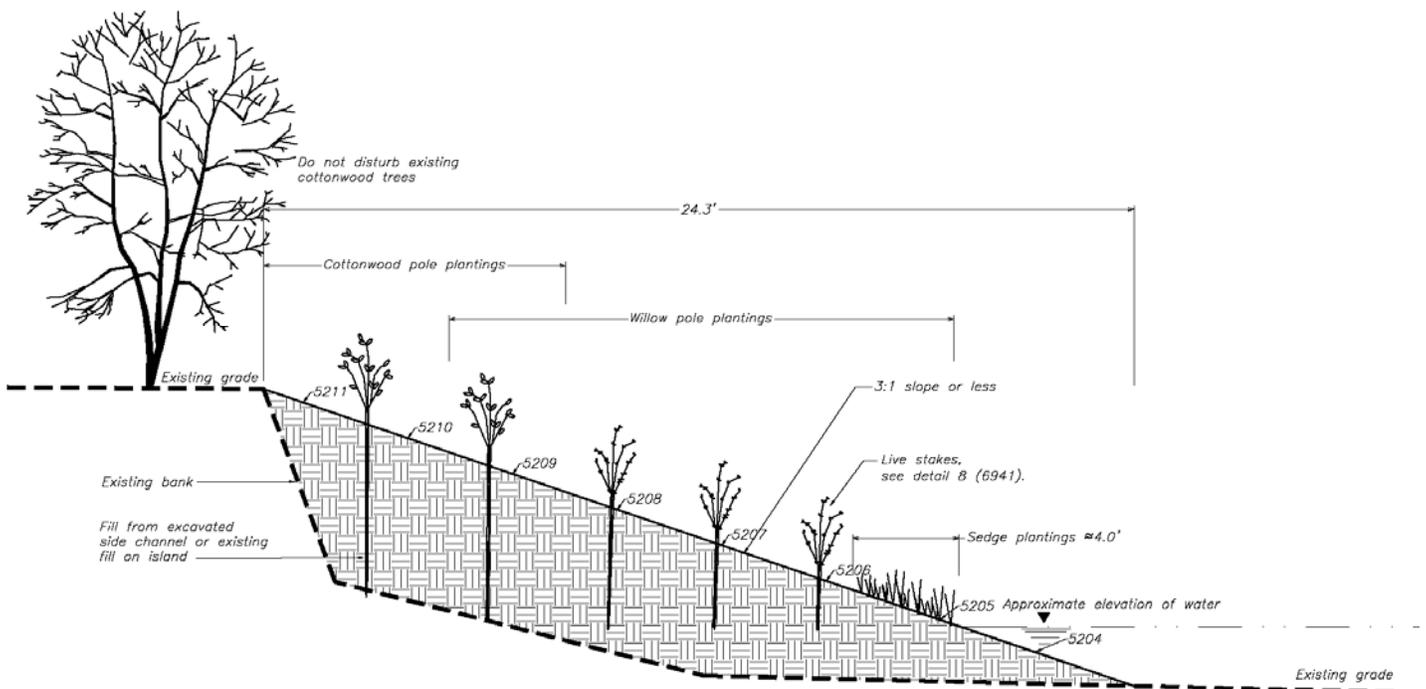


Figure 7 Berm and Bank Restructuring

As the bank is restructured to a reduced grade, habitat variability (“see “Other Habitat Enhancements”) would be introduced by adding berm features to the bankline. These berms would be created at varying slopes and would be planted with native riparian vegetation to help ensure berm stability and improve habitat (see “Vegetation Planting”).

Vegetation Planting

Native vegetation would be planted throughout disturbed areas of the project. The following table shows the proposed plants species to be planted and seeded:

Vegetative species	Containerized, pole, or pounds of pure live seed per acre	Method of planting
Populus deltoides (Rio Grande cottonwood)	pole	pole
Salix exigua (coyote willow)	pole	pole
Amorpha fruticosa (false indigo)	In containers	containerized
Artemisia filifolia (sand sage)	“	“
Atriplex conescens (fourwing saltbrush)	“	“
Forestiera pubescens (New Mexico olive)	“	“
Ribes aureum (golden currant)	“	“
Achnatherum or Oryzopsis hymenoides (Indian ricegrass)	3.4	Broadcast
Agropyron smithii (western wheatgrass)	4.36	“
Bouteloua gracilis (blue grama)	0.79	“
Distichlis stricta (saltgrass)	1.01	“
Eleocharis palustris (common spikerush)	0.84	“
Juncus balticus (Baltic rush)	0.20	“
Scirpus pungens (threesquare bulrush)	2.74	“
Sporobolus airoides (alkali sacaton)	0.99	“
Sporobolus cryptandrus (sand droopseed)	0.33	“

It is expected that cottonwood poles would be planted near the river on surfaces which will be flooded at flows of 5,000 cfs or higher, while coyote willows will be predominant at elevations between the 1,000 cfs and 5,000 cfs water surface elevations. Shrubs and grasses suitable for wetland and upland communities will also be planted, interspersed with the cottonwood and willow pole plantings. The total area of created vegetative communities for this site is approximately 3.05 acres. Pole and shrub species to be planted include the following: Rio Grande cottonwood, black willow, coyote willow, false indigo, sand sage, fourwing saltbrush, rubber rabbitbrush, New Mexico olive, and golden currant.

The following Figure 8 illustrates a plan view of the plantings and seedings:

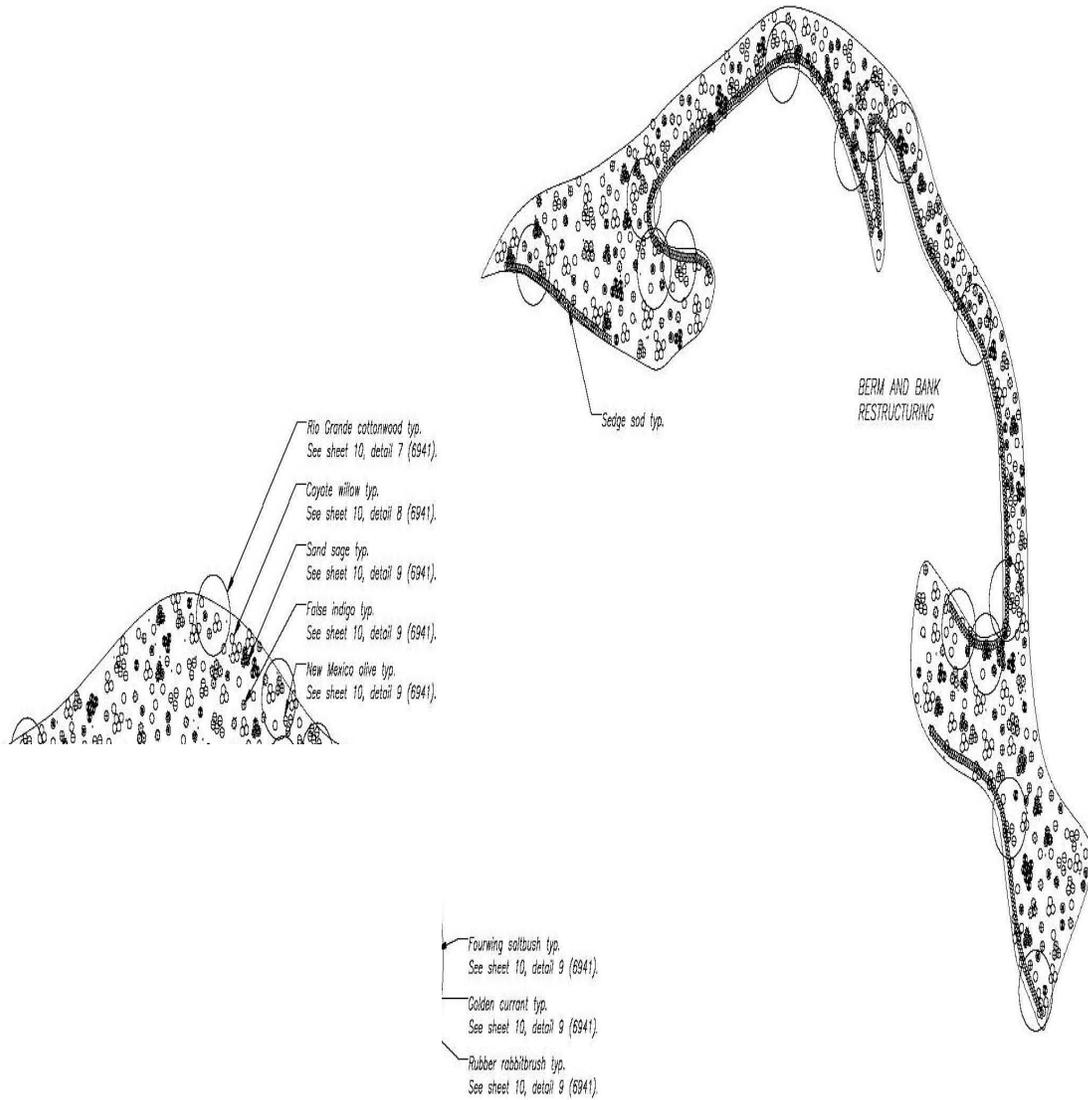
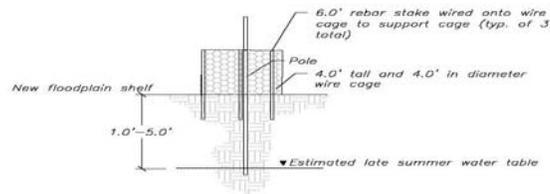
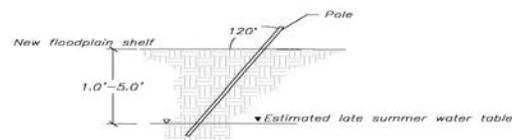


Figure 8 Plan view of Plantings and Seedings

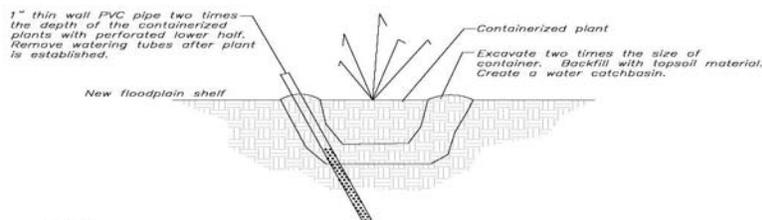
The following shows sheet 10 planting details for Figure 8 of pole and containerized planting:



7 COTTONWOOD POLE PLANTING DETAIL
NOT TO SCALE



8 COYOTE WILLOW POLE PLANTING DETAIL
NOT TO SCALE



9 CONTAINERIZED PLANTING DETAIL
NOT TO SCALE

Wildlife Habitat Enhancements

This project is expected to provide valuable habitat improvements for the Rio Grande silvery minnow. With even a small amount of flow from seepage through the diversion berm, there may be sufficient connectivity with the river to maintain adequate water quality conditions and prevent isolation of populations (Bio-West, Inc., 2005c). Permitting flow into and out of these habitat features would prevent water temperatures from increasing too much and allow dissolved oxygen and other water quality parameters to remain sufficient to support the species (Bio-West, Inc., 2005c). The cross-island channel would provide additional flows downstream of the oxbow area, providing a continuous flow through the majority of the abandoned eastern side channel, which may provide additional preferred habitat (less than 40 cm deep and less than 10 cm/s water velocity).

The habitat around the created oxbow and the bio-engineered bankline would be designed and planted with both emergent and woody riparian vegetation to ensure successful establishment of vegetation. The combination of these efforts would result in the eventual creation of habitat suitable for the Southwestern Willow Flycatcher. Because the Southwestern Willow Flycatcher generally occupies habitat consisting of high foliage density, benefits resulting from the implementation of this alternative would not be immediately realized. (Bio-West, Inc.)

2.4. Summary Comparison of the Activities, the Predicted Achievement of the Project Objectives, and the Predicted Environmental Effects of Alternatives.

Reasonable Alternatives	Predicted Achievement of objectives in section 1.4 to fulfill the need.	Affected Resources	Predicted Impacts of Alternatives (See Issues section 1.6)
No Action A	None	Vegetation	None
		Threatened and Endangered Wildlife Species	None
		Noxious Weeds	None
		Water Resources	Erosion would continue to develop and contribute to increased turbidity
		Environmental Justice	None
		Indian Trust Assets	None
		Cultural Resources	None
		Air Quality and Noise	None
Proposed Alternative For:	Predicted Achievement of objectives in section 1.4 to fulfill the need.	Affected Resources	Predicted Impacts of Alternatives (See Issues section 1.6)
River Mile 231.3 (Install Bioengineering Controls and move a road.	Yes	Vegetation	Destruction of some during construction
		Threatened and Endangered Wildlife Species	Positive impact to create nursery habitat for the silvery minnow
		Noxious Weeds	Need to be controlled
		Water Resources	Increased turbidity during construction
		Environmental Justice	None
		Indian Trust Assets	None
		Cultural Resources	None
		Air Quality and Noise	During construction only
River Mile 228.9 (Create Oxbow	Yes	Vegetation	Initial destruction of bankline vegetation
		Threatened and Endangered Wildlife Species	Positive impact to create nursery habitat for the silvery minnow
		Noxious Weeds	Need to be controlled
		Water Resources	Increased turbidity during construction
		Environmental Justice	None
		Indian Trust Assets	None
		Cultural Resources	None
		Air Quality and Noise	During construction only



Chapter 3. AFFECTED ENVIRONMENT

3.1 Introduction

The relevant resources described in this chapter are those that would be affected by the alternatives if they were implemented. Only resources that may be affected or impacted are described and only to the extent necessary to understand anticipated impacts. The effects (impacts or issues) to these resources created by the alternatives if implemented are discussed in Chapter 4.

3.2 Description of Relevant Affected Issues and Resources (See list of Issues in Section 1.6)

3.2.1 Vegetation

Vegetation at the project area is dominated by non-native species including saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), and other ground-layer weedy species. Native vegetation found in the project area includes Rio Grande cottonwood and coyote willow. According to the Wetlands/Riparian Database that exists for this portion of the Rio Grande (New Mexico Heritage Program 2000), the project area consists of highly disturbed vegetation communities that are frequently flooded, but not altogether scoured, and typically dominated by the Coyote Willow / Threesquare Bulrush Alliance (Muldavin et al. 2000). Other existing or potential vegetation alliances that are found within the project area include the Cottonwood / Coyote Willow Alliance, the Cottonwood-Gooding Willow Alliance, the Cottonwood / New Mexico Olive Alliance, and the Cottonwood-Russian Olive / Saltcedar Alliance.

3.2.2 Wildlife including Threatened and Endangered Species

Mammal species:

Coyote (*Canis latrans*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), and various species of mice, rats, bats, rabbits, and other small mammals are common to the area. Birds that can be found in the region at different times of the year include: herons, ducks, turkey vultures, hawks, doves, hummingbirds, crows, and numerous other species.

Threatened and Endangered Species (T&E):

The following describes relevant T&E species that may be found at the locations of the proposed alternative. The Rio Grande Silvery Minnow, Southwestern Willow Flycatcher, and the Bald Eagle have been identified as relevant to the analysis of this EA.

Rio Grande Silvery Minnow:

The Rio Grande silvery minnow (*Hybognathus amarus*) (minnow) was listed as a federally-endangered species by the U.S. Fish and Wildlife Service (Service) in July 1994 (U.S. Fish and Wildlife Service 1994a). Critical habitat was designated as the reach of the Rio Grande from

Cochiti Dam to the upper pool for Elephant Butte Reservoir, a distance of approximately 163 miles (U.S. Fish and Wildlife Service 2003a). The species was previously documented in Cochiti Reach in 1994 (Platania 1995) and may persist at low population densities. A more recent fish community survey conducted in 2002 did not encounter any silvery minnows in the project area (see Appendix). The most recent fish community surveys in the reach were conducted by the Service at Peña Blanca. The Final Critical Habitat Designation for the minnow includes the Cochiti Reach from Cochiti Dam to Angostura Diversion Dam, including the project area on Cochiti Pueblo (U.S. Fish and Wildlife Service 2003b).

Dudley and Platania (1997) documented habitat preferences of the minnow. They found that individuals were most commonly collected in shallow water (<40 cm) with low water velocities (<10 cm/second) and small substrate size, primarily silt and sand. Low-velocity habitats, such as backwaters and embayments, provide nursery areas for larvae (Dudley and Platania 1997, Massong et al. 2004), which grow rapidly in these areas. Restoration efforts that increase the availability of these habitat conditions would benefit the minnow. In addition to the quantity of preferred habitat, food availability may be influenced directly by river restoration activities. Minnows are herbivores that eat primarily diatoms, cyanobacteria, and green algae associated with sand or silt substrates in shallow areas of the river channel (Shirey 2004). Habitat created by the project would benefit possible remnant silvery minnow populations and facilitate future re-introduction in the reach.

Southwestern Willow Flycatcher:

The Willow Flycatcher is a widely-distributed summer resident of much of the United States and southern Canada (Brown 1988). Currently, four subspecies of Willow Flycatcher are recognized in North America and distinguished by subtle differences in color, morphology, and breeding range (Phillips 1948, Aldrich 1953, Unitt 1987, Browning 1993). One subspecies breeds east of the Rocky Mountains, *E. t. traillii*. Three breed west of the Rocky Mountains, *E. t. brewsteri*, *E. t. adastus*, and *E. t. extimus* (Unitt 1987). Browning (1993) recognizes a fifth subspecies (*E. t. campestris*) that is said to occur in the central portion of the United States. Formerly known as the Traill's Flycatcher, *Empidonax traillii* was divided into two species in 1973 (American Ornithologists' Union 1973). The Willow Flycatcher (*Empidonax trailli*) was defined as the "fitz-bew" song form of the prairies and open habitats of the Midwest and eastern United States. The Alder Flycatcher (*Empidonax alnorum*) was defined as the "fee-bee-o" song form from the boreal regions of Alaska, Canada, and eastern United States.

E. t. extimus was initially described by Phillips (1948), from a collection by Gale Monson. The southwestern subspecies is generally paler than other subspecies and differs in morphology, primarily wing formula. The taxonomic status of *E. t. extimus* was reviewed and confirmed by Hubbard (1987), Unitt (1987), and Browning (1993). Generally, *E. t. extimus* is paler on its back and head than either *E. t. adastus* or *E. t. brewsteri*, and the breast band found on *E. t. extimus* is less distinct and paler gray than on other subspecies (Browning 1993). In 1992 the Service was petitioned to list *E. t. extimus* as an endangered species under the Endangered Species Act (ESA). Subsequently, the Service published a proposal in 1993 to list the subspecies as endangered with critical habitat. A final designation of critical habitat for the flycatcher was made in 2005 (U.S. Fish and Wildlife Service 2005).

Historically, the Southwestern Willow Flycatcher was widespread across the southwestern United States, breeding in riparian habitats ranging from sea level to approximately 7,000 feet in

Arizona, southern California, New Mexico, southern Nevada, southern Utah, southwestern Colorado, west Texas, and extreme northwest Mexico (Phillips 1948, U.S. Fish and Wildlife Service 1995, McKernan and Braden 2001, Smith et al. 2004). This subspecies has been documented at a total of 109 sites on 43 drainages throughout the southwestern United States. The majority of the population occurs in Arizona, California, and New Mexico, accounting for 92 percent of all breeding territories (Marshall 2000).

In New Mexico Southwestern Willow Flycatcher breeding territories have been documented on the upper, middle, and lower Rio Grande; the Rio Chama; the Zuni River; and the middle and lower Gila River (Sogge et al. 1997, Williams 1997, Finch and Kelly 1999, Marshall 2000). During Southwestern Willow Flycatcher surveys conducted from 1994 to 1996, 17 territories were found along the middle Rio Grande. Sites were located on the Isleta Pueblo, Bosque del Apache, and San Marcial (Finch and Kelly 1999). More recently, 10 to 11 territories were located on the San Juan Pueblo and 6 to 8 pairs were found on the Isleta Pueblo (N. Baczek, pers. comm.). During presence/absence surveys conducted in 2006 along the middle Rio Grande, 177 Southwestern Willow Flycatcher territories were documented between the Pueblo of Isleta and the upper half of Elephant Butte Reservoir (Moore and Ahlers 2006).

Bald Eagle:

Historically widely distributed across North America, the Bald Eagle suffered great declines in southern and eastern portions of its range (Buehler 2000). By the early 1990s, populations in many areas had rebounded from the low levels that occurred before DDT use was banned in the United States. The number of breeding territories in the continental United States nearly tripled between 1980 and 1990 (Kjos 1992), and breeding populations have doubled every 6 to 7 years since the late 1970s (U.S. Fish and Wildlife Service 1994b).

In New Mexico the Bald Eagle is known to occur in Bernalillo, Catron, Colfax, McKinley, San Juan, and Sierra Counties. Watersheds in New Mexico where the species is known to occur include the Rio Grande headwaters, Alamosa-Trinchera, San Luis, Saguache, Conejos, Rio Grande, and Elephant Butte and Caballo Reservoirs (Buehler 2000).

The Bald Eagle was listed endangered in 1967, and a Federal recovery plan was written and approved in 1995. A proposed rule to reclassify the Bald Eagle from endangered to threatened in most of the lower 48 states was published in 1994 (U.S. Fish and Wildlife Service 1994b), and a final rule to reclassify the species from endangered to threatened in the lower 48 states was published in 1995 (U.S. Fish and Wildlife Service 1995). The Bald Eagle has been delisted as a threatened species as of July 9, 2007 (Federal Register 72(130): 37345-37372).

Roosting or perching (often communally) on snags, large deciduous trees, and cliffs, the Bald Eagle is primarily water-oriented, and the majority of the populations in New Mexico are found within 4 kilometers of streams and lakes. However, Bald Eagles have been known to regularly occur in considerably drier areas to include the region between the Pecos Valley and Sandia, Manzano, Capitan, and Sacramento Mountains, and areas of the Mogollon Plateau (Haynes and Schuetz 1997). Bald Eagles on the middle Rio Grande (from Albuquerque to the Rio Chama confluence) have been monitored by the U.S. Army Corps of Engineers since 1988 (Reclamation 1999). Reclamation has also conducted winter surveys for Bald Eagles at Elephant Butte and Caballo Reservoirs since 1997.

Wintering habitat for the Bald Eagle occurs almost statewide in New Mexico, though most of its wintering habitat is found in the north and west parts of the state. These sites have large numbers of waterfowl from November to March and fisheries supported by reservoirs that provide the prey base to support foraging Bald Eagles. Winter and migrant populations appear to have increased in New Mexico, apparently as the result of reservoir construction and the expansion of fish and waterfowl populations. This species is found occasionally elsewhere in New Mexico in the summer (Reclamation 1999).

3.2.3 Noxious Weeds

Populations of State-listed noxious weeds have been observed in the project area during site visits. Most of the species observed are considered Class B and Class C noxious weeds, according to the current State list of noxious weeds as shown in Appendix B. Some control efforts were recently implemented at the project area following a fire in 2003. Saltcedar, Russian olive, and Siberian elm were the species targeted during the control efforts.

3.2.4 Water Resources

Turbidity, from erosion in the reach of the Rio Grande that flows through the project area, is greatest during periods of high runoff. High-flow events from rainstorms or rapid snow melts in the mountains cause scouring of the banks and bottom of the Rio Grande as well as the streams and arroyos that empty into the river. This scouring results in high sediment loading and gradual erosion of the river's banks. Over time this erosion leads to a natural tendency of the river to meander back and forth from side to side. Surface runoff adds to sediment loading and turbidity in the river.

Any activities that reduce or eliminate vegetation have the potential to result in erosion until vegetation is re-established. The project area is surrounded by a region of farming, ranching, and, more recently, residential development. Farming activities (e.g., plowing and tilling), ranching activities (e.g., livestock grazing), and clearing activities for development often eliminate or reduce vegetation, even if only temporarily, and thus become a potential cause of sediment loading in the river during periods of high runoff.

3.2.5 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that the effects on minority and low-income populations within a project area be given special consideration to determine if the proposed action would result in disproportionate adverse effects to their communities. According to the most recent data from the U.S. Bureau of Economic Accounts (2005), the annual per capita income for the State of New Mexico in 2003 was \$24,995. The 2003 annual per capita income for Sandoval County was \$25,523. According to the most recent data from the U.S. Census Bureau (2005), 29.4 percent of the residents of Sandoval County were Hispanic or Latino in 2000 and 16.3 percent of the residents of Sandoval County were of American Indian or Alaskan Native descent in 2000.

3.2.6 Indian Trust Assets

Indian Trust Assets (ITAs) or resources are defined as legal interests in assets held in trust by the U.S. Government for Native American Indian tribes or individual tribal members. Examples of ITAs are lands, minerals, water rights, other natural resources, money, or claims. An ITA cannot be sold, leased, or otherwise alienated without approval of the Federal government. The project area is located primarily on Native American Indian Trust lands as part of the Pueblo of Cochiti.

3.2.7 Cultural Resources

Section 106 consultation with the New Mexico SHPO will be handled under the terms of a Programmatic Agreement, which sets out guidelines for the consultation process regarding Middle Rio Grande river maintenance projects. Native American tribes were consulted for the Programmatic Agreement. A copy of this Programmatic Agreement is contained in Appendix A.

3.2.8 Air Quality and Noise

The Clean Air Act of 1970, as amended, established National Ambient Air Quality Standards (NAAQS) (40 CFR 1 § 81.332) to protect the public from exposure to dangerous levels of several air pollutants. Sandoval County is in Air Quality Control Region (AQCR) 152 – Albuquerque – Mid Rio Grande. The AQCR 152 has been classified as an attainment area for all air pollutants identified in the NAAQS (eCFR 2005). Because of this classification for Sandoval County, the proposed project located on the Pueblo of the Cochiti is not subject to EPA requirements for ambient monitoring. The project area is occasionally used by people driving utility vehicles along the east levee, which results in the generation of a small amount of exhaust and fugitive dust during dry conditions.

Chapter 4. ENVIRONMENTAL CONSEQUENCES

4.1. Introduction

This chapter discusses the predicted achievement of the objectives, effects, and cumulative effects for each alternative in section 2.4 of Chapter 2. Included is a discussion of each alternative's effect on relevant issues summarized in section 1.6 (issues) and resources described in section 3.2.

4.2. Predicted Attainment of Project Objectives for Each Alternative

No Action

Under the no action alternative, the project objectives would not be attained. The river would continue to erode the east stream bank at river mile 228.9 until the levee breaches. In addition, at river mile 231.3 the west bank would continue to erode eventually causing damage to the road and Cochiti Pueblo land.

Proposed Action

Under the proposed action alternative, the project objective at River Mile 231.3 of preventing damage to a road and agricultural fields would be achieved. Included in the work would be the removal of jetty jacks, stabilization of the west bank, and installing underground drainage to halt sinkhole formation. At River Mile 228.9, protecting the east levee system would be achieved. The work would include creating an oxbow, a secondary channel with a dike, and bank stabilization. In addition, would satisfy habitat needs described in the Biological Opinion addressing Reclamation's river maintenance activities (U.S. Fish and Wildlife Service, 2003).

4.3. Predicted Effects on Each Relevant Issue and Resources

4.3.1. Native Vegetation

No Action Alternative

Under the no action alternative, existing vegetation, including native and non-native species, would remain in place.

Proposed Action Alternative

Any existing trees or shrubs removed at the beginning of construction would be replaced as specified in section 2.3.1 under Vegetation Planting. These new trees and shrubs would be spaced irregularly throughout the project area in appropriate locations to improve their potential for survival and to create a more natural condition. All pole plantings would be caged with wire initially to prevent beaver damage. In addition, all containerized plantings would include a watering tube made of plastic pipe to facilitate deep watering of these plants.

Native grasses and wildflowers would be seeded in areas disturbed by construction to re-establish vegetation. Only the amount of the proposed staging and stockpiling areas needed would be used or disturbed. Upon completion of stabilization activities, all work areas would be cleaned up and all materials and equipment removed. These areas would be reseeded as discussed in Section 2.3.1. The re-establishment of vegetation would be monitored and irrigation water would be brought in by truck, if necessary, to ensure the successful establishment of seeded areas.

Secondary and Cumulative Effects

There would be no secondary effects to vegetation as a result of the proposed action. The effects of the proposed action in combination with work at the Cochiti Priority Sites 231.3 and 228.9 over time, likely would result in an overall improvement in the quality of the local floral and faunal health. The short-term cumulative effects of construction would be small in the overall regional context and temporary in nature.

4.3.2. Wildlife including Threatened and Endangered Species

No Action Alternative

Since this alternative would not include any construction activities, effects to wildlife including threatened and endangered species would not occur.

Proposed Action Alternative

Mammals:

Although construction activities may scare existing wildlife away temporarily, most animal species in the project area would be able to return after project completion. Some mortality of less mobile species would be expected but not in quantities that would damage local populations. The improved quality of the habitat after new vegetation becomes established would offset these losses over time.

The effects of the proposed action on the Rio Grande Silvery Minnow, the Bald Eagle, and the Southwestern Willow Flycatcher are summarized below. The Biological Assessment (Appendix B) has been submitted to the Service for this proposed action under section 7 of the Endangered Species Act.

Rio Grande Silvery Minnow:

This effects determination considers population status of the minnow in the Cochiti reach, and possibility of individuals occurring in the vicinity of excavation equipment. Since the minnow is considered to be extirpated from this reach or possibly persist at undetectable population densities, the Fish and Wildlife Service considers the likelihood of silvery minnows being present in either construction area to be small and discountable (J. Parody pers. comm.). The construction of the proposed action would not result in adverse effects on minnow critical habitat. The project would result in an increase in potential habitat for the species, anticipating future re-introduction efforts in cooperation with the pueblos or a rebound by the local population.

The construction techniques in the proposed action are designed to minimize contact with any fish and minimize potential for harm or harassment. The construction sequence would allow fish present in the work area to move freely to avoid contact with the equipment or personnel. Personnel would operate equipment to facilitate avoidance and escapement by fish in the construction area based on normal predator avoidance behavior.

The project would have no effect on the minnow because it is considered to be extirpated from this reach. The construction of the proposed action and any dewatering of off-channel areas would not result in adverse effects on minnow critical habitat.

Southwestern Willow Flycatcher:

The proposed action would have no adverse effects on the Southwestern Willow Flycatcher or its designated critical habitat based on the distance to occupied habitat and the fact that minimal

existing vegetation would be disturbed by the proposed activity. Additionally, the proposed action would result in the planting of riparian/wetland communities in newly created areas that could eventually mature and create potentially suitable Southwestern Willow Flycatcher habitat. Therefore, the proposed action may affect, but is not likely to adversely affect, the Southwestern Willow Flycatcher.

Bald Eagle:

Potential roosting and perching structures would not be impacted by the proposed action, since existing native vegetation would be protected. Additionally, implementation of the proposed river maintenance activities would likely create suitable conditions for the Bald Eagle's prey base by creating a secondary channel with slower water velocities and planting riparian and wetland vegetation on newly created areas. Newly created habitat for its prey base may attract Bald Eagles to the project area.

Secondary and Cumulative Effects

There would be no adverse secondary effects to southwestern willow flycatcher or bald eagle as a result of the proposed action. Because there would be no adverse effects to the southwestern willow flycatcher from the proposed action, there would be no adverse cumulative effect when combined with other planned projects in the area. However, the proposed action would result in the planting of riparian/wetland communities in newly created areas that could eventually mature and create potentially suitable southwestern willow flycatcher habitat, which would be a beneficial secondary effect. Monitoring for bald eagle during this project and others would minimize any potential effect on this species. This project, in combination with other planned projects in the area, would not be expected to result in any adverse cumulative effects to bald eagles. Implementation of the proposed action would likely create suitable conditions for the bald eagle's prey base by creating a series of secondary channels with slower water velocities and planting riparian and wetland vegetation on newly created areas. This newly created habitat for its prey base would likely further attract the bald eagle to the project area, resulting in beneficial secondary effects.

Secondary effects of the proposed action for the Rio Grande silvery minnow include improving habitat quality within the secondary channels and other project features. The proposed action would result in an increase in potential habitat for the species, which may increase the local population abundance. The cumulative effects to Rio Grande silvery minnow should be beneficial, though difficult to quantify.

4.3.3. Noxious Weeds

No Action

Under the no action alternative, no ground-disturbing activities would be undertaken. Therefore, there would be no effect on existing noxious weed infestations.

Proposed Action

Whenever land is disturbed, the potential exists for the intrusion and establishment of noxious weeds. River Mile 231.3 portion of the project could disturb up to 21 acres and River Mile 228.9 could disturb up to 32 acres. To minimize the potential for the continued establishment and spread of State-listed and other noxious weeds, an aggressive revegetation plan would be

implemented. This plan, as described in Section 2.3.1 of this EA, would allow native species to become re-established more rapidly than they otherwise might. Past experience has shown that, over time, any noxious weeds that manage to gain a foothold in the project area would likely be crowded out by the more competitive native vegetation.

In addition to reseeding and planting, the introduction of noxious weed seeds would be minimized by a requirement that all equipment used on the project be pressure washed before arriving and leaving the site. Reclamation, in cooperation with the Pueblo of Cochiti, would monitor the project area following construction (5 years) for noxious weeds and treat them as necessary. By preventing the introduction of noxious weed seeds and pursuing an aggressive revegetation plan, the potential for noxious weeds becoming established in the project area over time would be minimal.

Secondary and Cumulative Effects

Addressing erosion problems at the Cochiti Priority Site would also require some ground-disturbing activities. Several acres of ground disturbance would occur at that site. Noxious weed seeds could be imported as part of that project. Through sound and aggressive revegetation planning and ensuring all equipment is pressure washed to prevent weed seed transmission, the opportunity for noxious weed establishment would be minimized. There would be no secondary effects to noxious weeds as a result of the proposed action.

4.3.4. Water Resources

No Action

Migration of the river at both priority sites would continue. Damage at River Mile 231.3 would include potential damage to agricultural fields, a road next to the river, and continual damage to the area as a result of potholes along the west bank. At River Mile 228.9, the river would continue to migrate to the east eventually breaching the levee.

Erosion of the river banks at both priority sites would continue to add a small amount of turbidity to the river downstream. When the levee at River Mile 228.9 ultimately fails, a large amount of soil would be deposited into the river and contribute adversely to the turbidity of the river for a brief period. Emergency measures to repair the levee and the east canal system would likely be carried out under less than desirable conditions, which could temporarily contribute further to turbidity in the river.

Proposed Action

During construction, the removal of vegetation in the project area could potentially result in erosion and contribute to additional turbidity in the river downstream of the project area; however, standard construction BMPs would be used to minimize runoff during this period. Consequently, most runoff would be contained within the active construction site. The re-establishment of native riparian vegetation in the project area following construction would ultimately reduce the project area's contribution to turbidity in the river. The Pueblo of Cochiti and Region 6 of the Environmental Protection Agency would specify project requirements for certification and compliance with Section 401 of the CWA.

Secondary and Cumulative Effects

The effects of the proposed action on erosion and water quality would be minor and temporary in nature; therefore, there would be no cumulative effects resulting from the combination of the proposed action and other anticipated projects. There would be no secondary effects to erosion and water quality as a result of the proposed action.

4.3.5. Environmental Justice

No Action

No effects of any kind to the local population are expected under the no action alternative. No adverse effects to low-income or minority populations are anticipated.

Proposed Action

No effects of any kind to the local population are expected under the proposed action. No adverse effects to low-income or minority populations are anticipated.

Secondary and Cumulative Effects

There would be no secondary effects concerning environmental justice as a result of the proposed action. Because no effects to the local population, either adverse or beneficial, are anticipated as a result of the proposed action, there would be no cumulative effect.

4.3.6. Indian Trust Assets

No Action

There would be no effects to ITAs under the no action alternative.

Proposed Action

The Pueblo of Cochiti Tribal Council has approved the Cochiti Priority Site Project proposed action. In addition, the Bureau of Indian Affairs has reviewed and provided comments on the proposed action to Reclamation. As such, there would be no effects to ITAs under the proposed action.

Secondary and Cumulative Effects

There would be no secondary effects to ITAs as a result of the proposed action. Because no effects to ITAs are anticipated as a result of the proposed action, there would be no cumulative effect.

4.3.7. Cultural Resources

No Action

There would be no effects to cultural resources or sacred sites under the no action alternative.

Proposed Action

There are no structures eligible for the National Register of Historic Places that would be affected by the proposed action. In addition, no sacred sites or traditional cultural properties are expected in the project area; however, should consultation with the tribes result in the identification of any such sites or properties, then Reclamation would consult with tribe(s) concerned to ensure no adverse effects result from the proposed action.

Secondary and Cumulative Effects

There would be no secondary effects to cultural and archaeological resources or sacred sites as a result of the proposed action. Because no effects to cultural or archaeological resources, sacred sites, or traditional cultural properties are anticipated as a result of the proposed action, there would be no cumulative effect on these resources.

4.3.8. Air Quality and Noise

No Action

There would be no effects to air quality or noise under the no action alternative.

Proposed Action

Fugitive dust generation from excavating and grading activities in the project area, along with exhaust emissions from heavy equipment and vehicles working on the project, are the only anticipated effects to air quality during construction. These temporary effects would not be expected to be significantly adverse. There would be no effects to air quality following completion of construction activities and re-establishment of vegetation in disturbed areas.

Fugitive dust would be suppressed by spreading water over disturbed areas where heavy equipment is working during dry conditions. Most nearby residences are far enough away from the project area that dust escaping from the immediate project area would dissipate before reaching them. Dust levels resulting from the proposed action would be expected to be lower than those generated by plowing and tilling activities on nearby farms and by construction Activities in nearby subdivisions. Exhaust emissions from heavy equipment and vehicles working on the project would dissipate rapidly before leaving the project area.

Noise from construction activities would exist during the project activities. However, noise from construction would not continue after the project is completed.

Secondary and Cumulative Effects

The effects of the proposed action on air quality and noise would be minor in the context of the local setting and temporary in nature; therefore, there would be no cumulative effects resulting from the combination of the proposed action and other anticipated projects. There would be no secondary effects to air quality and noise as a result of the proposed action.

4.3.9. Irreversible and Irretrievable Commitment of Resources of the Proposed Action

Some top soil would be removed from the project site, and would not be replaced in the same location at the end of the project. A small amount of wildlife habitat within the project area would be destroyed but would be replaced with a larger area of habitat as a result of bio-engineering bank line and revegetation activities of the proposed alternative. Construction equipment would utilize fuel and lubricants that would be permanently used.

Chapter 5. CONSULTATION AND COORDINATION

The U.S. Fish and Wildlife Service (Service) participated in a field review of the project site and were informally consulted about any species of concern. The U.S. Army Corps of Engineers (ACOE) and New Mexico Environment Department (NMED) were consulted with regarding CWA Section 404 and 401, respectively. New Mexico Department of Game and Fish (NMDG&F) was consulted with through their website regarding any state protected animal species that could potentially occur in the project area. The New Mexico State Historic Preservation Office (NMSHPO) was consulted with by Reclamation to determine project compliance with state and federal laws (Section 106 of the National Historic Preservation Act (NHPA) regarding cultural resources in the project area. A government to government consultation was conducted with the Pueblo of Cochiti on August 24, 2006, to provide the governor and tribal counsel an opportunity to make comments or voice any issues or concerns regarding the proposed project. On October 25, 2007, a field trip to the priority sites was conducted with the Pueblo, Reclamation, and a representative from the Corps of Engineers.

Chapter 6. ENVIRONMENTAL COMMITMENTS

- 6.1.** Construction of the stabilized bankline would be implemented during low flows to minimize the area of disturbance at the construction site.
- 6.2.** All construction debris and waste would be disposed of at an approved landfill facility.
- 6.3.** Best Management Practices would be implemented and utilized to prevent stormwater runoff and water pollution from entering the Rio Grande during construction activities.
- 6.4.** If a Bald Eagle is visible at the project area in the morning before construction activities start or following breaks in construction activities, Reclamation would be required to suspend all activity until the Bald Eagle leaves of its own volition. If a Bald Eagle arrives during construction activities, construction would not be interrupted. If Bald Eagles are found consistently in the immediate project area during the construction period, Reclamation would contact the Service to determine whether formal consultation is necessary.
- 6.5.** For the construction period January 15, 2008 to April 15, 2008, Reclamation would use an exclusion cage with ¼-inch hardware cloth enclosing the sides to screen the pump intake. The ¼-inch hardware cloth would exclude small silvery minnows and other fish

from the pump intake. The cage would be sized (larger than 2'L x 2'W x 2'D) to allow sufficient water for pumping and avoid pressure differential (suction) along the sides of the cage that could injure small fish.

- 6.6.** During construction, Reclamation would obtain water for dust abatement from drains, canals, and the river (not during the minnow spawning season).
- 6.7.** Should evidence of possible scientific, prehistorical, historical, or archeological data be discovered during the course of this action, work shall cease at that location and the Area 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 or fossils uncovered during operations, and the proponents shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Government.

Any person who knows or has reason to know that he or she has inadvertently discovered human remains on Federal or tribal lands, must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the responsible Federal agency official with respect to Federal lands, and, with respect to tribal lands, to the responsible Indian tribe official. The requirement is prescribed under the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3042) of November 1990 and National Historic Preservation Act, Section 110(a)(2)(E)(iii) (P.L. 102-575, 106 Stat. 4753) of October 1992.

Chapter 7. LIST OF PREPARERS

NAME: Mr. Robert Maxwell

Affiliation: Bureau of Reclamation

Education: B.S., Botany and Range Management, Brigham Young University, 1975
Graduate Studies: Hazardous Waste Management, Arizona State University

Technical Experience: Environmental Protection Specialist with over 30 years of experience in environmental resource management with the Bureau of Land Management, U.S. Forest Service, and Department of Defense. In addition, served 15 years in the private sector as an Environmental Engineer for Arizona Public Service Company and Woodgrain Millwork, respectively.

EA Responsibility: Project NEPA Team Leader responsible for project environmental compliance and preparation of the EA.

Chapter 8. REFERENCES

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- Coykendall, A. 2004. Art Coykendall, Endangered Species Coordinator, Bureau of Reclamation, Upper Colorado Region, Albuquerque, NM. Personal communication with Mike Sipos of BIO-WEST, Inc., regarding the distribution of known southwestern willow flycatcher breeding populations. 11/30/04.
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APPENDIX A

Public and Agency Correspondence

Cippy CrazyHorse
Governor

J. Leroy Arquero
Lt. Governor



P.O. Box 70
255 Cochiti Street
Cochiti Pueblo, New Mexico 87072-0070
PH # (505) 465-2244 Fax # (505) 465-1135

Andrew Quintana
Treasurer

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Action
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December 15, 2006

Connie Rupp, Area Manager
Bureau of Reclamation
555 Broadway NE, Suite 100
Albuquerque, NM 87102

RE: River Maintenance NEPA requirements

Dear Ms. Rupp:

The Pueblo de Cochiti would like to address the Biological Assessment issues relative to the NEPA requirements for the river maintenance projects early next year. The Pueblo has worked toward gaining the capacity to perform various surveys independently including wildlife surveys for management purposes. Pueblo staff has performed the training "Southwestern Willow Flycatcher Survey Protocol Training" conducted by the New Mexico Ecological Services Field office of the US Fish and Wildlife Service in coordination with the New Mexico Department of Game and Fish. The two species addressed in this letter are the Southwestern Willow flycatcher and the Rio Grande Silvery minnow.

The most recent Pueblo surveys for the flycatcher were performed in July of 2005. The survey revealed no nesting flycatchers or presence of flycatchers during these surveys. Prior to the 2005 surveys there were two reports written by the Bureau of Indian Affairs and the USDA Rocky Mountain Research Station in 2001. No Willow Flycatchers were detected in all five surveys performed on four sites, however, single incidental sightings occurred on three of the sites. In conclusion the flycatcher or its subspecies may be using some sites during migration. Suitable breeding habitat on the sites is uncommon, and the majority of the potentially suitable breeding habitat is below minimum patch size requirements (Lehmann, Walker and Finch 2001).

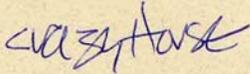
The Rio Grande silvery minnow has not been observed in the Cochiti Reach in at least the past 15 years. The most recent electrofishing survey (2002) conducted by the Bureau of Reclamation under the supervision of the Pueblo staff sampled 150 fish without finding any silvery minnows. The pueblo concurs that the silvery minnow has been extirpated from the Cochiti reach of the Rio Grande.

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The Pueblo de Cochiti would like to remain involved in the project details as it moves forward. We would like to thank you for your time and effort and please contact Mr. Jacob Pecos at 465-3123 should you have any questions on this matter or inquiries from other agencies.

Sincerely,



Cippy Crazyhorse, Governor
Pueblo de Cochiti

Cc: Robert Maxwell, Bureau of Reclamation
Richard Pecos, Tribal Administrator
Jacob Pecos, DNRC Director
DNRC/Tribal File



DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE NM 87109-3435

July 11, 2007

Operations Division
Regulatory Branch

Mr. Robert H. Maxwell
Environmental Protection Specialist
USBR-Albuquerque Area Office
555 Broadway Boulevard NE
Albuquerque, New Mexico 87102-2352

Dear Mr. Maxwell:

Enclosed is a copy of a letter which we received from the New Mexico Department of Game and Fish (NMDGF) regarding your Section 404 Permit Application No. 2006 00525 for your proposed bank stabilization work in the Rio Grande at River Miles 231.3 and 228.9, associated with the Cochiti Priority Sites Project, within the Pueblo of Cochiti, Sandoval County, New Mexico.

This letter is sent to inform you of the comments to your project. Please be advised that the Corps alone is responsible for reaching a decision on the merits of your application.

If you have any questions regarding the processing of your application, please feel free to contact me at (505) 342-3280 or by e-mail at james.a.wood@usace.army.mil.

Sincerely,

James A. Wood
Regulatory Project Manager

Enclosure

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GOVERNOR
Bill Richardson



DIRECTOR AND SECRETARY
TO THE COMMISSION
Bruce C. Thompson, Ph.D.

Tod Stevenson, Deputy Director

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

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Tijeras, NM
- M. H. "Dutch" Salmon, Commissioner
Silver City, NM
- Leo V. Sims, II, Commissioner
Hobbs, NM

July 5, 2007

Mr. Jim Wood,
Regulatory Branch, Albuquerque District
U.S. Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3435

RECEIVED
10 Jul 07
REGULATORY BR.
CORPS OF ENGINEERS

2006 00525

Re: Bank stabilization and channel work on the Rio Grande within Cochiti Pueblo; Sandoval County
NMGF No. 11511

Dear Mr. Wood,

In response to the Public Notice for Permit Application No. 2006 00525, the Department of Game and Fish (Department) wishes to communicate our support for the mitigation measures proposed for this project. The Department would like the Corps of Engineers to consider adding a condition to the permit that the applicant monitor the planted native vegetation to determine survival and establishment. Monitoring results showing successes or failures of restoration plantings would be valuable in supporting and informing similar efforts under similar conditions elsewhere.

Thank you for the opportunity to review and comment on the Permit Application No. 2006 00525 for bank stabilization and channel work on the Rio Grande within Cochiti Pueblo. If you have any questions, please contact Randy Floyd, Aquatic Habitat Specialist, at (505) 476-8091 or randy.floyd@state.nm.us.

Sincerely,

Jan Ward, Assistant Chief
Conservation Services Division

JW/rlf

xc: Wally Murphy, Ecological Services Field Supervisor, USFWS
Marcy Leavitt, Chief, Surface Water Quality Bureau
Brian Gleadle, NW Area Operations Chief, NMGF
Mark Olson, NW Area Habitat Specialist, NMGF





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

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Mr. Robert Maxwell
U.S. Bureau of Reclamation
Albuquerque Area Office
555 Broadway Blvd. NE, Suite 100
Albuquerque, New Mexico 87102-2352

RE: Clean Water Act §401 Water Quality Certification for Cochiti Priority sites 228.9 and 231.3

Dear Mr. Maxwell:

The Marine and Wetlands Section of the Environmental Protection Agency, Region 6 (EPA) has reviewed the application for authorization of the project indicated above under §404 and §401 of the federal Clean Water Act. The project purpose involves protecting a levee from river migration and bank protection from erosion and sinkhole activity. The project is located along the Rio Grande on the Pueblo of Cochiti, at river mile 228.9 and 231.3, Sandoval County, New Mexico. The U.S. Army Corps of Engineers (USACE) will regulate this project under Individual Permit 2006-0525.

It is EPA's understanding that the work would be accomplished during low-flow periods. At this time, the Pueblo of Cochiti has not adopted water quality standards under the federal Clean Water Act. Water quality standards have been adopted by the state of New Mexico, which apply to adjacent areas within this watershed. Although the state's standards do not apply to the Pueblo of Cochiti waters, these standards can provide a technical basis for evaluation of potential projects. To see the complete list of state water quality standards, refer to the *State of New Mexico Standards for Interstate and Intrastate Surface Waters*, New Mexico Water Quality Control Commission, 20.6.4 NMAC (amended February 16, 2006). These standards are available at the following address: <http://www.nmenv.state.nm.us/swqb/Standards/>. EPA has coordinated with the Pueblo of Cochiti's Department of Natural Resources and Conservation staff to determine the appropriateness of the New Mexico standards for assessment of this project. The Tribal staff concurred with EPA's approach for §401 certification of the project.

§401 Water Quality Certification with Conditions:

Pursuant to §404 of the Clean Water Act, EPA hereby issues §401 Water Quality Certification for this project. This certification is subject to conditions to ensure that the project will comply with water quality standards and the Antidegradation Policy.

Therefore, this Certification is not valid unless the following conditions are adhered to:

1. The permittee shall conduct all work in such a manner as to comply with all USACE 404 permit conditions.

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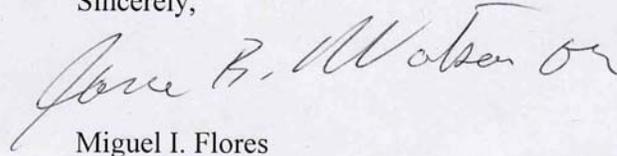


2. Work in a stream channel should be limited to periods of no flow when practicable, and must be limited to periods of low flow.
3. When working in a stream channel, flowing water must be temporarily diverted around the work area to minimize sedimentation and turbidity problems. Acceptable diversion structures are non-erosive and include (but are not limited to) sand bags, water bladders, concrete barriers lined with plastic, and flumes.
4. Culverts at stream crossings must be properly designed and installed to prevent erosion problems or diversion of the stream from its natural channel in the event of culvert failure.
5. Prior to beginning construction, erosion control measures must be installed to prevent the movement of disturbed soil or other contaminants into surface water. Temporary protective mats are required for heavy equipment working in wetlands to minimize impacts to soil and vegetation. Temporary access roads must be restored to pre-project conditions. All areas adjacent to the watercourse that are disturbed because of the project must be replanted with native vegetation. Native riparian and/or wetland species must be used in areas that support such vegetation.
6. All asphalt, concrete, and other construction materials must be properly handled and contained to prevent releases to the stream channels. All concrete that is to be poured must be fully contained in mortar-tight forms to prevent accidental releases to surface water or ground water. No discharge of any concrete to surface water or ground water may occur. Dumping of waste materials near watercourses is strictly prohibited.
7. All heavy equipment used in the project area must be steam cleaned before the start of the project and inspected daily for leaks. A written log of inspections and maintenance must be completed. Leaking equipment must not be used in or near any watercourse. Park equipment outside of channel when not in use.
8. Spill clean-up materials such as booms and absorbent pads must be available on-site at all times during construction. Report all spills immediately as required.
9. Fuel, oil, hydraulic fluid, or substances of this nature must not be stored within the normal floodplain, and must have secondary containment systems to prevent spills if the primary storage container leaks. Refuel equipment at least 100 feet from surface water or watercourse.
10. Prior to commencement of each project, the permittee shall contact the Pueblo of Cochiti to obtain a list of emergency response personnel. The permittee shall provide this list to all staff, contractors and subcontractors.

A copy of this §401 certification must be kept at the project site during all phases of construction. All contractors involved in this project must be provided a copy of this certification and made aware of the conditions prior to starting construction.

EPA reserves the right to amend or revoke this §401 certification at any time to ensure compliance with water quality standards. If you have any questions regarding this §401 Water Quality Certification please feel free to contact Tom Nystrom of my staff at (214) 665-8331. Thank you for your cooperation in maintaining the water quality of the Pueblo of Cochiti.

Sincerely,



Miguel I. Flores
Director
Water Quality Protection Division

cc: Honorable Ray H. Trujillo, Governor, Pueblo of Cochiti
Mr. Lee Suina, Programs Manager, Pueblo of Cochiti - DNRC
Jim Wood, U.S. Army Corps of Engineers

APPENDIX B

Biological Assessment

RECLAMATION

Managing Water in the West

Cochiti Priority Sites

Biological Assessment



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

**May 2007
Revised: July 2007**

Cochiti Priority Sites

Biological Assessment

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Cover photograph: Bend of the Rio Grande at Rive Mile 228.9.
Photo by Mark Nemeth.



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

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Background and Proposed Action

The Bureau of Reclamation (Reclamation) has authority for river channel maintenance on the Rio Grande in New Mexico between the community of Velarde and the headwaters of Caballo Reservoir. Reclamation regularly monitors changes in the river channel and evaluates channel and levee capacity in an effort to keep track of river maintenance priority sites where there is concern about possible damage to riverside facilities.

There are two priority sites on the Pueblo of Cochiti: one (at River Mile 231.3) is on the west side of the Rio Grande about 1 mile downstream of Cochiti Dam, and the other (at River Mile 228.9) is on the east side, about 3 miles downstream of the dam (Figure 1). Geomorphic investigations have been completed for both sites (Massong 2004, Bio-West, Inc. 2005a, Bio-West, Inc. 2005b). At River Mile 231.3, the west bank of the channel has migrated beyond the jetty jack line and is very close to a road and several agricultural fields. At River Mile 228.9, the main channel is on the west side of a large island with the secondary channel on the east side. The secondary channel carries water year-round. The concern at this site is that the secondary channel is slowly, but steadily, migrating eastward toward the levee and riverside drain. Both sites are located entirely within the boundaries of the Pueblo of Cochiti.

At River Mile 231.3, the planned maintenance action is to remove the jetty jacks, install bioengineered bank protection, and move the nearby road farther away from the river. At River Mile 228.9, the planned maintenance action is to block the upstream end of the secondary channel with a berm and excavate a new channel through the island that will connect the main channel to the secondary channel downstream of the priority site.

The primary concern at River Mile 231.3 is that the west bank of the Rio Grande is only about 30 feet away from a dirt road that runs parallel to the channel. The edge of an agricultural field is about 80 feet away from the channel; it is believed that this field may have an underground drainage system that could be damaged if the river migrates further westward. Additionally, several sinkholes, probably caused by flow of groundwater, have been observed between the river and the agricultural fields. Some sinkholes have formed in the road, and sinkholes near the channel have the potential to encourage erosion of the bankline. The project purpose at this site is to protect the road and agricultural fields from damage caused by erosion and sinkhole formation.

At River Mile 228.9, the main concern is that the bend in the secondary channel could migrate toward the levee, causing a levee breach and possible flow of river water into the adjacent drain. The bend in the secondary channel has an unusually small radius of curvature, and there is evidence that the secondary channel could abruptly become the main channel because of its steeper gradient, as compared to the western channel (Bio-West, Inc. 2005c). The distance from the channel to the levee toe is approximately 200 feet. At this site, the project purpose is to ensure that the levee is not damaged by eastward migration of the secondary channel.

For both sites, the project purposes must be accomplished while complying with the provisions of the Endangered Species Act and while meeting the habitat needs specified in the Biological

Opinion addressing Reclamation's river maintenance activities (U.S. Fish and Wildlife Service 2003a).

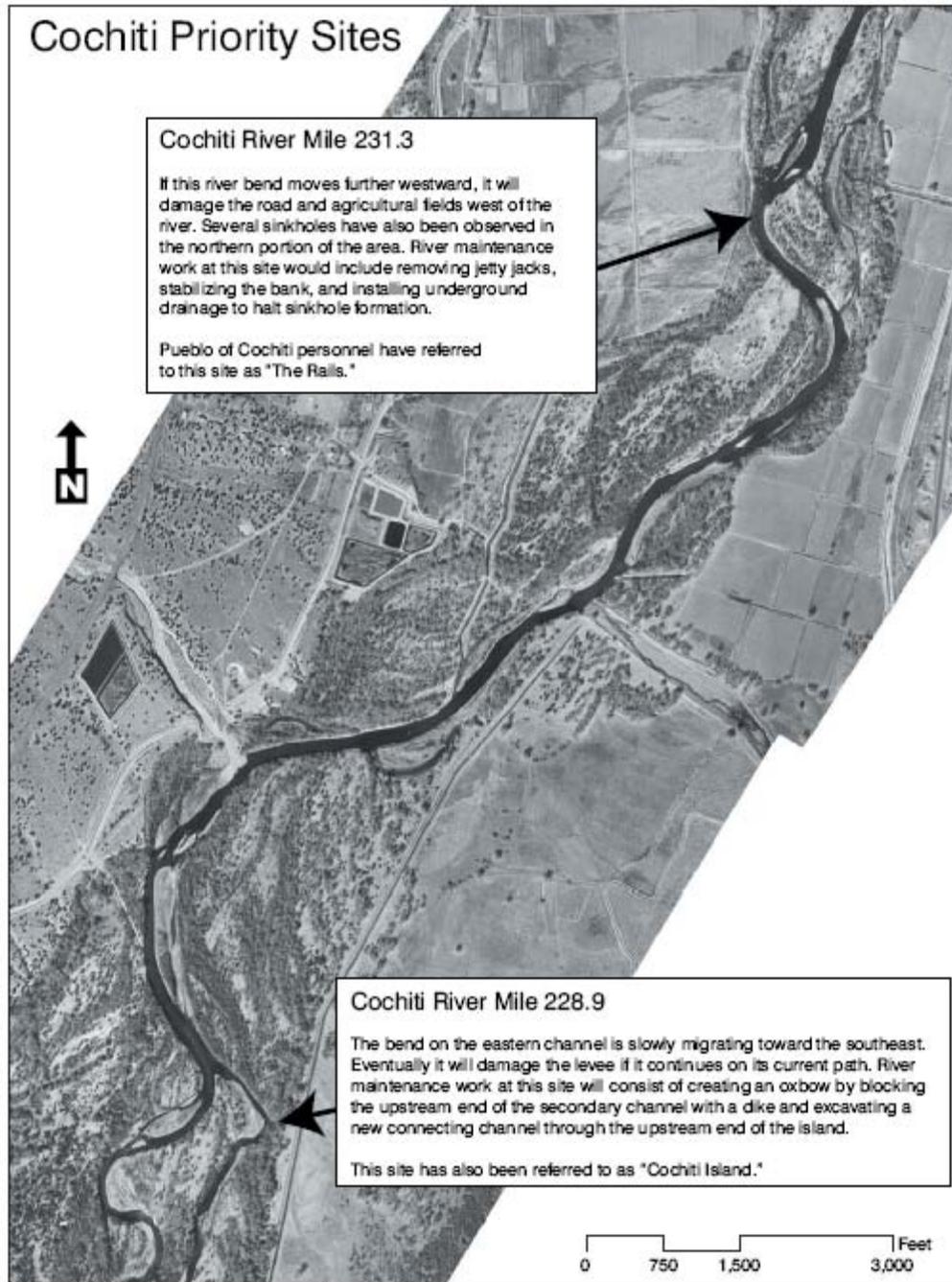


Figure 1. Locations of Cochiti priority sites.

Proposed Construction Sequence

The features of the projects for the priority sites at River Miles 231.3 and 228.9 are described below, in the probable order in which they will occur. The construction steps will likely overlap one another to some extent. Work at each site is completely independent of work at the other site. Construction equipment will include the following: bulldozers, excavators (land-track and amphibious), water trucks, scrapers, dump trucks, loaders, and motor graders. Proposed access routes and plan view illustrations of the proposed work for each of the two priority sites appear below in Figures 2-4. Construction at River Mile 231.3 will disturb a maximum area of 21 acres, while construction at River Miles 228.9 will disturb a maximum area of 32 acres.

Cochiti River Mile 231.3:

Step 1: Access Roads and Staging Areas

Dirt access roads will be graded, if necessary. The staging area designated in the construction drawings will be cleared of vegetation and used for equipment and material storage. Reclamation may pump water from irrigation facilities or the river for dust abatement during construction. If water is pumped from the river, Reclamation would use an exclusion cage with ¼-inch hardware cloth enclosing the sides to screen the pump intake for construction occurring August 31st (or later) to April 15th. For the construction periods April 16, 2008 through August 30, 2008, Reclamation would dig a sump in the proximate floodplain for pumping. The sump is less effective for pumping water but would exclude fish eggs and larvae during the spawning season. The sump would be filled back in with the excavated materials when pumping is terminated. The staging area will disturb up to 5 acres of terrestrial habitat in an adjacent fallow farm field on the west side of the river.

Step 2: Excavate Diversion Channel

A diversion channel between the main (western) and secondary (eastern) channels upstream of the priority site will be excavated through terrestrial habitat. Construction of the diversion channel will disturb up to 1 acre of terrestrial habitat. Water will be diverted into this channel in Step 3.

Step 3: Construct Diversion Dike

A temporary dike will be installed in the main (western) channel upstream of the priority site to divert water into the channel constructed in Step 2. The temporary dike should divert most of the flow down the eastern side channel during construction. If possible, local fill from the excavation of the diversion channel shall be used to build the temporary berm. The berm would be constructed by pushing earth material into the main channel with bulldozers; this may be done from only one side or from both sides simultaneously. Construction of the temporary dike will disturb approximately 1.5 acres of wetted habitat. Imported fill material may also be used, if necessary. It is anticipated that there may be seepage under the temporary berm and water may need to be pumped from the site during construction. A pit may be dug immediately downstream of the temporary berm to place a pump to dewater the groundwater and allow placement of the toe stone.

Step 4: Remove Jetty Jacks and Non-native Vegetation

All existing jetty jacks, including both tieback and main lines, located within the project area will be removed from the site. The removal of jetty jacks promotes more natural habitat conditions, provides better construction access for other project features, and eliminates a potential safety hazard. All non-native vegetation will also be removed within the disturbed area of the project site. The removal of existing cottonwood trees and other native plants shall be minimized in the disturbed area to the extent practical during all project phases. All removed vegetation shall be mulched within the project site and spread out evenly on the ground surface.

Step 5: Construct Bio-engineered Bankline and Install French Drain

The bio-engineered bankline will be constructed using a rock toe and coir fabric encapsulated soil. The existing bankline will be regraded at a 1.5:1 (H:V) slope. A toe trench shall be excavated at a width of approximately 7 feet. This trench shall be filled with 12-inch nominal toe stone at a 1.5:1 (H:V) slope to a level similar to the existing channel bed. After the stone toe has been placed, the coir fabric encapsulated soil will be placed in several lifts. Fill material will be provided for the bio-engineered bankline from the regrading of the existing bankline and construction of the toe stone trench. The fill material will be planted with native riparian vegetation. Approximately 0.3 acres of wetted and 2.7 acres terrestrial habitat will be disturbed during the bio-engineering bank construction and road relocation. The bio-engineered bankline will result in a more gradually sloped bank allowing for inundation of the surface at higher flows.

Concurrent with the bio-engineered bankline construction, an investigation of the source of piping in this area will be done to avoid possible collapse and failure of the bio-engineered bankline. Piping, through the formation of sinkholes, was noted in the vicinity of this priority site during an initial site investigation. A trench will be dug following a path west from one of the sinkholes towards the agricultural fields to investigate the source of the water causing the piping. If it is determined that the source is primarily a broken drainage tile, then this will be repaired. If the source is unchecked seepage from Cochiti Dam or the nearby agricultural fields, then the underground flow will be intercepted by digging a trench perpendicular to this flow and filling it with rock, gravel packed perforated pipe, solid pipe, or some combination of these three to create a French drain. The existing two-track road along the river bank will be moved westward during the construction process.

Step 6: Remove Diversion Dike

After the bio-engineering bankline has been completed, the temporary dike will be removed, and the diversion channel will either be filled in with the excavated material or left in place, at the discretion of the project manager.

Step 7: Site Cleanup and Planting

The final step of the construction is vegetation planting, removal of material from staging areas, and reseeded disturbed areas.

Cochiti River Mile 228.9:

Step 1: Access Roads and Staging Areas

Dirt access roads will be graded. If necessary, a gravel cap will be placed on the levee road from the Santa Fe River confluence to the project site at River Mile 228.9. The staging area designated in the construction drawings will be cleared of exotic vegetation and used for equipment and material storage. Reclamation may pump water from irrigation facilities or the river for dust abatement during construction. If water is pumped from the river, Reclamation would use an exclusion cage with ¼-inch hardware cloth enclosing the sides to screen the pump intake for construction occurring August 31st (or later) to April 15th. For the construction periods April 16, 2008 through August 30, 2008, Reclamation would dig a sump in the proximate floodplain for pumping. The sump is less effective for pumping water but would exclude fish eggs and larvae during the spawning season. The sump would be filled back in with the excavated materials when pumping is terminated. Approximately 2.5 acres of terrestrial habitat will be disturbed for the staging area.

Step 2: Placement of Rock in Berm

The first portion to be constructed of the berm across the east channel of the river will be the rock toe. The toe stone will be placed as a mound with a top width of 14 feet along the channel bed at the upstream end of the berm footprint.

Step 3: Excavate Material from Cross-island Channel and Spoil Berm

A cross-island channel will be excavated, running from the existing western side channel through Cochiti Island and connecting with the abandoned eastern side channel downstream of the priority site location. The diversion berm will cover approximately 2.5 acres of existing habitat (1.25 acres terrestrial; 1.25 acres aquatic). Additional earth material will be excavated from an existing spoil berm on the island, downstream of the new channel location. A plug will be left at the mouth of the cross-island channel at least until all excavated material has been transported upstream of the channel; the plug could potentially remain in place until the conclusion of the project, if it is necessary to keep water from backing up into the work area. Excavation of the side channel will convert (disturb) 1.5 acres terrestrial habitat to lotic habitat for a net gain of 0.25 acres.

Depending on hydrologic conditions, it may be preferable to complete Step 3 before Step 2. In this case, the excavated earth material would be temporarily stored on the island, north of the cross-island channel.

Step 4: Bank Restructuring

The bank of the channel at the priority site location (i.e., where the eastern branch of the channel is closest to the levee) will be graded to result in a flatter slope. Additional berms will be placed in the east channel between the diversion berm and the cross-island channel confluence. These berms will be created at varying slopes and will be planted with native riparian vegetation to help ensure berm stability and improve habitat. Fill material shall be provided for the berm and bank restructuring from the excavation in Step 3. To the extent possible, fill placement will be conducted to avoid creating isolated pools that could trap fish. Berm and bank restructuring for creating the oxbow will disturb up to 4.0 acres. The berm will create about 1.0 acres of potential

riparian habitat while the approximately 3.0 of backwater (oxbow) will result in higher quality (lower water velocities with a fine sediment substrate) aquatic habitat.

Step 5: Install Bio-engineered Bankline and Place Earth Material in Diversion Berm

Earth material excavated in Step 3 will be placed on top of and behind the rock toe to form the diversion berm. The berm would be constructed by pushing earth material into the channel with bulldozers; this may be done from one or both sides simultaneously. After the fill is placed, additional stabilization shall be provided by installing a bio-engineered bank above the toe stone on the river side of the berm. The bio-engineered bankline shall be installed by grading the diversion berm at a 1.5:1 (H:V) slope from the eastern top edge of the toe stone to the design elevation of the diversion berm. Each lift of the bio-engineering bankline shall consist of a coir fabric block with both a bottom and top coir fabric sheet.

Step 6: Site Cleanup and Planting

The final step of the construction is vegetation planting, removal of material from staging areas, and reseeding disturbed areas. If the plug at the upstream end of the cross-island channel has not previously been removed, it will be removed at this time.

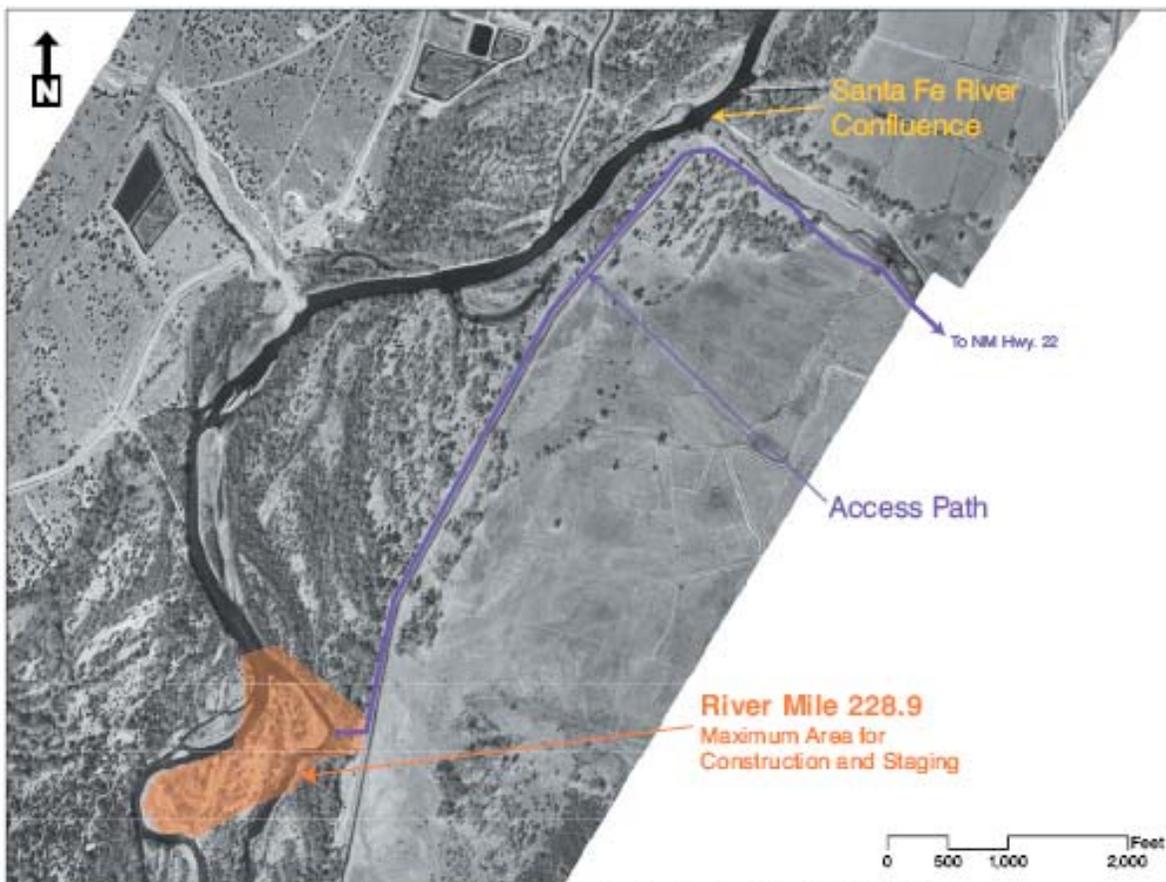


Figure 2. Access path and maximum area for work and staging for River Mile 228.9.

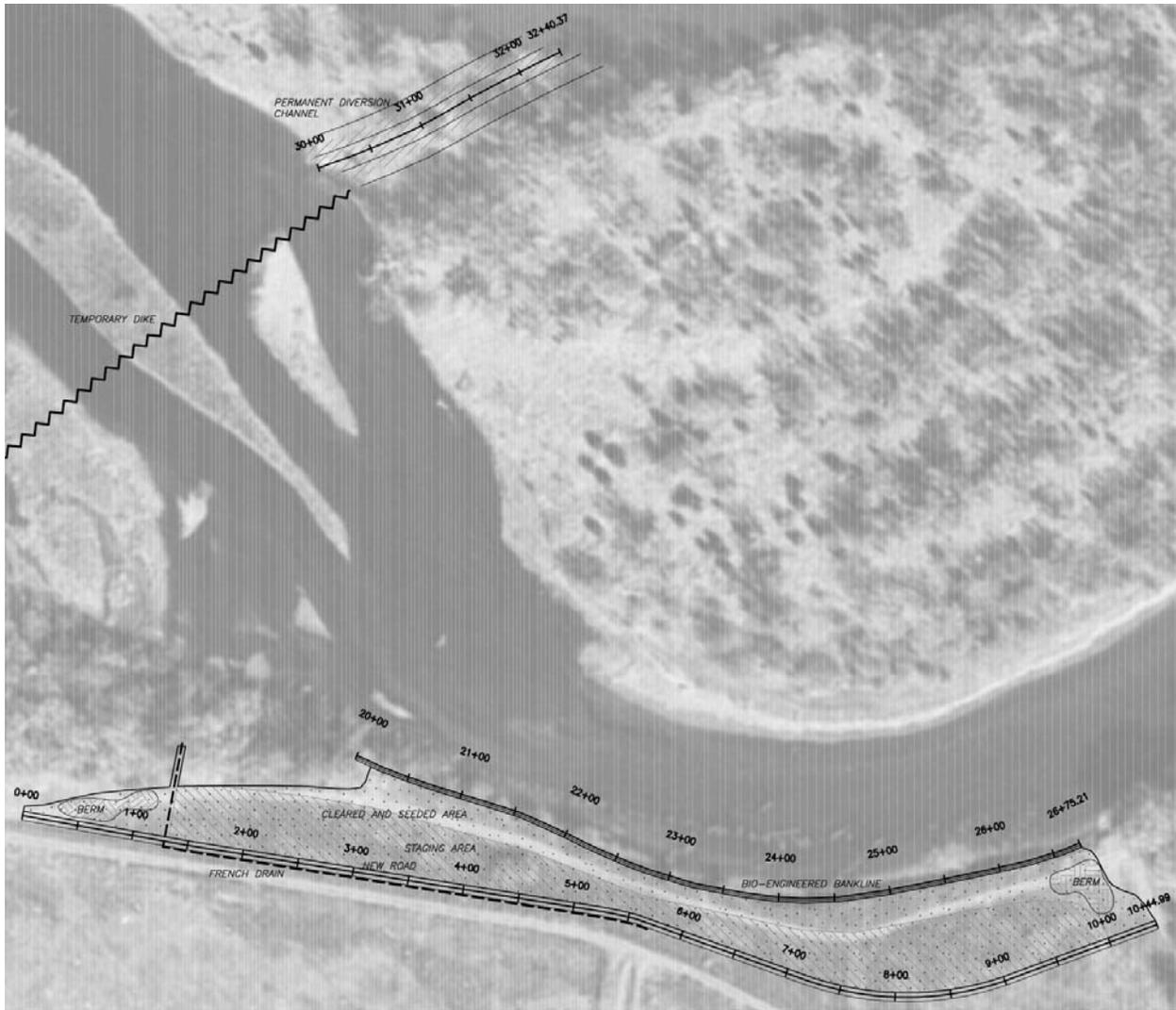


Figure 3. Plan view of River Mile 231.3 priority site features.

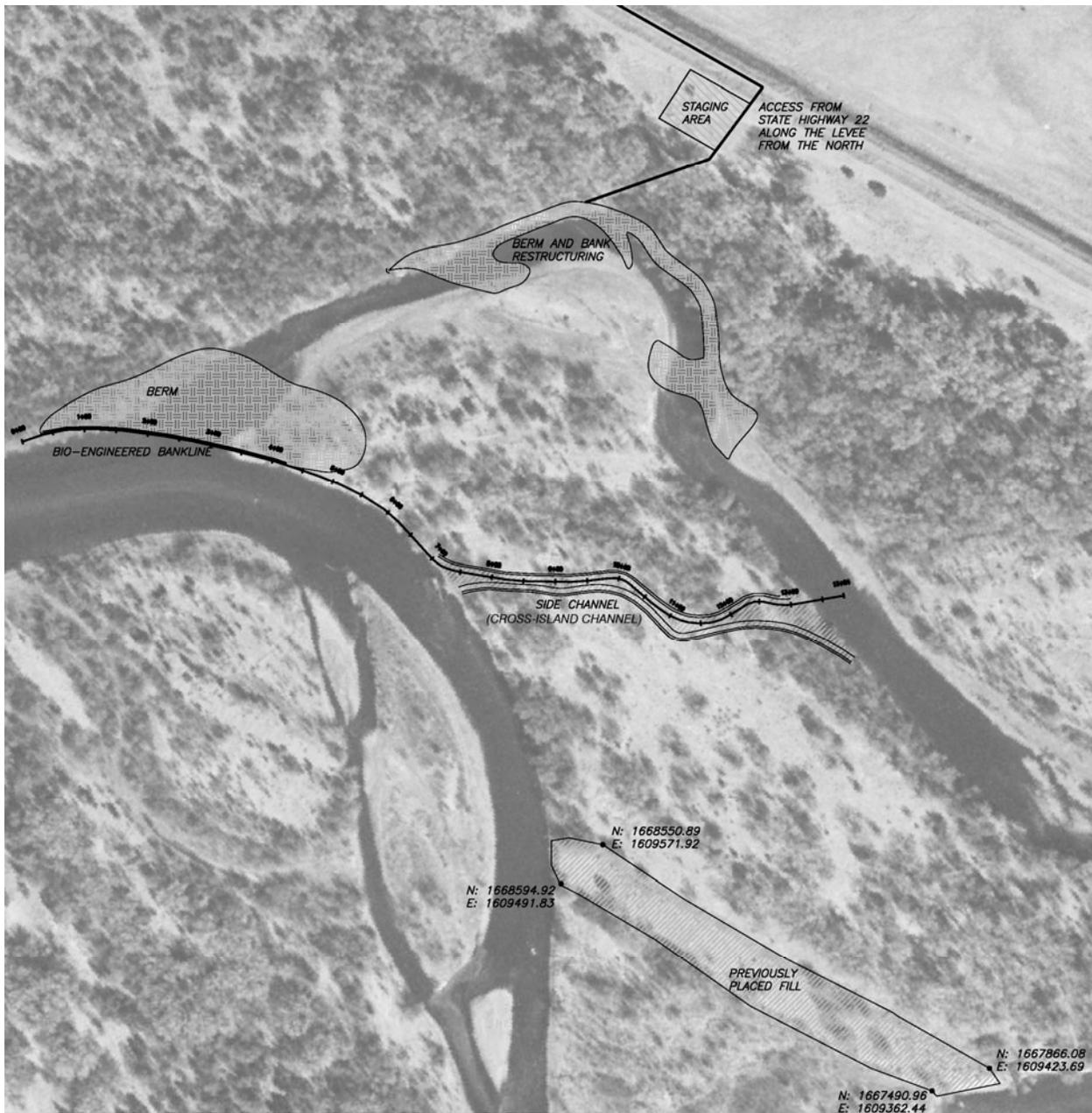


Figure 4. Plan view of River Mile 228.9 priority site features.

Species Information

Rio Grande Silvery Minnow

The Rio Grande silvery minnow (*Hybognathus amarus*) (minnow) was listed as a federally-endangered species by the U.S. Fish and Wildlife Service (Service) in July 1994 (U.S. Fish and Wildlife Service 1994a). Critical habitat was designated as the reach of the Rio Grande from Cochiti Dam to the upper pool for Elephant Butte Reservoir, a distance of approximately 163 miles (U.S. Fish and Wildlife Service 2003a). The species was previously documented in

Cochiti Reach in 1988 (Platania and Bestgen 1988), though no silvery minnows have been collected on Cochiti Pueblo since 1990's (Platania 1993; Pecos pers. comm.). A more recent fish community survey conducted in 2002 did not encounter any silvery minnows in the project area (see Appendix). The most recent fish community surveys in the reach were conducted by the Service at Peña Blanca. The Final Critical Habitat Designation for the minnow includes the Cochiti Reach from Cochiti Dam to Angostura Diversion Dam, including the project area on Cochiti Pueblo (U.S. Fish and Wildlife Service 2003b).

Dudley and Platania (1997) documented habitat preferences of the minnow. They found that individuals were most commonly collected in shallow water (<40 cm) with low water velocities (<10 cm/second) and small substrate size, primarily silt and sand. Low-velocity habitats, such as backwaters and embayments, provide nursery areas for larvae (Dudley and Platania 1997, Massong et al. 2004), which grow rapidly in these areas. Restoration efforts that increase the availability of these habitat conditions would benefit the minnow. In addition to the quantity of preferred habitat, food availability may be influenced directly by river restoration activities. Minnows are herbivores that eat primarily diatoms, cyanobacteria, and green algae associated with sand or silt substrates in shallow areas of the river channel (Shirey 2004). Habitat created by the project would benefit possible remnant silvery minnow populations and facilitate future re-introduction in the reach.

The hypolimnetic water released from Cochiti Reservoir has created a highly incised river channel armored by cobble and gravel in the project area (Dudley and Platania 2007). There are few backwater, side channel, or shallow water habitats in this reach of the river considered suitable for silvery minnows. Both project areas have low quality silvery minnow habitat as defined by Dudley and Platania (1997). The removal of jetty jacks, bio-engineered (deformable) banklines, oxbow re-establishment, and high flow channels are suitable habitat enhancement techniques cited in the 2001 Biological Opinion (U.S. Fish and Wildlife Service 2001).

Southwestern Willow Flycatcher

The Willow Flycatcher is a widely-distributed summer resident of much of the United States and southern Canada (Brown 1988). Currently, four subspecies of Willow Flycatcher are recognized in North America and distinguished by subtle differences in color, morphology, and breeding range (Phillips 1948, Aldrich 1953, Unitt 1987, Browning 1993). One subspecies breeds east of the Rocky Mountains, *E. t. traillii*. Three breed west of the Rocky Mountains, *E. t. brewsteri*, *E. t. adastus*, and *E. t. extimus* (Unitt 1987). Browning (1993) recognizes a fifth subspecies (*E. t. campestris*) that is said to occur in the central portion of the United States. Formerly known as the Traill's Flycatcher, *Empidonax traillii* was divided into two species in 1973 (American Ornithologists' Union 1973). The Willow Flycatcher (*Empidonax traillii*) was defined as the "fitz-bew" song form of the prairies and open habitats of the Midwest and eastern United States. The Alder Flycatcher (*Empidonax alnorum*) was defined as the "fee-bee-o" song form from the boreal regions of Alaska, Canada, and eastern United States.

E. t. extimus was initially described by Phillips (1948), from a collection by Gale Monson. The southwestern subspecies is generally paler than other subspecies and differs in morphology, primarily wing formula. The taxonomic status of *E. t. extimus* was reviewed and confirmed by Hubbard (1987), Unitt (1987), and Browning (1993). Generally, *E. t. extimus* is paler on its back

and head than either *E. t. adastus* or *E. t. brewsteri*, and the breast band found on *E. t. extimus* is less distinct and paler gray than on other subspecies (Browning 1993). In 1992 the Service was petitioned to list *E. t. extimus* as an endangered species under the Endangered Species Act (ESA). Subsequently, the Service published a proposal in 1993 to list the subspecies as endangered with critical habitat. A final designation of critical habitat for the flycatcher was made in 2005 (U.S. Fish and Wildlife Service 2005).

Historically, the Southwestern Willow Flycatcher was widespread across the southwestern United States, breeding in riparian habitats ranging from sea level to approximately 7,000 feet in Arizona, southern California, New Mexico, southern Nevada, southern Utah, southwestern Colorado, west Texas, and extreme northwest Mexico (Phillips 1948, U.S. Fish and Wildlife Service 1995, McKernan and Braden 2001, Smith et al. 2004). This subspecies has been documented at a total of 109 sites on 43 drainages throughout the southwestern United States. The majority of the population occurs in Arizona, California, and New Mexico, accounting for 92 percent of all breeding territories (Marshall 2000).

In New Mexico Southwestern Willow Flycatcher breeding territories have been documented on the upper, middle, and lower Rio Grande; the Rio Chama; the Zuni River; and the middle and lower Gila River (Sogge et al. 1997, Williams 1997, Finch and Kelly 1999, Marshall 2000). During Southwestern Willow Flycatcher surveys conducted from 1994 to 1996, 17 territories were found along the middle Rio Grande. Sites were located on the Isleta Pueblo, Bosque del Apache, and San Marcial (Finch and Kelly 1999). More recently, 10 to 11 territories were located on the San Juan Pueblo and 6 to 8 pairs were found on the Isleta Pueblo (N. Baczek, pers. comm.). During presence/absence surveys conducted in 2006 along the middle Rio Grande, 177 Southwestern Willow Flycatcher territories were documented between the Pueblo of Isleta and the upper half of Elephant Butte Reservoir (Moore and Ahlers 2006).

Bald Eagle

Historically widely distributed across North America, the Bald Eagle suffered great declines in southern and eastern portions of its range (Buehler 2000). By the early 1990s, populations in many areas had rebounded from the low levels that occurred before DDT use was banned in the United States. The number of breeding territories in the continental United States nearly tripled between 1980 and 1990 (Kjos 1992), and breeding populations have doubled every 6 to 7 years since the late 1970s (U.S. Fish and Wildlife Service 1994b).

In New Mexico the Bald Eagle is known to occur in Bernalillo, Catron, Colfax, McKinley, San Juan, and Sierra Counties. Watersheds in New Mexico where the species is known to occur include the Rio Grande headwaters, Alamosa-Trinchera, San Luis, Saguache, Conejos, Rio Grande, and Elephant Butte and Caballo Reservoirs (Buehler 2000).

The Bald Eagle was listed endangered in 1967, and a Federal recovery plan was written and approved in 1995. A proposed rule to reclassify the Bald Eagle from endangered to threatened in most of the lower 48 states was published in 1994 (U.S. Fish and Wildlife Service 1994b), and a

final rule to reclassify the species from endangered to threatened in the lower 48 states was published in 1995 (U.S. Fish and Wildlife Service 1995).

Roosting or perching (often communally) on snags, large deciduous trees, and cliffs, the Bald Eagle is primarily water-oriented, and the majority of the populations in New Mexico are found within 4 kilometers of streams and lakes. However, Bald Eagles have been known to regularly occur in considerably drier areas to include the region between the Pecos Valley and Sandia, Manzano, Capitan, and Sacramento Mountains, and areas of the Mogollon Plateau (Haynes and Schuetz 1997). Bald Eagles on the middle Rio Grande (from Albuquerque to the Rio Chama confluence) have been monitored by the U.S. Army Corps of Engineers since 1988 (Reclamation 1999). Reclamation has also conducted winter surveys for Bald Eagles at Elephant Butte and Caballo Reservoirs since 1997.

Wintering habitat for the Bald Eagle occurs almost statewide in New Mexico, though most of its wintering habitat is found in the northern and western parts of the state. These sites have large numbers of waterfowl from November to March and fisheries supported by reservoirs that provide the prey base to support foraging Bald Eagles. Winter and migrant populations appear to have increased in New Mexico, apparently as the result of reservoir construction and the expansion of fish and waterfowl populations. This species is found occasionally elsewhere in New Mexico in the summer (Reclamation 1999).

Analysis of the Effects of the Action

Rio Grande Silvery Minnow

The proposed action is limited to small areas (5.5 and 8 acres) and time period (4 months) with minimal disturbance to resident fish. There are no immediate direct or indirect adverse effects to Rio Grande silvery minnow critical habitat. The minnow has not been detected in this reach since the 1980's during recent surveys by Cochiti Pueblo or the Service. Though the minnow may persist at extremely low population densities further downstream in the Cochiti reach, the likelihood of silvery minnows being present at either construction area appear to be small and discountable due to unsuitable habitat. The project features would affect critical habitat constituent elements 2 (water velocity) and 3 (substrate) and have no affect on elements 1 (hydrologic regime) and 4 (water quality). The project will increase habitat quality for 3.55 acres of aquatic habitat.

At the River Mile 231.3 priority site the removal of jetty jacks and exotic terrestrial vegetation would have no direct effects on fish. An earthen berm would be constructed on the upstream ends of the main channel to redirect water into the eastern channel during construction. The work area will remain open at the downstream end throughout the project to allow any fish to avoid construction activities. This is normal behavior for avoidance of predators and in-channel dunes by this species in the Rio Grande. Personnel would operate equipment to facilitate avoidance and escapement by any fish in the construction area. The techniques employed on this project attempt to minimize harm, harass, or take of any fish present in the project area.

The proposed action would improve quality habitat for the minnow in the project area. The proposed bio-engineered bankline at River Mile 231.3 would create a low velocity shallow water area providing new habitat for the Rio Grande silvery minnows and other fish. Replacing the steep bankline with approximately 0.3 acres of bio-engineered bankline would create a gradient of benthic habitat at various water levels improving suitable silvery minnow and riparian habitat (U.S. Fish and Wildlife Service 2001). The bio-engineered bankline also produces a gradient of water velocities desirable for silvery minnows at higher flows. Establishment of riparian vegetation on the stabilized bankline would provide nursery habitat when inundated during the spawning season. The wetted area at base flows will be reduced, but the habitat value of the remaining wetted area will be improved. Replacing 0.3 acres of deep higher water velocity river channel with a bio-engineered bankline having a gradient of water velocities (constituent element 2) with a sand substrate (constituent element 3) would increase critical habitat value (U.S. Fish and Wildlife Service 2001).

The proposed action at the River Mile 228.9 priority site would create new habitat for the minnow in the project area by increasing the channel complexity. The perennial cross-island channel will have about 25 percent of the total river flow at 500 cfs. The flow through the cross-island channel would increase to 30 percent of the total river flow at 5000 cfs. Shifting the flow from the current side channel to the cross-island channel will result in a net gain of 0.25 acres of lotic habitat for fish. The berms and bank restructuring in the east channel at this site will create habitat with variable depths at a broad range of flows. The bio-engineered bankline (1.0 acre of riparian habitat) would create up to 3.0 acres of backwater habitat at various water levels suitable for silvery minnows and other fish (U.S. Fish and Wildlife Service 2001). This type of backwater habitat is considered higher quality than the current high velocity channel. Establishment of riparian vegetation on the stabilized bankline would provide nursery habitat when inundated during the spawning season. The wetted area at base flows will be reduced, but the habitat value of the remaining wetted area will be improved. Replacing 4.0 acres of deep higher water velocity river channel with a bio-engineered bankline (1.0 acre) with a backwater (3.0) having lower water velocities (constituent element 2) and a sand substrate (constituent element 3) would increase critical habitat value. The resulting decrease in depth and velocity would benefit by increasing the area of preferred habitat conditions for juvenile and adult minnows (<40 cm deep and <10 cm/second water velocity; Platania 1995).

Southwestern Willow Flycatcher

The project area is dominated by mixed native and exotic habitats that are primarily composed of Russian olive (*Elaeagnus angustifolia*) and saltcedar (*Tamarix* sp.) with a smaller component of coyote willow (*Salix exigua*) and a cottonwood (*Populus deltoids* var. *wislizeni*) overstory. These mixed communities are bordered by open, flowing water throughout both of the priority sites. In the vegetated areas affected by the proposed activity, while the vegetation species composition is suitable, the overall density of vegetation is low and there are no patches of dense habitat large enough to support breeding populations of Southwestern Willow Flycatchers, based on the median patch size of 4.4 ac given in the species' recovery plan (U.S. Fish and Wildlife Service 2002). The area of vegetation at River Mile 228.9 that will be affected by this project is approximately 3.0 acres. The proposed work at River Mile 231.3 will affect an area of vegetation less than 1.0 acre in size; most of the impacts are to open, agricultural land. Once the project activity is completed, the above areas will be replanted in native riparian species.

The Pueblo of Cochiti, following Service-approved protocols, surveyed the project areas for Southwestern Willow Flycatchers in 2005 and no birds were detected during the resident period (see Appendix). However, single birds were detected during these surveys and were determined to be migrants. This is not unexpected as migrant Southwestern Willow Flycatchers will utilize a wide variety of riparian, as well as non-riparian, habitats as stopover areas (U.S. Fish and Wildlife Service 2002). The closest occupied breeding habitat to the project area is located within the Isleta and Okhay Owingeh Pueblos, approximately 54 miles south and 38 miles north of the project area, respectively.

The proposed action would not adversely affect Southwestern Willow Flycatchers through habitat alteration. New plantings of native plant species and the creation of a backwater area at River Mile 228.9 will likely improve conditions for potential future occupation by Southwestern Willow Flycatchers.

Bald Eagle

Terrestrial habitat within the project area is composed of scattered cottonwoods with an understory of willow, saltcedar, Russian olive, and weed species. Several snags that may offer suitable perching structures have been identified within the project area. Because Bald Eagles only breed in a few isolated locations in New Mexico, none of which are located within close proximity to the project area, the proposed action would not adversely effect breeding Bald Eagle populations. Wintering Bald Eagles are present within the Middle Rio Grande Valley and have been observed flying and perching in the project area. To avoid adverse effects to Bald Eagles that may be present during construction, Reclamation would implement Conservation Measure number 2 (see page 15).

Effect Determinations

Rio Grande Silvery Minnow

This effects determination considers population status of the minnow in the Cochiti reach, and possibility of individuals occurring in the vicinity of excavation equipment. The likelihood of silvery minnows being present at either construction area is extremely small and discountable since the minnows have not been at detectable densities in this reach since the 1980's. The unsuitable deep high velocity habitat further reduces the possibility of minnows occurring in the project areas. The construction of the proposed action would not result in the adverse effects on minnow critical habitat as discussed in the 2001 Biological Opinion (U.S. Fish and Wildlife Service 2001). The project would improve 3.55 acres of aquatic habitat quality for the species, anticipating future re-introduction efforts in cooperation with the pueblos or a rebound by a potentially cryptic local population.

The construction techniques in the proposed action are designed to minimize contact with any fish and minimize potential for harm or harassment. The construction sequence would allow fish present in the work area to move freely to avoid contact with the equipment or personnel. Personnel would operate equipment to facilitate avoidance and escapement by fish in the construction area based on normal predator avoidance behavior.

The project may affect, but is not likely to adversely affect the minnow because the minnow does not appear to reside at detectable densities near or in the project area. The construction of the proposed action may affect, but is not likely to adversely affect Rio Grande silvery minnow critical habitat.

Southwestern Willow Flycatcher

The proposed action would have no adverse effects on the Southwestern Willow Flycatcher or its designated critical habitat based on the distance to occupied habitat and the fact that minimal existing vegetation would be disturbed by the proposed activity. Additionally, the proposed action would result in the planting of riparian/wetland communities in newly created areas that could eventually mature and create potentially suitable Southwestern Willow Flycatcher habitat. Therefore, the proposed action may affect, but is not likely to adversely affect, the Southwestern Willow Flycatcher.

Bald Eagle

The proposed action may affect, but is not likely to adversely affect, wintering Bald Eagles. Potential roosting and perching structures would not be impacted by the proposed action, since existing native vegetation would be protected. Additionally, implementation of the proposed river maintenance activities would likely create suitable conditions for the Bald Eagle's prey base by creating a secondary channel with slower water velocities and planting riparian and wetland vegetation on newly created areas. Newly created habitat for its prey base may attract Bald Eagles to the project area.

Conservation Measures

- 1) Construction of the stabilized bankline would be implemented during low flows to minimize the area of disturbance at the construction site.
- 2) If a Bald Eagle is visible at the project area in the morning before construction activities start or following breaks in construction activities, Reclamation would be required to suspend all activity until the Bald Eagle leaves of its own volition. If a Bald Eagle arrives during construction activities, construction would not be interrupted. If Bald Eagles are found consistently in the immediate project area during the construction period, Reclamation would contact the Service to determine whether formal consultation is necessary.
- 3) For the construction period January 15, 2008 to April 15, 2008, Reclamation would use an exclusion cage with ¼-inch hardware cloth enclosing the sides to screen the pump intake. The ¼-inch hardware cloth would exclude small silvery minnows and other fish from the pump intake. The cage would be sized (larger than 2'L x 2'W x 2'D) to allow sufficient water for pumping and avoid pressure differential (suction) along the sides of the cage that could injure small fish.

- 4) For the construction period April 16, 2008 through August 30, 2008, Reclamation would dig a sump in the proximate floodplain for pumping. Preparation of a sump involves digging a hole in the floodplain, away from the edge of the river. The sump would be located a minimum of 50' from the nearest open water in the river and excavated to about 30-35 feet square and approximately 3 feet below groundwater level. The excavated material would be temporarily placed as a berm between the sump and the river. Water would be pumped out of the sump for dust abatement. The sump is less effective for pumping water but would exclude fish eggs and larvae during the spawning season. The sump would be filled back in with the excavated materials when pumping is terminated.

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Appendix

Letter from the Pueblo of Cochiti addressing the Pueblo's efforts to survey for Southwestern Willow Flycatchers and Rio Grande silvery minnow.

Cippy CrazyHorse
Governor

J. Leroy Arquero
Lt. Governor



P.O. Box 70
255 Cochiti Street
Cochiti Pueblo, New Mexico 87072-0070
PH # (505) 465-2244 Fax # (505) 465-1135

Andrew Quintana
Treasurer

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December 15, 2006

Connie Rupp, Area Manager
Bureau of Reclamation
555 Broadway NE, Suite 100
Albuquerque, NM 87102

RE: River Maintenance NEPA requirements

Dear Ms. Rupp:

The Pueblo de Cochiti would like to address the Biological Assessment issues relative to the NEPA requirements for the river maintenance projects early next year. The Pueblo has worked toward gaining the capacity to perform various surveys independently including wildlife surveys for management purposes. Pueblo staff has performed the training "Southwestern Willow Flycatcher Survey Protocol Training" conducted by the New Mexico Ecological Services Field office of the US Fish and Wildlife Service in coordination with the New Mexico Department of Game and Fish. The two species addressed in this letter are the Southwestern Willow flycatcher and the Rio Grande Silvery minnow.

The most recent Pueblo surveys for the flycatcher were performed in July of 2005. The survey revealed no nesting flycatchers or presence of flycatchers during these surveys. Prior to the 2005 surveys there were two reports written by the Bureau of Indian Affairs and the USDA Rocky Mountain Research Station in 2001. No Willow Flycatchers were detected in all five surveys performed on four sites, however, single incidental sightings occurred on three of the sites. In conclusion the flycatcher or its subspecies may be using some sites during migration. Suitable breeding habitat on the sites is uncommon, and the majority of the potentially suitable breeding habitat is below minimum patch size requirements (Lehmann, Walker and Finch 2001).

The Rio Grande silvery minnow has not been observed in the Cochiti Reach in at least the past 15 years. The most recent electrofishing survey (2002) conducted by the Bureau of Reclamation under the supervision of the Pueblo staff sampled 150 fish without finding any silvery minnows. The pueblo concurs that the silvery minnow has been extirpated from the Cochiti reach of the Rio Grande.

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The Pueblo de Cochiti would like to remain involved in the project details as it moves forward. We would like to thank you for your time and effort and please contact Mr. Jacob Pecos at 465-3123 should you have any questions on this matter or inquiries from other agencies.

Sincerely,

A handwritten signature in black ink that reads "Cippy Crazyhorse". The signature is written in a cursive, somewhat stylized font.

Cippy Crazyhorse, Governor
Pueblo de Cochiti

Cc: Robert Maxwell, Bureau of Reclamation
Richard Pecos, Tribal Administrator
Jacob Pecos, DNRC Director
DNRC/Tribal File