

RECLAMATION

Managing Water in the West

Environmental Assessment

Hunters Hole Restoration Project



U.S. Department of the Interior
Bureau of Reclamation
Yuma Area office
Yuma, Arizona

April 2009

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Environmental Assessment

Hunters Hole Restoration Project

prepared by

**U.S. Department of the Interior
Bureau of Reclamation
Yuma, Arizona**

Acronyms and Abbreviations

AGFD	Arizona Game and Fish Department
APE	Area of Potential Effects
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	Centimeters
DDT	Dichloro-Diphenyl-Trichloroethane
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ft	Feet
FWS	United States Fish and Wildlife Service
ha	Hectares
IBWC	International Boundary and Water Commission
ITA	Indian Trust Assets
LCR	Lower Colorado River
Limitrophe	Limitrophe Division
m	Meters
MSCP	Multi-Species Conservation Program
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIB	Northern International Boundary
PM ₁₀	Particulate Matter that is 10 microns in diameter or less
ppm	Parts per million
Reclamation	Bureau of Reclamation
SHPO	State Historical Preservation Office
SIB	Southern International Boundary
SWFL	Southwestern willow flycatcher
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
VRM	Visual Resource Management
YBC	Yellow-billed cuckoo
YCNHA	Yuma Crossing National Heritage Area
YCR	Yuma clapper rail
YCSO	Yuma County Sherriff's Office

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1.0 Purpose of and Need for Proposed Action

1.1 Introduction

The Bureau of Reclamation (Reclamation) has prepared this environmental assessment (EA) to evaluate potential impacts associated with the riparian and wetland restoration of the Hunters Hole area. This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 UCS 4321 et seq.), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations 1500-1508) for implementing NEPA, and the Reclamation NEPA handbook. Reclamation is the lead Federal agency pursuant to NEPA. The Bureau of Land Management Yuma Field Office (BLM) is a cooperating agency for the preparation of this document.

1.2 Location

The 435 acre Hunters Hole area is located along the lower Colorado River (LCR), approximately 2 miles north of the Southerly International Boundary (SIB) below Morelos Dam. The project is located in the Limitrophe Division (Limitrophe), defined as the area between the SIB and Northern International Boundary where the United States borders Mexico along the Colorado River. The project lies on the Arizona side of the River on Reclamation lands, Yuma County, at approximate River Mile 2.5, see Figure 1.

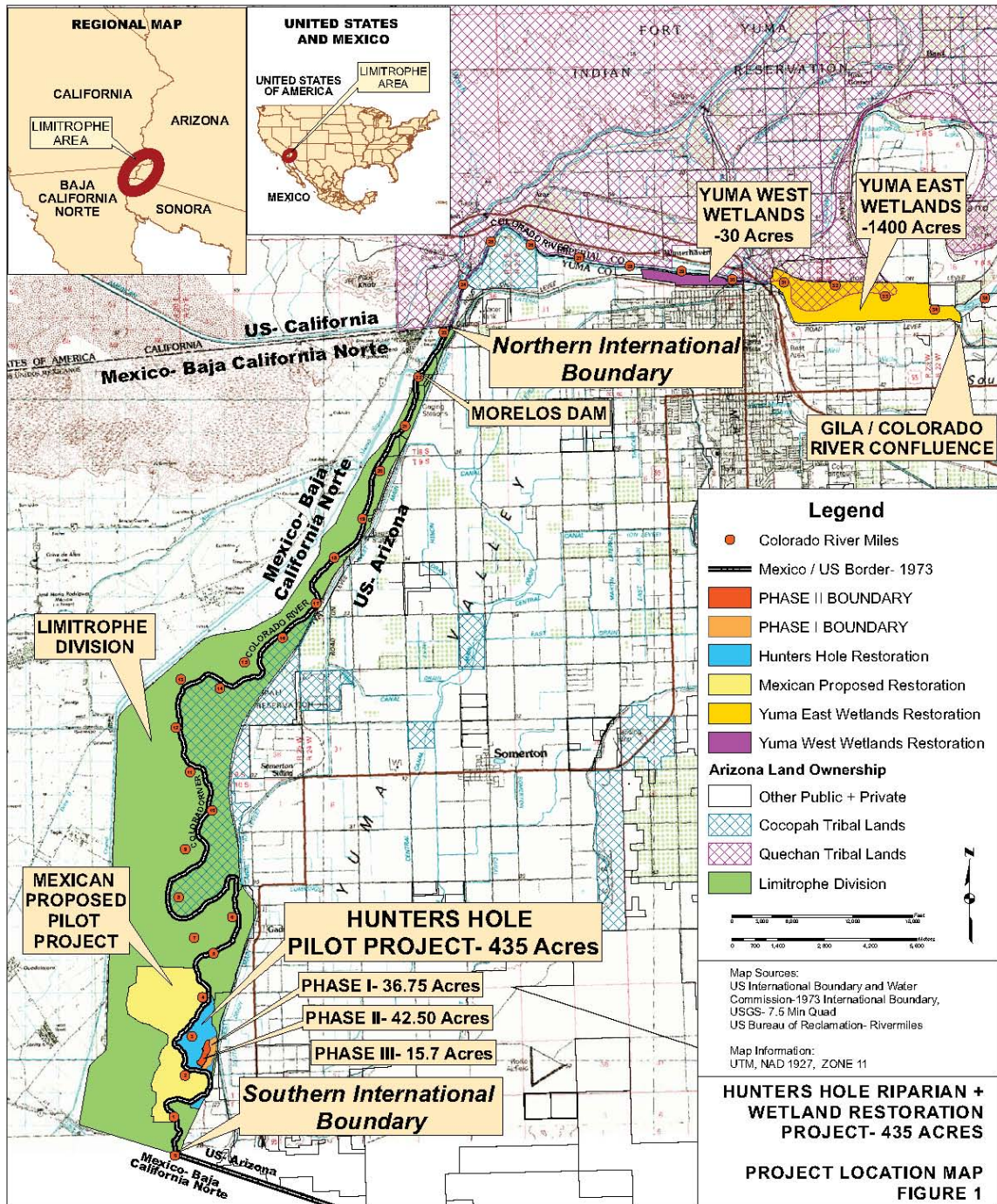


Figure 1-1. Hunters Hole Location Map

1.3 Background

Hunters Hole consists of a series of interconnected ponds that were formed by flood conditions during the period of 1950 and 1953. At the time of the formation, the surface water area was approximately 30 acres. Water levels in the ponds were historically maintained by groundwater, irrigation drain flows, and by a connecting channel to the river. Over time, natural marsh evolution reduced mainstem flows, and periodic flooding/silting have isolated the area from the mainstem of the river and reduced surface water area. Presently the water source for the ponds is from groundwater, intermittent discharge from local irrigation drains, the Bypass Drain siphon and seepage from the 21 mile spillway. Overall standing water is relatively localized near the discharge point of the drains.

On June 24, 1974, Title I of Public Law 93-320, Colorado River Basin Salinity Control was authorized. Title I provided for a program to reduce the salinity of the Colorado River water delivered to Mexico; more efficiently utilize water resources; and manage ground water withdrawal. Hunters Hole was one of the mitigation features for fish and wildlife impacts resulting from the operation of the desalting complex and regulatory groundwater pumping. Mitigation features include the installation of a groundwater well and maintaining the ponds at a water level elevation of 77.5 feet. During the Colorado River high flows of 1983, the river diverted through the Hunters Hole area and heavily impacted the area. During that time, Reclamation constructed an emergency earthen dike along the upstream section of the ponds in an effort to contain and divert flood waters away from the area. Due to sediment buildup and damage to the groundwater well caused by the high flows, it was determined that rehabilitation of Hunters Hole would be too costly. The decision was made that establishment of a ground water well at the Gila River's Quigley Pond area would be an ideal substitute. Through coordination with Arizona Game and Fish Department, Reclamation continued to provide an alternate water source (siphon) to the Hunters Hole ponds in order to continue supporting valuable marsh and riparian vegetation in the area.

In 2001, Arizona Game and Fish Department completed a plan "Restoration Plan for Hunters Hole" (Reclamation Grant No. 99FDG340015). The overall concept for the plan was to maintain and enhance as much of the existing upland and marsh vegetation and open water as possible. The objective for the plan called for the restoration, enhancement, and managing of aquatic terrestrial habitats within the area, provide recreational opportunities that would not conflict with habitat restoration goals, and to make the plan compatible with the International Boundary and Water Commission (IBWC) obligations of maintenance for flood control in the Limitrophe Division. However, since that time the Limitrophe Division (including the Hunters Hole area) has been characterized as an area extremely dangerous due to the increase of illicit activity and illegal border crossing over the past several years. The Yuma County Sheriff's Office (YCSO), and the Department of Homeland Security's Yuma Sector (Border Patrol) have

documented an increase in violent criminal acts such as assault, rape, and murder in the Limitrophe area. These crimes target both Mexican and American citizens. A Border Fence has been constructed in the area and should be a deterrent to the illicit and illegal activities associated with the border.

Over the past two years, the Yuma Borderland Management Task Force workgroup has met regularly to establish a strategy to manage the Limitrophe Division. The strategy proposes to enhance border security, safety, and the restoration and maintenance of the river corridor to desired future conditions. The key components of the strategic plan would include salt cedar (*Tamarix spp.*), also known as tamarisk, treatment (removal and maintenance); restoration of Fremont cottonwood (*Populus fremontii*)-willow (*Salix gooddingii or exigua*)-mesquite (*Prosopis glandulosa or pubescens*) and desired vegetation communities; and short-term and long-term actions to promote safe access for law enforcement officers, agents, and for government employees and the public. The Hunters Hole project area was identified by Border Patrol as a critical site experiencing increased illegal activities. The Border Patrol began a vegetation clearing project within the surrounding project area in 2007 under BLM's fuels reduction program and safety hazard program. This action removes non-native vegetation that obstructs visibility for the Border Patrol and the Sheriff's office. Currently BLM is implementing a 58 acre rehabilitation project within a portion of the previously cleared area and recently burned areas of Hunters Hole. The project proposes to control the re-sprout of salt cedar and other invasive plant species.

1.4 Purpose and Need

The purpose of the Proposed Action is to restore water delivery and maintain riparian, marsh, and open water habitat within the Hunters Hole area in a manner that will sustain wildlife values while providing for border security needs.

Project objectives are to restore water flow, re-establish riparian woodland habitat and wetland areas previously lost to wildfire and succession within the interconnected ponds. In addition, vegetation will be managed in a manner that will support border security and safety in the area. Reclamation proposes to issue the Yuma Crossing National Heritage Area (YCNHA) a License granting them use of the site for implementing the Hunters Hole restoration plan on Reclamation lands.

The need for the project is to offset impacts associated with projects that have limited water delivery and impacted vegetation in the Limitrophe division of the lower Colorado River. The Hunters Hole area experienced a recent wildfire in October 2007 that destroyed the remaining riparian and marsh habitat in the proposed project area. If a restoration plan that is compatible with the Borderland Management Task Force workgroup strategy is not implemented, non-native vegetation (salt cedar) will establish within the immediate area of the interconnected ponds where cottonwood and willow once thrived. Salt cedar

provides a dense ground cover and obscures a clear line of sight, consequently putting law enforcement officials at higher risk for potential ambushes or sniper attack due to the dense cover.

1.5 Applicable Regulatory Requirements

Land ownership within the Hunters Hole project area is primarily public land (Reclamation land). Under the Department of the Interior's Department Manual Part 613, BLM manages land bordering the lower Colorado River for recreation and wildlife. Private land borders the project area. Notification of adjacent land owners and other potentially affected parties would occur.

If issued, the License would grant the project proponent, the YCNHA, use of the land for implementing the restoration plan. It would be the responsibility of the proponent to adhere to guidance detailed in this EA concerning implementation. It would also be the responsibility of the proponent to provide funding, labor and materials to implement the plan.

To ensure compliance with the Endangered Species Act (ESA), consultation with U.S. Fish and Wildlife Service (FWS) under Section 7 will be necessary.

To ensure compliance with Section 106 of the National Historic Preservation Act (NHPA), consultation on the Proposed Action would be conducted with the Arizona State Historic Preservation Office (SHPO). In addition, coordination and consultations with interested Indian tribes and groups would be conducted.

To comply with the Clean Water Act and Executive Order 11990 (Protection of Wetlands), a Section 404 permit under Clean Water Act would be required for this action. Coordination would be conducted with the U.S. Army Corps of Engineers (USACE) to determine the appropriate type of Section 404 permit required. Coordination with the Arizona Department of Water Quality for the Section 401 permit will be accomplished for Arizona's compliance requirements.

Any pesticide application in the proposed project area would follow Reclamation's compliance procedures for pesticide use. Should burning be required, BLM would follow regulatory requirements to issue the burn permit.

1.6 Determinations to be Made

This EA will be distributed to appropriate decision-makers within Reclamation for review to determine whether a Finding of No Significant Impact (FONSI) is appropriate. This decision will be based on a determination that all potential impacts are either not significant or can be reduced to not significant levels through the implementation of mitigation measures. If any potential impacts are considered significant and cannot be avoided or reduced to not significant levels,

the preparation and processing of an EIS is required. In this instance, Reclamation's decision is whether to issue a License to YCNHA or not. All other regulatory requirements must be fulfilled prior to the issuing of the License.

2.0 Alternatives Considered

This chapter describes the alternatives considered for the proposed restoration of Hunters Hole on Reclamation lands in greater detail. It includes the Proposed Action and No Action alternatives.

2.1 No Action Alternative

The No Action alternative serves as the baseline for comparing the environmental effects of the action alternatives. If no action is taken, Reclamation would not issue a License and the YCNHA would not implement the restoration project on Reclamation lands.

Under the No Action alternative a restoration plan for Hunters Hole that meets border security needs would not be implemented in the area. Non-native vegetation would continue to re-establish within the area.

2.2 Proposed Action

2.2.1 Construction Activities

Under the Proposed Action, Reclamation would grant a Contract and License to the YCNHA for the proposed restoration of the Hunters Hole area located on Reclamation lands. The Hunters Hole site is located along the lower Colorado River's Limitrophe Division below Morelos Dam, approximately 2.5 miles north of the SIB. The project area has been recently impacted by a wildfire that destroyed the remaining riparian habitat in the area.

Reclamation's grant of the Contract and License would grant the YCNHA access to the area for implementing the Hunters Hole Restoration Plan. A License in an instrument used by Reclamation to grant a personal, revocable, and un-assignable permission of authority for an entity to utilize a parcel of Reclamation land for a specific purpose or purposes, without granting any interest in the land. The License will include a term, description of the land and special stipulations for the purpose of the use, among other standard language protecting Reclamation. The restoration plan would consist of enhancing and restoring riparian, open water, and marsh habitats. In addition, the Proposed Action would make the project compatible with Border Patrol security requirements. Reclamation would continue to be responsible for any river control structures in the area (i.e. levees, salinity canal, and maintenance of access roads). The License would grant the YCNHA access to the site for a period of up to 25 years for the long-term management and maintenance of the site.

The Hunters Hole restoration project would restore approximately 95 acres within the 435 acre site. The project would be conducted in three Phases. Each of the three phases would not impact Border Patrol's enforcement zone, an area located west of the proposed 340 acre site.

Phase I

Phase I would restore and enhance a total of 36.75 acres, including 9.25 acres of open water (ponds and channels), 10.25 acres of native marsh, 7.5 acres of cottonwood/willow riparian, and 9.75 acres of mesquite habitat, Figure 2.

1. This action would involve the clearing and removal of invasive species (Common reed and salt cedar). The site was burned in late 2007; burned dead wood would be mulched. Any remaining and re-sprouts of non-native vegetation would be sprayed with herbicide in accordance with Reclamation pesticide use regulations and if needed, any existing dead wood physically removed or burned. Burning, if necessary, would follow BLM regulations and would require a burn plan signed by Federal land managers.

2. Re-establish open water areas by excavating to new depths existing ponds and re-establish channel connection between the ponds. The 9.25 acres of open water areas and channels would be re-established using a combination of the following equipment: amphibious excavator, a hydraulic dredge, a low-track, and a bulldozer. The channel would range in width between 30 and 60 feet (ft) with an average depth of 6-10 ft. The pond areas (60-300 ft wide) would be approximately 6-10 ft deep. The channel banks would be contoured on a 3:1 slope to accommodate small flows and facilitate marsh vegetation development. Open water areas (ponds and channels) will be supplied with water from an existing groundwater well pumped and intermittent flows from adjacent drainage canal siphon, also known as the Bypass Drain. The ponds would be controlled by a series of water control structures placed at both ends of the project area to allow variations in depth. Excavated material would be used to construct a berm/levee along the perimeter of the valuable habitat. The purpose of the levee would be to provide flood protection to the habitat and allow law enforcement agencies to use the 24-ft wide access road to patrol the area and to facilitate any future maintenance requirements.

3. Two stop log structures with a 72-inch diameter culvert crossing would be installed at the inlet and the outlet areas of the ponds. The structures would enable water levels in the channel and ponds to be raised and lowered.

4. Approximately 10.25 acres of wetlands would be established along the toe of the sloped bankline. This area would be planted with three-square bulrush. This species is low-lying which will promote line-of-site for border security. Cattail is expected to re-establish at the site naturally. The 7.5 acre cottonwood and willow habitat area will be planted along the upper sloped banks, where the depth to

water is shallow using bioengineering techniques. Poles would be planted directly into the water table at 15-17' spacing off-center (OC). Between the trees, the ground would also be planted with native riparian seed species such as, but not limited to alkali sacaton (*Sporobolous airoides*) and inland saltgrass (*Distichlis spicata*) to prevent the regeneration of invasive species. Marsh fringe areas are expected to vary between 25 ft. minimum width and 120 ft. maximum width, depending on the width of the channel. The marsh fringe will have a water depth ranging from 1 in. to 12 in, and be planted with threesquare and giant bulrush. Cattail will be allowed to naturally recolonize the site. Wetland and riparian areas will be flood irrigated by raising the water levels in the channel with the stoplog structures. In areas where the depth to water is too deep and soil salinities are too high for cottonwood and willow, about 9.75 acres of potted honey mesquite (*Prosopis glandulosa*) and screwbean mesquite (*Prosopis pubescens*) would be planted. This area would be planted on 30 ft OC spacing's and seeded with alkali sacaton. There shall be a visual corridor with a 2 – 12 ft height range maintained. The mesquite bosque habitat would be irrigated using pumped flood irrigation.

Construction of Phase I is proposed to begin during the summer months of 2009, and may proceed through the calendar year. Normally, this type of effort would be coordinated to avoid disturbance of a number of Federally listed species, however informal consultations with personnel from the United States Fish and Wildlife Service and the Arizona Game and Fish Department have concurred that the habitat associated with those species is not currently present at the site and those species are not expected to be present during this phase of construction.

Phase II

Phase II would restore and enhance a total of 42.25 acres, including 2.25 acres of open water (ponds and channels), 1.75 acres of native marsh, 15.25 acres of cottonwood/willow riparian, and 23.25 acres of mesquite habitat, Figure 2.

1. This action would involve the clearing and removal of invasive species. Burned dead wood would be mulched. Remaining and re-sprouts of non-native vegetation would be sprayed with herbicide according to Reclamation regulations for pesticide use and any existing dead wood physically removed or burned according to BLM regulations for burning.

2. Re-establish open water areas by excavating to new depths existing ponds and re-establishing channel connection between the ponds. The 2.25 acres of existing and proposed open water areas and channels would be re-established using a combination of an amphibious excavator, a hydraulic dredge, a low-track, and a bulldozer. The channel would range in width between 30 and 60 ft with an average depth of 6-10 ft. The open water pond areas would be approximately 6-10 ft deep. The channel banks would be contoured on a 3:1 slope to accommodate small flows and facilitate marsh vegetation development. Open water areas (ponds and channels) will be supplied with water from an existing

groundwater well pump and intermittent bypass canal siphon. The channel and ponds would be connected and controlled by a series of water control structures which would allow variations in depth. Excavated material would be used to construct a levee along the perimeter of the habitat.

3. Approximately 1.75 acres of wetlands would be established along the toe of the sloped banklines. The area would be planted with three-square bulrush (*Scirpus americanus*). This species is low-lying which will promote line-of-site for border security. Cattail is expected to re-establish at the site naturally. The 15.25 acre cottonwood and willow habitat area will be planted along the mid to upper sloped banks using bioengineering techniques. The poles would be planted directly into the water table at 15-17' ft spacing OC. Between the trees, the ground will also be planted with native riparian seed species (alkali sacaton, inland saltgrass and other native species) to prevent the regeneration of invasive species. Wetland and riparian areas will be flood irrigated by the raising the water levels in the channel with the stoplog structures. In areas where the depth to water is too deep and soil salinities are too high for cottonwood and willow, mesquites will be planted (23.25 acres). This area would be planted on a 30 ft off-center (OC) spacing and seeded with alkali sacaton. There shall be a visual corridor with a 2 – 12 ft height range maintained. The mesquite bosque habitats will be irrigated using pumped flood irrigation

4. Excavated material would be used to complete the protective levee along the perimeter of the valuable habitat. The levee would be approximately 3,700 linear ft and about 20 ft high. Riprap material would be placed along the outer and inner slopes, a 24-ft wide access road would be established and maintained to allow patrolling accessibility for law enforcement agencies and facilitate future maintenance access to the area.

Phase III

Phase III would restore and enhance a total of 15.7 acres, including 14.5 acres of open water (channel), and 1.2 acres of native marsh. Proposed activities for this phase would be located at the inlet and outlet channels that are interconnect with the proposed restoration in Phases I and II. These channels are located on the northern and southern end of the Phases I and II, see Figure 2.

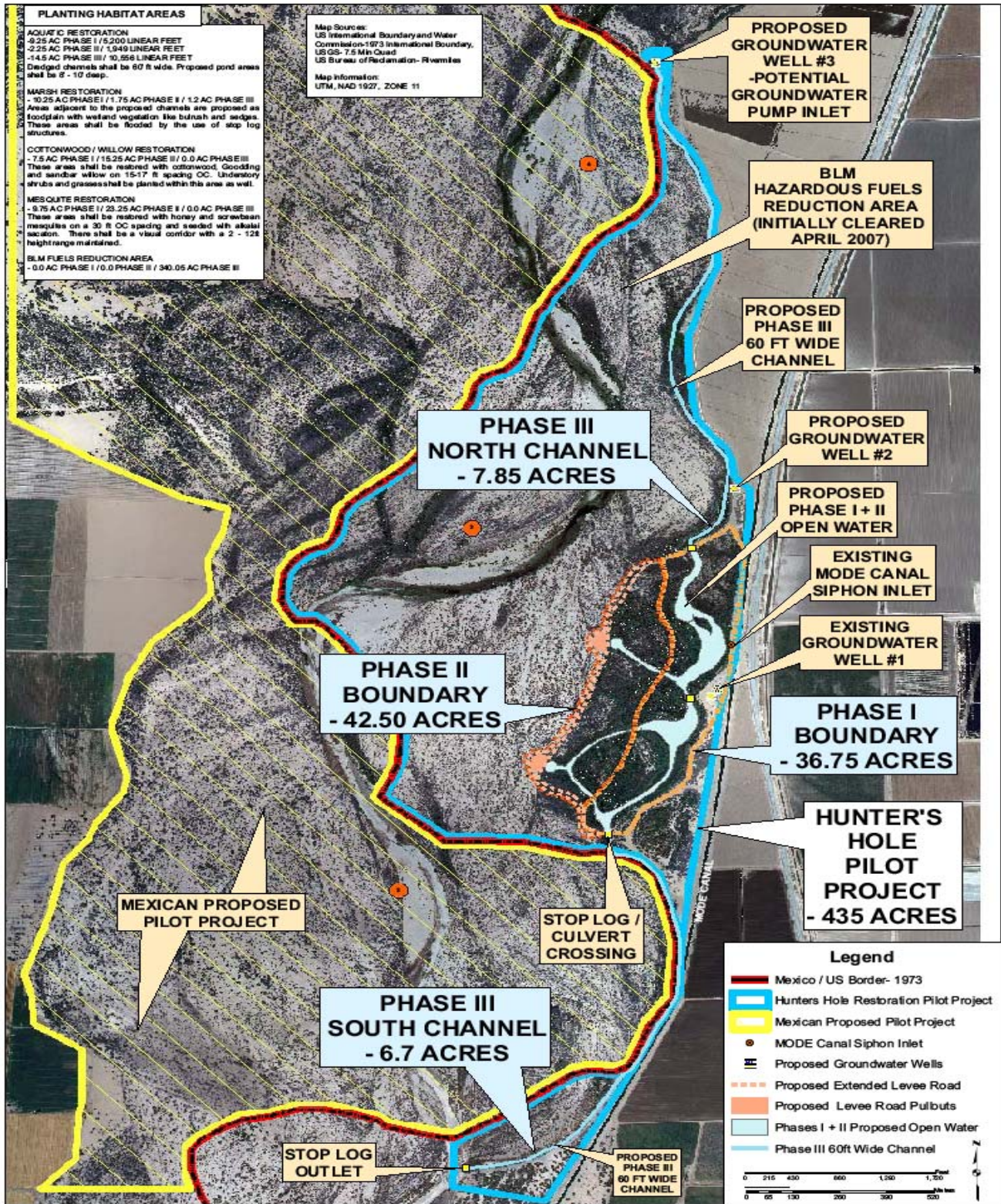
1. Phase III activities would consist of re-establishing a 60 ft wide security flow channel (10,556 linear feet) that would run parallel to the existing farmland located at the north and south ends of the Phase I and II project areas, see Figure 2. Excavation of the two channels (14.5 acres) would be conducted using a combination of an amphibious excavator and a bulldozer. The channel, which would follow the existing alignment, will be excavated to an approximate depth of 6 to 10 ft. The channel banks will be contoured on a 3:1 slope to accommodate small flows and facilitate marsh vegetation development. Open water areas (ponds and channels) will be supplied with water from a proposed groundwater

well pump that would be located at the top end of the channel. Approximately 1.2 acres of wetland vegetation would be established along the toe of the sloped banklines. This area would be planted with three-square bulrush.

2.2.2 Maintenance Activities

Once restored, the YCNHA expects to maintain the Hunters Hole area by cleaning out and repairing the stop log structures on an as needed basis to ensure water circulation throughout the area. In addition, access points to the open water areas and roads would be maintained in support of monitoring activities and for supporting Border Patrol access security points.

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Designed By: Fred Phillips Consulting, LLC
 401 S. Leroux Street
 Flagstaff, AZ 86001
 (928) 773-1530

Designed For: Yuma Crossing National Heritage Area
 180 West First Street, Suite E
 Yuma, AZ 85364
 (928) 373-5190

**COLORADO RIVER
 LIMITROPHE DIVISION
 HUNTERS HOLE RESTORATION
 PILOT PROJECT**

**NOVEMBER 2008
 ENVIRONMENTAL
 ASSESSMENT
 PHASES MAP
 FIGURE 2**



Designed By:
 Fred Phillips Consulting, LLC
 401 S. Leroux Street
 Flagstaff, AZ 86001
 (928) 773-1530

Designed For:
 Yuma Crossing National Heritage Area
 180 West First Street, Suite E
 Yuma, AZ 85364
 (928) 373-5190

**COLORADO RIVER
 LIMITROPHE DIVISION
 HUNTERS HOLE RIPARIAN +
 WETLAND RESTORATION PROJECT**

DECEMBER 2, 2008

FIGURE 3
 DESIGN MAP

3.0 Affected Environment and Environmental Consequences

This section describes the existing conditions of the environmental components that could be affected by the Proposed Action and No Action alternatives, if implemented. It also serves as the baseline for the comparisons of alternatives. The following critical elements of the human environment are not present or would not be affected by the alternatives; therefore, they will not be addressed in this EA: Areas of Critical Environmental Concern, Farm Lands (Prime or Unique), Wild and Scenic Rivers, Wilderness, and Standards for Rangeland Health.

3.1 Land Use

3.3.1 Affected Environment

The Hunters Hole area is located in Yuma County, Arizona, approximately 2.5 miles north of the SIB. The project area is located within the lower Colorado River's Limitrophe Division. The Hunters Hole area is bounded to the east by an unpaved road, a Bypass Drain from the Wellton-Mohawk project, the Yuma valley levee, and extensive irrigated cropland. The U.S.-Mexican Border lies to the west and south of Hunters Hole in the floodplain of the river. The International Boundary runs roughly down the center of the 1973 Colorado River channel (Treaty of November 23, 1970, between United States and Mexico). A variety of trails and litter attest to heavy foot traffic and there are extensive areas in the floodplain to the west and south of Hunters Hole that have recently been cleared of vegetation to support Border Patrol activity. The project area is situated on Reclamation lands. Under the Department of the Interior's Department Manual Part 613, BLM manages Reclamation land bordering the lower Colorado River for recreation and wildlife purposes.

3.1.2 Environmental Consequences

No Action – Under this alternative no restoration of the site would take place. Use and status of the land would not change.

Proposed Action – The proposed restoration project would include the issuance of a License to the YCNHA, allowing use of the site for up to 25 years. This action is not intended to change the land use of the area. No other short-term or long-term uses are anticipated for the Hunters Hole site. Short-term, limited impacts could be potential conflicts between heavy equipment used in the excavation process and farm equipment caused by the limited access to agricultural sites. These impacts would be negated through on site coordination between equipment users.

3.1.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.2 Air Quality

3.2.1 Affected Environment

The Hunters Hole area is within a non-attainment area for PM₁₀, airborne particulate matter 10 microns or less in diameter. Primary sources of particulate matter in the Yuma Non-Attainment Area are dust from vehicular travel on improved and unimproved road surfaces and construction and farming activities on private lands. Fugitive dust is dust created by any activity that loosens soil particles. Sources of fugitive dust within Hunters Hole are predominantly a result of agricultural activities and Border Patrol activities in the area. In the last 10 years, there have been many small wildland fires which also result in PM₁₀ emissions. Air quality is otherwise considered good except during high wind events.

3.2.2 Environmental Consequences

No Action - Under this alternative, the impacts of not performing vegetative treatments would be the same as currently occurring and may increase PM₁₀ emissions in the long term. The great majority of the vegetation was impacted as a result of the wildfire and currently the site has several unvegetated areas. As remaining vegetation becomes decadent due to lack of surface water in the site there would be a lessened wind break during high wind events.

Proposed Action - Under this alternative, PM₁₀ emissions from the project area would slightly increase temporarily as a result of excavation activities. In the long term, establishment of riparian marsh areas would further reduce the potential for emissions. Native vegetation would act as windbreaks in this area.

3.2.3 Management and Mitigation Measures

To mitigate for a slight increase in emissions, excavation activities would cease temporarily when wind speeds at the site exceed 20 miles per hour.

3.3 Biological Resources

3.3.1 Affected Environment

3.3.1.1 Fish and Wildlife

Hunters Hole supports numerous species of wildlife (birds, mammals, fish, reptiles, and amphibians), including both resident species and migratory visitors. Woody riparian vegetation and uplands provide habitat for common mammals such as coyote (*Canis latrans*), bobcat (*Felis rufus*), desert cottontail (*Sylvilagus audubonii*), several species of rodents and bats, striped skunk (*Mephitis mephitis*),

and raccoon (*Procyon lotor*) (Anderson and Ohmart 1984). The Colorado River corridor, including Hunters Hole, also provides important habitat for migratory birds, both upland species and waterfowl, as well as habitat for resident species. Common birds include various egrets, herons, and owls, Gambel's quail (*Callipepla gambelii*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), flycatchers, and woodpeckers. Reptiles and amphibians are represented by several species of lizards, snakes, toads, and frogs, many of which are native to the area. Most of these use upland and riparian areas, but the amphibians require water for reproduction.

Native fish have previously inhabited Hunters Hole and the Lower Colorado River including striped mullet (*Mugil cephalus*), machete (*Elops affinis*), razorback sucker (*Xyrauchen texanus*), and bonytail (*Gila elegans*), along with at least 23 non-native fish species introduced into the river in California (LCR MSCP 2004). Several species of non-native sport fish are likely to use open water and fringe wetlands for hunting, cover, and rearing when sufficient water is present again at Hunters Hole. Non-native sport fish that may be present in the future include largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), sunfish (*Lepomis* sp.), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), striped bass (*Morone saxatilis*), and tilapia (*Tilapia nilotica*) (AGFD 2006).

3.3.1.2 Threatened and Endangered Species

Federally listed threatened or endangered wildlife species potentially occurring at Hunters Hole were identified using information from the FWS (endangered species list by county). A total of six Federally-listed candidate, threatened, or endangered species were identified and include the following: brown pelican (*Pelecanus occidentalis*), razorback sucker (*Xyrauchen texanus*), Sonoran pronghorn (*Antilocapra americana sonoriensis*), southwestern willow flycatcher (*Empidonax trailliiextimus*), Yuma clapper rail (*Rallus longirostris yumanensis*), and yellow-billed cuckoo (*Coccyzus americanus*). The bald eagle (*Haliaeetus leucocephalus*) is no longer Federally-listed, but remains protected under the Bald and Golden Eagle Protection Act (Eagle Act) and is included in this section.

Federally listed species and bald eagles were examined to assess the probability of encountering them in the Proposed Action area and to determine if further study was warranted. Based on this review, the bald eagle, southwestern willow flycatcher, yellow-billed cuckoo, and Yuma clapper rail were identified as potentially occurring within the Proposed Action area.

Razorback sucker and Sonoran pronghorn do not occur in the area of the Proposed Action and would not be affected. The brown pelican has been known to occur in the vicinity of the Proposed Action, but only as a rare transient and is more likely to be found in large backwaters and impoundments. The Proposed Action would not affect the brown pelican because the dry river bottom, small

pools, and small flowing water habitat within the proposed project area is not this species' preferred habitat.

Bald eagle

The bald eagle occurs in North America from the Gulf of Mexico to the Arctic. This large bird of prey is usually associated with aquatic ecosystems, occurring near estuaries, large lakes, reservoirs, major rivers, and seacoasts. These areas must have an adequate prey base and perching areas to serve as habitat. Bald eagles are both predators and scavengers, feeding on fish, birds, rabbits, and small mammals. Selection of perches depends on function and includes cliffs, ridge tops, large snags, and trees in sheltered sites (for roosts) near water or other foraging areas (for hunting) or near nest sites (for sentry purposes). Wintering areas are usually near open water with good perch sites and night roosts (FWS 1982).

Bald eagles declined from historical numbers because of population declines of major prey species, killing, loss of nesting habitat, and use of DDT or Dichloro-Diphenyl-Trichloroethane, a pesticide. Protection of bald eagles began with the passage of the Eagle Act of 1940. Bald eagles south of the 40th parallel were listed as endangered on March 11, 1967. The ban on use of DDT and other persistent organochlorines, habitat protection, and other recovery efforts have resulted in an increase in the bald eagle population and an expansion of their range. The bald eagle in the lower 48 states was reclassified as threatened on July 12, 1995, and delisted on July 9, 2007. The Eagle Act prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C 668(a); 50 CFR 22). "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb" a bald or golden eagle. The term "disturb" under the Eagle Act was recently defined by a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31332). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

The Hunters Hole project area consists of marginally suitable foraging and roosting habitat. Bald eagles may occur within the action area as a rare to uncommon winter visitor. Lone sub-adult birds make up most of the bald eagle sightings between January and February (Rosenberg et al. 1991). Sightings have occurred at Cibola National Wildlife Refuge and Imperial National Wildlife Refuge (Rosenberg et al. 1991), and two adults and one lone mature adult were spotted at Imperial Dam on December 21, 1996 (Piest 2006a). The nearest breeding areas occur near Lake Pleasant, Alamo Lake, or near Lake Havasu, all more than 100 miles distant. Winter bald eagle surveys in 2006 yielded a total of

one sub-adult in the one survey area representing Yuma and La Paz Counties combined (Jacobsen et al. 2006). This is comparable to wintering results in recent years and corroborates the very small contribution the lower Colorado River makes for wintering bald eagles. Hunters Hole is not included along the survey area because it is unprofitable in terms of yielding birds.

Southwestern willow flycatcher

The southwestern willow flycatcher (SWFL) is a small grayish-green passerine bird. The SWFL was listed as endangered without critical habitat on February 27, 1995 and critical habitat was designated in July 1997. In May 2001, the 10th Circuit Court of Appeals set aside the critical habitat designation and instructed the FWS to issue new critical habitat. In October 2004, the FWS re-proposed designation of critical habitat. A final ruling was issued in October 2005. A final recovery plan was completed in August 2002. Threats to the SWFL include loss, fragmentation and modification of breeding habitat, loss of wintering habitat, and brood parasitism by the brown-headed cowbird (Sogge, et al. 1997; McCarthey, et al. 1998).

Prior to the wildfire, there were 355 acres of habitat that could be used by SWFL during migration at Hunters Hole. However, only 60 acres provided preferred cottonwood and willow habitat that would be suitable for nesting SWFL. A significant record of survey and use data for the SWFL exists for the proposed project area. Hunters' Hole was surveyed in 2003, 2004, 2005, 2006 and 2007 and mapped as "surveyed/occupied, historically occupied." Individual SWFL detected during these surveys were determined to be migratory. No nesting sites were detected. This represents the most accurate data available.

Table 1 Presents data collected for migratory SWFL detections for Hunters Hole that have been compiled by Arizona Game and Fish Department, and summarized by Jim Rorabaugh, FWS.

Table 1

Migratory southwestern willow flycatcher detections for Hunters Hole compiled by AGFD and summarized by Jim Rorabaugh, Supervisory Fish and Wildlife Biologist, FWS, Arizona Ecological Services and modified with 2006 data, where applicable.			
Year	Survey Status	Number SWFL Detected by Date	Breeding
2007	Surveyed	2, 4, 2, 2, 38 (May 9- June 3)	No
2006	Surveyed	10, 11, 1, 26, 1 (May 13 – June 15)	No
2005	Surveyed	6, 2, 1, 2, 1 (May 18- June 17)	No
2004	Surveyed	5, 37, 4 (May 18 – June 9)	No
2003	Surveyed	16, 1, 8, 2, 1, 2 (May 18 - June 16)	No
2002	No Surveyed	2, 4, 4, 2 (May 20 - June 12)	No Data
2001	No Surveyed	4, 5, 5, 3 (May 22 - June 15)	No Data
2000	Surveyed	2, 2, 3, 2 (May 23-June 14)	No

Hunters’ Hole supports substantial numbers of migrating flycatchers (up to 38 per count/site) from about mid-May to mid-June. Survey results after that time are generally negative, suggesting the birds do not stay to breed but are rather using the areas a migration stop on route to their breeding grounds elsewhere. Brown-headed cowbirds occur at Hunters Hole, and were detected at SWFL survey sites (McLeod 2007). Brown headed cowbird numbers are subsidized by agricultural areas adjacent to the Hunter Hole project site. As no nesting SWFL are known from the Hunters Hole, brood parasitism is not known, but could become a problem if birds attempted to breed there. Results from the 2008 breeding season have not yet been analyzed.

Yellow-billed cuckoo

The yellow-billed cuckoo (YBC) was petitioned for Federal listing as a Distinct Vertebrate Population Segment west of the crest of the Rocky Mountains; and the FWS determined the petition was warranted, but further action was precluded by higher priority listing actions on July 25, 2001 (66 FR 38611). YBC in the western United States is limited to narrow, and often widely separated, riparian cottonwood-willow galleries. YBC use mature stands of cottonwood and willow along the Lower Colorado River Valley and, to a lesser extent, also use a mix of cottonwoods, willows, and mesquite (Rosenberg et al. 1991). Foraging YBC may use smaller mesquite and salt cedar (Rosenberg et al. 1991). The loss, degradation, and fragmentation of riparian habitat have been identified as the primary factors causing YBC declines in the western states.

In Arizona, several important patch characteristics for YBC breeding habitat were identified, including size of patch (40+ ha), minimum width (> 200 m), height (>

5 m), vegetation type (dense willow/cottonwood riparian), dense canopy cover (>50%), and proximity to surface water (Corman and Magill 2000).

Patch size is one of the more significant factors influencing YBC occupancy (LCR MSCP 2004). Laymon and Halterman (1989) concluded that sites greater than 80 ha in extent and wider than 600 m were optimal, sites 41-80 ha in extent and wider than 200 m were suitable, sites 20-40 ha in extent and 100-200 m in width were marginal, and sites less than 15 ha in extent and less than 100 m in width were unsuitable. In California, away from the Colorado River, cuckoos occupied 9.5% of 21 sites that were 20 to 40 ha in extent, 58.8% of 17 sites that were 41 to 80 ha in extent, and 100% of 7 sites greater than 80 ha in extent. The trend towards increased occupancy with increased patch size is significant ($t = 3.63$, $p < 0.001$) (Laymon and Halterman 1989).

Of the trees making up a majority of Hunters Hole, YBC have nested in willow, cottonwood, screwbean mesquite, and salt cedar. Nesting and foraging areas have a high foliage density.

Nesting may take place in late May and finish in August, depending on the season (LCR MSCP 2004). Nest building may take 2-4 days (Hamilton and Hamilton 1965). However, a transmitter wearing cuckoo on the San Pedro River was observed building a nest in an afternoon, with incubation beginning the next morning (Halterman 2002). One brood of two to three young is raised per season. Cuckoos will occasionally double-brood in western populations if abundant food resources exist, even though the breeding season is 1-3 months shorter than in the east (Hamilton and Hamilton 1965, Hughes 1999).

During the nest-building and egg-laying stages, cuckoos can be very sensitive to human disturbance (LCR MSCP 2004). Four of twenty-three nests found on the Bill Williams River between 1993 and 2001 were abandoned, with three of these likely due to nest searching efforts (Halterman 2001).

Hunters Hole is known to harbor YBCs (LCR MSCP 2007). A Northern Arizona University team surveyed for YBC throughout the Limitrophe in 2005, and detected one YBC at Hunters Hole (Johnson M.J. et. al, 2006).

Yuma clapper rail

The Yuma clapper rail (YCR) was listed as an endangered species on March 11, 1967. There is no critical habitat for the species. The Yuma Clapper rail Recovery Plan (USFWS 1983) was signed in 1983. The YCR is a marsh bird found in dense cattail or cattail-bulrush marshes along the lower Colorado River from Bullhead City, Arizona, south to the Colorado River Delta in Baja California. It is also found in wetlands along the Gila River, Salt River, and Picacho Reservoir in Arizona and in the vicinity of the Salton Sea, Imperial County, California. The populations in Mexico are found along the Lower

Colorado River in the delta, marshes associated with tributaries to the Lower Colorado River, and the Cienega de Santa Clara (Hinojosa-Huerta *et al.* 2000).

Current threats include loss of wetland habitat from river channelization and flood control projects and large fluctuations of water levels, which affect habitat and prey availability. Contaminant research along the lower Colorado River has introduced concerns over selenium (King and others, 1993). Although elevated selenium levels have not been documented in clapper rails, selenium levels have been found in crayfish and other food items that could interfere in clapper rail reproduction.

The YCR is the only clapper rail to breed in freshwater marshes. Their year-round habitat requirements include a mosaic of variable-aged stands of emergent vegetation interspersed with open-water shallow pools. Breeding habitat is characterized by dense vegetation near water's edge. Nests are placed in these sites or, if available, on high sites within marshes; e.g. where banks are slightly higher than adjacent marshes (Zeiner *et. al.* 1990). Breeding takes place from May through July.

Historically, Hunters Hole has supported marsh habitat used by this species. Table 2 shows survey results starting in 1979 for Hunters' Hole and continued on a rotational basis to the present date (Piest 2006b). Recent surveys of YCR have not been conducted at the Hunters Hole site due to security reasons.

Table 2

Yuma Clapper Rail Survey Data for Hunters Hole	
Year	Number
1979	Nd
1980	Nd
1982	11
1983	1
1984	3
1985	6
1986	Nd
1987	Nd
1988	Nd
1989	3
1990	2
1991	1
1992	2
1993	5
1994	3
1995	3
1996	5
1997	4
1998	Nd
1999	0
2000	Nd
2001	Nd
2002	3
2003	Nd
2004	Nd
2005	0
2006	0
2007	*0
* There were no YCR surveys conducted in 2007 due to security issues (AGFD 2008)	

Large flood events occurred in 1983 and 1993 which changed the location of the river between the levees in the Limitrophe. Surveys in 2002 showed that the Hunters Hole area was used by YCR.

3.3.1.3 Migratory Birds

With the exception of domestic pigeons, house sparrows, and European starlings, all birds in the Proposed Action vicinity are protected under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712). The Migratory Bird Treaty

Act states it is unlawful to take, kill, or possess migratory birds that are listed under its protection. The Hunters Hole area has been disturbed by a recent wildfire and is located adjacent to disturbed agricultural areas and is heavily impacted by illegal human activity and does not currently support habitat valuable to nesting birds.

3.3.1.4 Vegetation and Wetlands/Riparian Zones

Before the October 2007 wildfire, the Hunters Hole project area was dominated by invasive non-native species. Riparian and wetland vegetation existed to a lesser extent. Riparian vegetation consisted of Goodding willow and Fremont cottonwood. Introduced salt cedar and native screwbean mesquite are large shrubs/small trees that occurred with the riparian vegetation and extend into drier sites. Low spots along former channels were vegetated by marsh vegetation. Common reed (*Phragmites australis*) dominates most of the marsh area, with some cattail (*Typha* spp.) and bulrush (*Scirpus* spp.) mixed in.

A site assessment by Reclamation conducted in August 30 and 31, 2007 showed that standing water was relatively localized near the entrance of the siphon leading from the Bypass Drain into the marsh. At the time, the siphon was closed and had been closed for some time since being open earlier in the year. In this area the common reed, willows, and cottonwoods were green and vigorously growing in contrast to other areas of the site. The area of green vegetation was generally limited to the eastern part of Hunters Hole where it was concentrated along low spots, including former channels (Photo 1). Areas previously mapped as open water lacked standing water at the time of the site visit. Open water was also lacking in 2006 when the site was surveyed for Yuma clapper rail (Piest 2006). At some locations, what had been previously mapped as open water had been vegetated over with dense marsh vegetation dominated by common reed. The vegetation in these areas had dead and dried vegetation around the periphery and in some cases throughout the marsh. At other locations, salt cedar was establishing on open low ground surrounded by dead and dried marsh dominated by common reed.

Photo 1

Date of Photo: August 30, 2007



The October 2007 wildfire fire burned through the area, destroying the great majority of the riparian and marsh vegetation (Photo 2). However, some of the marsh vegetation has re-established, and is currently dominated by common reed (photo 3), with a few scattered spots of cattails (*Typha spp.*) and bulrush (*Scirpus spp.*) through the low spots. Willows that retained a root system after the fire have begun to re-sprout. Also, salt cedar is beginning to re-sprout in the burned areas.

Reclamation conducted vegetation surveys at Hunters Hole in 2004. This survey determined that there were 11.1 acres of open water/backwater, 60 acres of cottonwood/willow, 17.6 acres of marsh, 28 acres of upland *Atriplex* sp./arrowweed, 23.3 acres of undeveloped bare ground/sand, and 295 acres of salt cedar. Together there were a total of 88.7 acres of jurisdictional wetlands documented in 2004. However, a wetland delineation conducted in accordance with the Corps of Engineers 1987 wetland delineation manual and arid supplemental was conducted in spring 2008, after the wildfire occurred, found that a total of 19.17 acres were existing jurisdictional wetlands. This decline of wetland habitat indicates the deteriorating condition of the wetland area. The Proposed Action would establish a total of 39.2 acres of wetlands, which would be a net increase of 20.03 acres of wetlands.

The BLM is currently clearing burned dead standing wood in a 68 acre portion of the project area, and planting native shrub and tree species and native grass plugs. This action is occurring to prevent the re-growth of invasive vegetation, and maintain a visual corridor for Border Patrol. This invasive species maintenance will help prepare the site for restoration. Also, the BLM is conducting a hazardous fuels reduction project within the riparian zone along the entire Limitrophe. Within the Hunters Hole project area, approximately 340 acres falls within this management practice. This area will remain clear of vegetation with the exception of native shrubs and grasses. This measure is to enhance border security.

Photo 2

Date of Photo: November 2, 2007



Photo 3

Date of Photo: June 12, 2008



3.3.1.5 Non-Native Invasive Species

The project area is dominated by the non-native, invasive salt cedar and common reed. Salt cedar is also fire adapted and re-sprouts vigorously after wildfire. Although salt cedar does provide habitat for a number of species, its dense growth and resinous outer cambium make it a prolific fire hazard. Salt cedar effectively out-competes native species such as cottonwood, willow, and mesquite by monopolizing available groundwater and increasing the surface salinity of soils through fallen leaf litter.

3.3.2 Environmental Consequences

3.3.2.1 Fish and Wildlife

No Action - If the Hunters Hole habitat restoration is not implemented, invasive non-native vegetation will re-colonize the areas that were decimated by the fire, and the ecological integrity of the site will remain compromised. The opportunity to improve the habitat quality for fish and wildlife species will be lost.

Proposed Action - Habitat restoration activities would have localized, short-term impacts on wildlife habitat resulting in minor impacts to wildlife populations.

Direct impacts would typically occur when species come in contact with equipment and crews, disrupting wildlife activities resulting in momentary displacement. However, once the 95 acres of habitat is restored, wildlife will mostly benefit from the improved habitat. Since the area was decimated by wildfire no riparian habitat will be lost, however the marsh habitat will be temporarily disturbed as invasive species are removed and native species are planted. The Proposed Action will increase suitable habitat for migrating and resident birds to forage and nest, as well as other wildlife. Increased vegetation cover may increase predators such as skunk, raccoon, great horned owl, king snake and bobcats and may increase the potential for predation. Also, this action is expected to result in a decrease of border crossings and criminal activity by decreasing the density of vegetation and therefore, decrease the disturbance to fish and wildlife from criminal activity. Before any activities are implemented, a Section 404 permit under the Clean Water Act would be obtained.

3.3.2.2 Threatened and Endangered Species

Bald eagle

Direct effects could include heavy equipment or manual laborers flushing eagles during channel excavation or vegetation planting activities. However, since the fire burned the existing preferred native habitat of the bald eagle, minimal preferred roosts or perches remain. If native tree species exist at the site, they will be retained and continue to provide habitat for eagles. By planting cottonwood and willows, the habitat for this species will increase.

The restoration site will be irrigated and, therefore, will insure the survival of planted native species. The continuation of irrigation will encourage the recruitment of native species, and continue to expand native habitat that will benefit eagles. By planting native species, the incidence of fire will be reduced and the long-term growth of native species will be available for eagles. Long-term maintenance of salt cedar re-growth will allow the native cottonwood and willow habitat to thrive.

Law enforcement actions would be more easily undertaken and possibly fewer actions would be needed due to the increased line of site with native mature vegetation. Law enforcement activities would be less likely to disturb any roosting bald eagles.

Due to the lack of bald eagles using the area, lack of nesting activities, the lack of preferred habitat currently present, the temporary and minimal disturbance caused by restoration activities, and creation of preferred habitat, no incidental take of bald eagles is expected. Flushing of an eagle from a roost, should it occur, would not likely be repeated, and therefore, would be within the normal realm of reaction these birds have to temporary disturbance, and not enough to constitute take. Essential breeding, feeding, and sheltering behavior is not expected to be affected by the project activity.

Southwestern willow flycatcher

Direct effects that would impact habitat would be limited because restoration activities, including the use of heavy machinery, would be timed to avoid the migration, breeding and nesting timeframe of SWFL. Currently, little suitable habitat exists within the 435 acres of Hunters Hole project area due to the extent of the fire and the BLM vegetation treatment project, and therefore it is expected that SWFL numbers were low during the 2008 breeding season.

Indirect effects include a likely decline in the incidence of fire and the threat to SWFL mortality from fires during breeding season. A lower fire frequency and lower acreage of burned habitat would mean that more habitat would remain for SWFL and migrant birds over the long term. The increased beneficial habitat for SWFL and migrating birds would likely increase the usage of the habitat by these species. By eliminating the salt cedar there will be a significant reduction of woody structure and cover, which may promote the increase in numbers of brown-headed cowbirds. This may increase potential for brood parasitism if birds were to attempt nesting. Increased open areas in the restoration site could expose migrant SWFL to additional predation, particularly from raptors specializing passerine prey. The addition of water for irrigation will possibly provide beneficial habitat for migrating SWFL. Construction activities will not occur in Phases II and III of the project from March 15 through September 30th, to avoid potential negative effects during the breeding seasons of various species.

Native vegetation, including cottonwood and willow species tend to grow tall with high branches. Therefore, these species naturally provide a line of site to improve law enforcement actions, which would improve the health and safety of Hunters Hole. Also the proposed tree planting density (15-17' ft spacing OC) along with native grasses and other low lying native vegetation planted between the trees under this action proposes to create a visual corridor that will improve law enforcement activities. Continual removal and maintenance of re-growing salt cedar will also help maintain the visual corridor. Law enforcement activities would probably be less likely to disturb any roosting or nesting SWFL because they could patrol the site along the periphery.

Yellow-billed cuckoo

Since restoration activities, primarily the use of heavy machinery during Phases II and III will be abstained during the migration and breeding season (March 15 through September 30), the YBC will also benefit from this minimal direct effect during migration and breeding season. Currently, limited suitable vegetation exists for migrating and breeding YBC due to the wildfire.

An indirect effect of establishing native cottonwood/willow vegetation at the Hunters Hole project site will potentially provide beneficial habitat for the YBC. The Proposed Action will increase foraging, roosting and potentially nesting habitat for YBC. In previous years, the marsh and channels in Hunters Hole were dry. By irrigating the site through created channels and increasing water in the

wetland area, will provide a more suitable habitat for breeding success. Native species planted at a lower density than invasive salt cedar will prevent destructive wildfires thus providing a long-term benefit for YBC habitat. Also the proposed tree planting density under this action (15-17 ft spacing OC) will be such that there will be a visual corridor that will improve law enforcement activities. Continual removal and maintenance of re-growing salt cedar will also help maintain the visual corridor. Law enforcement activities would probably be less likely to disturb any YBC because they could patrol the site along the periphery.

Yuma clapper rail

The direct effects to YCR may occur during pond, marsh and channel excavation by heavy machinery. During Phase II and III, excavation will be conducted outside the breeding season, and therefore will not likely have adverse effects. The excavation activity may temporarily displace YCR until the habitat restoration is completed. YCR are resident birds on the lower Colorado, and do have the potential to be occupying the marsh habitat at Hunters Hole. However, the most recent surveys conducted at Hunters Hole revealed that the marsh habitat was dry and there were no YCR detections. Therefore, it is unlikely that YCR will be encountered during the habitat excavation.

Other direct effects include habitat improvement for YCR in the long-term. Once restored, native marsh vegetation rigorously grows and can often provide sufficient cover for marsh birds, including YCR in a year after restoration. The addition of water to the marsh and channel areas will increase habitat for this species for the long-term, which may encourage residence and breeding. The addition of perennial water at the site will likely cause a decline in destructive wildfires, which will protect the longevity of YCR habitat. Construction activities during Phases II and III of the project will not occur from March 15 through September 30 to avoid potential negative effects during the breeding seasons of various species.

Some indirect effects of the project may occur. The addition of water and habitat restoration will also likely increase avian, reptilian, and mammalian predators, potentially increasing predation of YCR. Restoring both riparian and wetland habitat will help dissipate flood energy if flooding should occur. The last large floods in this area, in 1983 and 1993 scoured the riparian and wetland areas at Hunters Hole. However YCRs recolonized within a few years of each event in concordance with resurgence of the disturbed vegetation. The degree to which riparian and wetland revegetation will dissipate flood water is unknown. By planting native vegetation and continual removal of re-establishing salt cedar a visual corridor will be maintained. Since Law enforcement activities would probably be less likely to disturb any roosting or nesting YCR because they could patrol the site along the periphery.

3.3.2.3 Migratory Birds

No Action – If the Hunters Hole habitat restoration is not implemented, invasive non-native vegetation will re-colonize the areas that were decimated by the fire, and the ecological integrity of the site will remain compromised. The opportunity to improve the habitat quality for migratory birds will be lost.

Proposed Action – The restoration plan was reviewed and a determination was made that it would not result in the intentional take of any migratory bird species of concern, nor would the Proposed Action result in the unintentional take likely to have measurable negative effect on migratory bird populations, including species of concern and priority habitats. A viable migratory corridor would be maintained by avoiding treatment to habitat.

3.3.2.4 Vegetation and Wetlands/Riparian Zones

The effect of the Proposed Action would be that 95 acres of public lands will be restored with native wetland and riparian vegetation, channels and ponds will be created and enhanced, and water will be added to the site. This habitat restoration will utilize the techniques used to restore the Yuma East Wetlands. Native riparian vegetation that will be planted on the site consists of mesquite in the areas with deep depth to water and higher soil salinity, and cottonwood and willow in areas with a shallow depth to water and low soil salinity. These areas will be seeded with native annuals and perennial grasses for the understory. Arrowweed is expected to re-establish on the site naturally. Wetland areas will be planted with native wetland vegetation, including bulrush and sedges. Cattail is expected to naturally re-sprout, however if it does not come back naturally, cattail plugs would be planted. Approximately 50% of the cattail/bulrush vegetation is expected to be in water approximately 1 ft. deep and approximately 50% of 3-square bulrush is expected to be maintained at less than 1 inch depth. Since the fire decimated the pre-existing invasive vegetation, little invasive species removal will have to be accomplished. Herbicide treatment, following Reclamation's regulations, will be conducted on re-sprouting invasive vegetation and mechanical treatment will be used to remove dead standing wood. All existing native vegetation will be retained on site during the invasive vegetation clearing. A total of 26 acres are proposed to be restored as open water/backwater, 22.75 acres of cottonwood/willow habitat, 13.2 acres of marsh habitat, and 33 acres of upland mesquite habitat. The remaining 340.05 acres consists of BLM hazardous fuels reduction area. Wetland and riparian restored areas will be maintained periodically in order to prevent the re-colonization of invasive species.

This restoration treatment will have a net positive effect on the functionality of the riparian and wetland zones. Some of the functions include sediment capture, groundwater recharge, increased species diversity, plant density and cover. Plant density and cover will likely be lower than what existed in the invasive species dominated riparian zone prior to the wildfire. This restoration effort will help improve regional vegetative resources along the Limitrophe and the entire

Colorado River. Wetlands and open water habitats will be increased and improved.

In order to improve security situations in the Hunters Hole area, the native vegetation planting density will be lower than the pre-wildfire habitat dominated by invasive species, and will be maintained at lower density than naturally occurring riparian areas dominated by native species. This planting density may have a beneficial effect on the habitat potential; however the site will still likely be used by neotropical migrating birds and other wildlife species, although preferred nesting habitat is not expected.

No Action – If the Hunters Hole habitat restoration is not implemented, invasive non-native vegetation will re-colonize the areas that were decimated by the fire, and the ecological integrity of the site will remain compromised. The site will return to be a fire risk, provide cover for illegal activities, and threaten the safety of the public and law enforcement.

Proposed Action – Riparian and wetland restoration at Hunters Hole will improve the ecological integrity of the lower Colorado River. This action will reduce fire risk, reduce soil salinity, and increase soil moisture.

3.3.2.5 Non-Native Invasive Species

No Action - Non-native salt cedar and common reed would re-colonize the site and continue to dominate the riparian and wetland zones in untreated portions of the Hunters Hole site. The invasive vegetation would continue to out-compete native vegetation for resources, including available groundwater, light, and nutrients. Migratory birds would continue to use salt cedar as stop-over habitat. It would provide cover for illegal activity, continue to pose a fire risk, and threaten the safety of the public and law enforcement.

Proposed Action – Non-native invasive species, primarily salt cedar and common reed, would be removed throughout Hunters Hole and the area will be re-planted with native species. Regular maintenance will occur at the site to remove re-colonizing invasive species until the native vegetation becomes established enough to out-compete it. This action would provide improved habitat for migratory birds and other wildlife, prevent destructive wildfires, and increase the safety of the public and law enforcement.

3.3.3 Management and Mitigation Measures

Phase I of the project would occur through the year to include migrating and nesting seasons of SWFL because of the lack of wildlife habitat currently at the site. Phase II and III would be implemented to avoid the breeding season of various species, which is March 15 through September 30. Native riparian vegetation existing at the site would be avoided to the extent practical.

3.4 Cultural Resources

3.4.1 Affected Environment

The National Historic Preservation Act (NHPA) establishes national policy for protecting significant cultural resources that are defined as “historic properties” under 36 CFR 60.4. NHPA Section 106 (36 CFR §800) requires that Federal agencies consider and evaluate the effect that Federal projects may have on historic properties under their jurisdiction.

A records search and a Class III cultural resource study was conducted for the Hunters Hole restoration project (Reclamation 2008) to determine the presence or absence of significant prehistoric and historic resources within the proposed restoration boundaries that might be considered a historic property under 36 CFR 60.4.

The Area of Potential Effect (APE) is compromised of 435 acres. This stretch of river is dangerous and difficult to access and patrol due to obstructed views from heavy vegetation. For security purposes, archaeologists working in the Limitrophe were escorted by U.S. Border Patrol agents. At their recommendation, approximately 25 percent (two proposed restoration sites) of the Project Area was excluded from the Class III inventory. As a result, only 358 of the 475 acres were inventoried for cultural resources.

Two components of the Yuma Project that bordered the APE were not recorded. The Salinity Canal (AZ X:5:13) and the Yuma Valley Levee (AZ X: 6:15) are not yet historic and will not be impacted by the restoration project. One new site was recorded as a result of the survey (AZ X:9:13 (ASM)). The prehistoric or ethno-historic site, located in the Colorado River floodplain, contained historic artifacts as well as Patayan and non-local ceramics. The ceramics were discovered in sand bars along the western banks of the Colorado River channel. The river channel was dry during the site survey. The site assemblage includes prehistoric shards, and bone, historic glass, ceramics, and metal fragments. The somewhat consolidated nature of the site suggested that it had eroded out of a gravel bar and/or had traveled a short distance from an indeterminate upstream location. The site was determined as ineligible for the National Register of Historic Places based on a lack of integrity and Reclamation made a determination of “no adverse effect” (SHPO response dated 9 October 2008).

3.4.2 Environmental Consequences

Reclamation archaeologist Renee Kolvet recommended that a geomorphologist assess the integrity of the site and the depositional nature of the surrounding area. Desert Research Institute’s Dr. Tom Bullard later established that the site was out of context and the cultural materials rested on alluvial fill deposited by recent, high energy channel flow (Reclamation 2008).

3.4.2.1 No Action Alternative

Under the No Action alternative, the Hunters Hole restoration project would not be implemented, therefore no adverse impacts to resources.

3.4.2.2 Proposed Action

The Hunters Hole restoration project would occur in one of the two parcels that were excluded from the cultural survey due to poor ground visibility and very dense vegetation. The combination of dense vegetation cover and standing water made the ground surface visibility almost non-existent, except along a few trails that were surveyed through the vegetation. This area is located away from the (AZ X:9:13 ASM) site and will not impact it.

3.4.3 Management and Mitigation Measures

The following BMP is recommended to mitigate any potential effects to cultural resources from the project:

- An archaeological monitor would be present for any excavation activities proposed in the two parcels that were not surveyed for cultural resources.
- If previously unidentified archaeological or historical resources are discovered during the restoration project, work will stop and the Reclamation Environmental Manager and project archaeologist will be notified immediately.

3.5 Indian Trust Assets

3.5.1 Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian tribes or individuals, or property in which the United States is charged by law to protect for Indian tribes or individuals. In accordance with the Indian Trusts Fund Management Reform Act of 1994, as amended, all Department of Interior agencies, including Reclamation, are responsible for protecting ITAs from adverse impacts resulting from their programs and activities. In cooperation with tribes, Federal agencies must inventory and evaluate assets, and mitigate or compensate for adverse impacts to the asset. While most ITAs are located on reservation lands, they may also be located off-reservation. Examples of ITAs include, but are not limited to, land, minerals, rights to hunt, fish, and gather, and water rights.

3.5.2 Environmental Consequences

Reclamation departmental policy requires the agency to address potential impacts to ITAs even if impacts are found to be non-significant. The Hunters Hole project area is located immediately adjacent to the West Cocopah Indian Reservation. Figure 1 shows the location of the reservation in relation to the project site.

Trust Lands

The Proposed Action is not located on ITA lands; however, it is located adjacent to the West Cocopah Indian Reservation. There are several tribal residences and administration offices on the West Reservation.

Water Rights

Currently, the Cocopah Indian Tribe possesses perfected Federal reserve water rights to 10,847 Acre Feet per year of Colorado River water. This tribal water is diverted from the Colorado River at Imperial Dam and delivered via the Yuma Main Canal and various irrigation structures (Department of Interior 2004). In addition, the tribe has numerous well permits that allow the pumping of groundwater from aquifers that may be connected to the Colorado River within the boundaries of the United States (Department of Interior 2004).

Hunting, Fishing, and Gathering Rights

The Colorado River and its tributaries provide habitat for sensitive fish and wildlife species, especially in the riparian woodlands and marshes. Much of this habitat is located within the Cocopah Indian Reservation and is managed by the Cocopah Environmental Protection Office. Some members of the tribe still collect a variety of plants, which are eaten as well as used for medicinal and ceremonial purposes, and in traditional craft production (Department of Interior 2004).

3.5.2.1 No Action Alternative

Under the No Action alternative, the Hunters Hole project would not take place. Therefore, no change to Federal actions will occur that could result in an adverse effect to identified ITAs.

3.5.2.2 Proposed Action

Trust Lands

The Hunters Hole project will not interfere with any Trust Lands. The project is not located on Trust Lands and does not prevent the use or management of any tribal or Trust Lands.

Water Rights

The Hunters Hole project will not interfere with the Cocopah Tribe's reserved water rights. The Proposed Action will not result in a change to any tribal water right, or to the diversion or delivery of tribal water entitlements.

Because the Cocopah Indian Tribe receives their water from wells located on the reservation, the restoration of Hunters Hole will not interfere with or degrade water quality where there is a reserved water right. Therefore, no impact would occur.

Hunting, Fishing, and Gathering Rights

The Hunters Hole project will not interfere with any hunting, fishing or gathering rights which could be exercised by any tribe.

3.5.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.6 Energy Policy

3.6.1 Affected Environment

The Hunters Hole area and the surrounding area contain no features related to energy development, production, supply, or distribution. Salt cedar and other woody biomass may be used to produce energy in the future.

3.6.2 Environmental Consequences

In accordance with Executive Orders 13211 and 13212, the alternatives were evaluated for their potential impact to energy resources.

No Action - The No Action alternative would not directly or indirectly adverse impact on energy development production, supply, and/or distribution.

Proposed Action - Under this alternative, no direct or indirect adverse impact on energy development production, supply, and/or distribution would occur.

3.6.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.7 Environmental Justice and Socio-Economic Conditions

3.7.1 Affected Environment

Executive Order (EO) 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

Minority populations include all persons identified by the Census of Population and Housing to be of Hispanic or Latino Origin, as well as, non-Hispanic persons who are African American, American Indian and Alaska Native, Native Hawaiian or other Pacific Islander.

Low-income populations are those that fall within the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. If the total income of a person's family is less than the threshold appropriate for that family, then the person is considered poor,

together with every member with his or her family (U.S. Census Bureau). The definition of poverty is dependent on the size of the family. For example, the poverty threshold for a family of three is \$13,290; whereas, \$17,029 is the threshold for a family of four.

Information on total population, minority population, and poverty status for Yuma County and surrounding cities is provided in Table 3.

Table 3

Location	Total Population	Minority Population	Percent Minority	Population Living Below Poverty Level	Percent Population Living Below Poverty Level
Yuma County AZ	160,026	88,896	55.6	29,670	19.2
Yuma AZ	77,515	40,731	52.5	10,910	14.7
Somerton AZ	7,266	6982	96.1	1928	26.6
San Luis AZ	15,322	14,249	93.0	4545	35.8
Source: US Census Bureau 2000					

3.7.2 Environmental Consequences

No Action - Under the No Action alternative, the Hunters Hole restoration will not take place. Therefore, no Federal actions will occur that could result in a disproportionately high and adverse effect on the health or environment of minority or low-income populations.

Proposed Action - Implementation of the Proposed Action would not disproportionately affect the minority and impoverished population in the area. Based on previous analysis for air quality, water quality, and hazardous material in this EA, changes resulting from implementing the project will not result in proportionately high and adverse impacts to the environment or to the health of low-income and minority populations. For a more detailed discussion on air quality in the greater Yuma area, refer to Sections 3.2, 3.10, and 3.14, of this EA.

3.7.3 Management and Mitigation Measures

There are no environmental justice or socio-economic issues involved with any of the alternatives proposed for the project. The project will not adversely affect low-income or minority, therefore no management or mitigation measures will be necessary.

3.8 Fire Management

3.8.1 Affected Environment

The Hunters Hole area is within the lower Colorado River South Fire Management Unit (BLM 2004). The area is fire-prone and was recently impacted by a wildfire in October of 2007. These fires are rarely caused by lightning strikes or natural causes. Wildfires are ignited in association with illegal border activity. There is a high likelihood the area will burn again if human activity increases, depending upon how the site is developed and maintained in the future.

Between 1984 and 2003 the average number of fires per year was 21.6 with 812 acres burned. The Lower Colorado River South Fire Management Unit has goals and objectives specifically to reduce wildland fire hazard around identified cultural sites, private property, and recreational facilities by applying mechanical (hazardous) fuel reduction and prescribed fire where applicable. Wildfire suppression strategy would be the use of Appropriate Management Response to prevent wildland fires from spreading to private land, cultural resources, or improvements on BLM lands and other agencies' lands. Appropriate Management Response is used to manage all fires in accordance with management objectives based on current conditions and fire location. All fires occurring at a Fire Intensity Level 1-3 will be suppressed at less than 5 acres 90 percent of the time. All fires occurring at Fire Intensity Level 4-6 will be suppressed at less than 50 acres 75 percent of the time.

3.8.2 Environmental Consequences

No Action - Under the No Action alternative the restoration plan would not be implemented. Salt cedar would dominate the site and the threat of continued wildfires would remain. Also, threat of fire from illegal activity may decrease due to the installation of the border fence which could divert foot traffic to another location.

Proposed Action - Implementation of this alternative would help reduce the intensity of wildfires within the area due to the elimination of salt cedar, re-establishment of native vegetation, and ongoing management of the area. The development of an access road (levee) around the site would act as a firebreak. The threat of fire would still be present due illegal activity associated with this stretch of the lower Colorado River.

3.8.3 Management and Mitigation Measures

If controlled burning is required, coordination with BLM and a burn permit will be acquired.

3.9 Floodplain

3.9.1 Affected Environment

The Colorado River Floodway Protection Act, Public Law 99-450, was signed into law on October 8, 1986. The Act calls for the establishment of a Federally declared floodway from Davis Dam to the Southerly International Boundary between the United States and Mexico. In accordance with Section 5 (a) of the public law, Reclamation developed maps that show the floodplain for the Lower Colorado River. The Hunters Hole area lies on an existing floodplain of the Colorado River's Limitrophe Division. In addition, EO 11988, Floodplain Management, May 24, 1977, requires avoiding or minimizing harm associated with the occupancy or modification of a floodplain. The base floodplain is an area expected to be inundated by floodwaters on the average of once in 100 years.

The Colorado River is also subject to flooding throughout the winter and spring season from rapid snowmelt in the upper Colorado River Watershed. The major flood control structures on the lower Colorado River are the Glen Canyon and Hoover Dams. The two major water storage levels in these reservoirs are regulated in association with the small reservoirs to provide flood protection, year-round water use, and hydro-electric power. In combination with these storage facilities, Reclamation has developed extensive levee systems along many parts of the river to ensure safe passage of water during periods of high flow.

Historically the Gila River floods on average every ten years with the last major event occurring in 1993. There are considerably fewer flood control features on the Gila River than the Colorado River. Flood events would be more likely as a result of Gila River floods.

The Colorado River flood of 1983 deposited large amounts of sediment into Hunters Hole area impacting the site. Reclamation responded by building a dike at the north end of Hunters Hole in an attempt protect the site by diverting floodwaters.

3.9.2 Environmental Consequences

No Action - The No Action alternative would not impact the integrity of the lower Colorado River floodplain.

Proposed Action - Implementation of the Proposed Action, including extending the existing dike to surround the Hunters Hole area for the purposes of protecting the area from future flooding and silting would not impact the integrity of the lower Colorado River floodplain's flow regime. The Hydrologic Engineering Center River Analysis System has been review by both Reclamation and IBWC under the Colorado River Floodway Protection Act of 1986.

3.9.3 Management and Mitigation Measures

No mitigation measures proposed.

3.10 Hazardous or Solid Waste

3.10.1 Affected Environment

There are no known hazardous or solid wastes sites along or near the project area. Additionally, there are no landfills (municipal or non-municipal) along or near the project area. The project area has been used as an illegal dump site for various miscellaneous trash discarded by the public and undocumented aliens entering the country and traversing through the site.

3.10.2 Environmental Consequences

No Action - Impacts under this alternative, the area would continue to be more susceptible to illegal dumping due to the cover provided by the vegetation that would prevail in the area (salt cedar).

Proposed Action - The potential of contamination from small quantities of hazardous materials and solid waste exists from the Proposed Action if approved. Mitigation actions found in the stipulations section are designed to limit the potential impact of hazardous materials or solid waste and would be implemented. The proposed restoration project would potentially have a positive effect with regard to hazardous and solid waste by removing salt cedar which provides the vegetative cover often used to hide illegal dumping activities. The construction of the levee road around the site would also lessen the impact on the land caused by the disposal of personal property (for example: clothing and water jugs) by undocumented aliens traversing the site by decreasing the number of individuals using the area, because of the improved ability of the Border Patrol to manage the international border in this area.

3.10.3 Management and Mitigation Measures

Hazardous materials anticipated to be used during construction of the project are small volumes of petroleum hydrocarbons and their derivatives (for example, fuels, oils, lubricants, and solvents) required to operate the equipment used in the restoration activities. These materials are those routinely associated with the operation and maintenance of heavy equipment or other support vehicles, including gasoline, diesel fuels, and hydraulic fluids.

- Hazardous materials used for this project would be contained within vessels engineered for safe storage.
- Areas for refueling of equipment would be chosen so as to prevent any accidental fuel leakage from contaminating surface water, groundwater, or soils.

3.11 Noise

3.11.1 Affected Environment

Noise that currently exists in the area generally comes from nearby farming equipment, Border Patrol activities, and vehicle travel along existing roads and levees along the Colorado River. There are no residences in the general vicinity of the area that qualify as noise receptors. There are no other sensitive noise receptors, such as schools or hospitals, along the area.

3.11.2 Environmental Consequences

No Action - In the No Action alternative, current noise levels including noise from patrol cars and Border Patrol aircraft would continue at the present levels.

Proposed Action - The operation of heavy equipment to implement the proposed project would cause several months of noise disturbance in the vicinity where work is occurring. This could affect neighboring landholders, and law enforcement officials.

3.11.3 Management and Mitigation Measures

Because the noise levels would be consistent with current ongoing (farming) activities in the area and there are no nearby residential areas, no mitigation measures are required.

3.12 Recreation and Visitor Services

3.12.1 Affected Environment

The Hunters Hole area was historically a popular hunting and fishing spot for Yuma area residents. Dove hunting, in particular, makes the Yuma area a regional destination and significantly contributes to the local economy for the duration of the season. Prior to the 2007 wildfire at Hunters Hole, increased criminal activity, and construction of a new border fence, recreational opportunities in the lower Limitrophe area have been severely limited.

3.12.2 Environmental Consequences

No Action - Under the No Action alternative, the site would continue to degrade, due to the recent wildfire that destroyed the majority of the native vegetation. Salt cedar would gradually become the dominant vegetation type in the area. The site would continue to be an area of concern for the general public due to the prevalent dangers that are associated with this area.

Proposed Action - Implementation of the proposed alternative would restore native vegetation at the site which would re-establish wildlife and angling recreational opportunities. The site would not be managed for recreation by BLM; however this management prescription may change in the future. The site

would continue to be an area of concern for the public due to the prevalent dangers that are now associated with this stretch of the lower Colorado River.

3.12.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.13 Soils

3.13.1 Affected Environment

The Hunters Hole area is primarily located on a soils complex consisting of very fine sandy loams to silt, loamy sands, and silt loams. These soils are formed in recent mixed alluvium and are well drained with moderate to rapid permeability and variable water capacity. There are some areas with sandy soils with rapid permeability and low water capacity. When disturbed, these soils are highly susceptible to wind erosion.

3.13.2 Environmental Consequences

No Action - Under this alternative, there would be no changes to soils. Disturbances would continue as they are currently.

Proposed Action - Implementation of the Proposed Action would disturb soils during excavation and planting activities, however following restoration activities the surface would be protected by vegetation.

3.13.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.14 Surface and Groundwater Quality

3.14.1 Affected Environment

Past flooding events and siltation have isolated the Hunters Hole area from the mainstem river flow. Surface water in the vicinity generally occurs when water accumulates in the area as a result of subsurface agricultural drainage from the United States. This amount of water varies according to the cropping in the Yuma Valley and the amount of water being removed from the aquifer by agricultural drainage and production wells.

Other surface water in the area may occur away from the Hunters Hole site along the upper reach of main river channel in the Limitrophe Division. This area has been historically more dependant on excess flows arriving from Morelos Dam. Morelos Diversion Dam is the primary diversion point of Colorado River water delivered to Mexico under the US-Mexican Water Treaty of 1944. The waters of the Colorado River, once delivered to Mexico, as agreed upon in the 1944 Water Treaty, are under the exclusive jurisdiction of Mexico. Reclamation does not

have control of Colorado River water once it reaches Morelos Dam. Currently, water can flow past Morelos Diversion Dam under three circumstances; (1) Morelos Dam gate leakage (LCR MSCP 2004); (2) as a result of over deliveries by the US that Mexico is unable to divert at Morelos Diversion Dam; and (3) during flood flows on either the Gila River or along the mainstem Colorado River. In addition, to flows that may pass Morelos Dam, water enters the Hunters Hole area through a groundwater pump, a siphon from the Bypass Drain and the 21-Mile wasteway. The quality of the water from agricultural drains in the Yuma valley ranges between a maximum of about 1,800 parts per million (ppm) and a minimum of about 1,200 ppm. Agricultural drains tend to have a higher concentration of salts and nutrients than the mainstream of the Colorado River.

Groundwater flow in the southern end of the Yuma Valley is generally toward the southwest, with flow passing into and under the Colorado River. Where this underground water intersects the land surface, it emerges as a spring or seep or within a stream channel as groundwater discharge. The primary source of recharge to the groundwater system is deep-percolating irrigation water applied to crops in the flood-plain areas. Factors, such as variations in irrigation recharge rates and pumping, can cause groundwater levels to rise or fall in the area. Also, the Hunters Hole area is located within the Five Mile Zone Protective and Regulatory Pumping Unit, which was established pursuant to the Colorado River Basin Salinity Control Act of 1974 (Act). The Act authorized the United States to construct, operate, and maintain, consistent with Minute No. 242, well fields capable of furnishing approximately one hundred and sixty thousand acre-feet of water per year for use in the United States and for delivery to Mexico in satisfaction of the 1944 Mexican Water Treaty. Minute 242 further provides that "...each country shall limit pumping of groundwaters in its territory within five miles (eight kilometers) of the Arizona-Sonora boundary near San Luis to 160,000 acre-feet (197,358,000 cubic meters) annually." An existing groundwater well is located at the Hunters Hole site, the well can provide up to 3,000 acre feet of water annually to the backwater site. The quality of the water from the groundwater pump is at a pH of 7.92, specific conductance of 2.9 $\mu\text{S}/\text{cm}$ and salinity of 1.5 parts per thousand.

3.14.2 Environmental Consequences

No Action - Under the No Action alternative the existing groundwater well and siphon would continue to operate on an intermediate basis providing water to the Hunters Hole site. Additional water would help restore site however, due to the wildfire destroying remaining native vegetation and not implementing a restoration plan, salt cedar and common reed would continue to dominate the site. Operation of the existing groundwater would not conflict with water deliveries to Mexico, deplete groundwater supplies and/or alter the existing drainage pattern of the area.

Proposed Action - Under the Proposed Action a new well would be installed at the site. A new pump would not conflict with water delivery obligations,

substantially deplete groundwater supplies or interfere substantially with groundwater recharge, substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or flooding.

3.14.3 Management and Mitigation Measures

Proposed new wells would be metered by Reclamation, as well as the International Boundary and Water Commission, on a monthly and annual basis to ensure compliance with the international agreement and obligation.

3.15 Visual Resources

3.15.1 Affected Environment

Visual resources consist of natural and manmade features that give a particular environment its aesthetic qualities. Landscape character is evaluated to assess whether the project will appear compatible with the existing features or would contrast noticeably with the setting and appear out of place. Visual sensitivity includes public values, goals, awareness, and concern regarding visual quality.

Visual resources within the project area generally include open space, agricultural areas, degraded wetland areas, and desert upland habitats located in and near the Colorado River floodplain. Prominent vegetation includes agricultural land and patches of desert scrub, salt cedar, and common reed. Other visible structures in the area consist of the Bypass Drain canal and Yuma valley levee. Resulting from the recent 2007 wildfire and the BLM vegetation treatment project within the project area, the generally flat topography, provides for clear views throughout site along the floodplain.

Section 102(a) (8) of Federal Land Policy and Management Act mandates the BLM to manage the public lands in a manner that will protect the quality of the visual and scenic values of the landscape. Section 505 (a) requires that “Each right-of-way shall contain terms and conditions which will . . . minimize damage to the scenic and esthetic values” In response to this mandate, the BLM has developed the Visual Resource Management (VRM) System. The scenic values of all BLM-administered lands are inventoried and allocated into VRM Classes between I and IV. VRM Class I lands aim to preserve the existing nature of the landscape, and VRM Class IV lands allow for major modifications to the landscape.

The most recent inventory of visual resource values for the Yuma Field Office (YFO) was completed in 2005. VRM policy outlined in BLM Handbook H-8410-1 allows the YFO to use the 2005 inventory as “interim” VRM Classes until its on-going RMP revision is finalized. The proposed project would occur in a VRM Class III area. The objective of projects on VRM Class III lands is to partially

retain the existing character of the landscape and that the level of change to the characteristic landscape should be moderate.

3.15.2 Environmental Consequences

No Action - Under the No Action alternative, no changes would occur to the sites characteristics.

Proposed Action - Implementation of the Proposed Action would enhance the scenic quality of the land. Because the area was impacted due to a wildfire, restoring the site would not cause adverse changes to the landscape.

3.15.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.16 Public Health and Safety

3.16.1 Affected Environment

Illegal activities (smuggling, undocumented immigrant traffic, transient populations, illegal dumping, rampant litter, and diversionary fires) are all currently putting public health and safety at risk within the Hunters Hole area. The Border Patrol and Yuma County Sheriff's Office noted heightened gang activity near this stretch of river as well as with murders, rapes and armed robbery. Neighboring tribal lands have also reported an increase in criminal activity near the river resulting in loss of safe access to tribal lands along this portion of the river. The new border fence that runs parallel to the Yuma valley levee was installed in 2008 to help alleviate some of these activities.

3.16.2 Environmental Consequences

No Action - Under the No Action alternative restoration of the site and the proposed protective levee would not be constructed.

Proposed Action - Under the proposed activity, the protective levee would provide additional law enforcement access points in the area. The proposed restoration project would not impact the area west of the Hunters Hole backwater area (340 acres), as this area would continue to be maintained as a security zone by Border Patrol. Public and law enforcement safety will increase by increasing visual line of site due to the various vegetation treatments. Additionally, areas of open water will make the area more difficult to navigate and less attractive to illegal activities.

3.16.3 Management and Mitigation Measures

Activities (construction and future maintenance) in the Hunters Hole area will be coordinated with Border Patrol. Notification would be provided to Border Patrol prior to any scheduled activities in the project area.

3.17 Travel Management

3.17.1 Affected Environment

The public primarily accesses the Hunters Hole area by the Yuma valley levee and agricultural roads. The river levee roads are maintained and managed by Reclamation, and are not designated as open to public use. Existing roads in the area are primarily used by Reclamation for operation and maintenance activities, agricultural purposes, and law enforcement patrols. The new border fence has deterred recreational access to most of the lower Limitrophe division. Due to public health and safety concerns, the BLM does not actively manage or plan for motorized or nonmotorized trails within the Limitrophe.

3.17.2 Environmental Consequences

No Action - The No Action alternative would result in no changes to area roadways and hence impacts to travel management would not occur.

Proposed Action - The Proposed Action would create a new access road (protective levee) along the outer boundary of the proposed Hunters Hole area. Use of this new access road would be consistent with existing area road uses. During planning and construction activities for the restoration project, access to the site would be accomplished using the Yuma valley levee road. Because of the increased security measures in the Limitrophe (new border fence), traffic would not be expected to increase in the area.

3.17.3 Management and Mitigation Measures

No mitigation measures are proposed.

3.18 Cumulative Effects of the Proposed Action

Cumulative impact is the impact on the environment that results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). Several current and planned projects either located within or in the vicinity of the planning area and having the potential to impact common resources will be addressed in this section.

Drop 2 Reservoir Project

The Drop 2 Reservoir Project, located in southern Imperial Valley, CA (California) approximately 20 miles west of Yuma, AZ (Arizona), has three primary physical components, the reservoir itself, an inlet canal (approximately seven miles in length, 150 feet wide with capacity flow of 1,800 cubic feet per second), and an outlet canal (approximately 2,000 feet in length). The new inlet canal would convey water from the All-American Canal to a new storage

reservoir, and later, water would be returned to the All-American Canal at a point approximately one mile downstream of Drop 2, via a new outlet canal. Both the inlet and outlet canals would be designed to use gravity flow. To maintain capacity, periodically silt would have to be removed from the bottom of the reservoir. Construction of the Drop 2 project is expected to commence in October 2008. The project is located approximately 15 miles east of the Yuma Desalting Plant (YDP). Potential impacts relate to biological resources, hazardous materials, air quality, Indian Trust assets, and environmental justice. With implementation of mitigation measures, no significant impacts are expected.

Laguna Reservoir Restoration Project

The proposed Laguna Reservoir Restoration Project would increase the amount of storage capacity in the basin area from 400 acre feet to 1,500 acre feet. The project area is located immediately upstream of Laguna Dam through the excavation of accumulated sediments. Laguna Dam is located approximately 12 miles northeast of Yuma, AZ and five miles downstream from Imperial Dam. The project is intended to provide sufficient storage space at Laguna Reservoir to allow for the release of sluicing flows from Imperial Dam that would remove sediment accumulated at the AAC headworks and the California Sluiceway channel. The EA/FONSI for the Laguna Reservoir Restoration Project was finalized in December 2006. The Laguna Reservoir Restoration Project would have the potential to affect air quality in the County of Imperial, CA and biological resources of the Colorado River. With implementation of Imperial County Air Pollution Control District requirements for dust control, dredging and maintenance activities of the Laguna Reservoir Restoration Project would have no significant air quality impacts. Dredging and maintenance activities as part of the project could result in a loss of nesting and foraging habitat for common and sensitive wildlife species. The Laguna Reservoir Restoration Project is a covered activity under the LCR MSCP and accompanying ESA Biological and Conference Opinion for Federal covered actions. With incorporation of avoidance and minimization measures of the LCR MSCP into the proposed project description, and compensatory mitigation for all marsh wetland habitats affected, no significant impacts are expected.

Multi-Species Conservation Program

The LCR MSCP is a long-term multi-agency effort to conserve and work towards the recovery of endangered species, and protect and maintain wildlife habitat on the LCR. LCR MSCP's purposes are to:

- protect the LCR environment while ensuring the certainty of existing river water and power operations,
- address the needs of threatened and endangered wildlife under the ESA, and
- prevent the listing of additional species on the LCR.

The LCR MSCP covers areas up to and including the full-pool elevations of Lakes Mead, Mohave and Havasu and the historical floodplain of the Colorado

River from Lake Mead to the SIB. Reclamation's "covered actions" (actions for which ESA consultation, permitting and incidental take authorization was covered under the LCR MSCP) include (but are not limited to): Reclamation's daily operations of Hoover, Davis, Parker, Senator Wash, Imperial, and Laguna dams; flood control releases on the LCR; water deliveries to Arizona, California, Nevada, and Mexico consistent with existing contracts and obligations; electric power generation at Hoover, Davis, and Parker dams; application of future surplus and shortage guidelines on the LCR; channel maintenance from Davis Dam to the SIB; operation and maintenance of major Federal facilities, and the Laguna Reservoir Restoration Project (see below). LCR MSCP covered activities also include the potential changes in points of diversion of up to 1.574 million AF per year of Colorado River water by water contractors in Arizona, California, and Nevada (LCR MSCP 2004a). Specific transfers for the entire 1.574 million AF per year have not been identified; therefore, the impact analysis for the changes in points of diversion is programmatic. Diversion changes are expected to occur in response to shifts in water demand during the 50-year term of the LCR MSCP Conservation Plan. It is anticipated that a shift in water diversion from the southern reaches of the Colorado River upstream to Lake Mead and to Lake Havasu will occur. Potential impacts could include changes in water surface elevation along the LCR where points of diversion are changed as well as associated impacts on biological resources. The Environmental Impact Statement on the LCR MSCP addressed the affects of USFWS issuing the ESA take authorization and implementation of the plan's habitat conservation measures by the LCR MSCP over an anticipated 50 year period.

BLM Hazardous Fuels Program

The BLM currently manages fire and hazardous fuels within the Limitrophe Division. These projects help to reduce the likelihood of catastrophic fires, protect existing wildlife habitat, provide for health and safety of firefighters and the public, and secure the facilities and property within this reach. A number of projects including fire breaks, herbicide application and fuels reduction areas have been implemented within the Limitrophe, Yuma, and Laguna Divisions of the LCR (SIB to Imperial Dam).

Border Patrol Fence Project

Border Patrol is in the process of constructing a border fence (pedestrian) between SIB and County Road 18 (near Gadsden Bend), and a vehicle barrier fence upstream to Morelos Dam. The project was completed by the end of calendar year 2008.

Border Patrol Vegetation Treatment in the Limitrophe for Safety and Law Enforcement.

BLM issued a right-of-way license to Border Patrol that allows vegetation treatment activities, maintenance, and mitigation in order to facilitate border security (enforcement) along the Limitrophe division. The Proposed Action

provides for the treatment of various vegetation types in the area, while avoiding and minimizing impacts to native riparian and marsh vegetation.

Yuma Wetlands Restoration

The City of Yuma and the Yuma Crossing National Heritage Area have implemented two riparian and wetland restoration project that have also incorporated a recreational aspect along the LCR's Yuma Division (Yuma East and West Wetland projects). These projects have transformed former salt cedar thickets and degraded wetlands into functioning wetland areas and riparian forest areas while providing public access points. These projects are located approximately 4 miles upstream of the YDP.

Although this project is still under construction, initial findings suggest that the water diversions, vegetation treatments and invasive plant control have benefited many species of native wildlife. The Yuma East Wetlands provides regional benefits, providing alternative stop over habitat for migratory birds, but no onsite benefit.

Yuma Desalting Plant Proposed Pilot Run

Air Quality

Emissions from the Proposed Action would not contribute to an exceedance of an ambient air quality standard. As a result, the Proposed Action, in combination with other foreseeable sources and projects mitigation requirements, would not produce significant cumulative air quality impacts.

Biological Resources

Running the YDP for a short duration in combination with other projects would not result in loss of habitat and impacts on biological resources along the Limitrophe.

Water Resources

The Proposed Action and other cumulative projects would enhance Reclamation's ability to meet its obligations to water users in the US while meeting the obligation to deliver Mexico's share of Colorado River water under the Treaty. The project will operate for a short duration and will be operated in a manner that will not conflict with delivery obligations that may impacted other area projects, and/or violate any surface and groundwater water quality standards.

Hazardous Materials

Potentially significant impacts would occur in association with the Proposed Action, due to the use of chlorine and ammonia in the pretreatment process during operation of the YDP. Other projects may result in potentially significant impacts due to various other contamination related hazards. However, compliance with applicable Federal, state, and local regulations would reduce the likelihood of potentially significant impacts. Similarly, implementation of management and

mitigation measures would reduce the project's contribution to cumulative impacts, resulting from the operation of the YDP, so that no significant impacts would occur. In addition, other regional projects would also be subject to environmental review and appropriate mitigations established for each project, prior to construction. Therefore, significant cumulative hazards and hazardous materials impacts would not occur.

Indian Trust Assets

No impacts to ITAs were identified for the Proposed Action. Therefore, no cumulative impacts to ITAs are anticipated.

Environmental Justice

The Proposed Action, in combination with other proposed or on-going projects, would not cause disproportionate cumulative effects on minority or low-income populations.

4.0 Consultation, Coordination, and list of Preparers

4.1 Agencies Consulted

For a more complete look at the consultation and coordination that has been achieved for this project, please see Appendix A.

City of Yuma
U.S. Fish and Wildlife Service
Arizona Game and Fish Department
Quechan Indian Tribe
Cocopah Indian Tribe
International Boundary and Water Commission
Bureau of Land Management
U.S. Fish and Wildlife Service
United States Border Patrol
Yuma Crossing National Heritage Area
Yuma County Sherriff’s Office
AZ State Historic Preservation Office

4.2 List of Preparers

4.2.1 Bureau of Reclamation

Ed Virden	Assistant Area Manager
Sean Torpey	Environmental Planning and Compliance Group Manager
Renee Kolvet	Archaeologist
Julian DeSantiago	Environmental Protection Specialist
Elizabeth Kennett	Environmental Protection Specialist
Nicholas Heatwole	Environmental Protection Specialist
Anna Pinnell	Realty Specialist

4.2.2 Bureau of Land Management

Karen Reichhardt	Team Lead, Resources
Dave Daniels	Planning and Environmental Coordinator
Jeffery Young	Wildlife Biologist
Erica Faulkner	Fire Specialist
Aaron Curtis	Recreation Planner

4.2.3 Fred Phillips Consulting

Fred Phillips	Owner/Director
Heidi Trathnigg	Principal Biologist
Ann Hadley	Restoration Practitioner
Mark Winterowd	Ecological Coordinator

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