Draft Environmental Assessment

Flood Control Improvements
Lateral A/Retamal Dike Levee System

January 2007

Lead Agency:

United States Section,
International Boundary and
Water Commission

El Paso, Texas

Cooperating Agency:

United States Fish and
Wildlife Service

Technical Support:

PARSONS

Austin, Texas

COVER SHEET

DRAFT ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT

FLOOD CONTROL IMPROVEMENTS
LATERAL A/RETAMAL DIKE LEVEE SYSTEM

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

Cooperating Agency: U.S. Fish and Wildlife Service

Proposed Action: Raising the 14.0-mile Lateral A/Retamal Dike Levee System in south Texas to meet current requirements for flood control.

Report Designation: Environmental Assessment

Abstract: The United States Section of the International Boundary and Water Commission (USIBWC) is preparing an Environmental Assessment (EA) for a proposed action to raise the Lateral A/Retamal Dike Levee System. The levee system under consideration for this EA, approximately 14 miles long, is located in Hidalgo County, Texas, between the Carlson Settling Basin and Retamal Dam.

The Lateral A/Retamal Dike Levee System was recently identified as one of the priority areas along the lower Rio Grande to improve flood containment. The need for improvements to the levee system was determined by hydraulic modeling completed by the USIBWC. The study updated findings of a prior 1992 study by incorporating new structures and geometric data as well as increasing reliability of the hydraulic model with enhanced software capabilities. The USIBWC hydraulic study for the 14-mile levee system indicated that an increase in levee height would be required to meet design criteria for flood protection. An increase from 1.5 to 4 feet is anticipated for the Lateral A segment, and up to 2 feet for the Retamal Dike segment. The increase in levee height would also expand the levee footprint by lateral extension of the structure. Levee footprint increases in the Lateral A/Retamal Dike Levee system would occur within the USIBWC right-of-way and extend primarily toward the riverside of the existing levee.

The Environmental Assessment assesses potential environmental impacts of the Proposed Action and the No Action Alternative. A Finding of No Significant Impact was issued for the Proposed Action, including mitigation measures, based on a review of the facts and analyses contained in the Environmental Assessment.

FINDING OF NO SIGNIFICANT IMPACT

IMPROVEMENTS TO THE LATERAL A/RETAMAL DIKE LEVEE SYSTEM, IN THE LOWER RIO GRANDE FLOOD CONTROL PROJECT, HIDALGO COUNTY TEXAS

AGENCY

United States Section, International Boundary and Water Commission, United States and Mexico.

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 74th Congress, Sess. 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.

The USIBWC, in cooperation with the U.S. Fish and Wildlife Service (USFWS), prepared this Draft Environmental Assessment (Draft EA) for the proposed action of raising the Lateral A/Retamal Dike Levee System located in Hidalgo County, Texas to improve flood control. This levee system is part of the LRGFCP that extends approximately 180 miles from the Town of Peñitas in south Texas to the Gulf of Mexico. The Lateral A/Retamal Dike Levee System extends approximately 14 miles, from the Carlson Settling Basin to Retamal Diversion Dam.

PROPOSED ACTION

The Proposed Action would increase the flood containment capacity of the Lateral A/Retamal Dike System to meet the 3-foot freeboard design criterion for flood protection. Throughout the approximately 11.5-mile Lateral A segment, height increases between 1.5 and 4 feet are typically needed to reach the design freeboard value. For the 3.5-mile Retamal Dike segment, typical increases in levee height range from 0 to 2 feet. The increase in levee height will result in an expansion to the levee footprint by lateral extension of the structure. Structural improvements, such as a slurry cutoff barrier or a riverside impermeable liner, may be required for some levee segments where seepage is a potential problem.

ALTERNATIVES TO THE PROPOSED ACTION

A No Action Alternative was evaluated for the Lateral A/Retamal Dike 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, with risks to personal safety and potential property damage.

SUMMARY OF FINDINGS

Pursuant to NEPA guidance (40 Code of Federal Regulations 1500-1508), The President's Council on Environmental Quality issued regulations for NEPA implementation which included provisions for both the content and procedural aspects of the required Environmental Assessment. The USIBWC completed an EA of the potential environmental consequences of raising the Lateral A/Retamal Dike 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.

LEVEE 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 Lateral A/Retamal Dike System, with no impacts to biological and cultural resources, land use, community resources, or environmental health issues. In terms of flood protection, however, current containment capacity under the No Action Alternative may be insufficient to fully control Rio Grande flooding under severe storm events, with associated risks to personal safety and property.

PROPOSED ACTION

Biological Resources

Improvements to the Lateral A/Retamal Dike Levee would require vegetation removal. The approximate removal is 151 acres of herbaceous vegetation, 3 acres of Mesquite-Acacia woodland, and 8 acres of Texas Ebony-Anacua forest. Given its small extent, woodland removal would have a minimum impact on wildlife habitat. No significant effects are anticipated for any of the 25 threatened and endangered species with potential habitat near the right-of-way (ROW). None of 17 wetlands located within the ROW are located within the construction corridor and would be impacted by the potential levee expansion. Indirect impacts to wetlands near the corridor will be avoided, as required, by modification of the levee expansion alignment.

Cultural Resources

Improvements to the Lateral A/Retamal Levee system may adversely affect known archaeological resources, by mechanical excavation or by burial under the expanded levee footprint. Resources potentially affected include nine areas with a high probability to contain historic or prehistoric archaeological materials, and two known archaeological sites. Historic-age resources would also be affected, primarily structures associated with irrigation canals along the levee. These resources are the levee, canals, weir gates, standpipes, bridges, and residential structures. Several of the historic-age resources identified are located landside of the levee, across irrigation canals, and will not be adversely affected or minimally affected.

Water Resources

Improvements to the levee system 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.

Land Use

The expansion would take place almost completely within the ROW. Removal of approximately 3 acres of woodlands from natural resources management areas would be required. Levee expansion would affect less than 1 acre of active agricultural areas. Two irrigation canals along the levee would be temporarily affected by construction activities. There is a minimum potential for impacts on urban areas since no residential developments are located near the levee.

Community Resources

In terms of socioeconomic resources, the influx of federal funds into Hidalgo County from the levee improvement would have a positive local economic impact limited to the construction period; the impact would 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 is required during construction; a temporary increase in access road use would be required for equipment mobilization to staging areas.

Environmental Health Issues

Estimated air emissions of five criteria pollutants during construction represent less than 0.7 percent of the Hidalgo County annual emissions inventory. There would be a moderate increase in ambient noise levels due to excavation and fill activities. No long-term and regular exposure is expected above noise threshold values. A database search identified no waste storage or disposal sites within the expanded levee footprint and its vicinity.

Best Management Practices and Mitigation

Engineering design measures will be used, including optimization of the levee expansion alignment to avoid impacts on wooded vegetation, wetlands, and other natural resources. Riverside expansion will be used for a majority of the Lateral A/Retamal Dike Levee System. During construction, best management practices will include development of a storm water pollution prevention plan to minimize impacts of receiving waters, and use of sediment barriers and soil wetting to minimize erosion.

To protect vegetation, the construction corridor may be re-vegetated with herbaceous or woody vegetation, as agreed with the natural resources management organization where the corridor is located. Final surveys prior to the start of the project would determine the types and amounts of vegetation to be removed, and separation between construction corridor and boundaries of wetlands. To protect wildlife, construction activities will be scheduled to occur, to the extent possible, outside the bird migratory season.

If buried cultural materials are encountered during construction, work would cease and notification given to the State Historic Preservation Officer. Mitigation actions recommended by the Texas Historical Commission (THC) for potential impacts to historical or archaeological resources will be specified in a Memorandum of Agreement between THC and the USIBWC.

DECISION

Based on my review of the facts and analyses contained in the Environmental Assessment, I conclude that implementation of the Proposed Action to raise the Lateral A/Retamal Dike 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.

Carlos Marin, Commissioner
International Boundary and Water Commission,
United States Section

Date

DRAFT ENVIRONMENTAL ASSESSMENT
FLOOD CONTROL IMPROVEMENTS
LATERAL A/RETAMAL DIKE LEVEE SYSTEM

Lead Agency:

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

Cooperating Agency:

UNITED STATES FISH AND WILDLIFE SERVICE

Technical Support:

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

USIBWC Contract IBM04D0002, Task Order IBM05T0022

JANUARY 2007

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AQCR	air quality control region
BMP	best management practice
B.P.	before present
cfs	cubic feet per second
CWA	Clean Water Act
dB	decibel
dbA	A-weighted sound level in dBs
DNL	day-night average sound level
EA	environmental assessment
EIS	environmental impact statement
FERC	Federal Energy Regulatory Commission
HPA	high probability area
IBWC	International Boundary and Water Commission
LGGROUP	LopezGarcia Group
LRGFCP	Lower Rio Grande Flood Control Project
NAAQS	National Ambient Air Quality Standards
MxIBWC	Mexican Section, International Boundary and Water Commission
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NWR	National Wildlife Refuge
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
SWP3	stormwater pollution prevention plan
T&E	threatened and endangered
TARL	Texas Archaeological Research Laboratory
TASA	Texas Archaeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USIBWC	United States Section, International Boundary and Water Commission

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 USIBWC, in cooperation with the U.S. Fish and Wildlife Service (USFWS), prepared this Draft Environmental Assessment (EA) for the proposed action of raising the Lateral A/Retamal Dike Levee System located in Hidalgo County, Texas. This levee system is part of the Lower Rio Grande Flood Control Project (LRGFCP) that extends approximately 180 miles from the Town of Peñitas in south Texas to the Gulf of Mexico.

The USIBWC identified the Lateral A/Retamal Dike Levee System as a priority area for improved flood containment. The Lateral A segment extends from the Carlson Settling Basin to the Retamal Dike at approximately mile 11.5. The Retamal Dike segment extends from mile 11.5 downstream to the Retamal Dam at approximately mile 14.0. The need for levee improvements was determined from hydraulic modeling results indicating that height increases from 1.5 to 4 feet would be required to meet current design criteria for flood protection along the Lateral A/Retamal Dike system (*Hydraulic Model of the Rio Grande and Floodways within the Lower Rio Grande Flood Control Project.* USIBWC 2003a).

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 United States Section (the 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 is 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 has five components, the third of which covers the proposed raising of the Lateral A/Retamal Dike Levee System:

- Regulation and conservation of waters of the Rio Grande for use by the United States and Mexico through joint construction, operation, and maintenance of international storage dams and reservoirs and plants for generating hydroelectric energy at the dams, and regulation of the Colorado River waters allocated to Mexico;
- Distribution of waters of the Rio Grande and the Colorado River between the two countries;

- Protection of lands along the Rio Grande from floods through levee and floodway projects and solution of border sanitation and other border water quality problems;
- Preservation of the Rio Grande and Colorado River as the international boundary; and
- Demarcation of the land boundary.

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 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). These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action. The Council on Environmental Quality regulations requires that an EA:

- Briefly provide evidence and analysis to determine whether the proposed action might have significant effects that would require preparation of an environmental impact statement (EIS). If analysis determines that the environmental effects would not be significant, a Finding of No Significant Impact is prepared;
- Facilitate the preparation of an EIS, when required; or
- Aid an agency's compliance with NEPA when no EIS is necessary.

This EA identifies and evaluates the 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. The following resource areas are analyzed for potential environmental consequences: biological resources; cultural resources; water resources; land use; and community resources (socioeconomics, environmental justice, and transportation). Environmental health issues are also evaluated (air quality, noise, and hazardous and toxic waste).

Analyses of environmental resources for the affected environment and environmental consequences are based on a potential impact corridor around the existing Lateral A/Retamal Dike 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 studies conducted in support of the EA preparation were reported in the document *Technical Support Studies for the Environmental Assessment of Flood Control Improvements to the Lateral A/Retamal Dike Levee System* (Parsons 2006). 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. A copy of the Technical Support Studies report is provided in CD format in the Draft Environmental Assessment.

The most recent information is used for the impact analyses. Impacts are considered for the time period covered under the construction period and subsequent flood control improvement conditions. Potential environmental consequences of the Lateral A/Retamal Dike Levee System for each resource area evaluated are discussed separately in this EA.

1.4 ENVIRONMENTAL COORDINATION AND COMPLIANCE ANALYSIS

Table 1.1 is a summary of potential regulatory and/or permitting requirements potential compliance issues, and anticipated level of environmental coordination.

Table 1.1 Summary of Environmental Coordination and Compliance

Agency	Regulation	Level of USIBWC Coordination with Agency
USFWS	Endangered Species Act of 1973 (PL 93-205) and amendments of 1988 (Public Law 100-478) USFWS Coordination Act 916 U.S.C. 661 *et seq*.)	Consultation to determine whether migratory birds and T&E species could be affected. Section 7 of the Act requires formal consultation if significant adverse impacts to federally listed species could occur due to the proposed action. Requires federal agencies to consult with USFWS regarding impact of proposed action.
TPWD	Chapters 67 and 68 of the TPWD Code, and Section 65.171-65.184 of the Texas Administrative Code	Coordination concerning impacts on wildlife.
USACE	Section 10 of the Rivers and Harbors Act of 1899 Section 404 of the Clean Water Act (33 U.S.C. 1344, known as section 404)	Pre-permit application. If Waters of the United States are impacted, mitigation plan and permit application would be required. A mitigation plan could be requested by commenting resource agencies.
TCEQ	Section 401 of the Clean Water Act (33 U.S.C. 1344; known as Section 401) Section 26.040 of Texas Water Code and Section 402 of Clean Water Act	Consultation letter. The agency might suggest 404/401 permit conditions and mitigation measures. Review of TPDES permit and Construction Site Stormwater Pollution Prevention Plan.
State Historic Preservation Office	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.)*	Ensure compliance with Section 106. May suggest permit conditions and mitigation measures.

1.5 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

Section 1 identifies the purpose of and need for the Proposed Action, defines the scope of the environmental review, and provides an environmental coordination and compliance analysis.

Section 2 describes the Proposed Action and No Action Alternative, and summarizes potential environmental impacts.

Section 3 presents information on the affected environment, providing a basis for analyzing the impacts of the Proposed Action.

Section 4 analyzes the environmental consequences of the flood control improvements of the Lateral A/Retamal Dike Levee System.

Section 5 describes best management practices for construction and mitigation actions.

Section 6 describes the consultation process and lists persons and agencies consulted, and contributors to the EA preparation.

Section 7 is a list of cited references and source documents relevant to EA preparation.

Support documentation is provided in Appendices as follows:

Appendix A: Detailed maps of levee alignment, right-of-way and expansion area.

Appendix B: Agency consultation correspondence.

A Technical Support Studies Report and a Cultural Resources Evaluation prepared in support of the EA preparation are included in a CD attachment.

SECTION 2
DESCRIPTION OF PROPOSED ACTION

This section presents a description of the Proposed Action for improvements of the Lateral A/Retamal Dike Levee System. A summary of potential environmental impacts, subsequently discussed in Section 4, is provided at the end of Section 2. An overview of the Lateral A/Retamal Dike Levee System is presented in Figure 2.1. Appendix A presents detailed maps of levee alignment, right-of-way and potential expansion area.

2.1 LEVEE SYSTEM DESCRIPTION

The Lateral A/Retamal Dike Levee System is a component of the Lower Rio Grande Flood Control Project (LRGFCP). The LRGFCP extends for a distance of approximately 180 miles from the Town of Peñitas in south Texas to the Gulf of Mexico, and was constructed to protect urban, suburban, and highly developed irrigated farm lands from floods in the Rio Grande delta, in both the United States and Mexico.

The LRGFCP includes 102 miles of grass-covered earthen structures along the United States margin of the Rio Grande and Anzalduas Diversion Dam that diverts flood water into a United States interior floodway system (Banker Floodway, Main Floodway, North Floodway, and Arroyo Colorado) flanked by 168 miles of levees. A second dam, Retamal Diversion Dam, routes Rio Grande flood water into Mexico's interior floodway. The distances between the United States and Mexican levees along the Rio Grande range from approximately 400 feet to 3 miles.

The levee system right-of-way (ROW), extending from the Carlson Settling Basin to Retamal Dam, covers primarily irrigated agricultural areas. Several natural resources management areas owned and operated by the USFWS and TPWD are located along the levee, or in its vicinity. Two irrigation canals border approximately 7 miles of the landside levee: Lateral A Canal (Project Miles 0 to 4.0 and Project Miles 4.5 to 7.3), and the Main Canal of the Donna Irrigation District (Project Miles 10.6 to 11.0).

The USFWS has acquired several large tracts of land in the area that have been incorporated into the Santa Ana National Wildlife Refuge (NWR) and Lower Rio Grande Valley NWR. Refuge lands are found primarily along 3.5 miles on the riverside of the levee: between Project Miles 0-0.3 and 13.8-14.0 along the Lower Rio Grande Valley NWR, and between Project Miles 4.5-7.5 along the Santa Ana NWR.

Two units of the TPWD Las Palomas Wildlife Management Area are also located near the project area: the Kelly Unit, approximately 500 feet south of the existing levee (Project Mile 3.0), and the McManus Unit, approximately 750 feet north of the existing levee (Project Mile 13.5).

Scale = 1 : 55,000

0 2,000 4,000 8,000 12,000 16,000 Feet

0 0.4 0.8 1.6 2.4 3.2 Miles

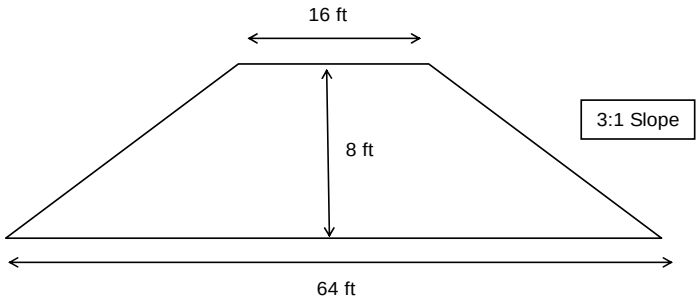
- 1/2 Mile Markers
- Irrigation Canal Landside of Levee
- Levee Footprint
- USFWS National Wildlife Refuge
- TPWD Wildlife Management Unit

Lateral A/Retamal Dike Levee System
Figure 2.1 Project Location Map

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map.mxd - 12/20/2006 @ 9:37:22 AM

The existing levee is a raised trapezoidal earth-made structure with a crown 16 feet wide, a typical height ranging from 6 to 10 feet, and a 3:1 side slope ratio (units of horizontal run in feet per foot of vertical rise). The existing levee footprint ranges from 50 to 80 feet, depending on location. A typical cross-section is shown in the diagram below.

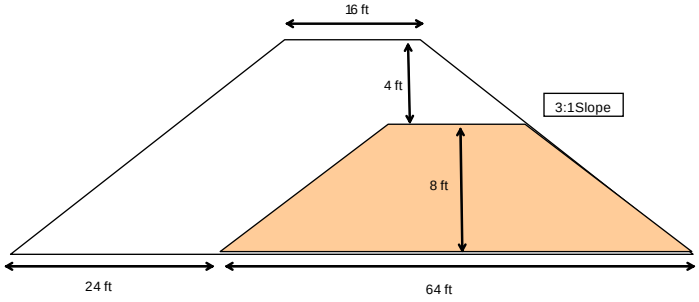


2.2 PROPOSED ACTION

The Proposed Action would increase flood containment capacity of the Lateral A/Retamal Dike System to meet the 3-foot freeboard design criterion for flood protection. Throughout the Lateral A segment, height increases between 1.5 and 4 feet are typically needed to reach the design freeboard value. For the Retamal Dike segment, typical increases in levee height range from 0 to 2 feet.

The increase in levee height would result in an expansion of the levee footprint by lateral extension of the structure. Expansion corridor width is commonly measured as the distance form the current levee centerline to the toe of the expanded levee. Thus, the distance from centerline to the toe is 32 feet for the existing levee, and 44 feet for the expanded levee (32 feet current distance to the toe plus a 12-foot expansion). While the centered levee expansion is commonly used, an offset expansion is used when required to insufficient ROW availability or existing infrastructure. This offset expansion would take place entirely on the landside of the levee or the riverside, as allowed by the available ROW.

Using the offset expansion option, for a typical levee cross-section, shown in the diagram below (8 feet elevation, 3:1 slope, and 16-foot crown), a 4-foot increase in levee height would result in a 24-foot offset increase of the footprint. The current footprint width value of 64 feet would expand to 88 feet as a result of the increased levee height.



Landside expansion of the levee footprint (from the landside shoulder of the crown away from the river) is the preferred option to maximize flood containment capacity along the LRGFCP. Landside alignment would also minimize potential impacts to biological resources such as wetlands and wildlife, including threatened and endangered (T&E) species populations and habitat. Riverside expansion (from the riverside shoulder of the crown toward the river) would be required when constraints on landside expansion are present. These constraints include the presence of irrigation canals along significant reaches of the levee system (Project Miles 0 to 4.0, 4.5 to 7.3, and 10.6 to 11.0). Right-of-way availability was not identified as a restriction for levee expansion, as illustrated in Appendix A.

Along with the increase in levee height, structural improvements may be required for levee segments, as identified in a recent evaluation prepared for the USIBWC (USACE 2003). In particular, floodwall modifications may be required at the Donna Irrigation District pump station to accommodate flood containment capacity. Structural improvements would consist of either a slurry cutoff barrier or a riverside impermeable liner. The slurry barrier would be installed at the riverside toe of the expanded levee, or along the levee centerline. The impermeable liner would be buried to a specified depth (18-30 inches) along the levee slope, and from some distance from the riverside toe to above the riverside shoulder of the levee.

2.3 OTHER ACTIONS WITH POTENTIAL CUMULATIVE IMPACTS

No other projects with potential cumulative impacts have been identified to date for the Lateral A/Retamal Dike Levee System.

2.4 SUMMARY COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

No Action Alternative

The No Action Alternative would retain the current configuration of the Lateral A/Retamal Dike System, with no impacts to biological and cultural resources, land use, community resources, or environmental health issues. In terms of flood protection, however, current containment capacity under the No Action Alternative may be insufficient to fully control Rio Grande flooding under severe storm events, with associated risks to personal safety and property.

Proposed Action

Table 2.1 summarizes potential environmental consequences of the proposed improvements to the Lateral A/Retamal Dike System. The proposed increase in levee height would provide improved flood protection. The levee footprint would modify approximately 163 acres, the majority of which is composed of herbaceous vegetation.

Table 2.1 Summary of Environmental Impacts for the Lateral A/Retamal Dike Levee Proposed Action

RESOURCE AREA	Environmental Impacts
Biological Resources *(Section 4.1)*	*Vegetation*. Improvements to the Lateral A/Retamal Dike Levee would remove 151.4 acres of herbaceous vegetation, 2.7 acres of Mesquite-Acacia woodland, and 7.9 acres of Texas Ebony-Anacua forest. *Wildlife*. Removal of approximately 2.7 acres of Mesquite-Acacia woodland would have a minimum impact on wildlife habitat. Of the 25 threatened and endangered species with potential habitat near the right-of-way (ROW) and levee expansion areas, only ocelot habitat would be negatively affected. *Wetlands*. No wetlands would be impacted by the potential levee expansion. There are 17 wetlands located within the ROW, with 39.1 acres of potential jurisdictional wetlands. No wetlands are located within the construction corridor. Impacts to wetlands near the corridor will be avoided by modification of the levee expansion alignment.
Cultural Resources *(Section 4.2)*	*Archaeological Resources*. Levee improvements have a potential to impact known prehistoric archaeological resources. Levee improvements may also impact historic archaeological materials at several locations. *Historical and Architectural Resources*. Resources located within levee expansion areas may be impacted by construction activities; if these resources are close enough to the proposed levee improvements the integrity or feeling of the sites could be impaired. Historic-age resources within the current ROW may be impacted by construction activities.
Water Resources *(Section 4.3)*	*Flood Control*. Improvements to the levee system would increase flood containment capacity to control the design flood event. *Water Flow*. Levee footprint expansion would not affect water bodies.
Land Use *(Section 4.4)*	*Natural Resources Management Areas.* Expansion of the existing levee would take place completely within the ROW. Removal of the 2.7 acres woodlands adjacent to the levee would be required. *Agricultural Lands*. Two irrigation canals along the levee would be temporarily affected by construction activities. Levee expansion would impact less that 1 acre of active agricultural areas. *Urban Areas*. There is a minimum potential for impacts since no residential developments are located near the levee.
Community Resources *(Section 4.5)*	*Socioeconomic Resources*. Influx of federal funds into Hidalgo County from the levee improvement would have a positive local economic impact limited to the construction period and representing less than 0.7 percent of the annual county employment, income and sales values. *Environmental Justice*. No adverse impacts to disproportionately high minority and low-income populations were identified for construction activities. *Transportation*. Moderate utilization of public roads is required during construction; a temporary increase in access road use would be required for equipment mobilization to staging areas.
Environmental Health Issues *(Section 4.6)*	*Air Quality*. Estimated emissions of five criteria pollutants during construction represent less than 1 percent of the Hidalgo County annual emissions inventory. *Noise*. There would be a moderate increase in ambient noise levels due to excavation and fill activities. No long-term and regular exposure is expected above noise threshold values. *Waste Storage and Disposal Sites*. A database search identified no waste storage or disposal sites within the expanded levee footprint and its vicinity.

SECTION 3
AFFECTED ENVIRONMENT

This section describes resources in the potential area of influence of the levee construction project. The sequence of resource areas presented in this section matches the sequence used in Section 4 to discuss environmental consequences potentially associated with implementation of improvements to the Lateral A/Retamal Dike Levee System. Baseline conditions are discussed in this section as follows:

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

3.1 BIOLOGICAL RESOURCES

3.1.1 Vegetation

Regional Vegetation

The Lower Rio Grande Valley is 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 Lower Rio Grande Valley is part of the Tamaulipan region of southern Texas and northeastern Mexico where multiple vegetation communities and warm average temperatures provide a highly diversified wildlife habitat. Annual rainfall in the area, ranging from 16 to 35 inches, increases from west to east. Monthly rainfall is lowest in January and February, and highest in May and June.

Thorn woodland is predominant in the Tamaulipan region where areas of shallow soil and rapid drainage generally support that type of vegetation. A few species of plants account for the bulk of the brush vegetation, including mesquite (*Prosopis spp.*), various species of acacia (*Acacia spp.*), desert hackberry (*Celtis pallida*), javelina–brush (*Microrhamnus ericoides*), cenizo (*Atriplex canescens*), common bee-brush (*Lippia ligustrina*), Texas prickly pear (*Opuntia spp.*), and tasajillo or desert Christmas cactus (*Opuntia leptocaulis*). Parts of the region support grasslands of very diverse composition due to the highly variable soil and moisture conditions, while lines of riparian vegetation are present within the few river valleys (World Wildlife Fund 2001). Grassland vegetation was somewhat more extensive prior to the 19th century, but continuous grazing and other factors altered the plant communities (USIBWC 2003b).

Levee Corridor

Vegetation within the levee ROW and potential expansion corridor of the Lateral A/Retamal Dike Levee System were evaluated in field surveys conducted to identify habitat and plant communities, as listed below. Results of studies conducted in support of this EA preparation are reported in the document *Technical Support Studies for the Environmental Assessment of Flood Control Improvements to the Lateral A/Retamal Dike Levee System* (Parsons 2006) provided in CD format in the Draft Environmental Assessment.

- September 7, 2006. Vegetation surveys and habitat evaluation of land adjacent to the levee.

- September 11, 2006. Delineation of potential jurisdictional wetlands in the immediate vicinity of the levee construction areas along the levee system.

Vegetation classifications for the project area are adapted from Diamond (1987; 1993) and the 1996 National Vegetation Classification System in use by USFWS and Texas Parks and Wildlife Department (TPWD). Based on literature review and field surveys, the following four vegetation community classifications were identified as occurring within the project area: a) Woodlands/Thornscrub; b) Herbaceous; c) Wetlands/Riparian communities; and d) Agricultural, as described below. In addition to these four plant communities, developed areas were also mapped, including roads, urban areas, and other impervious cover.

A. Woodlands / Thornscrub

Mesquite - Acacia Woodland

This woodland occurs over moderately to poorly drained soil, primarily in the south Texas Plains and the Coastal Prairie. It is a natural disturbance type of river floodplains and depressions that may succeed to Sugarberry (*Celtis laevigata*)-dominated forest, especially on floodplains of major streams. It is an even more widespread anthropogenic disturbance community, with introduced woody species such as Retama (*Parkinsonia aculeata*) and possibly Chinese tallow (*Sapium sebiferum*). In wet areas, Sweet acacia (*Acacia farnesiana*) often forms nearly pure stands or occurs as scattered individuals within a matrix of weedy grasses during the course of secondary succession. This woodland may grade into Black-brush (*Acacia rigidula*) or Guajillo (*Acacia berlandieri*) shrublands in south Texas and Little bluestem (*Schizachyrium scoparium*) grasslands in the Coastal Prairie.

B. Herbaceous

Bufflegrass – Dominant Grassland

This herbaceous community occupies levee slopes and open grassland area, and is dominated by Bufflegrass (*Cenchrus ciliaris*) and sand dropseed (*Sporobolus cryptandrus*). Occurrences of grasses once found in the Cane Bluestem – False rhodesgrass Grasslands - include False rhodesgrass (*Chloris pluriflora*), Cane bluestem (*Bothriochloa barbinodis*), Buffalograss (*Buchloe dactyloides*), Curly

mesquite (*Hilaria belangeri*), and Common speargrass (*Heteropogon contortus*). Woody species once common include Honey mesquite (*Prosopis glandulosa*), Sweet acacia (*Acacia farnesiana*), and Black-brush (*Acacia rigidula*).

C. Wetlands / Riparian Communities

Texas Ebony - Anacua Forest.

Occurs in wooded borrow sites. Evergreen subtropical community once occurred as dense forests with 15-meter canopies and large diameter subtropical trees. Larger tree species (both in diameter and height) may include Texas ebony (*Pithecellobium ebano*), anacua (*Ehretia anacua*), and great leadtree (*Leucaena pulverulenta*). Snake eyes (*Phaulothamnus spinescens*), haujillo (*Havardia pallens*), spiny hackberry (*Celtis pallida*), lotebush (*Ziziphus obtusifolia*), and honey mesquite (*Prosopis glandulosa*) may occur as tall shrubs or small trees. In most of the former borrow areas within the project area, black willow (*Salix nigra*), sweet acacia, and retama dominate. Former borrow areas characterized by infrequent flooding exhibit a stronger mesquite component.

Typha/Phragmites Emergent Wetlands

Typically found on borrow sites and storm-water collection areas. Often dominated by giant reed (*Phragmites spp.* or *Arundo donax*) or cattail (*Typha spp.*) with a fringe of sea-oxeye daisy *(Borrichia arborescens)*, and spikerush (*Scirpus spp*.).

Drainage Ditches

Typically are irrigation ditches, mostly open vegetation, with emergent species such as cattail, and occasional honey mesquite.

D. Agricultural

Includes active agricultural fields typically planted with corn, cotton, and various garden crops, and fallow fields not currently under cultivation.

Table 3.1 lists acreage by plant community classes along the Lateral A/Retamal Dike Levee Systems for the entire ROW and within the potential levee footprint expansion area. The herbaceous communities are predominant within the ROW. The Mesquite-Acacia woodlands, Texas Ebony-Anauco Forest, and Typha/Phragmites emergent plant communities are nearly equally represented within the ROW. Within the potential levee expansion area, herbaceous communities dominate, with smaller areas of the Mesquite-Acacia woodland and Texas Ebony-Anauco vegetation communities present. A graphical representation of vegetation communities distribution along the levee ROW is provided in Section 3 of the Technical Support Studies Report provided in CD format in the Draft Environmental Assessment.

Table 3.1 Acreages of Plant Communities along Levee Expansion Area and ROW

Plant Community	Lateral A / Retamal Dike Levee System	
	Right of Way (acres)	Levee Expansion Area (acres)
Woodland / Thornscrub		
Mesquite Acacia Woodland	54.7	2.7
Herbaceous		
Bufflegrass Dominant Grassland	211.4	151.4
Wetlands / Riparian Communities		
Texas Ebony – Anauco Forest	49.9	7.9
Typha / Phragmites Emergent	67.8	0.3
Drainage Ditches	0.7	0.0
Open Water	3.0	0.4
Agricultural		
Active Agricultural	10.6	1.0
Fallow Agricultural	2.7	0.0
Developed / Impervious Cover		
Lined Canal	35.4	17.2
Road	28.8	27.0
TOTAL	**465.0**	**208.3**

3.1.2 Wildlife

Regional Wildlife

From a regional perspective, the proposed levee improvement area is located within the Lower Rio Grande Valley. The levee corridor is adjacent to various units of the USFWS Lower Rio Grande Valley NWR and Santa Ana NWR, as well as units of TPWD Las Palomas Wildlife Management Area. These natural resources management areas are components of a multi-partner effort attempting to connect and protect blocks of habitat, known locally as a Wildlife Corridor (USFWS 2005). The Wildlife Corridor partnership includes USFWS, TPWD, National Audubon Society, The Nature Conservancy, and private owners, and extends over 25,000 acres within Hidalgo County. Additional blocks of habitat are located in Cameron, Willacy, and Starr Counties (USIBWC 2003b).

Common Lower Rio Grande Valley 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 (*Sylviagus floridanus*), jackrabbit (*Lepus californicus*), waterfowl, and a variety of nongame birds. The region also provides important wintering habitat for thousands of 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). The distribution of many wildlife species is limited, either partially or entirely, to

the Tamaulipan Biotic Province, and some are found exclusively within the Lower Rio Grande Valley.

There are approximately 67 mammals of potential occurrence in the Lower Rio Grande Valley, including federally listed species, such as the jaguarundi (*Felis yagouaroundi cacomitli*) and ocelot (*Felis pardalis*). The mammals are dominated by rodents (24 species) and bats (13 species). Some common mammals which may be encountered in the Lower Rio Grande Valley are the raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), Mexican ground squirrel (*Spermophilus mexicanus*), and the bobcat (*Felis rufus*), beaver (*Castor canadensisis*), and nutria (*Myocastor coypus*) (USIBWC 2003b).

There are approximately 500 species of birds that potentially occur in the Lower Rio Grande Valley. The dominant numbers of bird species are represented by wood warblers (44 species), geese and ducks (30 species), sparrows and towhees (26 species), raptors (25 species), and tyrant flycatchers (25 species). Many species pass through the Lower Rio Grande Valley on their way to summer breeding or wintering grounds because of the convergence of the Central and Mississippi Flyways. The Lower Rio Grande Valley is the point where many tropical birds reach their northernmost ranges (Fermata 2003).

Amphibians and reptiles are also well represented in the Lower Rio Grande Valley, with approximately 76 species that potentially occur in Hidalgo County. The reptiles consist of snakes (29 species), lizards (19 species), turtles (six species), and the American alligator. The amphibians consist of frogs and toads (18 species), and three species of salamanders (USIBWC 2003b).

Levee Corridor

High quality wildlife habitat in the Lateral A/Retamal Dike Levee Systems corridor is found primarily in tracts of the Lower Rio Grande Valley NWR and the Santa Ana NWR. Plant communities considered high quality habitat include thorn woodlands and wetlands/riparian areas. Grassland habitat and former agricultural sites are dominated by non-native species (primarily bufflegrass), and are considered low value habitat.

3.1.3 Threatened and Endangered Species

Habitat requirements and life history for each federal and state-listed species potentially occurring along the Lateral A/Retamal Dike Levee Systems 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. Table 3.2 lists federal and State-listed species potentially occurring along the levee corridor. A detailed analysis is provided in Section 5 of the Technical Support Studies Report prepared in conjunction with this EA (Parsons 2006) and provided in CD format in the Draft Environmental Assessment.

Table 3.2 Threatened and Endangered Species Habitat Potentially Occurring within the Levee Corridor

	Common Name	Scientific Name	Listing Status		Association with Project Area Habitat
			Federal	State	
Plant Species	Texas ayenia	*Ayenia limitaris*	E	E	Terraces and floodplains within borrow sites that have thick riparian canopy cover.
Amphibian Species	South Texas siren	*Siren spp.*	-	T	Wet or semi-wet areas; aestivates in the ground during dry periods; breeding season from February to June.
	Black spotted newt	*Notophtalmus meridionali*	-	T	Riparian and other moist soil areas along flood-side of levee.
	Mexican treefrog	*Smilisca baudinii*	-	T	Wet or semi-wet areas; eggs laid in temporary rain pools; breeding coincides with rainy months, usually May –October.
Reptile Species	American alligator	*Alligator mississipiensis*	T	-	Large streams, canals, ponds, lakes, and swamps.
	Black-stripped snake	*Coniophanes imperialis*	-	T	Sandy soil areas of borrow sites; eggs laid April through June.
	Indigo snake	*Drymarchon corais*	-	T	Mesquite and Mesquite-Acacia woodlands of borrow sites and along flood-side of levee. Also along dense riparian communities in flood-side ditches.
	Northern cat-eyed snake	*Leptodeira septentrionalis*	-	T	Thorn brush woodlands, dense thickets bordering ponds and streams, semi-arboreal, nocturnal.
	Reticulate collard lizard	*Crotaphytus reticulates*	-	T	Open brush grasslands; thorn-scrub vegetation, usually on well drained gravelly or sandy soil.
	Texas horned lizard	*Phrynosoma cornutum*	-	T	Open arid or semi-arid regions with sparse vegetation, grass, cactus, scattered brush or scrubby trees, burrows into soil, utilizes rodent burrows or hides under surface litter.
	Texas tortoise	*Gopherus berlandieri*	-	T	Open scrub woods, arid brush, grass/cactus association, shallow depressions at base of bush or cactus or underground burrow or hides under surface cover.
Bird Species	American peregrine falcon	*Falco peregrinus anatum*	DL*	E	Potential migrant, nests in West Texas.
	Arctic peregrine falcon	*Falco peregrinus tundrius*	DL*	T	Potential migrant.
	Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	-	T	Riparian corridors and mesquite thickets; roosts in small caves and recesses on slopes of low hills during the day; breeds April – August.
	Gray hawk	*Asturina nitidus*	-	T	Mature woodlands of river valleys and adjacent semiarid mesquite and scrub grasslands.
	Hook-billed kite	*Chondrohierax uncinatus*	-	T	Dense tropical and subtropical forests, but does occur in open woodlands, uncommon to rare in most of its range.

	Common Name	Scientific Name	Listing Status		Association with Project Area Habitat
			Federal	State	
	Interior least tern	*Sterna antillarum athalassos*	E	E	Nests along sand and gravel bars of braided streams, rivers, inland channels, and some lakes.
	Northern beardless-tyrannulet	*Camptostoma imberbe*	-	T	Mesquite woodlands near the Rio Grande, frequents cottonwood, willow, elm (*Ulmus spp.*), and great leadtree, breeds April - July.
	Rose-throated becard	*Pachyramphus aglaiae*	-	T	Riparian corridors and mesquite thickets, open forest, and mangroves (*Avicennia spp.*); breeds April – July.
	Texas Botteri's sparrow	*Aimophila botterii texana*	-	T	Grassland plains or parklands with scattered bushes or shrubs, sagebrush (*Artemeia spp.*), mesquite, or yucca. Rests on ground in a low clump of grasses.
	Tropical parula	*Parula pitiayuma*	-	T	Dense woodlands or parklands, riparian corridors, shrublands with dense underbrush. Breeds April – July.
Mammal Species	Coues' rice rat	*Oryzomys couesi*	-	T	Cattail-bulrush marsh, with a shallower zone of emergent grasses; shade trees around shoreline; breeds April – August.
	Gulf Coast jaguarundi	*Felis yagouaroundi cacomitli*	E	E	Dense, thorny thickets of southern Texas with a proximity to a water source. Cacti, mesquite, cat claw (*Smilax spp.*), spiny hackberry, and other spine-studded vegetation often characterize habitat.
	Ocelot	*Felis pardalis*	E	E	Dense, thorny thickets of southern Texas with a proximity to a water source. Spiny hackberry, lotebush, black-brush, and mesquite characterize habitat where a line of sight is limited to approximately 5 feet.
	Southern yellow bat	*Lasiurus ega*	-	T	Associated with sabal palms (*Sabal spp.*) near Brownsville, breeds in late winter, ranges far for insects. Breeds in late winter.

3.1.4 Wetlands and Aquatic Habitat

A total of 17 individual wetlands areas were identified during field surveys, comprising 120.4 acres within the levee ROW (Figure 3.1). Twelve wetlands within the ROW can be described as "Non-jurisdictional water features" which are typically seasonally or temporarily flooded former borrow pits (Table 3.3). Historical references (*e.g.*, 1925 Hidalgo County Soil Survey and historical topographic maps) were used to identify borrow pits that may have been modified resaca scars or other water-impounding feature. Up to 1.0 acres of wetlands would be impacted (Wetlands A, B, D, F, and H).

Five of the identified wetlands could be considered jurisdictional waters of the U.S. under Section 404 of the Clean Water Act (CWA). Only 0.1 acre of the wetlands, comprising 39.1 acres within the ROW, would be located within the potential levee expansion area (Wetlands F). Impact to this wetlands will be avoided by modified realignment of levee expansion.

Scale = 1 : 42,000

0 1,250 2,500 5,000 7,500 10,000 Feet

0 0.25 0.5 1 1.5 2 Miles

1/2 Mile Markers

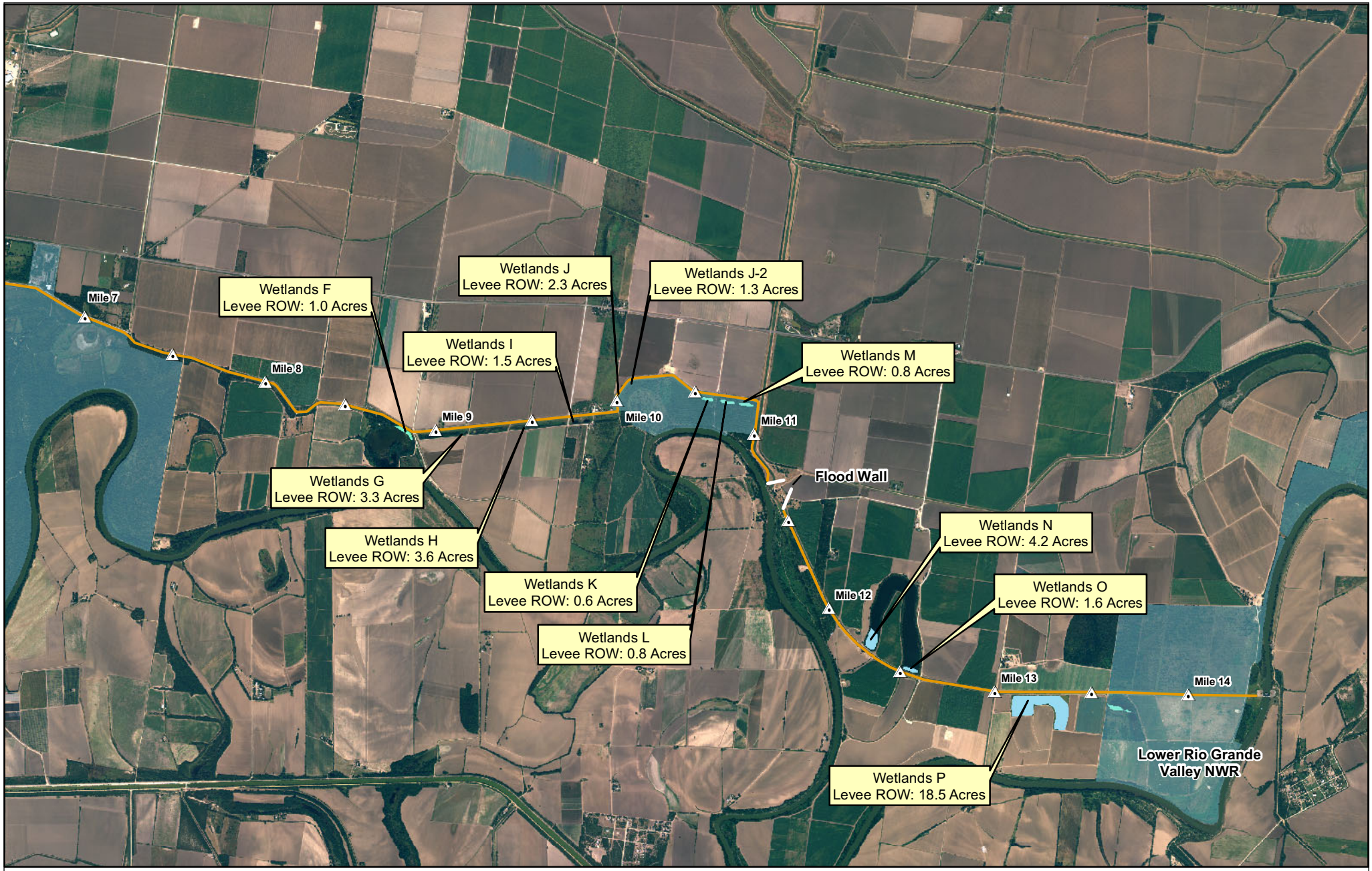
Center Line

3.1a Wetlands Locations
Upper Reach

Environmental Assessment
International Boundary and Water Commission
United States Section

PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\wetlands_locations.mxd - 11/3/2006 @ 3:06:46 PM



Scale = 1 : 42,000

0 1,250 2,500 5,000 7,500 10,000 Feet

0 0.25 0.5 1 1.5 2 Miles

1/2 Mile Markers

Center Line

3.2 Wetlands Locations

Lower Reach

Environmental Assessment
International Boundary and Water Commission
United States Section

PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\wetlands_locations.mxd - 11/3/2006 @ 3:36:35 PM

Table 3.3 Wetlands Identified along the Lateral A/Retamal Dike Levee System

Wetlands Name	Description	Determination as Potential Jurisdictional Wetlands	Acreage Within ROW	Acreage Within Expansion Area
A	Carlson Settling Basin	Non Jurisdictional wetlands. Water intake into settling basin is artificial (via mechanical pumps).	0.1	0.6
B	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	15.2	0.1
C	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	1.4	0.0
D	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	0.4	0.1
E	*Resaca feature*	*Potential jurisdictional wetlands (Regulated under Section 404 of CWA)*	*10.8*	*0.0*
F	*Resaca feature*	*Potential jurisdictional wetlands (Regulated under Section 404 of CWA)*	*1.0*	*0.1 (4402 sq ft)*
G	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	16.3	0.0
H	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	20.6	0.1
I	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	6.5	0.0
J	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	7.3	0.0
J-2	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	4.3	0.0
K	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	2.6	0.0
L	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	2.8	0.0
M	Temporarily Flooded, emergent non-forested	Non jurisdictional water feature. Excavated borrow pit not in existence prior to levee construction	3.8	0.0
N	*Resaca feature*	*Potential jurisdictional wetlands (Regulated under Section 404 of CWA)*	*6.2*	*0.0*
O	*Resaca feature*	*Potential jurisdictional wetlands (Regulated under Section 404 of CWA)*	*2.6*	*0.0*
P	*Resaca feature*	*Potential jurisdictional wetlands (Regulated under Section 404 of CWA)*	*18.5*	*0.0*
TOTAL POTENTIAL JURISDICTIONAL WETLANDS			**39.1**	**0.1**

3.2 CULTURAL RESOURCES

The proposed project lies within the Los Caminos del Rio Heritage Project corridor, an area of regional, national, and international prehistoric, historic, and architectural significance (Sánchez 1994). The corridor is located along the lower Rio Grande and lies entirely within Terminal Pleistocene and Holocene fluvial deposits of a wide delta plain. This plain extends from Los Ebanos to the Gulf of Mexico, a distance of approximately 80 miles (Cooper, *et al*. 2002:Figure 15). This delta plain is dominated by deposits of silt and sand, while deposits within old meander loops are dominated by mud (Brewton, *et al*. 1976).

Surface landforms within the delta plain are characterized by meandering distributary channels, crevasse splays and interdistributary basins. These landforms are believed to be no older than 4,500 years before present (B.P.) based on radiocarbon dates from a proposed terrace landform (Boyd, *et al*. 1994:82). The data are inconclusive, however, as Cooper, *et al*. (2002:86) suggest that the proposed terrace is in fact a natural levee feature located along an old meander loop of the river.

The land area reviewed in this section consists of 100 feet either side of the center line of the levee and dike sections and is referred to as the project study corridor. This area extends slightly beyond the current ROW to include areas of potential cultural resources immediately adjacent to the project but beyond the current ROW that might be acquired for project expansion. The Lateral A Canal extends along the north side of the Lateral A Levee for a distance of 7.25 miles.

3.2.1 Previous Cultural Resources Studies

Five previous cultural resources surveys have been conducted within or immediately adjacent to the project area. In 1972 a survey by the National Park Service was conducted prior to the construction of the Retamal Dike and Retamal Dam (Brown 1972). Two historic sites recorded during this survey, 41HG32 and 41HG33, have been bisected by the construction of Retamal Dike. These sites are, respectfully, the remains of a brick kiln dating to around 1940 and a former bootleg saloon known as Casa del Colorado constructed in 1908. Casa del Colorado may also be a part of the much larger Santa Rita Ranch, a historic ranch located along this banco in the same general vicinity. The survey report by Brown (1972) was not located, and the level of data recovery at these two sites is unknown. In 1978 a 23-acre survey was conducted at the Santa Ana NWR by Southmost College (Paull and Zavaleta 1978). Little information on this survey was available from the Texas Archeological Sites Atlas (TASA), and the exact location of the survey area within the refuge is not specified.

In 1993 an aerial survey was conducted by Prewitt and Associates for the proposed Pharr-Reynosa International Bridge. The 400-acre survey covered a 1.6-mile section of the Lateral A Levee System, and 10 archaeological sites were recorded (Kibler and Freeman 1993). Of these sites, three are immediately adjacent to the levee ROW (41HG160, 41HG164, and 41HG165) and are likely to be adversely affected if new ROW is acquired in these areas. The three sites are the locations of historic artifact scatters where residential structures have been removed.

In 1999, a 9-mile-long linear survey was conducted for the Federal Energy Regulatory Commission (FERC) from south of Alamo to southeast of Hidalgo. This survey crossed the Pharr-San Juan Main Canal approximately 1,500 feet north of the Lateral A Levee. No cultural resources were recorded during this survey within the project vicinity. In 2004, a 195-acre survey was conducted immediately north of the Donna Pump Station and abutting the eastern edge of the Lateral A Levee (Driver 2004). The survey was conducted for the Donna-Rio Bravo International Border Crossing. Sixteen backhoe trenches were excavated, and one pit feature was located. The feature was dated at 3470 to 3260 cal B.P. but could not be conclusively attributed to human activity (Driver 2004).

In 1995, the Louisiana-Rio Grande Irrigation Company National Register District was created. This district extends over more than 130 square miles of southern Hidalgo County and includes all but the eastern 1.2 miles of the Lateral A Levee. The Retamal Dike portion of the project is also located outside of the district.

More recently, previous archival research and a cultural resources assessment was conducted by Cooper, *et al.* (2002) to determine the potential for archaeological sites along the 180-mile length of the Lower Rio Grande Flood Control Project (LRGFCP), of which the current Lateral A Levee/Retamal Dike project is a part. Cooper, *et al.* (2002) identified 19 recorded archaeological sites and 28 areas as having a high potential to contain cultural resources within the Lateral A and Retamal Dike study corridors, as defined at that time. The 28 areas were designated as High Probability Areas (HPA) (Cooper, *et al*. 2002). The majority of these archaeological sites and HPAs are located well south of the currently defined study corridor of the project and will not be affected.

A cultural resources evaluation of the Lateral A Levee/Retamal Dike was conducted by Neel (2006) in support of the Environmental Assessment (EA) preparation. The evaluation included research from online and archival sources, as well as published reports to supplement previous research by Cooper, *et al.* (2002). In addition, photographic documentation of landforms and resources along the project route was collected. Evaluation methods and detailed findings were reported in the document *An Archaeological and Historic Resources Evaluation of Proposed Improvements to the Lateral A Levee System and Retamal Dike, Hidalgo County, Texas* (Neel 2006) and is provided with the Draft EA in electronic format. No systematic intensive archaeological or historic resources surveys have been undertaken for the Lateral A/Retamal Dike Levee System.

Figure 3.2 shows locations of known and potential cultural resources along the Lateral A Levee/Retamal Dike Levee System.

Figure 3.2a Lateral A/Retamal Dike Study Corridor Showing Locations of Known and Potential Cultural Resources

FIGURE 3.2 IS NOT INCLUDED IN PUBLIC DISTRIBUTION COPY

Figure 3.2b

FIGURE 3.2 IS NOT INCLUDED IN PUBLIC DISTRIBUTION COPY

Figure 3.2c

FIGURE 3.2 IS NOT INCLUDED IN PUBLIC DISTRIBUTION COPY

Figure 3.2d

FIGURE 3.2 IS NOT INCLUDED IN PUBLIC DISTRIBUTION COPY

3.2.2 Historic and Prehistoric Archaeological Resources

Historic Archaeological Resources

Previous studies in the form of archival research and a cultural resources assessment have been conducted to determine the potential for archaeological sites along the 180-mile length of the LRGFCP (Cooper, *et al*. 2002). Seventeen known historic archaeological sites and 28 other areas were identified at that time as having high potential for historic archaeological resources within the Lateral A Levee/Retamal Dike portion of the LRGFCP study corridor (Cooper, *et al*. 2002). Five of these historic archaeological sites and four HPAs for historic archaeological resources identified by Cooper, *et al*. (2002:Maps 2 and 3) are located within the currently defined Lateral A/Retamal Dike Levee corridor and retain the potential to be affected by the proposed project. Additional areas of potential historic archaeological resources were identified during the archival research conducted in support of the Lateral A Levee/Retamal Dike EA (Neel 2006). These resources are the locations of former buildings associated with San Juan Hacienda, Alambrado Ranch, Esperanza Ranch, Young's Ranch, Santa Rita Ranch, abandoned canals, and areas where residential structures have been removed. These historic archaeological resources and HPAs are listed in Table 3.4 and depicted on Figures 3.2a through 3.2d. The areas identified as HPAs are locations of structures as depicted on the 1916 San Juan quadrangle map (USGS 1916), or the Banco 39 and 40 maps (DOS 1910). The archaeological sites location data are derived from Texas Archaeological Studies Association (TASA) reports.

Table 3.4 Historic Archaeological Resources and HPAs Identified Within or Near the Project Study Corridor

*Resource Type**	*Previous Designation (reference)*	*Primary Source (year)*	*Description***	*Location: (R) Riverside (L) Landside (B) Both sides*	*Within 100 ft construction corridor (estimate)*	*Resource Number/ Map Key*
HPA	Boyd 3 (Cooper, *et al*. 2002:B-11)	(IBC) (1909)	El Capote community location	R	yes	Boyd 3
HPA	Resource 8 (Neel 2006)	IBC (1934)	Previous structure location	B	yes	8
Recorded archaeological site	41HG165 (Cooper, *et al*. 2002:B-11)	TASA (1993)	Not verified	R	no	41HG165
Recorded archaeological site	41HG164 (Cooper, *et al*. 2002:B-11)	TASA (1993)	Not verified	R	no	41HG164
HPA	16LM6 (Cooper, *et al.* 2002:B-10)	(USGS) (1916)	Previous structure locations	B	yes	16LM6
Recorded archaeological site	41HG160 (Cooper, *et al*. 2002:B-11)	TASA (1992)	Not verified	L	no	41HG160
HPA	Resource 12 (Neel 2006)	(DOS) (1913)	Abandoned Canal, not evident	B	yes	12

Resource Type*	***Previous Designation (reference)***	***Primary Source (year)***	***Description****	***Location: (R) Riverside (L) Landside (B) Both sides***	***Within 100 ft construction corridor (estimate)***	***Resource Number/ Map Key***
HPA	NF1 (Cooper, *et al*. 2002:B-11)	USGS (1916)	Glass, ceramic, metal, and brick scatter observed at NF1	L	no	NF1
HPA	Resource 13 (Neel 2006)	DOS (1912)	San Juan Hacienda location	L	yes	13
HPA	Resource 14 (Neel 2006)	DOS (1912)	Alambrado Ranch location	L	yes	14
HPA	B40-2*** (Cooper, *et al*. 2002:B-16)	DOS (1929)	Esperanza Ranch location	R	yes	16
HPA	Resource 17 (Neel 2006)	DOS (1929)	Young's Ranch location	L	yes	17
HPA	Resource 21 (Neel 2006)	DOS (1912)	Lateral Canal, not evident	B	yes	21
HPA	Resource 22 (Neel 2006)	DOS (1912)	Hallaway Canal, not evident	B	yes	22
Recorded archaeological site	41HG33 (Cooper, *et al*. 2002:B-15)	TASA (1972)	Not verified	B	yes	41HG33
HPA	B39-1 (Cooper, *et al*. 2002:B-16)	DOS (1910)	Santa Rita Ranch location	L	yes	B39-1
Recorded archaeological site	41HG32 (Cooper, *et al*. 2002:B-15)	TASA (1972)	Not verified	B	yes	41HG32

* The Study Corridor is a 200-foot-wide area centered on the current levee.

** The description is based on a cursory field inspection of the resource conducted by Neel (2006).

*** The location of Young's Ranch identified in Cooper, *et al.* (2002) as B40-2 is plotted in that report at the location of the Esperanza Ranch.

Prehistoric Archaeological Resources

Two previously recorded prehistoric archaeological sites were identified within close proximity to the Lateral A Levee portion of the LRGFCP, and no HPAs were identified for prehistoric archaeological resources during the previous study by Cooper, *et al.* (2002). A second review of the TASA in September 2006 confirms this data (Neel 2006:4). The two prehistoric archaeological sites identified by Cooper, *et al.* (2002), 41HG153 and 41HG158, are located well south of the current Lateral A Levee study area and will not be adversely affected by the project. One area of prehistoric artifacts was observed during the field visit by Neel (2006). Flakes and a tested cobble were observed at the entrance to the Jackson Cemetery during photographic documentation of this resource.

Additional archival research and a review of the prehistoric settlement pattern within the project area by Neel (2006:8) indicate that prehistoric sites are likely to occur along the outer edges of former meander bends (natural levees) or along edges of chute channels. Based on this distribution, prehistoric archaeological resources are more likely to occur in four distinct areas along the Lateral A Levee where the levee has been constructed across these natural landforms: along an unnamed meander (HPA 7), along the northern boundary of the Santa Ana NWR (HPA 15), at the San Juan del Rio Banco No. 40 (HPA 18), and at the Monterrey Banco No. 89 (HPA 20). In addition, prehistoric artifacts were reported on the surface at the location of the Jackson Cemetery entrance (HPA 10) by Neel (2006:10) during a field visit to photograph this resource. Prehistoric archaeological resources are also more likely to occur along the Retamal Dike at three locations where the levee has been constructed across the natural levee landforms: at the crossings with the Longoria Banco No. 39 (HPA 24 and 41HG33), at the Retamal Banco No. 105 (HPA 25), and at the Pena Flora Banco No. 106 (HPA 26). No systematic intensive archaeological surveys for prehistoric sites have been undertaken for the Lateral A/Retamal Dike Levee. The locations of these HPAs for prehistoric resources are depicted on Figure 3.2 and listed in Table 3.5.

Table 3.5 Prehistoric Archaeological Resources and HPAs Identified Within or Near the Project Study Corridor

*Resource Type **	*Previous Designation (reference)*	*Primary Source (year)*	*Description***	*Location: (R) Riverside (L) Landside (B) Both sides*	*Within 100-ft construction corridor (estimate)*	*Resource Number/ Map Key*
HPA	Resource 7 (Neel 2006)	Neel (2006)	Natural levee	B	yes	7
HPA	Resource 10 (Neel 2006)	Neel (2006)	Prehistoric artifacts	R	no	10
HPA	Resource 15 (Neel 2006)	Neel (2006)	Natural levee	B	yes	15
HPA	Resource 18 (Neel 2006)	DOS (1910)	Natural levee	B	yes	18
HPA	Resource 20 (Neel 2006)	DOS (1913)	Natural levee	B	yes	20
HPA	Resource 24 (Neel 2006)	DOS (1910)	Natural levee	B	yes	24
HPA	Resource 25 (Neel 2006)	DOS (1929)	Natural levee	B	yes	25
HPA	Resource 26 (Neel 2006)	DOS (1929)	Natural levee	B	yes	26

* The Study Corridor is a 200-foot-wide area centered on the current levee.

** The description is based on a cursory field inspection of the resource conducted by Neel (2006).

3.2.3 Historic-age Resources

Previous research has been conducted to determine if historic-age buildings and structures are known to be present along the LRGFCP (Cooper, *et al*. 2002). Only one structure, a small brick building in ruins, was identified as occurring within the current project area and was designated NF1 (Cooper, *et al.* 2002:B-11).

More recent investigations conducted in preparation of this EA indicate numerous other historic-age resources exist within the project ROW and immediately adjacent to the ROW (Neel 2006). These historic-age resources are engineering elements of the levee system and residential structures located along the levee. The engineering structures are the Lateral A Levee itself, the Pharr-San Juan Main Canal, the Lateral A Canal, concrete bridges that cross this canal, approximately 16 weir gates and standpipe structures, the old Donna Canal, the Donna Main Canal, and the historic-age structures complex at the Donna Pump Station (Neel 2006). Additional historic-age structures were identified on 1934 aerial photographs (International Boundary Commission [IBC] 1934) located in the Special Collections of The University of Texas Pan American. These are residential structures located immediately outside of the ROW. A limited field reconnaissance indicates that approximately 13 of these structures are extant. The locations of these historic-age resources are depicted on Figure 3.2 and listed in Table 3.6. No reconnaissance level field survey of historic-age resources within the project area has been completed.

Table 3.6 Historic-age Resources Identified Within or Near the Project Study Corridor

*Resource Type**	*Previous Designation (reference)*	*Primary Source (year)*	*Description***	*Location: (R) Riverside (L) Landside (B) Both sides*	*Within 100-ft construction corridor (estimate)*	*Resource Number/ Map Key*
Historic-age structure	Resource 1 (Neel 2006)	IBC (1934)	Pharr–San Juan Main Canal, in use	B	no	1
Historic-age structure	Resource 2 (Neel 2006)	IBC (1934)	Lateral A Levee weir gates and standpipes, in use	B	yes	2
Historic-age structure	Resource 3 (Neel 2006)	IBC (1934)	Lateral A Canal, in use	L	yes	3
Historic-age structure	Resource 4 (Neel 2006)	IBC (1934)	Lateral A Levee, in use	B	yes	4
Historic-age structure	Resource 5 (Neel 2006)	IBC (1934)	13 structures are extant at locations of structures on the 1934 aerial photograph	B	yes	5
Historic-age structure	Resource 6 (Neel 2006)	IBC (1934)	Bridges are shown on the 1934 aerial photograph of the levee	B	yes	6
Historic-age structure	16LM8 (Cooper, *et al.* 2002:B-10)	USGS (1916)	Extant structure	R	yes	16LM8

Resource Type*	***Previous Designation (reference)***	***Primary Source (year)***	***Description*****	***Location: (R) Riverside (L) Landside (B) Both sides***	***Within 100-ft construction corridor (estimate)***	***Resource Number/ Map Key***
Historic-age structure	16LM7 (Cooper, *et al.* 2002:B-10)	USGS (1916)	Extant structure	R	no	16LM7
Christo Salva Church and Cemetery	HG-C073 (TASA 2004) Resource 9 (Neel 2006)	TASA (2004)	Church and cemetery, in use	R	yes	9
Cemetery	Resource 10 (Neel 2006)	Neel (2006)	Jackson Cemetery, fenced and in use	R	no	10
Historic-age structure	Resource 11 (Neel 2006)	Neel (2006)	Concrete pump mount and weir box	L	no	11
Historic-age structure	NF1 (Cooper, *et al.* 2002:B-11)	USGS (1916)	Standing brick building, without roof; possibly the San Juan Hacienda Store	L	no	NF1
Cemetery	CEM (Cooper, *et al.* 2002:B-16)	Cooper, *et al.* (2002:B-16)	Fenced cemetery at Esperanza Ranch location	L	no	CEM
Historic-age structure	Resource 19 (Neel 2006)	IBC (1934)	Old Donna Canal, abandoned	R	yes	19
Cemetery	Webber Cemetery (Neel 2006)	Neel (2006)	Webber Cemetery, fenced and in use	L	no	Webber Cemetery
Historic-age structure	Resource 23 (Neel 2006)	DOS (1913)	Donna Main Canal, in use	L	no	23
Historic-age structures	16SJ4 (Cooper, *et al.* 2002:B-15)	DOS (1913)	Donna Pump Station and Canal, in use	B	yes	16SJ4

* The Study Corridor is a 200-foot-wide area centered on the current levee.

** The description is based on a cursory field inspection of the resource conducted during by Neel (2006).

3.2.4 Cemeteries

Four cemeteries have been identified as occurring immediately adjacent to the levee ROW. These are the cemetery at Christo Salva Church, the Jackson Cemetery, an unnamed cemetery possibly associated with the Esperanza Ranch, and the Webber Cemetery. The cemetery at Christo Salva has been recorded by the Texas Archaeological Research Laboratory (TARL) as HG-C073. Prehistoric artifacts have been reported at the entrance to the Jackson Cemetery (Neel 2006). The locations of these cemeteries are depicted on Figure 3.2a through 3.2d and listed in Table 3.7.

Table 3.7 Cemeteries Identified Within or Near the Project Study Corridor

*Resource Type **	*Previous Designation (reference)*	*Primary Source (year)*	*Description***	*Location: (R) Riverside (L) Landside (B) Both sides*	*Within 100-foot construction corridor (estimate)*	*Resource Number/ Map Key*
Cemetery	HG-C073 (TASA 2004) Resource 9 (Neel 2006)	TASA (2004)	Christo Salva Church and cemetery, in use	R	yes	9
Cemetery	Resource 10 (Neel 2006)	Neel (2006)	Jackson Cemetery, fenced and in use	R	no	10
Cemetery	CEM (Cooper, *et al*. 2002:B-16)	Cooper, *et al.* (2002:B -16)	Fenced cemetery at Esperanza Ranch location	L	no	CEM
Cemetery	Webber Cemetery (Neel 2006)	Neel (2006)	Webber Cemetery, fenced and in use	L	no	Webber Cemetery

* The Study Corridor is a 200-foot-wide area centered on the current levee.

** The description is based on a cursory field inspection of the resource conducted during by Neel (2006).

3.3 WATER RESOURCES

3.3.1 Regional Flood Control

Lower Rio Grande Flood Control Project

In 1932 an agreement was reached between the United States and Mexico to develop a coordinated plan for an international project to protect the Lower Rio Grande Valley against flooding from the Rio Grande in both countries. This agreement, which later resulted in the Lower Rio Grande Flood Control Project, was developed by the IBWC. The USIBWC and MxIBWC are each responsible for meeting treaty obligations within their national boundaries.

The LRGFCP is designed for flood protection of urban, suburban, and highly developed irrigated farm lands in the Rio Grande delta in both countries. The LRGFCP flood levees are grass-covered earthen structures, with a distance between the United States and Mexican levees ranging from approximately 400 feet to 3 miles (USIBWC 1992). The LRGFCP is jointly operated by the USIBWC and MxIBWC to convey excess floodwaters of the Rio Grande to the Gulf of Mexico through the river and United States and Mexican interior floodways.

The LRGFCP facilities on the United States side are located in Hidalgo, Cameron, and Willacy Counties, Texas, with the river levee beginning near the Town of Peñitas at the head of the delta, about 180 river miles from the Gulf of Mexico. The United States interior floodway system is flanked by 168 miles of levees covering the natural channel of the Arroyo Colorado, and 102 miles of levees along the Rio Grande (USIBWC 1980).

The LRGFCP includes the Anzalduas Diversion Dam, completed in 1960, and the Retamal Diversion Dam, completed in 1973. Joint ownership of Anzalduas and Retamal Dams is a responsibility of the United States and Mexico via the IBWC, United States and Mexico. Operation and maintenance is shared equally between both countries.

The design flood for the LRGFCP is based on a peak flow of 250,000 cubic feet per second (cfs) at Rio Grande City, which attenuates to 235,000 cfs at Peñitas. During the design flood, Anzalduas Diversion Dam and Retamal Diversion Dam would each divert 105,000 cfs into the United States and Mexico, respectively. Flow diversion during the design flood would limit flood flows through the Brownsville-Matamoros area to 20,000 cfs. The USIBWC and MxIBWC coordinate operation of these dams to ensure both dams divert equal flows into the respective countries during significant flood events.

Lateral A/Retamal Dike Levee System.

The current Levee System does not meet design criteria for the design flood event. The need for improvements to the 14-mile levee system and current levee elevation data was determined by hydraulic modeling completed by the USIBWC. A 3-foot freeboard value is the design criterion for the levee system. The current levee elevation would not meet this freeboard requirement.

3.3.2 Water Flow

Flow of the Rio Grande is highly variable and tightly managed. Along the LRGFCP, including the Lateral A/Retamal Dike Levee System, the flow is dictated by the needs of agriculture and crop watering schedules. Low water flow conditions characterize the river, with minimum values from September to February. Severely reduced flows occur, frequently due to increased water demands from a growing urban and industrial population, reduced riparian habitat and ground cover, proliferation of exotic aquatic vegetation, and recent drought conditions. Rio Grande water is currently fully allocated with agricultural use constituting 82 to 90 percent of the water in the Lower Rio Grande Valley (USIBWC 2003b).

Two other factors that impact flow in the Rio Grande are water storage and storms. There are two large international reservoirs on the lower Rio Grande, International Amistad Reservoir, near Del Rio, Texas, and International Falcon Reservoir, near Zapata, Texas. These reservoirs store water for agricultural use, public water supply, and recreational activities, and provide storage capacity for control of floods. Storm water is managed by 270 miles of levees that channel flow into and out of diversions and floodways. During non-flood conditions, irrigation/treated effluent and local drainage flow into the floodways through over 550 irrigation and drainage structures.

3.4 LAND USE

Current land use along the Lateral A/Retamal Dike 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.

Agricultural Lands

Agricultural lands flank nearly all of the landside of the Lateral A levee. On the riverside, natural resources management areas intermixed with agricultural parcels account for approximately one half of the land adjacent to the levee. Approximately two-thirds of the Retamal Dike, the upper reach, is surrounded by agricultural parcels; the downstream reach runs through a unit of the Lower Rio Grande Valley NWR.

Natural Resources Management Areas

Several large tracts of land in the area have been acquired by the USFWS and incorporated into the Lower Rio Grande Valley NWR and Santa Ana NWR. Refuge lands are found primarily along 3.5 miles on the riverside of the levee: between Project Miles 0-0.3 and 13.8-14.0 along the Lower Rio Grande Valley NWR, and between Project Miles 4.5-7.5 along the Santa Ana NWR. Two irrigation canals border approximately 7 miles of the landside levee: Lateral A Canal (Project Miles 0 to 4.0 and Project Miles 4.5 to 7.3), and the Main Canal of the Donna Irrigation District (Project Miles 10.6 to 11.0). Additional land tracts near the levee have been acquired by various irrigation districts or residential subdivisions.

Urban Areas

There is no urban development on the vicinity of the Lateral A/Retamal Dike Levee System. No residential developments are located, or allowed, within the levee system ROW.

3.4.1 Socioeconomics

The Lateral A/Retamal Dike Levee System is located in the southern portion of Hidalgo County which comprises 1,596 square miles of Rio Grande delta. The nearest populated area to the proposed levee improvement area is the City of Hidalgo adjacent to the levee system to the west of the upper reach of the Lateral A/Retamal Dike Levee.

Population

Hidalgo County's total population in 2000 was approximately 569,463, a 33 percent increase from 383,545 in 1990 (U.S. Census Bureau 2000). The cities with the largest populations within the county are McAllen with a population of 106,414; Mission, population 45,000; and Pharr, population 46,660. The City of Hidalgo had a 2000 population of 7,322. The largest racial category for the county is "Hispanic or Latino" (Table 3.8). The median age for Hidalgo County is 27 years, with a 48 percent male and 52 percent female population. According to the 2000 U.S. Census, Hidalgo County has 192,658 total housing units; 81 percent of which are occupied (U.S. Census Bureau 2000).

Table 3.8 Racial Composition of Hidalgo County

Race	Number	Percent
Hispanic or Latino (any race)	503,100	88.3%
White	59,423	10.4%
Black or African American	1,934	0.3%
American Indian and Alaska Native	428	0.1%
Asian	3,635	0.6%
Other	1,371	0.3%
Total Population	569,463	100%

Employment

Hidalgo County's total full-time and part-time employment in 2001 was 217,418 (Bureau of Economic Analysis 2003). The largest employment sectors in terms of jobs were federal, state, and local government; trade, transportation and utilities; and education and health services with 43,699, 35,337, and 25,335 jobs, respectively. The unemployment rate in 2002 was 12.1 percent (Texas Economic Development 2005). Farm employment makes up approximately 2 percent of the county's total employment (Bureau of Economic Analysis 2003). In 1997 there were approximately 1,373 farms totaling 635,884 acres in the county. The surrounding area near the proposed levee improvement area is primarily agricultural.

Income

Income and poverty figures obtained from the 2000 census for Hidalgo County are provided in Table 3.9 (U.S. Census Bureau 2000). Hidalgo County records show that 41,725, or 31.3 percent of the families, and 201,865, or 35.9 percent of individuals are below the poverty line. The average per capita annual income is $9,899.

Table 3.9 Hidalgo County Income Data

Income and Poverty Characteristics	Hidalgo County
Total population	569,463
Total number of families	133,186
Median family income	$ 26,009
Families below the poverty line (31.3%)	41,725
Individuals below the poverty line (35.9%)	201,865
Total number of households (81% occupancy)	156,709
Median household income	$ 24,863
Per capita income (dollars)	$ 9,899

3.4.2 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 Executive Order requires a federal agency to make "…achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." As such, a 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 will be suffered by the non-minority population and/or non-low income population.

Information from Tables 3.9 and 3.10 indicate that Hidalgo County has disproportionately high minority (approximately 88 percent) and low-income populations (individuals – 35.9 percent) in relation to the State of Texas.

3.4.3 Transportation

Hidalgo County is an important throughway for agricultural products. The major artery 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 the county from east to northwest. Hidalgo County has an extensive network of state and farm-to-market roads. The two spans of the Hidalgo-Reynosa International Bridge over the Rio Grande, the Pharr-Reynosa Bridge, and the Progreso Bridge serve as crossing points between Mexico and the United States. A new bridge, the Anzalduas International Bridge, is in the design phase. Two major rail systems serve Hidalgo County.

The Lateral A/Retamal Dike Levee crown is an unpaved service road with restricted public access throughout most of the system. The service road is utilized by the USIBWC as a service road for levee maintenance and vegetation management. The service road is also used extensively by the U.S. Border Patrol for immigration control, by the USFWS for access to the Lower Rio Grande Valley NWR and Santa Ana NWR, adjacent landowners, and local farmers.

3.5 ENVIRONMENTAL HEALTH

3.5.1 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 NAAQS. All areas within each AQCR are assigned a designation of attainment, nonattainment, unclassifiable attainment, or not designated attainment for each criteria air pollutant.

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. As of April 2005, the USEPA designated air quality within all counties of AQCR 213 to be under attainment status for all criteria pollutants (USEPA 2005). The emissions data for Hidalgo County 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 (TCEQ) identified 12 companies in Hidalgo County as contributors of point source emissions. Potential stationary sources of criteria pollutant and hazardous air pollutant emissions within Hidalgo County include the Rio Grande Valley Sugar growers, Inc., several oil mills and refineries, and utilities and gasoline facilities (TCEQ 2004). Area emission sources for Hidalgo County, as designated generally by USEPA, include waste disposal and recycling, highway and off-highway vehicles, and other miscellaneous emission sources (USEPA 1999). The area and stationary point source emission inventory for Hidalgo County for calendar year 1999, the latest available data from USEPA as of May 2005 (USEPA 1999) is as follows:

- Carbon monoxide, 151,085 tons per year;
- Volatile organic compounds, 27,812 tons per year;
- Nitrogen dioxide, 19,726 tons per year;
- Sulfur oxides, 1,127 tons per year; and
- Particulate matter greater than 10 micrometers (PM_{10}), 61,819 tons per year.

3.5.2 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 have been 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 (dB), 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 (U.S. Department of Transportation 1980). Potential adverse effects of noise include annoyance, speech interference, and hearing loss.

Annoyance. Noise annoyance is defined by the USEPA as any negative subjective reaction to noise by an individual or group. Typically 15 to 25 percent of persons exposed on a long-term basis to DNL of 65 to 70 dBA would be expected to be highly annoyed by noise events, and over 50 percent at DNL greater than 80 (National Academy of Sciences 1977).

Speech Interference. In a noisy environment, understanding speech is diminished when speech signals are masked by intruding noises. Based on a variety of studies, DNL 75 dBA indicates there is good probability for frequent speech disruption. This level produces ratings of "barely acceptable" for intelligibility of spoken material. Increasing the level of noise to 80 dBA reduces the intelligibility to zero, even if the people speak in loud voices.

Hearing Loss. Hearing loss is measured in dBs and refers to a permanent auditory threshold shift of an individual's hearing. The USEPA (USEPA 1974) recommended limiting daily equivalent energy value of equivalent sound level of 70 dBA to protect against hearing impairment over a period of 40 years. Hearing loss projections must be considered conservative as the calculations are based on an average daily outdoor exposure of 16 hours. It is recommended that no residential uses, such as homes, multi-family dwellings, dormitories, hotels, and mobile home parks, be located where the noise is expected to exceed a DNL of 65 dBA. Some commercial and industrial uses are considered acceptable where the noise level exceeds DNL of 65 dBA. For outdoor activities, the USEPA recommends DNL of 55 dBA as the sound level below which there is no reason to suspect that the general population will be at risk from any of the impacts of noise (USEPA 1974).

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 Lateral A/Retamal Dike Levee System is predominantly managed as agricultural land, and some is managed as wildlife refuge areas. Near Mile 0, close to the Carlson Settling Basin, there is a Middle School present, which can be considered a sensitive noise receptor.

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).

3.5.3 Hazardous and Toxic Waste

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances and Control Act. Hazardous waste is defined under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, both hazardous substances and waste include substances that, because of their quantity, concentration, and physical, chemical, or infectious characteristics, may present a danger to public health and/or welfare and to the environment when released or improperly managed.

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 Lateral A/Retamal Dike Levee System was conducted by Banks Information Systems. The search extended along the entire levee system, up to 0.5 miles from the levee corridor centerline. Detailed data are reported in the document *Technical Support Studies for the Environmental Assessment of Flood Control Improvements to the Lateral A/Retamal Dike Levee System* (Parsons 2006). The identification of hazardous and toxic waste disposal and the storage site near the project area included the following databases:

- The National Priorities List;
- RCRA Corrective Actions and associated Transport, Storage, and Disposal list;
- State equivalent priority list;
- State equivalent Comprehensive Environmental Response, Compensation, and Liability Information System list;
- Sites currently or formerly under review by the USEPA;
- RCRA-permitted transport, storage, and disposal facilities;
- RCRA-registered generator of hazardous waste;
- Registered underground storage tanks, including leaking underground storage tanks;
- Registered aboveground storage tanks;
- Sites permitted as solid waste landfills, incinerators, or transfer stations;
- Emergency Response Notification System of Spills list; and
- State spills list.

Table 3.10 resents results of the search along the Lateral A/Retamal Dike Levee System, including the search radius by individual database. Detailed results are provided in the

Technical Support Studies Report prepared for the EA. No waste storage and disposal sites were identified for the project area or within a quarter mile from the levee system. A leaking underground storage tank site was reported within one-half mile from the levee system. This site would not affect, or be affected, by the levee construction project.

Table 3.10 Summary Search for the Lateral A/Retamal Dike Levee System

Database	Database Updated	Search Radius	Levee Corridor	1/8 Mile	1/4 Mile	1/2 Mile	Total
NPL	08-08-06	1.00	0	0	0	0	0
CERCLIS	06-08-06	0.50	0	0	0	0	0
NFRAP	06-08-06	0.25	0	0	0	0	0
RCRA TSD	4-16-06	0.50	0	0	0	0	0
RCRA COR	4-16-06	1.00	0	0	0	0	0
RCRA GENS	4-16-06	0.50	0	0	0	-	0
ERNS	12-31-05	0.25	0	0	0	-	0
State Sites	05-14-06	1.00	0	0	0	0	0
SWL	05-14-06	0.50	0	0	0	0	0
Spills	05-15-05	0.25	0	0	0	-	0
Other	03-14-06	0.25	0	0	0	-	0
Regular UST/AST	06-28-06	0.25	0	0	0	-	0
Leaking UST	06-28-06	0.50	0	0	0	1	1
Brownfields	1-19-06	0.50	0	0	0	0	0
Total Sites			**0**	**0**	**0**	**1**	**1**

NPL: National Priorities List
CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
NFRAP: CERCLIS database of No Further Action Required
TSD: Transport, storage, and disposal
GENS: Generator of Hazardous Waste
COR: _Corrective Actions
ERNS: Emergency Response Notification System
SWL: Solid Waste Landfill
UST/ABS: Underground storage tank / Aboveground storage tank
AST: aboveground storage tank

SECTION 4
ENVIRONMENTAL CONSEQUENCES

Section 4 presents an analysis of the environmental consequences of the No Action Alternative and proposed improvements for the Lateral A/Retamal Dike Levee projects. Resource areas are presented in the same sequence used for the description of the affected environment in Section 3: biological resources; cultural resources; water resources; land use, community resources; and environmental health issues.

4.1 BIOLOGICAL RESOURCES

4.1.1 Vegetation

No Action Alternative

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

Proposed Action

Improvements to the Lateral A/Retamal Dike Levee corridor would affect plant communities through excavation and fill activities. Impacts would occur on the levee sidewalls where fill would be added, and within the expanded levee footprint area. The vegetation communities identified during field surveys fall into one of the following classes: a) Woodlands/Thornscrub (mesquite-acacia woodland); b) Herbaceous, represented primarily by Bufflegrass-dominant grassland; c) Wetlands/Riparian communities, represented primarily by phragmites – arundo emergent and semi-emergent plants; and d) Agricultural. Potential acreage removed and impacts to each vegetation community for the Lateral A/Retamal Dike levee system is shown in Table 4.1. Equipment staging areas would be outside natural resources management areas.

4.1.2 Wildlife

No Action Alternative

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

Proposed Action

The value of vegetation to wildlife along the Lateral A/Retamal Dike Levee corridor to wildlife 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 Lateral A/Retamal Dike Levee corridor may provide the best quality wildlife habitat. The herbaceous 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.

Table 4.1 Potential Impacts to Vegetation within Lateral A/Retamal Dike Levee System Corridor

Plant Community	Vegetation Removal by Levee Expansion (acres)	Vegetation Removal from National Wildlife Refuge Areas (acres)	Potential Impact Characterization
Mesquite Acacia Woodland	2.7	1.1	Woodlands along the levee systems are in varying stages of succession. The removal of thorn woodland along the Lateral A/Retamal Dike Levee is approximately 4.9% of the total thorn woodland area in the ROW. Approximately 34% woodland removal (0.9 acres) will occur within the Santa Ana NRW, and 7% (0.2 acres) from units of the Lower Rio Grande Valley NWR.
Herbaceous	151.4	14.6	Short-term impact on grassland communities in the area of levee expansion for the levee system corridors would occur. An invasive species, Bufflegrass, is predominant throughout the herbaceous areas. Herbaceous vegetation can be rapidly re-established.
Texas Ebony – Anauco Forest	7.9	0.0	Under a worst case scenario, with a non-optimized levee expansion alignment, removal of Texas Ebony – Anauco Forest along the Lateral A/ Retamal Dike Levee would be approximately 15.8% of that vegetation community in the ROW. None of the removal would occur within the Santa Ana NWR or Lower Rio Grande Valley NWR. Optimization of levee expansion alignment (riverside or landside, as applicable) would reduce potential impacts to a minimum.
Wetlands	0.3	0.0	There is one potential jurisdictional wetland (approximately 0.1 acre) that would be affected by levee expansion. Optimization of levee expansion alignment would reduce potential impacts to a minimum The remaining wetlands vegetation occurs in seasonally flooded borrow pits, and would be expected to re-establish.
Agricultural	1.0	0.0	Removal of limited active agricultural areas along the Lateral A/Retamal Dike corridor would have minimal impact.

Natural resource areas with quality wildlife habitat adjacent to the riverside of the Lateral A/Retamal Dike Levee system occupy approximately 3.5 miles, or 25 percent of the 14.0 miles total length (approximately 0.5 miles along the Lower Rio Grande Valley NWR, and 3.0 miles along the Santa Ana NWR).

The estimated levee expansion would remove approximately 2.7 acres of thorn woodland, which is approximately 4.9 percent of the thorn woodland that occurs within the ROW. Woodlands along the levee systems are in varying stages of succession. Although not considered unique, the limited extent of thorn woodland accentuates its value as wildlife habitat. Approximately 34 percent of the anticipated 2.7 acres of woodland removal would will occur within the Santa Ana NRW (0.9 acres), and 7 percent from units of the Lower Rio Grande Valley NWR (0.2 acres). Mitigation and/or compensation actions and best management practices for protection of natural resources are discussed in Section 5.2.

Removal of Texas Ebony–Anauco Forest, under a worst case scenario (non-optimized levee expansion alignment), would be approximately 7.9 acres or 15.8 percent of that vegetation community in the ROW. None of the removal would occur within the Santa Ana NWR or Lower Rio Grande Valley NWR. Optimization of levee expansion alignment (riverside or landside, as applicable) would reduce potential impacts to a minimum.

4.1.3 Threatened and Endangered Species

Table 4.2 lists potential impacts to T&E species habitat due to flood control improvements to the Lateral A/Retamal Dike Levee System.

No Action Alternative

No impacts are anticipated as the current levee configuration would be retained. No T&E species potentially present in the area would be adversely affected.

Proposed Action

Levee expansion activities on the riverside corridor of the Lateral A/Retamal Dike Levee would remove some habitat for T&E species. There are 25 species considered potentially present in the vicinity of the levee corridor, and of these, only potential habitat for the ocelot would be removed. The Lateral A/Retamal Dike Levee expansion would remove a minimum of thorn woodlands, approximately 2.7 acres. The quality of that habitat is relatively low for ocelots. Utilization of the habitat by the species would likely be limited to transit corridors due to the need ocelots have for higher shrub density. The herbaceous plant communities present in the ROW are dominated by invasive grasses (primarily Bufflegrass), and provides little suitable habitat for ocelots, except possibly as a transit corridor.

Unforeseen adverse effects may be prevented by timing construction activities to avoid breeding and nesting seasons of T&E species. Consultation with USFWS and TPWD would be needed to schedule construction activities to minimize potential impacts on species and species habitat (see Table 4.2).

Table 4.2 Potential Effect of Levee Construction on Listed Federal and State-Listed Species Potentially Present

	Common Name	Association with Project Area Habitat	Potential Effect
Plant Species	Texas ayenia	Terraces and floodplains within borrow sites that have thick riparian canopy cover.	Not likely to affect
Amphibian Species	South Texas siren	Wet or semi-wet areas; aestivates in the ground during dry periods; breeding season from February to June.	Not likely to affect – Avoidance of potential habitat during construction
	Black spotted newt	Riparian and other moist soil areas along flood-side of levee.	Not likely to affect – Avoidance of potential habitat during construction
	Mexican treefrog	Wet or semi-wet areas; eggs laid in temporary rain pools; breeding coincides with rainy months, usually May –October.	Not likely to affect – Avoidance of potential habitat during construction
Reptile Species	American alligator	Large streams, canals, ponds, lakes, and swamps.	Not likely to affect
	Black-stripped snake	Sandy soil areas of borrow sites; eggs laid April through June.	Not likely to affect – Timing of construction to avoid nesting season impacts (April – June)
	Indigo snake	Mesquite and Mesquite-Acacia woodlands of borrow sites and along flood-side of levee. Also along dense riparian communities in flood-side ditches.	Not likely to affect
	Northern cat-eyed snake	Thorn brush woodlands, dense thickets bordering ponds and streams, semi-arboreal, nocturnal.	Not likely to affect
	Reticulate collard lizard	Open brush grasslands; thorn-scrub vegetation, usually on well drained gravelly or sandy soil.	Not likely to affect
	Texas horned lizard	Open arid or semi-arid regions with sparse vegetation, grass, cactus, scattered brush or scrubby trees, burrows into soil, utilizes rodent burrows or hides under surface litter.	Not likely to affect
	Texas tortoise	Open scrub woods, arid brush, grass/cactus association, shallow depressions at base of bush or cactus or underground burrow or hides under surface cover.	Not likely to affect
Bird Species	American peregrine falcon	Potential migrant, nests in West Texas.	Not likely to affect – Timing of construction activities to limit impacts
	Arctic peregrine falcon	Potential migrant.	Not likely to affect – Timing of construction activities to limit impacts
	Cactus ferruginous pygmy-owl	Riparian corridors and mesquite thickets; roosts in small caves and recesses on slopes of low hills during the day; breeds April – August.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – July)

Table 4.2 Potential Effect of Levee Construction on Listed Federal and State-Listed Species Potentially Present (Continued)

	Common Name	Association with Project Area Habitat	Potential Effect
	Gray hawk	Mature woodlands of river valleys and adjacent semiarid mesquite and scrub grasslands.	Not likely to affect
	Hook-billed kite	Dense tropical and subtropical forests, but does occur in open woodlands, uncommon to rare in most of its range.	Not likely to affect
	Interior least tern	Nests along sand and gravel bars of braided streams, rivers, inland channels, and some lakes.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – June)
	Northern beardless-tyrannulet	Mesquite woodlands near the Rio Grande, frequents cottonwood, willow, elm (Ulmus spp.), and great leadtree, breeds April - July.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – July)
	Rose-throated becard	Riparian corridors and mesquite thickets, open forest, and mangroves (Avicennia spp.); breeds April – July.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – July)
	Texas Botteri's sparrow	Grassland plains or parklands with scattered bushes or shrubs, sagebrush (Artemeia spp.), mesquite, or yucca. Rests on ground in a low clump of grasses.	Not likely to affect – Timing of construction activities to limit impacts
	Tropical parula	Dense woodlands or parklands, riparian corridors, shrublands with dense underbrush. Breeds April – July.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – July)
Mammal Species	Coues' rice rat	Cattail-bulrush marsh, with a shallower zone of emergent grasses; shade trees around shoreline; breeds April – August.	Not likely to affect – Timing of construction activities to avoid breeding season impacts (April – June)
	Gulf Coast jaguarundi	Dense, thorny thickets of southern Texas with a proximity to a water source. Cacti, mesquite, cat claw (Smilax spp.), spiny hackberry, and other spine-studded vegetation often characterize habitat.	Not likely to affect
	Ocelot	Dense, thorny thickets of southern Texas with a proximity to a water source. Spiny hackberry, lotebush, black-brush, and mesquite characterize habitat where a line of sight is limited to approximately 5 feet.	Not likely to affect
	Southern yellow bat	Associated with sabal palms (Sabal spp.) near Brownsville, breeds in late winter, ranges far for insects. Breeds in late winter.	Not likely to affect

4.1.4 Wetlands and Aquatic Habitat

No Action Alternative

There are no anticipated impacts to wetlands as current levee configuration would be retained.

Proposed Action

A total of 17 individual wetlands areas were identified during field surveys, comprising 120.4 acres within the USIBWC ROW. Five (total 39.1 acres) of these wetland areas could be considered potential jurisdictional wetlands and occur within the ROW. Within the potential expansion area, 1.0 acres of wetlands would be impacted (Wetlands A, B, D, F, and H); however, only 0.1 acre (4,402 square feet) could be considered potential jurisdictional Waters of the U.S. (Wetlands F). Impacts to Wetlands F will be avoided by replacing offset riverside expansion with a centered expansion alignment.

4.2 CULTURAL RESOURCES

4.2.1 Historic and Prehistoric Archaeological Resources

No Action Alternative

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

Proposed Action

Proposed improvements to the Lateral A Levee segment may adversely affect known archaeological sites and HPAs that may contain historic or prehistoric archaeological materials. Four cemeteries may also be adversely affected. The locations of these resources are depicted on Figure 3.2 and listed in Table 4.3. Proposed improvements to the Retamal Dike segment may adversely affect two known archaeological sites and four HPAs that may contain prehistoric archaeological materials. Archaeological resources may be adversely affected by mechanical excavation or by burial under the expanded levee footprint. The intensive cultural resources survey has been completed within the project area.

Table 4.3 Potential Impacts on Historic and Prehistoric Archaeological Resources and HPAs as Identified Within or Near the Project Corridor

Resource Number	Description*	Potential Impact?	Comment
Recorded Sites			
41HG165	Recorded archaeological site (not verified)	No	Located outside 100-foot construction corridor

Resource Number	Description*	Potential Impact?	Comment
41HG164	Recorded archaeological site (not verified)	No	Located outside 100-foot construction corridor
41HG160	Recorded archaeological site (not verified)	No	Separated from construction area by irrigation canal
41HG33	*Recorded archaeological site (not verified)*	*Yes*	*Likely near/within expansion corridor*
41HG32	*Recorded archaeological site (not verified)*	*Yes*	*Likely near/within expansion corridor*
Structures			
Boyd 3	HPA. El Capote community location	Yes	Likely near/within expansion corridor (riverside levee expansion only)
8	HPA. Previous structure location	Yes	Likely near/within expansion corridor
16LM6	HPA. Previous structure locations	Yes	Likely near/within expansion corridor
10	HPA. Prehistoric artifacts observed at the entrance to Jackson Cemetery	No	Located outside 100-foot construction corridor
NF1	HPA. Glass, ceramic, metal, and brick scatter observed at NF1	No	Separated from construction area by irrigation canal
12	HPA. Abandoned Canal, not evident	Yes	Likely near/within expansion corridor
13	HPA. San Juan Hacienda location	No	Separated from construction area by irrigation canal
14	HPA. Alambrado Ranch location	No	Separated from construction area by irrigation canal
16	HPA. Esperanza Ranch location	Yes	Likely near/within expansion corridor
17	HPA. Young's Ranch location	Yes	Likely near/within expansion corridor (landside levee expansion only)
B39-1	*HPA. Santa Rita Ranch location*	*Yes*	*Likely near/within expansion corridor (landside levee expansion only)*
21	HPA. Lateral Canal, not evident	Yes	Likely near/within expansion corridor
22	HPA. Hallaway Canal, not evident	Yes	Likely near/within expansion corridor
Natural Levees			
7	HPA. Natural levee associated with an unnamed abandoned meander	Yes	Likely near/within expansion corridor
15	HPA. Natural levee associated with overlapping abandoned meanders at the Santa Ana NWR	Yes	Likely near/within expansion corridor
18	HPA. Natural levee associated with the Banco 40 abandoned meander	Yes	Likely near/within expansion corridor
20	HPA. Natural levee associated with the Banco 89 abandoned meander	Yes	Likely near/within expansion corridor
24	*HPA. Natural levee associated with the Banco 39 abandoned meander*	*Yes*	*Likely near/within expansion corridor*
25	*HPA. Natural levee associated with the Banco 105 abandoned meander*	*Yes*	*Likely near/within expansion corridor*
26	*HPA. Natural levee associated with the Banco 106 abandoned meander*	*Yes*	*Likely near/within expansion corridor*

** Italics indicate resources located along the Retamal Dike.*

4.2.2 Historic-age Resources

No Action Alternative

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

Proposed Action

Neel (2006:Table 1) identified 15 potential historic-age resources or HPAs for historic-age resources along the Lateral A segment. These resources are the levee, canals, weir gates, standpipes, bridges, residential structures, and a concrete foundation for an irrigation pump. The locations of these resources are depicted on Figures 3.2a through 3.2d, and potential impacts are listed in Table 4.4.

Table 4.4 Potential Impacts on Historic-age Resources Identified Within or Near the Project Corridor

Resource Number	Description*	Potential Impact?	Comments
Irrigation System Structures			
1	Pharr-San Juan Main Canal, in use	No	Outside construction corridor
2	Lateral A Levee weir gates and standpipes, in use	Yes	Proposed Action to raise levee
3	Lateral A Canal, in use	No	Outside construction corridor
11	Concrete pump mount and weir box	No	Outside construction corridor
19	Old Donna Canal, abandoned	Yes	Likely near/within expansion corridor
23	Donna Main Canal, in use	No	Outside 100-foot construction corridor
16SJ4	*Donna Pump Station and Canal, in use*	Yes	*Increased height of protective floodwall*
Other Structures			
4	Lateral A Levee, in use	Yes	Proposed Action to raise levee
5	13 structures are extant at locations of structures (1934 aerial photograph)	Yes	Likely near/within expansion corridor
6	Bridges are shown on the 1934 aerial photograph of the levee	Yes	Likely near/within expansion corridor
16LM8	Extant structure	Yes	Likely near/within expansion corridor
16LM7	Extant structure	No	Outside 100-foot construction corridor
NF1	Brick building with collapsed roof	No	Outside 100-foot construction corridor
Cemeteries			
9	Christo Salva Church and Cemetery, in use	Yes	Likely near/within expansion corridor
CEM	Fenced cemetery, in use	No	Outside 100-foot construction corridor
Webber Cemetery	Webber Cemetery, fenced and in use	No	Outside 100-foot construction corridor

The resources located on the landside of the levee for the western 7.25 miles along the Lateral A Canal will not be adversely affected or would be minimally affected by levee modifications as these modifications would occur on the riverside of the levee. Of these 15 resources identified, one, the Old Donna Canal, is likely to be adversely affected by levee expansion on the riverside of the levee. Historic archaeological deposits are likely to occur at Resources 5 and 28. No reconnaissance level historic-age resources survey or intensive cultural resources survey have been conducted in the project area.

The Retamal Dike and Retamal Dam were constructed in 1973 and are currently 23 years old and not eligible under NEPA regulations to be considered as historic resources. One historic-age resource, the Donna Pump Station, has been identified by Neel (2006:Table 1) along Retamal Dike segment. The location of this resource is depicted on Figure 3.5 and listed in Table 4.4. This resource may be adversely affected by proposed modifications to the Retamal Dike however these affects will likely be minor modifications to the floodwall of the resource. No reconnaissance level historic-age resources survey has been completed for the Donna Pump Station or Retamal Dike.

4.3 WATER RESOURCES

4.3.1 Flood Control

No Action Alternative

The No Action Alternative would retain the current configuration of the Lateral A/Retamal Dike Levee System, as designed over 30 years ago, and maintain the level of protection currently associated with this system. Under severe storm events, containment capacity may be insufficient to fully control Rio Grande flooding with risks to personal safety and property.

Proposed Action

Improvements to the levee system would increase flood containment capacity to control the design flood event as evaluated in the 2003 hydraulic model prepared by USIBWC. 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 levee along this reach of the LRGFCP.

4.3.2 Water Flow

Under the *No Action Alternative*, no impacts are anticipated as the current levee configuration would be retained.

For the *Proposed Action*, improvements to the Lateral A/Retamal Dike Levee System would not affect water flow or downstream water bodies.

4.4 LAND USE

No Action Alternative

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

Proposed Action

Expansion of the Lateral A/Retamal Dike Levee System would occur almost entirely within the ROW. The expansion would primarily occur on the riverside of the levee due to the presence of irrigation canals along large levee segments. Potential impacts were evaluated in terms of natural resources management areas, agricultural lands, and urban areas.

Natural Resources Management Areas. The approximate 208-acre expansion of the Lateral A/Retamal Dike Levee would impact mostly herbaceous vegetation dominated by invasive species (approximately 151 acres). Approximately 2.7 acres of thorn woodland, a higher quality habitat, would also be removed along with 7.9 acres of Texas Ebony-Anauco Forest.

Agricultural Lands. Removal of agricultural lands would be limited to 1.0 acres. Along irrigation canals, Lateral A/Retamal Dike Levee expansion would take place on the riverside, opposite to the canal location. Irrigation canal segments along the levee would be minimally affected by levee construction activities, and this effect would be temporary.

Urban Areas. There is no urban development in the vicinity of the Lateral A/Retamal Dike Levee System, and the Proposed Action will not impact urban areas.

4.5 COMMUNITY RESOURCES

4.5.1 Socioeconomics

No Action Alternative

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

Proposed Action

The analysis of impacts of the footprint expansion on socioeconomic resources and environmental justice was 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 into Hidalgo County would be $19 million based on construction costs. This influx of funds would have a small but positive local economic impact, representing an increase of $64,391,247 in direct and indirect sales. Job creation is estimated at 589 in direct and indirect employment. The positive impact would be limited to

the anticipated 1-year construction period. Table 4.5 illustrates the magnitude of the economic influx relative to reference values for Hidalgo County.

Table 4.5 Potential Economic Impacts Improvements to the Lateral A/Retamal Dike Levee System

Evaluation Criteria	Unit Value for Rio Grande Levees [a]	Lateral A/Retamal Dike Levee Expansion	Annual Value for Hidalgo County	Change Relative to Hidalgo County
Local Expenditures	$1,000,000	$19,000,000	Not applicable	
Direct Employment	19	361		
Indirect Employment	12	228		
Total Employment	31	589	180,121 [b]	0.33%
Direct Sales Volume	$1,274,065	$24,207,235		
Indirect Sales Volume	$2,114,948	$40,184,012		
Total Sales Volume	$3,389,013	$64,391,247	$ 10,375 million [c]	0.62%
Direct Income	$554,814	$10,541,466		
Indirect Income	$452,466	$8,596,854		
Total Income	$1,007,280	$19,138,320	$5,637 million [d]	0.34%

[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 2000 (U.S. Census Bureau 2000).*
[c] *Gross sales for Hidalgo County in 2004 (Texas Comptroller 2005).*
[d] *Based on a 2000 per capita income of $9,899 and an Hidalgo County population of 569,463.*

4.5.2 Environmental Justice

No Action Alternative

Under the No Action Alternative, improvements to the Lateral A/Retamal Dike Levee System would not occur; therefore, the current condition of minority and low-income populations would remain unchanged.

Proposed Action

Data indicate that Hidalgo County has disproportionately high minority (approximately 88 percent) and low-income populations (individuals – 35.9 percent); 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 be anticipated as a result of the proposed levee construction project. As a result, no adverse impacts to disproportionately high minority and low-income populations are expected from construction of the Lateral A/Retamal Dike Levee improvements.

4.5.3 Transportation

No Action Alternative

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

Proposed Action

Proposed improvements to the Lateral A/Retamal Dike Levee would have moderate impacts on local transportation. During levee construction, a temporary increase in use of the access road would take place during placement of equipment in the staging areas. Subsequent construction activities would also impact the local transportation as fill material would be imported from sources outside the levee system. Following completion of the levee improvement project, the levee road would continue providing service for USFWS and Border Patrol activities, and limited public access to adjacent landowners and local farmers.

4.6 ENVIRONMENTAL HEALTH

4.6.1 Air Quality

No Action Alternative

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

Proposed Action

Improvements to the Lateral A/Retamal Dike Levee System would impact air quality through excavation and fill activities. Potential impacts would be a slight increase in criteria air pollutants within Hidalgo County. Table 4.6 summarizes the additional estimated criteria pollutants associated with the Proposed Action, as well as the percent increase above the existing Hidalgo County emissions inventory. Estimates were calculated for 14.0 miles of levee construction for the levee height increase. Unit air emissions estimates for these activities followed common construction practices and methods (Means 2002) and emission factors reported by USEPA (1996) as applied to a similar levee expansion project in an upper reach of the Rio Grande (Parsons 2003). Estimated emissions for all five criteria pollutants represent less than 1 percent of the Hidalgo County annual emissions inventory.

Table 4.6 Air Emissions for Improvements to the Lateral A/Retamal Dike Levee System

	Emissions (tons per year)				
Parameter	**Sulfur Oxides**	**Nitrogen Dioxides**	**Carbon Monoxide**	**Volatile Organic Compounds**	**Particulate Matter (PM_{10})**
Unit emissions per mile of levee height increase*	0.55	5.05	2.11	0.4	5.61
Lateral A/Retamal Dike Levee System (14.0 miles)	7.70	70.7	29.54	5.6	78.54
Hidalgo County emissions inventory**	1,127	19,726	151,085	27,812	61,819
Lateral A/Retamal Dike Levee Emissions as a Percent of Hidalgo County Emissions	0.68%	0.36%	0.02%	0.02%	0.13%

** Unit data for levee construction from the USIBWC Rio Grande Canalization Project EIS (Parsons 2003: Table 4.11-1).*
*** USEPA 1999, the most recent available data as of May 2006.*

4.6.2 Noise

No Action Alternative

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

Proposed Action

Improvements to the Lateral A/Retamal Dike 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 receptor in a rural area would be a person(s) 100 feet off-site. Given the rural nature of the area, it is also unlikely a person other than a worker would be within 100 feet of the site boundary during activities. However, if a person were within this distance, the person could be exposed to noise as high as 74 to 83 dBA.

It is anticipated that construction activities would occur between 7:30 a.m. and 5:00 p.m., 5 days per week for the duration of the project. However, individuals would not be exposed during entire noise-producing period. Under these conditions, persons would not be exposed to long-term and regular noise above 75 dBA. As stated in Subsection 3.6.2, DNL 75 dBA during the noise event indicates a good probability for frequent speech disruption, producing ratings of "barely acceptable" for intelligibility of spoken material. Therefore, nearby persons should not experience loss of hearing, but may experience frequent speech disruption.

4.6.3 Hazardous and Toxic Waste

No Action Alternative

No impacts from waste storage and disposal sites are anticipated, as the current levee configuration would be retained.

Proposed Action

Improvements to the Lateral A/Retamal Dike Levee System would not be affected by waste storage and disposal sites. No waste storage and disposal sites were identified within the proposed Lateral A/Retamal Dike Levee project area. One site, a leaking UST, was identified ½ mile to the north of the project. This site would not affect, nor be affected by the proposed levee construction project.

4.7 INDIRECT AND CUMULATIVE EFFECTS

Following completion of the proposed levee improvement project, the levee road would continue providing service for Border Patrol activities. The increased levee elevation has a potential to facilitate patrol activities by providing an improved line of vision from the levee road.

SECTION 5
BEST MANAGEMENT PRACTICES AND MITIGATION ACTIONS

Section 5 describes best management practices (BMP) and mitigation measures addressing potential impacts of the Proposed Action for flood control improvements of the Lateral A/Retamal Dike Levee System. Best management practices represent specific actions for minimizing impacts to natural and cultural resources. Mitigation measures compensate for potential adverse effects of the Proposed Action that cannot be prevented through BMPs. These BMPs and mitigation measures are organized within the engineering, natural resources, and cultural resources categories.

5.1 ENGINEERING MEASURES

5.1.1 Best Management Practices

- A storm water pollution prevention plan (SWP3) will be developed during project design to minimize impacts to receiving water, as specified by TCEQ regulations for construction projects. The SWP3 will include construction areas along the levee system, as well as equipment staging areas. To prevent sedimentation, sediment fences and/or sediment barriers around wetlands will be installed while construction occurs in affected area.

- During the project construction, methods such as wetting the soil would be employed to prevent erosion from unvegetated slopes and/or corridors. After construction is complete, the expanded levee would be re-vegetated with herbaceous native vegetation.

5.1.2 Engineering Design Measures

- Levee expansion alignment would be optimized, to the extent possible, to avoid impacts on wooded vegetation, wetlands, and other natural resources. Because of the presence of irrigation canals along the landside of the levee, riverside expansion will be required for a majority of the Lateral A/Retamal Dike Levee System. Modification of the levee expansion alignment would be used, whenever possible, to avoid direct impacts to wetlands areas.

5.2 NATURAL RESOURCES

5.2.1 Best Management Practices

- To protect vegetation, the construction corridor may be re-vegetated with herbaceous or woody vegetation, at the discretion of the natural resources

management organization where the corridor is located. Final surveys prior to the start of the project would determine the types (herbaceous or woody) and amounts of vegetation to be removed.

- Surveys would be conducted prior to the start of the project to determine separation between the construction corridor and boundaries of five potential jurisdictional wetlands identified within the ROW during a previously-completed field survey.

- For protection of migratory birds, disturbances of potentially suitable habitat will be avoided, to the extent possible, during the general nesting period of March through August.

5.2.2 Mitigation Measures

If natural resources, such as rare species or natural plant communities, cannot be fully protected from adverse impact through best management practices, then mitigation measures will be adopted. Mitigation is the action that would compensate for unavoidable losses of sensitive vegetation, wetlands or wildlife during project construction.

If thorn woodland is removed during construction, woody plant revegetation would occur in areas where such revegetation will provide the most benefit. That is, replanting may take place elsewhere on the property where previous disturbance occurred, or in areas where woody vegetation is desired for continuity of habitat. A 2:1 replacement ratio will be used for high quality woodlands, and a 1:1 ratio for herbaceous vegetation, as recommended by TPWD guidelines. Target plant density revegetation would be at the discretion of the natural resources management organization where the removal occurred.

5.3 CULTURAL RESOURCES

5.3.1 Best Management Practices

There is a probability that archaeological resources may be encountered during construction. If buried cultural materials are encountered during construction, the contractor would cease work in the immediate area and notify the State Historic Preservation Officer.

5.3.2 Mitigation Measures

Any mitigation actions recommended by the Texas Historical Commission (THC) for potential impacts to historical or archaeological resources will be specified in a Memorandum of Agreement between THC and the USIBWC.

SECTION 6
ENVIRONMENTAL COMPLIANCE AND COORDINATION

6.1 CONSULTATION PROCESS

Potential impacts and issues were identified during consultation meetings and correspondence. Consultation conducted is briefly described below by agency or organization. Consultation correspondence is included in Appendix B.

U.S. Fish and Wildlife Service

A letter of cooperation in preparation of this EA was sent by the USIBWC to various potential stakeholders. The USFWS agreed to provide technical support and review in preparation of this EA as a cooperating agency.

U.S. Army Corps of Engineers

The USACE submitted a reply to the August 28, 2006 consultation by the USIBWC (September 22, 2006 letter from Mr. Lloyd Mullins to Mr. Daniel Borunda). The letter provided an approved wetlands jurisdictional determination, and required permit submittal if jurisdictional wetlands were impacted.

Texas Historical Commission

The agency submitted a reply to the August 28, 2006 consultation by the USIBWC (September 28, 2006 letter from Mr. Daniel Borunda). The THC requested additional support documentation on historic and pre-historic cultural resources prior to the project evaluation.

Natural Resources Conservation Service

In response to the August 28, 2006 consultation, Natural Resources Conservation Service (NRCS) indicated compliance of the project with the Prime Farmland Protection Act, and indicated that no further action would be required (September 20, 2006 letter from Mr. James M. Greenwade to Mr. Daniel Borunda).

6.2 PERSONS AND AGENCIES CONSULTED

Consultation on biological, cultural and water resources, and land issues was conducted, in writing or during consultation meetings, with agencies and organizations listed below.

Biological Resources

Jody Stroklund, Refuge Manager
Santa Ana National Wildlife Refuge
U.S. Fish and Wildlife Service

Water Resources

Lloyd Mullins, Unit Leader
Corpus Christi Field Office, Galveston District
U.S. Army Corps of Engineers

Christina Montoya, Refuge Manager
Lower Rio Grande Valley National Wildlife Refuge
U.S. Fish and Wildlife Service

Ernesto Reyes
Ecological Services
U.S. Fish and Wildlife Service

Russell Hooten, Habitat Assessment Biologist
Texas Parks and Wildlife Department
Wildlife Habitat Assessment Program

Cultural Resources

Hannah Vaughan
Director, State & Federal Review Section
Archaeology Division
Texas Historical Commission

Amy Hammons
Division of Architecture
Texas Historical Commission

Lori Hamilton
Texas Commission on Environmental Quality

Water Quality Division, MC-150

Land Use Issues

James Greenwade, Soil Scientist
Natural Resources Conservation Service
Soil Survey Section USDA-NRCS

Cruz J. Rodriguez,
Assistant Chief Patrol Agent, McAllen Sector
U.S. Customs and Border Protection

Sonny Hinojosa, Manager
Hidalgo County Irrigation District No. 2

Nora Zapata, General Manager
Donna Irrigation District

6.3 LIST OF CONTRIBUTORS

Tables 6.1 and 6.2 list contributors to the preparation of the Environmental Assessment for improvements to the Lateral A/Retamal Dike Levee System, and development of technical support studies.

Table 6.1 Preparers of the Environmental Assessment and Technical Studies

Name	Organization	Degree	Years Experience	Project Role
Carlos Victoria-Rueda.	Parsons	Ph.D., Environmental Engineering	22	Project manager; water resources evaluation
James Hinson	Parsons	M.S. Wildlife Science	16	Vegetation and wildlife analyses; field studies supervision
Namir Najjar	Parsons	Ph.D., Water Resources Engineering	9	Hydraulic modeling
Taylor Houston	Parsons	M.S., Geography-Environmental Resources	6	Wetlands and land use
Jill Noel	Parsons	M.S. Botany	8	Vegetation and community resources
Sherrie Keenan	Parsons	B.A., Journalism	27	Technical editor
Charles Neel	LGGROUP	B.A., Archaeology	16	Cultural resources evaluation

Table 6.2 Technical Review of the Environmental Assessment

Name	Agency	Degree	Years Experience	Project Role
Daniel Borunda	USIBWC Environmental Protection	M.S. Fisheries and Wildlife Science	9	Project manager; NEPA compliance; document review
Raymundo Aguirre	USIBWC Engineering Division	Ph.D. Civil Engineering	49	Engineering, hydraulics and hydrology; document review
Enrique Reyes	USIBWC, LRGFCP Project Manager	B.S., P.E., Civil Engineering	32	Document review
Christopher Anzaldua	USIBWC, LRGFCP Assistant Project Manager	B.S. Agricultural Engineering	10	Document review
Ernesto Reyes Jr.	USFWS, Senior Fish and Wildlife Biologist	M.S. Biology	18	Document review
Jodi Stroklund	USFWS, Manager Santa Ana NWR	M.S. Biology	12	Document review
Russell Hooten	TPWD Wildlife Division	M.S. Biology	14	Document review

SECTION 7
REFERENCES

Boyd, Douglas K., Andres Tijerina., Karl W. Kibler, Amy C. Earls, and Martha Doty Freeman 1994. Pharr-Reynosa International Bridge: Continued Archeological and Historical Research at El Capote Ranch Community, Hildago County, Texas. Report of Investigations 97, Prewitt and Associates, Austin, Texas.

Brewton, J., F. Owen, S. Aronow, V. Barnes, and A. Trowbridge 1976. *Geologic Atlas of Texas, McAllen-Brownsville Sheet*. Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas.

Bureau of Economic Analysis 2003. U.S. Department of Commerce, BEARFACTS, 2003. [*http://www.bea.doc.gov/bea/regional/reis/action.cfm?catable=CA25N&areatype=48000&years=2003,2002, 2001&fips=48215&format=htm* - website accessed June 2005].

CERL 1978. *Construction Site Noise Control Cost-Benefit Estimating Procedures.* Construction Engineering Research Laboratory, Engineer Research and Development Center of the U.S. Army Corps of Engineers. Interim Report N-36, January 1978.

Cooper, E., N. Reese, D. Shanabrook and V. Gibbs 2002. An Assessment of Potential Effects to Historic Properties within the Lower Rio Grande Flood Control Project by Maintenance Activities of the United States International Boundary and Water Commission. Miscellaneous Reports of Investigations No. 184. Geo-Marine, Inc., Plano, Texas.

Department of State 1910. Banco Maps 39 and 40 in: Proceedings of the International Boundary Commission United States and Mexico, American Section, Elimination of Fifty-Seven Old Bancos Specifically Described in the Treaty of 1905. Department of State, United States Government Printing Office, Washington, D. C.

Department of State 1912. Banco Maps in: Proceedings of the International Boundary Commission United States and Mexico, American Section, Elimination of Fifty-Seven Old Bancos Specifically Described in the Treaty of 1905. Department of State, United States Government Printing Office, Washington, D. C.

Department of State 1913. Banco Maps 67 and 89 in: Proceedings of the International Boundary Commission United States and Mexico, American Section, Elimination of Fifty-Seven Old Bancos Specifically Described in the Treaty of 1905. Department of State, United States Government Printing Office, Washington, D. C.

Department of State 1929. Banco Maps 101, 105, and 106 in: Proceedings of the International Boundary Commission United States and Mexico, American Section, Elimination of Fifty-Seven Old Bancos Specifically Described in the Treaty of 1905. Department of State, United States Government Printing Office, Washington, D. C.

Diamond, D.D., D.H. Riskind, and S.L Orzell 1987. A framework for plant community classification and conservation in Texas. *Texas Journal of Science* 39:203-221.

Diamond, D.D. 1993. Classification of the plant communities of Texas (series level). Unpublished document. Texas Natural Heritage Program, Austin. 25 pp.

Driver, David 2004. A Cultural Resource Survey for the Donna-Rio Bravo International Border Crossing, Hidalgo County, Texas. Report of Investigations No. 392, Moore Archeological Consulting, Inc., Houston, Texas.

Fermata 2003. The Lower Rio Grande Valley Biological Profile. Fermata Inc., Austin, Texas. [http://www.fermatainc.com/nat_riogrande.html - website accessed May 2005]

International Boundary Commission (IBC) 1934. *Flood Control Project, Lower Rio Grande Texas, Mosaic of Rio Grande, Sheets 5 and 6*. Aerial photo-mosaic in the Special Collections Archives, University of Texas Pan American, Edinburg.

Kibler, Karl W. and Martha Doty Freeman 1993. *Preliminary Cultural Resources Investigations for the Pharr-Reynosa International Bridge, Hidalgo County, Texas*. Report of Investigations 90, Prewitt and Associates, Austin, Texas.

Means, R.S. 2002. *Building Construction Cost Data*. 54th Annual Edition, R.S. Means Company, Incorporated, Kingston, Massachusetts.

National Academy of Sciences 1977. Guidelines for Preparing Environmental Impact Statements on Noise. Report of Working Group on the Committee on Hearing, Bioacoustics, and Biomechanics, National Research Council. Washington, D.C.

Neel, Charles 2006. A Cultural, Architectural and Engineering Resources Evaluation of Proposed Improvements to the Lateral A Levee System and Retamal Dike, Hidalgo County, Texas. LGGROUP, Dallas, Texas. LGGROUP Miscellaneous Reports, Report of Investigation Number 49 prepared for Parsons, Austin, Texas..

Parsons 2003. Draft Environmental Impact Statement – River Management Alternatives for the Rio Grande Canalization Project. Document prepared by Parsons for the USIBWC, December 2003.

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

Parsons 2006. Technical Support Studies for the Environmental Assessment of Flood Control Improvements to the Lateral A/Retamal Dike Levee System. Document prepared by Parsons for the USIBWC, October 2006.

Paull, Gene J., and Anthony N. Zavaleta 1978. *Archeological Investigations at Santa Ana National Wildlife Refuge*. Texas Southmost College, Brownsville.

Sánchez, M.L. (editor) 1994. *A Shared Experience, The History, Architecture and Historic Designations of the Lower Rio Grande Heritage Corridor*. Los Caminos del Rio Heritage project and the Texas Historical Commission, Austin.

TASA 1972, 1992, 1993, 2004. Texas Archeological Studies Association annual reports.

TCEQ 2004. Year 2001 Point Source Emissions Inventory by County and Company Name Texas Commission on Environmental Quality. [*http://www.tnrcc.state.tx.us/air/aqp/ei/hgmap.htm*]

Texas Comptroller 2005. Texas Comptroller of Public Accounts website, Quarterly Sales Tax Report for 2004, Hidalgo County. [*http://ecpa.cpa.state.tx.us/allocation/HistSalesResults.jsp;jsessionid=0000JJiEsID249mtI_9CL5H6frt:-1*]

Texas Economic Development 2005. Hidalgo County, Texas Economic Development website. [http://community.txed.state.tx.us/counties/county.cfm?id=48215 - accessed June 2005].

U.S. Census Bureau 2000. Annual Population Estimates by City and County, April 1, 1990 through April 1, 2000, [*http://www.census.gov/popest/counties/CO-EST2004-01.html]* accessed May 2005.

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

USACE 2003. Condition Assessment of the U.S. International Boundary and Water Commission, Lower Rio Grande Valley Levees, South Texas. Engineer Research and Development Center of the U.S. Army Corps of Engineers.

USEPA 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. United States Environmental Protection Agency. Publication No. 550/9-74-004. Washington, D.C. March 1974.

USEPA 1996. *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources (AP-42).* 5th edition with Supplements, United States Environmental Protection Agency, Research Triangle Park, February 1996.

USEPA 1999. Emissions by Category Report - Criteria Air Pollutants – 1999. [*http://oaspub.epa.gov/airsdata/adnet.tier?geotype=co&geocode=48215&geoinfo=%3Fco%7E48215%7EHidalgo+Co%2C+Texas&pol=CO+NOX+SO2+VOC+PM25+PM10&year=1999&fld=state&fld=county&fld=tier1&rpp=25*]

USEPA 2005. Currently Designated Nonattainment Areas for All Criteria Pollutants, United States Environmental Protection Agency, [*http://www.epa.gov/air/oaqps/greenbk/ancl.html#TEXAS* - as of April 2005].

USFWS 2005. Threatened and Endangered Species List for Hidalgo County. May 17, 2005 response by the U.S. Fish and Wildlife Service to USIBWC consultation letter [*provided in Attachment A*].

USGS 1916. *Mission, Texas.* 7.5 minute series topographic sheet, Washington, D. C.

USIBWC 1980. Negative Impact Declaration, Operation and Maintenance of the Lower Rio Grande Flood Control Project, Texas. United States Section, International Boundary and Water Commission, El Paso, Texas.

USIBWC 1992. Status of Conveying Capacity of the Lower Rio Grande Flood Control Project. United States Section, International Boundary and Water Commission, El Paso, Texas

USIBWC 2003a. Hydraulic Model of the Rio Grande and Floodways Within the Lower Rio Grande Flood Control Project. United States Section, International Boundary and Water Commission, El Paso, Texas.

USIBWC 2003b. Draft Environmental Impact Statement for Alternative Vegetation Management Practices for the Lower Rio Grande Flood Control Project: Cameron, Hidalgo, and Willacy Counties, Texas. Volume I of V, July 2003. United States Section, International Boundary and Water Commission, El Paso, Texas.

World Wildlife Fund 2001. Wild World Ecoregion Profile – Tamaulipan Mezquital (NA1312). T. Cook, J. Adams, A. Valero, J. Schipper, and T. Allnutt. [*http://www.worldwildlife.org/wildworld/profiles/terrestrial/na/na1312_full.html*] Website document dated 2001, posted in May 2006 as undergoing peer review]

APPENDIX A

DETAILED MAPS OF LEVEE ALIGNMENT, RIGHT-OF-WAY AND POTENTIAL EXPANSION AREA

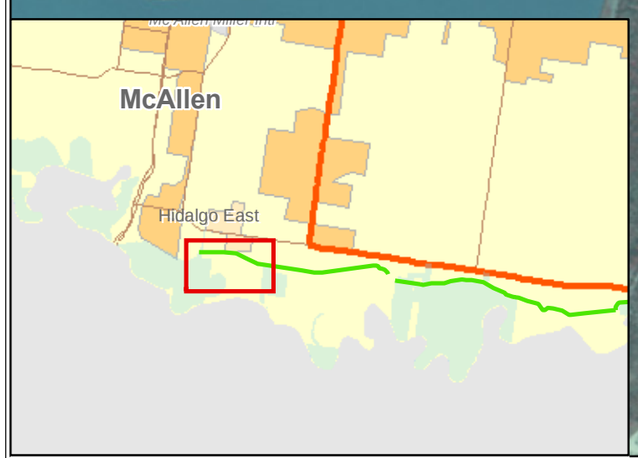
Mile 0

Mile 0.5

Mile 1

Mile 1.5

Carlson Settling Basin (San Juan Irrigation District)



Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A1

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A2

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

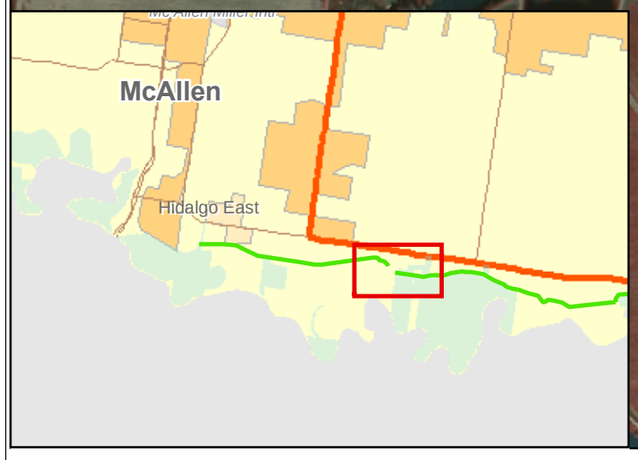
J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

Mile 4

Mile 4.5

Mile 5

Mile 5.5



Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

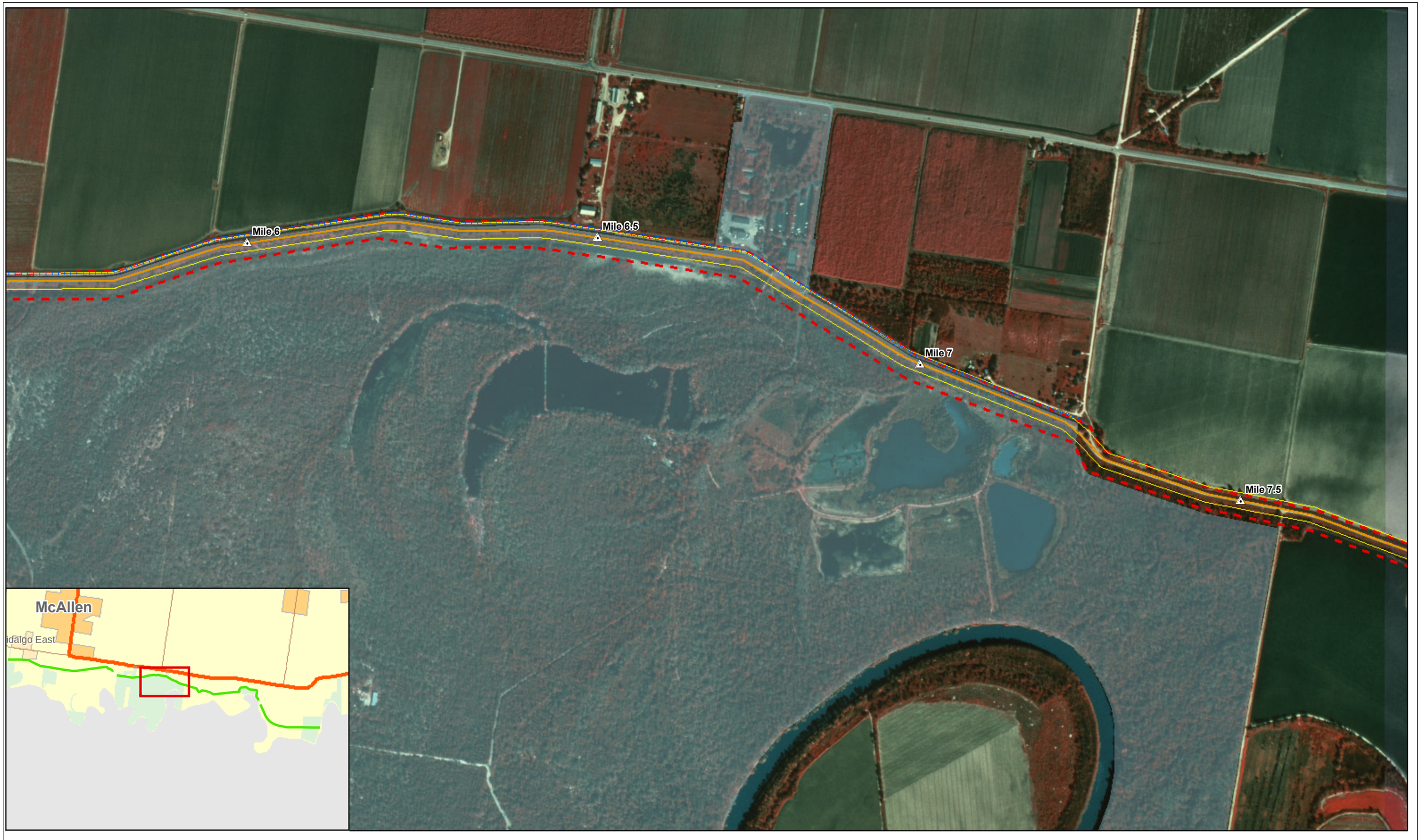
0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A3

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM



Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A4

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

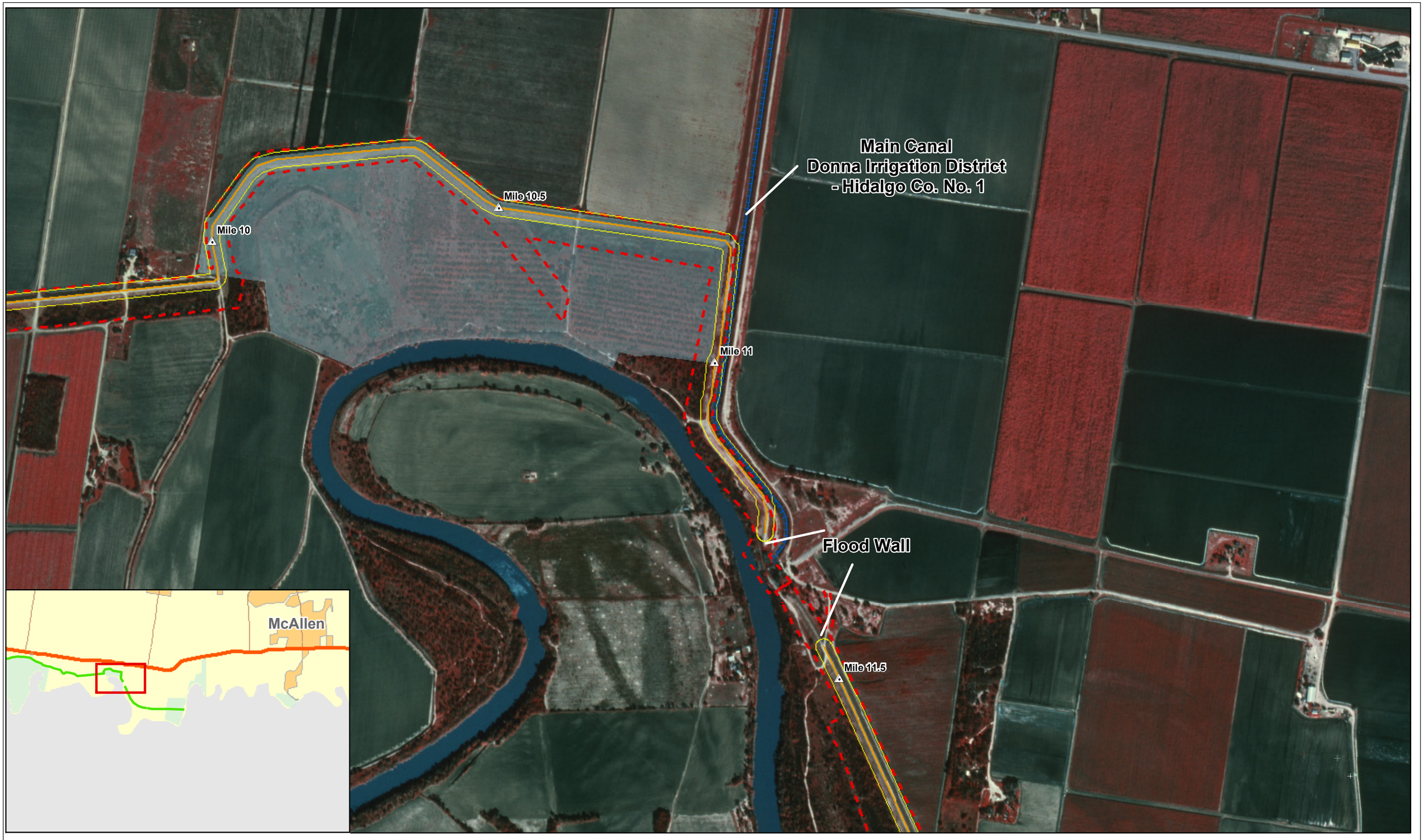
0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A5

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM



Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A6

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A7

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

Scale = 1 : 8,000

0 250 500 1,000 1,500 2,000 Feet

0 0.05 0.1 0.2 0.3 0.4 Miles

Mile Markers
Canal
Center Line
60 Foot Expansion
ROW
USFWS National Wildlife Refuge
TPWD Wildlife Management Unit

Lateral A/Retamal Dike System
A8

Environmental Assessment
International Boundary and Water Commission
United States Section

PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map_sections2.mxd - 12/20/2006 @ 10:14:26 AM

APPENDIX B

AGENCY CONSULTATION CORRESPONDENCE

AUG 2 5 2006

Ms. Jodi Stroklund, Manager
Santa Ana National Wildlife Refuge
U.S. Fish and Wildlife Service
Rt. 2, Box 202-A
Alamo, TX 78516

Subject: Initial Consultation on Potential Environmental Impact Improvements to the Lateral A/Retamal Levee System, Hidalgo County, Texas

Dear Ms. Stroklund:

The United States Section of the International Boundary and Water Commission (USIBWC) is preparing an Environmental Assessment (EA) for a proposed action to raise the Lateral A/Retamal Dike Levee System in Hidalgo County, Texas. This levee system, approximately 14 miles long, was recently identified as a priority area to improve flood containment along the lower Rio Grande valley.

The proposed action would increase flood containment capacity of the Lateral A/Retamal Dike Levee System by raising the height of the existing compacted-earth levee from 1.5 to 4 feet to meet a 3-foot freeboard requirement. The increase in levee height would also expand the levee footprint by lateral extension of the structure. The existing levee footprint, ranging from 50 to 100 feet depending on location, would increase 12-feet on each side of the levee as a result of a potential 4-foot height increase. Levee footprint increases would take place within the USIBWC levee right-of-way.

According to the National Environmental Policy Act (NEPA), the USIBWC must assess the potential environmental impacts of the proposed and alternative actions. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, the USIBWC is requesting input on the Proposed Action from other federal, state and local agencies, as well as other potential stakeholders. Please identify any resources within your organization's purview that may be potentially impacted, and issues and concerns associated with implementing the Proposed Action. Identified issues will be evaluated and addressed in a Draft EA under development that will be subsequently provided for a 30-day review by agencies and stakeholders. To assist your office in this initial review, we have included a Proposed Action description with illustrative maps of the levee alignment and project area.

Your assistance in providing information is greatly appreciated. Please provide any comments or information by September 28, 2006. Responses should be sent directly to:

Mr. Daniel Borunda
United States Section,
International Boundary and Water Commission
4171 N. Mesa, Suite C-1 00
El Paso, TX 79902

Sincerely,

Gilbert G. Anaya
Supervisory Environmental Protection Specialist
Environmental Management Division

Attachment:
Description of Proposed Action

Same letter sent to:

Ms. Christina Montoya, Refuge Manager
Lower Rio Grande Valley National Wildlife Refuge
U.S. Fish and Wildlife Service
Rt. 2, Box 202-A
Alamo, TX 78516

Mr. Ernesto Reyes
U.S. Fish and Wildlife Service, Ecological Services
Rt. 2, Box 202-A
Alamo, TX 78516

Mr. Russell Hooten, Habitat Assessment Biologist
Texas Parks and Wildlife Department
Wildlife Habitat Assessment Program
TAMU-CC, Natural Resource Center
6300 Ocean Drive, NRC Suite 2501
Corpus Christi, TX 78412

Mr. Lloyd Mullins
Unit Leader, Corpus Christi Field Office
U.S. Army Corps of Engineers
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318

Ms. Lori Hamilton
Texas Commission on Environmental Quality
Water Quality Division, MC-150
P.O. Box 13087
Austin, TX 78711-3087

Ms. Amy Hammons
Texas Historical Commission
Project Reviewer
P.O. Box 12276
Austin, Texas 78711-2276

Mr. Sonny Hinojosa, Manager
Hidalgo County Irrigation District No. 2
P.O. Box 6
San Juan, Texas 78589
Ms. Nora Zapata, General Manager
Donna Irrigation District
101 N. Farm Road 493
Donna, Texas 78537

Mr. Cruz J. Rodriguez,
Assistant Chief Patrol Agent, McAllen Sector
U.S. Customs and Border Protection,
2301 Main Street, McAllen, Texas 78503

Mr. James Greenwade, Soil Scientist
Natural Resources Conservation Service
Soil Survey Section USDA-NRCS
101 South Main
Temple, TX 76501

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
101 South Main Street
Temple, TX 76501-7602

September 20, 2006

International Boundary and Water Commission
4171 N. Mesa, Suite C-100
El Paso, Texas 79902

Attention: Mr. Daniel Borunda, Environmental Specialist

Subject: LNU-Farmland Protection-
A/Retamal Levee System, Hidalgo County, Texas
Hidalgo County, Texas

We have reviewed the information provided concerning the proposed improvements to The A/Retamal Levee System in Hidalgo County, Texas as outlined in your letter of August 25, 2006. This is part of NEPA evaluation for the International Boundary and Water Commission. We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed improvements are in soils classified as Important Farmland and are subject to the FPPA. We estimated that the project will require about 41 acres of additional land. This assumes that the project will need a strip of land 14 miles long and 24 feet wide. We also recognize that this is within the existing levee ROW. We have developed a composite rating for the soils of the project area and completed an AD-1006 form for the project. The total points in Part VII are 114. The FPPA law states that sites that score less than 160 will need no further consideration. Also part of the area could be considered as previously converted.

I have attached the completed AD-1006 (Farmland Conversion Impact Rating) form for this project indicating the approval status. Thanks for the resource materials you submitted to evaluate this project. If you have any questions please call James Greenwade at (254)-742-9960, Fax (254)-742-9859.

Thanks,

James M. Greenwade
Soil Scientist
Soil Survey Section
USDA-NRCS, Temple, Texas

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 8-25-2006	
Name of Project A/Retamal Levee System Improvements		Federal Agency Involved US Boundary and Water Commission	
Proposed Land Use Flood Control		County and State Hidalgo County, Texas	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 9-29-2006	Person Completing Form: James Greenwade
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES x ☐ NO ☐	Acres Irrigated 185,330	Average Farm Size 463
Major Crop(s) Grain Sorghum	Farmable Land In Govt. Jurisdiction Acres: 639,936 % 63	Amount of Farmland As Defined in FPPA Acres: 521,634 % 52	
Name of Land Evaluation System Used LESA	Name of State or Local Site Assessment System NONE	Date Land Evaluation Returned by NRCS 9-20-06	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	41			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	41			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	17.7			
B. Total Acres Statewide Important or Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.001			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	45			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	69			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	10			
2. Perimeter In Non-urban Use	(10)	5			
3. Percent Of Site Being Farmed	(20)	15			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	10			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	0			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	45			
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	69			
Total Site Assessment *(From Part VI above or local site assessment)*	160	45			
TOTAL POINTS ***(Total of above 2 lines)***	260	114			

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318

REPLY TO
ATTENTION OF

September 22, 2006

Regulatory Branch

SUBJECT: D-19025

International Boundary and Water Commission
Attention: Daniel Borunda
4171 N. Mesa Street Suite C-100
El Paso, Texas 79902-1432

Gentlemen:

This is in reference to your letter, submitted August 28, 2006, concerning the proposal to raise the Lateral A/Retamal Dike Levee System along the Rio Grande. The project will include raising the levee height an additional 1.5 to 4 feet, with a resulting increase in the width of the levee footprint of up to 24 feet, along a 14-mile levee segment extending from the Carlson Settling Basin near the city of Hidalgo to the Retamal Dam in Hidalgo County, Texas as shown on the enclosed plans in 1 sheet.

Based on the information you submitted, most of the levee footprint increases would occur within the United States International Boundary and Water Commission levee right-of-way (ROW) on the landside of the levees. In those areas where there is not sufficient ROW on the landside, riverside expansion (from the landside shoulder of the crown toward the river) would be required. Impacts to jurisdictional wetlands may occur as a result of this riverside expansion. In addition, other structural improvements may be required including slurry cutoff barriers or a riverside impermeable liner. The barrier would be installed at the riverside toe of the expanded levee along the levee centerline. The liner would be buried to a specified depth along the levee slope, beginning at a specified distance from the riverside toe to above the riverside shoulder of the levee.

The Rio Grande is a navigable water of the U.S. and is regulated by the Corps of Engineers (Corps) under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Under Sections 10 and 404, activities that involve work in waters of the U.S., including the discharge of dredged and/or fill material, requires a Department of the Army (DA) permit. Additionally, any activities that involve or result in the discharge of dredged or fill material, including associated

excavation activities, in any adjacent wetland areas may require a Department of the Army permit. You should submit an application and project plans for Corps review prior to the initiation of the project.

This determination has been conducted to identify the limits of the Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provision of the Food Security Act of 1985, as amended. If the owner or their tenant are USDA program participants or anticipate participation in the USDA programs, then they should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a combined Notification of Administrative Appeal Options and Process (NAP) and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Southwestern Division Office at the following address:

James E. Gilmore, Appeal Review Officer
Southwestern Division, CESWD-CMO-E
1100 Commerce Street, Room 8E9
Dallas, Texas 75242-0216

Telephone: 469-487-7061; FAX: 469-487-7190

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by November 20, 2006.

It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

This approved determination is valid for five years from the date of this letter unless new information warrants revision before the expiration date. Please reference the determination number D-19025 in future correspondence pertaining to this project. If you have questions concerning this matter, please contact Marie C. Pattillo at the letterhead address or by telephone at 361-814-5847.

Sincerely,

for → Lloyd Mullins
Unit Leader,
Corpus Christi Regulatory Field Office

Enclosures

D-19025

Lateral A/Retamal Dike System
Project Location Map

Environmental Assessment
International Boundary and Water Commission
United States Section
PARSONS

J:\745\745153_IBWC Lateral A Levee EA\GIS\mxd\location_map.mxd - 7/25/2006 @ 4:47:59 PM

Location Map
D-19025
U.S.-International Boundary & Water Commission
Hidalgo County, Texas
Page 1 of 1

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: International Boundary and Water Commission	File #: D-19025	Date: 22 Sept. 2006
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ Or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Marie C. Pattillo, Project Manager
U.S. Army Corps of Engineers, CESWG-PE-RCC
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318
Telephone 361-814-5847; FAX 361-814-5912

If you only have questions regarding the appeal process you may also contact:
James E. Gilmore, Appeal Review Officer
CESWD-CMO-E, 1100 Commerce Street, Room 8E9
Dallas, Texas 75242-0216
Telephone: 214-767-2457; FAX: 214-767-9021
Email: James.E.Gilmore@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or authorized agent.	Date:	Telephone number:

TEXAS HISTORICAL COMMISSION

The State Agency for Historic Preservation

RICK PERRY, GOVERNOR

JOHN L. NAU, III, CHAIRMAN

F. LAWERENCE OAKS, EXECUTIVE DIRECTOR

September 28, 2006

Mr. Daniel Borunda
United States Section
International Boundary and Water Commission
4171 N. Mesa, Ste C 100
El Paso, TX 79902

RE: Project review under Section 106 of the National Historic Preservation Act, *Initial Consultation on Potential Environmental Impact, Improvements to the Lateral A/Retamal Levee System, Hidalgo County, TX*

Dear Mr. Borunda:

Thank you for contacting us regarding 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 (THC).

The THC review staff, led by Hannah Vaughan, has evaluated the information you provided. In order to complete your review under Section 106 of the National Historic Preservation Act, as amended, we require additional information. You will need to hire a professional archeologist to identify the high probability areas (HPAs) for cultural resources, historic and prehistoric, within the areas identified for ground disturbance including the footprint expansion & borrow locations. We will also need USGS maps of the project are and Information on any buildings to be effected by the project including date of construction and photographs of any building more than fifty years old.

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 Hannah Vaughan at 512/463-5942 or hannah.vaughan@thc.state.tx.us. For questions regarding our requirements for archeological reviews please contact Debra Beene, 512-463-5865 or debra.beene@thc.state.tx.us.

Sincerely,

Hannah Vaughan, Historian
for F. Lawerence Oaks, SHPO

December 5, 2006

Mr. Daniel Borunda
United States Section,
International Boundary and Water Commission
4171 N. Mesa, Suite C-100
El Paso, TX 79902

RE: Initial consultation regarding potential environmental impacts associated with the proposed improvements to the Lateral A/Retamal Levee System, Hidalgo County, Texas

Dear Mr. Borunda:

This letter is in response to your request for information regarding natural resources that may be potentially impacted by the project referenced above. Texas Parks and Wildlife Department (TPWD) reviewed the information provided. The following comments and recommendations are provided to further assist your planning efforts and to minimize effects of this project upon fish, wildlife and habitat resources.

The Lateral A/Retamal Levee System segment extends approximately 14 miles from the Carleson Settling Basin east to the Retamal Dam in Hidalgo County, Texas. In order to meet current design criteria for flood protection and correct structural deficiencies in the levees, the proposed project would require a height increase of 1.5 to 4 feet. The footprint of the levee would be increased from 64 feet to a maximum of 88 feet and a slurry cutoff barrier or riverside impermeable liner would be included to address a potential seepage issue.

The levee primarily traverses agricultural areas; however, adjacent areas include tracts in the Lower Rio Grande Valley National Wildlife Refuge (LRGVNWR) and Santa Ana NWR managed by the U.S. Fish and Wildlife Service (USFWS) and two units of the Las Palomas Wildlife Management Area (Kelly and McManus) managed by TPWD. The Kelly unit is approximately 500 feet south of the existing levee at Project Mile Marker 3; the McManus unit is approximately 750 feet north of the existing levee at project Mile Marker 13.5. Both units share common boundaries with tracts of the LRGVNWR. While direct impacts to vegetation associated with the Wildlife Management Areas (WMAs) is not anticipated, they provide habitat for wildlife that may enter the project area. For more information regarding the natural resources within these units of the Las Palomas WMAs, please contact biologist Steve Benn at 956-565-1223.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800

www.tpwd.state.tx.us

Habitats adjacent to the project area may provide suitable nesting, feeding, and loafing sites for wildlife as well as function as corridors isolated from developed areas. Additionally, information from the TPWD Natural Diversity Database (NDD) indicates federally and state listed species may also occur in the area.

Given the small proportion of public versus private land in Texas, the TPWD NDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the NDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by your qualified biologists. The NDD information is intended to assist you in avoiding harm to species that may occur on your site.

Based on the project as presented, the TPWD list for Hidalgo County, and presently known NDD records for the general project area, the following federal and state listed and rare species could be impacted by proposed project activities if suitable habitat is present:

Federal and State Listed Endangered:

* Jaguarundi (*Herpailurus yaguarondi*)
* Ocelot (*Leopardus pardalis*)

State Listed Threatened:

* Black-spotted newt (*Notophthalmus meridionalis*)
* South Texas siren (large form) (*Siren* sp.1)

White-lipped frog (*Leptodactylus labialis*)
Grey Hawk (*Asturina nitida*)
Hooked-Billed Kite (*Chondrohierax uncinatus*)
Peregrine Falcon (*Falco peregrinus*)
Southern yellow bat (*Lasiurus ega*)

* Indigo snake (*Drymarchon corias*)

Speckled racer (*Drymobius margaritiferus*)
Spot-tailed earless lizard (*Holbrookia lacerate*)
Texas tortoise (*Gopherus berlandieri*)

Occurrences of the species shown above, preceded by an asterisk, have been documented on and/or possibly within 1.5 miles of the project route. Printouts for these occurrence records are included for your planning reference. **Please do not include NDD printouts in your draft or final documents.** Because some species are especially sensitive to collection or harassment, these records are for your reference only.

Depending upon habitat availability, other rare species could be encountered in the project area. For more information, please review the entire county list at (http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx). If during construction, the project area is found to contain rare species, natural plant communities or special features, TPWD recommends that precautions be taken to avoid, minimize, and compensate for impacts to them. The U.S. Fish and Wildlife Service (FWS) should be contacted for additional species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species.

In general, TPWD recommends construction activities avoid wetland habitats, forested riparian drainages and dense, mature woody vegetation. Performing construction activities within existing right-of-ways (ROWs) and in previously disturbed areas is supported by TPWD as this generally minimizes adverse impacts to fish and wildlife resources and habitat. However, because the Lower Rio Grande Valley is one of the most biologically diverse regions in the world, potential to encounter wildlife within any of the anticipated project areas does exist. Drainages, intake channels and isolated wetlands such as are likely to occur within the proposed project area often develop vegetation along their banks that may provide food sources, cover or nesting sites for wildlife including migratory birds. These areas may especially be heavily utilized by migratory birds during fall and spring migration. The waterbodies themselves may also support other food sources (*e.g.,* insects) that may attract birds, reptiles or small mammals.

Contiguous mature Tamaulipan brush, ebony-anacua woodlands and cedar elm-sugarberry series, all unique ecosystem located in the Lower Rio Grande Valley of south Texas and in northern Mexico, occur along segments of the proposed project, and adjacent to the USIBWC ROW. These densely wooded areas provide valuable feeding, nesting and protective cover habitat for many resident and migrating wildlife species. This habitat is essential to the conservation of two endangered species, the Ocelot (*Leopardus pardalis*) and Jaguarondi (*Herpailurus yaguarondi)* that use it for cover. The Tamaulipan brush provides

habitat for more than 500 vertebrate species and 1,200 plant species, many of which are state and federal listed.

The Migratory Bird Treaty Act (MBTA) provides for a year round closed season for non-game birds and prohibits the taking of migratory bird nests and eggs. Construction activities that would involve clearing, trampling or trimming vegetation should be scheduled outside the March through August migratory bird nesting season of each year the project is authorized. If such activities can not be scheduled outside of the nesting season, affected areas should be surveyed for migratory bird nest sites prior to construction or future maintenance activities. In addition, since raptors nest in late winter and early spring, all construction activities as identified above should be excluded from a minimum zone of 100 meters around any raptor next during the period of February 1- July 15.

Woodland habitat that occurs in an area isolated from agriculture practices or development, such as occurs within the project vicinity, has increased value for many species of wildlife. While impacts to this habitat may be considered minimal throughout the project corridor, the **total or cumulative** impact on this habitat is significant, for the reason listed above. As required by the National Environmental Policy Act (NEPA), §1502.14(f), 1502.16(h), 1503.3(d), 1505.2(c), 1505.3, and 1508.20, the Environmental Assessment to be prepared should include a mitigation plan demonstrating that mitigation measures would be initiated sequentially from avoidance and minimization to compensation for unavoidable impacts to woodland habitat.

The woodland habitats and former borrow sites provide valuable habitat for wildlife, including federally and state-listed threatened and endangered species. Clearing woodland communities or removing the buffer around the wetlands could impact ocelot, jaguarondi, indigo snakes, collared lizard, horned lizard and Texas tortoise. Impacts to woodland habitat could also destroy nesting sites. Filling or draining wetlands in the project area may impact South Texas sirens and black-spotted newts.

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

Sincerely,

Russell Hooten

Russell Hooten
Wildlife Habitat Assessment Program
Wildlife Division
/rh

Attachment

cc: Steve Benn, Las Palomas WMA, TPWD-Wildlife Division

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
December 13, 2006

Mr. Carlos Victoria-Rueda, Ph.D.
Parsons
8000 Centre Park Drive, Suite 200
Austin, Texas 78754

Consultation No. 21410-2007-T-0077

Dear Mr. Rueda:

This responds to a letter and EA received on November 13, 2006 regarding the effects of the proposed action to raise the Lateral A and Retamal Dike Levee Systems on species federally-listed or proposed for listing as threatened or occurring within 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 The United States Section, International Boundary and Water Commission (USIBWC) is proposing to raise the lateral A and Retamal Dike Levee System that extends 14 miles along the Rio Grande, downstream from the Carlson Settling Basin. The Lateral A segment extends from the Carlson Settling Basin downstream to the Retamal Dike at approximately project mile 11.5. The need for this improvement was determined from hydraulic modeling results indicating that height increases from 1.5 to 4 feet would be required to meet current design criteria for flood protection along the Lateral A/Retamal Dike Levee Systems.

Several large tracts of land in the area were acquired by the U.S. Fish and Wildlife Service (USFWS) and incorporated into the Lower Rio Grande Valley National Wildlife Refuge (LRGV NWR) and Santa Ana NWR. Refuge lands are found primarily along 3.5 miles on the riverside of the levee: Between Project Miles 0-0.3 and 13.8-14.0 along the LRGV NWR, and Project Miles 4.5-7.5 along the Santa Ana NWR.

A 4-foot increase in levee height would result in a 24-foot offset increase of the footprint. The current footprint width value of 64 feet would expand to 88 feet as a result of the increased levee height. The preferred option for enlarging the levee footprint is landside expansion to maximize flood containment capacity along the Lower Rio Grande Flood Control Project (LRGFCP). Riverside expansion (from the landside shoulder of the crown toward the river) would be required when constraints on landside expansion are present. These constraints include the presence of irrigation canals along significant reaches of the levee system (Project Miles 0 to 4.0, 4.5 to 7.3, and 10.6 to 11.0).

Along with the increase in levee height, structural improvements may be required for levee segments. Structural improvements would consist of either a slurry cutoff barrier or a riverside impermeable liner. The slurry barrier would be installed at the riverside toe of the expanded levee, or along the levee

centerline. The impermeable liner would be buried to a specified depth (18-30") along the levee slope, and from some distance from the riverside toe to above the riverside shoulder of the levee.

A total of 17 individual wetland areas were identified during field surveys, comprising 120.4 acres within USIBWC ROW. Of these wetland areas, five could be considered jurisdictional waters of the U.S. under Section 404 of the Clean Water Act, comprising 39.1 acres within the ROW. Within the potential expansion area, 1.0 acres of wetland will be impacted (Wetlands A, B, D, F, and H); however, only 0.1 acre (4,402 square feet) is considered potential jurisdictional Waters of the U.S. (Wetlands F). You have determined that replacing offset riverside expansion with a centered expansion alignment can minimize impacts to Wetlands F.

Field surveys were conducted on September 7 and 11, 2006 to identify plant communities, threatened and endangered species habitat, and potential jurisdictional wetlands. Levee expansion activities on the riverside corridor adjacent to the levee would remove some potential habitat for threatened and endangered species. Even though, there is a relative small amount of habitat subject to removal and no adverse modification for listed species is expected to occur as a result of levee expansion activities there is no mention of any conservation measures for the loss of 2.7 acres of Mesquite-Acacia Woodland and 7.9 acres of Texas Ebony - Anacua Forest or any conservation measures taken for the impacts and loss of habitat on tracts of land that could affect the Santa Ana NWR as well as the Hidalgo Bend, Vela Woods, Marinoff, East Lake, and Las Palomas units of the LRGV NWR. There is no mention of acres of habitat that will be impacting the Refuge tracts. The Service recommends for USIBWC to address these issues in the EA and continue coordinating with the Refuge for recommendations.

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.

We appreciate the opportunity to provide pre-planning information and look forward to providing any further assistance.

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

Sincerely,

Ernesto Reyes Jr.

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
Jodi Stroklund, Santa Ana Manager, Alamo, Texas