

# Environmental Assessment

## Improvements to the Arroyo Colorado North Levee Project

June 2009

*Lead Agency:*  
United States Section,  
International Boundary and  
Water Commission  
El Paso, Texas





**ENVIRONMENTAL ASSESSMENT**

**IMPROVEMENTS TO THE  
ARROYO COLORADO FLOODWAY  
IN HIDALGO AND CAMERON COUNTIES**

*Lead Agency:*

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

*Technical Support:*

**PARSONS**

**8000 Centre Park Dr., Suite 200  
Austin, Texas 78754**

**USIBWC Contract IBM04D0002, Task Order IBM09T0016**

**JUNE 2009**



**COVER SHEET**  
**ENVIRONMENTAL ASSESSMENT**  
**AND**  
**FINDING OF NO SIGNIFICANT IMPACT**

**FLOOD CONTROL IMPROVEMENTS TO THE  
ARROYO COLORADO FLOODWAY**

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

**Proposed Action:** Raising approximately 11 miles of levee along the Divisor Dike and Arroyo Colorado Floodway (ACF) beginning at Divisor Dike near the juncture point of the ACF and the North Floodway.

**Report Designation:** Environmental Assessment (EA)

**Abstract:** The United States Section, International Boundary and Water Commission (USIBWC) is considering raising levee segments along the Arroyo Colorado starting at the Divisor Dike near the juncture point of the Arroyo Colorado and the North Floodway in Hidalgo County and ending at White Ranch Road in Cameron County, Texas. The Arroyo Colorado was divided into two reaches for planning purposes. Levee rehabilitation would take place on the north side of the Arroyo Colorado levee sections from Divisor Dike to approximately levee mile 7.0 (near the Hidalgo/Cameron county line) (6.9 miles) and from west of Santa Maria Road (FM 2556), through the Willacy Canal area, to White Ranch Road (4.1 miles). Approximately 84 percent of the two reaches would not require fill material to be placed on top of the levee; therefore, no extension of the levee footprint would be required. The proposed action would increase the height of the levee up to 2 feet for approximately 8.6 percent of the 11-mile segment. Approximately 4 percent of the levee height would be increased from 2 to 4 feet, and approximately 2.4 percent would be increased from 4 to 6 feet. Moderately higher increases (greater than 6 feet) would be needed in small levee segments accounting for less than 1.2 percent of the total length.

The EA assesses potential environmental impacts of the proposed action and the no action alternative. Potential impacts on natural, cultural, and other resources were evaluated, and mitigation measures were incorporated into the proposed action. A Finding of No Significant Impact was issued for the proposed action based on a review of the facts and analyses contained in the EA.

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## **FINDING OF NO SIGNIFICANT IMPACT**

### **Flood Control Improvements to the Arroyo Colorado**

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

#### **BACKGROUND**

The USIBWC is authorized to construct, operate, and maintain any project or works projected by the United States of America on the Lower Rio Grande Flood Control Project (LRGFCP) as authorized by the Act of the 74<sup>th</sup> Congress, Sec. I Ch. 561 (H.R. 6453), approved August 19, 1935 (49 Stat. 660), and codified at 22 USC Section 277, 277a, 277b, 277c, and Acts amendatory thereof and supplementary thereto. The LRGFCP was constructed to protect urban, suburban, and highly developed irrigated farmland along the Rio Grande Delta in the United States and Mexico.

An interior floodway system is a component of the LRGFCP of the Arroyo Colorado Floodway (ACF) that conducts floodwater diverted from the Rio Grande to the Laguna Madre in the Gulf of Mexico. Diverted water enters a Main Floodway that branches near Mercedes, Texas into a North Floodway, south branch, and the ACF. The USIBWC prepared this Environmental Assessment (EA) for the proposed action to improve flood control and flood containment capacity along the Divisor Dike and ACF.

The Arroyo Colorado is an ancient distributary of the Rio Grande, and it serves as drainage for crop irrigation, municipal wastewater returns, and as a floodway during periods of heavy precipitation in the lower Rio Grande Valley. The beginning of this project is a 2.1-mile Divisor Dike near the juncture point of the Arroyo Colorado and the North Floodway in Hidalgo County, extending a total of 6.9 miles to the Willacy Canal. The remaining segment is 4.0 miles from the Willacy Canal ending at White Ranch Road in Cameron County, Texas.

#### **PROPOSED ACTION**

The proposed action will improve flood control along the Divisor Dike and ACF. The project begins at Divisor Dike near the juncture point of the Arroyo Colorado and the North Floodway in Hidalgo County to approximately levee mile 7.0 near the Hidalgo/Cameron county line, and from west of Santa Maria Road (FM 2251) through Willacy Canal area to White Ranch Road in Cameron County. The proposed levee rehabilitation improvements consist of: 1) raising the top-of-levee elevation; 2) conducting geotechnical investigations and testing to determine the type and extent of any required remediation improvements due to slope stability, seepage, levee settlement; and 3) modifying, if necessary, hardware or structures located along the levee reaches. Any structure modifications would comply with the Texas Historical Commission recommendations.

The top elevation of the levee-raising improvements will be to provide containment of flood flows with a minimum freeboard of 3 feet for water surface elevations as calculated in the USIBWC 2003 Hydraulic Model for the LRGFCP. Raising the levee from the centerline of the levee is assumed for analyses, but raising the levee on the riverside of the levee is possible where right-of-way (ROW) is a constraint.

Fill material from commercial sources will be added to the existing levee to bring flood containment to its original design specifications. The proposed action will increase the height of the levee up to 2 feet for approximately 8.6 percent of the 11-mile segment. Approximately 4 percent of the levee height will be increased from two to 4 feet, and approximately 2.4 percent will be increased from four to 6 feet. The existing levee is a raised trapezoidal compacted-earth structure with a crown width of 16 feet, a typical height ranging from 10 to 15 feet, and approximately 3:1 side slope ratio (horizontal run : vertical rise). For a typical levee cross-section at the ACF that will require additional fill material the levee footprint will be expanded at a 1:6 ratio (crown height: footprint length). The lateral expansion could be equally divided between the riverside and landside (centered expansion) or entirely on one side (offset expansion). Moderately higher increases will be needed in a small segment that accounts for less than 1.2 percent of the total length. In areas where existing topography is too steep to allow levee expansion, construction solutions, including armored banks (riprap) or retaining walls will be used.

Footprint expansion, when required, will take place inside the maintained floodway, and entirely within the USIBWC ROW. In some instances, adjustment in levee slope will be made to eliminate the need for levee footprint expansion when required due to construction constraints or for protection of biological or cultural resources. Construction constraints include; the presence of irrigation drains or canals as well as structural features abutting or built into the levee along some reaches of the levee system, or urban development in the immediate vicinity of the levee system. The need for excavation outside the levee structure is not anticipated.

## **ALTERNATIVES TO THE PROPOSED ACTION**

A no action alternative was evaluated for the ACF levee system. This alternative will retain the existing configuration of the system, as designed over 30 years ago, and the current level of protection currently associated with this system. Under severe storm events, current containment capacity may be insufficient to fully control Rio Grande flooding, including risks to personal safety and potential property damage.

## **SUMMARY OF FINDINGS**

Pursuant to the National Environmental Policy Act (NEPA) guidance (40 Code of Federal Regulations 1500-1508), The President's Council on Environmental Quality issued regulations for implementing NEPA, which included provisions for both the content and procedural aspects of the required EA. The USIBWC completed an EA of the potential environmental consequences of raising the ACF levee system to meet current requirements for flood control.



The EA, which supports this Finding of No Significant Impact, evaluated the proposed action and no action alternative.

## **LEEVE SYSTEM EVALUATION**

### *No Action Alternative*

The no action alternative was evaluated as the single alternative action to the proposed action. The no action alternative will retain the current configuration of the ACF levee system, with no impacts to biological and cultural resources, water resources, land use, soil, 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, including associated risks to personal safety and property.

### *Proposed Action*

#### *Biological Resources*

Biological resources near the levee systems are dominated by agricultural fields, rangelands, and non-native grasslands. There are some woody species along the margins of the Arroyo Colorado, drainage ditches from irrigation fields, and adjacent to borrow pits. The 160-foot wide biological survey corridor, centered on the existing levee, includes approximately 221 acres, primarily composed of non-native grasslands dominated by buffelgrass and king ranch bluestem or rangelands.

The proposed action will raise the levee using a centered expansion, except in areas south of La Feria reservoir, where an offset expansion will be utilized. The proposed levee expansion will remove non-native grasslands on the levee slopes and adjacent areas. Native grasses will be planted at the completion of the project. The levee expansion will not occur in wooded areas. There are wetlands near the proposed levee expansion, and less than one-half acre of non-jurisdictional wetlands will be affected by the levee expansion. No habitats used by federally or state-listed threatened or endangered species will be impacted by the levee expansion.

In areas adjacent to sensitive areas such as water bodies, levee expansion may be altered to an offset expansion toward the riverside of the levee to avoid affecting sensitive resources. In areas where the existing topography is too steep to allow levee expansion, construction solutions, including armored banks (riprap), will prevent erosion of the levee slopes. The construction solutions will not affect sensitive habitats, including wooded areas, habitats for threatened and endangered species, or jurisdictional wetlands.

#### *Cultural Resources*

Improvements to the ACF levee system may adversely affect prehistoric and historic archaeological resources. Some areas adjacent to the toe of the levee contain intact archaeological resources. Adverse effects to archaeological resources may occur from the use of heavy equipment during levee construction that could disturb surface or shallowly buried

deposits. Adverse effects may also occur to archaeological deposits that will be buried by the addition of the fill material on the surface above them. Alternatively, levee footprint expansion may protect archaeological resources by capping with fill material, preserving those resources in place.

Architectural resources may be adversely affected by levee height increases or by expansion of the levee footprint. Potential effects include vibration and ground disturbance from the use of heavy equipment during construction. Design for levee improvements is primarily considering avoidance of the structures as much as possible. However, if structures have to be removed or modified, USIBWC will consult with the Texas Historical Commission (THC) to determine the appropriate level of documentation prior to any modification. In addition to documentation, mitigation of impacts to cultural resources may include their replacement with "in-kind" structures that will look and operate the same. The increased height of the levee is not expected to change the flow of water to or from architectural resources in the floodway or farm fields flanking the levee. Native American resources may be affected by the levee improvements; consultation with the Native American tribes will assist in identifying resources or concerns regarding the project.

Under NEPA, there will be no significant impacts (*i.e.*, "unresolvable" adverse effects under the National Historic Preservation Act [NHPA]) to cultural resources because all cultural resources will be identified and evaluated for National Register of Historic Places (NRHP) eligibility. Any impacts to National Register of Historic Places-eligible resources will be mitigated prior to implementation of levee height increases, footprint expansion, or other structural modifications, in consultation with the Texas Historical Commission (THC) and Native American Tribes.

### ***Water Resources***

Flood control improvements to the ACF will increase flood containment capacity to control the design flood event with a negligible increase in water surface elevation. Levee footprint expansion will not affect water bodies.

### ***Land Use***

Footprint levee expansion, where required, will take place completely within the existing ROW. No urban or agricultural lands will be affected.

### ***Soil***

Improvement activity contributing to soil disturbance will include geotechnical investigations and adding soil to the top and sides of the levee. Levee fill material will come from local commercial sources and not from borrow areas in the floodplain. The disturbance of soil will occur within areas where soil has been disturbed and modified by prior levee construction and maintenance activities. Therefore, alteration of soil previously unassociated with the existing levee will not occur.

### ***Community Resources***

In terms of socioeconomic resources, the influx of federal funds into Hidalgo and Cameron Counties from the flood control improvement area will have a positive but minor local economic impact. The impact will be limited to the construction period, and represent less than 1 percent of the annual county employment, income, and sales values. No adverse impacts to disproportionately high minority and low-income populations were identified for construction activities. Moderate utilization of public roads will be required during construction; a temporary increase in access road use will be required for equipment mobilization to staging areas.

### *Environmental Health Issues*

Estimated air emissions of five criteria pollutants during construction will be discontinuous and represent less than 0.13 percent of the annual emissions inventory within the air quality control region of Hidalgo, Cameron, and Willacy Counties. There will be a moderate increase in ambient noise levels due to construction activities. No long-term and regular exposure is expected above noise threshold values. A database search indicated that no waste storage and disposal sites were within the proposed ACF levee improvement area, and none will affect, or be affected by, the levee improvement project.

### *Best Management Practices*

When warranted due to engineering considerations, or for protection of biological resources, the need for levee footprint expansion will be eliminated by levee slope adjustment. Best management practices during construction will include development of a storm water pollution prevention plan to avoid impacts to receiving waters, and use of sediment barriers and soil wetting to minimize erosion.

To protect vegetation cover, the embankment improvement areas will be re-vegetated with native herbaceous species. To protect wildlife, construction activities will be scheduled to occur, to the extent possible, outside the March to August bird migratory season.

## **DECISION**

Based on my review of the facts and analyses contained in the Environmental Assessment, I conclude that implementation of the proposed action to improve the ACF levee system will not have a significant impact. 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.



C.W. Ruth, Commissioner  
International Boundary and Water Commission,  
United States Section

June 2 2009  
Date

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# **Environmental Assessment**

## **IMPROVEMENTS TO THE ARROYO COLORADO FLOODWAY IN HIDALGO AND CAMERON COUNTIES**

### *LEAD AGENCY:*

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

### *TECHNICAL SUPPORT:*

**PARSONS**

**8000 Centre Park Dr., Suite 200  
Austin, Texas 78754**

**USIBWC Contract IBM04D0002, Task Order IBM09T0016**

**JUNE 2009**



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## ACRONYMS AND ABBREVIATIONS

ACF	Arroyo Colorado Floodway
APE	area of potential effect
AQCR	air quality control region
CFR	Code of Federal Regulations
dbA	A-weighted sound level in decibels
DNL	day-night average sound level
EA	environmental assessment
EO	executive order
GIS	geographic information system
HAER	Historic American Engineering Record
IBWC	International Boundary and Water Commission
LRGFCP	Lower Rio Grande Flood Control Project
LRGV	Lower Rio Grande Valley
MxIBWC	Mexican Section, International Boundary and Water Commission
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLCD	National Land-Cover Database
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
O&M	operation and maintenance
PEIS	Programmatic Environmental Impact Statement
ROW	right-of-way
SHPO	state historic preservation office
T&E	threatened and endangered
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USIBWC	United States Section, International Boundary and Water Commission

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## **SECTION 1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION**

This section discusses the purpose of and need for the proposed action; the authority of the United States Section, International Boundary and Water Commission (USIBWC) to conduct the project as part of its mission; the scope of the environmental review; a summary of environmental compliance requirements; and the organization of this document.

### **1.1 PURPOSE OF AND NEED FOR ACTION**

The ACF is a component of the Lower Rio Grande Flood Control Project (LRGFCP) that conducts floodwater diverted from the Rio Grande to the Laguna Madre in the Gulf of Mexico.

The proposed action would include levee system improvements to address the 100-year flood protection criteria established by the Federal Emergency Management Administration. The Divisor Dike and the two portions of the north ACF levee system would be raised by adding fill material to the existing levee to bring flood control to its original design specifications, or to meet a 3-foot freeboard design criterion. The proposed action is described in detail in Subsection 2.2.

### **1.2 USIBWC AUTHORITY**

The International Boundary and Water Commission (IBWC), which before 1944 was known as the International Boundary Commission, was created by the Convention of 1889, and consists of a (USIBWC and a Mexican Section (MxIBWC). The IBWC was established to apply the rights and obligations the Governments of the United States and Mexico assumed under the numerous boundary and water treaties and related agreements. Application of the rights and obligations are accomplished in a way that benefits the social and economic welfare of the people on both sides of the boundary and improves relations between the two countries. The mission of the USIBWC covers the proposed raising of the ACF levee system.

### **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 President's Council on Environmental Quality issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental analysis. In 1978, the Council on Environmental Quality issued regulations implementing the process (40 Code of Federal Regulations [CFR] 1500-1508).

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; Appendix 501-A).

This EA identifies and evaluates potential environmental consequences that may result from implementation of the proposed action and No Action alternative. It also characterizes the affected environment and describes, when required, mitigation measures to prevent or minimize impacts to environmental resources.

Analysis of environmental resources for the affected environment and environmental consequences was based on a potential impact corridor around the existing ACF levee system. Analyses of environmental consequences also include potential indirect impacts adjacent to the levee corridor and the region, depending on the resource and its relationship to the proposed action and alternatives. Reference values for air quality, cultural resources, socioeconomics, and environmental justice are evaluated on a regional basis (county level).

Results of field biological surveys of terrestrial and aquatic natural resources and cultural resources, including archaeological sites, architectural resources, and Traditional Cultural Properties, were incorporated into the EA. Findings of these studies were used to document baseline conditions for biological resources, cultural resources, wetlands, and waste storage and disposal. The report also documents potential performance of the levee system based on hydraulic model simulations, and an evaluation of environmental compliance requirements and coordination activities.

Environmental impacts associated with the proposed flood control improvements described in this EA were tiered from the 2008 Final Programmatic Environmental Impact Statement (PEIS) (USIBWC 2008), as per 40 CFR 1502.20. Recent published information is used for impact analyses based for the time period covered during construction and subsequent flood control improvement conditions. Potential environmental consequences of the ACF levee system for each resource area are discussed separately in this EA.

The following terminology is used in this document.

- *Riverside/Landside*, riverside refers to the side of the levee closest to the Arroyo Colorado, and landside refers to the side of the levee away from the Arroyo Colorado.
- *Existing levee footprint*, this is the footprint of the levee without any improvements or changes. For the purposes of this report, the existing levee footprint is assumed to be 88 feet from landside toe of the levee to riverside toe of the levee.
- *Survey Corridor*, the land on both sides of the levee included in visual surveys and verified with aerial imagery
- *Construction Corridor*, the area of the levee identified as having deficiencies, where fill would be added to the top of the levee a height defined by modeling and surveys to provide adequate flood control. The Construction Corridor also includes areas where staging of equipment and/or materials will occur. The Construction Corridor is assumed to be a 100-foot buffer from the centerline of the levee.

- *Levee Expansion Area*, the area within the construction corridor where the footprint of the levee will be expanded beyond the existing footprint.
- *Area of Potential Effect*, the area where cultural resources may occur and may be affected by construction activities.

#### **1.4 ENVIRONMENTAL COORDINATION AND COMPLIANCE ANALYSIS**

Table 1.1 is a summary of regulatory and/or permitting requirements potentially applicable to improvements under consideration, potential compliance issues, and anticipated level of environmental coordination.

**Table 1.1 Summary of Environmental Coordination and Compliance**

Agency or Organization	Regulation or Issue	Level of USIBWC Coordination
<b>Biological Resources</b>		
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act of 1973 (Public Law 93-205) and amendments of 1988 (Public Law 100-478)	Section 7 of the Act requires formal consultation if significant adverse impacts to federally listed threatened and endangered species and migratory birds could occur.
Texas Parks and Wildlife Department (TPWD)	Chapters 67 and 68 of the TPWD Code, and Section 65.171-65.184 of the Texas Administrative Code	Coordination with Wildlife Division concerning potential impacts of the levee-raising project to wildlife. Coordination with State Parks Division concerning potential impacts on park tracts.
<b>Cultural Resources</b>		
State Historic Preservation Office (SHPO) - Texas Historical Commission (THC)	National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code [USC] 470 <i>et seq.</i> ) American Indian Religious Freedom Act (AIRFA), 1978 Native American Graves Protection and Repatriation Act (NAGPRA) 1990	Ensure compliance with NHPA, AIRFA and NAGPRA. The THC may suggest conditions and mitigation measures following review of the Draft EA.
<b>Water Resources</b>		
U.S. Army Corps of Engineers (USACE)	Section 10 of the Rivers and Harbors Act of 1899 Section 404 of the Clean Water Act (33 USC 1344)	Permit application if waters of the United States are affected. Mitigation plan and permit application for potential impacts to wetlands.
Texas Commission on Environmental Quality (TCEQ)	Section 401 of the Clean Water Act (33 USC 1344); Section 26.040 of Texas Water Code	Section 401 Certification: conditions and mitigation measures may be stipulated for the 401 permit; coordination is typically a function of the USACE permitting process.
United States Environmental Protection Agency (USEPA)	Section 402 of the Clean Water Act Section 404 of the Clean Water Act	Requirements for National Pollutant Discharge Elimination System construction permit and Storm Water Pollution Prevention Plan preparation. Section 404 Certification; coordination is typically a function of the USACE permitting process.
<b>Other Issues</b>		
Natural Resources Conservation Service (NRCS)	Farmland Protection Policy Act	Determination that no unique or prime farmland would be affected by the federal project.
Irrigation Districts	Modifications to intake channel and construction along irrigation canals	Mercedes Districts in Hidalgo County; La Feria, Adams Garden, and Harlingen Irrigation Districts in Cameron County: levee construction along the Arroyo Floodway.



## **SECTION 2 DESCRIPTION OF PROPOSED ACTION**

This section presents a description of the proposed action for improvements of the ACF levee system. An overview of the ACF levee system is presented in Figures 2.1 to 2.7. The Biological Resources Report (USIBWC 2009) prepared in support of this EA presents detailed maps of levee alignment, potential levee improvement areas, and land use in the levee system vicinity.

### **2.1 LEVEE SYSTEM DESCRIPTION**

The Arroyo Colorado, that drains to the Laguna Madre, is an ancient distributary of the Rio Grande, and it serves as drainage for crop irrigation, municipal wastewater returns, and as a floodway during periods of heavy precipitation in the lower Rio Grande Valley. The ACF is part of the LRGFCP, which was constructed to protect urban, suburban, and highly developed irrigated farmlands in the Rio Grande delta from floods in both the United States and Mexico. The proposed levee rehabilitation project includes 2.1 miles of the Divisor Dike, and the upper 8.9 miles of the Arroyo Colorado north levee that contain areas of rich farm and citrus land near the municipalities of Mercedes and La Feria, Texas.

Levee floodway system descriptions for the LRGFCP, including the Main and North Floodways and the ACF, are described in detail in the 2008 Final PEIS (USIBWC 2008). Sections of the interior floodway system were identified by hydraulic modeling as priority areas to improve flood containment. The hydraulic evaluation indicated that an increase in levee height, up to 4-feet, would be needed in a number of sections of the ACF to meet design criteria for flood protection (USIBWC 2003a). The section of the ACF evaluated in this EA runs primarily through agricultural areas. Urban development in the section of the ACF evaluated in this EA is primarily limited to portions of Mercedes and La Feria, Texas. No residential developments are allowed within the floodway.

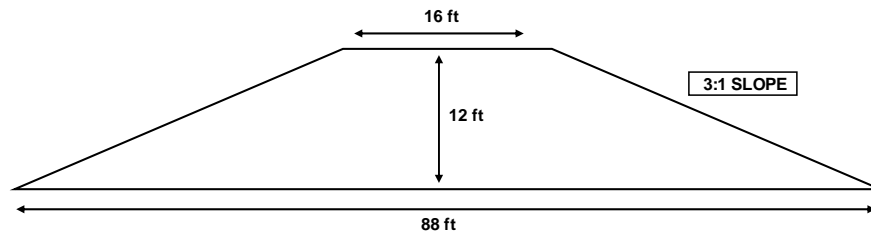
### **2.2 PROPOSED ACTION**

Levee assessment and potential rehabilitation will occur on the north levee. The upper reach of the project area extends from the Divisor Dike to the Willacy Canal (6.9 miles) and from the Willacy Canal to White Ranch Road (4.1 miles). There is a reach between levee miles 7 and 8 where the levee road is on high ground (See Figure 2.5), and no levee is present and no levee will be constructed in this reach. This reach (0.75 miles) is not included in the 11-mile levee assessment reported in this EA.

The proposed action would improve flood control and increase flood containment capacity along the Divisor Dike and ACF beginning at Divisor Dike near the juncture point of the Arroyo Colorado and the North Floodway in Hidalgo County and ending at White Ranch Road, Cameron County, Texas. The proposed levee rehabilitation improvements consist of: 1) raising the top-of-levee elevation; 2) conducting geotechnical investigations and testing to determine the type and extent of any required remediation improvements due to slope stability,

seepage, levee settlement, and any other geotechnical issues that may cause levee failure; and 3) modifying, if necessary, hardware or structures located along the levee reaches. Any structure modifications would be in compliance with the Texas Historical Commission recommendations. The top elevation of the levee-raising improvements would be to provide containment of flood flows with a minimum freeboard of 3 feet for water surface elevations as calculated in the USIBWC 2003 Hydraulic Model for the LRGFCP (USIBWC 2003a). Raising the levee from the centerline of the levee is assumed for analyses, except for the areas south of La Feria reservoir. Due to the proximity of the reservoir to the existing levee, construction and levee expansion would be offset to the riverside of the levee.

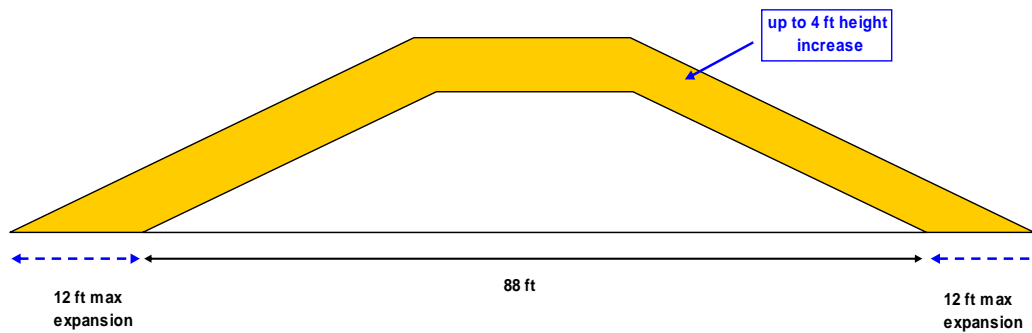
The existing levee is a raised trapezoidal compacted-earth structure with a crown width of 16 feet, a typical height ranging from 10 to 15 feet, and an approximate 3:1 side slope ratio (units of horizontal run in feet per foot of vertical rise). The levee crown is an unpaved service road with restricted public access. The existing levee footprint typically ranges from 70 to 100 feet, depending on location. A typical levee cross-section is shown in the diagram below.



Levee assessment and potential levee rehabilitation will occur on the ACF north levee. The upper reach of the project area extends from the Divisor Dike to approximately levee mile 7.0 (near the Hidalgo/Cameron county line) (6.9 miles total). The entire upper reach falls within Hidalgo County. Downstream of the upper reach is a short segment (0.75 miles) of high ground where there is no levee and no levee will be constructed. The lower reach extends from west of Santa Maria Road (FM 2556), through the Willacy Canal area to White Ranch Road (4.1 miles). The lower reach is further divided into two sections: the area extending from the high ground west of FM 2556, adjacent to La Feria reservoir to FM 800 (approximately 2.3 miles), and the easternmost end of the project area, extending from FM 800 to White Ranch Road (approximately 1.8 miles). The entire lower reach falls with Cameron County.

The proposed action would increase flood containment capacity by raising elevation of a number of levee segments for improved flood control. Fill material from commercial sources would be added to the existing levee to bring flood control to its original design specifications, or to meet a 3-foot freeboard design criterion. There are commercial sand pits within the ACF floodway, but these will not be utilized to obtain fill material

Addition of fill material would be place on top of the levee, extending the footprint beyond the toe of the existing levee. Levee footprint expansion would occur within the maintained floodway and within the USIBWC right-of-way (ROW). For a typical levee cross-section with height increases of up to 4 feet, the levee footprint would be expanded by 24 feet, 12 feet on either side of the levee. The need for excavation outside the levee structure is not anticipated.



Figures 2.2 to 2.7 present an overview of the Arroyo Colorado levee systems that would undergo levee rehabilitation. The proposed action would raise the levee in areas where modeling indicates that the existing levee is insufficient to provide adequate flood control. With the exceptions described below, most of the levee expansion will be centered, extending the footprint the same width on each side of the levee (Table 2.1).

Along the boundary of the La Feria reservoir, a centered expansion is not possible. Adjacent to the La Feria reservoir, any levee expansion will occur within the floodway, toward the riverside of the levee. The areas for the offset expansion are shown in Table 2.1.

At the most downstream end of the project area, there is no levee, but the “levee road” is on high ground. Hydraulic modeling indicates several segments of the levee road will have to be raised. As shown in Table 2.1, most of the levee expansion in the downstream end will be a centered expansion. In one reach (approximately 424 feet), the hydraulic modeling indicates that up to 8 feet of fill will be required to obtain adequate flood control. At this location, lateral extension is not possible to the landside of the levee road due to the proximity of a borrow pit, nor into the floodway due to the steep topography. Construction of a flood retaining wall may be used to avoid lateral expansion, or increasing the levee slope and use riprap armoring to prevent erosion.

**Table 2.1 ACF Levee System Improvement Summary**

Needed Increase in Levee Height	Approximate Length (miles)	Percent of Length	Expansion Alignment	Area of Impact (acres)	Comments
<b>UPPER REACH (Divisor Dike to approximately levee mile 7.0) (total 6.9 miles)</b>					
Not required	6.4	58.1	n/a	n/a	No changes to existing levee
up to 2 feet	0.3	3.1	centered	0.2 <sup>(1)</sup>	0 to 6 ft footprint expansion on each side of the levee <sup>(2)</sup>
2 to 4 feet	0.2	1.7	centered	0.6 <sup>(3)</sup>	6 to 12 ft footprint expansion on each side of the levee
4 to 6 feet	0.004 [23 feet]	0.04	centered		12 to 18 ft footprint expansion on each side of the levee
<b>LOWER REACH</b>					
From FM 2556 to FM 300 (Adjacent to La Feria Reservoir) (total 2.3 miles)					
Not required	1.8	16.2	n/a	n/a	No changes to existing levee
up to 2 feet	0.3	2.5	offset to riverside	0.2	0 to 6 ft footprint expansion on each side of the levee <sup>(2)</sup>
2 to 4 feet	0.06 [326 feet]	0.6	offset to riverside	0.7	6 to 12 ft footprint expansion, entirely to riverside
4 to 6 feet	0.1 [711 feet]	1.2	offset to riverside	1.3	12 to 18 ft footprint expansion entirely to riverside
6 to 8 feet	0.05 [259 feet]	0.4	offset into floodway side	0.4	36 to 48 ft footprint expansion, entirely to riverside
<b>From FM 300 to White Ranch Road (Downstream end of Project Area) (total 1.8 miles)</b>					
Not required	1.0	9.4	n/a	n/a	No changes to existing levee
up to 2 feet	0.3	3	centered	0.2	0 to 6 ft footprint expansion on each side of the levee <sup>(2)</sup>
2 to 4 feet	0.2 [994 feet]	1.7	centered	0.6	6 to 12 ft footprint expansion on each side of the levee
4 to 6 feet	0.1 [659 feet]	1.1	centered	0.5	12 to 18 ft footprint expansion on each side of the levee
6 to 8 feet	0.08 (424 feet)	0.7	centered	n/a	New levee on top of existing road, no footprint expansion due to steep topography in area
<b>Total</b>	<b>11.0</b>	<b>100</b>		<b>4.7</b>	

(1) Height increases of up to 2 feet may require footprint expansion, and it is assumed that expansion will be on average 3 feet on either side of the levee (total of 6 feet).

(2) Depending on specific conditions in areas where up to 2 feet of fill may be added to the top of the levee, the levee slopes may be adjusted to reduce footprint expansion.

(3) For the upper reach, the area of impact calculation is combined for the two height increases, because the 4 to 6 foot height increase is a short length.

Any staging areas for heavy equipment or soil storage needed for construction activities associated with the proposed action would be located outside the USIBWC ROW and Area of Potential Effect (APE). Vehicles would access the project area by means of existing levee access or farm roads. No new haul roads would be constructed. The majority of work to raise the levee would occur on top of the existing levee. Belly dump trucks would carry commercially obtained fill material to the top of the levee. Areas requiring placement of fill material on the sides of the embankments would be accessed from the top of the levee road and spread over the embankments until the desired thickness has been reached. After releasing a load of fill, a motorgrader would follow behind to compact fill to the required height. After increasing the height of the levee and extending the footprint, where necessary, the easement area adjacent to the levee, up to 35 feet on either side, would also be subject to compaction.

### **2.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY**

Levee expansion beyond the current flood control project ROW was ruled out as a viable, or needed, option for levee improvements.

### **2.4 OTHER ACTIONS WITH POTENTIAL CUMULATIVE IMPACTS**

Complete environmental impact analysis of the alternatives must consider cumulative impacts due to other actions. The USIBWC reviewed a number of reasonably foreseeable actions with potential cumulative effects. Two projects were identified along the ACF levee system.

- Construction work for the Main and North Floodway levee improvements project would occur at the same time as the Arroyo Colorado levee improvement project.
- Geotechnical work would be conducted along the 11-mile project area to assess the ability of the levee to safely contain flood flows in the Rio Grande.

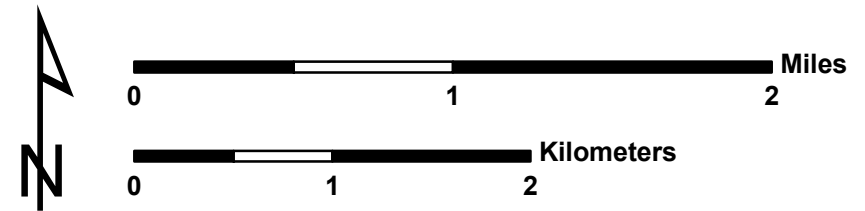
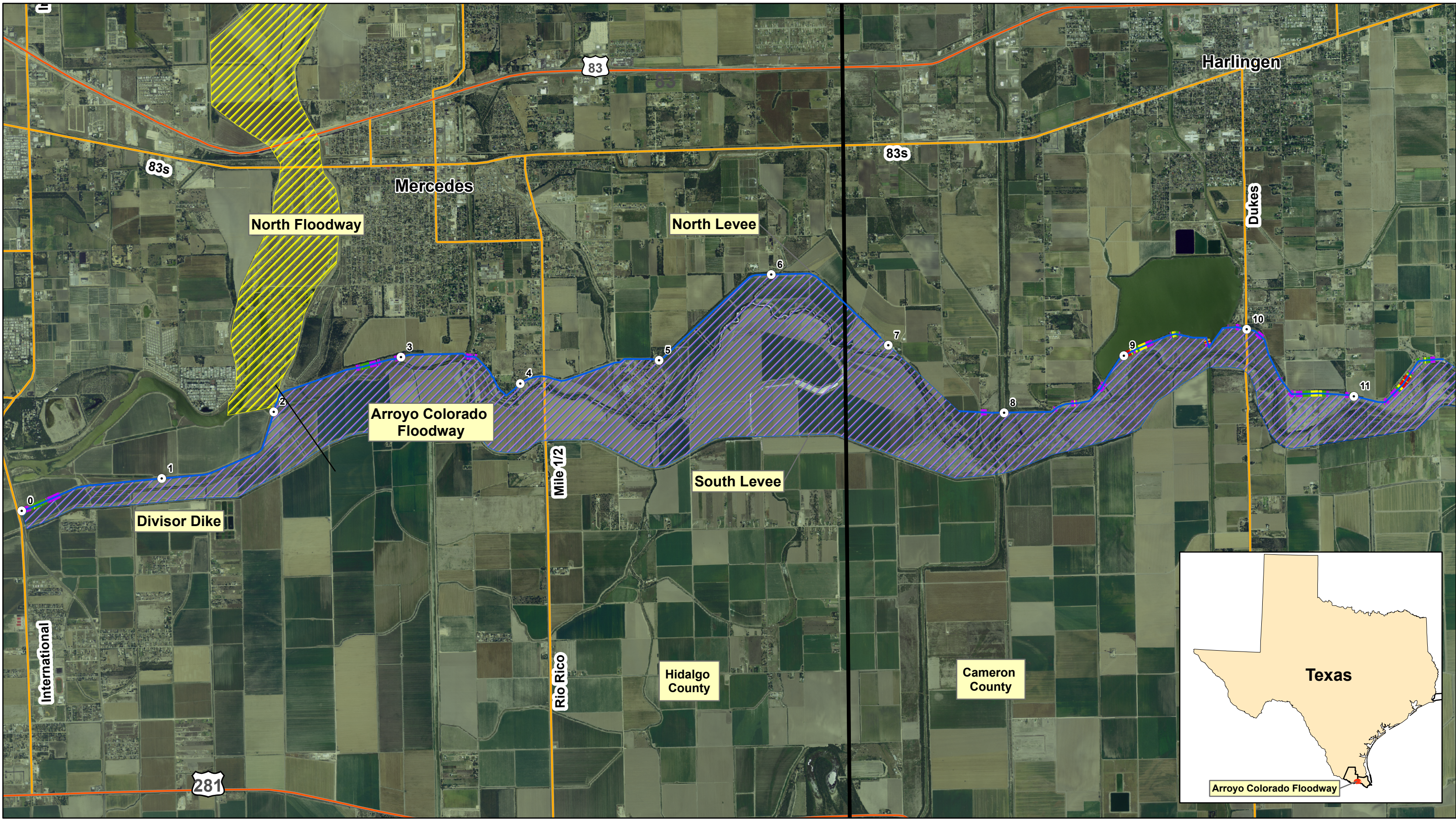
Subsection 3.8 provides an assessment of cumulative effects of the Main and North Floodway levee improvements project, in conjunction with the proposed action.

### **2.5 SUMMARY COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES**

#### **2.5.1 No Action Alternative**

The no action alternative would retain the current configuration of ACF 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 flooding within the interior floodway system under severe storm events, with associated risks to personal safety and property.

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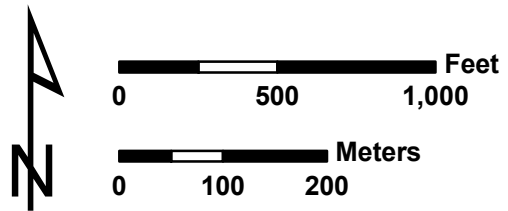
- Levee Mile Markers
- North Levee Centerline
- Highway
- Major Road
- ▨ Arroyo Colorado Floodway
- ▨ North Floodway
- Levee Deficiency (feet)
- ▨ < 2
- ▨ 2 - 4
- ▨ 4 - 6
- ▨ 6 - 8
- ▭ counties



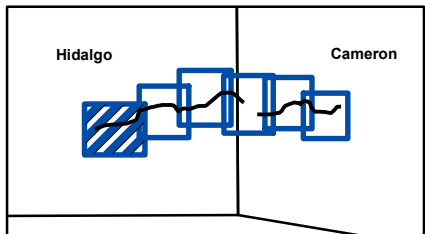
**Figure 2.1**  
**North Levee Location and**  
**Levee Improvement Areas**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section





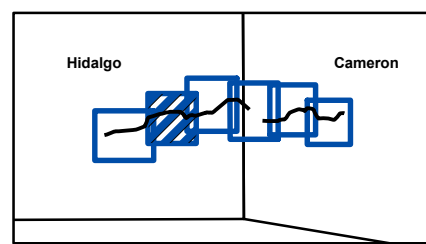
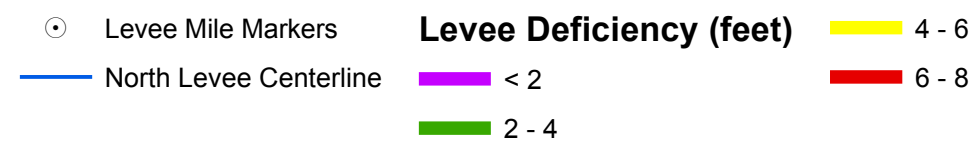
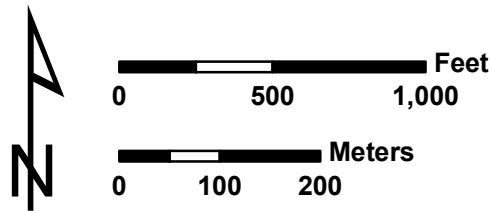


- Levee Mile Markers
- North Levee Centerline
- Levee Deficiency (feet)**
- < 2
- 2 - 4
- 4 - 6
- 6 - 8



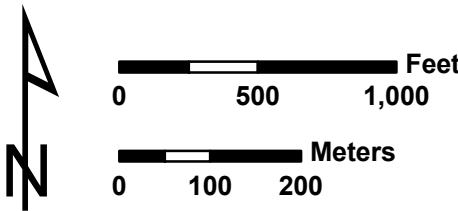
**Figure 2.2**  
**North Levee Improvement Areas - Miles 0-2**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section





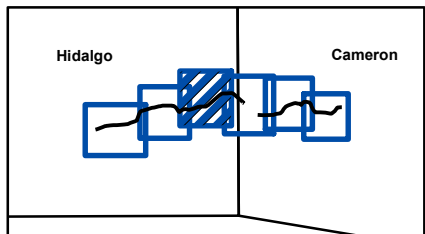
**Figure 2.3**  
**North Levee Improvement Areas - Miles 2-4**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section





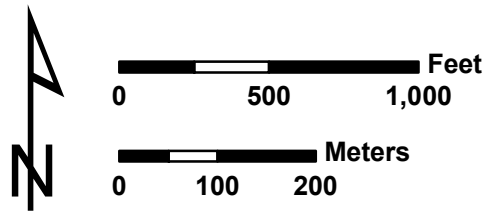
- Levee Mile Markers
- North Levee Centerline

Levee Deficiency (feet)	
	4 - 6
	< 2
	2 - 4
	6 - 8



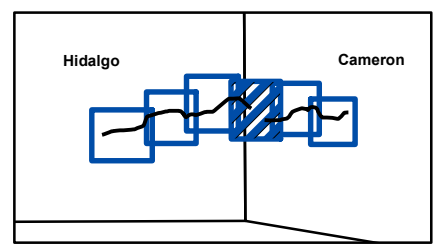
**Figure 2.4**  
**North Levee Improvement Areas - Miles 4-6**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section





- Levee Mile Markers
- High Ground, No Levee Present
- North Levee Centerline
- County Line

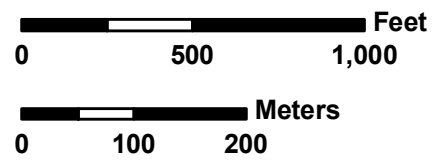
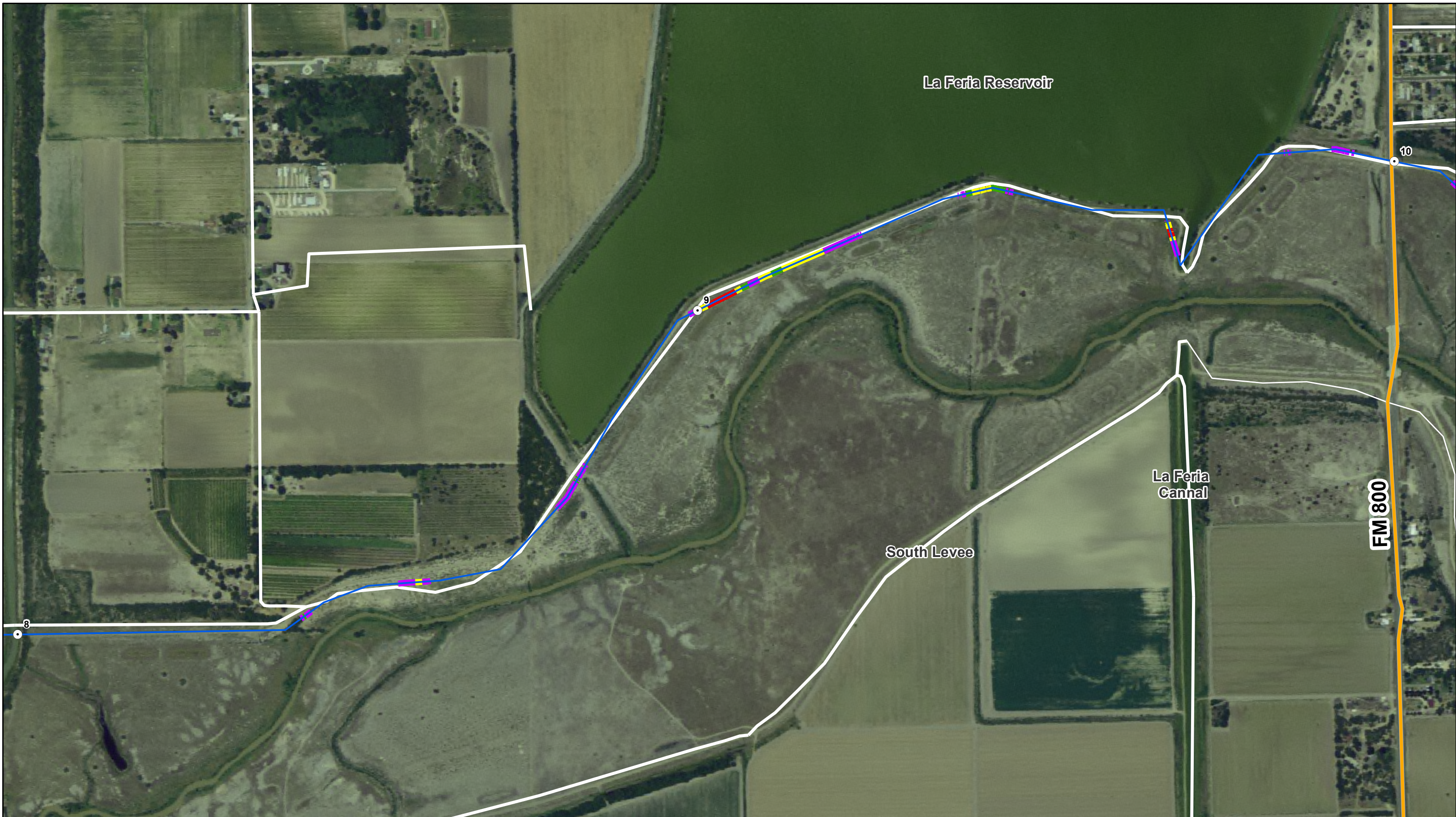
- Levee Deficiency (feet)**
- < 2
  - 2 - 4
  - 4 - 6
  - 6 - 8
  - USFWS Tract



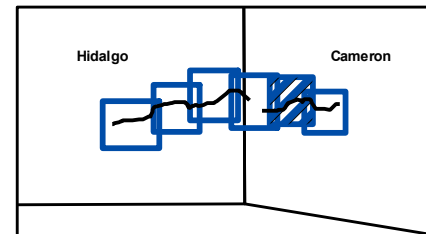
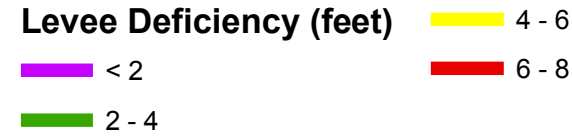
**Figure 2.5**  
**North Levee Improvement Areas - Miles 6-8**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section





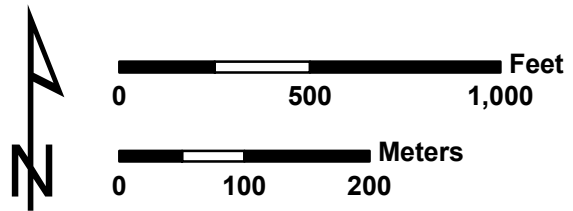


- Levee Mile Markers
- North Levee Centerline



**Figure 2.6**  
**North Levee Deficiencies - Miles 8-10**  
 Arroyo Colorado Floodway  
 International Boundary and Water Commission  
 United States Section

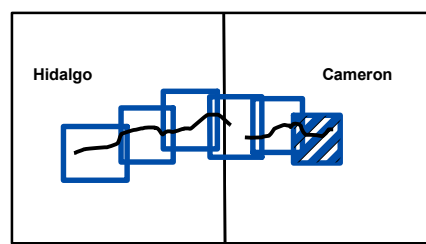




○ Levee Mile Markers  
 — North Levee Centerline

**Levee Deficiency (feet)**

— (Purple)	< 2	— (Yellow)	4 - 6
— (Green)	2 - 4	— (Red)	6 - 8



**Figure 2.7**  
**North Levee Improvement Areas - Miles 10-12**  
**Arroyo Colorado Floodway**  
 International Boundary and Water Commission  
 United States Section



### 2.5.2 Proposed Action

The proposed increase in levee height for improved flood protection in some cases would require extension of the levee footprint into the USIBWC ROW and removal of herbaceous vegetation on the levee slopes. No impacts on biological resources are anticipated since footprint expansion areas would not take place along natural resources conservation areas. Similarly, there would be no significant impacts (*i.e.*, “unresolvable” adverse effects under the National Historic Preservation Act) to cultural resources because all cultural resources would be identified and evaluated for eligibility on the National Register of Historic Places (NRHP). Any impacts to NRHP-eligible resources would be mitigated prior to implementation of levee height increases or footprint expansion, in consultation with the Texas Historical Commission (THC) and Native American Tribes.

All levee expansion, when required, would take place along the current levee alignment and in areas immediately adjacent to the levee where footprint expansion is required, inside the maintained floodway, and entirely within the flood control project ROW. No potential impacts on land use, community resources, or environmental health issues as a result of the levee improvement were identified. Table 2.2 summarizes the potential environmental consequences of the proposed improvements to the ACF levee system.

**Table 2.2 Summary of Environmental Impacts of Proposed Improvements to the Arroyo Colorado Floodway**

Resource Area	Environmental Impacts
<p><b>Biological Resources</b>                      (Subsection 3.1)</p>	<p>Flood control improvements to the levee system would include placement of fill material on top of and adjacent to the levee. The fill material would affect herbaceous plant communities. All footprint expansion would take place along the centerline of the current levee, limiting vegetation removal to invasive species grasses and weedy species on the levee slopes, except in the area south of La Feria reservoir. Native herbaceous species would be planted at the completion of the project. There is limited woody vegetation in the project area, typically restricted to the banks of the Arroyo Colorado or toward the north side of the levee, outside the project area.</p> <p>No significant effects on wildlife habitat near the levee system are anticipated, including potential habitat for threatened and endangered species. No natural resources conservation areas are immediately adjacent to the levee expansion corridor. In areas requiring levee footprint expansion, no woodland communities would be impacted, and impacts on vegetation would be limited to non-native grasslands along the levee. The levee slopes provide only limited value as wildlife habitat. Limited wetlands are present near the levee. South of La Feria reservoir, non-jurisdictional water features (e.g., borrow pits) are present, and due to the offset levee expansion in this area, less than one-half acre of wetlands would be affected by potential levee footprint expansion.</p>

**Table 2.2 Summary of Environmental Impacts of Proposed Improvements to the Arroyo Colorado Floodway (continued)**

Resource Area	Environmental Impacts
<p><b>Cultural Resources</b> (Subsection 3.2)</p>	<p>Levee improvements may adversely affect prehistoric and historic archaeological resources. Some areas adjacent to the toe of the levee contain intact archaeological resources. Adverse effects to archaeological resources may occur from the use of heavy equipment during levee construction that could disturb surface or shallowly buried deposits. Adverse effects may also occur to archaeological deposits that would be buried by the addition of the fill material on the surface above them. Alternatively, levee footprint expansion may protect archaeological resources by capping with fill material, preserving those resources in place.</p> <p>Architectural resources may be adversely affected by levee height increases or by expansion of the levee footprint. Potential effects include vibration and ground disturbance from the use of heavy equipment during construction. Design for levee improvements is primarily considering avoidance of the structures as much as possible. However, if structures have to be removed or modified, USIBWC will consult with the Texas Historical Commission (THC) to determine the appropriate level of documentation prior to any modification. In addition to documentation, mitigation of impacts to cultural resources may include their replacement with "in-kind" structures that will look and operate the same.</p> <p>Native American resources may be affected by the levee improvements; however, consultation with the Native American tribes has not identified resources or concerns regarding the project.</p> <p>Under NEPA, there would be no significant impacts (<i>i.e.</i>, "unresolvable" adverse effects under NHPA) to cultural resources because all cultural resources would be identified and evaluated for NRHP eligibility. Any impacts to NRHP-eligible resources would be mitigated prior to implementation of levee height increases, footprint expansion, or other structural modifications, in consultation with the THC and Native American Tribes.</p>
<p><b>Water Resources</b> (Subsection 3.3)</p>	<p>Flood control Improvements to the ACF would increase flood containment capacity to control the design flood event with a negligible increase in water surface elevation. Levee footprint expansion would not affect water bodies. Levee footprint expansion would not affect water quality in the Arroyo Colorado.</p>
<p><b>Land Use</b> (Subsection 3.4)</p>	<p>Footprint levee expansion, where required, would take place completely within the existing floodway. No urban or agricultural lands would be affected.</p>
<p><b>Soil</b> (Subsection 3.5)</p>	<p>Levee fill material would come from local commercial sources and not from borrow areas in the floodplain. The disturbance of soil would occur within areas where soil has been disturbed and modified by prior levee construction and maintenance activities. Therefore, alteration of soil previously unassociated with the existing levee would not occur.</p>

**Table 2.2 Summary of Environmental Impacts of Proposed Improvements to the Arroyo Colorado Floodway (continued)**

Resource Area	Environmental Impacts
<p><b>Community Resources</b>                      (Subsection 3.6)</p>	<p>In terms of socioeconomic resources, the influx of federal funds into Hidalgo and Cameron Counties from the flood control improvements project would have a positive but minor local economic impact. The impact would be limited to the construction period, and represent less than 1% of the annual county employment, income, and sales values. No adverse impacts to disproportionately high minority and low-income populations were identified for construction activities. Moderate utilization of public roads would be required during construction; a temporary increase in access road use would be required for equipment mobilization to staging areas.</p>
<p><b>Environmental Health Issues</b>                      (Subsection 3.7)</p>	<p>Estimated air emissions of five criteria pollutants during construction would be discontinuous and represent less than 0.13% of the annual emissions inventory within the air quality control region of Hidalgo, Cameron, and Willacy Counties. There would be a moderate increase in ambient noise levels due to construction activities. No long-term and regular exposure is expected above noise threshold values. A database search indicated that no waste storage and disposal sites were within the proposed ACF levee project area, and none would affect, or be affected by, the levee improvement project.</p>

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## **SECTION 3 AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL CONSEQUENCES**

This section describes resources in the potential area of influence of the levee construction project and presents an analysis of potential environmental impacts that could result from implementation of the no action alternative and the proposed action. The sequence of resource areas presented in this section is as follows:

- Biological resources;
- Cultural resources;
- Water resources;
- Land use;
- Soil;
- Community resources; and
- Environmental health.

### **3.1 BIOLOGICAL RESOURCES**

Biological resources analyses considered whether and to what extent the action would:

- Diminish habitat for a plant or animal species;
- Diminish population sizes or distribution of regionally important plant or animal species; and/or;
- Interfere with wildlife movement or reproductive behavior; or
- Adversely affect endangered species.

#### **3.1.1 Vegetation**

Based on literature review and field surveys, the following four vegetation community classifications were identified as occurring within the improvement area: a) Woodlands/Thornscrub; b) Herbaceous; c) Wetlands/Riparian communities; and d) Agricultural/Rangeland. In addition to these four plant communities, open waters were mapped, and developed areas were mapped, including roads, urban areas, and other impervious cover.

##### ***Regional Vegetation***

The Lower Rio Grande Valley (LRGV) covers an approximate 150-mile segment of the Rio Grande that extends from Falcon Reservoir Dam to the river opening into the Gulf of Mexico. The Arroyo Colorado, as a former distributary of the Rio Grande, runs a course

approximately parallel to the lowermost portion of the Rio Grande (Texas Parks and Wildlife Department [TPWD] 2006). The Arroyo Colorado is up to 20 miles north of the Rio Grande. The LRGV is part of the Tamaulipan Biotic Province as described by Blair (1950) and summarized by Judd (2002) of southern Texas and northeastern Mexico where multiple vegetation communities and warm average temperatures provide a highly diversified wildlife habitat.

### ***Potential Levee Improvement Areas***

Vegetation along the levee corridors of the ACF levee system was evaluated during field surveys conducted during April 6 – 9, 2009 to identify plant communities, threatened and endangered (T&E) species habitat, and potential jurisdictional wetlands, as listed below. Results of the field studies conducted in support of this EA are reported in the document Biological Resources Evaluation (USIBWC 2009).

Vegetation surveys include the 160-foot wide survey corridor with more focused surveys conducted within the construction corridor to identify wetlands resources and assess the presence of T&E species habitat. Vegetation communities were determined within a 160-foot wide buffer centered on the levee centerline (e.g., 80 feet to each side of the levee) along the entire length of the improvement area to ensure coverage by field survey included in the potential levee expansion areas. The 160-foot wide survey corridor includes the levee footprint and the levee slopes. Adjacent to the La Feria reservoir, where an offset levee expansion is likely to be required, an additional 80 feet of habitat was surveyed within the floodway. That is, adjacent to the reservoir, 80 feet from the centerline toward the reservoir was surveyed, and 160 feet from the centerline into the floodway was surveyed. The survey corridor is approximately 222 acres, including the wider survey corridor near La Feria reservoir.

Potential levee footprint expansion areas were determined from USIBWC levee evaluation data (USIBWC 2003a), and from modeling performed by the USIBWC using recent Lidar data. Following the field mapping efforts, this expansion area was analyzed using Geographic Information Systems (GIS) to determine the composition of the vegetation community based on vegetation mapping within the survey corridor. The survey corridor and maximum potential levee improvement area are shown on the schematic cross sections in Subsection 2.2 and Table 2.1. For all areas of levee improvement, approximately 4.7 acres of primarily herbaceous vegetation would be removed for levee footprint expansion.

### ***No Action Alternative Environmental Consequences***

No changes would be made to improve the levees. The levee slopes would continue to be mowed on an as-needed basis, which would maintain the vegetation as non-native grasses and stunted honey mesquite. No herbaceous vegetation or plant habitat would be affected.

### ***Proposed Action Environmental Consequences***

Improvements to the ACF levee system would add fill to the crown of the levee, the sidewalls of the levee, and areas immediately adjacent to the levee. Improvements to the ACF levees would affect herbaceous plant communities (primarily non-native grassland and

rangeland) through fill activities, but not wooded areas. A total of 222 acres of vegetation is present within the survey corridor. Levee footprint expansion would remove 117 acres of herbaceous vegetation on the existing levee slopes, and 4.7 acres of vegetation adjacent to the levee (including less than one-half acre of wetlands vegetation) for increases in levee footprint. Native grasses would be planted on both the levee slopes and adjacent areas after project completion (see Biological Resources Evaluation (USIBWC 2009) for additional details). Therefore, herbaceous vegetation would be lost temporarily during construction activities, and the loss of an additional 4.7 acres of herbaceous vegetation would not diminish overall population sizes or plant habitats.

One small tract of land is owned and/or managed by the USFWS as part of the LRGV National Wildlife Refuge. This tract of USFWS land intercepts the ACF at approximately levee mile 8. The ACF levee in this area would be raised less than two feet, and the levee footprint expansion of up to 12 feet will not affect the refuge lands.

### **3.1.2 Wildlife**

#### ***Regional Wildlife***

From a regional perspective, the proposed levee improvement area is located within the LRGV. The USFWS maintains one unit of the LRGV National Wildlife Refuge as a corridor adjacent to the Willacy Canal. The tract intersects the ACF at approximately levee mile 8. The wildlife refuge is a component of a multi-partner effort attempting to connect and protect blocks of habitat, known locally as a Wildlife Corridor (USFWS 2009). The Wildlife Corridor partnership includes USFWS, TPWD, National Audubon Society, the Nature Conservancy, and private owners, and extends over 90,000 acres within the four southernmost counties of Texas (Hidalgo, Cameron, Willacy, and Starr Counties) (USFWS 2009; USIBWC 2003b).

Common LRGV wildlife species include whitetail deer (*Odocoileus virginianus*), turkey (*Meleagris gallopavo*), javelina (*Pecari tajacu*), bobwhite quail (*Colinus virginianus*), scaled quail (*Callipepla squamata*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), cottontail rabbit (*Sylvilagus floridanus*), jackrabbit (*Lepus californicus*), waterfowl, and a variety of nongame birds. The region also provides important wintering habitat for migratory birds, including many species of passerines, raptors, sandhill cranes (*Grus canadensis*), ducks, and geese. In addition to the more common wildlife species, a number of unique and rare animals occur in the region (World Wildlife Fund 2001, USIBWC 2003b, USIBWC 2008).

#### ***Levee System Corridor***

Habitat considered high quality wildlife habitat is limited along the levee corridor. Plant communities considered high quality habitat include thorn woodlands and wetlands/riparian areas. The riparian areas immediately adjacent to the Arroyo Colorado have woody vegetation that could be utilized by some wildlife species, but the riparian corridor is relatively narrow in most places, limiting extensive wildlife utilization, particularly those species with large home ranges. The remaining habitat in the levee system corridor is dominated by non-native

grassland areas and agricultural/rangeland areas and these habitats are considered low quality habitats for wildlife species, with the exception of raptors, which hunt in the grassland areas. The USFWS maintains one unit of the LRGV National Wildlife Refuge as a corridor adjacent to the Willacy Canal. Within the ACF levee system corridor, there are several areas considered wetlands, or areas where water is ponded (particularly in borrow pits as a result of levee construction), and several waterfowl species utilize these areas.

### ***No Action Alternative Environmental Consequences***

No changes would be made to improve the levees. The ongoing mowing operations would maintain the non-native grasses and stunted honey mesquite on the levee slopes, which provides little suitable wildlife habitat, except as transit corridors, with the exception that several species of raptors hunt in the non-native grassland areas. No high quality wildlife habitat would be altered, nor would raptor hunting grounds be altered under the no action alternative.

### ***Proposed Action Environmental Consequences***

The value of vegetation to wildlife along the ACF levee system depends on the quantity of habitat and the relative successional stage of the vegetation (quality of habitat). The thorn woodlands and wetlands areas along the ACF levee system may provide the best quality wildlife habitat, but are limited in spatial area. The grassland and agricultural areas are dominated by invasive or cultivated species, and provide little suitable habitat for most wildlife species. Some wildlife species may utilize these areas as transit corridors, but the usage is likely limited. Several raptor species utilize the grassland areas and, to some extent, the agricultural areas for hunting. The proposed action would not affect the USFWS tract that intercepts the ACF.

The ACF levee expansion would not remove any Mesquite-Acacia thorn woodland that occurs within the survey corridor. If levee expansion were required in these areas, it would not extend into these sensitive areas.

The herbaceous non-native vegetation described in Subsection 3.1.1 is considered relatively low-quality wildlife habitat. Native grasses would be planted on both the levee slopes and adjacent areas after completion of the project. The raptors that utilize the grassland areas for hunting would likely utilize other areas during construction, and would utilize the area after the grasses re-establish. The loss of 4.7 acres of primarily non-native grasslands and rangelands would not diminish population sizes or wildlife habitat under the proposed action.

### **3.1.3 Threatened and Endangered Species**

Habitat requirements and life history for each federal and state-listed species potentially occurring along the ACF levee system corridor were identified through literature review. Sources of information included T&E species fact sheets published by natural resource agencies, species recovery plans, and scientific literature (USFWS 2005). The TPWD compiles a list of federal and state-listed species and species of concern. The lists are organized by county (TPWD 2007). The Biological Resources Evaluation (USIBWC, 2009),

prepared in support of this EA, lists federal and state-listed species potentially occurring within Cameron and Hidalgo Counties where the levee system is located. Forty-seven species are federally or state listed as threatened or endangered, or as candidate species. A detailed analysis is provided in the Biological Resources Evaluation (USIBWC, 2009), prepared in conjunction with this EA.

Preferred habitat types for each T&E species potentially occurring in Hidalgo and Cameron Counties were compared to the habitat types identified during field surveys to evaluate their likelihood of occurrence. The habitat determination was categorized according to USFWS guidelines as follows:

- *Not Likely Present*: no suitable habitat identified;
- *Potentially Present*: habitat present but there are no records of species occurrence in the vicinity;
- *Likely Present*: habitat present and species are known to occur in the vicinity; and
- *Present*: observed.

Twenty-one species are potentially present in the project area or near the project area. For those species considered potentially or likely present in the area, a determination of the effect of each action on those species was made. The determination of effect includes vegetation that may be altered or removed, water resources used by the species (if appropriate), and the effects of construction activities such as noise and disturbance during breeding activities. The effects determination was based on the following criteria:

- *No effect*: There are absolutely no effects of the proposed project, positive or negative.
- *May affect, is not likely to adversely affect*: All effects of the proposed project are beneficial, insignificant or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the site of the impact, and should not reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. These determinations require written concurrence from the USFWS.
- *May affect, is likely to adversely affect*: All adverse effects of the proposed project cannot be avoided, and requires formal consultation with the USFWS.
- *Likely to jeopardize/adversely modify proposed species/critical habitat*: Occurs in situations where the proposed action is likely to jeopardize the proposed species, or destroy or adversely modify the proposed critical habitat.

### ***No Action Alternative Environmental Consequences***

No changes would be made to improve the levees. The ongoing mowing operations would maintain the non-native grasses on the levee slopes, which provides little suitable T&E habitat, except possibly as transit corridors. If populations or individuals of T&E species occur

in the improvement area, the species will not be affected by on-going operations, and no habitat for T&E species will be lost under the no action alternative.

### ***Proposed Action Environmental Consequences***

Levee expansion activities of the ACF levee system would occur on the crown of the levee and immediately adjacent to the levee. No levee expansion would occur in wooded areas nor would levee expansion encroach on habitat suitable for T&E species. Within Cameron and Hidalgo Counties, 47 species are federally or state listed as threatened or endangered, or as candidate species. Of these 47 federally or state listed species, 21 species have a potential to occur within the counties included in the improvement area. Levee expansion activities would not remove suitable T&E habitat. The effects on listed species are either no effect or may affect, not likely to adversely affect. For the species that may be affected by the proposed action, not likely adversely affected by the proposed action, the effects are considered insignificant because the proposed construction activities are temporary in nature and will not result in take of listed species. Therefore, no adverse effects to T&E species would be expected from the levee improvement. See the Biological Resources Evaluation (USIBWC, 2009) for additional details.

Unforeseen adverse effects may be prevented by timing construction activities to avoid breeding and nesting seasons of T&E species, when possible, or to avoid conducting construction activities within habitats suitable for T&E species.

#### **3.1.4 Wetlands and Aquatic Habitat**

Several individual wetland features were identified during field surveys. The majority of wetland features were south of La Feria reservoir. Potential wetlands areas were initially identified using aerial photography, soil maps, and National Wetlands Inventory data. Specific wetlands information and analysis is provided in the Biological Resources Evaluation (USIBWC, 2009), prepared in conjunction with this EA. Non-jurisdictional wetlands within the survey corridor are described as “Non-jurisdictional water features”. These wetlands are typically seasonally or temporarily flooded former borrow pits or artificial settling basins used for irrigation. Approximately 3.4 acres of non-jurisdictional wetlands were identified in the survey corridor.

There is also the potential for wetland development within the ACF as described in the *Arroyo Colorado Watershed Protection Plan, Phase I* (Arroyo Colorado Watershed Partnership and Texas Sea Grant, 2007). As plans for additional wetland development within the ACF are proposed, they will be evaluated for compatibility with flood control missions of the USIBWC.

### ***No Action Alternative Environmental Consequences***

No changes would be made to improve the levees. There are no anticipated impacts to jurisdictional wetlands or aquatic habitat due to ongoing operations. The ongoing operations will not add fill or sediment to existing wetlands, or remove or alter wetland habitats.

### ***Proposed Action Environmental Consequences***

There are potential jurisdictional wetlands within the survey corridor. No jurisdictional wetlands were identified within areas where construction activities would occur (See Biological Resources Evaluation (USIBWC, 2009)). Subsequent GIS analysis using the USIBWC levee deficiency study data (USIBWC 2003a) confirmed that no jurisdictional wetlands are within the potential improvement area. Therefore, no impacts to jurisdictional wetlands are anticipated from levee improvement activities associated with the ACF levee system, and existing wetlands would not be removed or altered by the levee expansion.

There are non-jurisdictional water features (borrow pits) located south of La Feria reservoir. Levee expansion in this area includes utilizing less than on-half acre of these non-jurisdictional water features. There area approximately 3.1 acres of similar wetlands in borrow pits in the immediate vicinity that would be utilized by waterfowl during construction activities.

## **3.2 CULTURAL RESOURCES**

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for traditional, religious, scientific, or any other reason. Cultural resources are discussed in terms of archaeological sites, which include both prehistoric and historical occupations, architectural resources, and locations of concern to Native Americans, including Traditional Cultural Properties. Although cultural resources are addressed in NEPA, procedures for their identification, evaluation, and treatment are contained in a series of other federal and state laws and regulations and agency guidelines. Historic properties, as defined by the NHPA, represent the subset of cultural resources listed on, or are determined eligible for, inclusion on the NRHP.

An undertaking has an effect on a cultural resource when that action “may alter the characteristics of the property that may qualify the property for inclusion in the National Register” (36 CFR 800.5 (a)(1)). An undertaking is considered to have an adverse effect when the effect “may diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Adverse effects as defined by Section 106 of the NHPA include, but are not limited to:

1. Physical destruction, damage, or alteration of all or part of the property;
2. Isolation of the property from or alteration of the character of the property’s setting when that character contributes to the property’s qualification for the NRHP;
3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
4. Neglect of a property resulting in its deterioration or destruction; and
5. Transfer, lease, or sale of the property (36 CFR 800.5 (a)(2)).

For purposes of this EA, a significant impact under NEPA is defined as an unresolvable “adverse effect” under Section 106 of the NHPA.

The APE for the Divisor Dike and ACF improvement area consists of the USIBWC ROW, including the dike or levee, and an easement of up to 35 feet from both the north and south toes of the dike or levee. In some places, this ROW includes narrow, unpaved levee service roads or farms roads around agricultural fields

### **3.2.1 Previously Identified Cultural Resources within the ACF Improvement Area**

Three cultural resources, two archaeological sites, and one cemetery, were previously identified within the ACF APE. An archaeological survey was conducted within a portion of the improvement area in 2004 resulting in the identification of sites 41CF180 and 41CF181 (Bradle and Fuller 2004). An intensive archaeological survey of the entire improvement area will be conducted as part of cultural resources investigations supporting this EA. Information on previous surveys in and in the vicinity of the project area will be included in the cultural resources survey report.

#### ***Archaeological Sites***

Two previously recorded sites (41CF180 and 41CF181) are located within the ACF APE and were reported on State of Texas Archaeological Site Data Forms by the American Archaeology Group (Bradle and Fuller 2004; Texas Historical Commission 2009a). Site 41CF180 was recorded as two possible hearths evidenced by burned, discolored clay with mussel and marine shell fragments. Site 41CF181 consists of a partially buried prehistoric component and a surface scatter of early 20<sup>th</sup> century artifacts. Both sites are intact as they were avoided by subsequent sand mining operations and associated construction of access roads related to that project on the Arroyo Colorado (Bradle and Fuller 2004).

#### ***Ebony Grove Cemetery***

The Ebony Grove Cemetery was designated a Historic Texas Cemetery in 2006. The Cemetery was established in 1922 when the American Rio Grande Land and Irrigation Company developed land around Mercedes, Texas. Nine acres of land were deeded to the Mercedes Cemetery Association, and this organization continues to perform maintenance on the cemetery grounds. Several graves reinterred from another cemetery date from the latter part of the 19<sup>th</sup> century (Texas Historical Commission 2009b).

Impacts to archaeological sites include physical disturbance through construction of the levee. Heavy equipment, such as dump trucks and motorgraders, may create churning of surface or shallow subsurface deposits, which may be particularly severe during rainy periods. Any ground-disturbing activity in the area of an NRHP-eligible or potentially eligible archaeological site, or modification to such a site, could disturb or destroy the integrity of the archaeological site, resulting in alteration or destruction of those characteristics or qualities that make it potentially eligible for inclusion in the NRHP.



### ***No Action Alternative Environmental Consequences***

Under the no action alternative, the current levee configuration would be retained and operation and maintenance (O&M) of the existing structures along the levee and in the floodway would continue. No adverse effects to archaeological resources differing from the baseline condition would be expected. Existing conditions and natural degradation of archaeological resources would continue from increased flooding and erosion potential along the floodway where buried archaeological sites may occur. Cultural resources would continue to be managed in accordance with Sections 106 and 110 of the NHPA and USIBWC Directives.

### ***Proposed Action Environmental Consequences***

Proposed improvements to the Divisor Dike and ACF North levee system may adversely affect unrecorded prehistoric or historic archaeological sites. Two archaeological sites were previously identified within the APE, but only a portion of the APE has been subject to survey; an intensive archaeological resources survey of the entire improvement area is being completed to support this EA. Geoarchaeological investigations in other areas of the of the lower Rio Grande floodplain reveal the potential for buried prehistoric deposits associated with older Holocene river meanders, alluvial fans, and relict terraces.

Although no excavation is planned in the floodplain along either side of the levee, the use of heavy equipment, as described in Subsection 2.2, could result in ground disturbance from the creation of track and tire ruts extending several inches below ground surface. Archaeological resources on the surface or shallow subsurface deposits may be adversely affected by the use of heavy mechanical equipment in the APE and along access routes.

Archaeological resources in the floodway may have already been capped (buried) by the creation of the Divisor Dike and North Levee of the Arroyo Colorado. Fill material was added to the surface of the floodway to create the earthen levee and dike during the original construction of the ACF in the 1940s. Unrecorded archaeological sites may be capped by the addition of soil and gravel used to extend the width (footprint) of the existing levee in deficient locations along the Divisor Dike and ACF.

In some instances, capping may provide a beneficial impact to identified or potential archaeological resources as one method to preserve archaeological resources in place and prevent their inadvertent exposure or destruction. However, to avoid potential adverse effects from capping archaeological sites (*e.g.*, from crushing and compaction), the THC developed recommendations for appropriate techniques to intentionally bury these resources (Texas Historical Commission 1999). These procedures are discussed in Section 4, Best Management Practices. Activities associated with levee expansion may result in adverse effects to archaeological resources.

### **3.2.2 Architectural Resources**

Forty historic-age or unknown-age architectural resources were identified within the ACF APE during the architectural survey conducted in April 2009. The resources consist of water

control structures, including irrigation and drainage features that convey water to and from the Arroyo Colorado from the surrounding farmland. These features include an interconnected system of gatewells, pipes, culverts, and screwgates; separate culverts, headwalls, and wingwalls; the raised earthen North Levee of the Arroyo Colorado and Divisor Dike dividing the Main Floodway of the LRGFCP into the North Floodway and ACF; and a cableway for water flow measurement, drain ditches, and vertical field drains, some of which are associated with the original construction of the ACF Project in the 1940s. Additional resources in the APE include a cemetery and a residential dwelling. Most of these resources are more than 50 years old and will be evaluated for eligibility to the NRHP as part of a cultural resources survey being conducted to support this EA. All architectural resources in the APE are summarized in Table 3.1.

**Table 3.1 Architectural Resources in the Area of Potential Effect**

Resource Type	Quantity
Gatewell / Pipe / Culvert / Screwgate System*	22
Culvert / Headwall / Wingwall (no gatewell or screwgate)*	9
Levee / Dike	2
A-Frame / Cableway	1
Drain Ditch / Channel	3
Vertical Field Drain / Pipe	1
Other Architectural Resources (Cemetery, Residential Dwelling)	2

Impacts to architectural resources include alteration of architectural traits by modification to existing structures, structural instability to existing structures from erosion, and physical disturbance and vibration effects through use of heavy equipment. Any alteration of architectural traits or loss of structural stability can affect the physical integrity of an NRHP-eligible or potentially eligible architectural resource, resulting in alteration or destruction of those characteristics or qualities that make it potentially eligible for inclusion in the NRHP.

***No Action Alternative Environmental Consequences***

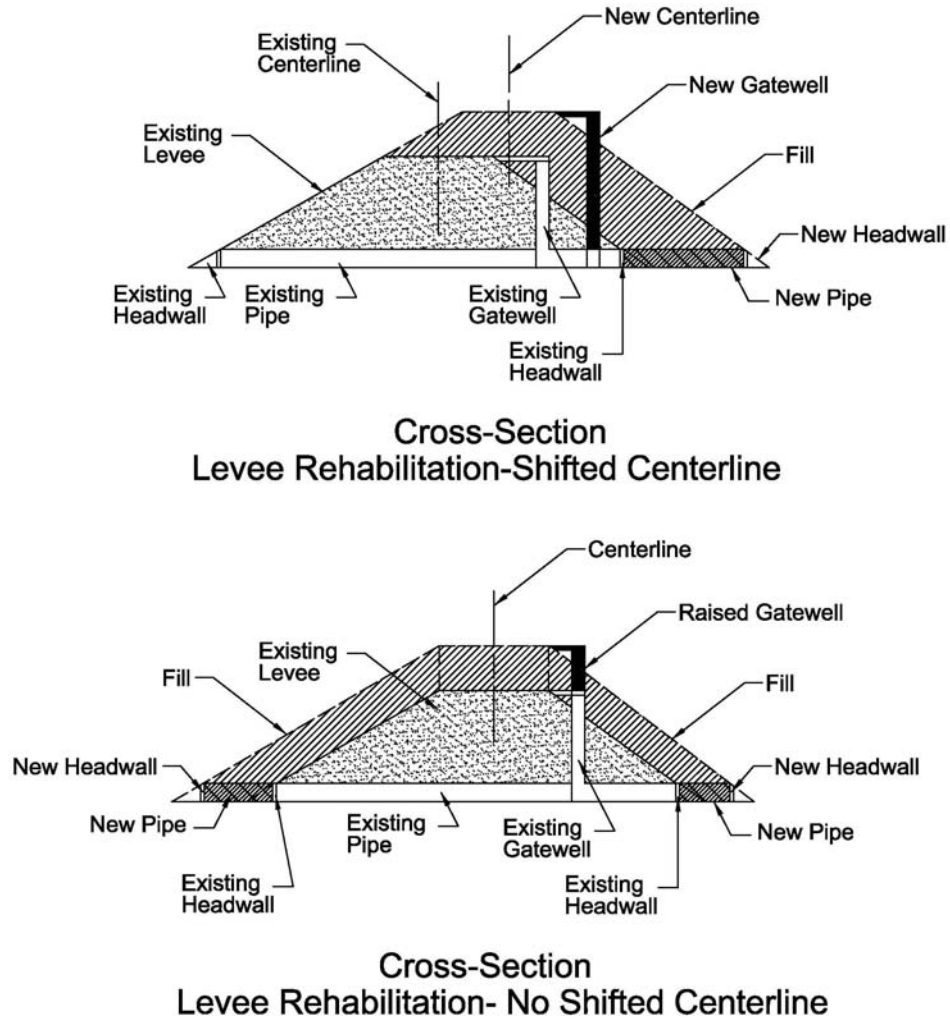
Under the no action alternative, the current dike and levee configuration would be retained and O&M would continue. No adverse effects to architectural resources differing from the baseline condition would be expected. Existing conditions and natural degradation of architectural resources would continue from increased potential for flooding, which reduces the structural integrity of water control structures (*e.g.*, breaches of screw gates, siltation of drains, and culverts, potential collapse of box culverts supporting the levee over drains and pipes). Cultural resources would continue to be managed in accordance with Sections 106 and 110 of the NHPA and USIBWC Directives.

### ***Proposed Action Environmental Consequences***

Proposed improvements to the ACF levee system may adversely affect architectural resources in the APE. Under the proposed action, construction associated with rehabilitation of the levee (toe/footprint expansion) would occur in proximity to architectural resources (*e.g.*, gatewells and screwgates on top of or intersecting the slope of the levee, and culverts and drains under the levee), some of which may be considered eligible for the NRHP. The use of heavy equipment as described in Subsection 2.2 could result in ground disturbance and vibration effects to architectural resources under the levee. Modifications to architectural resources, including height increases and, in some areas, widening of the dike and levee footprints would occur as a result of the proposed action. Resources such as the gatewells and screw gates that occur on top or intersect the slope of the levee may be affected when the levee is raised or widened. Resources like the culverts, headwalls, and wingwalls would potentially be covered by the addition of soil at the base of the levee to expand the footprint.

In consultation with the THC, USIBWC has determined that most, if not all, water control structures require major modifications to accommodate the required levee improvements. The USIBWC has determined that, in most cases, project-engineering plans cannot avoid impacts to architectural resources. In addition, USIBWC determined that project redesign around architectural resources, (*e.g.*, altering the slope of the dike or levee, implementing a construction solution such as rip rap for slope siding, or designing adjustments around structures such as gatewells and culverts on and under the levee) is not feasible. To preserve the water control function of structures on or near the levee, USIBWC proposes alterations to those structures, as necessary, as part of levee raising and widening. For structures identified in the project area, the extent of modifications will depend on the whether the levee expansion in that area requires a shift in centerline. Figure 3.1 depicts the proposed changes to structures including the gatewell, headwalls, and underground pipes associated with water flow and delivery under the levee structure. Alterations to structures in areas where the levee footprint will be expanded but the centerline will not be shifted include raising the height of the existing gatewell to the height of the raised levee, the addition of pipe on both sides under the levee and the replacement of headwalls around the pipe on both expanded toes of the levee. For those areas of the levee where widening will require a shift in centerline (*e.g.*, to avoid resources in the floodway or where there is not sufficient area in the floodway for the necessary expansion if both sides of the levee are extended the same width), modifications to structures will be more extensive.

**Figure 3.1 Proposed Modifications to Structures on and under the Arroyo Colorado North Levee and Divisor Dike**



### 3.2.3 Native American Resources

Native American resources are sites, areas, and materials important to Native Americans for religious or heritage reasons. Resources may include prehistoric sites and artifacts, contemporary sacred areas, traditional use areas (*e.g.*, native plant or animal habitat), sources used in the production of sacred objects and traditional implements, or traditional cultural properties. Sacred places important to religion may also be present and include mountain peaks, springs, and burial sites. Traditional rituals may prescribe the use of particular native plants, animals, or minerals from specific places. Therefore, activities that may affect sacred areas, their accessibility, or the availability of materials used in traditional practices may be of concern.

Two Native American groups that may have historical ties to the project area are identified in Table 3.2. The USIBWC initiated consultation with these Native American groups, pursuant to 36 CFR 800.2, to ensure that any sites of traditional cultural value are identified and adequately considered under the proposed action.

**Table 3.2 Native American Groups Identified for the ACF Improvement Area**

State	Tribal Name
Oklahoma	Comanche Nation
	Kiowa Tribe of Oklahoma

Impacts to Native American resources include destruction of traditional resources, burials, and sacred sites, and plant or animal habitat through ground-disturbing activities such as riverbed dredging and levee reconstruction. Audio and visual intrusion may adversely affect the visual and audio landscape or the viewshed of these resources as well as disturb any associated ceremonial activities. These types of physical disturbance may disturb or destroy unidentified Native American resources.

Native American consultation has been initiated with the Comanche Nation and Kiowa Tribe of Oklahoma to identify any Native American resources or concerns. The Kiowa Culture Preservation Authority has indicated that the Kiowa Tribe has no comment on the proposed project at this time (Appendix A). The Comanche Nation Historic Preservation Office has indicated that archaeological materials relevant to the Comanche Nation are not likely to be encountered (Appendix A).

#### ***No Action Alternative Environmental Consequences***

Under the no action alternative, the current levee configuration would be retained and O&M would continue.

#### ***Proposed Action Environmental Consequences***

Although no resources or concerns to Native American Tribes have previously been identified, it is possible that activities related to levee improvements in the ACF APE would result in limited access to segments of the Arroyo Colorado and sites and resources within the

floodway during levee improvement. It is also possible that expanding the footprint could cover unrecorded resources of interest to Tribes and would result in adverse effects to resource accessibility for Native Americans. However, Tribes have not indicated any concerns regarding resources in the project area or with the proposed project itself.

### **3.3 WATER RESOURCES**

Impacts to water resources would be considered significant if any of the following were to occur: substantial flooding or erosion; adverse effects on any significant water body (such as stream, lake, or bay); exposure of people to reasonably foreseeable hydrologic hazards such as flooding; or adverse effects to surface or groundwater quality or quantity. Impacts on water quality would be considered significant when concentrations of indicator parameters exceeded regulatory values for protection of human health and aquatic life.

#### **3.3.1 Regional Flood Control**

Detailed information about regional flood control, design flows, and how floodwaters are diverted in the interior floodway along the LRGFCP is provided in the 2008 Final PEIS (USIBWC 2008). The ACF levees begin at Divisor Dike near the Town of Mercedes in Hidalgo County, and end at the Town of Rio Hondo in Cameron County. The levee ROW runs primarily through agricultural areas. Numerous irrigation canals intersect the exterior side of the levee at La Feria, Adams Garden and Harlingen irrigation districts in Cameron County, and the Mercedes Irrigation District located in Hidalgo County.

The interior floodway system was designed with a 3-foot freeboard that is not currently met in one ACF segment and two segments in the North Floodway (USIBWC 2003a). The ACF segment requiring height increase extends 11 miles, from the Divisor Dike to White Ranch Road. Levee elevation data and the need for height increases were determined in a hydraulic modeling study conducted in October 2003 by the USIBWC.

The USIBWC commissioned the U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center to assess structural integrity of the entire LRGFCP levee system. The study indicated that the overall structural condition of the ACF levees fell in the good and adequate categories (USACE 2003); a need for structural improvements is not anticipated.

#### ***No Action Alternative Environmental Consequences***

The no action alternative would retain the current configuration of the ACF levee system, as designed over 30 years ago, and maintain the current 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 property.

### ***Proposed Action Environmental Consequences***

Improvements to the levee system would increase flood containment capacity to control the design flood event as evaluated by hydraulic modeling. A minimum change in water elevation, less than 1 inch, would be anticipated as a result of the levee height increase for the ACF levee system. In areas where there are structural deficiencies in the levee system, the proposed levee expansion would address those deficiencies during construction to improve the overall performance of the ACF levee within the first 11 miles.

#### **3.3.2 Water Flow**

Flow in the Arroyo Colorado is sustained by wastewater discharges, agricultural return flows, urban runoff, and base flows from shallow groundwater. During non-flood conditions, irrigation/municipal water and local drainage flow into the floodways through irrigation and drainage structures. One third of the stream is also used for shipping from the Gulf Intracoastal Waterway to the Port of Harlingen (Arroyo Colorado 2009).

The ACF empties into the Laguna Madre north of the dredged Arroyo Colorado mouth. The ACF has a high channel bottom and therefore does not receive any flow from Llano Grande except during flood conditions. The flood control features at this site are used to divert a significant portion of floodwaters conveyed by the Main Floodway to the ACF during flood events.

Flow into the interior floodways is controlled by the USIBWC with adjustable gates that are closed during high storm events. This could cause floodwater to back up into agricultural drainages. A number of pumps are located on top of the levee to remove ponded water. A divider dike splits the base flows between the Main and North Floodways, with a partial routing of North Floodway water into Arroyo Colorado.

#### **3.3.3 Water Quality**

The classified segments that comprise the Arroyo Colorado (segments 2201 and 2202) have consistently failed to meet the water quality standards established by the State of Texas as reported in State of Texas Water Quality Inventory Reports (CWA Section 305(b) reports) and lists of impaired water bodies (CWA Section 303(d) lists). The ACF project area is within Segment 2202. The pollutant reduction plan (TCEQ 2006) includes measures to reduce non-point and point sources of pollution to the Arroyo Colorado. Cattle grazing on the levee and within the floodway may contribute to non-point sources of pollution to the Arroyo Colorado. There are cattle grazing leases present within the floodway, however the USIBWC is encouraging landowners to minimize, reduce or eliminate any cattle grazing activities on the levee and floodway.

### ***No Action Alternative Environmental Consequences***

Under the no action alternative, no impacts are anticipated, as the current levee configuration would be retained.

### ***Proposed Action Environmental Consequences***

For the proposed action, improvements to the ACF levee system would not affect water flow or downstream water bodies. The use of effective measures to prevent erosion and sedimentation in the Arroyo Colorado will not affect water quality resources in the adjacent water bodies.

## **3.4 LAND USE**

Current land use along the ACF levee system was evaluated along a corridor potentially affected by the levee improvement project using three main categories: natural resources management areas, agricultural lands, and urban areas. Conflict with current and future land use of the improvement area is the criterion used to assess impacts on land use. Construction and levee expansion improvements of the ACF levee system would occur entirely within the ROW.

### **3.4.1 Natural Resources Management Areas**

Land set aside specifically for natural resource management activities are important for T&E species recovery, habitat preservation, and the emerging eco-tourism economy in South Texas. Tracts of lands along the ACF levee system are managed by the USFWS. The USFWS maintains one small unit of the LRGV National Wildlife Refuge in the improvement area. The unit is associated with the Willacy canal, which traverses the ACF levee system at mile 8 of the levee improvement project.

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

The proposed levee improvement project of the ACF levee system would affect mostly herbaceous vegetation dominated by non-native species. Approximately 5117 acres of non-native herbaceous vegetation may be temporarily removed from the existing levee footprint, and 4.7 acres of primarily non-native grassland or rangeland may be removed for levee expansion areas. No thorn woodland, a higher quality habitat, would be removed. Less than one-half acre of wetland vegetation would be removed.

### **3.4.2 Agricultural Land**

Agricultural and open land flanks approximately 75 percent of the floodway. According to the National Land-Cover Database (NLCD), this land is classified as cultivated crops, pasture, open space, or barren land (NLCD 2001). Crops observed near the improvement area during field reconnaissance were mostly vegetables, grain, and citrus fruit. Pastureland was utilized for cattle, sheep, and goats. Additionally, adjacent land near miles 10 to 12 of the improvement area has been utilized for sand mining.



### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

No agricultural areas are located within the proposed improvement area. The proposed action would not affect agricultural lands adjacent to the improvement area.

### **3.4.3 Urban Areas**

The NLCD classified approximately 25 percent of the land adjacent to the levee as either low or medium intensity developed. Low intensity implies a 20 to 49 percent impervious surface coverage, whereas medium intensity implies 50 to 79 percent coverage (NLCD 2001). Urban development near the ACF levee system is limited to portions of Mercedes and La Feria, Texas. Although sparsely populated, several residences were found near the improvement area during field reconnaissance. These residences were on the landside, north of the levee system. No residential development is allowed within the levee system ROW.

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

Urban development near the ACF levee system is limited to portions of Mercedes and La Feria located on the levee boundaries. The proposed action would not affect urban development in these areas.

## **3.5 SOIL**

Project contribution to erosion and alteration of soil previously unassociated with the existing levee are the evaluation criteria used to assess impacts on land use.

Levees within the ACF levee system are primarily composed of stable fill material transported in from locations outside the area of the floodway. Therefore, soil associated with the actual levee has no unique soil type designation. According to online USDA Natural Resources Conservation Service (NRCS) soil survey maps of the area, soil along the levee centerline is designated as "levee." However, soil immediately adjacent to the levee toe comprises six major soil types: Harlingen clay, Mercedes clay, Hidalgo sandy clay loam, Ramondville clay loam, Runn silty clay, and Hidalgo fine sandy loam (NRCS 2009).

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

Improvement activity under the proposed action contributing to soil disturbance would include raising the top of the levee as described in Subsection 2.2. Geotechnical investigations would also be conducted to determine the type and extent of any required remediation improvements due to slope stability, seepage, levee settlement, as well as any other geotechnical issues that may cause levee failure. The disturbance of soil would occur within areas where soil has been disturbed and modified by prior levee construction and maintenance activities. Therefore, alteration of soil previously unassociated with the existing levee would not occur.

The contractor would ensure a storm water pollution prevention plan is completed and approved before initiating activities. The plan would include erosion control best management practices that would be used during levee rehabilitation improvements to minimize erosion in disturbed areas.

Earthwork would be planned and conducted in such a manner as to minimize the duration of exposure of unprotected soil. Protection would be provided by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Slopes too steep for stabilization by other means would be stabilized by hydroseeding, mulch anchored in place, covering by anchored netting, sodding, or such combination of these and other methods as may be necessary for effective erosion control. Use of best management practices such as rock berms, silt fences, and single point construction entries would minimize erosion during construction. For these reasons, no soil impacts would be expected.

## **3.6 COMMUNITY RESOURCES**

Community resources impacts would be considered significant if the federal action resulted in substantial growth or concentration of population or the need for substantial new housing or public services.

### **3.6.1 Socioeconomics**

The ACF levee system is located within Cameron and Hidalgo Counties. Some of the larger cities within these counties that are near the levee system include Weslaco, Mercedes, and Harlingen.

The region of influence of this analysis is based on the location of the levee construction work being conducted in Hidalgo and Cameron Counties. The USIBWC is anticipating spending \$14,700,000 for the ACF levee rehabilitation project (including geotechnical analysis, design, and actual levee work) for the first 6.93 miles (up to Hidalgo county line). This amount also includes the geotechnical and design work for the next 4.07-mile segment. The construction work for the smaller segment would be completed only if funding is available. Therefore, assuming 10 per cent of the total project cost (\$14.7 million) would be spent on design and geotechnical analysis, the cost to perform the construction work for 6.93 miles of levees is \$13.23 million ( $14.7 - 1.47 = 13.23$ ). This equates to approximately \$1.91 million per

mile of levee rehabilitation ( $13.23 / 6.93 = 1.91$ ). Therefore, the amount of construction work that would be conducted in Cameron County is estimated to be \$7.77 million ( $1.91 \times 4.07 = 7.77$ ).

**Population**

Table 3.3 presents population characteristics, including populations in 2000, as well as projected populations for 2005, 2020, and 2030 and the percent change for these statistical areas. As shown in Table 3.4, the total county population for Cameron County is projected to increase 65 percent from 2000 to 2030 while Hidalgo County is projected to increase 89 percent.

**Table 3.3 Population Growth in Cameron and Hidalgo Counties Adjacent to the Arroyo Colorado Floodway**

Jurisdiction	2000	2005	2020	2030	Percent Change 2000-2030
Cameron County	335,227 <sup>1</sup>	371,081 <sup>1</sup>	476,992 <sup>2</sup>	554,513 <sup>2</sup>	65
Hidalgo County	569,463 <sup>2</sup>	671,967 <sup>2</sup>	879,381 <sup>2</sup>	1,078,637 <sup>2</sup>	89

1 U.S. Census Bureau 2007

2 Texas Water Development Board 2006

**Table 3.4 Percentage of Minority Populations and Poverty Rates in the Arroyo Colorado Floodway Levee Area**

Ethnic Composition <sup>1</sup>	Hidalgo County	Percent	Cameron County	Percent
White	59,224	10.4	48,608	14.5
Hispanic (of any race)	502,836	88.3	282,596	84.3
Black	1,708	0.3	1,676	0.5
Asian	3,417	0.6	1,006	0.3
American Indian	2,278	0.4	1,341	0.4
Total Population	569,463	100	335,227	100
Total Minority	510,239	89.6	286,619	85.5
Poverty Levels <sup>2</sup>	187,353	32.9	94,534	28.2
Individuals below poverty level	213,549	37.5	110,960	33.1

1. Based on 2006 values presented in U.S. Census Bureau, accessed 2007

2. Based on 2000 values and percentages presented in U.S. Census Bureau, accessed 2007

Executive Order (EO) 12898 defines a minority as an individual belonging to one of the following population groups: Hispanic, Black (not of Hispanic origin), American Indian or Alaskan Native, Asian or Pacific Islander. Under EO 12898, minority populations are to be identified if: (i) the minority population with the affected area exceeds 50 percent; or (ii) if the minority population age is meaningfully greater than the age in the general population. Table 3.4 indicates the percentage of the population represented by minorities and the poverty

rate for each of the selected census tracts in the project area. The minority population in Cameron and Hidalgo Counties is 85.5 and 89.6 percent, respectively. Minority populations of Hispanic nationality dominate in the potential region of influence.

### ***Employment***

The economy of the two county region is based primarily on the service, retail trade, and government sectors. Each of these industries comprises approximately 22 to 23 percent of the total employment in the region of impact. In Cameron County, employment was also high in the manufacturing and transportation industries, approximately 11 percent and 4 percent, respectively. Manufacturing (7%), construction (5%), and the agricultural (5%) industries have relatively high employment in Hidalgo County (USIBWC 2003b). Table 3.5 indicates the estimated total employment for the two counties. The estimated total employment for the two counties increased 10.8 and 26.6 percent, respectively, from 2000 to 2005.

**Table 3.5 Estimated Total Employment for Cameron and Hidalgo Counties**

	<b>2000</b>	<b>2005</b>	<b>Percent Change 2000-2030</b>
Cameron County	118,079 <sup>1</sup>	130,864 <sup>1</sup>	10.8
Hidalgo County	191,542 <sup>1</sup>	242,525 <sup>1</sup>	26.6

*1. Texas Workforce Commission 2007*

### ***Income***

Median household incomes for Cameron and Hidalgo Counties (reported in 1999 dollars) was \$26,155, \$24,863, and \$22,114, respectively. The median family income was \$27,853 and \$26,009 counties. Per capita income was \$10,980 for Cameron County and \$9,899 for Hidalgo County (U.S. Census Bureau 2007).

### ***Agricultural Economics***

Approximately 34,277 acres of agricultural land lie in the project area along the Rio Grande in Cameron and Hidalgo Counties. Although land is not cultivated immediately along the riverbanks, agricultural land predominates within the floodplain inside the ACF levee system (USIBWC 2003b).

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

The analyses of impacts of the footprint expansion on socioeconomic resources and environmental justice were based on changes in employment, income, and business volume as

indicator criteria, as well as the disproportionate number of minority or low-income populations potentially affected by the proposed levee improvements.

The direct influx of federal funds would be \$13,230,000 based on construction costs, assuming 6.93 miles of the levee system improvement project would be constructed in Hidalgo County. This influx of funds would have a small but positive local economic impact, representing an increase of \$44,836,660 in direct and indirect sales. Job creation is estimated at 410 in direct and indirect employment. The positive impact would be limited to the duration of the construction period. Table 3.6 illustrates the magnitude of the economic influx relative to reference values for Hidalgo County.

**Table 3.6 Potential Economic Impacts Improvements to the Arroyo Colorado Floodway Levee System for Hidalgo County**

Evaluation Criteria	Unit Value for Rio Grande Levees <sup>a</sup>	Raising of Arroyo Colorado Floodway Levee	Annual Value for Hidalgo County	Increase Relative to County
Local Expenditures	\$1,000,000	\$13,230,000	Not applicable	
Direct Employment	10	251		
Indirect Employment	6	159		
Total Employment	16	410	242,525 <sup>b</sup>	0.17%
Direct Sales Volume	\$1,274,065	\$16,855,900		
Indirect Sales Volume	\$2,114,948	\$27,980,760		
Total Sales Volume	\$3,389,013	\$44,836,660	\$ 10,375 million <sup>c</sup>	0.43%
Direct Income	\$554,814	\$7,340,190		
Indirect Income	\$452,466	\$5,986,125		
Total Income	\$1,007,280	\$13,326,315	\$6,652 million <sup>d</sup>	0.2%

*a* Unit data for levee construction from the USIBWC Rio Grande Canalization Project (Parsons 2004).

*b* Total of the labor force (16 years and older) employed in 2005 (Texas Workforce Commission 2007).

*c* Estimated Gross sales for Hidalgo County in 2005 (Texas Comptroller 2005).

*d* Based on a 2000 per capita income of \$9,899 and an Hidalgo County population of 671,967.

The direct influx of federal funds for Cameron County would be \$7,770,000 on the basis of construction costs, assuming 4.1 miles of the levee improvement project would be constructed in the county. This influx of funds would have a small but positive local economic impact, representing an increase of \$26,332,630 in direct and indirect sales. Job creation is estimated at 240 in direct and indirect employment. The positive impact would be limited to the duration of the construction period. Table 3.7 illustrates the magnitude of the economic influx relative to reference values for Cameron County.

**Table 3.7 Potential Economic Impacts Improvements to the Arroyo Colorado Floodway Levee System for Cameron County**

Evaluation Criteria	Unit Value for Rio Grande Levees <sup>a</sup>	Raising of Arroyo Colorado Floodway Levee	Annual Value for Cameron County	Increase Relative to County
Local Expenditures	\$1,000,000	\$7,770,000	Not applicable	
Direct Employment	10	147		
Indirect Employment	6	93		
Total Employment	16	240	130,864 <sup>b</sup>	0.18%
Direct Sales Volume	\$1,274,065	\$9,899,490		
Indirect Sales Volume	\$2,114,948	\$16,433,140		
Total Sales Volume	\$3,389,013	\$26,332,630	\$ 5,064 million <sup>c</sup>	0.52%
Direct Income	\$554,814	\$4,310,900		
Indirect Income	\$452,466	\$3,515,660		
Total Income	\$1,007,280	\$7,826,560	\$4,074 million <sup>d</sup>	0.19%

*a* Unit data for levee construction from the USIBWC Rio Grande Canalization Project (Parsons 2004).

*b* Total of the labor force (16 years and older) employed in 2005 (Texas Workforce Commission 2007).

*c* Estimated Gross sales for Cameron County in 2005 (Texas Comptroller 2005).

*d* Based on a 2000 per capita income of \$10,980 and an Cameron County population of 371,081.

### 3.6.2 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 EO 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 proposed action 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 would be suffered by the non-minority population and/or non-low income population.

Information from Table 3.4 indicates that Cameron and Hidalgo Counties have disproportionately high minority (approximately 86% and 90%, respectively). Approximately 28 percent and 33 percent of all families in Cameron and Hidalgo Counties were reported to be below the poverty level in the 2000 Census (U.S. Census Bureau 2007).

### ***No Action Alternative Environmental Consequences***

Under the no action alternative, current condition of minority and low-income populations for all three counties would remain unchanged, as improvements to the levee system would not occur.

### ***Proposed Action Environmental Consequences***

Data indicate that Hidalgo and Cameron Counties have disproportionately high minority (approximately 90% and 86%, respectively) and low-income populations (families—33% and 28%, respectively); however, construction activities would not occur in residential or workplace areas associated with these populations. A small but positive economic input to the local community would occur as a result of the levee improvements. As a result, no adverse impacts to disproportionately high minority and low-income populations are expected from construction of the ACF levee improvements.

### **3.6.3 Transportation**

Hidalgo, Cameron, and Willacy Counties are an important thoroughway for agricultural products. One of the major arteries for highway traffic is U.S. Highway 281, which connects Hidalgo County with cities to the north. Also important is U.S. Highway 83, which traverses Cameron and Hidalgo Counties from east to west, and U.S. Highway 77 in Cameron and Willacy Counties from Brownsville northwest to Harlingen and Raymondville. Hidalgo, Cameron, and Willacy Counties have an extensive network of state and farm-to-market roads. The two spans of the Hidalgo-Reynosa International Bridge over the Rio Grande serve as crossing points between Mexico and the United States. Two major rail systems serve the two counties. The only railroad port of entry in the area is located in Brownsville, Texas.

The crown of the ACF levee system is an unpaved service road with restricted public access throughout most of the system. The road is utilized by the USIBWC as a service road for levee maintenance and vegetation management. The service road is also used by the local farmers for access to farmland.

There are numerous secondary and connecting routes that run perpendicular to the Rio Grande and cross the highways to the north, which allows access to the border areas along the river. However, there are no roads or highways that allow access to the Arroyo Colorado levee system that cross into Mexico. Numerous farm-to-market roads, paved and unpaved county roads, and unpaved farm roads used to access agricultural fields cross the project area.

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

Proposed improvements to the ACF levee would have moderate impacts on local transportation. Heavy construction equipment (dump trucks, front-end loaders, graders) in the reach of the ACF near Mercedes and La Feria would likely be driven to the construction site

from local areas using State Highways 83 and 281. The north levee section starting at Divisor Dike near FM 1015 and extending eastward toward La Feria Reservoir can be accessed using FM 491 (Mistletoe Road), Duker Highway, and White Ranch Road, which generally intersect the floodway.

During levee construction, a temporary increase in use of the access roads would take place during placement of equipment in the staging areas. Subsequent construction activities would also temporarily increase local transportation, as fill material would be imported from commercial sources outside the levee system. Most of these construction activities, however, would not require public road use as, material borrow sites would be located near the construction sites. All construction activities would occur within the existing ROW. Transportation of construction equipment and the use of personnel vehicles would mainly occur within the levee ROW and along the levee road system within the floodway. New easements would have to be obtained by USIBWC if levee footprints are increased from existing conditions. Following completion of the levee improvement project, the levee road would continue providing service for USIBWC and farming activities, and limited public access.

### **3.7 ENVIRONMENTAL HEALTH**

Evaluation criteria considered in air quality analysis include the following.

- Would emissions from the action cause or contribute to a violation of any national, state, or local ambient air quality standard?
- Would emissions from the action represent 10 percent or more of the emissions inventory for the affected AQCR counties, to be considered regionally significant?

The following evaluation criteria were used to determine the impacts of noise:

- The degree to which noise levels generated by demolition and construction activities would be greater than the ambient noise levels;
- The degree to which there would be annoyance, speech interference, and hearing loss; and
- The proximity of noise-sensitive receptors to the noise source.

The evaluation criteria listed below were used to assess the alternatives with regard to hazardous materials and waste.

- Would the action violate federal or state regulations for hazardous waste usage, storage, or disposal?
- Could the action require materials that could not be accommodated by existing guidance?
- Would there be human exposure to hazardous waste or materials due to the action?
- Would the action cause hazardous waste generation that could not be accommodated by current waste management practice?



### **3.7.1 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). The U.S. Environmental Protection Agency (USEPA) classifies air quality within an AQCR according to whether the concentrations of criteria air pollutants in the atmosphere exceed primary or secondary NAAQSs. All areas within each AQCR are assigned a designation of attainment, nonattainment, unclassifiable attainment, or not designated attainment for each criteria air pollutant.

Air quality standards are currently in place for six pollutants or “criteria” pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur oxides, lead, and particulate matter with aerodynamic diameters less than or equal to 10 micrometers (PM<sub>10</sub>) and 2.5 micrometers (PM<sub>2.5</sub>). There are many suspended particles in the atmosphere with aerodynamic diameters larger than 10 micrometers. The collective of all particle sizes is commonly referred to as total suspended particulates.

An attainment designation indicates that air quality within an area is as good as or better than the NAAQS. The proposed levee improvement area is located within AQCR 213, or the Brownsville-Laredo AQCR. This AQCR is located completely within the State of Texas, covering Cameron County, Hidalgo County, Jim Hogg County, Starr County, Webb County, Willacy County, and Zapata County (CFR 2001). As of April 2009, the USEPA designated air quality within all counties of AQCR 213 to be under attainment status for all criteria pollutants (USEPA 2009a). Emissions data for Cameron, Hidalgo, and Willacy Counties are used for analysis purposes because the activity associated with the alternatives would be localized in the narrow area along the river, and emissions from the activities would not likely affect the more distant counties within the AQCR.

The Texas Commission on Environmental Quality has identified 16 companies in Hidalgo, Cameron, and Willacy Counties as contributors of point source emissions. Potential stationary point sources of criteria pollutant and hazardous air pollutant emissions within the three counties include the Rio Grande Valley Sugar growers, Wil Ron Manufacturing Corporation, several oil mills and refineries, and utilities and gasoline facilities. The combined area and stationary point source emission inventory for Hidalgo, Cameron, and Willacy Counties for calendar year 2002, based on the latest available data from USEPA National Emission Inventory as of April 2009 (USEPA 2009b), is as follows:

- Carbon monoxide, 208,099 tons per year;
- Volatile organic compounds, 41,427 tons per year;
- Nitrogen dioxide, 41,128 tons per year;
- Sulfur oxides, 5,185 tons per year; and
- PM<sub>10</sub>, 97,789 tons per year.

- PM<sub>2.5</sub>, 13,869 tons per year

Existing maintenance activities by USIBWC personnel consists of routine inspections of levees and access roads. Periodic maintenance activities at the levees, channels and floodway results in the use of heavy equipment including scrapers, mowers, bulldozers and dump trucks. Use of these heavy equipment and associated vehicles is typically limited to once every 3 months or less and does not represent a significant source of air pollutants.

**No Action Alternative Environmental Consequences**

Under the no action alternative, the current configuration of the levee system would be retained. Air emissions would not be expected to increase beyond the established emissions inventory in the project area.

**Proposed Action Environmental Consequences**

Improvements to the levee system would impact air quality through excavation and fill activities. Potential impacts would be a slight increase in criteria air pollutants within Hidalgo, Cameron, and Willacy Counties. Table 3.8 summarizes the additional estimated criteria pollutants associated with the proposed action, as well as the percent increase above the existing Hidalgo, Cameron, and Willacy Counties’ emissions inventory. Estimates were calculated for 11 miles of construction for the levee height increase. Unit air emissions estimates for these activities followed common construction practices and methods (Means 2008) and emission factors reported by USEPA (USEPA 1996) as applied to a similar levee expansion project in an upper reach of the Rio Grande (Parsons 2003). Estimated emissions for the criteria pollutants represent less than 0.13 percent of the Hidalgo, Cameron, and Willacy Counties’ annual emissions inventory.

**Table 3.8 Air Emissions for Improvements to the Arroyo Colorado Floodway Levee System**

Parameter	Emissions (tons per year)					
	Sulfur Oxides	Nitrogen Dioxides	Carbon Monoxide	Volatile Organic Compounds	Particulate Matter (PM <sub>10</sub> )	Particulate Matter (PM <sub>2.5</sub> )
Unit emissions per mile of levee height increase*	0.55	5.05	2.11	0.4	5.61	0.95
Floodway Levee Systems (11 miles)	6.05	55.55	23.21	4.40	61.71	10.45
Hidalgo, Cameron, and Willacy Counties emissions inventory**	5,185	41,128	208,099	41,427	97,789	13,869
Floodway Levee Systems Emissions as a Percent of Hidalgo, Cameron, and Willacy Counties’ Emissions	0.12%	0.13%	0.01%	0.01%	0.06%	0.07

\* Unit data for levee construction from the USIBWC Rio Grande Canalization Project Environmental Impact Statement (Parsons 2003: Table 4.11-2).

\*\* USEPA 2009b, the most recent available data as of April 2009.

### **3.7.2 Noise**

#### ***Guidelines***

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. Noise levels often change with time. To compare sound levels over different time periods, several descriptors were developed that take into account this time-varying nature. These descriptors are used to assess and correlate the various effects of noise on humans.

The day-night average sound level (DNL) is a measure of the total community noise environment. DNL is the average A-weighted sound level in decibels, or dBA, over a 24-hour period, with a 10 dBA adjustment added to the nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment is an effort to account for increased human sensitivity to nighttime noise events. DNL was endorsed by the USEPA for use by federal agencies. DNL is an accepted unit for quantifying annoyance to humans by general environmental noise, including aircraft noise. The Federal Interagency Committee on Urban Noise developed land use compatibility guidelines for noise (USDOT 1980). Potential adverse effects of noise include annoyance, speech interference, and hearing loss.

#### ***Baseline Noise Levels***

Land use and zoning classifications in the area surrounding the proposed levee improvement area provide an indication for potential noise impact. Land surrounding the ACF levee system is predominantly managed as agricultural land. No sensitive noise receptors such as schools, churches, and medical facilities are located in or surrounding the ACF levee system; however, several residences associated with Mercedes and La Feria, Texas were found along the landside of the levee during field reconnaissance conducted for this project.

Typical outdoor noise sources near the levee system include vehicles, pickup trucks, diesel tractor mowers, and other farm machinery. Noise sources such as mowers at 100 feet, a diesel truck, or scrapers used to grade levee roads at 50 feet are approximately 70 dBA, 88 dBA, and 89 dBA, respectively (CERL 1978).

Existing maintenance activities by USIBWC personnel consist of routine inspections of levees and access roads. Periodic maintenance activities at the levees result in the use of heavy equipment, including scrapers, mowers, bulldozers, and dump trucks. Use of heavy equipment and associated vehicles is typically limited to once every three months or less and does not represent a significant source of noise.

Since noise-generating activities are intermittent, it is expected that most areas at the ACF levee system exhibit noise levels less than 55 dBA, which is normally accepted by the public without complaints. Existing noise levels near Mercedes and La Feria should be typical of a light commercial or industrial area, which is about 65 dBA.

### ***No Action Alternative Environmental Consequences***

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

### ***Proposed Action Environmental Consequences***

Improvements to the ACF levee system would increase ambient noise levels through the use of trucks to bring additional fill material to the site and fill activities associated with the levee improvement project. For the purposes of this EA, it is estimated that the shortest distance between an equipment noise source and a non-construction receptor would be a person(s) 50 feet off-site, or less. Typical noise levels generated by activities associated with the proposed action range from 75 to 89 dBA at 50 feet from the source (CERL 1978).

Several residences associated with Mercedes and La Feria, Texas were found along the landside of the levee; therefore, potential noise-sensitive receptors would be nearby residents. However, given the primarily rural nature of the area, it is unlikely anyone other than a construction worker would be within 50 feet of the site boundary during activities. If a non-construction receptor were within this distance, the person could be exposed to noise as high as 75 to 89 dBA. This level of noise could annoy nearby residents and cause disruption of speech during the noise event. However, interior noise levels during construction activity would be reduced from the 75 to 89 dBA level by approximately 18 to 27 dB due to the noise level reduction properties of the building's construction materials (USDOT 1992).

The potential for hearing loss involves direct exposure on a regular, continuing, long-term basis to noise levels above 75 dBA. Hearing loss projections are based on an average daily outdoor exposure of 16 hours over a 40-year period. It is anticipated that construction activities would occur between 7:30 a.m. and 5:00 p.m., five days per week for the duration of the project. However, individuals would not be exposed during the entire noise-producing period. Under these conditions, persons would not be exposed to long-term and regular noise above 75 dBA. Therefore, nearby persons should not experience loss of hearing, but may experience frequent speech disruption.

### **3.7.3 Hazardous Materials and Waste Management**

Waste disposal activities at or near the proposed levee improvement area were reviewed to identify areas where industrial processes occurred; solid and hazardous waste were stored, disposed, or released; and hazardous materials or petroleum or its derivatives were stored or used. A data search on waste storage and disposal sites along the ACF levee system was conducted by Banks Information Systems, Inc. (2009). The search extended along major portions of the potential levee expansion area, up to 1/2 mile from the levee corridor centerline.

Results of the data search along the ACF levee system, including the search radius (up to 1/2 mile) by individual database, are shown in Table 3.9. No hazardous materials or waste storage, disposal sites, or spill sites, were identified within the proposed ACF levee improvement area; however, the Hidalgo County Landfill was identified within 1/8 mile from the levee.

**Table 3.9 Summary Search Report for the Arroyo Colorado Floodway Levee System, McAllen, Texas Vicinity**

Database	Database Updated	Search Radius	Levee Corridor	1/8 Mile	1/4 Mile	1/2 Mile	Total
<b>NPL</b>	<b>01-12-09</b>	<b>1.00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
CERCLIS	01-09-09	0.50	0	0	0	0	0
NFRAP	01-09-09	0.50	0	0	0	0	0
RCRA TSD	11-13-08	0.50	0	0	0	0	0
RCRA COR	11-13-08	1.00	0	0	0	0	0
RCRA GENS	11-13-08	0.25	0	0	0	-	0
ERNS	03-03-09	0.25	0	0	0	-	0
SWL	12-17-08	0.50	0	1	0	0	0
State Spills	01-15-09	0.25	0	0	0	-	0
VCP/IOP	01-02-09	0.50	0	0	0	0	0
Regular UST/AST	02-26-09	0.25	0	0	0	-	0
Leaking UST	02-29-09	0.50	0	0	0	0	0
Brownfields	11-17-08	0.50	0	0	0	0	0
Other	03-04-09	0.25	0	0	0	-	0
<b>Total Sites</b>			<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>

- NPL National Priorities List
- CERCLIS Comprehensive Environmental Response, Compensation, and Liability Information System
- NFRAP No Further Remedial Action Planned
- RCRA Resource Conservation and Recovery Act
- TSD Transport, Storage, and Disposal
- COR Corrective Action
- GENS Generator of Hazardous Waste
- ERNS Emergency Response Notification System
- SWL Solid Waste Landfill
- VCP Voluntary Cleanup Program
- IOP Innocent Owner/Operator Program
- UST underground storage tank
- AST aboveground storage tank

**No Action Alternative Environmental Consequences**

No impacts regarding hazardous materials and waste management are anticipated, as the current levee configuration would be retained.

**Proposed Action Environmental Consequences**

The proposed action would not result in noncompliance with federal or state regulations regarding hazardous materials and waste management. No hazardous materials or waste storage, disposal, or spill sites were identified within the proposed ACF levee improvement area. The Hidalgo County Landfill was identified within 1/8 mile from the levee; however, due to the distance from the project area, the landfill would not affect, nor be affected by the levee construction project. Improvements to the ACF levee system under the proposed action would not be affected by waste storage and disposal sites, nor would they affect ongoing management operations of hazardous materials and waste sites. There would be no significant impacts to hazardous materials and waste management.

### 3.8 INDIRECT AND CUMULATIVE IMPACTS

Following completion of the proposed levee improvement project, the levee road would continue providing service for USIBWC, farmers, and adjacent land owners. Other uses of the levee system, such as incorporation of a hike and bike trail, are possible but not currently under consideration by the USIBWC.

Subsection 2.4 identifies the USIBWC action of levee improvements for the Main and North Floodways. The construction project along the Main and North Floodways would occur at the same time as construction activities for the ACF improvement area (Parsons 2007). However, the levees are separated far enough apart that cumulative impacts during construction would not likely occur for the concurrent construction projects. Table 3.10 summarizes the expected cumulative impacts for each resource area considered in this EA.

**Table 3.10 Cumulative Impacts**

Resource Area	Cumulative Effect
Biological Resources	USIBWC's ongoing and planned initiatives are not expected to have an effect on plant communities, wildlife communities, T&E species, or wetlands. On natural resource managed lands adjacent to the floodways, some habitat improvement can be expected. The use of native species in re-vegetation activities of newly constructed levee slopes would support the beneficial effects of these actions.
Cultural	USIBWC's ongoing and planned initiatives would not have any significant cumulative effects in conjunction with the proposed action.
Water	USIBWC's ongoing and planned initiatives would not affect water quality within the floodways. If constructed wetlands were proposed to the USIBWC, they would be evaluated to determine their effect on flood control. The waterways would not be affected by ongoing and planned initiatives.
Land Use	USIBWC's ongoing and planned initiatives would not have any significant cumulative effects in conjunction with the proposed action.
Soil	USIBWC's ongoing and planned initiatives would not have any significant cumulative effects in conjunction with the proposed action.
Community Resources	USIBWC's ongoing and planned initiatives would not have any significant cumulative effects in conjunction with the proposed action.
Environmental Health	USIBWC's ongoing and planned initiatives would not have any significant cumulative effects in conjunction with the proposed action.

## SECTION 4 BEST MANAGEMENT PRACTICES

Section 4 describes best management practices to be implemented as part of the proposed action for improved flood control of the ACF levee system. Best management practices represent specific actions to minimize the potential for impacts to natural and cultural resources. Best management practices are organized within the engineering, natural resources, and cultural resources categories.

### 4.1 ENGINEERING MEASURES

Levee expansion alignment would be optimized, to the extent possible, to avoid impacts to wooded vegetation, wetlands, and other natural resources. Levee footprint expansion is not anticipated along natural resources management areas, or areas with a potential to contain cultural resources areas. Best management practices to avoiding construction impacts on resources near levee improvement areas:

- A storm water pollution prevention plan would be developed during project design to minimize impacts to receiving water, as specified by USEPA regulations for construction projects. The storm water pollution prevention plan would include construction areas along the levee system, as well as equipment staging areas. To prevent sedimentation, sediment fences and/or sediment barriers around wetlands would be installed while construction occurs in affected areas.
- During the project construction, methods such as wetting the soil would be employed to prevent erosion from unvegetated slopes and/or corridors.
- During construction, in areas where construction will occur near water bodies (e.g., Arroyo Colorado, La Feria reservoir), silt curtains or other erosion control devices, such as temporary erosion blankets, will be used to prevent sediment from reaching water bodies.
- During the project construction, existing access points to the levee road would remain in service; because no significant modifications would be made to the levee 3:1 slope ratio, lateral access to the levee road would continue as currently available.

### 4.2 NATURAL RESOURCES

Fill material placement and levee footprint expansion would not be conducted along USFWS natural resources management areas. For additional protection of vegetation and wildlife habitat along the Divisor Dike and ACF improvement area, the following best management practices would be utilized:

- After construction is complete, the expanded levee, as well as any required construction corridor, would be re-vegetated with native herbaceous vegetation as soon as possible. Rapid re-establishment of vegetation will allow native species to become established, and will provide additional erosion control. Based on

preliminary recommendations by the USFWS, native species planted in combination may include the following:

- Annual: Needle Grass (*Bouteloua aristidoides*), a low-growing grass.
- Annual: Sixweeks Threawn (*Aristida adscensionis*), a low-growing grass, 15-50 cm tall.
- Perennial: Red Grama (*Bouteloua trifida*), grows up to 40 cm tall, persists under heavy grazing or mowing traffic.
- Perennial: Buffalograss (*Bouteloua dactyloides*), a low-growing grass up to 20 cm tall.
- Perennial: Side Oats Grama (*Bouteloua curtipendula*) grows up to 90 cm tall, rhizomatous; occurs in counties north of Hidalgo county, occurs in clay/sandy loam soils
- Perennial: Hairy Grama (*Bouteloua hirsute*), grows up to 70 cm tall, short lived perennial, occurs in sandy/sandy loam soils, occurs in Starr and Willacy counties, increases with heavy grazing or mowing.
- Perennial: Purple three awn (*Aristida purpurea var. purpurea*), grows up to 50 cm tall, good on disturbed sites, short lived perennial
- Perennial: Texas cupgrass (*Eriochloa sericea*), grows up to 50-100 cm tall, not persistent in heavy mowing or traffic.

The TPWD has also provided a list of species of grasses, forbs, and vines that may be suitable for re-vegetation. This list of species is provided in Table 4.1.

- Construction activities near natural resources management areas would be coordinated with the USFWS. Bird species in the area that are protected under the Migratory Bird Treaty Act may nest in areas containing trees or other suitable habitat. Activities would be scheduled to occur outside the March through July migratory bird nesting season, when possible, or will not occur in vegetation utilized by T&E species. If construction activities will occur during the nesting season of birds protected under the Migratory Bird Treaty Act, then the areas proposed for disturbances should be surveyed prior to construction to nesting birds to avoid inadvertent destruction of nests and eggs.
- Where possible, cattle grazing should be limited within the floodway and on the levee to prevent compaction, tearing of soil, and increased erosion. In particular, cattle and other livestock should be removed from the levee during re-vegetation efforts to allow plant establishment.
- Prior to and during construction activities, the contractor that will be performing the levee work will provide an environmental monitor to survey for birds protected under the migratory bird treaty act to prevent destruction of nests or eggs during construction activities. In addition, the contractors will use best management practices including a storm water pollution prevention plan.



List of appropriate grasses (G), forbs (F), and vines (V) compiled by TPWD staff that may be utilized in post-levee improvement revegetation efforts.

Scientific Name	Common Name	Form
<i>Andropogon gerardii</i>	Big Bluestem	G
<i>Andropogon glomeratus</i>	Bushy Bluestem	G
<i>Bothriochloa longipaniculata</i>	Longspike Beardgrass	G
<i>Bothriochloa torreyana</i>	Silver Beardgrass	G
<i>Bouteloua hirsuta</i>	Hairy Grama	G
<i>Bouteloua rigidisetata</i>	Texas Grama	G
<i>Bouteloua trifida</i>	Red Grama	G
<i>Bromus texensis</i>	Texas Brome	G
<i>Buchloe dactyloides</i>	Buffalo Grass	G
<i>Eragrostis intermedia</i>	Plains Lovegrass	G
<i>Eragrostis spectabilis</i>	Purple Lovegrass	G
<i>Eragrostis spicata</i>	Spicate Lovegrass	G
<i>Hilaria belangeria</i>	Curlymesquite	G
<i>Leersia monandra</i>	Bunch Cutgrass	G
<i>Leptochloa fascicularis</i>	Bearded Sprangletop	G
<i>Leptochloa filiformis</i>	Red Sprangletop	G
<i>Neeragrostis reptans</i>	Creeping Lovegrass	G
<i>Panicum hirsutum</i>	Hairy Panicum	G
<i>Panicum virgatum</i>	Switchgrass	G
<i>Paspalum langei</i>	Rustyseed Paspalum	G
<i>Paspalum plicatulum</i>	Brownseed Panicum	G
<i>Tridens texanus</i>	Texas Tridens	G
<i>Schizachyrium scoparium</i>	Little Bluestem	G
<i>Sporobolus buckleyi</i>	Buckley Dropseed	G
<i>Abutilon fruticosum</i>	Indian Mallow	F
<i>Ambrosia psilostachya</i>	Western Ragweed	F
<i>Aster spinosa</i>	Spiny Aster	F
<i>Aster subulatus</i>	Hierba del Marano	F
<i>Calyptocarpus vialis</i>	Straggler Daisy	F
<i>Cyperus rotundus</i>	Purple Nutsedge	F
<i>Galium aparine</i>	Clingon Bedstraw	F
<i>Gaura parviflora</i>	Gaura	F
<i>Helianthus annuus</i>	Common Sunflower	F
<i>Heterotheca latifolia</i>	Camphor Weed	F
<i>Malvastrum americanum</i>	Malva Loca	F
<i>Nicotiana repanda</i>	Wild Tobacco	F
<i>Oxalis stricta</i> (=dillenii)	Yellow Wood-Sorrel	F
<i>Petiveria alliacea</i>	Garlic-Weed	F
<i>Plantago rhodosperma</i>	Red-seeded Plantain	F

Scientific Name	Common Name	Form
<i>Plumbago scandens</i>	Hierba de Alacran	F
<i>Ratibida columnaris</i>	Mexican Hat	F
<i>Rhynchosida physocalyx</i>	Rhynchosida	F
<i>Ruellia drummondiana</i>	Wild Petunia	F
<i>Ruellia runyonii</i>	Wild Petunia	F
<i>Sida spinosa</i>	Prickly Sida	F
<i>Solanum americanum</i>	American Nightshade	F
<i>Solanum triquetum</i>	Texas Nightshade	F
<i>Sonchus oleraceus</i>	Sow Thistle	F
<i>Stellaria prostrata</i>	Prostrate starwort	F
<i>Urtica chamaedryoides</i>	Nettle	F
<i>Verbesina enceloides</i>	Cowpen Daisy	F
<i>Verbesina microptera</i>	Frostweed	F
<i>Cardiospermum halicacabum</i>	Balloon-Vine	V
<i>Cissus incisa</i>	Marine Ivy, Ivy Treebine	V
<i>Clematis drummondii</i>	Barbas de Chivato	V
<i>Cocculus diversifolius</i>	Snailseed Vine	V
<i>Matelea reticulata</i>	Pearl Milkweed	V
<i>Sarcostemma cynanchoides</i>	Climbing Milkweed, Twine Vine	V
<i>Urvillea ulmacea</i>	Urvillea	V

### 4.3 CULTURAL RESOURCES

Mitigation measures reduce adverse effects on cultural resources. The assumed (and preferred mitigation) is avoidance. Avoidance preserves the integrity of cultural resources, protects their research potential (i.e., their NRHP eligibility), and also avoids costs and potential construction delays associated with data recovery. The USIBWC is currently developing a Programmatic Agreement with THC to identify appropriate treatments for routine O&M activities as well as specific mitigation measures for NRHP-eligible resources along Rio Grande flood control projects, including the Arroyo Colorado segments of the LRGFCP.

#### *Archaeological Sites*

Historically, data recovery of archaeological sites through professional techniques such as surface collection, mapping, photography, subsurface excavation, technical report preparation, and dissemination, has been the standard mitigation measure. Under the revised Section 106 regulations (36CFR800.5(a)(2)(i)), data recovery conducted as mitigation is now considered, in and of itself, an adverse effect. Because intact prehistoric archaeological resources that may contain sufficient information to be NRHP eligible may occur in the APE in areas designated as high probability for archaeological resources, a Phase I archaeological survey is being conducted prior to ground disturbing or levee improvement activities.

The Phase I survey will consist of shovel testing for shallowly buried deposits (<3 feet deep), artifact analysis, and report preparation to identify archaeological sites to determine their extent and integrity. If intact archaeological sites are identified during Phase I investigations, two approaches may be employed, depending on the effect.

For those sites that could be buried by the addition of fill to expand the footprint of the levee, the USIBWC may implement, as appropriate, recommendations for appropriate techniques to intentionally bury archaeological sites to avoid potential adverse effects (Texas Historical Commission 1999). Commercial material, compatible in physical and chemical characteristics with the existing material comprising the levee (and surrounding floodway), would be used for the expansion. Existing use of the restricted-access road on the crown of the dike and levee would continue with no increase in traffic that could result in additional impacts (e.g., soil compaction). The depth of additional capping material would not exceed 6.6 feet in nearly all areas of the dike and levee. The levee cross section diagrams shown in Subsection 2.2 schematically illustrate how soil would be added to the existing crown and slopes to expand the levee. Combined, these practices would avoid potential adverse impacts to archaeological sites that may be identified as part of the cultural resources survey.

In cases where identified archaeological sites cannot be avoided by project redesign or protected by capping using the recommended techniques, Phase II cultural resources studies would be designed in consultation with the Texas State Historic Preservation Office (SHPO), and implemented to determine the NRHP eligibility of the cultural resources. If NRHP-eligible resources occur and cannot be avoided through project redesign, data recovery investigations would be designed in consultation with the Texas SHPO and implemented prior to construction.

### ***Architectural Resources***

Architectural studies to determine the NRHP eligibility of the unevaluated architectural resources in the APE is being conducted in accordance with standards established by the Texas SHPO (THC) and implemented prior to project activities. If NRHP-eligible resources occur and cannot be avoided through project redesign, the need for additional investigations, such as Phase III data recovery, would be determined in consultation with the THC and implemented prior to construction. The THC has reviewed and provided preliminary comments on structural modifications that would result from proposed levee expansion (Figure 3.x) and would potentially affect NRHP-eligible resources. The THC indicated the effect would not be adverse provided they are mitigated by appropriate documentation of the structures prior to construction. Mitigation measures may include, but not be limited to, renovation using architecturally compatible design and materials and documentation through the Historic American Engineering Record (HAER) program administered by the National Park Service. Documentation of structures to HAER standards to preserve the contextual and architectural information of the resource even if the resource is demolished.

### ***Native American Resources***

Mitigation measures for Native American resources would be determined in consultation with the Comanche Nation and Kiowa Tribe of Oklahoma, and the THC. Established USIBWC consultation procedures would be followed during this consultation process. However, neither Tribe has identified resources or issues of concern in the project area.

## **SECTION 5 ENVIRONMENTAL COMPLIANCE AND COORDINATION**

### **5.1 PUBLIC REVIEW OF DRAFT EA**

Copies of the Draft EA were distributed for a 30-day public review period to agency representatives, general managers of irrigation districts, and other interested parties, as listed in Table 5.1. Comments received on the Draft EA, provided in Appendix A, were evaluated and addressed in the Final EA, as applicable.

**Table 5.1 Distribution List for the Environmental Assessment**

Federal Agencies	State Agencies (...continued)
Wilson Palmer Jr. Port of Harlingen Authority P O Box 3646 Harlingen, Texas 78551	Kendall Keyes, Natural Resources Coordinator Texas Parks and Wildlife Department State Parks Division, Region 2 715 Highway 35 South Rockport, TX 78382
Bryan Winton , Refuge Manager Lower Rio Grande Valley National Wildlife Refuge U.S. Fish and Wildlife Service Rt. 2, Box 202-A Alamo, TX 78516	Steve Benn, Manager Texas Parks and Wildlife Department Las Palomas WMA, Lower Rio Grande Units 154B Lakeview Drive Weslaco, TX 78596
Ernesto Reyes U.S. Fish and Wildlife Service, Ecological Services Rt. 2, Box 202-A Highway 281, Farm Road 907 Alamo, TX 78516	Jennifer Owen Estero Llano Grande State Park 154A Lakeview Drive Weslaco, Texas 78596
Lloyd Mullins Unit Leader, Corpus Christi Field Office U.S. Army Corps of Engineers 5151 Flynn Parkway, Suite 306 Corpus Christi, Texas 78411-4318	Mark Lingo Texas Parks & Wildlife Lower Laguna Madre Ecosystem Leader 95 Fish Hatchery Road Brownsville, TX 78520
Michael P. Jansky, P.E. Regional Environmental Coordinator Environmental Protection Agency, Region 6 1445 Ross Avenue Suite 1200 Dallas, TX 75202-2733	Willy Cupit Texas Parks & Wildlife Lower Laguna Madre Ecosystem Leader 95 Fish Hatchery Road Brownsville, TX 78520
Cruz J. Rodriguez, Assistant Chief Patrol Agent, McAllen Sector U.S. Customs and Border Protection, 2301 Main Street McAllen, Texas 78503	David Gallindor Texas Commission on Environmental Quality Standards Implementation Team, MC-150 P.O. BOX 13087 Austin, TX 78753
<b>State Agencies</b>	Roger Miranda, P.G. Texas Commission on Environmental Quality MC203 P.O. BOX 13087 Austin, Texas 78711-3087
Russell Hooten, Habitat Assessment Biologist Texas Parks and Wildlife Department Wildlife Habitat Assessment Program, TAMU-CC Natural Resource Center Building, Suite 2501, Unit 5846 6300 Ocean Drive, NRC Suite 2501 Corpus Christi, TX 78412	Kathy Boydston Texas Parks and Wildlife Department Natural Resources Coordinator 4200 Smith School Road Austin, TX 78744
Leslie Williams Texas Parks and Wildlife Department Wildlife Habitat Assessment Program Natural Resource Center Building, Suite 2501, Unit 5846 6300 Ocean Drive, NRC Suite 2501 Corpus Christi, TX 78412	Debra Beene Division of Archaeology Texas Historical Commission 1511 Colorado Austin, TX 78701
Rebecca Hensley Texas Parks and Wildlife Department Dickinson Regional Office 1502 FM 517 E Dickinson, TX 77539	Rachel Leibowitz Division of Architecture Texas Historical Commission 1511 Colorado Austin, TX 78701

**Table 5.1 Distribution List for the Environmental Assessment (continued)**

Native American Parties	Irrigation Districts (...continued)
Chairman Wallace Coffey Comanche Nation 584 NW Bingo Road HC 32 Box 1720 Lawton, Oklahoma 73502	Sonia Kaniger, General Manager Cameron County Drainage District # 2 & #3 P.O. Box 687 San Benito, Texas 78586
Chairman Don Tofpi Kiowa Tribe of Oklahoma Hwy 9 West P.O. Box 369 Carnegie, Oklahoma 73015-0369	Alan Moore Cameron County Drainage District #5 301 East Pierce Harlingen, Texas 78550
Regional Agencies/Interested Parties	Other Interested Parties
Kenneth N. Jones, Jr., Executive Director, Lower Rio Grande Valley State Planning Region (21) 311 N. 15th McAllen, Texas 78501-4705	Jaime J Flores, PG Arroyo Colorado Watershed Coordinator 2401 E Hwy 83 Weslaco, TX 78596
Honorable Sylvia Handy, Chairman Lower Rio Grande Valley State Planning Region (21) County Commissioner, Hidalgo County 1902 Joe Stephens Avenue Weslaco, Texas 78596-3702	Joel Quintanilla, Mayor P.O. Box 837 Mercedes, Texas 78570
Ludy Saenz Texas Reviewer and Comment System Coordinator Lower Rio Grande Valley Development Council 311 North 15 <sup>th</sup> Street McAllen, Texas 78501-4705	Mary Lou Campbell Frontera Audubon/Sierra Club 7030 Mile 2 3/4 East Mercedes, Texas 78570
Irrigation Districts	Christine Rakestraw Coalition to Save The Arroyo Colorado Fun N Sun RV Park 1400 Zillock Rd, M169 San Benito, TX 78586
Wayne Halbert – Manager Harlingen Irrigation District CC #1 and Adams Garden ID #19 P.O. Box 148 Harlingen, TX 78551	Jim Tabak President Valley Land Fund 2400 N. 10th St., Suite A McAllen, TX 78501
Rick Smith - Manager La Feria Irrigation District, DD #3 and Santa Maria IC CC #4 P.O. Box 158 La Feria, TX 78559	Laura De La Garza Board Member, Lower Rio Grande Citizen's Forum 2814 Treasure Hills Blvd. "C" Harlingen, Texas 78550
Frank White, General Manager Hidalgo and Cameron Counties Irrigation District No. 9 (Mercedes) P.O. Box 237 Mercedes, TX 78570	Professor Paul Friesema Environmental Policy and Culture Program 304 Scott Hall 601 University Place Northwestern University Evanston, Il 60208-1006
Archie Miles Hidalgo County Water and Irrigation District No 5 FM 1015 & Jonny Vela Street Progresso, Texas 78579	

## 5.2 LIST OF CONTRIBUTORS

Tables 5.2 and 5.3 list contributors to the preparation of this Environmental Assessment for improvements to the ACF Levee System, and development of technical support studies.

**Table 5.2 Preparers of the Environmental Assessment and Technical Studies**

Name	Organization	Degree	Years Experience	Project Role
Carlos Victoria-Rueda	Parsons	Ph.D., Environmental Engineering	25	Project manager; water resources evaluation
Anthony Davis	Parsons	B.S., Civil Engineering	32	Air quality, environmental health, socioeconomics
James Hinson	Parsons	M.S., Wildlife Science	20	Vegetation, wetlands and wildlife analyses; field studies supervision
Justin Kirk	Parsons	B.S. Environmental Sciences	10	Land use, soil, environmental health
Jill Noel	Parsons	M.S., Botany	8	Vegetation, threatened and endangered species, field survey, biological resources technical sections
Sherrie Keenan	Parsons	B.A., Journalism	35	Technical editor
Rachael Mangum	Parsons	M.A. Anthropology	9	Cultural resources specialist, field survey, cultural resources technical sections
Susan Bupp	Parsons	M.A. Anthropology	33	Cultural resources, document review
Seth Wilcher	Parsons	B.S. History	4	Cultural resources/ Historic structures
Erin Atkinson	Parsons	M.A. Geography	4	Cultural resources

**Table 5.3 Technical Review of the Environmental Assessment**

Name	Agency	Degree	Years Experience	Project Role
Rita Crites	USIBWC Environmental Protection Division	B.S. Biology M.S. in progress	13	Project manager
Carlos Peña	USIBWC Environmental Protection Division	B.S. Civil Engineering	22	NEPA compliance; document review
Raymundo Aguirre	USIBWC Engineering Division	Ph.D. Civil Engineering	49	Engineering, hydraulics and hydrology; document review
Rodolfo Montero	USIBWC Assistant Area Operations Manager, Mercedes Field Office	B.S. Civil Engineering	13	LRGFCP Assistant Area Operations Manager; document review



## **SECTION 6 REFERENCES**

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**APPENDIX A**  
**COMMENT LETTERS ON THE DRAFT EA**

SUBJECT: Quincy Colorado Broadway

Dear Applicant:

Your project has been given the tracking number SWG-2009-00388 and has been assigned to Marie Attilio.

Please be advised that applications received in this office are assigned on a first-come, first-served basis. Once the application is assigned, please allow the project manager time to review your application. He/she will contact you if further information is required.

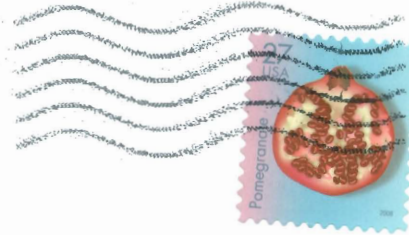
Please reference the above number on any future correspondence to this office. Our telephone number is 361-814-5847.

Thank you.

---

Department of the Army  
US Army Corps of Engineers  
Regulatory Field Office  
5151 Flynn Parkway Suite 306  
Corpus Christi, TX 78411-4318

CORPUS CHRISTI  
TX 784 11  
MAY 2009 PM



Ms. Rita Crites  
US Section – IBWC  
4171 N. Mesa C-100  
El Paso, TX 79902

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TEXAS HISTORICAL COMMISSION

*real places telling real stories*

April 21, 2009

Carlos Pena, Jr., P.E.  
Division Engineer  
Environmental Management Division  
International Boundary and Water Commission  
The Commons, Building C, Suite 310  
4171 N. Mesa Street  
El Paso, Texas 79902

Re: Project review under Section 106 of the National Historic Preservation Act of 1966,  
Proposed Divisor Dike and Arroyo Colorado Floodway levee expansion, Hidalgo and  
Cameron Counties County, Texas (IBWC)

Dear Mr. Pena:

Thank you for the correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The review staff, led by Debra L. Beene, has completed its review. We understand that you need us to comment on the proposed levee expansion located along the Divisor Dike and Arroyo Colorado. As well, we understand that the Environmental Assessment (EA) will be published prior to the completion of the cultural resources surveys to evaluate the archeological and architectural resources.

Under these circumstances, the language in the EA must clearly state that all cultural resource survey reports will be submitted to the TxSHPO for review and comment. As well, IBWC will adhere to the TxSHPO's recommendations to protect or mitigate all significant cultural resources, and follow all Section 106 procedures prior to any ground disturbance. With these stipulations in place, the project should not have an effect on historic properties.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. We thank you for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Debra L. Beene at 512/463-5865.**

Sincerely,



for

F. Lawrence Oaks, State Historic Preservation Officer

FLO/dlb





Kiowa Culture Preservation Authority  
P.O. Box 885 Carnegie, OK 73015  
(580)654-2300 ext. 370 Fax: (580)654-1538



Chairman~ George Tahbone Sr  
Vice-Chairman~ Joe B. Lucero Hobay  
Secretary/Treasurer~ Francine Worthington

April 24, 2009

Ms. Rita Crites  
United States Section  
International Boundary and Water Commission  
4171 North Mesa C-100  
El Paso, Texas 79902

**RE: Improvements to the Arroyo Colorado North Levee Project**

Dear Ms. Crites,

In response to your request, regarding the above referenced projects and upon review by staff of this office, the Kiowa Tribe of Oklahoma has no comment at this time. However, in the advent of change or upon additional findings in regards to the same, we respectfully request that your office keep us advised in advance of work performed.

For additional information or questions contact the Kiowa Culture Preservation Authority. Our office can be reached by telephone at (580)654-2300 ext. 370.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jamē Lyn Eskew".

Jamē Lyn Eskew, Administrative Assistant  
Kiowa Culture Preservation Authority



United States Department of the Interior  
FISH AND WILDLIFE SERVICE  
Ecological Services - LRGV SubOffice  
Phone: (956) 784-7560 Fax: (956) 787-0547  
Rt. 2 Box 202-A  
Alamo, TX 78516  
May 6, 2009

Ms. Rita Crites  
United States Section  
International Boundary and Water Commission  
4171 North Mesa C-100  
El Paso, Texas 79902

Consultation No. 21410-2009-I-0204

Dear Ms. Crites:

This responds to a letter received on April 27, 2009 regarding the Draft Environmental Assessment and the effects of the proposed flood control and flood containment capacity along the Divisor Dike and Arroyo Colorado Floodway (ACF) on species federally listed or proposed for listing as threatened or endangered occurring within Cameron and Hidalgo County, Texas. In addition, your project was evaluated with respect to wetlands and other important fish and wildlife resources.

It's the Service's understanding that U.S. International Boundary and Water Commission is proposing to raise approximately 11 miles of levee along the Divisor Dike and Arroyo Colorado Floodway beginning at the Divisor Dike near the juncture point of the ACF and the North Floodway in Hidalgo County and ending at the town of Rio Hondo in Cameron County to address the 100-year flood protection criteria established by the Federal Emergency Management Administration. Raising the levee from the centerline of the levee is assumed for analyses, but raising the levee on the riverside of the levee is possible where right-of-way (ROW) is a constraint.

Footprint expansion, when required will take place inside the maintained floodway, and entirely within the USIBWC ROW. In some instances, adjustment in levee slope will be made to eliminate the need for levee footprint expansion when required due to construction constraints or for protection of biological or culture resources. The proposed action will raise the levee using a centered expansion. The proposed action would increase the height of the levee up to 2 feet for approximately 8.6 percent of the 11 mile segment, approximately 4 percent would increase 2 to 4 feet, approximately 2.4 percent would be increased from 4 to 6 feet, and 1.2 percent of the segment, a levee would be constructed to a height of 6 to 8 feet in areas where there are currently no levees. The proposed levee expansion will remove non-native grasslands on the levee slopes and adjacent areas. Native grasses will be planted at the completion of the project. The levee expansion will not occur in wooded areas. There are wetlands in the vicinity of the proposed levee expansion, but the existing wetlands are outside the potential expansion area and will not be affected.

Any staging areas for heavy equipment or soil storage needed for construction activities associated with the proposed action would be located outside the USIBWC ROW and Area of Potential Effect. The Service needs to be informed by USIBWC before construction begins on where the potential borrow sites and staging areas will be located to make sure there will be no potential impacts to habitat and threatened and endangered species. Vehicles would access the project area by means of existing levee access or farm roads. No new haul roads would be constructed. The majority of the work to raise the levee would occur on top of the existing levee.


Vegetation along the levee corridor of the ACF levee system was evaluated during field surveys conducted during April 6-9, 2009 to identify plant communities, threatened and endangered species habitat, and potential jurisdictional wetlands. One small tract of land is owned and/managed by the Service as part of the Lower Rio Grande Valley National Wildlife Refuge. This tract of land intercepts the ACF at approximately levee mile 8. However, the ACF levee in this area would be raised less than 2 feet, and no levee footprint expansion would occur. Therefore, the USFWS tract would not be affected by the potential levee expansion.

Regarding other important fish and wildlife resources, please keep in mind that many bird species protected under the Migratory Bird Treaty Act may nest in any area containing trees or other suitable habitat. As the Federal agency responsible for the protection of migratory birds, the Service recommends vegetation disturbances potentially associated with these activities avoid the general nesting period of March through August or that areas proposed for disturbance be surveyed first for nesting birds, in order to avoid the inadvertent destruction of nests, eggs, etc.

You have made a determination that this project would not result in any adverse impacts on federally listed threatened or endangered species or critical habitat. Based on the above understanding, the Service believes that you have complied with section 7(a) (2) of the Endangered Species Act. We appreciate the opportunity to provide pre-planning information and look forward to providing any further assistance. Attached is a list of recommended native grasses that can be used in a combination for reseeding the levees.

If we can be of further assistance, please contact Ernesto Reyes at the above letterhead and telephone number.

Sincerely,



Ernesto Reyes Jr.  
Senior Fish & Wildlife Biologist  
For  
Allan M. Strand  
Field Supervisor

cc:  
Field Supervisor, U.S. Fish and Wildlife Service, Corpus Christi, TX  
Bryan Winton, Lower Rio Grande Valley National Wildlife Refuge Manager, Alamo, TX

## Recommended Native Grasses

### Annuals:

*Bouteloua aristidoides*: Needle Grass

low-growing

*Aristida adscensionis*: Sixweeks Threeawn

15-50 cm tall

### Perennials:

*Bouteloua trifida*: Red Grama

up to 40 cm tall, persists under heavy grazing (mowing, traffic)

*Bouteloua dactyloides*: Buffalograss

up to 20 cm tall

*Bouteloua rigidiseta*: Texas Grama

up to 40 cm tall, increases under heavy grazing (mowing), occurs in counties north of Hidalgo county

*Bouteloua curtipendula*: Side Oats Grama

up to 90 cm tall, rhizomatous perennial, occurs in counties north of Hidalgo county, occurs in clay/sandy loam soils

*Bouteloua hirsuta*: Hairy Grama

up to 70 cm tall, short lived perennial, occurs in sandy/sandy loam soils, occurs in Starr and Willacy counties, increases with heavy grazing (mowing)

*Aristida purpurea* var. *purpurea*: Purple three awn

up to 50 cm tall, good on disturbed sites, short lived perenial

*Eriochloa sericea*: Texas cupgrass

50-100 cm tall, not persistent in heavy mowing or traffic

**TEXAS HISTORICAL COMMISSION**  
*real places telling real stories*

May 11, 2009

Rita Crites  
United States Section  
International Boundary and Water Commission  
4171 North Mesa C-100  
El Paso, TX 79902

Re: *Project review under Section 106 of the National Historic Preservation Act of 1966  
Draft Environmental Assessment: Improvements to the Arroyo Colorado North Levee Project  
(Divisor Dike and Arroyo Colorado Floodway), Cameron and Hidalgo Counties (200907840,  
USIBWC)*

Dear Ms. Crites,

Thank you for your correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The Draft Environmental Assessment (EA) was received by our agency on April 29, 2009. We appreciate the inclusion of our agency in the early stages of this project and acknowledge that the Section 106 process has been initiated.

We look forward to receiving the completed cultural resources survey and will be able to discuss determinations of both eligibility and effect at that time. If a revised EA is submitted to our office in the future, please provide a general summary of all modified information within the cover letter.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Kim Barker at 512/463-8952.**

Sincerely,



Kim Barker, Project Reviewer  
for: Mark S. Wolfe, Deputy State Historic Preservation Officer

cc: Larry Lof, Chair, Cameron County Historical Commission  
Adela Ortega, Chair, Hidalgo County Historical Commission

MSW/KAB





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May 15, 2009

Ms. Rita Crites  
United States Section  
International Boundary and Water Commission  
4171 North Mesa C-100  
El Paso, Texas 79902  
[ritacrites@ibc.gov](mailto:ritacrites@ibc.gov)

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---

Carter P. Smith  
Executive Director

Re: Draft Environmental Assessment for Improvements to the Arroyo Colorado Floodway in Hidalgo and Cameron Counties

Texas Parks and Wildlife Department (TPWD) staff has reviewed the Draft Environmental Assessment for Improvements to the Arroyo Colorado North Levee Project dated April 2009. The applicant requests authorization for conducting levee rehabilitation on the Arroyo Colorado Floodway (ACF) levee system.

The proposed project would take place along the Divisor Dike of the ACF beginning at Divisor Dike near the juncture point of the Arroyo Colorado and the North Floodway in Hidalgo County and ending at the town of Rio Hondo in Cameron County, Texas. The proposed levee rehabilitation improvements consist of: 1) raising the top-of-levee elevation; 2) conducting geotechnical investigations and testing to determine the type and extent of any required remediation improvements due to slope stability, seepage, levee settlement, and any other geotechnical issues that may cause levee failure during a 100-year flood event; and 3) modifying, if necessary, hardware or structures located along the levee reaches. The proposed levee rehabilitation project includes 2.1 miles of the Divisor Dike, and the upper 8.9 miles of the Arroyo Colorado north levee that contain areas of rich farm and citrus land near the municipalities of Mercedes and La Feria, Texas.

The proposed project is located in a segment of the Arroyo Colorado which is classified by the Texas Commission on Environmental Quality (TCEQ) as impaired (Segment 2202 bacteria, mercury in edible tissue, and PCBs in edible tissue). TPWD personnel conducted a site visit of the project location on May 13, 2009. One of the most heavily degraded segments of the levee was assessed during the site visit. Cattle grazing activity on and adjacent to the levee in this particular segment appeared to be the cause for the degradation of the levee.

Examination of the aerial imagery on other proposed construction areas of the levee also indicated heavy grazing activity. Cattle grazing in riparian areas often trample and consume riparian vegetation which leads to increased runoff and erosion. Heavy grazing can also compact the soil and reduce infiltration that in

turn diminishes the ability of riparian areas to absorb and hold water. This can result in an increased amount of sediments and nutrients entering the adjacent water body. Sediments can become suspended in the water column and cause chemical reactions which consume oxygen used by aquatic organisms and result in fish kills.

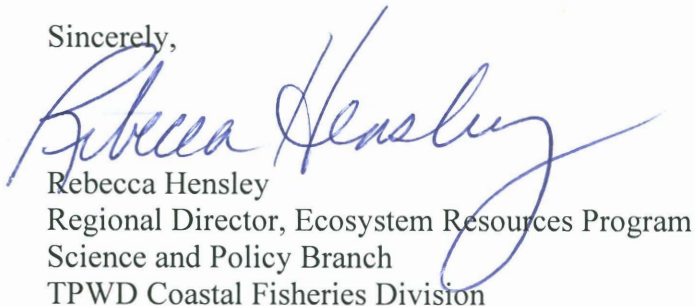
TPWD recommends that silt curtains and other erosion control methods be employed to minimize sediment rich runoff from reaching the Arroyo Colorado both prior to and during construction activities. Likewise, revegetation with native grasses should occur immediately following the completion of construction activities for each segment of the levee. In order for revegetation efforts to be successful, TPWD also recommends that cattle grazing be restricted on the levee until the newly planted vegetation is fully established.

TPWD believes that the primary cause for the degradation of certain areas of the levee is the direct result of overgrazing. At minimum, cattle grazing should be restricted throughout the entire length of the levee and its right-of-way. Future impacts to the fish and wildlife resources of Texas could be minimized if cattle grazing were prohibited on the levee and in the riparian areas adjacent to the levee. Ignoring the damaging effects of overgrazing on the levee could ultimately result in the failure of the levee during a 100-year flood event.

TPWD recommends that the International Boundary and Water Commission not conduct the proposed project as it is presented in the project plans. The International Boundary and Water Commission should provide revised project plans which address the above recommendations.

Questions can be directed to Willy Cupit (956-350-4491) in Brownsville or William "Jamie" Schubert (281-534-0135) in Dickinson.

Sincerely,



Rebecca Hensley  
Regional Director, Ecosystem Resources Program  
Science and Policy Branch  
TPWD Coastal Fisheries Division

RH: WWC



**International Boundary and Water Commission United States and Mexico  
Attn: Rita Crites  
4171 N. Mesa Street  
El Paso ,79902**

**May 20, 2009**

**Re: EA for Proposed Flood Control Improvements along the  
Divisor Dike and Arroyo Colorado Floodway (ACF) Project located  
Within Hidalgo and Cameron Counties, Texas**

Dear Ms.Rita Crites:

In response to your request, the above referenced project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of *no current listings* has been identified. Based on this information, topographic/hydrologic setting of your project and level of ground disturbance proposed, archeological materials are not likely to be encountered.

Please contact this office at (580) 595-9960/9393 if you require additional information on this project.

This review is performed in order to locate, record, and preserve the Comanche Nation and State of Texas prehistoric and historic cultural heritage, in cooperation with the State Historic Preservation Office. In addition to our review comments, you are reminded of your responsibility to identify and consult with the appropriate parties under 36CFR Part 800.2.

Sincerely,

A handwritten signature in black ink, appearing to read "Theodore Villicana".

Theodore Villicana  
Resource Technician  
Comanche Nation Historic Preservation Office





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May 26, 2009

Rita Crites
United States Section
International Boundary and Water Commission
4171 North Mesa, Suite C-100
El Paso, TX 79902

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John D. Parker
Lufkin

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

Re: Review of Draft Environmental Assessment for Improvements to the Arroyo Colorado Floodway, Comen on and Hidalgo counties, Texas

Dear Ms. Crites:

This letter is in response to your request for a review of the Draft Environmental Assessment (DEA) prepared to assess the potential impacts associated with the proposed project referenced above. The U.S. Section, International Boundary and Water Commission (USIBWC) is proposing to place fill material in approximately 16% of an 11 mile segment of the levee system along the Arroyo Colorado. Fill would be placed in areas to heighten the levee in order to meet current design criterion for flood protection. Texas Parks and Wildlife Department (TPWD) staff reviewed the information provided and has comments and recommendations concerning the following:

- Impacts to fish, wildlife and habitat resources
• Post-construction revegetation
• Corrections to draft EA

Impacts to fish, wildlife and habitat resources

In construction areas, flood control improvements would permanently impact invasive grasses and weedy species along the levee slopes. No woody species would be cleared to accommodate levee rehabilitation. Appropriate best management practices (BMPs) would be used to avoid/minimize potential sedimentation, erosion, and dust impacts.

Based on the information presented and the proposed BMPs to be used, TPWD concur that impacts to fish, wildlife and habitat resources should be minimal.

Post-construction revegetation

The information provided states that following construction, the expanded levee as well as any required construction corridors would be revegetated with native herbaceous vegetation. Following construction, these areas are expected to recover quickly. TPWD recommend seeding as quickly as possible following

Ms. Crites  
Page 2 of 2  
May 26, 2009

construction to minimize potential erosion and sedimentation from disturbed areas.

Information regarding specific species that would be used in revegetation efforts was not provided. In order to remove any ambiguity, TPWD recommends including language that specifies that plant species used in revegetation efforts not only be native, but also be species that currently occur near the habitats that would be impacted by the project or natives indigenous to Cameron and Hidalgo counties. This will decrease the likelihood of selecting plants that may be native to Texas but not appropriate for the area. Attached are lists of appropriate grasses, forbs, and vines that have been compiled by TPWD staff.

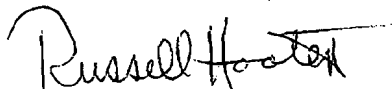
#### Corrections to draft EA

On Figure 2.1, the two urban areas along US 83 that are approximately five miles apart from one another are identified as McAllen and Harlingen. These areas are actually Mercedes and La Feria, respectively. (McAllen and Harlingen are more than 35 miles from each other).

To be consistent, in Appendix B, the word "Amphibian" should be inserted in the row above the *Black-spotted newt* entry. Also, TPWD recommends including entries in the "Habitat Presence..." column of Appendix B for state listed species.

TPWD appreciates the opportunity to review this project. Please contact me at (361) 825-3240 if you have any questions regarding our comments.

Sincerely,



Russell Hooten  
Wildlife Habitat Assessment Program  
Wildlife Division

/rh 14019

Attachment

SENT VIA EMAIL

May 25, 2009

Ms. Rita Crites  
U.S. Section, International Boundary and Water Commission (USIBWC)  
4171 N. Mesa, C-100  
El Paso, Texas 79902

Re: Draft Environmental Assessment, Improvements to the Arroyo Colorado North Levee Project

Dear Ms. Crites,

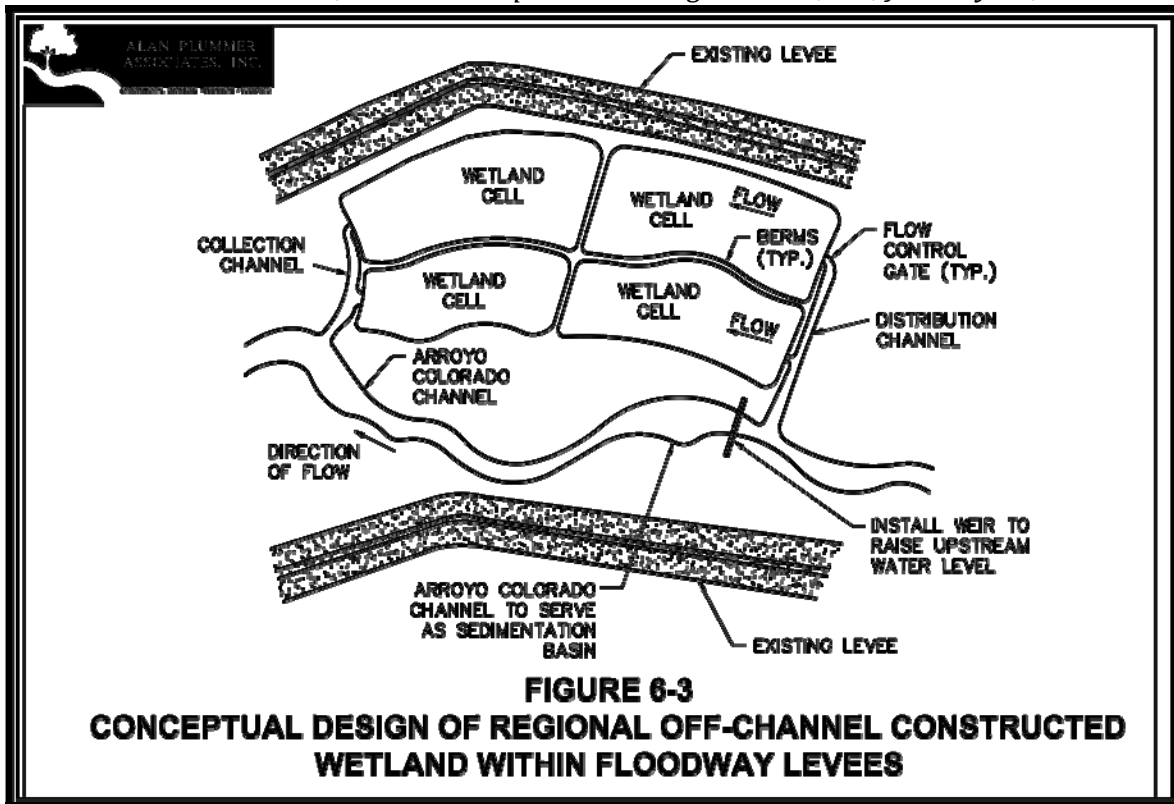
As a board member of the Lower Rio Grande Citizen's Forum and former watershed coordinator for the Arroyo Colorado, I appreciate the opportunity to comment on Draft Environmental Assessment: Improvements to the Arroyo Colorado North Levee Project dated April 2009. I am in general agreement with the proposed actions for flood control improvements and the draft finding of no significant impact. However, I wish to once again to bring attention to the fact that the Arroyo Colorado is an impaired waterbody of the state of Texas and of the existence of a watershed protection plan to improve the quality of water within the Arroyo Colorado and the receiving Lower Laguna Madre.

The Arroyo Colorado is listed in the State of Texas' Clean Water Act 303(d) list due to excessive levels of bacteria and low dissolved oxygen. In 2007, the Arroyo Colorado Watershed Partnership published the document titled *A Watershed Protection Plan for the Arroyo Colorado*. This plan identifies strategies for water quality improvements within the Arroyo Colorado including recommendations for the construction of individual and regional wetland systems.

The plan recommends that a regional wetland system be constructed in the Main Floodway/Arroyo Colorado near Llano Grande Lake. Although, a detailed design for this regional wetland system within the floodway has not yet been developed, see Figure 1 for preliminary design that could be used to estimate the potential effect of such a system on water surface elevation during a 100-year flood event. Note that the plan recommends a 300-acre wetland system in the vicinity of Llano Grande, however due to landowner constraints, a wetland system may need to be developed at a different downstream location within the levees and it could be greater in size.

It is recommended that the IBWC incorporate a future scenario(s) into the estimates of water surface elevation in the floodway that includes any increases in roughness and/or impediments to flow associated with a low-growing grass-type wetland system in the floodplain of the Arroyo Colorado; and to accommodate any simulated increases in water surface elevation resulting from implementation of these features in the design of the levee rehabilitation project.

Figure 1. Taken from the page 6-10 in the Final Technical Report: Feasibility Study for Habitat Restoration/Modification to Improve Water Quality in the Arroyo Colorado by Alan Plummer Associates, Inc and Crespo Consulting Services, Inc, January 18, 2006.



I appreciate Appendix C, Wetland Issues in the Arroyo Colorado, as a placeholder and request that information about the watershed protection plan be provided in the ecological assessment highlighting the potential for wetland development, particularly within the Arroyo Colorado Floodway. The watershed plan for the Arroyo Colorado can be view in its entirety at [www.arroyocolorado.org](http://www.arroyocolorado.org). Also see *Feasibility Study for Habitat Restoration/Modification to Improve Water Quality in the Arroyo Colorado: Final Technical Report* by Alan Plummer Associates, Inc and Crespo Consulting Services, Inc, January 18, 2006; <http://www.arroyocolorado.org/WPP.php>

I acknowledge and recognize the mandate for flood protection, boundary stabilization and water delivery as the top priority and the core mission of the USIBWC. I also acknowledge the USIBWC adoption of additional goals that include improvements in water use, quality, conservation, and multipurpose utilization of projects in support of local or regional initiatives for recreational use and environmental improvement. With this, I also bring to your attention the desire and need for a regional hike and bike trail that could not only benefit communities proximate to the levees, but also benefit the region as a whole. The cities and residents of La Feria, Mercedes, and Weslaco could directly benefit from the ability

to use the levees as a hike and bike trail and I recommend that the possible use of the levees for hiking and biking be discussed and evaluated.

Note that the city of Mercedes is mislabeled in Figure 2.1. It is labeled as McAllen.

Again, please evaluate the potential impact of a large-scale (300 -700 ac) wetland system of low growing plants within the interior floodway. Moreover, there may be additional opportunities for environmental and recreational improvements associated with the floodway improvements. Thank you for your attention to these matters.

Sincerely,

*Laura De La Garza*

Laura De La Garza  
Board Member, Lower Rio Grande Citizen's Forum  
Comite Resources, Inc.



# The Arroyo Colorado Watershed Partnership

312 N. International Blvd  
Weslaco, Texas 78596

956/968-2132 Office 956/969-0649 Fax [www.arroyocolorado.org](http://www.arroyocolorado.org)

May 26, 2009

Ms. Rita Crites  
United States Section  
International Boundary and Water Commission  
El Paso, TX 79902

RE: Environmental Assessment-Improvements to the Arroyo Colorado North Levee Project

The ACWP appreciates the opportunity to comment on the draft EA document titled "Improvements to the Arroyo Colorado North Levee Project" (April 200). The Partnership is an organization of over 700 individuals representing numerous local, state, and federal organizations, including 14 local municipalities, who share an interest in improving the quality of water in the Arroyo Colorado and the Lower Laguna Madre.

We look forward to working with the IBWC to improve water quality, protect natural resources and enhance the quality of life for all citizens of the Arroyo Colorado watershed

Sincerely,

A handwritten signature in black ink, appearing to read "Jaime Flores", with a long horizontal line extending to the right.

Jaime Flores  
Arroyo Colorado Watershed Coordinator  
for Arroyo Colorado Watershed Partnership

## **Arroyo Colorado Watershed Partnership**

### **Comments on the Draft Environmental Assessment titled: Improvements to the Arroyo Colorado North Levee Project (April 2009)**

#### General Comments

The Arroyo Colorado Watershed Partnership (ACWP) is in general agreement with the need for the modifications to the levee system of the Arroyo Colorado Floodway (ACF) proposed in the draft EA document and concurs that these modifications are needed in order to protect human health and safety from catastrophic flood events in the middle portion of the Rio Grande Valley. Furthermore, the ACWP is also in general agreement with the methods and conclusions contained in the EA document and limits comment to two recommendations for improvement of the analysis used to support the document: 1) a more thorough environmental evaluation of the area immediately south of the La Feria Reservoir and 2) an evaluation of a future scenario in the area near Llano Grande Lake where a 300-acre regional constructed wetland system has been proposed by the ACWP. The recommendations are detailed in specific comments included below.

#### Specific Comments

Comment No. 1 – The report mentions that, in specific areas located south of the La Feria reservoir (miles 9-10); an increase of more than 6 feet (of fill) in the height of the levee will be required with a commensurate potential expansion of the levee footprint by 36 feet (page 3-2). The report previously mentions that, due to the proximity of the existing levee to the boundary of the reservoir, an option for levee improvement may be to make the entire offset occur towards the river side of the levee, adding 36 feet to the riverside toe of the levee in this area (page 2-3). The report also mentions that another option for this area is to steepen the slope of the levee and armor the banks with riprap to prevent erosion. Finally, the report estimates that construction in this area could result in the removal of 1.15 acres of herbaceous vegetation.

A review by the ACWP of the National Wetland Inventory (USFWS) reveals areas of Palustrine Marsh located adjacent to the ACF levee construction areas south of the La Feria Reservoir (Figure 1) identified in the EA report as needing some of the most intensive construction (i.e., largest levee footprint expansion and/or slope armoring). While it is unclear from the information available to us whether the construction activity proposed by the IBWC will affect this marsh area or whether the marsh area constitutes jurisdictional wetlands, the ACWP recommends a more thorough review of this area to ensure that valuable habitat is not inadvertently destroyed. The ACWP acknowledges that the National Wetland Inventory and other sources of information were used by the authors to make determinations on impacts to potential jurisdictional wetlands. However, the details of these studies were not included in the draft EA and have not been made available for review (i.e., Appendix A is not included in the review draft of the EA and the *Technical Support Studies Report* has not been provided for review). Consequently, the ACWP recommends that: 1) a discussion of this particular marsh area be included in the EA report, 2) that the conclusions associated with the investigation of the La Feria Palustrine Marsh be corroborated by the US Army Corps of Engineers and 3) that the *Technical Support Studies Report* be made available for review.

Additionally, the ACWP recommends that the IBWC include a specific discussion of the treatment of the La Feria reservoir area in the Best Management Practices section(s) of the report detailing the measures that will be taken to protect sensitive marsh areas during construction in this portion of the ACF levee.

Comment No. 2 – The Arroyo Colorado is listed in the State of Texas’ Clean Water Act 303(d) list because of several water quality impairments including, excessive levels of pathogenic indicator bacteria and depressed dissolved oxygen. In 2007, the ACWP published the document titled *A Watershed Protection Plan for the Arroyo Colorado*. This document contains recommendations for the construction of two regional wetland systems for improvement of water quality in the Arroyo Colorado. The document recommends that one of these constructed wetlands (a 300-acre wetland system) be located in the ACF near Llano Grande Lake. Although, a detailed design for this regional wetland system has not yet been developed, preliminary designs exist that could be used to estimate the effect (or lack thereof) of such a system on water surface elevation during a 100 year flood event.

The ACWP recommends that the IBWC incorporate a future scenario into the estimates of water surface elevation in the ACF (i.e., perform a simulation using the 2003 Hydraulic Model for the LRGFCP) that includes the pertinent design features (i.e., any increases in roughness and/or impediments to flow) associated with the 300-acre constructed wetland system in the floodplain of the ACF and to accommodate any simulated increases in water surface elevation resulting from implementation of these features in the design of the ACF levee rehabilitation project (i.e., increase the height of the ACF levee in miles 0-3 as indicated by the requested future “wetland” model scenario). Furthermore, the ACWP recommends that a discussion be included in the EA of the 300-acre Llano Grande Regional Wetland System proposed in the Watershed Protection Plan for the Arroyo Colorado.

Comment No. 3 – The ACWP notes that the city of Mercedes is mislabeled in Figure 2.1 (it is labeled as McAllen).



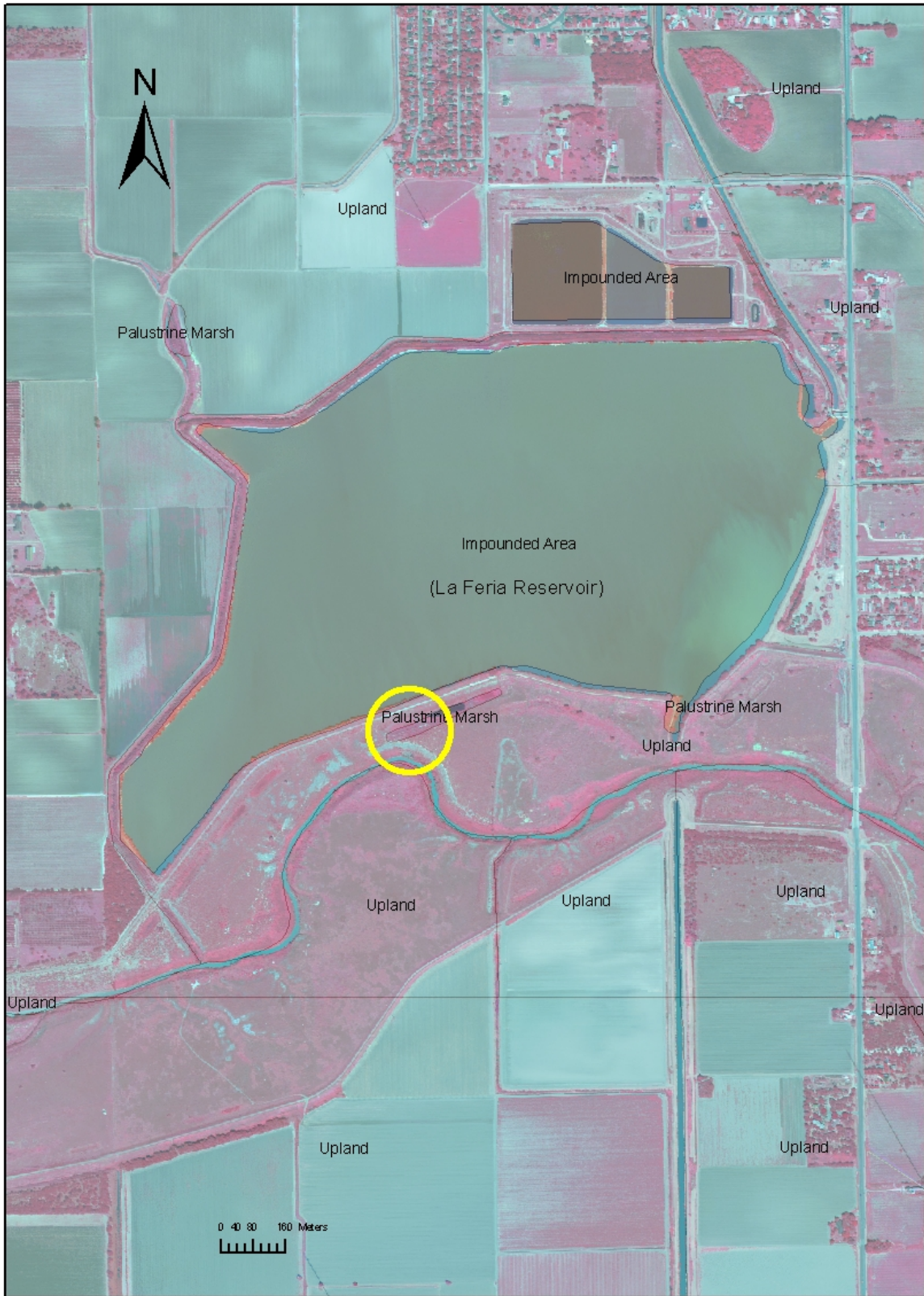


Figure 1. Area of Concern

## References and Data Sources

**Arroyo Colorado Watershed Partnership (ACWP)**, *A Watershed Protection Plan for the Arroyo Colorado: Phase I*. ACWP and Texas Sea Grant College (TAMU), January, 2007.

**Texas Water Development Board**, Texas Natural Resource Information Service, Texas Digital Orthophoto Quadrangles (DOQs), 2004 NIAP 1m CIR.  
<http://www.tnris.state.tx.us/datadownload/download.jsp> (accessed May 21, 2009)

**National Wetlands Inventory**, wetland/ land cover data mapped by the U.S. Fish and Wildlife Service (USFWS). Data classified from 1992-93 aerial photography by the USFWS. <http://www.glo.state.tx.us/gisdata/gisdata.html> (accessed May 21, 2009)