DRAFT ENVIRONMENTAL ASSESSMENT
EMERGENCY LEVEE REPAIRS TO THE PRESIDIO FLOOD CONTROL PROJECT, STATION 7+000.

Prepared by:
United States Section, International Boundary and Water Commission
El Paso, Texas

April 2, 2009

DRAFT FINDING OF NO SIGNIFICANT IMPACT
EMERGENCY LEVEE REPAIRS TO THE PRESIDIO FLOOD CONTROL PROJECT, STATION 7+000.

LEAD AGENCY

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

BACKGROUND

The United States Section of the International Boundary and Water Commission (USIBWC) operates and maintains approximately 15.2 miles of Presidio Flood Control Project (FCP) within Presidio County near the city of Presidio, Texas, providing protection to 5,403 acres of land in the United States. The Presidio FCP was first constructed in 1975 to provide flood protection by augmenting the capacity of the river channel through the construction of cleared berms and levees on both sides of the Rio Grande (USIBWC 2008). Rectification of the Rio Grande also took place at the time of project construction, reducing the river channel length by approximately 6.3 miles. The Presidio FCP levees range in height from 6 to 16 feet and protect the river reach between Haciendita and Brito Creek. The crest width is typically 16 feet wide, but is currently between 8 and 12 feet at the downstream end of the project.

During the month of September 2008, the Presidio FCP experienced severe flooding conditions from water releases in the Rio Conchos Watershed in Mexico. Figure 1 outlines the Presidio FCP levee system. Flood flows up to 1,500 cubic meters per second (cms) (52,972 cubic feet per second (cfs)) were experienced in the Presidio FCP, which is designed for flood conveyance of 1,190 cms (42,024cfs). As a result, the Presidio FCP sustained substantial damage to include levee breaches, overtopping, piping/sand boils, under-seepage and severe surface and slope erosion. In addition, flood conditions exacerbated levee weaknesses at old river meander locations. Based on recent geotechnical assessments, as well as, data from previous geotechnical studies of the Presidio FCP, the USIBWC has determined that immediate emergency levee repairs are needed. The current levee integrity makes the Presidio FCP vulnerable to potential levee failure if not repaired.

PROPOSED ACTION

The Proposed Action would repair two damaged levee reaches totaling approximately 3000 linear feet due to severe under-seepage problems near Station 7+000. A recent geotechnical survey titled, "Upper Rio Grande Project – Presidio Flood Control Project Emergency Remediation for the US River Levee & Cibolo Creek North Levee near the City of Presidio, March 13, 2009," (USIBWC 2009)**,** revealed that the structural integrity of this levee reach is compromised. Emergency repairs would consist of reconstructing two levee reaches totaling 3000-feet to the pre-event conditions and providing an under-seepage barrier at the riverside toe of the levee up to 25-feet below grade. The repairs would be completed within the existing levee footprint and within USIBWC right of way.

SUMMARY OF FINDINGS

Pursuant to National Environmental Policy Act (NEPA) guidance (40 Code of Federal Regulations 1500-1508), The President's Council on Environmental Quality issued regulations for NEPA implementation which included provisions for both the content and procedural aspects of the required Environmental Assessment (EA). The USIBWC completed a draft EA of the potential environmental consequences of the emergency repairs at Station 7+000. The draft EA, which supports this draft Finding of No Significant Impact, evaluated the No Action Alternative and three (3) Action Alternatives: Slurry Trench Cut-off Wall; Slurry Trench Cut-off Wall with geo-membrane; and Sheet Pile Cut-off Wall.

The USIBWC assessed the impacts of the proposed action on significant resources, including flood control, wildlife, threatened and endangered species, cultural resources, and community resources. No significant adverse impacts were identified for any of the resources.

PUBLIC INVOLVEMENT

On March 26, 2009, the USIBWC held a public information meeting at the Presidio Activities Center, Presidio, Texas to provide information to local residents, adjacent landowners, and city and county officials about the USIBWC proposed action. Attendees were in favor of the emergency repairs and raised no concerns with the proposed project. On March 26, 2009, the USIBWC mailed a letter to resource agencies including: Fish and Wildlife Service; United States Army Corps of Engineers; Texas Parks and Wildlife Department; and the Texas Historical Commission. The letter provided information about the proposed action and the USIBWC "no-effect" determination on impacts to natural resources. The USIBWC published a Notice of Intent to Prepare an Environmental Assessment for Emergency Levee Repairs on April 2, 2009.

BEST MANAGEMENT PRACTICES

Best management practices and mitigation measures will be implemented as part of the proposed action to minimize the potential for impacts to natural resources. Best management practices during construction would include the use of sediment barriers, silt fencing, and soil wetting to minimize erosion and dust.

Due to the March 1st to August 31st migratory bird breeding season, a bird survey will be conducted by USIBWC prior to groundbreaking activities.

DECISION

Based on my review of the facts and analyses contained in the draft Environmental Assessment, I conclude that implementation of the preferred alternative to construct a Slurry Trench Cut-off Wall would have no significant impacts. 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. An Environmental Impact Statement will not be prepared unless additional information which may affect this decision is brought to our attention within thirty (30) days from publication of the notice of intent in the Federal Register.

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

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SECTION 1. PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

During the month of September 2008, the Presidio Flood Control Project (FCP) experienced severe flooding conditions from water releases in the Rio Conchos Watershed in Mexico. Figure 1 outlines the Presidio FCP levee system. Flood flows up to 1,500 cubic meters per second (cms) (52,972 cubic feet per second (cfs)) were experienced in the Presidio FCP, which is designed for flood conveyance of 1,190 cms (42,024cfs). As a result, the Presidio FCP sustained substantial damage to include levee breaches, overtopping, piping/sand boils, under-seepage and severe surface and slope erosion. In addition, flood conditions exacerbated levee integrity at old river meander locations. Emergency response included, but was not limited to, filling over 25,000 sand bags and placing the bags on the existing levee to add support and using Department of Defense helicopters to fill bridge openings with super sand bags in existing railroad right-of-ways to create secondary levees. Permanent repairs were delayed due to required completion of engineering assessments. Based on recent geotechnical assessments, as well as, data from previous geotechnical studies of the Presidio FCP, the USIBWC has determined the specific immediate emergency levee repairs needed. Presently, the levee integrity of the Presidio FCP is highly vulnerable to potential levee failure; therefore, immediate repairs are needed. This draft Environmental Assessment (EA) addresses the emergency repairs of reconstructing the levee to the pre-event grade at the levee section Station 7+000. This levee reach (Station 7+000) suffered severely with under-seepage and structural damage.

On February 26, 2009, the USIBWC issued a notice of intent to prepare an Environmental Impact Statement for long term improvements to the entire affected Presidio FCP. Due to serious levee structural deficiencies that immediately threaten health and human safety, the USIBWC is currently proposing, within this draft EA, the extensive rehabilitation expeditiously and efficiently to pre-event conditions prior to the region's summer 2009 monsoon season. This draft EA is tiered from the January 2008, USIBWC Final Programmatic Environmental Impact Statement (PEIS) titled, "Improvements to the USIBWC Rio Grande Flood Control Projects along the Texas-Mexico Border" and is incorporated herein by reference (USIBWC 2008). In addition, the USIBWC conducted a public information meeting regarding the proposed emergency levee repairs on March 26, 2009 at the Presidio Activities Center, Presidio, Texas. Local residents attending the meeting were supportive of the proposed emergency levee repairs.

1.2 PURPOSE AND NEED

The USIBWC prepared this draft EA for the proposed action of constructing emergency levee repairs in two levee reaches (Reach 1 ~ 1000 feet at geotechnical boring No. 21 and Reach 2 ~ 2000 feet between boring No. 24 and 25) that contain significant damaged caused by sand boils (Figure 2). A sand boil is a rupture of the topsoil stratum on the landside of a levee caused by excess hydrostatic pressures in the soil substratum. Sand boils can produce three different effects on a levee depending on the condition of flow under the levee: 1) piping flow which leads to slumping of the levee crown; 2) non-piping flow which produces undercutting and sloughing of the landside slope of the levee; and 3) saturating flow which produces boils at or near the landside of the levee toe (USACE 2000). Immediate levee improvements in these two reaches are needed in order to repair saturating flow conditions that occurred and to limit the potential for a levee failure. Emergency levee repairs consist of reconstructing the levee to pre-event conditions and preventing any future saturating flows.

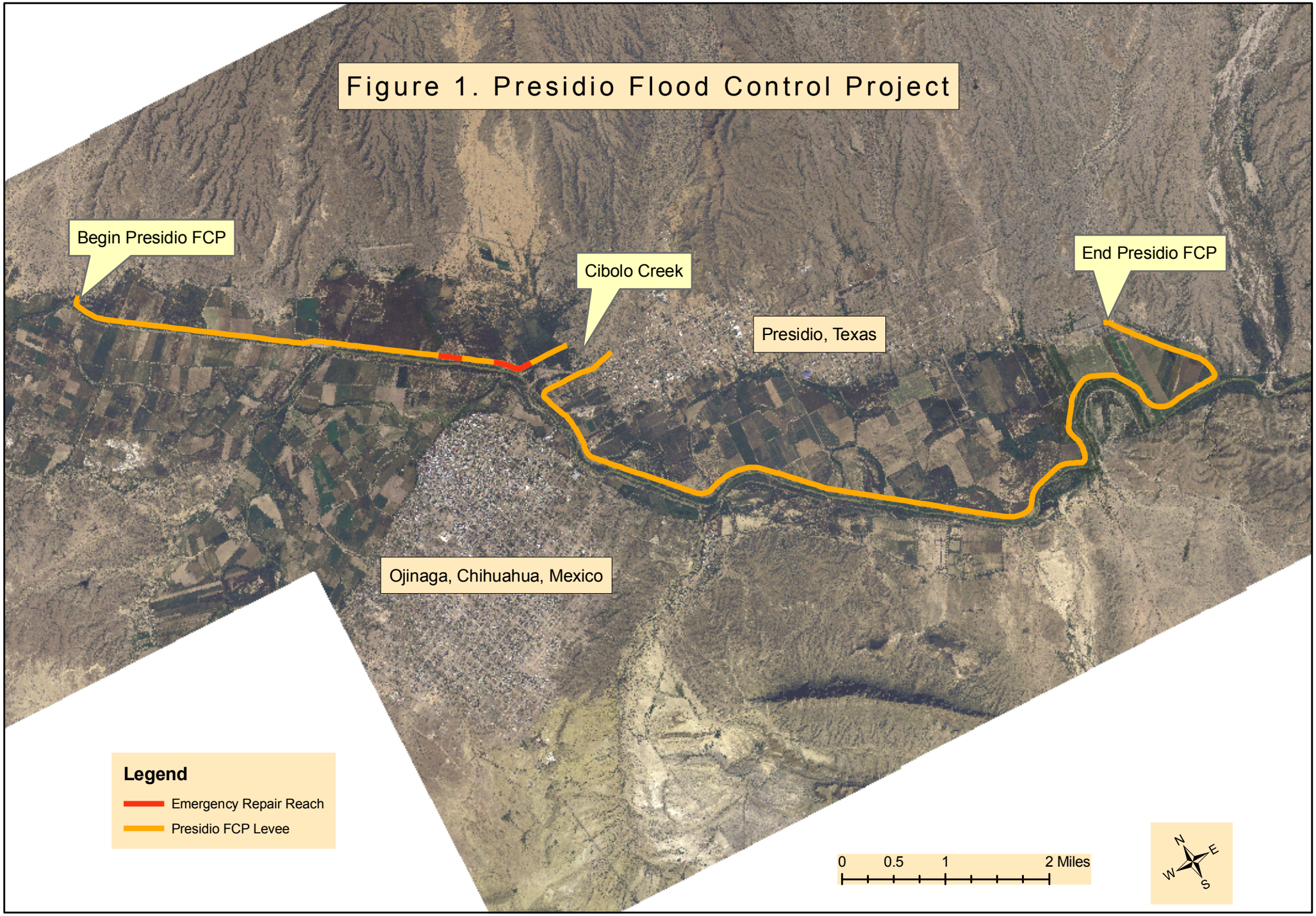
Figure 1. Presidio Flood Control Project
Begin Presidio FCP
Cibolo Creek
Presidio, Texas
End Presidio FCP
Ojinaga, Chihuahua, Mexico
Legend
Emergency Repair Reach
Presidio FCP Levee
0
0.5
1
2 Miles
N
E
S
W

Figure 2. Emergency Levee Repairs, Station 7+000
5+500
6+00
6+500
7+00
Cibolo Creek
Legend
Presidio Stations
Emergency Repair Reach
Presidio FCP Levee
N
W
E
S
0
475
950
1,900 Feet

Scope of the Environmental Review

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

This draft EA identifies and evaluates the potential environmental consequences that may result from implementation of the No Action and three action alternatives. The following resource areas are analyzed for potential environmental consequences: 1) Physical resources (flood control, air, water, noise) 2) Biological resources (vegetation, wildlife, federal and state threatened or endangered species); 3) Cultural resources (archaeology and historic properties); and 4) Community resources (socioeconomics, environmental justice). These and other resource areas were discussed in the 2008 Programmatic Environmental Impact Statement and are incorporated by reference (USIBWC 2008). Analyses of environmental resources for the affected environment and environmental consequences are based on a potential impact corridor in the vicinity of the existing levee reach.

SECTION 2. DESCRIPTION OF PROPOSED ACTION

2.1 LEVEE SYSTEM DESCRIPTION

The United States Section of the International Boundary and Water Commission (USIBWC) operates and maintains approximately 15.2 miles of Presidio FCP within Presidio County near the city of Presidio, Texas, providing protection to 5,403 acres of land in the United States. The Presidio FCP was first constructed in 1975 to provide flood protection by augmenting the capacity of the river channel through the construction of cleared berms and levees on both sides of the Rio Grande (USIBWC 2008). Rectification of the Rio Grande also took place at the time of project construction, reducing the river channel length by approximately 6.3 miles. The Presidio FCP levees range in height from 6 to 16 feet and protect the river reach between Haciendita and Brito Creek. The crest width is typically 16 feet wide, but is currently between 8 and 12 feet at the downstream end of the project.

2.2 PROPOSED ACTION

The Proposed Action would repair two damaged levee reaches totaling approximately 3000 linear feet due to severe under-seepage problems near Station 7+000. A recent geotechnical survey titled, "Upper Rio Grande Project – Presidio Flood Control Project Emergency Remediation for the US River Levee & Cibolo Creek North Levee near the City of Presidio, March 13, 2009," (USIBWC 2009)**,** revealed that the structural integrity of this levee reach is compromised. Emergency repairs would consist of reconstructing two levee reaches totaling 3000-feet to the pre-event conditions and providing an under-seepage barrier at the riverside toe of the levee up to 25-feet below grade. The repairs would be completed within the existing levee footprint and within USIBWC right of way.

2.3 SUMMARY COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Alternative 1: No Action

Under the No Action Alternative, the USIBWC would not make emergency repairs to the 3000-ft levee reach with extensive under-seepage problems. The No Action alternative would perpetuate a state of reduced levee structural integrity and flood protection until long-term solutions are implemented. The levee would be susceptible to possible failure at the damage site and threaten the livelihood of adjacent landowners and the City of Presidio.

Alternative 2: Slurry Trench Cut-off Wall
Alternative 2 consists of constructing a slurry trench cut-off wall with a backhoe, trencher, or excavator and filling the trench during excavation with a slurry mixture. The slurry mixture consists of approximately 94% water and 6% bentonite. This technique requires a high water table in order to be effective. Hydrostatic pressure of the slurry forces the bentonite particles into the trench walls forming a cake layer and preventing additional groundwater intrusion. As trench excavation proceeds the backfilling operation follows.

Alternative 3: Slurry Trench Cut-off Wall with Geo-membrane
Alternative 3 is similar to Alternative 2 with the addition of a geo-membrane layer on the riverside of the slurry trench. The geo-membrane is made of low density polyethylene (LDPE) plastic which provides an additional water-proofing barrier.

Alternative 4: Sheet Pile Cut-off Wall
Under this alternative the USIBWC would utilize PZ-27 steel sheet pile along the two reaches identified. The United States Army Corps of Engineers recommends hot-rolled sheet pile with interlock seams. The interlock seems would have to be welded in order to prevent leaks. Sheet pile is difficult to install in soils containing gravel and cobble substrates which are evident at the site.

Table 1 provides a summary of the environmental resources which could potentially be affected by the Alternatives mention above in Section 2.3. The No Action Alternative is the only alternative that will not affect nor adversely affect resources.

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

ENVIRONMENTAL RESOURCES	No Action	Slurry Trench Cut-off Wall	Slurry Trench Cut-off Wall with Geo-membrane	Sheet Pile Cut-off Wall
Physical Resources				
A. Flood Control	Adversely Affected	Affected Positively	Affected Positively	Affected Positively
Biological Resources				
A. Wildlife	Not Affected	Not Significantly Affected	Not Significantly Affected	Not Significantly Affected
B. Threatened and Endangered Species	Not Affected	Not Affected	Not Affected	Not Affected
Cultural Resources				

ENVIRONMENTAL RESOURCES	No Action	Slurry Trench Cut-off Wall	Slurry Trench Cut-off Wall with Geo-membrane	Sheet Pile Cut-off Wall
A. Archaeological	Not Affected	Not Affected	Not Affected	Not Affected
B. Historic Resources	Not Affected	Not Affected	Not Affected	Not Significantly Affected
Community Resources				
A. Environmental Justice	Adversely Affected	Affected Positively	Affected Positively	Affected Positively

SECTION 3. AFFECTED ENVIRONMENT

This section describes resources in the potential area of influence of the proposed project. For more detailed information please refer to the USIBWC 2009 PEIS. Only those components of the environment that potentially could be affected by the project are discussed. The consequences of the No Action and Proposed Action Alternatives are discussed.

3.1 PHYSICAL RESOURCES

3.1.1 Flood Control

The Presidio FCP provides flood protection to the city of Presidio, agricultural lands, and stabilizes the international boundary. The Presidio FCP is 15.2 miles in length and is located along the Rio Grande within the sister cities of Presidio, Texas and Ojinaga, Chihuahua. The United States and Mexico are responsible for the maintenance of its portion of the facilities and floodway.

Alternative 1 No Action

The potential for adverse impacts are anticipated as the current levee condition would remain damaged.

Alternative 2 Slurry Trench Cut-off Wall

A slurry trench cut-off wall would improve the current flood control deficiencies at Station 7+000. The proposed action would minimize the potential for levee failure at the site and improve the flood control risk for the City of Presidio.

Alternative 3 Slurry Trench Cut-off Wall with Geo-membrane

The proposed improvements under this alternative would be similar to those anticipated for Alternative 2. The geomembrane would be an added feature that would improve and further minimize under-seepage.

Alternative 4 Sheet Pile Cut-off Wall

The proposed improvements under this alternative would be similar to those anticipated for Alternative 2. Sheet pile has the potential to leak along the interlock seams, thus reducing the potential to provide a necessary barrier for under-seepage.

3.2 BIOLOGICAL RESOURCES

3.2.1 Wildlife

Typical wildlife that could inhabit the project area include black-tailed jackrabbit, desert cottontail, mourning dove, meadowlark, kestrel, red-tail hawk and other non-game animals. For more detailed information please review the 2008 PEIS documentation.

Alternative 1 No Action

No impacts are anticipated as the current levee condition would remain unchanged.

Alternative 2 Slurry Trench Cut-off Wall

A minimal loss of habitat for wildlife would occur under Alternative 2. Project activities would be limited to the levee reaches. Temporary impacts would occur to the 3000-ft reach along the levee corridor and would remove some habitat, however the removal is limited to the levee riverside toe. The dimension of the proposed trench would be 3ft wide by 25ft deep.

Alternative 3 Slurry Trench Cut-off Wall with Geo-membrane

The impacts under this alternative would be similar to those anticipated for Alternative 2.

Alternative 4 Sheet Pile Cut-off Wall

The impacts under this alternative would be similar to those anticipated for Alternative 2.

3.2.2 Threatened and Endangered Species

In preparation of the Presidio FCP long-term levee rehabilitation EIS, biological surveys were conducted March 11-13, 2009 for the entire levee system. Preliminary assessment of survey results indicates that no suitable habitat for state and federal threatened and endangered (T&E) species exists within the project location.

Alternative 1 No Action

No impacts are anticipated as the current levee condition and configuration would remain unchanged.

Alternative 2 Slurry Trench Cut-off Wall

No impacts are anticipated, as no suitable habitat for T&E species exists.

Alternative 3 Slurry Trench Cut-off Wall with Geo-membrane

No impacts are anticipated, as no suitable habitat for T&E species exists.

Alternative 4 Sheet Pile Cut-off Wall

No impacts are anticipated, as no suitable habitat for T&E species exists.

3.3 CULTURAL RESOURCES

The USIBWC completed a cultural resources survey of the Presidio FCP in June 2004 (USIBWC 2004). The objective of the report was to consider the potential impacts of USIBWC actions to repair, rehabilitate, and maintain the United States portion of the Presidio FCP. No archaeological resources were identified near Station 7+000. The 2004 Cultural Resources report identified a potential historic resource as was described as Area F-4. The following excerpt was taken from the 2004 report:

"Area F-4 is the location of a concrete lined irrigation canal near the mouth of Cibolo Creek. The irrigation system consists of a concrete cased well shaft, pump motor, pump house, iron pipe, concrete standpipe, water canal, and box hydrant. The pump motor is bolted to a concrete apron surrounding the cased well shaft. The pump house consists of four large steel I-beams which have been set into the ground as corner-posts and enclosed with plywood. At 8 m distance, a 35 cm diameter iron pipe extends from the ground and is attached to a concrete standpipe. The iron pipe consists of bolted sections and contains a wheel valve. The concrete standpipe is attached to a V-shaped concrete-lined canal with a flat bottom. The canal sits atop an earthen berm that stands 3 to 4 m high and extends for 215 m to a 90 degree turn where it enters a box hydrant. The box hydrant is located underneath a large splayed salt cedar tree and has two openings, one on the west and one on the north side. A short concrete-lined canal for water distribution extends from each opening in the hydrant. The irrigation canal is 1.45 m wide at the top with inward tapering walls of 45 degrees and a maximum depth of 50 cm. The canal has been formed of poured concrete sections 3.06 m long. Numerous cracks and displaced sections indicate the canal is no longer in usable condition. The age of the structure could not be determined. The center line of the canal is located at approximately 30.4 m (100 ft) from the levee center line placing approximately half of the structure within the levee rehabilitation zone. An assessment of this structure as a historical resource is warranted, with landowner interviews to determine date of construction. Should it be determined that the structure is at least 50 years old and within an area of potential levee rehabilitation, documentation and assessment of the structure along with the completion of a State of Texas Archaeological Site Data Form, is recommended. "

Alternative 1 No Action
No impacts are anticipated as the current levee condition and configuration would remain unchanged.

Alternative 2 Slurry Trench Cut-off Wall
No impacts are anticipated as the proposed action would be limited to the riverside toe of the levee. The proposed action will provide flood protection the private land where Area F-4 is located, and limit the potential for flood damage to the structure.

Alternative 3 Slurry Trench Cut-off Wall with Geo-membrane
The impacts under this alternative would be similar to those anticipated for Alternative 2.

Alternative 4 Sheet Pile Cut-off Wall
The potential for ground vibration may exist during pile driving activities. The impacts may be minimal and temporary as the sheet piles are driven into the ground near Area F-4.

3.4 COMMUNITY RESOURCES

3.4.1 Environmental Justice

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

Alternative 1 No Action
The potential for adverse impacts are anticipated as the current levee condition and configuration would remain unchanged. No action by the USIBWC would increase the risk of levee failure at Station 7+000, and jeopardize the flood protection to the adjacent landowners and the City of Presidio.

Alternative 2 Slurry Trench Cut-off Wall
Positive impacts are anticipated. The risk of levee failure at Station 7+000 would be reduced, thus providing the necessary flood protection to adjacent landowners and the City of Presidio. Positive local economic impacts would be realized as an influx of federal dollars would occur for local businesses including hotels, restaurants, groceries stores, gasoline stations.

Alternative 3 Slurry Trench Cut-off Wall with Geo-membrane
The impacts under this alternative would be similar to those anticipated for Alternative 2.

Alternative 4 Sheet Pile Cut-off Wall
The impacts under this alternative would be similar to those anticipated for Alternative 2.

SECTION 4. CUMULATIVE IMPACTS

The USIBWC is in the process of developing an Environmental Impact Statement (EIS) for long-term rehabilitation of the Presidio FCP. A notice of intent to prepare an EIS was published in the Federal Register on February 26, 2009, and a public scoping meeting was held in Presidio on March 10, 2009. Preliminary alternatives being considered include rehabilitating the Presidio FCP levee system to its current level of protection against a 25-year frequency flood, or raised to meet a 100-year flood containment design capacity. Levee height increases would expand the current levee footprint and may require additional right-of-way acquisition. In-place rehabilitation is anticipated along approximately 9 miles in the upper reach of the Presidio FCP. Current alignment of the levee system in the upper reach would be retained for levee rehabilitation for raising levee height to reach the 100-year flood containment design capacity. Approximately 6 miles of this segment overlap with an area where the U.S. Department of Homeland Security (DHS) intends to construct border fencing. One option under consideration by DHS is to incorporate a border wall into the USIBWC levee. Along the 6 mile segment in the lower reach of the Presidio FCP, where flood damage was more extensive, a number of levee realignment options are under consideration. To reach the 100-year flood containment design capacity, the primary realignment under consideration is partial levee relocation, approximately 500 feet inland from its current alignment. Other options under consideration are the construction of a new spur levee beginning approximately 1.5 miles downstream of the Railroad Bridge. The proposed spur levee would follow a northeastward alignment and intersect Highway 170.

The U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP) plans to construct, operate, and maintain tactical infrastructure along the U.S./Mexico international border in the U.S. Border Patrol (USBP) Marfa Sector, Texas (DHS 2008). The

tactical infrastructure will consist of approximately 11 miles of primary pedestrian fence, access and patrol roads, and lights. Of the 11 miles approximately, 6.2 miles of tactical infrastructure would be constructed upstream and downstream of the Presidio Port of Entry. On April 1, 2008, the Secretary of the DHS, pursuant to his authority under Section 102(c) of IIRIRA, exercised his authority to waive certain laws that were an impediment to the expeditious construction of tactical infrastructure along the southwestern border. Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources. DHS is proposing to construct tactical infrastructure which is not assessed within this effort.

SECTION 5. MITIGATION MEASURES

The proposed action would not cause any significant, adverse, environmental impacts. The USIBWC will implement best management practices (BMP) during construction to minimize impacts to natural resources. BMPs would typically include silt fencing, straw bale fencing, and spill prevention and control countermeasures.

SECTION 6. LIST OF CONTRIBUTORS

Table 6.1 Preparers of the Environmental Assessment

Name	Agency	Degree	Years Experience
Daniel Borunda	USIBWC Environmental Protection Specialist Environmental Management Division	M.S. Fisheries and Wildlife Science	13
Steven Lyell	USIBWC Lead Civil Engineer Engineering Services Division	B.A. Biology B.S. Civil Engineering M.B.A.	19
Carlos Peña	USIBWC Division Engineer Environmental Management Division	B.S. Civil Engineering	21
Lisa Santana	USIBWC Environmental Protection Specialist Environmental Management Division	Ph.D. Biology	7

SECTION 7. REFERENCES

DHS (2008). Environmental Stewardship Plan for the Construction, Operation and Maintenance of Tactical Infrastructure, U.S. Border Patrol Marfa Sector, Texas.

USACE (2000). Design and Construction of Levees. Engineering Manual No. 1110-2-1913, p. F-18~F-20.

USIBWC (2009). Draft Emergency Remediation Design Memorandum for Upper Rio Grande Project – Presidio Levee System Emergency Remediation for the US River Levee & Cibolo North Creek Levee.

USIBWC (2008). Final Programmatic Environmental Impact Statement – Improvements to the USIBWC Rio Grande Flood Control Projects along the Texas-Mexico Border.

USIBWC (2004). Final Cultural Resource Reconnaissance Survey for the Presidio-Ojinaga Flood Control Project, Presidio County, Texas.

USIBWC (1981). USIBWC Operational Procedures for Implementing Section 102 of the National Environmental Policy Act of 1969. 46 FR 44083

APPENDIX A

Project Area Photo-log.

Landside levee slope near geotechnical boring No. 21.

Riverside levee slope near geotechnical boring No. 24, note Rio Grande on right.

Sand boil near Station 7+000 on landside of levee (picture courtesy George Sills).

Sand boil near Station 7+000 (picture courtesy George Sills).

Large sand boil near Station 7+000 on landside of levee (picture courtesy George Sills).