

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
FLOOD CONTROL IMPROVEMENTS TO THE RIO GRANDE
CANALIZATION PROJECT IN VADO, NEW MEXICO



Prepared by:

United States Section, International Boundary and Water Commission

El Paso, Texas

July 2014

COVER SHEET
Draft Supplemental
Environmental Assessment and
Finding of No Significant Impact

Flood Control Improvements to the
Rio Grande Canalization Project
in Vado, New Mexico

Lead Agency: United States Section, International Boundary and Water
Commission

Preferred alternative: Relocate the Rio Grande river channel and create approximately 1.08 miles of new levee where no flood control measures exist in Vado, New Mexico.

Report Designation: Supplemental Environmental Assessment (SEA)

Abstract: The USIBWC is considering relocating the Rio Grande river channel in the Canalization Project Levee System in a 1.08 mile stretch in Vado, New Mexico and create new levees where no flood control measures exist in an effort to meet current FEMA flood control requirements. The Preferred Alternative would relocate the river channel approximately 100 feet west due to the river channel moving east against the Burlington Northern Santa Fe (BNSF) railroad. The preferred alternative would then create a new levee that would tie into existing levee structures to the north and south of the project area. These improvements will be subject to availability of funds.

The Supplemental Environmental Assessment assesses potential environmental impacts of the No Action Alternative and the Preferred Alternative. Two additional alternatives were considered but were not evaluated as they were determined to be more costly, more difficult to achieve, less reliable, and more difficult to maintain. Potential impacts on natural, cultural, and other resources were evaluated. A Finding of No Significant Impact was issued for the Preferred Alternative based on a review of the facts and analyses contained in the Environmental Assessment when taking the proposed mitigation into account.

FINDING OF NO SIGNIFICANT IMPACT

FLOOD CONTROL IMPROVEMENTS TO THE RIO GRANDE CANALIZATION PROJECT IN VADO, NEW MEXICO

LEAD AGENCY: United States Section, International Boundary and Water Commission, United States and Mexico (USIBWC).

BACKGROUND

The Rio Grande Canalization Project was authorized by the Act of June 4, 1936, 49 Stat. 1463, Public Law No. 648 to facilitate compliance with the Convention concluded with Mexico on May 21, 1906, (TS 455), providing for the equitable division of waters of the Rio Grande, and to properly regulate and control the water supply for use in the two countries. The Act authorized the construction, operation, and maintenance of the project in accordance with the plan in the Engineering Report of December 14, 1935.

The USIBWC prepared an Environmental Assessment (EA) for the preferred alternative to improve flood control along sections of the Rio Grande Canalization Project (RGCP) Levee System located in El Paso County, Texas and Doña Ana and Sierra Counties, New Mexico. The original EA entitled "*Final Environmental Assessment Flood Control Improvements to the Rio Grande Canalization Project,*" dated December 2007 was developed to address flood control improvements along the Canalization Project that extends approximately 105.6 miles along the Rio Grande from Percha Diversion Dam in Sierra County, New Mexico downstream to American Dam in El Paso. The EA covered levee rehabilitation by raising the levee system between 1 to 4 feet for the entire reach. After design of the levee reconstruction was complete, it was determined that three sections of the levee system either did not have levees or did not have sufficient right of way to raise the levees.

This Supplemental Environmental Assessment (SEA) is being developed to address one of these areas, which is located in Vado, New Mexico. In this reach of the levee system, the river has meandered to the east and currently abuts the BNSF Railroad maintenance road at the base of the railroad. At this point, there is no levee and no right of way to construct flood control measures.

ALTERNATIVE ACTIONS

A No Action Alternative was evaluated for the flood control improvements to the Rio Grande Canalization Project Levee System. This alternative would retain the existing configuration of the system, and the level of protection currently associated with this system. Under severe storm events, current containment capacity may be insufficient to fully control Rio Grande flooding, with risks to personal safety and potential property damage, as well as risks to the railroad system.

Design alternatives were conducted and evaluated in the final design memorandum entitled "*Rehabilitation Improvements for the Vado East Levee, Doña Ana County, New Mexico,*" dated July 29, 2011. The final design memorandum evaluated three alternatives as described below. (Tetrattech 2011)

Preferred Alternative. The Preferred Alternative would allow the levees to meet the design criteria to contain 100-year flood flows and to comply with FEMA specifications for the levees in the Rio Grande Canalization Project Levee System. This would be accomplished

by creating a flood containment levee 1.08 miles in length that would continue from the current levee system to the north and south of the project area. Fill material, obtained from commercial sources would be used to create a levee to meet the 3 foot freeboard criterion established by the Federal Emergency Management Agency (FEMA). In order to create the levee in this area, the river channel would have to be relocated 100 feet to the west and the floodplain would have to be re-established on the eastern side of the river.

Flood Wall Alternative. This alternative would construct a flood wall that would tie into the existing levee system to the north and south of the project instead of relocating the river. The flood wall would require dredging the river channel along the section that is currently against the railroad easement and construction of a concrete or metal wall that would extend 888 feet along the river and existing flood plain to the current levees. The wall would be 8 feet tall above the flood plain and require pilings to be driven 40 feet in the ground. Additionally, the cost of this alternative is \$8.5 million above the cost of the preferred alternative.

Sheet Pile Wall Alternative. This alternative would construct a sheet pile wall instead of the flood wall. This wall would follow the same requirements but would consist of interlocked metal sheets driven into the ground instead of a concrete wall. The sheet metal pilings would also have to be driven 40 feet into the ground to reach the bedrock. Additionally, the cost of this alternative is \$5.3 million above the cost of the preferred alternative.

SUMMARY OF FINDINGS

Pursuant to National Environmental Policy Act (NEPA) guidance (40 Code of Federal Regulations 1500-1508), the President's Council on Environmental Quality issued regulations for NEPA implementation which included provisions for both the content and procedural aspects of the required Supplemental Environmental Assessment. The USIBWC completed an SEA of the potential environmental consequences of relocating the Rio Grande Canalization Project in Vado, New Mexico and continuing the levee system to meet current requirements for flood control. The SEA, which supports this Finding of No Significant Impact, evaluated the Preferred Alternative that would satisfy the purpose and need and the No Action Alternative.

LEVEE SYSTEM EVALUATION

NO ACTION ALTERNATIVE

The No Action Alternative would retain the current configuration of the Rio Grande Canalization Project Levee System, with no impacts to biological and cultural resources, water resources, land use, community resources, and environmental health issues. In terms of flood protection, however, current containment capacity under the No Action Alternative may be insufficient to fully control Rio Grande flooding under severe storm events, with associated risks to personal safety, property, and transportation systems. The USIBWC will not be able to certify the levee system segments, that are being targeted for improvements, as meeting FEMA requirements and therefore residents residing within the FEMA flood zone would be required to maintain flood insurance policies.

PREFERRED ALTERNATIVE

Biological Resources

Improvements to the levee system would entail removal of riparian vegetation along the river's edge and clearing and grubbing of the floodplain. This would follow with placement of fill material on the restructured floodplain on the east side. Vegetation would be impacted along the river's edge. Riparian vegetation consists of mature native willows and mule-fat. The floodplain is managed for flood protection and therefore consists of low quality weeds and invasive plant species.

Significant effects are anticipated on wildlife habitat in the vicinity of the levee system due to the removal of riparian habitat consisting of mature willows and mule-fat. The USIBWC will mitigate for the loss through harvesting and replanting of willows along the construction zone as well as expansion of the willow habitat to areas south of the project in the Berino area. Additionally, the USIBWC will monitor the area for 5 years to ensure species proliferation through augmentation of lost plantings and control of invasive species. In floodplain areas, no riparian woodland communities would be impacted; impacts on vegetation would be limited to low quality vegetation of very limited value as wildlife habitat.

Cultural Resources

Improvements to the levee system are not expected to adversely affect known archaeological or historical resources. The preferred alternative would only impact a small area of the flood control system. The area of construction is within an area that has been previously disturbed by the construction of the Canalization Project in the 1930s and by the meandering of the river within the established floodplain.

Water Resources

Improvements to the levee system would restore flood containment capacity to control the design flood event with a negligible increase in water surface elevation and would not affect water resources.

Land Use

Levee improvements would occur in the existing canalization project. There is minimal potential for impacts to urban or agricultural lands since the work will take place within USIBWC Canalization Project area. There are no existing river trails in this segment of the levee system.

Community Resources

In terms of socioeconomic resources, the influx of federal funds into Doña Ana County from the levee improvement project would have a positive but minor local economic impact. No adverse impacts to disproportionately high minority and low income populations were identified for construction activities. Moderate utilization of public roads is required during construction; a temporary increase in access road use would be required for equipment mobilization and material shipments. The Preferred Alternative would have beneficial impacts to local economics by reducing the requirement for home owners to maintain costly flood insurance.

Environmental Health Issues

Improvements to the levee system would have minimal impact to air quality through construction activities. Air emissions during construction would be limited to heavy

equipment operation during normal working hours. There would be a moderate increase in ambient noise levels due to construction activities. No long-term and regular exposure is expected to be above noise threshold values.

Best Management Practices

Best management practices during construction would include use of sediment barriers and soil wetting to minimize erosion and dust. To protect riparian woody vegetation, avoidance measures will be implemented. To protect wildlife, construction activities would be scheduled to occur, to the extent possible, outside the March to August bird migratory season, and particularly outside of the Southwestern Willow Flycatcher nesting season from May to mid-August.

Mitigation

Mitigation would be performed to restore the habitat to its current conditions except at the point of meander where armoring is necessary to prevent the river from undermining the project. Mitigation of riparian habitat south of the project area would be performed to restore habitat quality along the Rio Grande in this region.

DECISION

Based on my review of the facts and analyses contained in the Supplemental Environmental Assessment, I conclude that implementation of the Preferred Alternative to improve the Rio Grande Canalization Project Levee System in Vado, New Mexico would not have a significant impact. Levee system improvements do not preclude USIBWC support or implementation to regional initiatives for river trail projects, habitat improvement, and management of natural resources within the floodway. Accordingly, requirements of the National Environmental Policy Act and regulations promulgated by the Council on Environmental Quality are fulfilled and an environmental impact statement is not required.

Edward Drusina, P.E.
Commissioner
International Boundary and Water
Commission, United States Section

Date

**DRAFT SUPPLEMENTAL ENVIRONMENTAL
ASSESSMENT: FLOOD CONTROL
IMPROVEMENTS TO THE RIO GRANDE
CANALIZATION PROJECT IN
VADO, NEW MEXICO**

Prepared by:

**UNITED STATES SECTION, INTERNATIONAL BOUNDARY
AND WATER COMMISSION
UNITED STATES AND MEXICO**

DECEMBER 2013

CONTENTS

LIST OF TABLES	ii
ACRONYMS AND ABBREVIATIONS.....	iii
SECTION 1. PURPOSE OF AND NEED FOR THE PREFERRED ALTERNATIVE...1	1
1.1 Introduction.....	1
1.2 Purpose and Need	1
1.3 Scope of the Environmental Review.....	1
SECTION 2. DESCRIPTION OF PREFERRED ALTERNATIVE	2
2.1 Levee System Description	2
2.2 Preferred Alternative.....	3
2.3 Other Alternatives	4
2.4 Summary Comparison of Environmental Consequences of the Alternatives.....	5
SECTION 3. AFFECTED ENVIRONMENT	6
3.1 Biological Resources	7
3.1.1 Vegetation	7
3.1.2 Wildlife	7
3.1.3 Threatened and Endangered Species	8
3.2 Cultural Resources	8
3.3 Water Resources	9
3.3.1 Flood Control.....	9
3.3.2 Water Quality.....	10
3.4 Land Use.....	10
3.5 Community Resources.....	11
3.5.1 Environmental Justice.....	11
3.6 Environmental Health.....	11
3.6.1 Air Quality	11
3.6.2 Noise	12
SECTION 4. MITIGATION MEASURES	12
4.1 Mitigation Plan... ..	13
4.2 Mitigation During Construction.....	13
4.2.1 Soils.....	14
4.2.2 Vegetation	15
4.2.3 Wildlife Resources.....	15
4.2.4 Cultural Resources.....	15
4.2.5 Water Resources	15
4.2.6 Air Quality	15
4.2.7 Noise	16
4.2.8 Hazardous material.....	16
SECTION 5. CUMULATIVE IMPACTS.....	17
SECTION 6. PUBLIC INVOLVEMENT.....	17
SECTION 7. LIST OF CONTRIBUTORS	18
SECTION 8. REFERENCES.....	19

APPENDICES

- Appendix A Detailed Maps of Levee Alignment and Mitigation
- Appendix B Threatened and Endangered Species List
- Appendix C Photolog of Project Area
- Appendix D Draft Environmental Assessment Review Comments

LIST OF TABLES

Table 1 Summary of Environmental Resources Affected by the Preferred Alternative and No Action Alternatives.....6

Table 2 Preparers of the Environmental Assessment.....14

ACRONYMS AND ABBREVIATIONS

AQCR	air quality control region
BMP	best management practice
BNSF	Burlington Northern Santa Fe Railroad
CWA	Clean Water Act
dba	A-weighted sound level in decibels
EA	environmental assessment
EBID	Elephant Butte Irrigation District
EIS	Environmental Impact Statement
EG	Existing Ground level
ESA	Endangered Species Act
FEM	Field Environmental Monitor
FEMA	Federal Emergency Management Agency
IBWC	International Boundary and Water Commission, United States and Mexico
Flycatcher	Southwestern Willow Flycatcher
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NMED	New Mexico Environment Department
NMGFD	New Mexico Game and Fish Department
NMHPD	New Mexico Historic Preservation Division
NEPA	National Environmental Policy Act
RGCP	Rio Grande Canalization Project
ROW	right-of-way
SEA	Supplemental Environmental Assessment
SHPO	State Historical Preservation Officer
SPCC	Spill Prevention, Control, and Countermeasure
SWFL	Southwestern Willow Fly Catcher
T&E	threatened and endangered

TCEQ	Texas Commission on Environmental Quality
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	International Boundary and Water Commission, United States Section
WSE	Water Surface Elevation

SECTION 1. PURPOSE OF AND NEED FOR THE PREFERRED ALTERNATIVE

1.1 INTRODUCTION

the International Boundary and Water Commission, United States Section (USIBWC) identified the need to make improvements to the flood control features of the Rio Grande Canalization Project (RGCP) while at the same time implementing environmental enhancements. The USIBWC published the final *Environmental Impact Statement (EIS) for River Management Alternatives for the Rio Grande Canalization Project* in August 2004 (USIBWC 2004). The 2004 EIS described the flood control improvements that were identified in coordination with the United States Army Corps of Engineers (USACE), Albuquerque District, in 1996. The Record of Decision (ROD) was signed in June 2009 by USIBWC Commissioner Bill Ruth.

As per 40 CFR 1502.20, the USIBWC is authorized to tier from existing environmental documents to focus on issues “ripe for decision.” However, because the ROD was not yet signed in 2007 when USIBWC was in the initial planning phase for levee improvements, the USIBWC developed an Environmental Assessment for the levee improvement projects in the Canalization Project. In December 2007, the USIBWC published the *Final Environmental Assessment Flood Control Improvements to the Rio Grande Canalization Project* and the associated Finding Of No Significant Impact for the preferred alternative. The environmental impacts associated with the proposed flood control improvements described in the 2007 EA are tiered from the 2004 Final EIS. This allowed the USIBWC to meet the Federal Emergency Management Agency (FEMA) requirements for levee certification within a timely manner. The 2007 EA document assessed the environmental impacts to improving the RGCP Levee System by raising and expanding the footprint of the current levee system in order to meet the 3 foot of freeboard during a 100-year flood event as required by FEMA to meet certification of the levees.

Design of the levee improvements was completed and reconstruction of the levees has been completed in the RGCP, except for areas that were identified as not having levees or insufficient right of way to implement improvements. The area of the Vado, New Mexico stretch not only does not have an existing east levee but has no right of way as the river has encroached onto the Burlington Northern Santa Fe (BNSF) Railroad right of way.

1.2 PURPOSE AND NEED

The USIBWC prepared this Supplemental Environmental Assessment (SEA) for the preferred alternative of continuing the aforementioned flood control improvements to the RGCP in Vado, New Mexico. Flood control improvements were identified in the USIBWC 2004 Final EIS and the 2007 Final EA as well as subsequent hydraulic modeling utilizing FLO-2D; however, neither document assessed the impacts of a flood structure on the east Vado levee due to limited plans available at the time. Improvements in the Vado stretch of the project will require the relocation of the Rio Grande river channel and construction of new levee. These improvements are needed in order to meet the USIBWC 100-year design criteria for flood protection while at the same time meeting FEMA levee certification requirements.

1.3 SCOPE OF THE ENVIRONMENTAL REVIEW

Federal agencies are required to take into consideration the environmental consequences of

proposed and alternative actions in the decision-making process under the National Environmental Policy Act (NEPA) of 1969, as amended. The USIBWC regulations for implementing NEPA are specified in *Operational Procedures for Implementing Section 102 of the National Environmental Policy Act of 1969, Other Laws Pertaining to Specifics Aspects of the Environment and Applicable Executive Orders* (46 FR 44083, September 2, 1981). These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action.

This SEA identifies and evaluates the potential environmental consequences that may result from implementation of the Preferred Alternative and the No Action alternative. The following resource areas are analyzed for potential environmental consequences: biological resources; cultural resources; water resources; land use; and community resources (socioeconomics, environmental justice, and transportation). Environmental health issues are also evaluated (air quality, noise). Resource areas were discussed in the 2004 EIS as well as the 2007 EA and are incorporated herein by reference (USIBWC 2004, USIBWC 2007).

Analyses of environmental resources for the affected environment and environmental consequences are based on a potential impact corridor adjacent to the existing levee system. Analyses of environmental consequences also include potential indirect impacts to the levee corridor and the region depending on the resource and its relationship to the preferred alternative and the no action alternative. Reference values for air quality, cultural resources, socioeconomics, and environmental justice are evaluated on a regional basis (county level).

SECTION 2. DESCRIPTION OF PROPOSED ALTERNATIVES

2.1 LEVEE SYSTEM DESCRIPTION

In the Final EA, The USIBWC proposed to conduct flood control improvements along approximately 52-miles of east and west levees within the RGCP. The RGCP consists of a narrow river corridor that extends 105.4 miles along the Rio Grande, from below Percha Dam in Sierra County, New Mexico to American Dam in El Paso, Texas. The RGCP, operated and maintained by the USIBWC since its completion in 1943, was constructed to facilitate water deliveries to the Rincon and Mesilla Valleys in New Mexico, El Paso Valley in Texas, and Juárez Valley in Mexico in accordance with the Convention of 1906, and to provide flood control. A levee system for flood control extends 57 and 74 miles over the west and east sides of the Rio Grande, respectively. For more detailed information and project description please view the 2004 EIS (USIBWC 2004).

Various levee design measures were analyzed to determine a preferred design option to rehabilitate the existing Vado East Levee. The rehabilitation of the levee should accomplish the following:

1. Provide a minimum of 3 feet freeboard above the water surface elevations (WSE) for the RGCP design flood flows within the entire project reach;
2. Provide seepage control structures, as required, to control through-seepage and underseepage; and

3. Rehabilitate existing hydraulic structures and appurtenances located within the levee by modifying them to be in accordance with the raised levee cross-section, repairing any damages as necessary and adding gates to those structures.

2.2 PREFERRED ALTERNATIVE

The Preferred alternative would increase flood containment capacity of the RGCP levee system as well as meet the requirements listed in section 2.1. Due to right of way constraints with both BNSF and the Elephant Butte Irrigation District (EBID), the upstream portion of the project will require a re-alignment of the levee and construction of new levee embankment. The downstream portion of the project will involve only rehabilitation of the existing levee.

Based on the review of the existing USIBWC Right-of-way (ROW) boundaries, the upper half segment of the project levee between the upstream end of the project (Station 636+20) and the north end of an adjacent pecan farm (Station 665+00) is predominantly located outside of the USIBWC ROW. Currently, a combination of the railroad maintenance road (which crosses EBID ROW) and railroad embankment, owned by BNSF, serves as a levee with deficient freeboard along this segment. In order to remain within the USIBWC ROW, a new levee structure in this segment would need to be built at least 100 feet away from the existing railroad embankment to ensure the levee footprints are limited to the USIBWC ROW. The separation from the existing railroad embankment would place the new levee within the Rio Grande, encroaching into the current flow area of the river. Additionally, this new levee would require placing fill material outside of the USIBWC ROW, between the new levee and the existing railroad maintenance road. This fill placement is necessary in order to eliminate sump areas behind the new levee. The fill placement has been designed such that it is limited to USIBWC and EBID ROW. No fill placement will be performed on BNSF ROW.

The typical section showing relative locations of ROW and existing (EX.) levee is shown in **Figure 1**.

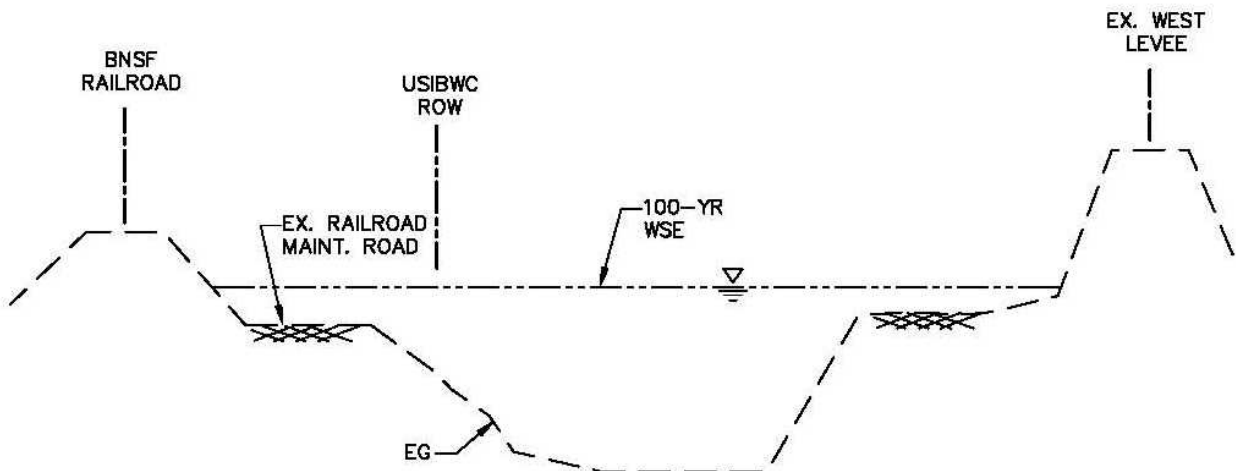


Figure 1 – Typical Existing Section

Based on the FLO-2D Proposed Conditions Model of the Rio Grande, the maximum flow velocity that the project levee may experience is estimated to be **5.07** feet per second (fps). According to the USACE's Engineer Manual (EM) 1110-2-1601, flood waters become erosive at velocities greater than 5 fps for grass-lined earthen channels. Although the estimated maximum channel velocity is barely over the recommended minimum velocity by the USACE's EM, the fact that the project levee is located along an outside bend of Rio Grande must be considered. Therefore, riprap protection will be added to the east riverside slope of the new earthen levee embankment to protect against erosion by the river and therefore help protect the BNSF railroad during the 100-year storm event. The riprap would extend from the upstream end of the project to the end of the river bend (Station 663+80).

The existing Del Rio Drain channel will be cut off from the Rio Grande by the proposed new levee. The channel would therefore be extended from the current confluence with the Rio Grande to the new alignment by means of a reinforced concrete box culvert sized such that it would provide at least as much available flow area as the existing channel.

2.3 OTHER ALTERNATIVES CONSIDERED BUT NOT EVALUATED

Based on the project goals stated above and design requirements, the USIBWC evaluated two other preliminary design plans and Opinion of Probable Cost (OPC). The other two alternatives were a sheet pile wall and a reinforced concrete floodwall.

The new levee structures in the other alternatives evaluated would be constructed where the existing levee ends and no IBWC levees exist. The existing railroad embankment and maintenance road does not meet the required freeboard requirement and FEMA requirements for flood control per requirements set in 44CFR65.10.

In the comparison of the OPCs of the different design options, the preferred alternative would require approximately \$ **5.3** million less than the sheet pile wall and \$ **8.5** million less than the floodwall, respectively. However, the earthen levee would require more channel excavation (approximately ~ 130,000 cubic yards) along the west side of Rio Grande to compensate for larger flow conveyance area lost by a larger footprint of earthen levee. Any excavation activities within Rio Grande will require permits from regulatory agencies.

Additionally, the earthen levee design option is likely to avoid constructional difficulties that may arise from excavating or pile-driving more than 40 feet into the channel bottom to place sheet piles or floodwall foundation piles, respectively. Geotechnical analysis also suggests that the pile driving may not seat into material sufficient to prevent movement of the pile driving and could compromise the structure. (S&B 2008)

The USIBWC chose to discard the other alternatives and proceed with design and evaluation of the preferred alternative due to the following factors:

1. All three alternatives would generate the same improvement benefits to the purpose and need of the project.

2. The cost of the preferred alternative is significantly lower.
3. Impacts to the environment for the alternatives would require removal of riparian habitat. The USIBWC will mitigate the impacts by harvesting riparian vegetation augmented with pole plantings and invasive species control to compensate for the temporary loss during construction.
4. The other alternatives would require the introduction of concrete with metal pilings or metal sheets with pilings into the environment whereas the preferred alternative would maintain continuity of the terrain and introduce stone rip-rap on the bank.
5. Technology required for the preferred alternative is surface earth moving equipment and is easily available whereas the other alternatives require more specialized equipment.
6. Earth moving in the preferred alternative would be less invasive to the surrounding neighborhoods than the extreme noise and vibrations caused by the pile driving in the other alternatives.

For the SEA, the assessment of impacts will evaluate only the preferred alternative and the no action alternative.

2.4 SUMMARY COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE PREFERRED ALTERNATIVE AND NO ACTION ALTERNATIVE

Environmental impacts are discussed in detail in Section 3.

No Action Alternative

The No Action Alternative would retain the current configuration of the levee system with no impacts to biological and cultural resources, land use, community resources, or environmental health issues. In terms of flood protection, however, current containment capacity under the No Action Alternative may be insufficient to fully control Rio Grande flooding under severe storm events, with associated risks to personal safety and property, including the railroad system. The USIBWC would not be able to certify its levee system, and FEMA flood rate insurance maps would show no levee system for the project area. Residents within a non-certified levee system will be required to purchase flood insurance if the home has an existing mortgage. Residents who own their homes will be advised to purchase flood insurance.

Preferred Alternative

The primary focus of the preferred alternative is to address known or potential flood control deficiencies in the RGCP. Key features of the preferred alternative include: improving the containment capacity by constructing a new flood control levee in the Vado area and relocating the river channel. Table 1 summarizes potential environmental consequences of the proposed improvements. The proposed action would provide improved flood protection along the RGCP.

Table 1 Summary of Environmental Resources Affected by the Preferred Alternative and No Action Alternatives.

ENVIRONMENTAL RESOURCES	EFFECTS OF THE PREFERRED ALTERNATIVE	EFFECTS OF NO ACTION ALTERNATIVE
Biological Resources		
A. Vegetation and Habitat	Affected but mitigated	Not Affected
B. Wildlife	Not Significantly Affected	Not Affected
C. Threatened and Endangered Species	Not Significantly Affected	Not Affected
Cultural Resources		
A. Archaeological and Historic Resources	Not Affected	Not Affected
Water Resources		
A. Flood Control	Affected Positively	Adversely Affected
B. Water Quality	Not Affected	Not Affected
Land Use		
A. Levee Corridor	Affected Positively	Affected
Community Resources		
A. Environmental Justice	Affected Positively	Affected
Environmental Health		
A. Air Quality	Temporarily Affected	Not Affected
B. Noise	Temporarily Affected	Not Affected

SECTION 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes resources in the potential area of influence of the project. For more detailed information please refer to the USIBWC 2004 EIS and the 2007 EA. Only those components of the environment that potentially could be affected by the project are discussed. The consequences of the Preferred Alternative and No Action are discussed immediately after the description of each resource component.

3.1 BIOLOGICAL RESOURCES

3.1.1 Vegetation

The RGCP is located in the northern Trans-Pecos region of the Chihuahuan Desert. This region includes all sections of the Chihuahuan Desert in the U.S. and the northernmost sections of the desert of Mexico (McMahan 1984). Climatic conditions throughout the study area are classified as semi-arid continental, characterized by fairly hot summers, mild winters, and short temperate spring and fall seasons. Precipitation averages 7.7 inches per year (Parsons 2001). The Trans-Pecos region of the Chihuahuan Desert is historically a mosaic of grasslands and desert shrublands (McMahan et al. 1984). The levee system grasses are mowed regularly to ensure suitable design flood features and to prevent degradation of the structural integrity of the levees. (USIBWC 2007)

In 2011, USIBWC hired a private environmental firm, HDR, to evaluate the habitat in the project area and determine if any wetlands would be impacted by the project. The report entitled, “*Wetlands and Waters of the United States Delineation Report for Vado Reach Dona Ana County, New Mexico*” was completed October 2010. Additional information on vegetation in the study area is available in the reference.

No Action Alternative

No impacts are anticipated, as the current levee configuration would be retained.

Preferred alternative

No wetlands will be impacted; however, impacts would occur to riparian vegetation during the construction in a 1- mile stretch on both banks of the Rio Grande. Construction would affect 2.06 acres of native riparian vegetation, namely coyote willows. USIBWC will mitigate to offset impacts to the riparian vegetation. See Section 4 on Mitigation and map in Appendix A for more information.

The floodplain is managed by the USIBWC for flood flow containment by mowing vegetation annually. Therefore, the floodplain does not possess natural habitat, primarily containing invasive species and weeds. The project will have no adverse, significant impacts to the vegetation in the floodplain.

3.1.2 Wildlife

Typical wildlife that could inhabit the project area include black-tailed jackrabbit, desert cottontail, cotton rat, ground squirrels, mourning dove, meadowlark, kestrel, red-tail hawk, skunks, burrowing owls, several species of waterfowl, and other non-game animals (USIBWC 2007). In addition, habitat could potentially be utilized by migratory birds. For more detailed information please review the 2004 EIS documentation and the 2007 EA.

USIBWC must comply with the Migratory Bird Treaty Act (MBTA). The MBTA protects migratory birds, their parts, nests, and eggs thereof during their nesting season. The U.S. Fish and Wildlife Service (USFWS) has determined that the nesting season for the region including the RGCP area is March 1 through August 15, and may be extended to September 1 if birds are still nesting. Work will be planned to occur outside of the bird nesting season which is typically from March through August. If work continues into the bird breeding season the areas proposed for

disturbance will be surveyed in order to avoid the inadvertent destruction of nests and eggs.

No Action Alternative

No impacts are anticipated, as the current levee configuration would be retained.

Preferred Alternative

A loss of habitat for wildlife would occur under the preferred alternative. Project activities along the levee corridor would remove some habitat; however, the removal is limited to riparian habitat in the small length on the east and west banks where the river channel relocation would occur. The USIBWC will mitigate for the loss of habitat by replacing lost riparian habitat where possible and extending the mitigation downstream to areas of lower quality habitat. Work will be scheduled to occur outside of the bird breeding season which is generally March through August. If work continues into the bird breeding season the areas proposed for disturbance will be surveyed in order to avoid the inadvertent destruction of nests and eggs.

3.1.3 Threatened and Endangered Species

USIBWC is required to evaluate impacts to threatened and endangered (T&E) species per the Endangered Species Act of 1973, as amended (ESA). In preparation of the 2004 EIS, biological surveys were conducted along the RGCP. A Biological Assessment was prepared to identify T&E species potentially occurring within the RGCP (Parsons 2001); additional biological assessments were conducted in 2004 and 2011 (SWCA 2011)

Within the RGCP most suitable habitat is located in areas adjacent to, but outside, the USIBWC Right-of-way (ROW), such as Seldon Canyon (southwestern willow flycatcher) and on state property near Leasburg Dam. Sandbars and beaches along the river, more of which become exposed during periods of low flow, provide small amounts of habitat for waterfowl and the interior least tern. Appendix B, lists threatened and endangered species potentially occurring in Doña Ana County, New Mexico. Of the species listed potential suitable habitat exists within the RGCP for the interior least tern, southwestern willow flycatcher, and whooping crane. The USIBWC in coordination with the USFWS have identified known nesting sites for the Southwestern Willow Flycatcher. The project area is not identified as a nesting area for Southwestern Willow Flycatcher or any other endangered species. Although the project area potentially provides migratory habitat for the flycatcher, no breeding or migrant flycatchers have been documented in surveys conducted in 2012 and 2013 (USBR 2013; USBR 2013b)

No Action Alternative

No impacts are anticipated, as the current levee configuration would be retained.

Preferred alternative

No T&E species within the levee corridor would be adversely affected by the preferred alternative. All work will occur on the existing floodplain corridor. The herbaceous plant communities present along the levee corridor are dominated by invasive plants and grasses and provides little suitable habitat for T&E species except for the riparian habitat located along the river's edge in the project area. Potential habitat located within the river channel will be impacted during construction but will be re-established under the mitigation plan for the project. T&E species potentially occurring during the levee construction will not be impacted as no potential habitat is located within the floodplain and areas of levee construction. Work will be

planned to occur outside of the flycatcher nesting season, from May to August. If work must occur during the flycatcher season, work will incorporate best management practices approved by USFWS, to include working after 9 am to minimize noise which could affect migratory flycatchers.

3.2 CULTURAL RESOURCES

As part of the 2004 EIS, cultural resource information was collected through a records search and literature review, field reconnaissance and location verification, and consultations with Native American Tribes (Ecosystem Management Inc. 2001). A 2-mile wide corridor that extends for 105.6 miles of the Rio Grande from Percha Dam to American Dam (one mile each side of the river centerline) was defined as the cultural resources study area for the records search. No historic buildings or structures, other than bridges and facilities associated with irrigation facilities, were identified in the Ecosystem Management Inc. (EMI) 2001 report.

Archaeological, prehistoric, and historic resources review identified 186 sites. Of the 186 sites EMI determined that 9 of the sites are or may be within the USIBWC ROW and include 7 prehistoric sites and two multi-component sites.

In addition, the USIBWC has conducted extensive evaluations of cultural resources in the RGCP, including evaluations for levee construction work and for habitat restoration work. An extensive archaeological investigation of the RGCP was completed in June 2009, and an architectural report was completed in July 2009, in advance of major improvements to the RGCP flood control features, including proposed new floodwalls and levee construction. Additional cultural resource investigations were conducted for specific construction areas. In addition, in March 2011, TRC completed cultural resource investigations for lands designated as potential habitat restoration sites. (USIBWC 2011)

The Elephant Butte Irrigation District (EBID) was listed in the national Register of Historic Places (NRHP) as a historic district in 1997. The period of significance for the EBID is 1906-1942. The district is listed in the NRHP under Criterion A for its association with agriculture and Criterion C for its engineering and design. The Del Rio Drain terminates at the section of the river to be altered. No work will occur in the drain except at the current mouth of the channel to construct a box culvert that will extend the drain under the additional length of new floodplain. The channel itself will not be altered or covered from its current configuration.

No Action Alternative

No adverse affects are anticipated, as the current levee configuration would be retained.

Preferred alternative

Proposed improvements to levee system would occur entirely within the floodplain and within the existing levee footprint. The levee footprint corridor has been previously impacted during original levee construction. There are no documented prehistoric sites within the project, therefore, impacts to archaeological properties are not anticipated. However, there is one historic property identified above which occurs in the project area, the Del Rio Drain, part of the EBID irrigation system. In September 2011, the New Mexico State Historic Preservation Office concurred with the USIBWC determination that the removal and replacement of the Del Rio Drain will have negligible effects on historic significance of the overall EBID district as well as

the Canalization Project levee system, and does not warrant further documentation. The 105-mile Canalization Project contains other historic features that have greater potential for preservation and interpretation.

3.3 WATER RESOURCES

3.3.1 Flood Control

The RGCP flood control system was designed to provide protection from the 100-year storm event, a storm of large magnitude with a very low probability of occurrence. The flood control levees extend for 57 miles along the west side of the RGCP and 74 miles on the east side, for a combined total of 131 miles. Naturally elevated bluffs and canyon walls contain flood flows along portions of the RGCP that do not have levees. The levees range in height from about 3 feet to about 8 feet and have slopes of about 3:1 (length to width) on the river side and 2.5:1 on the “land” side. The levees have a gravel maintenance road along the top. The levees are positioned on average about 750 to 800 feet apart north of Mesilla Dam and 600 feet apart south of Mesilla Dam. The floodway between the levees is generally level or uniformly sloped toward the channel. The floodway contains mostly grasses, some shrubs, and widely scattered trees. The bank of the channel at the immediate edge of the floodway is typically vegetated with a narrow strip of brush and trees.

The project area levees were raised during recent levee reconstruction as per the original EA requirements. The east Vado, New Mexico section was not completed during the construction as no levee was ever built in this area. The river over time has eroded the bank along a bend in the river. The erosion has removed earth in the USIBWC right of way and is now eroding lands owned by the BNSF railroad against the railroad maintenance road. Further erosion may continue to encroach onto the railroad. The railroad embankment does not meet the flood control requirements for FEMA under 44CFR65.10

No Action Alternative

The No Action Alternative would retain the current configuration of the levee and maintain the deficient level of protection currently associated with this system. See Appendix C for photos of the current system. Under severe storm events, containment capacity may be insufficient to fully control Rio Grande flooding with risks to personal safety and property as well as damage to farmlands located along the river. The risk of levee overtopping would remain elevated for those areas identified by the FLO-2D hydraulic model.

Preferred alternative

Improvements to the levee system would increase flood containment capacity to control the 100-year design flood event. The improvements would allow the USIBWC to certify the levee segment and meet FEMA requirements.

3.3.2 Water Quality

Water quality along the RGCP is defined by New Mexico and Texas on the basis of individual reaches for which designated uses have been defined. As required by the Clean Water Act Section 303b, states regularly submit to the USEPA a 303b surface water quality report that provides a summary for each reach, use attainment, and identifies any potential concerns in terms of water

quality.

For the project area, the RGCP segment is contained entirely within New Mexico Water Quality Standard Assessment Unit NM-2101 (20.6.4.101), that covers a 107-mile mainstem reach of the Rio Grande, from Percha Dam to the Texas border. In June 2007, USEPA approved a TMDL for Bacteria within the main stem of the Rio Grande from the international boundary with Mexico to Elephant Butte Dam (NMED 2013). State designated uses for the RGCP reach include: Irrigation; Marginal warmwater aquatic life; Livestock watering; Wildlife habitat; and Primary and Secondary Contact (NMED 2007; NMED 2013; NMAC 2000). In the 2012-2014 surface water quality assessment, the Rio Grande Assessment Unit NM-2101 from one mile below Percha Dam to the International boundary is "Not Supporting" the designated use for primary contact due to bacteria concentrations exceeded developed standards (NMED 2013).

No Action Alternative

No impacts are anticipated, as the current levee configuration would be retained.

Preferred alternative

No impacts are anticipated because construction in the Rio Grande channel would occur outside of irrigation season when there is little or no water in the river channel. There are also no jurisdictional waters and or wetlands present adjacent to the levee. Avoidance measures and best management practices will be implemented to avoid impacts to water quality. Implementation of BMP's would reduce or eliminate erosion and downstream sedimentation and the consequential effects to water quality.

3.4 LAND USE

Current land use adjacent to the RGCP levee system corridor consists primarily of agriculture (farmlands, orchards, livestock). Some urban centers of commerce and residential areas are present in the region. The majority of the USIBWC levee system corridor is off limits for public use, with the exception of hike and bike trails, state parks, and other uses from local traffic for accessing farms and residential facilities at specific locations. Existing recreational areas including hike and bike trails will not be impacted.

No Action Alternative

No impacts are anticipated as the current levee configuration would be retained.

Preferred alternative

Construction will occur within the existing USIBWC ROW and the river channel. The preferred alternative consists of removal of the floodplain and river bank from the west side of the river and transferring it to the east side of the river where the meander has no levee and floodplain available. Levee construction would then occur within the USIBWC right of way on the newly established floodplain. See figure 1 for cross-section.

3.5 COMMUNITY RESOURCES

3.5.1 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on February 11, 1994. The Executive Order requires a federal agency to make "...achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." As such, a preferred alternative must be evaluated in terms of an adverse effect that:

- Is predominantly borne by a minority population and/or low-income population; or
- Would be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low income population.

No Action Alternative

Negative adverse impacts are anticipated as the current levee configuration would be retained, and potential for levee overtopping and flooding nearby areas would remain. FEMA will require flood insurance for residents located in flood zones where RGCP levee certification cannot occur. Future impacts to the railroad maintenance road and levee could occur as the river continues to erode the river bank at the bend. See map in Appendix A.

Preferred alternative

Positive impacts are anticipated as a result of the levee rehabilitation effort. The RGCP levee system would meet the design criteria for flood protection, and the USIBWC would be able to certify its levees as required by FEMA.

3.6 ENVIRONMENTAL HEALTH

3.6.1 Air Quality

The Clean Air Act, Title 42, Section 7407 of the U.S. Code, states that Air Quality Control Regions (AQCR) shall be designated in interstate and major intrastate areas as deemed necessary or appropriate by a federal administrator for attainment and maintenance of concentration-based standards called National Ambient Air Quality Standards (NAAQS). NAAQS standards exist for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide. The RGCP levee transgresses through AQCR 153. This AQCR includes Doña Ana, Lincoln, Sierra, and Otero Counties in New Mexico, and Brewster, Culbertson, El Paso, Hudspeth, Jeff Davis, and Presidio Counties in Texas.

The USEPA designated air quality within all counties of AQCR 153 to be under attainment status for all criteria pollutants, with the exception of Doña Ana and El Paso Counties (USEPA 2007). Doña Ana County presently has two nonattainment areas: Anthony for particulate matter (PM10); and a 42 square-mile region in the southeast corner of Doña Ana County a marginal nonattainment area for the 1-hour ozone standard (NMED 2007). The General Conformity Rule applies to areas that have been designated as a non- attainment zone for an air pollutant. Federal actions may be exempt from further conformity analysis, if emissions from the action do not exceed *de minimis* thresholds, and if the Federal action is not considered a regionally significant action.

No Action Alternative

No impacts are anticipated, as the current configuration of the levee system would be retained.

Preferred alternative

The proposed action would have minimal impact to air quality through excavation and fill activities. Potential impacts would be temporary with a slight increase in criteria air pollutants within the project corridor from disturbed soils and from minor construction equipment emissions. The temporary nature and use of best management practices, such as soil wetting for dust suppression and proper maintenance of equipment, would result minimal impacts to the annual emissions inventory.

3.6.2 Noise

Noise is defined as sound that is undesirable because it interferes with speech and hearing, is intense enough to damage hearing, or is otherwise annoying (USDOT 1980). Typical outdoor noise sources near the project corridor include highways, local streets, residential and commercial areas with noise levels from 70-75 dba. Noise levels from heavy equipment at typical construction sites range from 84 to 89 dba (EPA 1971).

No Action Alternative

No impacts from noise are anticipated, as the current levee configuration would be retained.

Proposed Alternatives

The proposed action would increase ambient noise levels through the use of trucks and heavy construction equipment used to remove soil from the floodplain and to bring additional fill material to the site for levee construction. Construction noise would be limited to the immediate construction zone. It is anticipated that construction activities would occur between 7:30 a.m. and 5:00 p.m., 5 days per week for the duration of the project, although nighttime construction could occur if the construction schedule requires it.

SECTION 4. MITIGATION MEASURES

The preferred alternative would cause adverse environmental impacts in that the levee channel and riparian habitat would be affected. The USIBWC will implement best management practices (BMP) during construction to minimize impacts to natural resources. Best management practices will include but are not limited to soil wetting for dust suppression;

working, to the extent possible, outside of the bird breeding season and outside of the flycatcher breeding season; avoidance measures of native woody riparian vegetation; and reintroduction of native species.

Additionally, the adverse impacts to the river channel are not significant in that the river channel only has water during irrigation season, which is typically April through August. However, due to the extreme drought conditions affecting the Southwest, irrigation deliveries have been substantially reduced in length and quantity. The most recent water deliveries only lasted 6 weeks in June and July, leaving the river channel dry 10 months. The river channel contains primarily sands and possesses no aquatic or biological resources.

The floodplain is managed by the USIBWC for flood flow containment and therefore does not possess natural habitat, primarily containing invasive species and weeds. The project will have no adverse, significant impacts to the natural resources in the floodplain.

The river's edge and the mouth of the Del Rio drain, an EBID irrigation drain that relieves croplands of tail water, contain indigenous plants, to include mature willow trees and native grasses. Impacts to the removal of the riparian habitat will be mitigated to return the project area to its natural state by harvesting the mature willows, introducing willow pole plantings, and controlling invasive species introduction.

4.1 MITIGATION PLAN

CEQ has provided guidance on the use of mitigation and supports the use of mitigation to lead to a FONSI. Per 40 CFR 1508.20, as described in the CEQ Regulations, agencies can use mitigation to reduce environmental impacts in several ways. Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action;
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.

The USIBWC proposes to mitigate for the loss of riparian habitat in the project area by restoring the affected environment, except where armoring of the bank at the bend in the river is necessary to prevent future erosion. To compensate for the loss of the bend in the river, the USIBWC will compensate by providing substitute resources downstream near the Berino Bridge where there currently is no riparian habitat.

The proposed mitigation site, shown in Appendix A, is land surrounding the Berino East and Berino West habitat restoration sites in the Conceptual Restoration Plan (USACE 2009) implemented under the 2009 Record of Decision. This area is currently designated as a No-Mow Zone in the USIBWC draft River Management Plan. Mitigation work conducted under this SEA will complement restoration work under the ROD. (USIBWC 2007)

The mature willow trees lining the river channel will be harvested and replanted along the realigned river channel. Trees not surviving the harvesting will be replaced with pole plantings and the flood plain will be reseeded. Mitigation operations will be performed in accordance with guidance as published in the USDA New Mexico Natural Resources Conservation Service and the New Mexico Association of Conservation Districts guide entitled, “*A Guide for Planning Riparian Treatments in New Mexico.*”

The total loss of riparian habitat due to the preferred alternative amounts to 2.06 acres. After realignment, 1.12 acres in the construction zone will be mitigated as described above. This leaves a net loss of 0.94 acres of riparian habitat in the project area. The flood plain outside of the riparian habitat is not calculated as there is no habitat due to the floodplain vegetation management.

Mitigation for this project is being proposed at a ratio of 2:1 therefore the project mitigation would be 4.12 acres. With the 1.12 acres mitigated in the project area, 3 acres will be mitigated around the Berino habitat restoration sites. The mitigation will consist of pole plantings and invasive species removal along the riparian zone immediately below the Berino West site for 2,178 linear feet and immediately above the Berino East site for 2,178 linear feet. The mitigation sites will be 30 feet wide as this has been determined to promote endangered SWFL activity such as migration and foraging. These sites will enhance the much larger SWFL habitat and breeding zones being developed for the 2009 ROD. This will provide 1.5 acres on the west side and 1.5 acres on the east side of the Rio Grande adjacent to the Berino SWFL sites. See Appendix A for map of mitigation area.

Monitoring will occur for at least five years. The monitoring will consist of replacing dead pole plantings or harvested trees with new willow pole plantings, invasive species will be removed when identified, and USIBWC floodplain maintenance will avoid the mitigated riparian zones.

4.2 MITIGATION DURING PROJECT PLANNING AND CONSTRUCTION

USIBWC will require that the contractor performing the work follow certain BMPs to include:

- Construction will be designed such that riparian habitat is disturbed last and that plant species are immediately transplanted.
- A Field Environmental Monitor (FEM) will be on-site to insure all environmental regulations are being followed.
- Work will not be performed during bird breeding season, or if work must be done during bird breeding season that bird surveys will be performed to insure no nests or birds are present during construction.
- Work will not be performed during flycatcher nesting season, or if work must be done during flycatcher nesting season, that USFWS-approved BMPs be implemented.
- Contractor will document any establishment of non-native plants and will implement appropriate control measures as well as control noxious weeds using USEPA-approved herbicides.
- Levees and floodplain will be reseeded post construction with approved native grass seed.
- Contractor will use disturbed areas or areas that will be used later in the construction period for staging, parking, and equipment storage.
- Contractor will develop and implement erosion control measures and appropriate BMPs

before, during, and after soil-disturbing activities. To address areas with highly erodible soils, various erosion control techniques will be implemented, such as straw bales, silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion.

- A construction contractor Spill Prevention, Control and Countermeasure (SPCC) Plan will be developed and implemented at construction and maintenance sites to ensure that any toxic substances are properly handled and that escape into the environment is prevented. Agency standard protocols will be used. Drip pans underneath equipment, containment zones used when refueling vehicles or equipment, and other measures are to be included.
- Contractor will incorporate BMPs relating to project area delineation, water sources, waste management, and site restoration into project planning and implementation for road construction and maintenance.
- Contractor will clearly demarcate the perimeter of all areas to be disturbed during construction or maintenance activities using flagging or temporary construction fence, and no disturbance outside that perimeter will be authorized.
- All materials such as gravel or topsoil will be obtained from existing developed or previously used sources to include the existing soils within the floodplain and not from undisturbed areas adjacent to the project area. Deliveries of materials and equipment will be limited to the designated disturbance area.
- Water storage on the project area will be in on-ground containers located on upland areas, not in washes. Nonhazardous waste materials and other discarded materials, such as construction waste, will be immediately removed from the construction and maintenance sites. This will assist in keeping the project area and surroundings free of litter and will reduce the amount of disturbed area needed for waste storage.
- Disposal of all food-related trash items such as wrappers, cans, bottles, and food scraps will be in closed containers and remove them daily from the project site.

4.2.1 SOILS

Vehicular traffic associated with the construction activities and operational support activities will remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various erosion control techniques, such as straw bales, silt fencing, aggregate materials, wetting compounds, and rehabilitation, where possible, to decrease erosion during construction. Site rehabilitation will include re-vegetating. Additionally, erosion control measures and appropriate BMPs will be implemented before, during, and after construction activities as appropriate.

4.2.2 VEGETATION

USIBWC will seed the levees and floodplain with materials free of non-native plant seeds and other plant parts. Since natural materials cannot be certified as completely weed-free, if such materials are used, there will be follow-up monitoring to document establishment of non-native plants, and appropriate control measures will be implemented during the monitoring period.

4.2.3 WILDLIFE RESOURCES

The Migratory Bird Treaty Act (16 U.S.C. 703-712, [1918, as amended 1936, 1960, 1968, 1969,

1974, 1978, 1986 and 1989]) requires that Federal agencies coordinate with the USFWS if a construction activity would result in the take of a migratory bird. If construction or clearing activities are scheduled during nesting seasons (March 15 through August 31), surveys will be performed to identify active nests. Another mitigation measure that would be considered is to schedule all construction activities outside nesting seasons, negating the requirement for nesting bird surveys.

Work will be planned to occur outside of the flycatcher nesting season, from May to August. If work must occur during the flycatcher season, work will incorporate best management practices approved by USFWS, to include working after 9 am to minimize noise which could affect migratory flycatchers.

4.2.4 CULTURAL RESOURCES

Cultural resources were evaluated during the EA and it was determined that improvements to the levee system are not expected to adversely affect known archaeological or historical resources. Consultation was conducted with the SHPO and with native tribes and concurrence was received for the project. To insure that no cultural resources are impacted, the field environmental monitor and the USIBWC archaeologist will monitor the construction site to determine if any cultural resources are encountered. If any cultural resources are discovered during construction, all work will immediately stop and the USIBWC will contact the SHPO and implement recovery works to preserve the cultural resources prior to construction resuming in the project area.

4.2.5 WATER RESOURCES

Standard construction procedures will be implemented to minimize potential for erosion and sedimentation during construction. All work would cease during heavy rains and would not resume until conditions are suitable for the movement of equipment and material. All fuels, waste oils, and solvents will be collected and stored in tanks or drums within secondary containment areas consisting of an impervious floor and bermed sidewalls capable of holding the volume of the largest container stored therein. The refueling of machinery will be completed following accepted guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. No refueling or storage will take place within 100 feet of drainages or the river channel. The contractor will be required to develop and submit a Storm Water Pollution Prevention Plan.

4.2.6 AIR QUALITY

Mitigation measures will be incorporated to ensure that fugitive dust and other air quality constituents emission levels do not rise above the minimum threshold as required per 40 CFR51.853(b)(1). Measures will include dust suppression methods to minimize airborne particulate matter created during construction activities. Additionally, all construction equipment and vehicles will be required to be maintained in good operating condition to minimize exhaust emissions.

4.2.7 NOISE

During the construction phase, short-term noise impacts are anticipated. All applicable Occupational Safety and Health Administration (OSHA) regulations and requirements will be followed. On-site activities would be restricted to daylight hours to the greatest extent practicable, although nighttime construction could occur if the construction schedule requires it. Construction equipment will possess properly working mufflers and would be kept properly tuned to reduce backfires. Implementation of these measures will reduce the expected short-term noise impacts to an insignificant level in and around tower construction sites.

4.2.8 HAZARDOUS MATERIALS

BMPs will be implemented as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed in accordance with accepted industry and regulatory guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. Although it is unlikely that a major spill would occur, any spill of reportable quantities will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill. To ensure oil pollution prevention, an SPCC plan will be in place prior to the start of construction activities, and all personnel will be briefed on the implementation and responsibilities of this plan. All spills will be reported to the designated USIBWC point of contact for the project. Furthermore, a spill of any petroleum liquids (e.g., fuel) or material listed in 40 CFR 302 Table 302.4 of a reportable quantity must be cleaned up and reported to the appropriate federal and state agencies. All waste oil and solvents will be recycled.

Solid waste receptacles will be maintained at construction staging areas. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of in accordance with all applicable federal, state, and local regulations, including proper waste manifesting procedures. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Solid waste will be collected and disposed of by a local waste disposal contractor. Disposal of used batteries or other small quantities of hazardous waste will be handled, managed, maintained, stored, and disposed of in accordance with applicable federal and state rules and regulations for the management, storage, and disposal of hazardous materials, hazardous waste and universal waste. Additionally, to the extent practicable, all batteries will be recycled locally. Where handling of hazardous and regulated materials does occur, the contractor will collect and store all fuels, waste oils, and solvents in clearly labeled tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein.

SECTION 5. CUMULATIVE IMPACTS

The USIBWC is participating in a collaborative effort with project stakeholders: EBID, USFWS, Reclamation, and others to implement environmental enhancements that are currently being implemented following the issuance of the 2009 Record of Decision for the Rio Grande Canalization Project (USIBWC 2009). The ROD requires the agency to implement a variety of

approaches to land management, including cessation of mowing in designated areas, elimination of grazing leases throughout the project, and habitat restoration activities such as salt cedar extraction, chemical treatment of salt cedar, installation of groundwater monitoring wells, possible construction of irrigation infrastructure, and planting of native trees. The 2009 ROD also required the USIBWC to prepare an updated River Management Plan for the RGCP. This document is under way and will establish the procedures and management protocols for operating and maintaining the river channel and river floodplain to include this project in Vado, NM and the Berino mitigation sites

Further downstream of the project area, two other projects to finalize the rehabilitation of the RGCP levee system are under consideration. The two areas are Canutillo, Texas and the Courchesne-NeMexas Reach, which extends from Mexico-Texas border at American Dam in El Paso, Texas upstream through the New Mexico-Texas Border at Courchesne to the Country Club area in Doña Ana County, NM. These levee reaches include flood walls, new levees, and improvements of existing levees. These areas also have levee design concerns that will require different alternatives to solve the engineering challenges in those areas.

The City of Sunland Park, along with cooperating organizations, is proposing to continue construction of approximate 3.75-miles of pedestrian and bicycle trail along the east side of the Rio Grande from Country Club Bridge to the end of the existing trail about 0.75 miles upstream of Sunland Park Bridge. The proposed project requires the use of USIBWC property and a license or permit will be required from the USIBWC. The project is currently in the developmental stages and specific engineering designs/profiles have not been submitted for review by the USIBWC.

The New Mexico State Parks has indicated that they will issue a Request for Proposals in the near term for a proposed trail alignment of the Rio Grande Trail System. This work will focus on the southern part of the state from Belen downstream to the Texas state line. New Mexico State Parks will also establish a coordinating council comprised of land managers and stakeholders. Local work groups will be convened to develop criteria for trails. Generally, the Rio Grande trail concept is a multi-use trail for hiking and biking and equestrian when feasible. Width and trail materials will vary. Multi-use trails could use natural surfaces for equestrian, and an adjoining but separate more stable surface for other users. If the proposed project requires the use of USIBWC property, a license or permit will be required from the USIBWC.

SECTION 6. PUBLIC INVOLVEMENT

6.1 AGENCY COORDINATION

This section discusses consultation and coordination that will occur during the preparation of this document. This includes contacts made during development of the proposed action, other alternatives considered, and preparation of the draft SEA. Copies of agency coordination letters are presented in *Appendix E*. Formal and informal coordination will be conducted with the following agencies:

- State Historic Preservation Office (SHPO),
- U.S. Fish and Wildlife Service (USFWS),

- United States Environmental Protection Agency (USEPA), Region 6 Office
- USACE
- Environmental departments (TCEQ or NMED)
- EBID

6.2 PUBLIC INFORMATION AND REVIEW

In accordance with NEPA, a 30-day review period of the draft SEA was provided via a Notice of Availability in the Federal Register, posted on the USIBWC website located at www.ibwc.gov, and a local mailing (*Appendix D*).

SECTION 7. LIST OF CONTRIBUTORS

Table 2 Preparers of the Environmental Assessment

Name	Agency/ Title	Degree	Years Experience	Role
Gilbert G. Anaya	USIBWC Environmental Protection Specialist	M.S. Environmental Science	26	Reviewer
Wayne Belzer	USIBWC Environmental Engineer	M.S. Geophysics	23	Preparer
Elizabeth Verdecchia	USIBWC Natural Resources Specialist	M.A.G. Applied Geography	10	Reviewer

SECTION 8. REFERENCES

- BISON 2007. Species Reports. [<http://www.bison-m.org/> - accessed September 2007]
- HDR 2010. *Wetlands and Waters of the United States Delineation Report for Vado Reach Dona Ana County, New Mexico*
- McMahan, Craig A., Roy G. Frye, and Kirby L. Brown, 1984, The Vegetation Types of Texas, Texas Parks and Wildlife Department Website, [<http://www.tpwd.state.tx.us/gis/veg/index.htm>, accessed March 2007]
- NMED 2007. Air Quality Bureau. Doña Ana County NM [http://www.nmenv.state.nm.us/aqb/control_strat/sip/dona_ana_county_new_mexico.html – accessed September 2007]
- NMAC. 2000. “New Mexico Water Quality Standards: Standards for Interstate and Intrastate Surface Waters (Title 20 Environmental Protection, Chapter 6 Water Quality, Part 4) (20.6.4 NMAC)”. New Mexico Administrative Code. <http://www.nmcp.state.nm.us/nmac/parts/title20/20.006.0004.pdf>.
- NMED. 2013. “WQCC-Approved 2012-2014 State of New Mexico CWA 303(d)/305(b) Integrated List & Report.” May. <http://www.nmenv.state.nm.us/swqb/303d-305b/2012-2014/>.
- PARSONS 2001, Threatened and Endangered Species Report, Rio Grande Canalization Project.
- S&B 2008. “Geotechnical Explorations of Levee System within the Rio Grande Canalization Project.” S&B Infrastructure in association with Raba Kistner. Septmeber 26, 2008.
- SWCA 2011. Final Biological Assessment: Integrated Land Management for Long-Term River Management of the Rio Grande Canalization Project.
- TCEQ 2007. Point Source Emissions Inventory by County, Texas Commission on Environmental Quality. [http://www.tceq.state.tx.us/nav/data/aq_data.html – accessed March 2007]
- TETRATECH 2011. “Rehabilitation Improvements for the Vado East Levee, Dona Ana County, New Mexico.” TetraTech, July 29, 2011.
- USACE 1996. Rio Grande Canalization Improvement Project. Prepared for the U.S. International Boundary and Water Commission, U.S. and Mexico. U.S. Army Corps of Engineers, Albuquerque District.
- USACE. 2009. “Conceptual Restoration Plan and Cumulative Effects Analysis, Rio Grande - Caballo Dam to America Dam, New Mexico and Texas”. US Army Corps of Engineers, Albuquerque District, with Mussetter Engineering Inc and Riada Engineering, Inc.
- USBR 2013a. 2012 Southwestern Willow Flycatcher Survey Results: Selected Sites within the Rio Grande Basin from Caballo Reservoir, NM to El Paso, TX U.S. Bureau of Reclamation, Fisheries and Wildlife Resources, Denver, CO.
- USBR 2013b, unpublished. 2013 Southwestern Willow Flycatcher Survey Results: Selected Sites within the Rio Grande Basin from Caballo Reservoir, NM to El Paso, TX U.S. Bureau of Reclamation, Fisheries and Wildlife Resources, Denver, CO.
- USDA-NRCS 2001., Riparian Restoration in the Southwest – Species Selection, Propagation, Planting Methods, and Case Studies, By: David Dreesen, John Harrington, Tom Subirge, Pete Stewart, and Greg Fenchel
- USDA-NRCS 2007, United States Department Of Agriculture -A Guide for Planning Riparian Treatments in New Mexico

USDOT 1980. Guidelines for Considering Noise in Land Use. Planning and Control. United States Department of Transportation, Federal Interagency Committee on Urban Noise.

USEPA 1971. *Noise from Construction Equipment and Operations, US Building Equipment, and Home Appliances*. Prepared by Bolt, Beranek & Newman, Inc. for USEPA Office of Noise Abatement and Control, Washington, DC.

USEPA 2007. Emissions by Category Report - Criteria Air Pollutants El Paso County Texas – 2007. [<http://www.epa.gov/air/data/index.html>, accessed September 2007]

USIBWC 2004. Final Environmental Impact Statement – River Management Alternatives for the Rio Grande Canalization Project. Document prepared by Parsons for the USIBWC, August 2004.

USIBWC 2007. Final Environmental Assessment: Flood Control Improvements to the Rio Grande Canalization Project

USIBWC 2011. “USIBWC Rio Grande Canalization Project River Restoration Implementation Plan: Cultural Resources Management Task.” Prepared by TRC, March 2011.

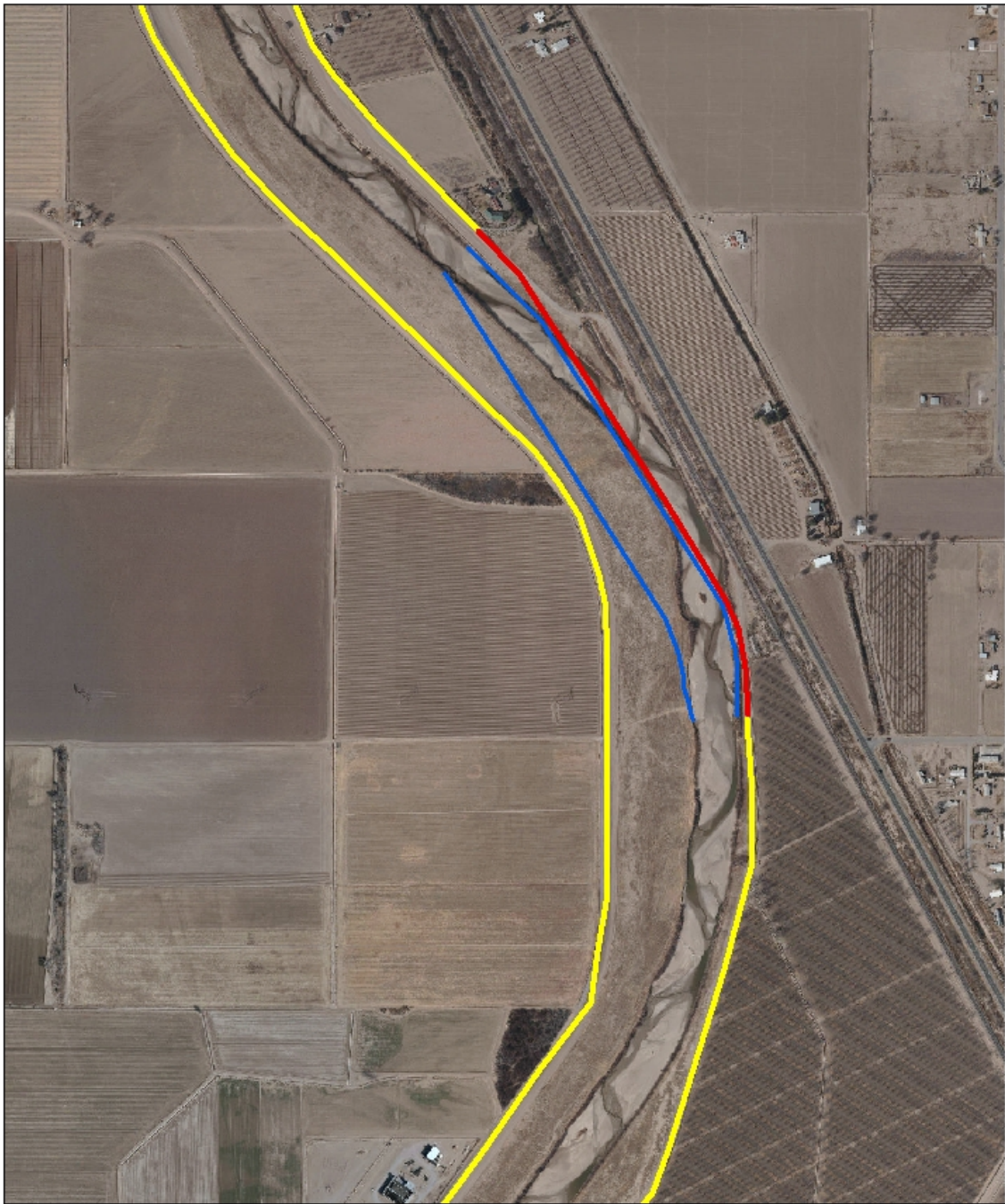
USIBWC 2013. The Texas Clean River Program Basin Summary Report. http://www.ibwc.gov/CRP/documents/USIBWC_Rio_Grande_Basin_Summary_Report_082613.pdf

USFWS. 2012. “Biological and Conference Opinion on the Effects of USIBWC Integrated Land Management Alternative for Long-Term Management for RGCP”. USFWS New Mexico Ecological Services Field Office.

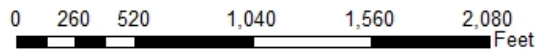
Appendix A

Maps

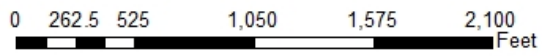
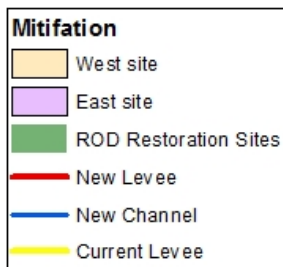
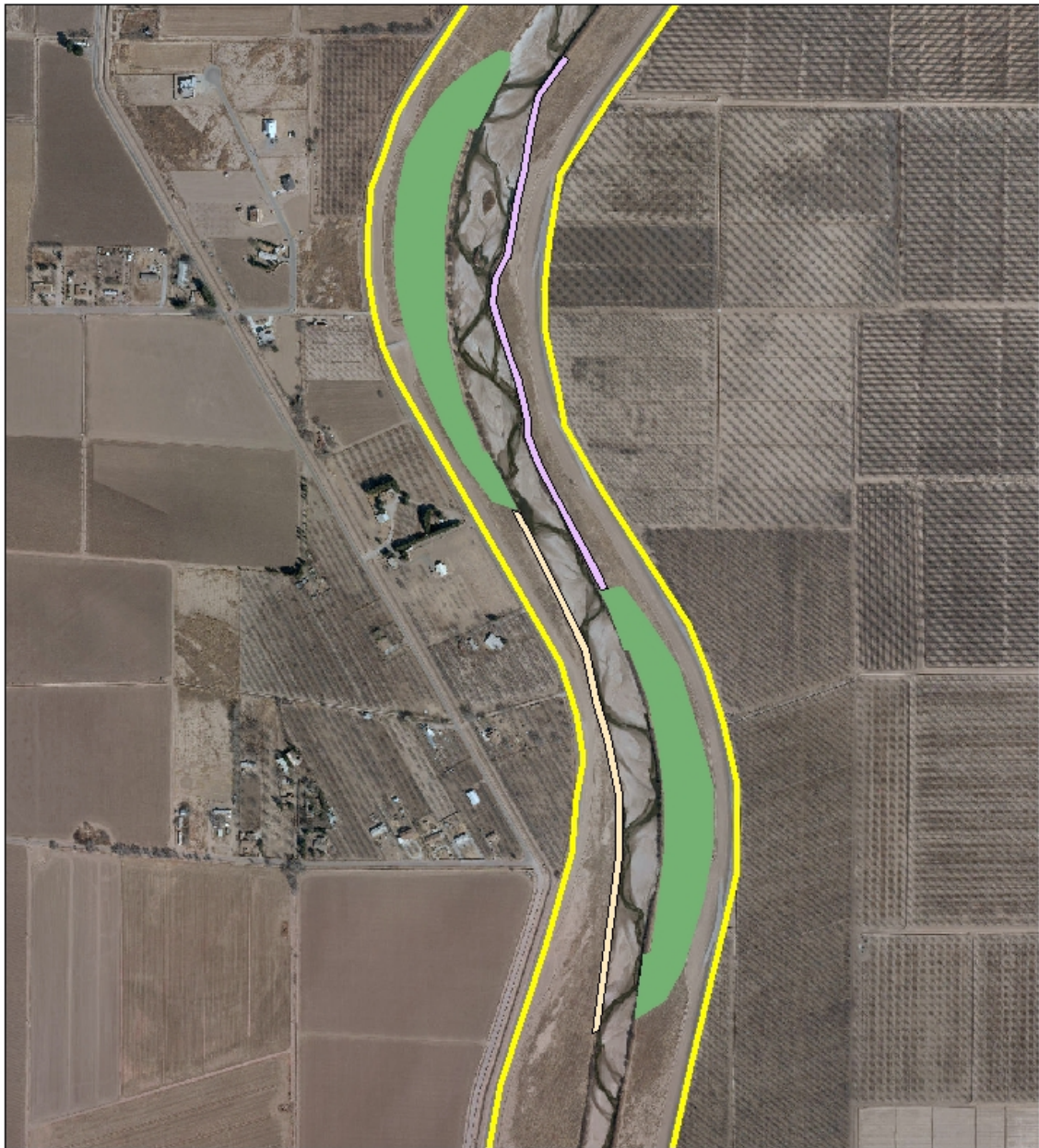
Vado Levee Project



- New Levee
- New Channel
- Current Levee



Vado Levee Mitigation Sites



Appendix B

Threatened and Endangered Species List

Federal and State Threatened and Endangered Species in Doña Ana County, New Mexico.

Common Name	Scientific Name	Federal	New Mexico
Bat, Spotted	<i>Euderma maculatum</i>		Threatened
Black-Hawk, Common	<i>Buteogallus anthracinus anthracinus</i>		Threatened
Black Bear	<i>Ursus americanus</i> Threatened	Threatened	
Bunting, Varied	<i>Passerina versicolor versicolor</i> ; <i>dickeyae</i>		Threatened
Chipmunk, Colorado, Organ Mtns	<i>Neotamias quadrivittatus australis</i>		Threatened
Cormorant, Neotropic	<i>Phalacrocorax brasilianus</i>		Threatened
Crane, Whooping	<i>Grus Americana</i>	Endangered	
Cuckoo, Yellow-billed	<i>Coccyzus americanus occidentalis</i>	Candidate	
Eagle, Bald	<i>Haliaeetus leucocephalus alascanus</i>		Threatened
Falcon, Aplomado	<i>Falco femoralis septentrionalis</i>	Endangered	Endangered
Falcon, Peregrine	<i>Falco peregrinus anatum</i>		Threatened
Falcon, Peregrine, Arctic	<i>Falco peregrinus tundrius</i>		Threatened
Ferret, Black-footed	<i>Mustela nigripes</i>	Endangered	
Flycatcher, Willow, SW.	<i>Empidonax traillii extimus</i>	Endangered	Endangered
Frog, Leopard,	<i>Chiricahua Rana chiricahuensis</i>	Threatened	
Ground-dove, Common	<i>Columbina passerina pallescens</i>		Endangered
Hummingbird, Broadbilled	<i>Cyanthus latirostris magicus</i>		Threatened
Hummingbird, Costa's	<i>Calypte costae</i>		Threatened
Hummingbird, Lucifer	<i>Calothorax Lucifer</i>		Threatened
Hummingbird, Violetcrowned	<i>Amazilia violiceps ellioti</i>		Threatened
Kingbird, Thick-billed	<i>Tyrannus crassirostris</i>		Endangered
Minnow, Rio Grande Silvery	<i>Hybognathus amarus</i>	Endangered	Endangered
Mountain snail, Mineral Creek	<i>Oreohelix pilsbryi</i>		Threatened
Nightjar, Buff-collared	<i>Caprimulgus ridgwayi ridgwayi</i>		Endangered
Owl, Spotted, Mexican	<i>Strix occidentalis lucida</i>	Threatened	
Pelican, Brown	<i>Pelecanus occidentalis carolinensis</i>		Endangered
Pupfish, White Sands	<i>Cyprinodon tularosa</i>		Threatened
Sheep, Bighorn, Desert	<i>Ovis canadensis mexicana</i>		Endangered
Sparrow, Baird's	<i>Ammodramus bairdii</i>		Threatened
Talussnail, Dona Ana	<i>Sonorella todseni</i>		Threatened
Tern, Least Sterna	<i>antillarum athalassos</i>	Endangered	Endangered
Trogon, Elegant	<i>Trogon elegans canescens</i>		Endangered
Trout, Gila	<i>Oncorhynchus gilae</i>	Threatened	Threatened
Vireo, Bell's Vireo	<i>bellii arizonae</i> ; <i>medius</i>		Threatened
Vireo, Gray	<i>Vireo vicinior</i>		Threatened
Wolf, Gray, Mexican	<i>Canis lupus baileyi</i>		Endangered

1. New Mexico data obtained from the Biota Information System of New Mexico (BISON 2007).

Appendix C

Photos of Project Area and Mitigation Sites



East Bank of Rio Grande looking upstream



East Bank of Rio Grande looking downstream, habitat to be removed on right, floodplain with no habitat on left with levee toe road



Rio Grande channel looking downstream, habitat to be removed



Confluence of Del Rio Drain and Rio Grande, will be extended to meet new alignment



Rio Grande Channel looking upstream



Riparian Vegetation at the confluence of the Rio Grande and the Del Rio Drain

Appendix D

Distribution List

Federal Government

- U.S. Army Corps of Engineers - Las Cruces Office
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation - El Paso Field Office
- U.S. Bureau of Reclamation - Elephant Butte Dam
- U.S. Customs and Border Protection - U.S. Border Patrol Santa Teresa Sector
- U.S. Environmental Protection Agency - El Paso office
- U.S. Fish & Wildlife Service - New Mexico Ecological Services Division

State Government

- New Mexico Department of Cultural Affairs - Historic Preservation Division
- New Mexico Department of Game and Fish
- New Mexico Environment Department
- Interstate Stream Commission
- Doña Ana County
- Doña Ana County Sheriff
- Village of Vado New Mexico

Organizations

- Audubon New Mexico
- Chihuahuan Desert Wildlife Rescue
- Elephant Butte Irrigation District
- El Paso County Water Improvement District No. 1
- Mesilla Valley Audubon
- Native Plant Society of New Mexico
- New Mexico Wilderness Alliance
- Paso del Norte Watershed Council
- Sierra Club
- Southwest Environmental Center
- World Wildlife Fund

USIBWC Rio Grande Citizens Forum Board members:

- Danny Chavez
- Valerie Beversdorf
- Leslie Dryder
- John Balliew
- John Cordova
- Travis Johnson
- Conrad Keyes
- Sal Masoud
- Dale Reinhardt

Elected Officials

- Office of Senator Tom Udall
- Office of Senator Martin Heinrich

Media

- El Paso Times
- Las Cruces Sun News

Appendix E

Draft Environmental Assessment Review Comments

Commenting Entity	Subject	Response
USACE	No Comments	None required
Conrad Keyes	Typographical and syntax	Corrected
	This implies that there could be an economic benefit when the Preferred Alternative is used. I don't see such below - One Million dollars savings if protected by the levee during a 200-year storm event?	FEMA has instructed that any holes in the levee will mean that the entire length of levee from Percha to Little Box Canyon will not be certified thus impacting a very large population not just the Vado residents.
	Railroad levee provides protection from severe storm runoff in the river	Railroad levee will eventually become undermined if the river migrates. Additionally, the railroad is not a certified levee and is not designed to act as a flood control levee per 44CFR65.10.
	Could this new 1-mile segment on the east side of the Rio Grande become one of the ROD restoration sites?	The mitigation areas in the Berino area are located adjacent to the ROD restoration sites in order to augment the effectiveness of the sites.
	Can the railroad withstand a 200-year storm event?	The Railroad levee was not evaluated for its effectiveness as a storm levee currently or after further erosion of the channel as the railroad cannot be considered for flood containment as it was not designed for that purpose and FEMA will not allow the railroad to be considered as well.
	Would the EBID have some control of the flood gate to the river during high flow conditions in the Del Rio Drain? Where is and at what location is the discharge to the Rio Grande?	There will be no gate. Discharge to the Rio Grande would still occur at the end of the Del Rio drain which would be extended to meet the new alignment.
	The Watershed Based Plan of the RGCP reaches is located on the PdNWC web site and has been provided to USEPA - if the East Drain has any connection to the Del Rio Drain; the Anthony, NM area might have bacterial contaminates. It does seem that the Del Rio Drain contaminates will now go directly to the Rio Grande, instead of staying on the floodplain.	The Del Rio Drain currently empties directly into the Rio Grande therefore the project should have no impact to contaminants transport within the drain or river. See photos in Appendix C.
	How does the Rectification Project have Cumulative Impacts on the proposed Vado, NM levee project of only 1.08 miles?	It doesn't and therefore the paragraph referencing the Rectification Project was removed.