

**Arizona Water Protection Fund
FY 2014 Grant Application Review**

Application # WPF 0410 Applicant: Yuma Crossing National Heritage Area

Title of Project: Yuma East Wetlands Marsh Creation & Mesquite Bosque Enhancement

Additional materials were submitted with this application that could not be reproduced and distributed for review. These materials may be reviewed in person at the Arizona Water Protection Fund offices at (3550 N. Central Avenue, 2nd Floor, Phoenix). The additional materials available are the following:

- Maps
- Photographs
- Disk *CD*
- Other

WPF 0410

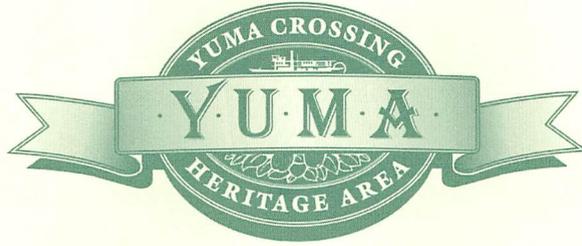
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Arizona Water Protection Fund
Application Cover Page
FY 2014

AUG 28 2013

Water Protection Fund

Title of Project: Yuma East Wetlands Marsh Creation and Mesquite Bosque Enhancement											
Type of Project: <input checked="" type="checkbox"/> Capital or Other <input type="checkbox"/> Water Conservation <input type="checkbox"/> Research	Stream Type: <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral										
Your level of commitment to maintenance of project benefits and capital improvements: <input type="checkbox"/> < 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> 11-15 years <input checked="" type="checkbox"/> 16-20 years											
Applicant Information: Name/Organization: Yuma Crossing National Heritage Area Address 1: 180 West First St. Address 2: Suite E City: Yuma State: Arizona ZIP Code: 85364-1407 Phone: 928-373-5192 Fax: 928-373-5191 Tax ID No.: XXXXXXXXXX											
Inside an AMA: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, which AMA: <input type="checkbox"/> Phoenix <input type="checkbox"/> Tucson <input type="checkbox"/> Prescott <input type="checkbox"/> Pinal <input type="checkbox"/> Santa Cruz											
Type of Application: <input type="checkbox"/> New <input checked="" type="checkbox"/> Continuation											
Contact Person: Name: Charles Flynn Title: Executive Director Phone: 928-373-5192 Fax: 928-373-5191 e-mail: Charles.Flynn@yumaaz.gov											
Any Previous AWPf Grants: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, please provide Grant #(s): 06-140WPF, 07-148WPF, 07-147WPF, 08-152WPF											
Arizona Water Protection Fund Grant Amount Requested: \$ 99,769 If the application is funded, will the Grantee intend to request an advance: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Matching Funds Obtained and Secured: <table border="1"> <thead> <tr> <th>Applicant/Agency/Organization:</th> <th>Amount (\$):</th> </tr> </thead> <tbody> <tr> <td>1. Applicant</td> <td>\$159,200</td> </tr> <tr> <td>2.</td> <td></td> </tr> <tr> <td>3.</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right;">Total: \$ 59,200</td> </tr> </tbody> </table>	Applicant/Agency/Organization:	Amount (\$):	1. Applicant	\$159,200	2.		3.		Total: \$ 59,200	
	Applicant/Agency/Organization:	Amount (\$):									
1. Applicant	\$159,200										
2.											
3.											
Total: \$ 59,200											
Has your legal counsel or contracting authority reviewed and accepted the Grant Award Contract General Provisions? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A											
Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the attached application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The Arizona Water Protection Fund Commission may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.											
Charles Flynn	Executive Director, Yuma Crossing National Heritage Area 928-373-5192										
Typed Name of Applicant or Applicant's Authorized Representative	Title and Telephone Number										
Signature 	Date Signed 8/27/13										



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AUG 28 2013

Water Protection Fund

August 28, 2013

Arizona Water Protection Fund Commission
3550 North Central Avenue, Suite 200
Phoenix, Arizona 85012

To Whomever It May Concern:

The Yuma Crossing National Heritage Area (HA) is pleased to submit the 2014 AWPf proposal titled "Yuma East Wetlands Marsh Creation and Mesquite Bosque Enhancement." The HA has been actively restoring the riparian and wetland habitats in the Yuma East Wetlands for the past nine (9) years. Several of these projects were funded by the AWPf and are showing great success. The endangered Yuma Clapper Rail and other marsh birds such as Least Bittern and Virginia Rail have returned to breed in the restored marsh habitats, and several other riparian obligate bird species, such as Yellow-Billed Cuckoo and Gilded Flicker, have been detected using the restored habitats.

The area involved in this grant application seeks to convert less productive (and saline) riparian areas into marsh, expanding adjacent marsh areas. In addition, nearby mesquite bosques will be expanded and enhanced.

In 2013, the HA and its local partners signed an agreement with the Multi-Species Conservation Program of the Bureau of Reclamation that provides operation and maintenance funding for the entire Yuma East Wetlands Project Area for a 50-year period. This funding, therefore, will cover the maintenance of the proposed AWPf restoration project. All maintenance, through this agreement, will be performed by the HA or our contractor Fred Phillips Consulting.

If you have any questions or would like additional information, please do not hesitate to contact our Yuma East Wetlands Project Coordinator, Fred Phillips, at (928) 380-5058. Thank you for your consideration, and we look forward to continuing our conservation efforts on the Lower Colorado River.

Sincerely,

A handwritten signature in blue ink, appearing to read "CFlynn", with a long horizontal flourish extending to the right.

Charles Flynn
Executive Director

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AUG 28 2013

YUMA CROSSING NATIONAL HERITAGE AREA

Water Protection Fund

**YUMA EAST WETLANDS MARSH CREATION AND MESQUITE
BOSQUE ENHANCEMENT**

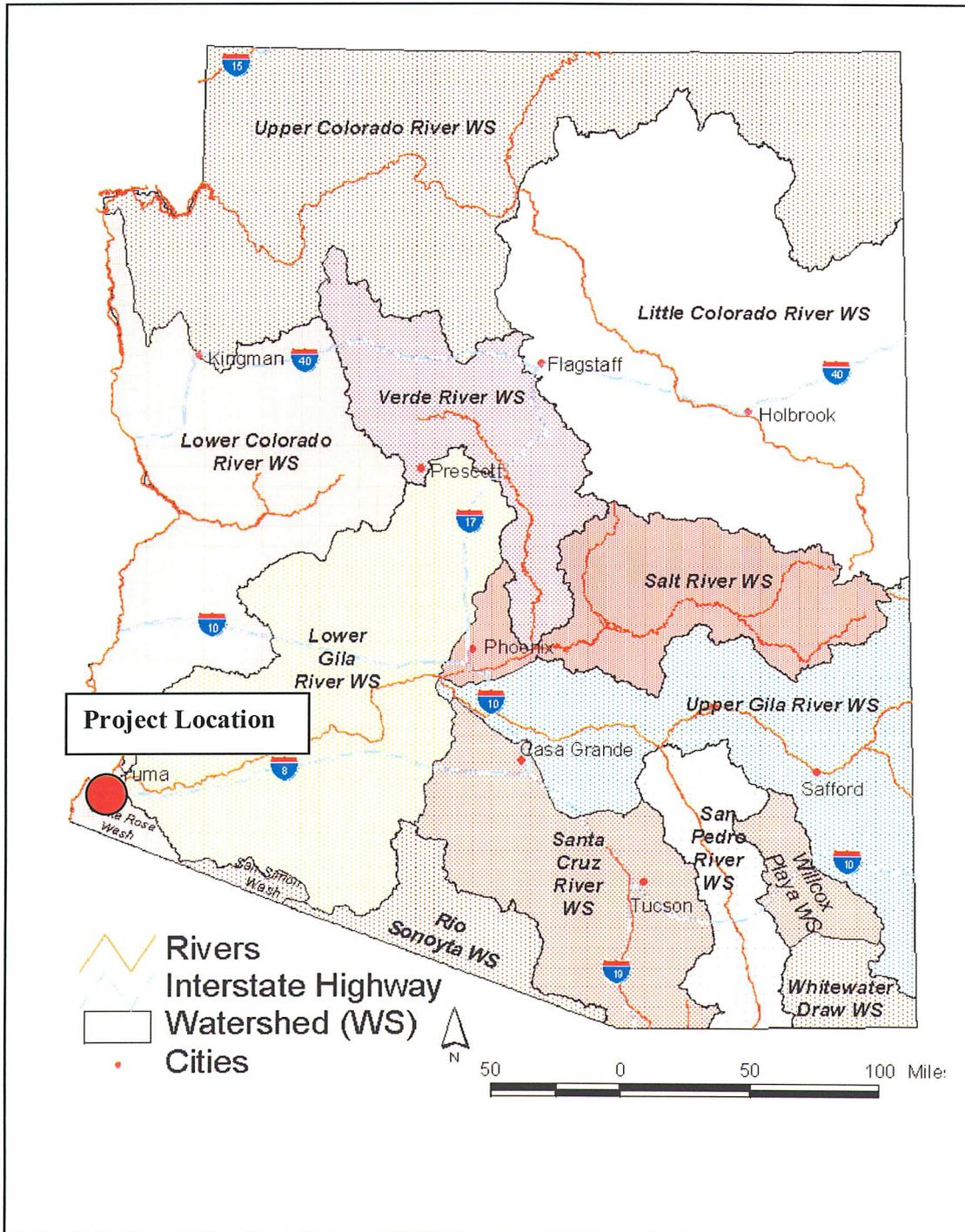
AWPF GRANT PROPOSAL

August 28, 2013

Yuma Crossing National Heritage Area
Arizona

Due by 3:00 p.m., August 28, 2013

Arizona Watershed Map FY 2014



Title of Project: **Yuma East Wetlands Marsh Creation and Mesquite Bosque Enhancement**

Executive Summary

This proposal will create 7 acres of historic marsh habitat and enhance 23.9 acres of mesquite bosque within the Yuma East Wetlands along the Lower Colorado River (LCR). This site was previously cleared and planted during the Phase I and Phase II South Channel Projects construction. However, due to changing groundwater conditions and salt migration which created the high soil salinities present at the site, the native cottonwood and willow species did not survive. Also, by 2007 an unknown malady was causing a decline in screwbean mesquite vigor on the LCR. Due to this unknown malady, the majority of the screwbean mesquite trees planted in the project site had a high mortality rate. Currently, the site is being overrun by exotic Bermuda grass in the lower areas and standing dead screwbean mesquite in the bosque. This proposal will fund the creation of marsh habitat and the enhancement of the mesquite bosque to provide a contiguous network of native habitats in the Yuma East Wetlands.

The aquatic, wetland, and riparian ecosystems of the LCR have been greatly altered and reduced by over a century of water development projects, deforestation, agriculture and development, and non-native species invasion. These activities have decimated native stands of cottonwood, willow, and mesquite, and have promoted the establishment and proliferation of non-native, invasive species such as tamarisk and giant cane. Seasonal flooding that provided alluvial seed beds of native cottonwood and willow have ceased to occur causing the demise of natural recruitment of these species as well as ending the natural process of soil desalinization. Also, historic wetlands, aquatic habitats, and back water channels have filled in with sediment due to the lack of scouring flood flows. Wildlife species, particularly resident and migratory bird populations, have declined with the loss of suitable riparian and wetland habitat. In the arid southwest, native wetland and riparian habitats have disproportionately higher species diversity and density than any other habitat type in the overall landscape, however have become extremely threatened.

In response to the degraded riparian and wetland habitats along the LCR, the Yuma Crossing National Heritage Area (Heritage Area) in partnership with the Quechan Indian Nation (Tribe), City of Yuma (City), State of Arizona, US Bureau of Reclamation (BOR), and private landowners embarked on a landmark collaborative restoration effort by implementing the Yuma East Wetlands Restoration Plan. The plan outlined a roadmap to restore over 900 acres of degraded habitat located from the Ocean to Ocean Bridge and extends east to the confluence of the Gila and Colorado Rivers in Yuma, Arizona. To date over 350 acres have been restored with over \$8 million awarded through various funders. This funding has aided to complete the permitting, wetland delineation, interpretive facilities and environmental education programs, and on-the-ground native riparian and wetland restoration. If this project is funded, native habitat connectivity will be increased by providing a continuum of native habitats across the Yuma East Wetlands. This linkage will inevitably restore ecological integrity and provide critical habitat for declining wildlife species. In order to accomplish this 30.9-acre wetland and mesquite bosque restoration and enhancement project, the following objectives have been proposed:

1. Create approximately 7 acres of marsh habitat by excavating impenetrable high salinity clay layers to hydrologically connect the habitat to the adjacent South Channel.
2. Enhance 23.9 acres of mesquite bosque habitat by replacing dead stands of screwbean mesquite with native honey mesquite and other native shrubs.
3. Obtain valuable data to apply to future restoration activities within the YEW.

This will be accomplished by completing the following tasks:

1. Planting and irrigation design.
2. Excavation of marsh areas.
3. Revegetate 7 acres with native marsh species.
4. Enhance 23.9 acres of native mesquite bosque by planting honey mesquite.
5. Plant monitoring within the revegetation and wetland restoration areas

Project Location & Environmental Contaminant Information FY 2014

Project Location Information			
1. County: <u>Yuma</u>	2. Section: <u>22</u>	3. Township: <u>8 South</u>	4. Range: <u>22 West</u>
<p>5. Watershed: <u>Lower Colorado River</u></p> <p>6. Name of USGS Topographic Map where project area is located: <u>Yuma East Arizona-California</u></p> <p>7. State Legislative District: <u>5</u> (Information available at http://156.42.40.10/mapping/default2.asp?tname=Interim.2004.Legislative.Map)</p> <p>8. Land ownership of project area: <u>City of Yuma</u></p> <p>9. Current land use of project area: <u>Degraded habitat</u></p> <p>10. Size of project area (in acres): <u>30.9 acres</u></p> <p>11. Stream Name: <u>Lower Colorado River</u></p> <p>12. Length of stream through project area: <u>5950 linear ft</u></p> <p>13. Miles of stream benefited: <u>1.1 miles</u></p> <p>14. Acres of riparian habitat: <u>23.9 acres</u> will be:</p> <div style="margin-left: 300px;"> <input checked="" type="checkbox"/> Enhanced <input type="checkbox"/> Maintained <input type="checkbox"/> Restored <input type="checkbox"/> Created </div>			
<p>15. Provide directions to the project site from the nearest city or town. List any special access requirements: From downtown Yuma take Giss Parkway to the Prison Hill exit, go left, take first right and go over MODE Canal, the Yuma East Wetlands will be directly in front of you. The project area is located approximately 0.5 miles southeast on the levee road.</p>			
Environmental Contaminant Location Information			
<p>1. Does your project site contain known environmental contaminants? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:</p> <ul style="list-style-type: none"> • 			
<p>2. Are there known environmental contaminants in the project vicinity? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:</p> <ul style="list-style-type: none"> • 			
<p>3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>			

PROJECT OVERVIEW

Background:

Riparian ecosystems are renowned for their high levels of biodiversity, productivity, and dynamism (Noss and Cooperrider 1994). In the arid southwest, these ecosystems comprise of the smallest habitat areas, but support a disproportionately higher species diversity and density than any other habitat type in the overall landscape. However, particularly in Arizona, these ecosystems are increasingly imperiled due to extensive modification and exotic species invasion. The lower Colorado River, including the Yuma East Wetlands (YEW), and Gila River channels and their associated wetlands have been modified extensively by over a century of flood-control, water delivery, and agricultural activities, which have affected the native vegetation and wildlife that depend on them.

In an effort to restore the native riparian, wetland, and aquatic habitats of Arizona, the *Yuma East Wetlands Restoration Plan* (YEWP) (Phillips Consulting 2001) was developed to focus this effort along the Colorado River immediately upstream from Historic Downtown Yuma, Arizona. The primary goal of implementing this plan is to restore aquatic, wetland, and riparian habitats for both resident and migratory wildlife species along the Lower Colorado River. Some of these species include Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Yuma Clapper Rail (*Rallus longirostris yumanensis*), Yellow-billed Cuckoo (*Coccyzus americanus*), Yuma Hispid Cotton Rat (*Sigmodon hispidus eremicus*), Least Bittern (*Ixobrychus exilis*) and MacNeill's Sootywing Skipper (*Pholisora graciela*). The restoration of these habitats involved, but was not limited to, three main activities:

- Revegetating the riverbanks and other suitable riparian areas with cottonwood/willow/mesquite, and other native species
- Restoring flow through degrading marshes of dense cattail and bulrush
- Converting fallow agricultural land into sheet-irrigated cottonwood/willow habitat

Encompassing 938 acres, the YEWP is bound on the north and south by the Colorado River levees, on the west by the Ocean-to-Ocean Bridge, and on the east by the confluence of the Gila and Colorado Rivers. **Figure 1** shows the entire YEWP area and land ownership, which covers approximately 2.25 square miles in Sections 19, 21, 22, 23, and 24, Township 8 South, Range 22 and 23 West, of the Gila/Salt River Base and Meridian, in Yuma County, Arizona extending from the Ocean-to-Ocean Bridge to the confluence of the Colorado and Gila Rivers (miles 30.8-34.2). One of the most ecologically altered riparian landscapes in the southwest, the YEW area has sustained nearly a century of flow regulation, channelization, non-native species invasion, mining, and wildfires. It is now largely comprised of exotic invasive vegetation such as, tamarisk (*Tamarix pentandra*) and common reed (*Phragmites* sp.). **Figure 2** is the detailed map of the Project site. **Figure 3** is an aerial photograph of the existing proposed AWPf revegetation site. **Figure 4** show photos of the overall proposed AWPf revegetation site and existing site conditions.

The first phases of this ambitious restoration project in the YEW have already been completed. Currently, over 350 acres have been restored in the YEW, including 10 acres of historic channel and bank line vegetation, 200 acres of riparian areas with the primary species comprising of cottonwood, willow and mesquite bosque, 40 acres of upland areas primarily consisting of

quailbush and four-wing saltbush, and 100 acres of wetlands. The endangered Yuma Clapper Rail now resides and nests in the restored marsh habitat. Also, the Gilded Flicker and Yellow-billed Cuckoo have been detected using the restored riparian habitats. In August 2013, the Yuma Crossing National Heritage Area and Quechan Indian Tribe signed an Agreement with the Multi-Species Conservation Program (MSCP) of the Bureau of Reclamation to provide operations and maintenance funding for the YEW project area for 50 years. This agreement primarily funds irrigation maintenance and exotic weed control, and will be used to maintain this proposed project.

If funded, this project will create 7 acres of historic marsh habitat and enhance 23.9 acres of mesquite bosque within the Yuma East Wetlands. This site was previously cleared and planted during the Phase I and Phase II South Channel Projects construction. However, due to the high soil salinities present at the site, the native cottonwood and willow species did not survive. Also, by 2007 an unknown malady was causing a decline in screwbean mesquite vigor on the LCR. Due to this unknown malady, the majority of the screwbean mesquite trees planted in the project site had a high mortality rate. Currently, the site is being overrun by exotic Bermuda grass in the lower areas and standing dead screwbean mesquite in the bosque. This project will increase the connectivity between native habitats to benefit wildlife and increase habitat for the Yuma Clapper Rail and other marsh bird species. Without this restoration, this potential wildlife habitat will degrade further.

Goal(s):

1. Establish and enhance 30.9 acres of self-sustaining native habitat, including 7 acres of marsh habitat and 23.9 acres of mesquite bosque along the Lower Colorado River.
2. Monitor the project success of the 30.9 acre marsh creation and mesquite bosque enhancement project through plant monitoring.

Objective(s):

1. Create approximately 7 acres of marsh habitat by excavating impenetrable high salinity clay layers to hydrologically connect the habitat to the adjacent South Channel.
2. Enhance 23.9 acres of mesquite bosque habitat by replacing dead stands of screwbean mesquite with native honey mesquite and other native riparian shrubs.
3. Obtain valuable data to apply to future restoration activities within the YEW.

Statement of problem(s):

- Damaged/Degrading riparian and wetland habitat.
- Increased soil salinities due to changing groundwater conditions and insufficient water-flow through historic channels and wetlands.
- Excessive reproduction of exotic plant species.
- Insufficient reproduction of native plant species.
- Lack of critical habitat for several endangered species including the Yuma clapper rail and southwestern willow flycatcher and other wildlife species.

Statement of cause(s) of the problem(s):

- Dams
- River channelization
- Siltation of historic river channels and backwaters
- Introduction of highly flammable, quickly-regenerating, exotic tamarisk and grass species
- Human encroachment /Development

Statement of project-related remedies or solutions:

1. Excavate marsh, increase hydrologic connectivity and plant native wetland plants in the degrading wetlands within the Yuma East Wetlands Project.
2. Plant native honey mesquite to enhance degraded mesquite bosque.
3. Monitor the revegetation site for potential success of other revegetation efforts within the Yuma East Wetlands Project.

Statement of project years of benefit:

The 30.9-acre revegetation stand will be planted to the water table or planted within 1-2 feet of the water table, and therefore should become self-sustaining by the end of the first full growing season. The Heritage area and the YEW Project Partnership intend to work to monitor the success of this project, and will use the information to plan and, where feasible, implement control programs in the foreseeable future. Follow-up maintenance required at this site will consist of limited fire control, weed eradication, and tree stand evaluation. The projected years of benefit for this project should exceed 50 years.

STATE HISTORIC PRESERVATION OFFICE Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 *et seq*, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that **recipients of state funds are required to comply with this law** throughout the project period. All projects that affect the ground-surface that are funded by AWPf require SHPO clearance, **including those on private and federal lands.**

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information **MUST** be submitted with each application for funding assistance:

- A completed copy of this form, and
 - A United States Geological Survey (USGS) 7.5 minute map
 - A copy of the cultural resources survey report if a survey of the property has been conducted, and
 - A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.
- NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA),
- OR**
- A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: Arizona Water Protection Fund FY 2014
2. Project Title: Yuma East Wetlands Marsh Creation and Mesquite Bosque Enhancement
3. Applicant Name and Address: Yuma Crossing National Heritage Area Corporation, 180 West 1st Street, Yuma, AZ 85364
4. Current Land Owner/Manager(s): City of Yuma, Arizona
5. Project Location, including Township, Range, Section: County: Yuma; Section: 22; Range: 22 West; Township: 8 South
6. Total Project Area in Acres (or total miles if trail): 30.9 Acres
7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground? YES NO
8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: Marsh excavation will disturb the soil surface at the Yuma East Wetlands (YEW). A qualified archaeologist has surveyed the entire YEW and no archaeological resources were found. It is unlikely that any would be found as this area was

subject to frequent flooding prior to installation of water diversion projects on the Colorado River. Excavation will consist of using an excavator and bulldozer to dig below the salt layer to connect the site with the adjacent created channel. This site was previously cleared of invasive saltcedar using a bulldozer. As part of the SHPO agreement, any activities affecting found archaeological resources would be immediately halted in the unlikely event of discovering them.

9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to document condition: The ground has been disturbed by previous non-native species clearing activities. Current photos of the site can be found in the "Project Site Photo" section.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area?
 YES NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist?
 YES NO UNKNOWN

If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? YES NO

If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? YES NO

If YES, name of the district:

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

Tina Clark /Date
Applicant Signature

Tina Clark, YCNHA Archaeologist
Applicant Printed Name

FOR SHPO USE ONLY

SHPO Finding:

- Funding this project will not affect historic properties.
- Survey necessary – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)
- Cultural resources present – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)

Scope of Work: Task Descriptions

Task #1: Permits, Authorizations, Clearances and Agreements

Task Description: The Yuma Crossing National Heritage Area shall obtain all permits, authorizations, environmental clearances, and agreements necessary to complete the tasks listed in the Scope of Work. These include but are not limited to:

- State Historic Preservation Office (SHPO) certification
- National Environmental Policy Act (NEPA) compliance
- Endangered Species Act Section 7 consultation with U.S. Fish and Wildlife Service.
- Sub-contractor agreements for project implementation.
- Access agreement between Yuma Crossing National Heritage Area and landowners and/or land managers for project data collection activities.
- Clean Water Act Section 401 Certification from Arizona Department of Environmental Quality
- Clean Water Act Section 404 permit from the Army Corps of Engineers
- Water Rights permits
- Arizona Department of Environmental Quality Pesticide General Permit and filing of Notice of Intent

All necessary permits, including access agreements or other documentation allowing all sub-contractors or other project personnel access to all portions of the project site and off-site locations shall be obtained prior to any on-the-ground research activities. The access agreements shall be for the period necessary to complete the project.

Task Purpose: To comply with all local, state, and federal permit requirements and environmental laws such as NEPA and obtain legal access to project area. Copies of all permit letters that have already been required are attached at the end of this document, including: SHPO clearance, NEPA compliance, Access agreement between YCNHA and City of Yuma, and Army Corps of Engineers RGP 22, and Arizona Department of Environmental Quality Pesticide General Permit.

Deliverable Description: Copies of all approved permits, authorizations, clearances and agreements necessary to implement the project Scope of Work.

Deliverable Due Date: Prior to any ground disturbance activities.

Reimbursable Cost: \$0

Task #2: Prepare and Submit Restoration and Monitoring Plans

Task Description: YCNHA shall prepare and submit an excavation, restoration and vegetation monitoring plan for the 30.9 acre marsh creation and mesquite bosque enhancement project. This plan will include details on the 7-acre marsh excavation and construction and the 23.9-acre re-planting of honey mesquite to replace dead screwbean mesquite in the mesquite bosque.

- Excavation and Grading Design for CMAR Contract (Grading Design and As-Built)

The project design team and contractors will complete the marsh excavation, grading and CMAR design for the completion of the following by the Grantee:

- a. Excavation of existing high salinity Bermuda grass areas within the revegetation site. These marsh areas will be excavated down and connected to the Phase I and II South Channels.
 - b. The perimeter of the marsh cells will have a 2:1 slope bank line.
 - c. Maps or drawings to scale clearly indicating where and how marsh cells will be excavated along the Phase I and II South Channels.
 - d. The as-built excavation and grading plan will be stamped by a certified engineer prior to implementation.
- Revegetation Planting Design/Construction Documents for 30.9 Acre Revegetation Site
The Grantee will develop a Revegetation Plan that will include the following details:
 - a. A detailed planting design for the revegetation of the 7 acres of marsh habitat. The plan will include plant species type, plant spacing and planting methods.
 - b. A detailed planting design for the enhancement of the 23.9 acres of mesquite bosque. The plan will include honey mesquite (*Prosopis glandulosa*), saltbush (*Atriplex canescens*), brittlebush (*Encelia farinose*), and desert marigold (*Baileya multiradiata*) planting locations and details on the planting methodology.

The Revegetation Plan will also include a discussion of the invasive species control and all maintenance activities and schedules.

- Monitoring Plan
The Monitoring Plan shall be designed to evaluate the success of the revegetation efforts and survival of the species planted. Monitoring activities shall consist of, but not limited to photo points and measurement of vegetation growth and vigor. The Monitoring Plan shall also describe routine monitoring for damage to the revegetation due to wildlife or human activities. The Monitoring Plan shall include, at a minimum:
 - Map(s), to scale, of the Project Area showing the proposed monitoring sites
 - Attributes to be measured
 - Rationale for the number and location of monitoring points
 - Procedures used to measure attributes
 - Equipment list
 - Discussion of quality assurance/quality control
 - Sample data sheets and photo point record sheets

Task Purpose: To provide a feasible design and monitoring plan to ensure that the project will be completed in a timely manner and obtain project success.

Deliverable Description: Excavation and grading plan; marsh and mesquite restoration plans; and vegetation monitoring plans.

Deliverable Due Date: After Contract Execution
AWPF Reimbursable Cost: \$15,907

Task #3: Marsh Excavation and Leveling

Task Description: Historic wetland localities will be excavated and restored in 7 acres using an amphibious excavator, a low-track bulldozer, dump truck and land-grading equipment. The marsh cells will be lowered by excavating down to the saturated soil zone adjacent to the tributary channels. These areas will be excavated to the average water level of the tributary channels with a mean water level of 3-12 inches deep. This will provide wetland conditions and flood irrigation from the adjacent tributary channel. The wetland cell bank line slope will be graded to a 2:1 slope and planted with salt tolerant native species, such as inland saltgrass (*Distichlis spicata*). These cells will be connected to the adjacent Phase I and II South Channels and will be flood irrigated through the natural fluctuations of these channels. No additional irrigation will be necessary.

Valuable native habitat (cattail/bulrush, cottonwood/willow/mesquite) will be avoided during excavation to create islands of native vegetation if found near a proposed marsh excavation site. More detailed plans for this task are outlined in the revegetation and monitoring plans sections.

Task Purpose: The primary purpose is to create native marsh habitat. This new topographic configuration will diversify habitats for terrestrial and aquatic wildlife.

Deliverable Description:

1. Monthly reports including dredging and excavation plans, photos, and project aquatic/wetland restoration activities to date.
2. A final year report describing all aquatic/wetland construction activities for the 7 acre project.

Deliverable due dates: 4, 5, 6, 7, 8, 9, 12, 18 Months after Contract Execution

AWPF Reimbursable cost: \$ 32,670

Task #4: Revegetate 30.9 Acres of Native Habitat

Task Description: Revegetate 30.9 acres of self-sustaining indigenous marsh and mesquite bosque habitat on the Lower Colorado River within the YEW. The wetland cell bank line slope will be planted with salt tolerant native species, such as inland saltgrass (*Distichlis spicata*). The perimeter of the marsh cells will be planted with four-wing saltbush (*Atriplex canescens*) and pickleweed (*Salicornia* sp.). Shallow marsh areas (<3 inch water depth) will be planted with Olney's threesquare (*Schoenoplectus americanus*) and other suitable shallow native marsh plants. Deep marsh (3 – 12 inch water depth) will be planted with Giant bulrush (*Schoenoplectus californicus*). These cells will be connected to the adjacent Phase I and II South Channels and will be flood irrigated through the natural fluctuations of these channels. No additional irrigation will be necessary.

For the 23.9 acre mesquite bosque habitat, one gallon pots of honey mesquite, four-wing saltbush, brittlebush, and desert marigold will be planted in areas where a high mortality of screwbean mesquite occurred due to an unknown malady. Existing drip irrigation infrastructure and pumps will be used to irrigate the newly planted vegetation. Many of the shrub and herbaceous species proposed for planting will provide additional understory cover for the project site and will require additional tubing and emitters for irrigation. The minimal irrigation to irrigate the additional species will be connected to the existing irrigation infrastructure.

Site maintenance will include irrigation maintenance, site weeding and repair of planting cages. Site maintenance costs will be covered by matching funds. More detailed plans on this task are outlined in the revegetation and monitoring plans section at the end of this grant.

Task Purpose: The purpose of this task is to restore indigenous mesquite bosque habitats to the lower Colorado River and to ensure project success.

Deliverable Description:

1. Monthly reports including planting plan, photos, and project revegetation activities to date.
2. A final year report describing all revegetation construction activities for the 23.9-acre project.

Deliverable due dates: 4, 5, 6, 7, 8, 9, 12, 18 Months after Contract Execution

AWPF Reimbursable cost: \$ 29,515

Task #5: Two Year Post-Revegetation Monitoring

Task Description: When planting is complete the grantee will conduct annual plant and photo monitoring two times during the growing season (May-October) at the revegetation site. Monitoring will include establishing photo monitoring points to document the growth and survivorship of the planted vegetation. Also, planted honey mesquite trees will be assessed for height, survivorship, condition, and factors affecting growth. Monitoring will help determine success of the project by documenting native wetland and riparian vegetation establishment and survivorship and control of exotic species re-growth. Additionally, this monitoring effort will help guide future revegetation efforts within the Yuma East Wetlands. A detailed monitoring plan is included in the revegetation and monitoring plans section at the end of this grant application.

Deliverable Description:

1. Annual report including, photos, growth data, and project activities to date.
2. A final monitoring report describing all revegetation activities for the 30.9 acres including the success of the project and all tree growth and photos.

Deliverable due dates: 12 and 24 Months after Contract Execution

AWPF Reimbursable cost: \$ 10,663

Task #6: Overall Project Coordination

Task Description: For every project of this scale there must be a coordinator that is intimately familiar with the grant contract, the deliverables involved and the standard procedures of the AWPF program. The Yuma Crossing National Heritage Area and the project consultant will execute the project coordination. Project Coordination will include negotiating contracts with outside services involved with the project to make sure: 1. All deliverables are being fulfilled as stated in the contract. 2. All reporting information and budgetary forms are submitted to the AWPF in a timely matter in accordance with the grant contract. 3. That any problems or difficulties that arise during the grant project are addressed and satisfactorily resolved. The Project coordination will also include gathering deliverables from the involved parties and packaging the monthly, bi-annual, annual and final reports necessary for project completion.

Task Purpose: To ensure that the project tasks and deliverables are completed in a timely manner complying with the standard procedures of the AWPF program and the project is a success.

Deliverable Description: Deliverables will consist of all monthly, bi-annual, annual and final reports required by all tasks for the grant project. The project coordinator will be responsible for compiling all of the necessary deliverables from project contractors. The Project Coordinator will develop the overall project reports, produce and track the budgetary information and forms, and ensure that all projects are done to standard and in a timely matter in accordance with the grant contract.

Deliverable due dates: 4, 5, 6, 7, 8, 9, 12, 18, 24 Months after Contract Execution
AWPF Reimbursable cost: \$5,198

Task #7: Final Report

Task Description: The Grantee shall prepare and submit a comprehensive final report in accordance with the Arizona Water Protection Fund Final Report Guidelines. The final report shall include a summary of all methodologies used, outcomes of all Tasks, analysis of all Project data, suggestions for any changes or future actions, and an evaluation of the success of meeting Project objectives. The Grantee shall provide all data generated under this Contract, unless otherwise specified in the Special Provisions.

Task Purpose: Final project report will summarize all methodologies used, outcome of all tasks, summarize and analyze project data and monitoring data, suggest any further changes needed in the project and evaluate project success measured against the objective. To provide a comprehensive final report for public distribution that gives a detailed description of the project and showcases its benefits to the State of Arizona.

Deliverable description: Final report
Deliverable due date: 24 Months After Contract Execution
AWPF Fixed Cost: \$5,818

DETAILED BUDGET BREAKDOWN
Yuma Crossing National Heritage Area

Yuma East Wetlands Marsh Creation and Mesquite Enhancement

Item	AWPF Funding Request			
	Item/Hours	Unit	Rate	Total
Task #1 Permits, Authorizations, Clearances and Agreements				
				\$ -
Total for Task #1				\$ -
Task #2 Prepare and Submit Restoration and Monitoring Plans				
Excavation and Grading Design for CMAR Contract (Grading design and As built)				
Outside Services				
Principal	12	Hours	\$ 90.00	\$ 1,080.00
AutoCAD/Arc view Operator	8	Hours	\$ 75.00	\$ 600.00
Civil Engineer	40	hours	\$ 100.00	\$ 4,000.00
Other Direct Costs:				
Principal Overnight Travel	1	Days	\$ 105.00	\$ 105.00
Mileage	1	Miles	\$ 0.56	\$ 0.56
Engineers Mileage	1400	miles	\$ 0.56	\$ 784.00
Trimble R-8 Survey unit	2	day	\$ 300.00	\$ 600.00
Engineers Overnight Travel	3	days	\$ 105.00	\$ 315.00
Revegetation Planting Design/Construction Documents for 30.9 Acre Revegetation Site (planting design and as built)				
Outside Services:				
Principal	8	Hours	\$ 90.00	\$ 720.00
Landscape Architect	24	Hours	\$ 85.00	\$ 2,040.00
Arc View/Cadd Operator	30	Hours	\$ 75.00	\$ 2,250.00
Other Direct Costs:				
Printing /Materials				
	Color Copies			
Color Copies 11x17"	20	each	\$ 2.00	\$ 40.00
Color Copies 8.5X11"	20	each	\$ 1.00	\$ 20.00
B&W Copies 8.5"X11"	50	each	\$ 0.10	\$ 5.00
24"x36" Color Plots	24	square feet	\$ 5.00	\$ 120.00
Travel Estimated	5	Days	\$ 96.00	\$ 480.00
Mileage	1400	Miles	\$ 0.56	\$ 784.00
Monitoring Plan				
Outside Services:				
Ecologist II	8	Hours	\$ 75.00	\$ 600.00
Arc View/Cadd Operator	8	Hours	\$ 75.00	\$ 600.00
Other Direct Costs:				
Color Copies 8.5X11"	2	each	\$ 1.00	\$ 2.00
B&W Copies 8.5"X11"	40	each	\$ 0.10	\$ 4.00
Subtotal				\$ 15,149.56
Administration: (5%)				\$ 757.48
Total for Task #2				\$ 15,907

Item	AWPF Funding Request			
	Item/Hours	Unit	Rate	Total
Task #3: Marsh Excavation and Leveling				
Outside Services:				
Civil Engineer	12	hours	\$ 100.00	\$ 1,200.00
Principal	12	hours	\$ 85.00	\$ 1,020.00
Wetland Excavation				
350 L Excavator	30	Hours	\$ 190.00	\$ 5,700.00
5 Yd Dump Trucks (2 trucks)	48	Hours	\$ 120.00	\$ 5,760.00
D6 H LGP Dozer	24	Hours	\$ 165.00	\$ 3,960.00
Earthwork and Laser Leveling 7 Acres				
Laser Equipment	16	Hours	\$ 15.00	\$ 240.00
623 Scraper	16	Hours	\$ 190.00	\$ 3,040.00
Water Truck Dust Control	40	Hours	\$ 140.00	\$ 5,600.00
Equipment Service	40	Hours	\$ 45.00	\$ 1,800.00
Ecologist II Oversight	24	Hours	\$ 75.00	\$ 1,800.00
Other Direct Costs:				
Principal Travel	1	Days	\$ 105.00	\$ 105.00
Mileage	700	Miles	\$ 0.56	\$ 392.00
Engineers Mileage	700	miles	\$ 0.56	\$ 392.00
Engineers Travel	1	days	\$ 105.00	\$ 105.00
Subtotal			\$	31,114.00
Administration: (5%)			\$	1,555.70
Total for Task #3			\$	32,670
Task #4: Revegetate 30.9 Acres of Native Habitat				
Construction Oversight of 30.9 Acre Revegetation				
Outside Services:				
Principal	12	Hours	\$ 85.00	\$ 1,020.00
Ecologist II	20	Hours	\$ 75.00	\$ 1,500.00
Other Direct Costs:				
Travel Estimated	2	Days	\$ 105.00	\$ 210.00
Mileage	700	Miles	\$ 0.56	\$ 392.00
Marsh and Mesquite Bosque Revegetation				
Outside Services:				
Marsh and 1 gallon Planting/Expand Irrigation System Labor (3 laborersx100 hrsx\$25/hr) (Foreman 100 hrs/wkx\$45/hr)	Lump		\$ 12,000.00	\$ 12,000.00
Capital Outlay:				
4" bulrush , three square and saltgrass plugs	3500	plugs	\$ 1.00	\$ 3,500.00
1 gallon honey mesquite, 4 winged saltbush , desert marigold and brittle bush plants	2050	Propagules	\$ 3.00	\$ 6,150.00
Seed Mix	20	LBS	\$ 40.00	\$ 800.00
Materials for Expanding/improving drip irrigation system	1		\$ 1,000.00	\$ 1,000.00
Glue, Gloves and Shovels	1		\$ 100.00	\$ 100.00
Other Direct Costs:				
Truck Rental	2.5	Weeks	\$ 300.00	\$ 750.00
Trailer rental	2.5	Days	\$ 75.00	\$ 187.50
Gator Rental	2.5	weeks	\$ 200.00	\$ 500.00
Subtotal			\$	28,109.50
Administration: (5%)			\$	1,405.48
Total for Task #4			\$	29,515

Item	AWPF Funding Request			
	Item/Hours	Unit	Rate	Total
Task #5: Two-Year Post Revegetation Monitoring				
Year One Plant Monitoring (2 sessions 1.5 days session)				
Outside Services:				
Ecologist II	24	Hours	\$ 75.00	\$ 1,800.00
Laborer	24	Hours	\$ 25.00	\$ 600.00
Plant Monitoring Report, FPC Ecologist II	30	Hours	\$ 75.00	\$ 2,250.00
Other Direct Costs:				
Truc Rental	1	week	\$ 300.00	\$ 225.00
Year Two Plant Monitoring (2 sessions In May and October)				
Outside Services:				
Ecologist II	24	Hours	\$ 75.00	\$ 1,800.00
Laborer	24	Hours	\$ 25.00	\$ 600.00
Plant Monitoring Report, FPC Ecologist II	30	Hours	\$ 75.00	\$ 2,250.00
Other Direct Costs:				
Truck Rental	1	week	\$ 300.00	\$ 150.00
Printing and Photomonitoring (for both years of reporting year one and two 10 copies of report each year)				
Fence Posts and Orange Fencing for Transects and Photo Points	8	Each	\$ 5.00	\$ 40.00
Fed EX	4	Each	\$ 20.00	\$ 80.00
Color Copies 11x17"	60	Each	\$ 2.00	\$ 120.00
Color Copies 8.5X11"	125	Each	\$ 1.00	\$ 125.00
B&W Copies 8.5"X11"	125	Each	\$ 0.10	\$ 12.50
Coil Binding	10	Each	\$ 5.25	\$ 52.50
24"x36" Color Plots	10	Square Feet	\$ 5.00	\$ 50.00
Subtotal				\$ 10,155.00
Administration: (5%)				\$ 507.75
Total for Task #5				\$ 10,663
Task #6 Overall Project Coordination				
Outside Services:				
Principal	55	Hours	\$ 90.00	\$ 4,950.00
Subtotal				\$ 4,950.00
Administration: (5%)				\$ 247.50
Total for Task #6				\$ 5,198
Task #7 Final Report				
Outside Services:				
Principal	10	Hours	\$ 85.00	\$ 850.00
Ecologist II	30	Hours	\$ 65.00	\$ 1,950.00
Principal Biologist	30	Hours	\$ 70.00	\$ 2,100.00
Editor	10	Hours	\$ 50.00	\$ 500.00
Other Direct Costs:				
Printing Materials Postage (4 copies of final report)				
Fed EX	1	Each	\$ 20.00	\$ 20.00
Color Copies 11x17"	10	Each	\$ 2.00	\$ 20.00
Color Copies 8.5X11"	45	Each	\$ 1.00	\$ 45.00
B&W Copies 8.5"X11"	150	Each	\$ 0.10	\$ 15.00
Coil Binding	2	Each	\$ 5.25	\$ 10.50
24"x36" Color Plots	6	Square Feet	\$ 5.00	\$ 30.00
Subtotal				\$ 5,540.50
Administration: (5%)				\$ 277.03
Total for Task #7				\$ 5,818
Total Grant Request				\$ 99,769

DETAILED MATCHING FUNDS
Yuma Crossing National Heritage Area

Yuma East Wetlands Marsh Creation and Mesquite Enhancement

<i>Item</i>	<i>AWPF Matching Funds</i>			
	<i>Item/Hours</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Task #1 Permits, Authorizations, Clearances and Agreements				
Total for Task #1				\$ -
Task #2 Prepare and Submit Restoration and Monitoring Plans				
Total for Task #2				\$ -
Task #3: Marsh Excavation and Leveling				
Total for Task #3				\$ -
Task #4: Revegetate 30.9 Acres of Native Habitat				
Two Year Site Weed/Irrigation/Month	20	Months	\$ 2,960	\$ 59,200
One month includes two maintenance people 20 hrs wkx2 wks/\$25/hr				
(Foreman 8 hrs/month @ \$45/hr) (Truck use \$300/week*2 weeks=\$600)				
Total for Task #4				\$ 59,200
Task #5: Two-Year Post Revegetation Monitoring				
Total for Task #5				\$ -
Task #6 Overall Project Coordination				
Total for Task #6				\$ -
Task #7 Final Report				
Total for Task #7				\$ -
Total Matching Funds				\$ 59,200

Key Personnel

The following pages include the resumes of the Yuma Crossing National Heritage Area Project Coordinator, consultants, and contractors that will be involved with this project.

CHARLES W. FLYNN
1966 West 13th Lane
Yuma, Arizona 85364

PROFESSIONAL EXPERIENCE

Executive Director **1999 – Present**
Riverfront Development & Yuma Crossing National Heritage Area
Yuma, Arizona

Manages and coordinates projected \$100 million Riverfront Development Project, including new park development, Wetlands Restoration and commercial revitalization. Coordinates with private sector development partner for planning and implementation of a 22-acre commercial development opportunity on the Riverfront. Coordinates planning and implementation of Yuma Crossing National Heritage Area with multiple partners, including two (2) Indian Nations. (See yumaheritage.com)

Executive Director **1994 - 1999**
Wheeling National Heritage Area Corporation
Wheeling, West Virginia

Responsible for planning and implementation of a \$25 million redevelopment project in downtown Wheeling, WV, an Ohio River Valley industrial city of 35,000. Projects included:

- *Wheeling Artisan Center* - Managed the reconstruction of an 1860's industrial building, now a multi-use facility with private micro-brewery/restaurant, retail craft center, and exhibition space.
- *Wheeling Intermodal Center* - Coordinated a multi-agency effort to construct a transit facility with parking for 850 cars and visitor center, with other private tenants including Greyhound.
- *Heritage Port* - Managed the demolition of a dilapidated parking structure and the construction of a new Riverfront Park and Port.

President and CEO **1981 - 1993**
Conneaut Lake Park
Conneaut Lake, Pennsylvania

Responsible for planning, development, marketing and operations of a 150-acre summer family resort with annual revenues of \$4 million. Facility expansion included hotel and nightclub renovation, campground development and installation of new water park. Aggressive marketing increased revenues by 50% from 1982 - 1988.

Deputy Commissioner, Finance, and Administration **1979-1981**
New York City Department of General Services
New York, New York

Responsible for overall financial management, personnel, and administration of \$300 million agency. Duties included crafting and implementing 10% cost reduction plan with the agency during fiscal crisis.

PROFESSIONAL EXPERIENCE (Continued)

Department of Housing Preservation and Development **1978-1979**
City of New York
New York, New York

Initially involved in the Mayoral transition for Honorable Edward Koch. Tasked to the department to assist in development of program manage “In Rem” tax-foreclosed residential and commercial property.

Legislative Assistant **1974 - 1977**
Congressman Edward Koch

Responsibilities included constituent services, legislative drafting, speech writing, and concentration on appropriations committee matters.

EDUCATION

Stanford University
B.A., M.A. History
1974

Three (3) week seminar for Senior Executives in State and Local Government

Harvard University, Kennedy School of Government
1980

PERSONAL

Married to Ann Walker, Attorney
Two Children: Brendan, 22; Adam, 19

Councilmember
City of Meadville, Pennsylvania
1984 - 1994

PROJECT DESIGN AND CONSTRUCTION CONSULTANTS

Fred Phillips Consulting, LLC (FPC) is a Landscape Architecture/Ecosystem Restoration based small business in Flagstaff, Arizona. Fred Phillips established Phillips Consulting in 1998, and now has over 14 years experience in landscape architecture, ecosystem restoration, natural resources planning, restoration ecology, GIS Mapping, site analysis and soil surveying. Our projects include multidisciplinary wetland/aquatic/riparian restoration, commercial and residential landscape design, natural resource planning, and fundraising/eco-business development projects for Native American Tribes, non-profit organizations, federal and state agencies, and private individuals. We strive to accomplish the wise planning, restoration and development of the natural landscapes and ecosystems of the western United States and beyond. FPC also teams with a diverse group of highly qualified engineers and other specialists giving us the ability to implement any type of project.

Project Experience

WETLAND RESTORATION & NATIVE PLANT REVEGETATION

Yuma East Wetlands Restoration Project

Quechan Indian Tribe & City of Yuma, AZ

- Developed restoration plan for 1,400 acre Yuma East Wetlands riparian and wetland restoration, habitat enhancement and agricultural conversion, including restoration detail designs.
- Conducted design, site analysis, engineering, biological monitoring and construction management of over 350 acres of restoration projects.
- Conducted wetland delineation, endangered species surveys, and project construction management; applied for and obtained environmental compliance permits.
- Conducted design, site analysis, engineering, biological monitoring and construction management of over 350 acres of restoration projects.
- Excavated a mile long backwater channel and restored topography of native wetlands.

'Ahakhav Tribal Preserve

Colorado River Indian Tribes, Parker, AZ

- Designed and implemented 5 acres of park facilities, 300 acres of native riparian plant restoration, 500 acres of aquatic/ wetland restoration and protection, ecological monitoring, 3.5 mile trail system and an environmental education program.
- Administrated all construction and restoration operations, personnel management and an annual budget of over \$1.5 million for 5 years.
- Designed, obtained funding for, and established 'Ahakhav native plant nursery that currently grows and sells over 40,000 native plants annually.

Yuma West Wetlands Revegetation Project

City of Yuma, AZ

- Contracted to perform site analysis, design, construction management and monitoring of 50 acre native riparian revegetation project along the Colorado River.
- Fabricated and implemented mitigation plans and compliance for USCOE violations on riverfront project.

Las Vegas Wash Master Revegetation Project

City of Las Vegas/Clark County/Southern Nevada Water Authority

- Developed 200 acre 'Revegetation Master Plan for Las Vegas Wash'.
- Developed revegetation construction documents for three riparian and wetland restoration projects, including over 90 acres of the Las Vegas Wash Revegetation Project.

Glen Canyon Riparian Restoration Project

Glen Canyon National Recreation Area, AZ

- Completed revegetation design, implemented construction and biological monitoring for a 16-acre riparian restoration project at Lees Ferry, AZ in partnership with Grand Canyon Wildlands Council.
- Developed a revegetation master plan for the entire Colorado River corridor within the Glen Canyon National Recreation Area, a 15-mile reach from Glen Canyon Dam to Lees Ferry, in coordination with Grand Canyon Wildlands Council.

The Limitrophe Restoration Plan

Environmental Defense

- Developed restoration master plan for 25 miles of Colorado River corridor in the Limitrophe District, including existing data research, stakeholder consensus building, and grant writing for the pilot project

Multi-Species Conservation Plan Conservation Opportunity Area Plans

Bureau of Reclamation

- Served as Tribal liaison between federal agencies and other stakeholders in relation to the Multi-Species Conservation Plan.
- Developed riparian restoration plans for the Quechan, Hualapai, Cocopah, Chemehuevi, Quechan and Ft Mojave Indian Tribes.

George F. Cathey, P.E.

Civil Engineer/Owner

Oxbow Ecological Engineering, LLC

3080 S. Walkup Drive

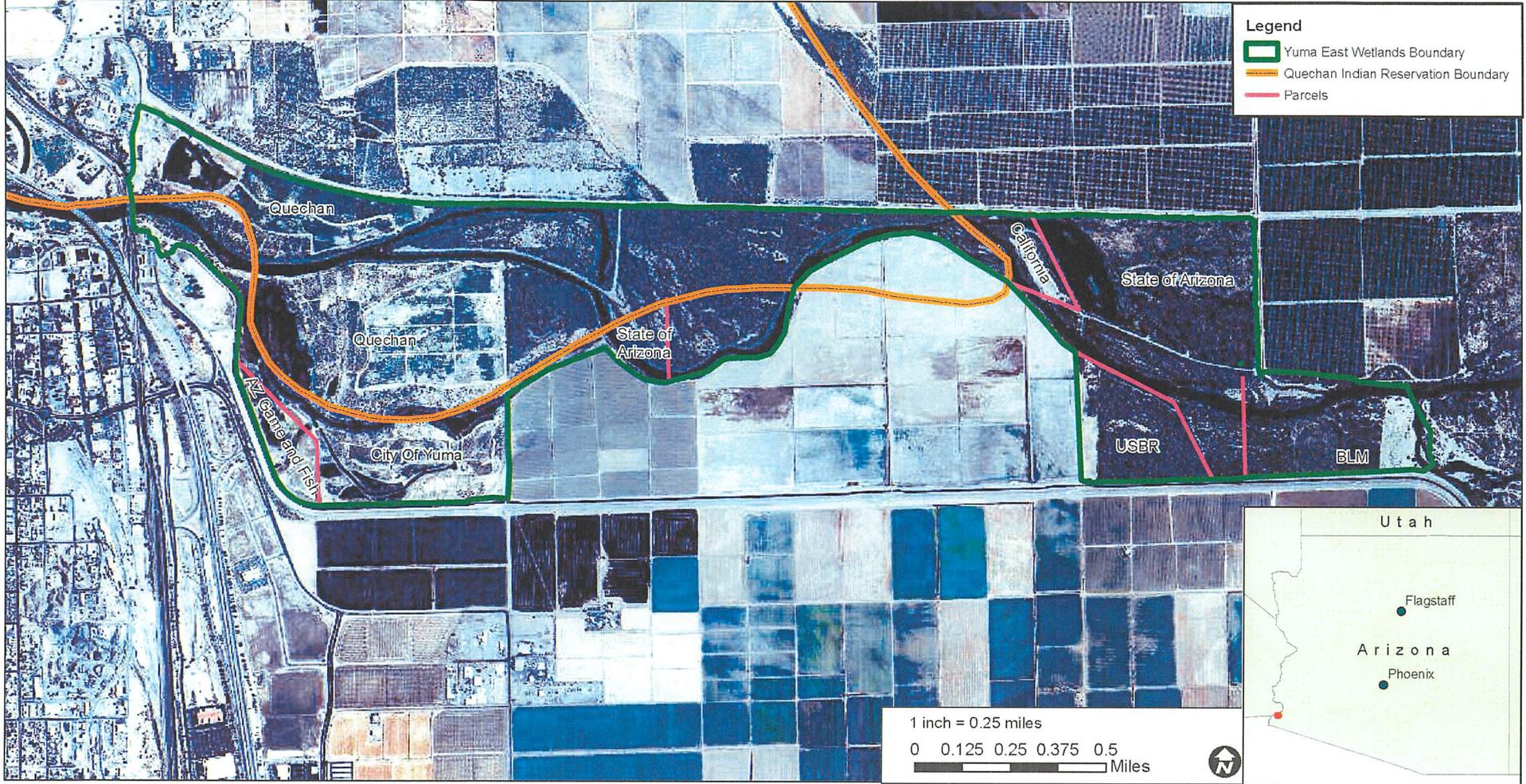
Flagstaff, AZ 86001

(928) 266-6192

george@oxbow-eco-eng.com

Oxbow Ecological Engineering, LLC is an engineering consulting firm that specializes in restoring, enhancing, and conserving river, riparian, wetland, and wildland systems. Oxbow Ecological Engineering, LLC applies a comprehensive approach to assessment, analysis, design, and planning, and integrates civil engineering and ecological principles to create unique restoration and enhancement solutions. Oxbow Ecological Engineering, LLC has the experience and capabilities to guide your habitat restoration project from concept to completion, offering a comprehensive set of services to help scope, survey, plan, design, permit, and administer your project.

George is the owner of Oxbow Ecological Engineering, LLC and is a civil engineer licensed in California, Arizona, New Mexico, and Texas. He has nearly ten years of experience working as an ecological engineering specialist, and has expertise in surveying, designing, bidding, and administering construction activities on large-scale wetland and riparian restoration projects. He has significant experience working with interdisciplinary teams of ecologists, riparian specialists, geomorphologists, landscape designer/architects and other engineers to develop and guide projects. Working with Fred Phillips Consulting, LLC, George recently completed the design/construction packages for all earthwork, water control structures, and water delivery systems associated with the restoration projects at the Laguna Division Conservation Area, Hunter's Hole Conservation Area, and Yuma East Wetlands (Arizona Game & Fish Parcel). He received a B.S. and M.S. in Civil Engineering from the University of New Mexico in 2000 and 2002, respectively. He has completed Levels I, II, III, & IV of David Rosgen's Wildland Hydrology Short Courses. George is proficient with AutoCAD Civil 3D, VisualAnalysis FEA Structural Software, HEC-RAS/RiverCAD, and Trimble Real Time Kinematic (RTK) Survey Grade GPS Systems.



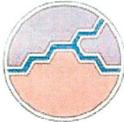
YEW Marsh Creation and Mesquite Bosque Enhancement

Yuma, AZ
Date: 8/22/2013



Prepared By:
Fred Phillips Consulting, LLC

Figure 1
Location Map





Legend

-  Yuma East Wetlands
-  2013AWPF_area

**Yuma East Wetlands
Marsh Enhancement
30.9 Acres**

**Phase II
South Channel**

**Phase II
South Channel**

**Proposed
City of Yuma Park**

1 inch = 1,000 feet
0 500 1,000 1,500 2,000 Feet



Yuma, AZ

Date: 8/21/2013

YEW Marsh Creation and Mesquite Bosque Enhancement



Prepared by:
Fred Phillips Consulting, LLC

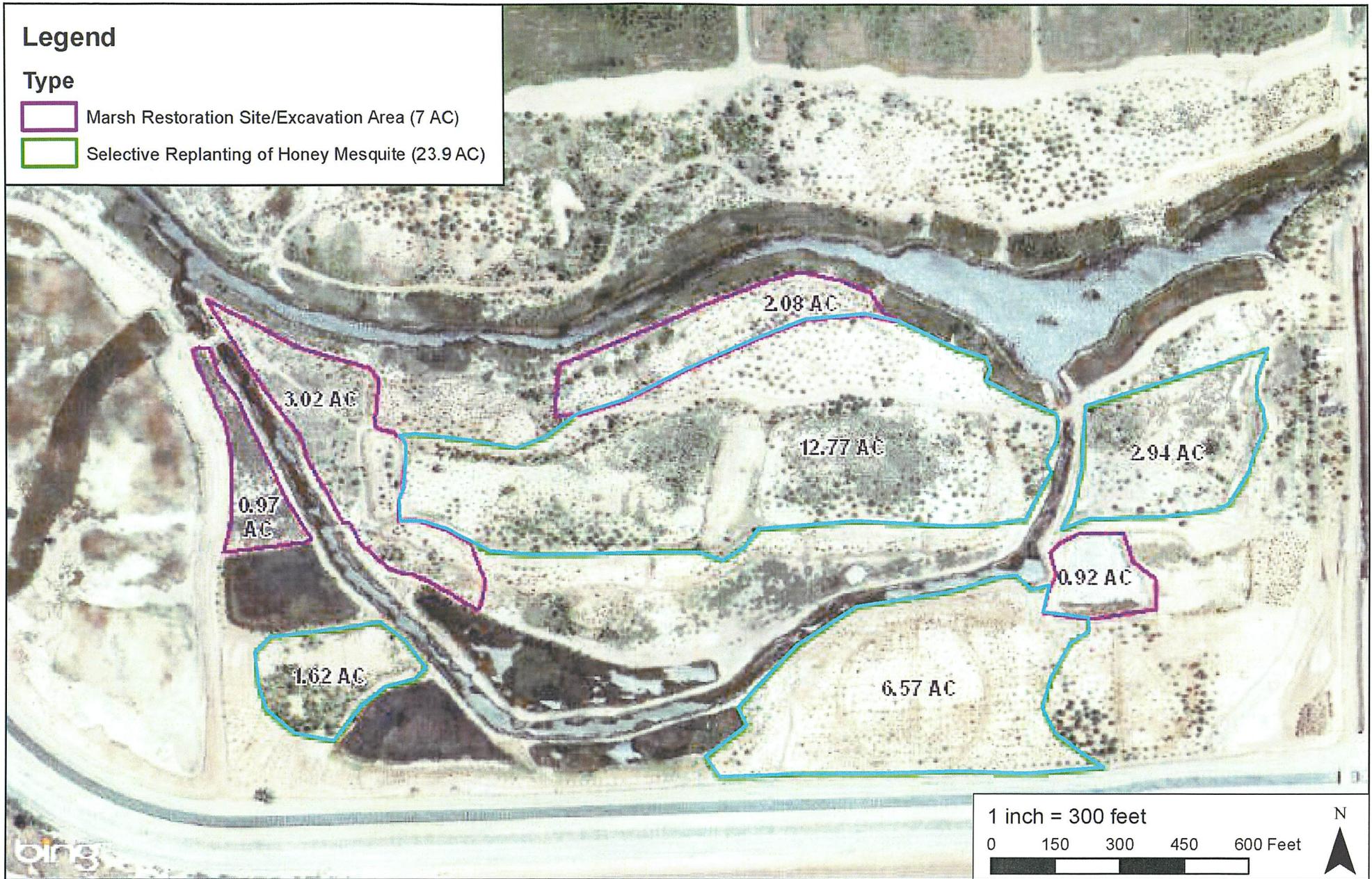
**Figure 2
Project Area**



Legend

Type

-  Marsh Restoration Site/Excavation Area (7 AC)
-  Selective Replanting of Honey Mesquite (23.9 AC)



Yuma, AZ

YEW Marsh Creation and Mesquite Bosque Enhancement

Date: 8/19/2013



Prepared by:
Fred Phillips Consulting, LLC

Figure 3
Project Schematic



Figure 4. Yuma East Wetlands Marsh Creation and Mesquite Bosque Enhancement

Site Photographs



Looking east at degraded habitat that is proposed for marsh excavation and creation with AWPf funding.



Picture of the dead screwbean mesquite that will be replaced with honey mesquite and native shrubs.



East end of degraded mesquite bosque. Dead mesquite trees will be re-planted with honey mesquite and native shrubs.



Degraded mesquite habitat that is proposed for enhancement. Dead mesquite trees will be re-planted with honey mesquite and native shrubs.

Revegetation and Monitoring Plans

The following are the sampling, revegetation, monitoring and photo point plans for this 30.9-acre marsh creation and mesquite bosque enhancement project.

MARSH EXCAVATION PLAN

The grantee will excavate 7 acres of marsh using an amphibious excavator, a low-track bulldozer, dump truck and land-grading equipment. The marsh cells will be lowered by excavating down to the average water level of the adjacent tributary channels. These areas will be excavated to maintain 3-12 inches deep water to provide wetland conditions and flood irrigation from the adjacent tributary channel. The flow into the marsh cells will be dictated by the Phase I and II South Channel and main stem Colorado River fluctuations. The wetland cell bank line slope will be graded to a 2:1 slope. This new topographic configuration will diversify habitats for terrestrial and aquatic wildlife. Prior to implementation, the excavator will be provided a schematic drawing of the desired excavation. During construction the contractor will work with the grantee to make design revisions as needed in the field, any changes in design will be submitted to the AWPf for comment and approval. When wetland cell construction is completed the grantee will provide the AWPf with an as built map of the created, channel and wetland cells that is signed off by a certified engineer. Valuable native habitat (cattail/bulrush, cottonwood/ willow/mesquite) will be avoided during excavation.

Spoils Placement

Materials will be placed on areas that contain no vegetation, areas that contain old spoil piles, and areas that have low value as wildlife habit (poor habitat includes low-stature, dense, salt cedar; high-density giant cane; dead stands of trees; and/or arrowweed stands). The spoils from this project will be placed on the future site of the City of Yuma Park location near the 2E drain (Figure 2). The park location is raised higher than the surrounding planted vegetation, and additional material will help to further stabilize the area. Spoils will be excavated from the wetland cells and transported to the park site using dump trucks. These trucks will use existing maintenance roads to access the excavation and dumping sites. Water flowing from this area will be directed onto the adjacent riparian habitat, where it can increase soil moisture and promote the natural regeneration of native vegetation. This design largely eliminates turbid inflow from the park site to the Phase I and II South Channels and main stem river.

MINIMAL IRRIGATION

The created 7 acre lowered wetland habitat will be irrigated through flood irrigation by from the water level in the Phase I and II South Channels. The wetland cells will be excavated to the average water level of the tributary channels to insure the presence of water. The flow into these cells will be dictated by the tributary channel fluctuations. This remaining 23.9 acre mesquite bosque enhancement site has existing irrigation infrastructure already in place that will be used for this project. Additional, but minimal, irrigation infrastructure will be necessary to irrigate additional planted shrub and herbaceous vegetation. In order to irrigate these additional species, new tubing and emitters will be necessary to tap into the existing mainlines. Irrigation will occur 10 days a month for 6 months (July-Sept) and 4 days a month (Oct-March) until the end of the first growing season. The second growing season the trees will be irrigated for 4 additional

months 8 days a month (April-July). The City of Yuma has agreed to use their water allocation to provide irrigation for this project (see the Letter of Support from the City of Yuma).

30.9-ACRE REVEGETATION PROJECT PLAN

The restored area will feature additional marsh habitat and a diversity of riparian, salt tolerant species, which will provide continuous vital native habitat. The result will be wetlands and mesquite bosque habitats that will be more functional and attractive to birds and wildlife.

Revegetation Construction Activities

This project will involve a total of 30.9 acres of native plant revegetation, including 7-acres of created lowered wetland habitat and 23.9-acres of enhanced mesquite bosque habitat. Marsh areas that are less than three inches deep will be planted with plugs of Olney's threesquare to provide habitat for California Black Rail and other marsh species. Marsh areas that are greater than 3 inches to one foot will be planted with plugs of giant bulrush to provide habitat for Yuma Clapper Rail, Least Bittern, and other marsh species. The bank line of the marsh habitat will be planted with plugs of salt tolerant inland saltgrass. The perimeter of the marsh cells will be planted with gallon pots of four-wing saltbush and pickleweed. All plants planted along the perimeter of the marsh cells will be planted down to the lowest water table of the year so no additional irrigation will be necessary. Any existing native vegetation will be retained, including bank line vegetation. Existing bank line vegetation will be retained as islands in the proposed marsh habitats.

The 23.9 acre mesquite bosque enhancement area will be planted with gallon pots of honey mesquite, four-wing saltbush, brittlebush and desert marigold. Additionally, 20 pounds of alkali sacaton seed will be broadcast sprayed to provide an understory layer for the mesquite bosque. The planted vegetation will be drip irrigated with existing irrigation infrastructure. The drip irrigation is currently receiving water from pumps that draw water from the Phase I and II backwater channels.

Planting

The following native plant species will be used in the revegetation project

- Honey mesquite (*Prosopis glandulosa*)
- Four-wing saltbush (*Atriplex canescens*)
- Alkali bulrush (*Schoenoplectus maritimus*)
- Olney three-square bulrush (*Schoenoplectus americanus*)
- Giant bulrush (*Schoenoplectus californicus*)
- Inland saltgrass (*Distichulus Spicata*)
- Pickleweed (*Salicornia* sp.)
- Brittlebush (*Encelia farinose*)
- Desert marigold (*Baileya multiradiata*)
- Alkali sacaton (*Sporobolus airoides*)
- Other suitable native riparian and wetland species

The final planting design will determine the density and location of these species within the site. Wetland species will primarily be planted by seed and plugs from local native stock and purchased from a nursery local to the region. The planting density of the wetland species will be determined in the final planting design. In the mesquite bosque area, approximately 2100 trees and shrubs will be planted on site, including 1,550 honey mesquite trees and 500 four-wing saltbush, brittlebush and desert marigold. Tubex tree shelters will be placed around all of the honey mesquite plants to prevent mammal browsing. The other species will not be protected. The area will be hand-weeded during native vegetation establishment to limit the encroachment of tamarisk and giant cane, thereby enhancing the natural recruitment of native grasses and forbs. Planting activities also include hand-broadcasting seeds of alkali sacaton (*Sporobolus airoides*) to promote under-story development in the enhancement area.

Weeding

When planting is complete the grantee will conduct regular maintenance of the revegetation site for two years. Maintenance activities will be conducted during the growing season and will include: maintaining the irrigation system, removing exotic weeds, and re-planting vegetation in the case of mortality. By the end of the first growing season, the plantings should be well established for long-term self-sustainability. Weeding will be paid for as part of the match for this grant.

MONITORING STRATEGY AND SUCCESS CRITERIA

In addition to providing information about the success of this project, this monitoring plan will help test the methods proposed for the remaining actions.

Vegetation Monitoring

The primary purpose of monitoring vegetation to determine if vegetation is establishing and thriving, if conditions are suitable for the vegetation planted, document the success of the project, and help guide future revegetation efforts. Monitoring will occur two times during the first two growing seasons (May to October). Both quantitative and qualitative techniques will be used to monitor vegetation growth at the site. Transects will be established at the site to measure quantitative growth parameters for tree and shrub vegetation species in the mesquite bosque enhancement. Transects will include all tree/shrub species that are present on the site and will be selected randomly using the following method:

1. A computer will be used to generate one random number within each acre of the site. The random number will correspond to a planting hole on the overall planting design for the area.
2. Vegetation transects will be assigned to random planting holes. These transects will include the randomly selected planting hole plus the consecutive holes that correspond to each plant species until all species planted on site are accounted for.

For tree and shrub species, including mesquite, four-wing saltbush, and brittlebush the following parameters will be measured:

- Tree height (ft) – From base of the trunk to the top of the tallest up-stretched leaf.
- Tree condition – Dead- healthy

- Factors affecting growth (i.e. insect/mammal browsing, high salinities, etc.)
- Percent survival rate – Dead verses alive.

Qualitative data-collection methods for vegetation will include photo point monitoring. Photo monitoring will occur for the entire project site, and will be the only method monitoring the planting success of the marsh cells. The Design Team will establish a minimum of five such locations on the revegetation site. Photo monitoring will be conducted using AWPf methods and guidelines.

Success Criteria

Productive native habitat development is the primary criterion that measures project success. The following table specifies success criteria for vegetation, criteria that the Design Team will use to assess the success of this revegetation project in relation to pre-treatment conditions.

Success Criteria for Native Vegetation Species in the Revegetation Project

Species	5-year goal		10-year Goal	
	Percent Survival	Height (inches)	Percent Survival	Height (inches)
Fremont Cottonwood	80-100	200-300	60-90	240-360
Gooding Willow	80-100	200-265	60-75	220-300
Sandbar Willow	75-80	135-265	60-80	140-280
Mesquite (Screwbean, Honey)	75-80	135-265	60-80	140-280
Four-Wing Saltbush	60-80	24-60	50-80	24-72

Certain site features may influence data collection: insect damage, browsing, soil erosion and drift, and “edge effects,” including vandalism. Insect damage, browsing, and edge effects will be noted through the monitoring period. Baseline conditions for vegetation are documented in the Phase II South Channel and the HA AWPf monitoring reports. This data provides information that is required to assess whether the project objectives are being met. The Design Team can use it to compare survival and growth rates to soil salinity, depth-to-water, and plant health. Plant health is a function of growth rate, survival, extent of insect damage or browsing, weed encroachment, and regeneration.

Existing Plans/Reports/Information

The Yuma East Wetlands Project Team has been actively planning, designing, permitting, building partnership and initiating restoration efforts for this important restoration project over the last ten years. Phases I and II of the Yuma East Wetlands Restoration Plan has been completed with 350 acres of riparian, wetland, aquatic, and upland restoration efforts completed. Various funders have contributed to restore the Yuma East Wetland's habitats, including: Yuma Crossing National Heritage Area (YCNHA), Quechan Indian Tribe (Quechan), City of Yuma (COY), U.S. Bureau of Reclamation (BOR), Environmental Protection Agency (EPA), National Fish and Wildlife Foundation (NFWF), Sonoran Joint Venture (SJV), U.S. Fish and Wildlife Service (USFWS), and Arizona Game and Fish Department (AZGFD). These efforts have been completed by various land owners and entities and have been very successful to date. In order to initiate these on-the-ground restoration projects, the following plans, reports, and studies were completed for the entire Yuma East Wetlands Site (attached CD):

- a. Yuma East Wetlands Restoration Plan
- b. The Biological Evaluation
- c. Yuma East Wetlands HEC RAZ Final Report
- d. Yuma East Wetlands USCOE Wetland Delineation
- e. Archaeological Impacts Study
- f. YEW Soils, Vegetation and Salinity Report
- g. Quality Assurance Plan
- h. Multi-Species Conservation Program's Operations and Maintenance Contract

Community Support

The following pages are resolutions and letters of support for the 30.9-acre restoration and revegetation project in the Yuma East Wetlands, Yuma, AZ.



United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Regional Office
P.O. Box 61470
Boulder City, NV 89006-1470

IN REPLY REFER TO:

LC-8000
ENV-7.00

AUG 27 2013

VIA ELECTRONIC MAIL ONLY

Mr. Charles Flynn
Executive Director
Yuma Crossing National Heritage Area Corporation
180 W. First Street, Suite E
Yuma, AZ 85364-1407

Subject: Arizona Water Protection Fund (AWPF) Grant Proposal FY2014: Yuma East Wetlands
Marsh Creation and Mesquite Enhancement

Dear Mr. Flynn:

The Bureau of Reclamation's Lower Colorado River Multi-Species Conservation Program is writing to express our support in pursuing the AWPF's grant for Marsh Creation and Mesquite Enhancement. This project helps rehabilitate a degraded portion of the Yuma East Wetlands and will aide in reducing long-term management costs. The enhancement will provide critical wildlife habitat for native species of the Colorado River. The Yuma Crossing National Heritage Area continues to provide leadership and continued coordination amongst all stakeholders.

Our office has reviewed the AWPF Grant Proposal and is confident that the work will positively benefit the wildlife habitat and the local community. We look forward to the continued planning, implementation, and monitoring of the Proposal.

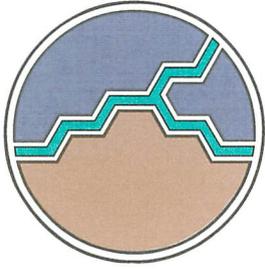
Sincerely,

 John Swett
Program Manager
Lower Colorado River
Multi-Species Conservation Program

RECEIVED

AUG 27 2013

Water Protection Fund



City of YUMA

CITY ADMINISTRATION

One City Plaza
Yuma, AZ 85364
928-373-5011 (phone)
928-373-5012 (fax)

August 22, 2013

Mr. Rodney Held
Executive Director
Arizona Water Protection Fund
Arizona Department of Water Resources
3550 North Central Avenue
Phoenix, Arizona 85012

Dear Mr. Held:

On behalf of the City of Yuma, I am writing to express my support for the Yuma Crossing National Heritage Area's AWPf application, entitled *Yuma East Wetlands Marsh Enhancement Program*.

These proposed improvements will take place on City-owned land in the East Wetlands. My understanding is that the soil salinity in this section of the East Wetlands has historically been high and resistant to our efforts to plant cottonwoods, willows, and even mesquites. On the other hand, in adjacent areas, we have excavated the soil and connected the sloughs with other back channels—creating very healthy marsh. Based on this success, we want to replicate those efforts in this grant.

The City strongly supports this grant application, as it will continue our common efforts to restore the riverfront. I am sure you are aware of the historic agreement reached recently with the MSCP to ensure long-term maintenance of the Yuma East Wetlands. The City remains committed to this program, and hope to continue to improve the habitat in the East Wetlands.

Sincerely,

Gregory K. Wilkinson
City Administrator



THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT

5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

REGION IV, 9140 E. 28TH ST., YUMA, AZ 85365

GOVERNOR

JANICE K. BREWER

COMMISSIONERS

CHAIRMAN, J.W. HARRIS, TUCSON

ROBERT E. MANSELL, WINSLOW

KURT R. DAVIS, PHOENIX

EDWARD "PAT" MADDEN, FLAGSTAFF

DIRECTOR

LARRY D. VOYLES

DEPUTY DIRECTOR

TY E. GRAY



August 22, 2013

Rodney Held
Executive Director
Arizona Water Protection Fund
Arizona Department of Water Resources
3550 North Central Avenue
Phoenix, Arizona 85012

Dear Mr. Held:

I am writing to express my support for the Yuma Crossing National Heritage Area's AWP application, entitled *Yuma East Wetlands Marsh Enhancement Program*.

As you may know, the Arizona Game and Fish Department owns 21 acres of restored marsh in the Yuma East Wetlands and is a partner in the MSCP long-term maintenance program. I am told that this grant application will take highly saline soil (adjacent to our site) which is not productive and create more marshlands.

I simply want to share our experience with our lands. Prior to restoration, we faced the same salinity issues. The only solution was to excavate and create new marsh habitat. We have been well satisfied with the results, both in terms of habitat health and bird diversity.

We believe that, if undertaken, this restoration project will further enhance the overall habitat in the Yuma East Wetlands, which is already a vast improvement from a decade ago.

Sincerely,

Samuel P. Barber
Yuma Regional Supervisor
Arizona Game and Fish Department



United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85364

IN REPLY REFER TO:
YAO-7210
ENV-4.00

AUG 27 2013

Mr. Charles Flynn
Yuma Crossing National Heritage Area
180 West 1st Street, Suite E
Yuma, AZ 85364

Subject: Marsh Creation and Mesquite Bosque Enhancement Project – Arizona Water Protection Fund (AWPF) Grant Proposal – Yuma East Wetlands Project Area

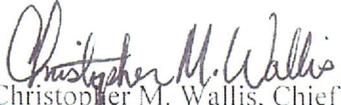
Dear Mr. Flynn:

The Bureau of Reclamation has reviewed the subject grant proposal by the Yuma Crossing National Heritage Area. Proposed project will create seven-acres of marsh habitat, enhance 23.9-acres of mesquite bosque habitat, and monitor project success within the Yuma East Wetlands project area in Yuma, Arizona.

As a stakeholder in the project area, Reclamation supports the ongoing efforts to restore riparian and wetlands habitats in the Yuma East Wetland project area for the purposes of providing habitat for fish and wildlife species. Without this project, native riparian and wetland habitats would be lost to less productive terrestrial areas dominated by exotic species such as salt cedar.

In summary, Reclamation believes the proposed restoration work will benefit wildlife species, including endangered species and many migratory birds associated with wetland and riparian communities along the lower Colorado River. Any questions please contact Mr. Julian DeSantiago, Acting Environmental Planning and Compliance Group Manager, at 928-343-8259 or jdesantiago@usbr.gov.

Sincerely,


Christopher M. Wallis, Chief
Resource Management Office

cc: Ms. Heidi Trathnigg
Fred Phillips Consulting, LLC
401 South Leroux Street
Flagstaff, AZ 86001

Evidence of Control and Tenure of Land

The applicant must have legal and physical access and authority to manage the area where grant tasks are to be performed and the area to be benefited by the grant. Cooperative agreements with all parties having such access and authority, or letters of support with a plan to obtain cooperative agreements prior to grant award shall meet this requirement.

- **If you do not own or manage the land on which the proposed project is located,** attach documentation verifying ownership (as noted above) and attach a copy of the permit, agreement or letter of intent that allows you access to the site.

RETURN

ZONING INFORMATION

ZONING	CONDITIONAL	CASE NUM	OVERLAY	ACRES
AG				53.663

LAND USE INFORMATION

LAND USE
PUBLIC USE

ZONING AND CUP ACTIONS

REZONE	YEAR	CUP

ANNEXATION INFO

ORDINANCE	DATE
CITY CHARTER	01/12/15

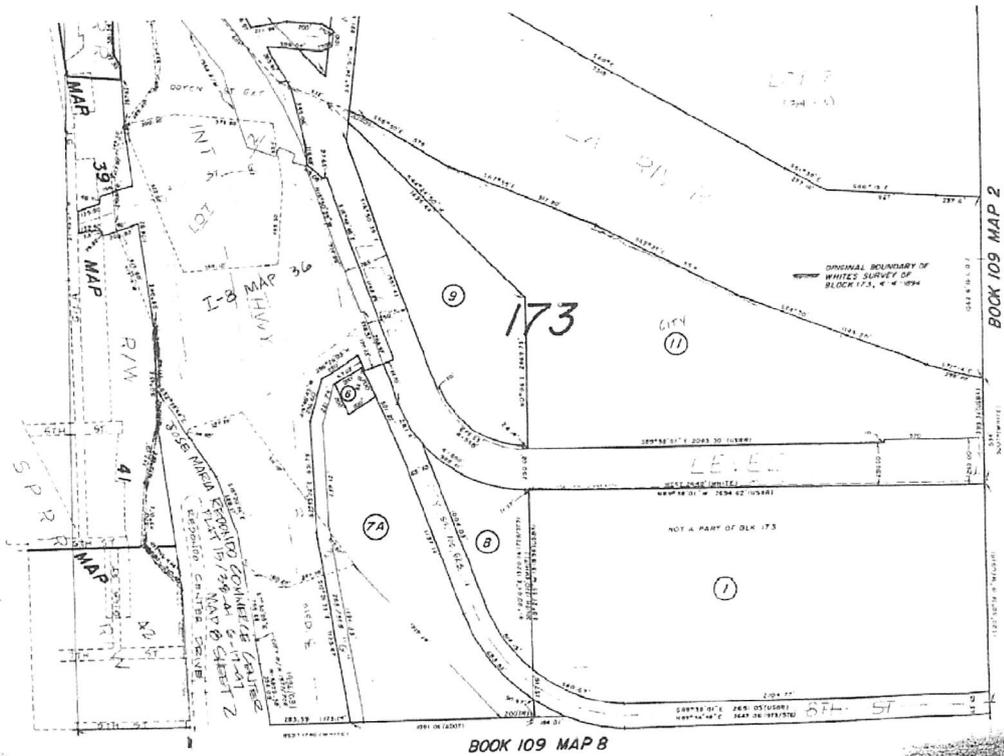
RETURN

ASSESSOR'S INFORMATION		
Parcel Location		
Parcel Number:	110-36-011	
Inside City of Yuuna:	Yes Click HERE for more info.	
Site Address:		
Ownership		
Owner 1:	YUMA CITY OF	
Owner 2:	ENGINEERING DIVISION	
Owner Address:	155 W 14TH ST	
City, State, Zip:	YUMA	AZ 85364
Financial Data	Full Cash Value	Assessed Value
Land:	\$8874	\$0
Improvements:	\$0	\$0
Total:	\$8874	\$0
Legal Description:		
SECT,TWN,RNG:22-08S-23W DESC: PT BEG S4 COR TH N1320FT TO TRUE POB TH N 1149.75FT M/L NWLY 1625.54FT SELY ALONG S BOUNDARY OF		

RETURN

BOOK 110

PAGE 36



RESOLUTION NO. R2001-53

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF YUMA, ARIZONA, SUPPORTING THE EAST WETLANDS RESTORATION PLAN AND AUTHORIZING THE PROJECT PARTNERSHIP TO SEEK FUNDING FOR THE DESIGN, CONSTRUCTION, AND OPERATIONS AND MAINTENANCE OF THE EAST WETLANDS.

WHEREAS the Colorado River has historically been the center of life for all people who live along its banks, the restoration of this vital ecosystem has become increasingly important. The River has made agriculture possible, provided food for the community and the nation. Traditionally the River produced food that included fish, wildlife, and plants in the riparian areas. The Quechan Tribe used willow trees in basket making, and the straight stems of arrowweeds for arrows; and,

WHEREAS, the Yuma East Wetlands is one of the few remaining areas along the Colorado River that fosters abundant and valuable wildlife habitat. This area supports an array of plant and wildlife species, including the endangered southwest willow flycatcher and the Yuma clapper rail; and,

WHEREAS, the Yuma East Wetland's ecosystem and the community's cultural heritage will be enhanced through the re-vegetation of native stands and bosques of mesquite, willow, and cottonwood trees;

WHEREAS, many wildlife populations will be benefited through increase of natural habitat; and,

WHEREAS, the Yuma East Wetlands Restoration Plan seeks to reestablish the vitality of this fragile ecosystem in balance with the community need for environmental education, passive recreation, and economic development through thoughtful enhancement of eco-tourism opportunities; and,

WHEREAS, the Yuma East Wetlands Restoration Plan addresses the concerns of the agricultural community and respects current farming practices.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Yuma, Arizona, as follows:

SECTION 1: The City of Yuma supports and approves the Yuma East Wetlands Restoration Plan.

SECTION 2: The Project Planning Team (Phillips Consulting, their subcontractors, project planners and CIP managers of the City of Yuma, and Yuma Crossing National Heritage Area Design Team and Board Members) are granted access to those municipal

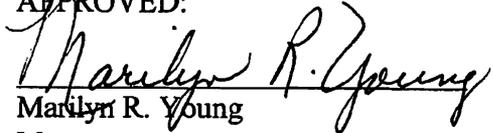
lands included in the plan for the purposes of data collection, surveying, engineering, architectural services, and approved construction.

SECTION 3: The Project Partnership (the Quechan Indian Tribe, City of Yuma, the Yuma Crossing National Heritage Area, and other interested stakeholders) is authorized to seek funding for the implementation of the plan, including applying for grants and donations for design, architectural services, engineering, construction, and operations and maintenance of the Yuma East Wetlands.

SECTION 4: The City Administrator, or the Administrator's Designee, is authorized to execute any and all documents necessary to implement this action.

Passed and adopted this 15th day of August, 2001.

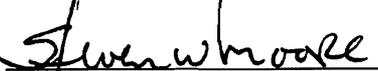
APPROVED:


Marilyn R. Young
Mayor

ATTESTED:

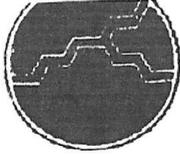

Brigitta K. Stanz
City Clerk

APPROVED AS TO FORM:


Steven W. Moore
City Attorney

Evidence of Physical and Legal Availability of Water

If water will be used in the project the water must be physically and legally available to the applicant for the proposed purpose. The marsh habitat is projected to require 105 acre feet/year of flood irrigation and the mesquite enhancement is projected to require 9.2 acre feet/year of drip irrigation. This is a total of 114.2 acre feet/year of water for the entire project. The City of Yuma also currently supports this proposed project and is providing their water allocation to irrigate this project.



City of YUMA

June 16, 2003

**Marjorie Blaine
Regulatory Agent
United States Army Corp. of Engineers
5205 E. Comanche Street
Tucson, Arizona 85707**

Dear Ms. Blaine:

This letter is to confirm the fact that the City of Yuma has a contract with the Secretary of Interior dated the twelfth day of November, 1959, providing for the City to have an allocation of 50,000 acre feet of Colorado River water annually. The contract number is 14-06-W-106.

Should you have any questions, please do not hesitate to contact me at 928-373-4500.

Sincerely,

Roger Gingrich

**Asst. Director, Dept of Public Works
City of Yuma**

RG/lc