

# Arizona Water Protection Fund FY 2011 Grant Application Review

Application # WPF0388 Applicant: Yuma Crossing National Heritage Area

Title of Project: Avifaunal and Butterfly (Lepidoptera) Recovery in Restored  
Wetland and Riparian Habitats

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, 2<sup>nd</sup> Floor, Phoenix). The additional materials available are the following:

Maps  
 Photographs  
 Disk  
 Other

WPFO388

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AUG 30 2010

**Arizona Water Protection Fund  
Application Cover Page  
FY 2011**

**Water Protection Fund**

<b>Title of Project:</b> Avifaunal and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats											
<b>Type of Project:</b> <input type="checkbox"/> Capital or Other <input type="checkbox"/> Water Conservation <input checked="" type="checkbox"/> Research	<b>Stream Type:</b> <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral										
<b>Your level of commitment to maintenance of project benefits and capital improvements:</b> <input type="checkbox"/> < 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> 11-15 years <input checked="" type="checkbox"/> 16-20 years											
<b>Applicant Information:</b> Name/Organization: Yuma Crossing National Heritage Area Address 1: 180 West 1 <sup>st</sup> St., Suite E Address 2: City: Yuma State: Arizona ZIP Code: 85364-1407 Phone: 928-373-5192 Fax: 928-373-5191 Tax ID No.: <span style="background-color: black; color: black;">XXXXXXXXXX</span>											
<b>Inside an AMA:</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <b>If yes, which AMA:</b> <input type="checkbox"/> Phoenix <input type="checkbox"/> Tucson <input type="checkbox"/> Prescott <input type="checkbox"/> Pinal <input type="checkbox"/> Santa Cruz											
<b>Type of Application:</b> <input type="checkbox"/> New <input checked="" type="checkbox"/> Continuation											
<b>Contact Person:</b> Name: Charles W. Flynn Title: Executive Director Phone: 928-373-5192 Fax: 928-373-5191 e-mail: Charles.Flynn@YumaAZ.gov											
<b>Any Previous AWPB Grants:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>If yes, please provide Grant #(s):</b> 08-153WPF, 07-147WPF											
<b>Arizona Water Protection Fund Grant Amount Requested:</b>  \$100,758.00  If the application is funded, will the Grantee intend to request an advance: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Matching Funds Obtained and Secured:</b> <table border="1"> <thead> <tr> <th><u>Applicant/Agency/Organization:</u></th> <th><u>Amount (\$):</u></th> </tr> </thead> <tbody> <tr> <td>1. Applicant</td> <td>\$65,170.00</td> </tr> <tr> <td>2.</td> <td></td> </tr> <tr> <td>3.</td> <td></td> </tr> <tr> <td align="right" colspan="2"><b>Total: \$65,170.00</b></td> </tr> </tbody> </table>	<u>Applicant/Agency/Organization:</u>	<u>Amount (\$):</u>	1. Applicant	\$65,170.00	2.		3.		<b>Total: \$65,170.00</b>	
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1. Applicant	\$65,170.00										
2.											
3.											
<b>Total: \$65,170.00</b>											
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											
<b>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.</b>											
Charles Flynn	Executive Director, (928) 373-5192										
<b>Typed Name of Applicant or Applicant's Authorized Representative</b>	<b>Title and Telephone Number</b>										
	8/24/10										
<b>Signature</b>	<b>Date Signed</b>										

**YUMA CROSSING NATIONAL HERITAGE AREA**

**AVIFAUNA AND BUTTERFLY (LEPIDOPTERA) RECOVERY  
IN RESTORED WETLAND AND RIPARIAN HABITATS**

**AWPF GRANT PROPOSAL**

**September 1, 2010**

Yuma Crossing National Heritage Area  
Arizona

**Due by 3:00 p.m., September 1, 2010**

## EXECUTIVE SUMMARY

This research proposal will measure the effectiveness of restoration activities on wildlife recovery, focusing on avifaunal and butterfly species richness and abundance and measuring habitat characteristics within restored riparian and wetland habitats within the Yuma East Wetlands (YEW) on the lower Colorado River. Baseline wildlife surveys were conducted in the restored habitats of the YEW during 2007-2008, focusing on invertebrate, avifauna, mammals, and herpetofauna richness and abundance. This research provided a baseline of the wildlife species occurring in the restored areas and identified research questions to prioritize and pursue in future efforts. These questions included re-examining the avifaunal richness and diversity in greater detail as restored habitats mature, focus on Lepidoptera (butterfly) species as indicators for habitat quality, and monitor changes in habitat characteristics. As the restored habitats have matured and restoration efforts expanded in the YEW these research questions are poised for implementation. This effort will continue to evaluate the goals of the original Yuma East Wetlands Restoration Plan to determine the success of restoration treatments on wildlife communities in the YEW, a multi-phase plan that will restore, protect and enhance over 900 acres of critical wetland, aquatic, and riparian habitats along four miles of river, beginning at the confluence of the Gila and Colorado Rivers and extending downstream to the Ocean-to-Ocean Bridge in Yuma.

Over the past century, wildlife populations have declined in riparian and wetland areas surrounding the Colorado River and Yuma East Wetlands due to extensive modification and exotic species invasion. Agriculture, fires, and human consumption have decimated native stands of cottonwood, willow, and mesquite (honey and screwbean), while the non-native saltcedar has overrun the riparian areas. Damming and confinement of the river channel have decreased seasonal flooding, which has caused an increase in soil salinity levels, favoring the growth and domination of non-native saltcedar. The historic wetlands and aquatic habitats have filled with sediment and exotic plant species due to the lack of scouring flood flows. This habitat alteration has caused notable declines in wildlife communities, particularly for migratory and resident bird and butterfly species. In an effort to revive these native riparian and wetland habitats, monumental restoration projects have commenced along the lower Colorado River. It is imperative to conduct this research in order to evaluate how restored habitats are recovering wildlife species over time.

The Yuma Crossing National Heritage Area (Heritage Area) in partnership with the Quechan Indian Nation (Tribe), City of Yuma (COY), State of Arizona, US Bureau of Reclamation (BOR), private landowners, and other entities, has embarked on a landmark collaborative restoration effort by implementing the 909 acre Yuma East Wetlands Restoration Plan (CD of the Plan is enclosed). Currently there are over 350 acres in different phases of aquatic, wetland, cottonwood/willow, and mesquite bosque habitat restoration across the YEW. During 2009-2010, 90 acres of wetland and riparian habitat was constructed as part of the YEW. The Heritage Area is investing \$65,170 towards this research effort as part of the match. If funded, this project would provide additional novel information on the recovery of the avifaunal community and butterfly species. The research will help evaluate whether the current restoration techniques are successful and what can be improved to maximize the benefit for avifaunal and butterfly species. Additionally, this research will build on the previously conducted research to provide sufficient data to publish an article in a scientific journal pertaining to habitat restoration. This is a critical component to accomplishing the goals of this YEW and all restoration projects on the lower Colorado River.

In order to research the effects of restoration on avian and butterfly communities, this proposal proposes the hypothesis that avian and butterfly richness and abundance will be different in restored riparian and wetland habitats than control habitats dominated by invasive species. In order to test this hypothesis four objectives have been proposed, including: 1) Compare richness and abundance of avifauna in restored versus control riparian and wetland habitats; 2) Compare butterfly species abundance and diversity in restored versus control riparian habitats; 3) Evaluate the habitat characteristics for bird and butterfly species; and 4) Evaluate nectar sources for butterfly species. These objectives will be accomplished by developing detailed research plans for invertebrate and avian communities as well as by conducting research, inventory, and monitoring for these communities.

## PROJECT OVERVIEW

### Background

The goal of most ecological restoration projects is to restore the ecosystem to the pre-disturbed state in terms of ecological integrity, structure, function and composition (Hobbs and Norton 1996). While many restoration projects evaluate the structural ecosystem components few evaluate the ecosystem function and wildlife composition recovery. Invertebrates can quickly respond to ecological changes and provide essential functions within an ecosystem such as decomposition, energy transfer and pollination (Recher et al. 1993, Andersen and Sparling 1997). Despite the important functions invertebrates provide within an ecosystem, few restoration projects monitor the recovery of invertebrates (Holl 1996, Andersen and Sparling 1997, Majer 1997, Davies et al. 1999, Waltz and Covington 2004). Butterflies, in particular, are amenable to research, because many larvae have specific host plants, as adults they are nectar generalists, they quickly respond re-colonize areas, and therefore occupy a broad range of ecological niches. These broad life history traits make butterflies good ecological indicators of herbaceous community health (Scoble 1992), other herbivorous arthropods (Brown 1991, Scoble 1992, Beccaloni and Gaston 1995) and even other taxonomic groups (Wilcox et al. 1986).

The avifaunal community, like butterflies, has shown to quickly re-colonize areas that have experienced changes in habitat quality, particularly when habitats are restored (Passell 2000, Gardali et al. 2006). Also, many avifaunal species are reliant on specific habitats for foraging and nesting. The relatively rapid positive response to habitat restoration and specific habitat requirements for many avifaunal species makes this group ideal for evaluating ecosystem health and function. Migratory and residential avifaunal communities have declined on the lower Colorado River due to loss of habitat and invasion of exotic saltcedar (Anderson and Ohmart 1984, Hunter et al. 1988). Habitat restoration on the lower Colorado River has been conducted primarily to recover endangered avifaunal species, including the southwestern willow flycatcher and Yuma clapper rail, however few studies have looked at the recovery of avifaunal communities (Fred Phillips Consulting 2009). Recovery of the avifaunal community is an essential metric to evaluate to determine restoration project success.

The Yuma East Wetlands (YEW) on the Lower Colorado River is bounded on the north and south by Colorado River levees; on the west by the Ocean-to-Ocean Bridge; and on the east by the Gila-Colorado River confluence. This area covers approximately 909 acres 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, (Figure 1). The project area has been extensively modified by almost a century of flow control activities, channelization, agricultural manipulation, timber harvesting, non-native species invasion, and unregulated dumping. As a result, the YEW was dominated by monotypic stands of exotic saltcedar (*Tamarix pentandra* and *ramosissima*) and common reed (*Phragmites* sp.); and the remaining native wetland habitat was threatened by sedimentation, lack of water, and invasive plants. In an effort to revitalize the natural ecosystem in this area, the *Yuma East Wetlands Restoration Plan* (YEWP) (Phillips Consulting 2001) was designed to restore and enhance over 900 acres of native riparian, wetland, and aquatic habitats on

the lower Colorado River immediately upstream from Yuma, Arizona. This plan acquired broad base support of stakeholders and landowners including many federal, state, and local agencies as well as private landowners, non-profits and volunteer groups (Figure 2). This plan outlines the restoration activities for the different YEW habitats, with the primary goal of improving wildlife habitat. In order to evaluate the success of this restoration effort and the achievement of this goal, the plan outlines two main activities:

- Conduct bird censuses to establish baseline data, protect sensitive species, and monitor success of revegetation efforts.
- Determine contemporary invertebrate composition and distribution to monitor success of revegetation efforts.

Currently, there are over 350 acres of restored aquatic, wetland, and riparian habitats in the YEW, with over half approaching maturity (restored 5-7 years ago). The project area encompasses approximately 4 river miles on the Colorado River from the confluence of the Gila River to the Ocean-to-Ocean Bridge. Approximately, 1.5 miles of channels were created in the YEW and drain into the adjacent lower Colorado River. The primary soil type in the project area is sand and clay that typically retains high soil salinities. Depth to ground water varies from 0-20 feet. The native species that have been planted at the site were carefully selected based on depth to water requirements. The average annual precipitation is 0.25 inches.

Preliminary research was conducted in the YEW on avifaunal, invertebrate, mammalian and herpetofaunal community recovery during 2007 and 2008 (Fred Phillips Consulting 2009). Many of the restored riparian and wetland habitats were immature and no significant differences in wildlife richness and abundance in restored verses control habitats were detected. However, a positive trend toward higher avifaunal and butterfly richness in restored verses control habitats was revealed in this study. Since the project was completed in 2008, habitats have matured and restoration has expanded in the YEW, which presents a prime opportunity to conduct further research using more detailed methods to tease out these patterns. A specific focus on breeding birds is proposed for this project, which will focus on calls and songs, nest sightings and habitat characteristics. Also, butterfly searches will be timed to coincide with butterfly migration periods and nectar sources will be evaluated. Avifaunal and butterfly surveys will overlap in location and timing with previous surveys, to the extent possible, in order compare results.

The hypothesis of this project is that avifaunal and butterfly richness and abundance will be different in restored riparian and wetland habitats than control habitats dominated by invasive species. This proposed research will address both refugia and pollination ecosystem services. This project will involve educational and outreach components by working with the local college to participate in the surveys as well as provide educational presentations on the work that is being conducted. Also, this research project has broad based support from a variety of federal, state and local entities (see Support Letters). The Yuma Crossing National Heritage Area (YCNHA) is also contributing \$65,000 as matching funds for this project. The additional funds from this grant will supplement the funding provided by the YCNHA and provide more statistical power to the research by

providing more replicates and more sampling periods. It is anticipated that the results of the combined efforts of this proposed research and previous studies will be prepared for a publication as well as be presented at various professional conferences. Since restored habitats grow and mature over time, wildlife recovery in these areas is not static, indicating the novelty of this project. Continuing this vital research is essential to evaluate the effects of restoration efforts on wildlife communities and provide information on how to adjust restoration practices to encourage visitation by more wildlife species.

### **Goals**

- 1.) To compare avifaunal and butterfly community richness and abundance in restored verses control wetland and riparian habitats in the Yuma East Wetlands on the lower Colorado River.
- 2.) To build on previous research and provide more detailed information of the breeding avifaunal species and migrating and resident butterfly species present at the YEW.

### **Objectives**

1. To compare richness and abundance of avifauna and butterflies in restored verses exotic vegetation-dominated (control) riparian and wetland habitats.
2. Compare restored verses control riparian and wetland habitat quality, nesting habitat and nectar availability.
3. Involve the local community in surveying techniques for interpretation and educational purposes.
4. Develop performance standards to optimize wetland and riparian restoration efforts on the lower Colorado River.

### **Statement of problems:**

Widespread flow regulation and introduction of non-native species in riparian ecosystems has compromised the ecological integrity of these systems and resulted in loss and endangerment of wildlife species that depend on them, particularly birds and butterflies. In addition, there is insufficient flow through historic channels and wetlands, excessive reproduction of exotic plant species, and insufficient reproduction of native plant species. Although riparian and wetland restoration has been initiated in many areas with the primary goal of restoring habitat for wildlife species, few projects have documented the response of wildlife populations to restoration activities. Monitoring the response of the wildlife community to restoration efforts is fundamental to determining the success of a restoration project.

### **Statement of causes of the problems:**

The hydrologic regime and, consequentially, the ecosystem of the lower Colorado River, including the YEW, has been greatly altered by over 100 years of water development projects; introduction of non-native species; river channelization; agriculture and

development; and deforestation of native riparian forests. As a result, the vegetation is dominated by highly flammable, quickly regenerating exotic saltcedar; soil salinities have risen; and the historic channels have developed increased sedimentation. These negative habitat changes have decreased the habitat quality for wildlife. While restoration of the lower Colorado River and the YEW has improved habitat quality, little attention has been focused on the recovery of wildlife, particularly birds and butterflies, over time in these restored habitats.

#### **Statement of project-related remedies or solutions:**

By conducting follow-up research on avifaunal and butterfly communities in restored wetland and riparian habitats at YEW, we will be able to determine the success of restoration activities on recovering these communities. This project would provide information on whether or not the primary goal of restoration was reached as well as providing insight on how to improve restoration activities for the future. Also, the project would provide the Heritage Area with more detailed information on the avifaunal and butterfly communities.

#### **Statement of project years of benefit:**

This project will provide information on the response of butterfly and avian populations to riparian and wetland restoration, which will provide information essential to all restoration efforts on the lower Colorado River and in the southwest for 20+ years. The project will also benefit education and interpretation of the area for 20+ years through increased knowledge of species response to restoration. With a detailed avifaunal and butterfly species list, the Heritage Area can involve local communities in educational and interpretive opportunities.

#### **References**

- Andersen, A.N. and G.P. Sparling. 1997. Ants as indicators of restoration success: relationship with soil microbial biomass in the Australian seasonal tropics. *Restoration Ecology* 5: 109-114.
- Anderson, B.W. and R.D. Ohmart. 1984. A vegetation management study for the enhancement of wildlife along the lower Colorado River. U.S. Bureau of Reclamation, Boulder City, NV.
- Beccaloni, G.W. and K.J. Gaston. 1995. Predicting the species richness of neotropical forest butterflies: Ithomiinae (Lepidoptera: Nymphalidae) as indicators. *Biological Conservation* 71:77-86.
- Brown, K.S. Jr. 1991. Conservation of neotropical environments: insects as indicators. Pages 350-404 in N.M. Collins and J.A. Thomas, editors. *The conservation of insects and their habitats*. Academic Press, New York.
- Davies, R.G., P. Eggleton, L. Dibog, J.H. Lawton, D.E. Bignell, A. Brauman, C. Hartman, L. Nunes, J. Holt and C. Rouland. 1999. Successional response of a tropical

forest termite assemblage to experimental habitat perturbation. *Journal of Applied Ecology* 36: 946-962.

Fred Phillips Consulting. 2009. The effects of restoration on wildlife recovery at the Yuma East Wetlands restoration project and the effects of restoration on herpetofaunal and mammalian community recovery. Arizona Water Protection Fund Final Report.

Gardali T, Holmes AL, Small SS, Nur N, G.R. Geupel, and G.H. Golet. 2006. Abundance patterns of landbirds in restored and remnant riparian forests on the Sacramento River, California, U.S.A. *Restoration Ecology* 14(3):391-403.

Hobbs, R.J. and D.A. Norton. 1996. Towards a conceptual framework for restoration ecology. *Restoration Ecology* 4:93-110.

Holl, K.D. 1996. The effect of coal surface mine reclamation on diurnal lepidopteran conservation. *Journal of Applied Ecology* 33:225-236.

Hunter, W.C., R.D. Ohmart, and B.W. Anderson. 1988. Use of exotic saltcedar (*Tamarix chinensis*) by birds in arid riparian systems. *The Condor* 90: 113-123.

Majer, J.D. 1997. Invertebrates assist the restoration process: an Australian perspective. Pages 212-237 in K.M. Urbanska, N.R. Webb, and P.J. Edwards, editors. *Restoration ecology and sustainable development*. Cambridge University Press, United Kingdom.

Nelson, S.M. and R. Wydoski. 2008. Riparian Butterfly (Papilionoidea and Hesperioidea) Assemblages Associated with Tamarix-Dominated, Native Vegetation-Dominated, and Tamarix Removal Sites along the Arkansas River, Colorado, U.S.A. *Restoration Ecology* 16 (1): 168-179.

Passell, H.D. 2000. Recovery of bird species in minimally restored Indonesian tin strip mines. *Restoration Ecology* 8(2): 112-118.

Phillips Consulting. 2001. Yuma East Wetlands Restoration Plan. Prepared for the City of Yuma Riverfront Development Office.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. *Biological Conservation* 12: 115-134.

Recher, H.F., and P.A. Hutchings, and S. Rose. 1993. The biota of the Hawksbury-Nepean catchment: reconstruction and restoration. *The Australian Zoologist* 29:3.

Reynolds, R.T., J.M. Scott, and R.A. Nussbaum. 1980. A variable circular-plot method for estimating bird numbers. *Condor* 82:309-313.

Scoble, M.J. 1992. *The Lepidoptera: form, function and diversity*. Oxford University Press, Oxford.

Steffan-Dewenter, I. and T. Tschardtke. 1997. Early succession of butterfly and plant communities on set-aside fields. *Oecologia* 109:294-302.

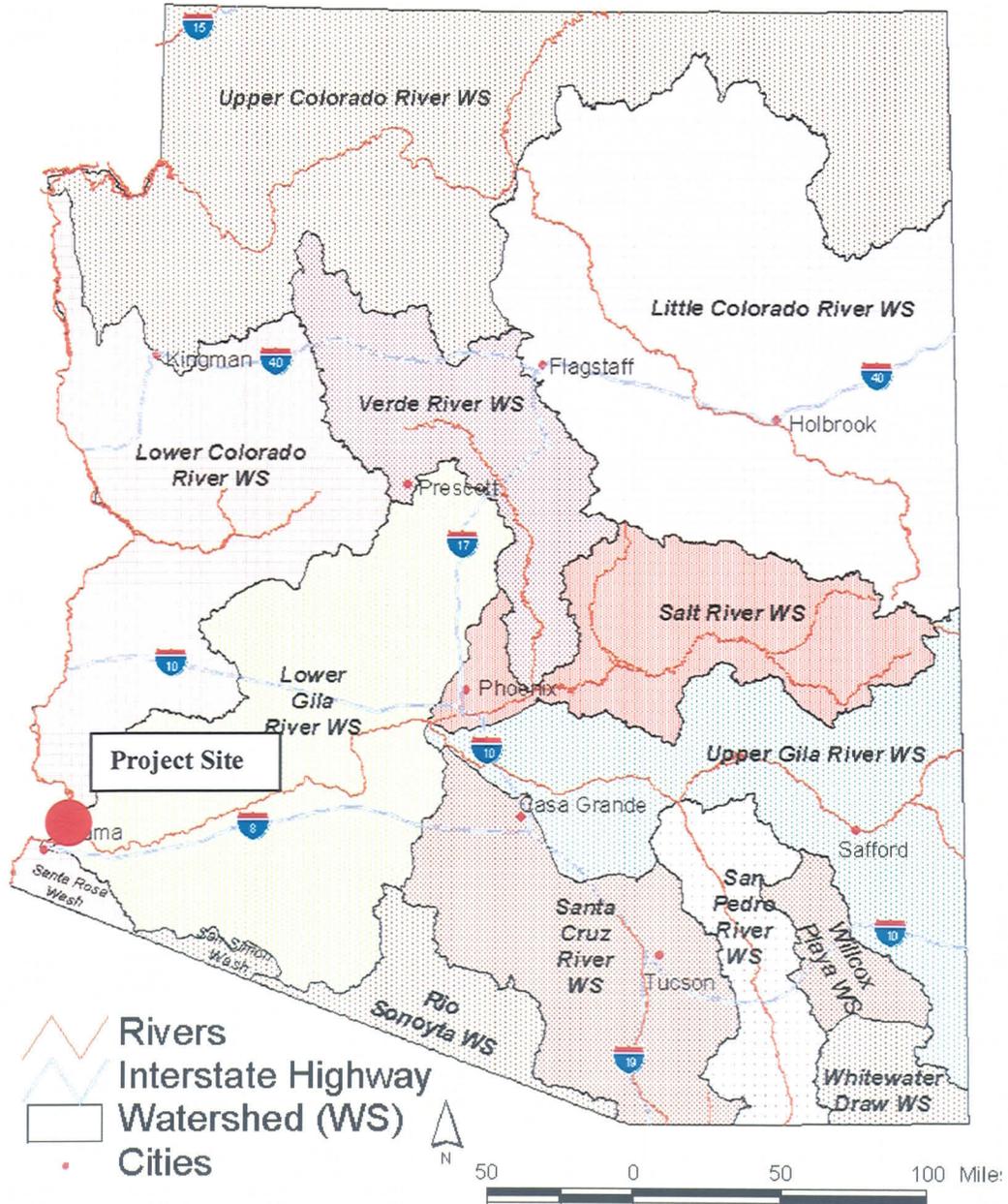
Waltz, A.E.M. and W.W. Covington. 2004. Ecological restoration treatments increase butterfly richness and abundance: mechanisms of response. *Restoration Ecology* 12(1): 85-96.

Wilcox, B.A., D.D. Murphy, P.R. Ehrlich, and G.T. Austin. 1986. Insular biogeography of the montane butterfly faunas in the Great Basin: comparison with birds and mammals. *Oecologia* 69: 188-194.

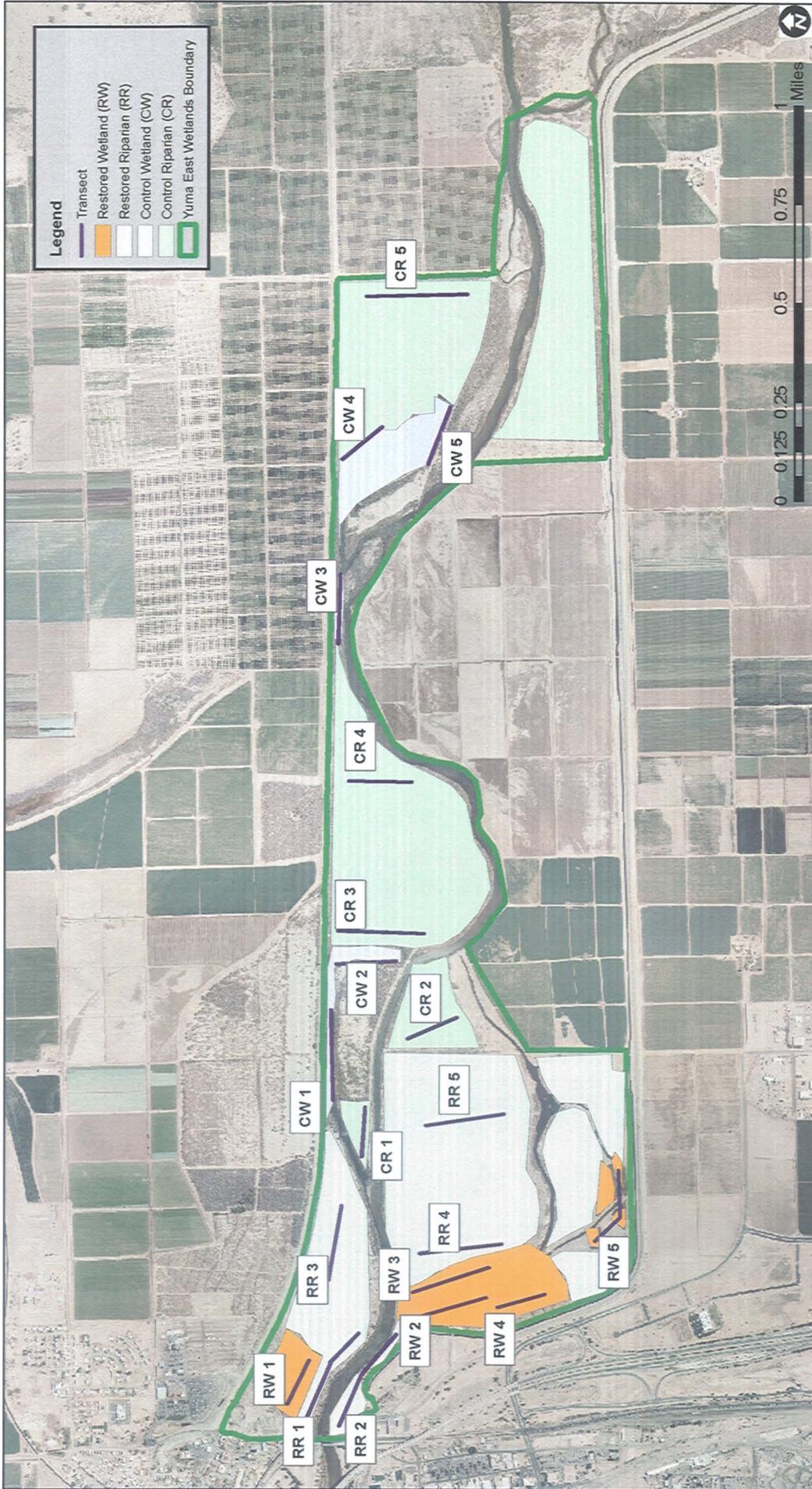
**Project Location & Environmental Contaminant Information  
FY 2011**

<b>Project Location Information</b>			
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. 8 or 10 Digit Hydrologic Unit Code (HUC): <u>15030107</u></p> <p>7. Name of USGS Topographic Map where project area is located: <u>Yuma East Arizona-California and Yuma West Arizona-California</u></p> <p>8. State Legislative District: <u>5</u></p> <p>(Information available at:  <a href="http://159.87.126.6/mapping/default2.asp?tname=Original.2009.Legislative.Map&amp;org2009leg=on&amp;service=ircmaps&amp;init=true">http://159.87.126.6/mapping/default2.asp?tname=Original.2009.Legislative.Map&amp;org2009leg=on&amp;service=ircmaps&amp;init=true</a>)</p> <p>9. Land ownership of project area: <u>City of Yuma, Arizona Game and Fish, Quechan Indian Nation</u></p> <p>10. Current land use of project area: <u>Restoration and degraded habitat</u></p> <p>11. Size of project area (in acres): <u>909</u></p> <p>12. Stream Name: <u>Lower Colorado River</u></p> <p>13. Length of stream through project area: <u>4 miles</u></p> <p>14. Miles of stream benefited: <u>4 miles</u></p> <p>15. Acres of riparian habitat: <u>909 acres</u> will be:</p> <p align="right"> <input type="checkbox"/> Enhanced  <input type="checkbox"/> Maintained  <input checked="" type="checkbox"/> Restored  <input type="checkbox"/> Created         </p>			
<p>16. 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.</p>			
<b>Environmental Contaminant Location Information</b>			
<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> <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> <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>			

# Arizona Watershed Map FY 2011



**Title of Project: Avifaunal and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats**

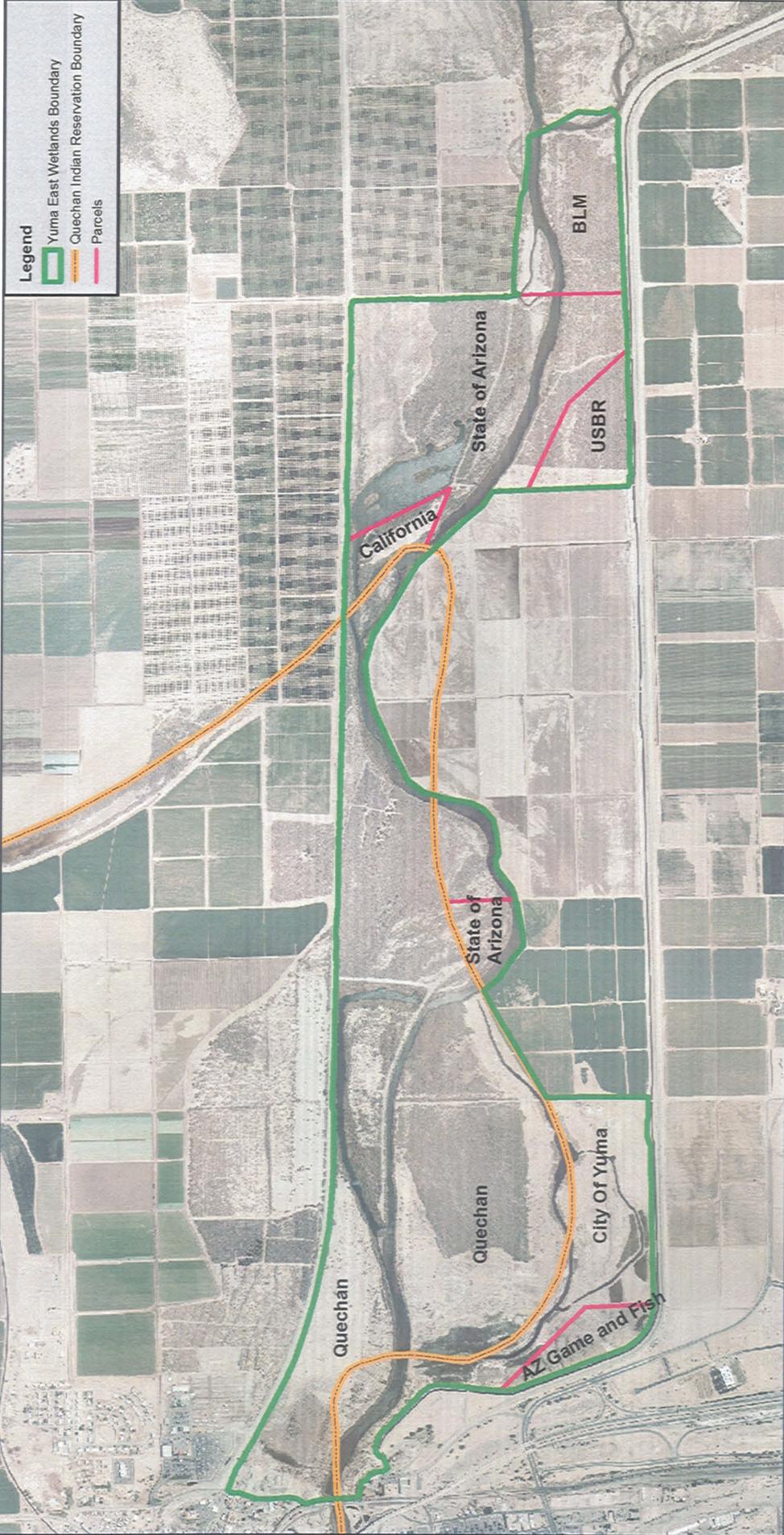


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 401 S. Leroux Street  
 Flagstaff, AZ 86001  
 928-773-1530

PROJECT PARTNERS:  
 Quechan Indian Tribe, City of Yuma, AZ State Land Department,  
 US Army Corps of Engineers, Yuma County, Bureau of Indian Affairs,  
 Audubon Society, Bureau of Reclamation, US Bureau of Land Management,  
 Private Landholders

Prepared For: Yuma Crossing National Heritage Area  
 Riverfront Development Office  
 180 W. First Street, Suite E  
 Yuma, AZ 85364

**Figure 2: Monitoring Locations**  
 FY 2011 AWP Research Proposal Avifauna and  
 Butterfly (Lepidoptera) Recovery in Restored  
 Wetland and Riparian Habitats



Prepared By: Fred Phillips Consulting, LLC

401 S. Leroux Street  
 Flagstaff, AZ 86001  
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**PROJECT PARTNERS:**

Quechan Indian Tribe, City of Yuma, AZ State Land Department,  
 US Army Corps of Engineers, Yuma County, Bureau of Indian Affairs,  
 Audubon Society, Bureau of Reclamation, US Bureau of Land Management,  
 Private Landholders

Prepared For: Yuma Crossing National Heritage Area

Riverfront Development Office  
 180 W. First Street, Suite E  
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**Figure 2: Yuma East wetlands**

**Ownership Map**

FY 2011 AWPFP Proposal  
 Avifauna and Butterfly (Lepidoptera) Recovery  
 in Restored Wetland and Riparian Habitats

## Scope of Work

### **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) clearance
- National Environmental Policy Act (NEPA) compliance
- Access agreement between Yuma Crossing National Heritage Area and landowners
- Arizona Game and Fish Department Collection Permit

**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, and access agreement from the City of Yuma.

**Deliverable Description:** Copies of all approved permits, authorizations, clearances and agreements.

**Deliverable Due Date:** Prior to research activities.

**Reimbursable Cost:** \$2,939.00

### **Task #2: Develop Detailed Research, Inventory, and Monitoring Plans for Avifauna, Butterfly and Habitat Characteristics**

**Task Description:** Develop detailed plans to research, inventory, and monitor avifaunal and butterfly communities. Plans will include detailed sampling designs, defined sampling intervals, data analysis, and database organization for butterflies and avifauna.

**Task Purpose:** To provide a consistent sampling regime for avifauna and butterflies to be utilized to collect comparable data over time. Also, this task will create a framework to analyze and store data for publication purposes. These plans/protocols will be used consistently throughout the duration of the project.

**Deliverable Description:** Copies of avifauna and invertebrate research, inventory, and monitoring plans, including sampling designs, data analysis, and database organization.

**Deliverable Due Date:** March 2011

**Reimbursable Cost:** \$4,876.00

### **Task #3: Conduct Avifaunal Research**

**Task Description:** In order to research avian species composition, richness, and abundance through out the breeding season, avian surveys will be conducted six times during the breeding season (March-July) for one year. Five transects will be established within the four habitat types, including restored and control wetland and riparian, for a total of 20 transects. Variable circular plots will be established every 50m along the transect to detect avifaunal species. Length of the transect will be determined based on

the size of the habitat type being monitored. A more detailed avifaunal sampling plan is included in the monitoring plans section of this proposal.

**Task Purpose:** To evaluate whether the YEW riparian and wetland restoration project was successful in accomplishing its goal of increasing habitat for and recovering resident and neo-tropical migrant birds and migrating waterfowl populations.

**Deliverable Description:** Bi-annual reports will be provided with information on avifaunal diversity, distribution, and relative abundance within the four primary habitat types. A species list will also be included for the entire site for use in interpretation and education.

**Deliverable Due Date:** August 2011 and January 2012

**Reimbursable Cost:** \$19,154.00

#### **Task #4: Conduct Butterfly Research**

**Task Description:** Butterflies will be sampled four times during May, June, July and September for one year from the restored and control riparian habitat types. Butterflies are primarily affiliated with nectar producing plants more commonly occurring in riparian versus wetland habitats. Five transects will be established in each of the control and restored riparian habitats for a total of 10 transects. Butterfly species encountered along the transect will be identified during timed searches. A reference collection of butterflies observed at the YEW will be collected, however after a species has been captured for the collection butterflies will be identified by sight. If a butterfly cannot be identified by sight, the individual will be captured with a hand net, identified in the field, and released. More detailed butterfly collection methods are included in the monitoring plans section of this proposal.

**Task Purpose:** Information on the diversity and abundance of butterflies will provide critical information to determine the success of a restoration project. The availability of host plants and nectar sources should be correlated with butterfly abundance and richness. Also, the butterfly collection of specimens captured from this project will be organized in display cases and used for interpretive and educational opportunities.

**Deliverable Description:** Bi-annual reports containing information on butterfly richness and relative abundance within the four habitat types will be provided. A species list will also be included for the entire site.

**Deliverable Due Date:** August 2011 and January 2012

**Reimbursable Cost:** \$29,200.00

#### **Task #5: Avifaunal and Butterfly Habitat and Nectar Resource Assessment**

**Task Description:** Habitat characteristics for avifauna and butterflies, including total vegetation volume, foliar height density, host plant and nectar resource frequency and abundance, will be measured along the established transects at each sampling site. Fifteen randomly selected plots perpendicular to the transect will measure vegetation characteristics. The plots will extend 5 meters on either side of the transect and vegetation will be measured using the point intercept method every 0.5m. An extended metric measuring pole will be used to record both herbaceous and over-story species. These measurements will provide plant species composition and frequency data. Host plant frequency and abundance as well as vegetation density and productivity by calculating total vegetation volume will be measured three times between (March-

September) using this method. In order to estimate the availability of nectar plants and blooms for butterflies 4m diameter plots will be established every 10m along the transect. At each plot the plants with blooming flowers will be tallied by species. These data will be collected 3 times during the survey season (April-September). More detailed habitat characteristics and nectar resource identification methods are included in the monitoring plans section of this proposal.

**Task Purpose:** To collect information on the habitat structure, vegetation species diversity and density, and host plant frequency and abundance in control verses restored riparian and wetland habitats. This information will be correlated with avifaunal and butterfly richness and abundance and will be compared between habitat types (restored verses control) at the Yuma East Wetlands.

**Deliverable Description:** Bi-annual reports will include a narrative of all the tasks completed, vegetation community diversity and density, host plant and nectar resource abundance and frequency, species lists, and datasheets.

**Deliverable Due Date:** August 2011 and January 2012

**Reimbursable Cost:** \$27,627.00

#### **Task #6: Presentation and Publication**

**Task Description:** All data and results gathered from this project will be presented at the Arizona Riparian Council Annual meeting and potentially other professional meetings. Also, an article of the results will be written for the Arizona Riparian Council newsletter and potentially for publication in the Ecosystem Restoration Journal.

**Task Purpose:** To disseminate the research results to the public and managers through various forms of media, including presentation and publication.

**Deliverable description:** The Arizona Riparian Council meeting agenda and presentation schedule will be provided and a copy of the article submission form, receipt of submission or the actual publication will be submitted for the publication. The deliverable for the publication will depend the timing of the submittal

**Deliverable due date:** September 2012

**Reimbursable Cost:** \$7,369.00

#### **Task #7: Final Report**

**Task Description:** The Grantee shall prepare and submit a comprehensive final report, including a summary of all methodologies used, outcome of all tasks, analysis of all project and monitoring data, suggestions for any further changes needed in the project, and an evaluation of the project's success measured against the objectives.

**Task Purpose:** To provide a synopsis of all data collected on the avian and butterfly populations at the YEW with suggestions for species conservation, and an evaluation on the benefits of restoration activities on these populations.

**Deliverable description:** Final project report will summarize all methodologies used, outcome of all tasks, summarize and analyze project data & monitoring data, suggest any further changes needed in the project and evaluate project success measured against the objective.

**Deliverable due date:** September 2012

**Reimbursable Cost:** \$9,593.00

**Requested Funds**  
**Yuma Crossing National Heritage Area**  
**Avifauna and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats**

Item	Item/Hours	Unit	Rate	Total
<b>Task #1 Permits, Authorizations, Clearances and Agreements</b>				
Administration: (5%)				\$ 134.00
<b>Outside Services:</b>				
Director	10	Hours	\$ 90.00	\$ 900.00
Principal Biologist	15	Hours	\$ 80.00	\$ 1,200.00
Autocadd/Arcdview Operator	10	Hours	\$ 70.00	\$ 700.00
<b>Other direct costs:</b>				
Postage	Lump		\$ 5.00	\$ 5.00
<b>Total Task One</b>				<b>\$ 2,939.00</b>
<b>Task #2 Develop Project Research Plan</b>				
Administration: (5%)				\$ 218.00
<b>Outside Services:</b>				
Principal Biologist	40	Hours	\$ 80.00	\$ 3,200.00
Autocadd/Arcview Operator	20	Hours	\$ 70.00	\$ 1,400.00
<b>Other direct costs:</b>				
B & W Printing (5 copies of a 20 page report @ \$0.10/copy/page)	100	Pages	\$ 0.10	\$ 10.00
Color Printing (5 copies of 8 color maps and photo pages )	45	Pages	\$ 0.95	\$ 43.00
Postage	Lump		\$ 5.00	\$ 5.00
<b>Total for Task Two</b>				<b>\$ 4,876.00</b>
<b>Task #3 Conduct Avifaunal Research</b>				
Administration: (5%)				\$ 824.00
<b>Outside Services:</b>				
Principal Biologist (3 days/survey; 3 surveys)	84	Hours	\$ 80.00	\$ 6,720.00
Principal Biologist (reports)	40	Hours	\$ 80.00	\$ 3,200.00
Wildlife Biologist	72	Hours	\$ 70.00	\$ 5,040.00
Autocadd/Arcdview Operator	20	Hours	\$ 70.00	\$ 1,400.00
<b>Other direct costs:</b>				
Overnight Travel (1 person (3 days/visit); 3 visits)	9	Days	\$ 90.00	\$ 810.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 3 trips)	2175	Mileage	\$ 0.44	\$ 957.00
B & W Printing (5 copies of a 40 page report @ \$0.10/copy/page)	200	Pages	\$ 0.10	\$ 20.00
Color Printing (5 copies of 5 color maps and photo pages )	25	Pages	\$ 0.95	\$ 23.00
<b>Capital Outlay &amp; Equipment Costs:</b>				
Flagging	5	Unit	\$ 5.00	\$ 25.00
Wooden stakes	150	Unit	\$ 0.90	\$ 135.00
<b>Total Task Three</b>				<b>\$ 19,154.00</b>
<b>Task #4 Conduct Butterfly Research</b>				
Administration: (5%)				\$ 1,263.00
<b>Outside Services:</b>				
Principal Biologist (4 days/survey; 4 surveys)	144	Hours	\$ 80.00	\$ 11,520.00
Principal Biologist (reports)	40	Hours	\$ 80.00	\$ 3,200.00
Wildlife Biologist (4 days/survey; 4 surveys)	128	Hours	\$ 70.00	\$ 8,960.00
Autocadd/Arcdview Operator	20	Hours	\$ 70.00	\$ 1,400.00
<b>Other direct costs:</b>				
Overnight Travel (1 person, 4 days/visit, 4 trips)	16	Days	\$ 90.00	\$ 1,440.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 4 trips)	2900	Mileage	\$ 0.44	\$ 1,276.00
B & W Printing (5 copies of a 40 page report @ \$0.10/copy/page)	200	Pages	\$ 0.10	\$ 20.00
Color Printing (5 copies of 5 color maps and photo pages )	25	Pages	\$ 0.95	\$ 24.00

Item	Item/Hours	Unit	Rate	Total
<b>Capital Outlay &amp; Equipment Costs:</b>				
Insect pins	3	Unit	\$ 7.00	\$ 21.00
Adjustable pinning board	3	Unit	\$ 25.35	\$ 76.00
Butterfly identification guide	1	Unit	\$ 20.00	\$ 20.00
<b>Total Task Four</b>				<b>\$ 29,200.00</b>
<b>Task #5 Avifaunal and Butterfly Habitat and Nectar Resource Assessment</b>				
Administration: (5%)				\$ 1,153.00
<b>Outside Services:</b>				
Principal Biologist (3 days/visit; 6 visits)	168	Hours	\$ 80.00	\$ 13,440.00
Wildlife Biologist	144	Hours	\$ 70.00	\$ 10,080.00
Autocadd/Aredview Operator	10	Hours	\$ 70.00	\$ 700.00
<b>Other direct costs:</b>				
Overnight Travel (1 person, 18 days)	18	Days	\$ 90.00	\$ 1,620.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 6 visits)	4350	Mileage	\$ 0.44	\$ 605.00
B & W Printing (5 copies of a 10 page report @ \$0.10/copy/page)	50	Pages	\$ 0.10	\$ 5.00
Color Printing (5 copies of 5 color maps and photo pages )	25	Pages	\$0.95	\$ 24.00
<b>Total Task Five</b>				<b>\$ 27,627.00</b>
<b>Task #6 Presentation and Publication</b>				
Administration: (5%)				\$ 351.00
<b>Outside Services:</b>				
Principal Biologist	80	Hours	\$ 80.00	\$ 6,400.00
<b>Other direct costs:</b>				
Personal Car Mileage (for 1 person, 300 miles round-trip)	300	Mileage	\$ 0.44	\$ 605.00
B & W Printing (10 copies of a 50 page report @ \$0.10/copy/page)	30	Pages	\$ 0.10	\$ 3.00
Postage	LUMP		\$ 10.00	\$ 10.00
<b>Total Task Six</b>				<b>\$ 7,369.00</b>
<b>Task #7 Final Report</b>				
Administration: (5%)				\$ 430.00
<b>Outside Services:</b>				
Director	5	Hours	\$ 90.00	\$ 450.00
Principal Biologist (reports)	80	Hours	\$ 80.00	\$ 6,400.00
Autocadd/Aredview Operator	30	Hours	\$ 70.00	\$ 2,100.00
<b>Other direct costs:</b>				
B & W Printing (10 copies of a 50 page report @ \$0.10/copy/page)	500	Pages	\$ 0.10	\$ 50.00
Color Printing (10 copies of 15 color maps and photo pages )	150	Pages	\$0.95	\$ 143.00
Postage	LUMP		\$ 20.00	\$ 20.00
<b>Total Task Six</b>				<b>\$ 9,593.00</b>
<b>Total Funds Requested</b>				<b>\$ 100,758.00</b>

**Matching Funds Breakdown**  
**Yuma Crossing National Heritage Area**  
**Avifauna and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats**

Item	Item/Hours	Unit	Rate	Total
<b>Task #1 Permits, Authorizations, Clearances and Agreements</b>				
<b>Total Task One</b>				\$ -
<b>Task #2 Develop Project Research Plan</b>				
<b>Total for Task Two</b>				\$ -
<b>Task #3 Conduct Avifaunal Research</b>				
<b>Outside Services:</b>				
Principal Biologist (2 days/survey; 4 surveys)	64	Hours	\$ 80.00	\$ 5,120.00
Wildlife Biologist	64	Hours	\$ 70.00	\$ 4,480.00
<b>Other direct costs:</b>				
Overnight Travel (1 person (2 days/visit); 4 visits)	8	Days	\$ 90.00	\$ 720.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 4 trips)	2900	Mileage	\$ 0.50	\$ 1,450.00
<b>Total Task Three</b>				\$ 11,770.00
<b>Task #4 Conduct Butterfly Research</b>				
<b>Outside Services:</b>				
Principal Biologist (4 days/survey; 4 surveys)	128	Hours	\$ 80.00	\$ 10,240.00
Principal Biologist (reports)	65	Hours	\$ 80.00	\$ 5,200.00
Wildlife Biologist (4 days/survey; 4 surveys)	128	Hours	\$ 70.00	\$ 8,960.00
Autocadd/Arcdview Operator	10	Hours	\$ 70.00	\$ 700.00
<b>Other direct costs:</b>				
Overnight Travel (1 person, 4 days/visit, 4 trips)	16	Days	\$ 90.00	\$ 1,440.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 4 trips)	2900	Mileage	\$ 0.50	\$ 1,450.00
<b>Capital Outlay &amp; Equipment Costs:</b>				
Sweep nets	3	Unit	\$ 27.00	\$ 81.00
Killing jars	3	Unit	\$ 12.00	\$ 36.00
Butterfly identification guide	1	Unit	\$ 20.00	\$ 20.00
<b>Total Task Four</b>				\$ 28,107.00
<b>Task #5 Avifaunal and Butterfly Habitat and Nectar Resource Assessment</b>				
Administration: (5%)				\$ 1,468.00
<b>Outside Services:</b>				
Principal Biologist (3 days/visit; 6 visits)	144	Hours	\$ 80.00	\$ 11,520.00
Wildlife Biologist	144	Hours	\$ 70.00	\$ 10,080.00
<b>Other direct costs:</b>				
Overnight Travel (1 person, 18 days)	18	Days	\$ 90.00	\$ 1,620.00
Personal Car Mileage (for 1 person, 725 miles round-trip, 6 visits)	4350	Mileage	\$ 0.50	\$ 605.00
<b>Total Task Five</b>				\$ 25,293.00
<b>Task #6 Presentation and Publication</b>				
<b>Total Task Six</b>				\$ -
<b>Task #7 Final Report</b>				
<b>Total Task Seven</b>				\$ -
<b>Total Matching Funds</b>				\$ 65,170.00

## 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 2001 Funding Cycle
2. Project Title: Avifaunal and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats
3. Applicant Name and Address: Yuma Crossing National Heritage Area, 180 West 1st St., Suite E, Yuma, Arizona 85364-1407
4. Current Land Owner/Manager(s): Quechan Indian Tribe, City of Yuma, Arizona Game and Fish Department
5. Project Location, including Township, Range, Section: Yuma County, Township 8 South, Range 22 West, Section 22
6. Total Project Area in Acres (or total miles if trail): 909
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: The proposed project will survey birds and butterflies in

restored and control sites, utilizing variable circular plots for birds and visual identification for butterflies. Vegetation techniques consist of establishing transects and using the point intercept method to identify vegetation species and characteristics. None of the above mentioned methods will disturb the ground.

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: Ground has been completely modified by removing invasive vegetation with bulldozers, re-grading the land, excavating channels and creating wetlands.

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

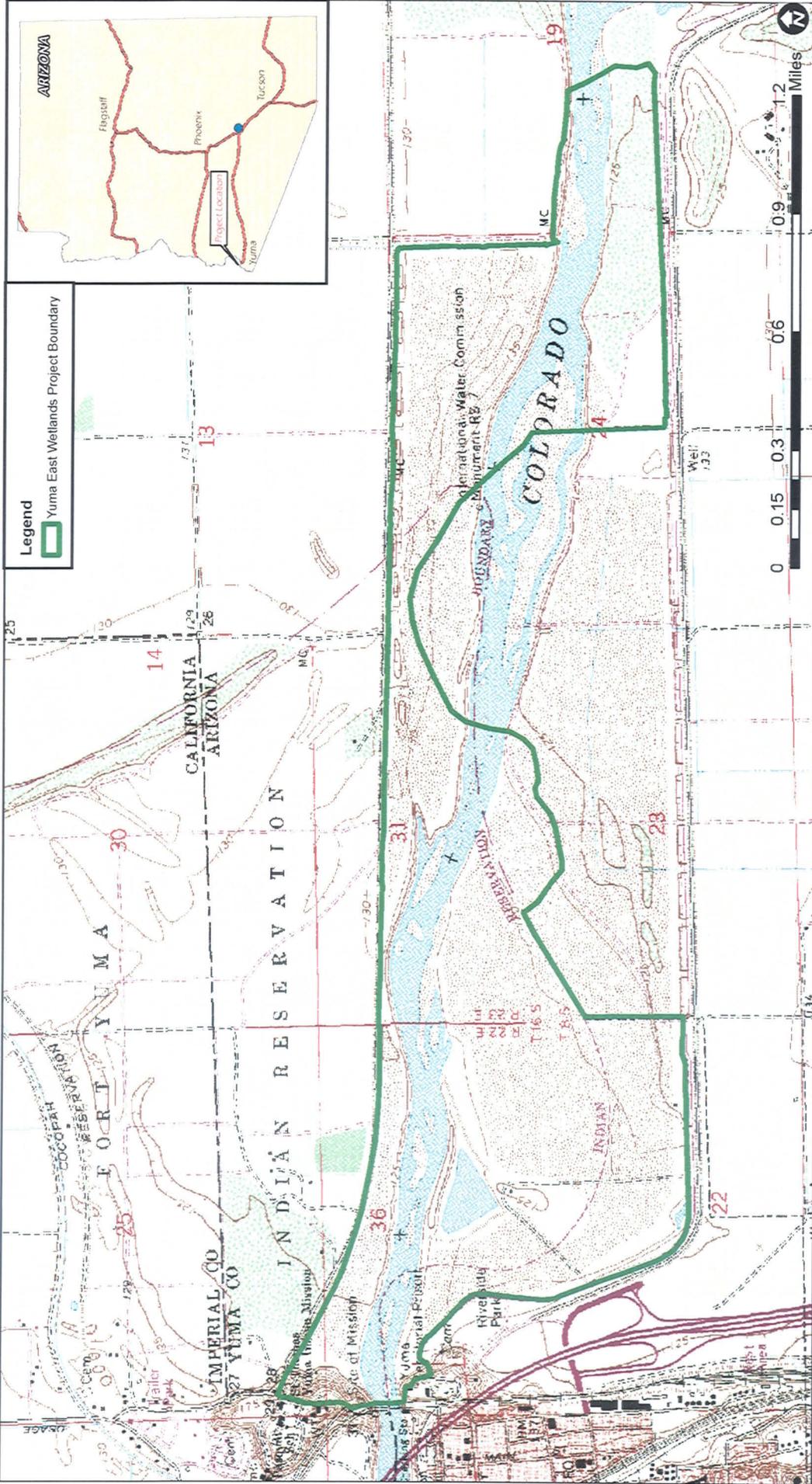
**If YES, name of the district:**

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

Jana Clark / 8-26-10  
 Applicant Signature                      /Date

TINA CLARK  
 Applicant Printed Name

FOR SHPO USE ONLY	
SHPO Finding:	<input type="checkbox"/> Funding this project will not affect historic properties. <input type="checkbox"/> Survey necessary – further GRANTS/SHPO consultation required ( <i>grant funds will not be released until consultation has been completed</i> ) <input type="checkbox"/> Cultural resources present – further GRANTS/SHPO consultation required ( <i>grant funds will not be released until consultation has been completed</i> )
SHPO Comments	
For State Historic Preservation Office:	Date:



**Prepared By:** Fred Phillips Consulting, LLC  
 401 S. Leroux Street  
 Flagstaff, AZ 86001  
 928-773-1530

**Prepared For:** Yuma Crossing National Heritage Area  
 Riverfront Development Office  
 180 W. First Street, Suite E  
 Yuma, AZ 85364

**PROJECT PARTNERS:**  
 Quechan Indian Tribe, City of Yuma, AZ State Land Department,  
 US Army Corps of Engineers, Yuma County, Bureau of Indian Affairs,  
 Audubon Society, Bureau of Reclamation, US Bureau of Land Management,  
 Private Landholders

**Figure 1: Location Map**  
 Yuma East Wetlands Restoration Project  
 River Mile 30.8 to 34.2

**STATE OF ARIZONA  
HISTORIC PROPERTY INVENTORY FORM**

*Please type or print clearly. Fill out each applicable space accurately and with as much information as is known about the property.*

**PROPERTY IDENTIFICATION**

For properties identified through survey: Site No. \_\_\_\_\_ Survey Area: \_\_\_\_\_

Historic Names (enter the name(s), if any that best reflect the property's historic importance): \_\_\_\_\_

Address: \_\_\_\_\_

City or Town: \_\_\_\_\_  Vicinity County: \_\_\_\_\_ Tax Parcel No.: \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_ Quarters: \_\_\_\_\_ Acreage: \_\_\_\_\_

Block: \_\_\_\_\_ Lot(s): \_\_\_\_\_ Plat (Addition): \_\_\_\_\_ Year of plat (addition): \_\_\_\_\_

UTM Reference – Zone: \_\_\_\_\_ Easting: \_\_\_\_\_ Northing: \_\_\_\_\_

USGS 7.5' quadrangle map: \_\_\_\_\_

ARCHITECT: \_\_\_\_\_  not determined  known Source: \_\_\_\_\_

BUILDER: \_\_\_\_\_  not determined  known Source: \_\_\_\_\_

CONSTRUCTION DATE: \_\_\_\_\_  known  estimated Source: \_\_\_\_\_

**STRUCTURAL CONDITION**

- Good (*well maintained; no serious problems apparent*)
- Fair (*some problems apparent*) Describe: \_\_\_\_\_
- Poor (*major problems; imminent threat*) Describe: \_\_\_\_\_
- Ruin/Uninhabitable

**USES/FUNCTIONS**

Describe how the property has been used over time, beginning with the original use: \_\_\_\_\_

Sources: \_\_\_\_\_

**PHOTO INFORMATION**

Date of photo: \_\_\_\_\_  
View Direction (looking towards): \_\_\_\_\_

Attach a recent photograph of property in this space. Additional photographs may be appended.
---

**SIGNIFICANCE**

*To be eligible for the National Register, a property must represent an important part of the history or architecture of an area. The significance of a property is evaluated within its historic context, which are those patterns, themes, or trends in history by which a property occurred or gained importance. Describe the historic and architectural contexts of the property that may make it worthy of preservation.*

A. HISTORIC EVENTS/TRENDS – Describe any historic events/trends associated with the property: \_\_\_\_\_

B. PERSONS – List and describe persons with an important association with the building: \_\_\_\_\_

C. ARCHITECTURE – Style: \_\_\_\_\_  no style

Stories: \_\_\_\_\_  Basement Roof Form: \_\_\_\_\_

Describe other character-defining features of its massing, size and scale: \_\_\_\_\_

### **INTEGRITY**

*To be eligible for the National Register, a property must have integrity (i.e. it must be able to visually convey its importance). The outline below lists some important aspects of integrity. Fill in the blanks with as detailed a description of the property as possible.*

Location -  Original Site  Moved: Date: \_\_\_\_\_ Original Site: \_\_\_\_\_

### **DESIGN**

Describe alterations from the original design, including dates: \_\_\_\_\_

### **MATERIALS**

*Describe the materials used in the following elements of the property:*

Walls (structure): \_\_\_\_\_

Walls (sheathing): \_\_\_\_\_

Windows: \_\_\_\_\_

Roof: \_\_\_\_\_

Foundation: \_\_\_\_\_

### **SETTING**

Describe the natural and/or built environment around the property: \_\_\_\_\_

How has the environment changed since the property was constructed? \_\_\_\_\_

### **WORKMANSHIP**

Describe the distinctive elements, if any, of craftsmanship or method of construction: \_\_\_\_\_

### **NATIONAL REGISTER STATUS (if listed, check the appropriate box)**

Individually Listed;  Contributor;  Non-contributor to \_\_\_\_\_ Historic District

Date Listed: \_\_\_\_\_  Determined eligible by Keeper of National Register (date: \_\_\_\_\_)

**RECOMMENDATIONS ON NATIONAL REGISTER ELIGIBILITY (opinion of SHPO staff or survey consultant)**

Property  is  is not eligible individually.

Property  is  is not eligible as a contributor to a listed or potential historic district.

More information needed to evaluate.

If not considered eligible, state reason: \_\_\_\_\_

## Key Personnel

The following pages include resumes of Yuma Crossing National Heritage Area employees and Project Coordinator, as well as contractors 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

## **BIOLOGICAL PROJECT CONSULTANTS**

**HEIDI TRATHNIGG**  
**Fred Phillips Consulting, LLC.**  
**401 South Leroux St.**  
**Flagstaff, AZ 86001**

### **Principle Biologist**

Fred Phillips Consulting, LLC (FPC) is a Landscape Architecture/ Ecosystem Restoration firm located in Flagstaff, AZ. FPC specializes in multidisciplinary wetland/aquatic/riparian restoration, wetland delineation, biological (birds, amphibians, small mammals, invertebrates, botanical, ecological) studies; commercial and residential landscape design, natural resource planning, and fundraising/eco-business development projects for Indian Tribes, non-profit organizations and public and private agencies. FPC strives to accomplish the wise planning, restoration and development of the natural landscapes and ecosystems of the western United States and beyond. Also, FPC has substantial experience in ecosystem based restoration, restoration monitoring, and conservation planning for sensitive species. Phillips Consulting also teams with a diverse group of highly qualified engineers and specialists giving us the ability to implement any type of project.

Heidi Kloeppe, M.S., with over 15 years experience in conservation biology, is the Principle Biologist for FPC. Ms. Kloeppe has extensive research and monitoring experience, including developing sampling designs for research projects; field sampling; bird, amphibian, fish, and invertebrate collection and identification; wildlife population estimates; habitat identification; water quality sampling and analysis; and non-native species removal. She conducted and managed the previous wildlife research in the Yuma East Wetlands looking at the recovery of avifauna, invertebrates, herpetofauna and mammals in restored wetland and riparian habitats. She has also been the primary author of several master plans, including Las Vegas Wash Revegetation Master Plan and Glen Canyon Revegetation Master Plan. She has headed the grant development for habitat restoration and research for over \$3,000,000 in approved funding. She has also delivered multiple presentations at local, regional, national, and international meetings, such as: Arizona Riparian Council, North American Benthological Society, Arizona Western College, Guide Training Seminar, Desert Fishes Council, and Geological Society of America National Meeting. Ms. Kloeppe earned her B.A. in biology and environmental studies from the University of California at Santa Cruz and her M.S. in biological sciences from Northern Arizona University.

Some of Ms. Kloeppe's wildlife research experience includes a long-term study of mountain yellow-legged frogs in the Sierra Nevada mountain range in California. Necessary skills included habitat surveys, frog and fish density estimates, water attenuation readings; non-native trout removal and otolith extraction; and backcountry leadership for remote site research activities. She assisted in a re-colonization study of invertebrates and algae in aquatic microcosms with varying salinities on the dry alkali lakebed of Owens Lake, CA. She assisted research on avian species of special concern in

Guatemala, including the horned guan. She designed and conducted studies on fish predator effects on snail prey densities using exclosure experiments and density estimates in multiple freshwater ponds in Cuatro Ciénegas, Mexico. She has conducted biological springs surveys (invertebrate collection and preparation, site description, vegetation characterization, and ecological evaluation) and written spring survey protocols for the Colorado Plateau National Park Service. She co-taught a seminar on “Southwestern Springs Classification, Inventory, and Monitoring” at the Geological Society of America National Conference in 2005. She has conducted monitoring studies on the southwestern willow flycatcher at the Yuma East Wetlands for five years, and monitoring studies for the Yuma clapper rail at the Yuma East Wetlands for two years and Picacho Reservoir for one year.

## **Project Site Photographs**

These photos represent the control, invasive species dominated and restored wetland and riparian habitats that will be surveyed for this research proposal. Five avifaunal, butterfly and vegetation transects will be established in each habitat type.



Invasive species dominated (control) wetland habitat in the YEW.



Invasive species dominated (control) riparian habitat in the YEW.



Restored wetland habitat in the YEW.



Restored riparian habitat in the YEW.

**2011 AWPF Grant Proposal: Avifauna and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitat  
Yuma Crossing National Heritage Area**

## **Sampling/Monitoring Plans**

### **AVIFAUNA SAMPLING**

In order to research avian species composition, richness, and abundance through out the breeding season, avian surveys will be conducted six times during the breeding season (March-July) for one year. Five transects will be established within the four habitat types, including restored and control wetland and riparian, for a total of 20 transects. Length of the transect will be determined based on the size of the habitat type being monitored. Variable circular plots will be established every 50m in riparian areas and 100m in wetland areas along the transect to detect avifaunal species (Reynolds et al. 1980). Birds will be measured in 10m increment bands around the center of the plot up to 25m in riparian areas and 50m in wetland areas for a total of 5 minutes. If a species is located by sound a subsequent attempt will be conducted to locate the species and estimate distance. The behavior of each detected species will also be recorded, including singing, calling, nest building, foraging, etc. Only the avifaunal species actively utilizing the habitat will be counted. For example egrets flying over the habitat will not be counted, however a hawk flying over looking for prey will be counted. This method was utilized for the 2007-2008 research conducted in the Yuma East Wetlands (YEW), however the increment bands were more crude (0-20m, 20-50m and <50m).

Due to the high temperatures typically experienced during the breeding season, avifaunal surveys will be conducted from 0.5 hours before sunrise until 1000 hr. Also, since species detections decline in inclement weather conditions, surveys will not be conducted when wind speeds exceed 20 miles per hour (mph) and under heavy rainfall. Density, diversity and distribution of avian species will be calculated for the breeding season. Statistical tests will be utilized to compare differences in avifaunal data in restored verses control riparian and wetland habitats. This data will also provide a species list that can be used for interpretive and educational purposes.

### **BUTTERFLY SAMPLING**

Butterflies will be sampled four times during May, June, July and September for one year from the restored and control riparian habitat types. Butterflies are primarily affiliated with nectar producing plants that more commonly occurring in riparian verses wetland habitats, therefore efforts will be focused at riparian habitats. Five transects will be established in each of the control and restored riparian habitats for a total of 10 transects. These transects will coincide with the avifaunal transects discussed above. Length of the transect will depend on the size of the habitat being monitored.

Butterfly species encountered along the transect will be identified during timed searches. One minute per every 20m along a transect will be spent searching for butterflies. This time will not include the time in pursuit of a butterfly. Butterfly species encountered on each transect will be recorded, along with the location along the transect and the lateral distance from the transect (perpendicular to the transect) (Waltz and Covington 2004). A reference collection of butterflies observed at the YEW will be collected, however after a species has been captured for the collection butterflies will be identified by sight. If a

butterfly cannot be identified by sight, the individual will be captured with a hand net, identified in the field, and released. In addition to the observation, behavior will be recorded for the butterfly, including basking, flying, nectaring, etc. Diurnal butterflies are very sensitive to cool and windy conditions, which reduces chance of observation (Waltz and Covington 2004). Therefore, butterflies will be sampled between 0700 and 1400 hrs, on days warmer than 17°C with winds less than 10 mph (Pollard 1977). Species richness and abundance will be calculated from the data, and will be compared for the restored verses control riparian habitats.

## **AVIFAUNA AND BUTTERFLY HABITAT AND NECTAR RESOURCE SAMPLING**

Avifauna richness and abundance is correlated with habitat characteristics particularly during the breeding season. Also, many butterfly species require specific host plant families for their larvae to develop. Host plant frequency and abundance will be measured for the most common butterfly species (up to 10 species) along with conducting the habitat characteristic surveys for avifauna. Habitat characteristics will be evaluated along the transects established to survey avifaunal and butterfly species. Fifteen randomly selected plots perpendicular to the transect will be used to measure vegetation characteristics. The plots will extend 5 meters on either side of the transect and vegetation will be measured using the point intercept method every 0.5m. An extended metric measuring pole will be used to record both herbaceous and over-story species. These measurements will provide plant species composition and frequency data. Host plant frequency and abundance as well as vegetation density and productivity by calculating total vegetation volume will be measured three times between (March-September) using this method.

Abundance of nectar plants and blooms have shown to directly effect butterfly distribution (Steffan-Dewenter and Tscharrntke 1997). In order to estimate the availability of nectar plants and blooms for butterflies 4m diameter plots will be established every 10m along the transect. At each plot the plants with blooming flowers will be tallied by species. These data will be collected 3 times during the survey season (April-September). The habitat characteristic and nectar resource data will be compared between the four habitat types, including restored verses control riparian and wetland. These data will be correlated to avifaunal and butterfly richness and diversity to evaluate what habitat characteristics may influence these populations.

## **DATA ANALYSIS**

By using these protocols, the data gathered in this project can be used to evaluate population trends on a regional level. Abundance, density, composition, diversity, and distribution of avifaunal and butterfly species will be calculated for each habitat type, restored verses control. This data will indicate whether the avifaunal and butterfly community diversity and abundance is different between the restored sites as compared to non-restored (control) sites. Also, these data will provide information on habitat preference and composition of avifaunal and butterfly species in the different habitat types.

Richness and abundance will be calculated for avifaunal and butterfly species. Ordination analysis will be utilized to determine recovery of diversity and analysis of variance (ANOVA) and linear regressions will be utilized to determine site differences in avifaunal and butterfly community characteristics. This data analysis has been recommended in the literature to evaluate the recovery of community structure and function, which can be utilized to evaluate and adjust restoration practices for the entire lower Colorado River (Reynolds et al. 1980, Waltz and Covington 2004, Nelson and Wydoski 2008).

## **References**

Nelson, S.M. and R. Wydoski. 2008. Riparian Butterfly (Papilionoidea and Hesperioidea) Assemblages Associated with Tamarix-Dominated, Native Vegetation-Dominated, and Tamarix Removal Sites along the Arkansas River, Colorado, U.S.A. *Restoration Ecology* 16 (1): 168-179.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. *Biological Conservation* 12: 115-134.

Reynolds, R.T., J.M. Scott, and R.A. Nussbaum. 1980. A variable circular-plot method for estimating bird numbers. *Condor* 82:309-313.

Steffan-Dewenter, I. and T. Tscharntke. 1997. Early succession of butterfly and plant communities on set-aside fields. *Oecologia* 109:294-302.

Waltz, A.E.M. and W.W. Covington. 2004. Ecological restoration treatments increase butterfly richness and abundance: mechanisms of response. *Restoration Ecology* 12(1): 85-96.

## **Existing Plans**

The Yuma East Wetlands Project Team has been actively planning, designing, permitting and building partnerships for this important research project for the past ten years. In order to initiate restoration on the Yuma East Wetlands and propose research on the effects of restoration on recovering avifaunal and butterfly communities numerous reports and studies have been completed, including:

- a. Yuma East Wetlands Restoration Plan
- b. Yuma East Wetlands Geomorphology Study
- c. Yuma East Wetlands USCOE Wetland Delineation
- d. The Effects of Restoration on Wildlife Recovery at the Yuma East Wetlands Restoration Project Final Report
- e. The Effects of Restoration on Herpetofaunal and Mammalian Community Recovery in the Yuma East Wetlands Final Report
- f. 2008- 2009 endangered bird surveys (Yuma clapper rail and southwestern willow flycatcher) for the entire Yuma East Wetlands Area

This reports and studies in Adobe Acrobat format are enclosed on the attached CD. The comprehensive Yuma East Wetlands Restoration Plan outlines the concept of monitoring and researching the response of wildlife populations to restoration activities as well as detailing concerns from stakeholders and the partnership in this regard. The geomorphological, USCOE Wetland Delineation, Archeological Impacts Study, and the Topographic surveys of the Yuma East Wetlands are all documents that provided a necessary component to initiating restoration on the YEW and are included on the enclosed CD. The Wildlife Recovery final reports provide details on the previous research that was conducted at the Yuma East Wetlands and is included on the enclosed cd. The 2008 and 2009 final reports for both the Yuma clapper rail and southwestern willow flycatcher are provided on the enclosed CD to reference the avian monitoring activities that have been accomplished at the YEW.

## **Community Support and Evidence of Control and Tenure of Land**

The following pages are letters of support and permission to access the site from landowners to conduct this research project that focuses on monitoring the effects of restoration on wildlife communities in the Yuma East Wetlands, Yuma, AZ. The letters presented here serve as letters of intent from the landowners to allow permission to access the site, on their land, to conduct the research in this proposal. No water is required for this proposed project so a water right is not included.

Janet Napolitano  
Governor

Mark Winkleman  
State Land  
Commissioner

# Arizona State Land Department



1616 West Adams Street Phoenix, AZ 85007 [www.land.state.az.us](http://www.land.state.az.us)

May 12, 2003

Marjorie E. Blain  
Senior Project Manager  
Regulatory Branch, Tucson Office  
5205 E. Comanche Street  
Davis Monthan Air Force Base, Arizona 85707

Right-of-Entry Application 29-108083; Yuma Crossing Heritage Area Corporation.

Dear Marjorie:

The Arizona State Land Department authorizes Yuma Crossing Heritage Area Corporation to apply for a 404 permit from the U.S. Army Corps of Engineers for the state land described in Right-of-Entry Application Number 29-108083 (Sections 22, 23 & 24, T8S, R23W, +/- 620.31 acres).

The State Land Department fully supports the project as described in the referenced application: "restored wetlands, public open space, passive recreation, environmental education, eco-tourism; construction, maintenance and operations of the Yuma East Wetlands."

Sincerely,

  
W. Dempsey Helms  
Senior Project Manager  
Engineering Section

C: Matthew Spriggs, AICP, Senior Planner/Redevelopment Specialist  
Yuma Crossing Heritage Area Corporation

V. Ottozawa-Chatupron, Ph.D., Manager  
Engineering Section, Arizona State Land Department

Herb Gunther, Director  
Arizona Department of Water Resources



**QUECHAN INDIAN TRIBE**  
*Fort Yuma Indian Reservation*

P.O. Box 1899  
YUMA, ARIZONA 85366-1899  
Phone (760) 572-0213  
FAX (760) 572-2102

**RESOLUTION**

R-17-02

A RESOLUTION OF THE QUECHAN TRIBAL COUNCIL SUPPORTING THE EAST WETLANDS RESTORATION PLAN AND CONSENT TO THE PROJECT PARTNERSHIP TO SEEK FUNDING FOR THE DESIGN, CONSTRUCTION AND OPERATIONS AND MAINTENANCE OF THE EAST WETLANDS PROJECT.

WHEREAS: THE QUECHAN INDIAN TRIBE OF THE FORT YUMA INDIAN RESERVATION IS A IS A FEDERALLY RECOGNIZED INDIAN TRIBE ORGANIZED UNDER A CONSTITUTION AND BYLAWS RATIFIED BY THE TRIBE ON NOVEMBER 28, 1936, AND APPROVED BY THE SECRETARY OF THE INTERIOR ON DECEMBER 18, 1936, WITH REVISED AMENDMENTS APPROVED ON NOVEMBER 18, 1974, AND MAY 21, 1997; AND

WHEREAS: THE COLORADO RIVER HAS HISTORICALLY BEEN THE CENTER OF LIFE TO THE QUECHAN PEOPLE AND THE RIVER MADE LIFE POSSIBLE, PROVIDING SUSTENANCE FOR THE TRIBE, INCLUDING FISH, WILDLIFE AND PLANTS IN THE RIPARIAN AREAS, WILLOW TREES THAT WERE USED IN BASKET MAKING, AND ARROW WEED THAT WAS USED TO MAKE 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 AND THE 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 WETLANDS ECOSYSTEM AND THE TRIBE'S CULTURAL AND HISTORICAL HERITAGE WILL BE ENHANCED THROUGH REVEGETATION OF NATIVE STANDS AND BOSQUES OF MESQUITE, WILLOW, AND COTTONWOOD TREES; AND

RESOLUTION R-17-02  
PAGE TWO

**WHEREAS:** MANY WILDLIFE POPULATIONS WILL BENEFIT FROM INCREASED NATURAL HABITAT AND REVEGETATION; AND

**WHEREAS:** THE YUMA EAST WETLANDS RESTORATION PLAN SEEKS TO REESTABLISH THE VITALITY OF THIS FRAGILE ECOSYSTEM IN BALANCE WITH THE TRIBAL AND NON-INDIAN COMMUNITY NEEDS FOR ENVIRONMENTAL EDUCATION, PASSIVE, LOW IMPACT RECREATION, AND ECONOMIC DEVELOPMENT THROUGH ENHANCEMENT OF ECOTOURISM OPPORTUNITIES WITHIN AND ADJACENT TO THE FORT YUMA RESERVATION; AND

**WHEREAS:** THE YUMA EAST WETLANDS RESTORATION PLAN INCLUDES SIGNIFICANT PORTIONS OF RIPARIAN LANDS OF THE TRIBE WITHIN THE FORT YUMA RESERVATION AND EACH IMPLEMENTATION PHASE OF THE PROJECT REQUIRES CONSULTATION WITH AND APPROVAL OF THE TRIBE PRIOR TO IMPLEMENTATION.

**NOW, THEREFORE BE IT RESOLVED:** THAT THE QUECHAN TRIBAL COUNCIL HEREBY EXPRESSES THE QUECHAN TRIBE'S SUPPORT OF THE YUMA EAST WETLANDS RESTORATION PLAN, DATED JUNE 30, 2001; AND

**BE IT FURTHER RESOLVED:** THAT THE PROJECT PLANNING TEAM (PHILLIPS CONSULTING, ITS SUBCONTRACTORS, PROJECT PLANNERS, AND CIP MANAGERS OF THE CITY OF YUMA AND YUMA CROSSING NATIONAL HERITAGE AREA DESIGN TEAM AND BOARD MEMBERS) WILL BE GRANTED REASONABLE ACCESS TO TRIBAL LANDS WITHIN THE FORT YUMA RESERVATION THAT ARE INCLUDED IN THE PLAN FOR THE PURPOSE OF COLLECTING DATA, SURVEYING, ENGINEERING AND PROVIDING ARCHITECTURAL SERVICES; HOWEVER, SUCH ACCESS WILL ONLY BE GRANTED BY THE TRIBAL COUNCIL AFTER REVIEW AND APPROVAL OF A WRITTEN SUBMISSION TO THE COUNCIL WHICH SHALL INCLUDE A SCHEDULE OF ACTIVITIES, A STATEMENT OF PURPOSE, DESCRIPTION OF THE LOCATION, THE ESTIMATED LENGTH OF TIME NECESSARY TO COMPLETE THE ACTIVITY, AND SUCH OTHER INFORMATION AS MAY BE REQUIRED BY THE TRIBAL COUNCIL PRIOR TO APPROVAL; AND

**BE IT FURTHER RESOLVED:** THAT THE CONSTRUCTION, RESTORATION, REVEGETATION, OR OTHER ACTIVITY OF A PERMANENT NATURE AFFECTING TRIBAL LANDS SHALL REQUIRE THE EXPRESS PRIOR WRITTEN APPROVAL OF THE TRIBAL COUNCIL AFTER CONSULTATION WITH THE PROJECT PLANNING TEAM AND OTHERS INVOLVED IN THE PROJECT; AND

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RESOLUTION R-17-02  
PAGE THREE

BE IT FURTHER RESOLVED: THAT THE QUECHAN TRIBE, THROUGH THE TRIBAL COUNCIL SHALL NEGOTIATE AND ENTER INTO A COMPREHENSIVE MEMORANDUM OF UNDERSTANDING WITH RESPECT TO OWNERSHIP OF IMPROVEMENTS, OPERATION, MAINTENANCE, ACCESS, FUNDING, SECURITY, AND ALL OTHER ASPECTS OF IMPROVEMENTS, AND ACTIVITIES THAT WILL OCCUR AS A RESULT OF THE EAST WETLANDS RESTORATION PLAN UPON TRIBAL LANDS WITHIN THE FORT YUMA RESERVATION; AND

BE IT FURTHER RESOLVED: THAT PRIOR TO IMPLEMENTATION OF ANY PORTION OF THE EAST WETLANDS RESTORATION PLAN ALL WATER ISSUES, IF ANY, SHALL BE RESOLVED TO THE SATISFACTION OF THE TRIBAL COUNCIL AND IN NO EVENT SHALL ANY PROJECT PLAN, WORK, OR OTHER ACTIVITY INFRINGE UPON OR IN ANY WAY AFFECT OR DIMINISH THE RESERVED WATER RIGHTS OF THE QUECHAN INDIAN TRIBE IN THE COLORADO RIVER AND RELATED WATERS; AND

BE IT FURTHER RESOLVED: THAT THE TRIBAL COUNCIL ENCOURAGES AND SUPPORTS EFFORTS BY THE PROJECT PARTNERSHIP, INCLUDING THE QUECHAN INDIAN TRIBE, THE CITY OF YUMA, AND THE YUMA CROSSING NATIONAL HERITAGE AREA TO SEEK FUNDING FOR IMPLEMENTATION OF THE PLAN, INCLUDING GRANTS AND DONATIONS FOR DESIGN, ARCHITECTURAL SERVICES, ENGINEERING, CONSTRUCTION AND OPERATIONS AND MAINTENANCE OF THE YUMA EAST WETLANDS; AND

BE IT FINALLY RESOLVED: THAT THE PRESIDENT OR IN HIS ABSENCE, THE VICE-PRESIDENT IS THE AUTHORIZED OFFICIAL TO NEGOTIATE OR SIGN ALL APPLICABLE DOCUMENTS.

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RESOLUTION R-17-02  
PAGE FOUR

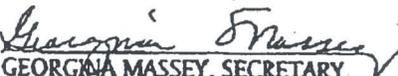
### CERTIFICATION

THE FOREGOING RESOLUTION WAS PRESENTED AT A SPECIAL COUNCIL MEETING OF THE QUECHAN TRIBAL COUNCIL WHICH CONVENED ON JANUARY 14, 2002, DULY APPROVED BY A VOTE OF: 3 FOR, 2 AGAINST, 0 ABSTAINED, 2 ABSENT, BY THE TRIBAL COUNCIL OF THE QUECHAN TRIBE, PURSUANT TO THE AUTHORITY VESTED IN IT BY SECTION 16 OF THE RE-ORGANIZATION ACT OF JUNE 18, 1934 (48 STAT. 984) AS AMENDED BY THE ACT OF JUNE 15, 1935 (49 STAT. 378) AND ARTICLE IV, OF THE QUECHAN TRIBAL CONSTITUTION AND BYLAWS. THIS RESOLUTION IS EFFECTIVE AS THE DATE OF ITS APPROVAL.

QUECHAN TRIBE

BY:

  
MIKE JACKSON, SR., PRESIDENT  
QUECHAN TRIBAL COUNCIL

  
GEORGIA MASSEY, SECRETARY  
QUECHAN TRIBAL COUNCIL

# EVIDENCE OF CONTROL AND TENURE

<b>When Recorded Mail copy to:</b> <b>Arizona Game and Fish Department</b> <b>Land Resources Program Manager</b> <b>2221 West Greenway Road</b> <b>Phoenix, Arizona 85023</b>	<b>Agreement</b> <b>State of Arizona,</b> <b>Arizona Game and Fish Commission</b> <b>And</b> <b>Yuma Crossing National Heritage Area</b>
<b>FOR: Operation and Management for Headstream McVey Property</b>	
<b>HAB-07-0316AL (08/27/07)</b>	<b>21 08S23W</b>

## COOPERATIVE AGREEMENT

### BETWEEN THE ARIZONA GAME AND FISH COMMISSION AND YUMA CROSSING NATIONAL HERITAGE AREA

This Cooperative Agreement ("Agreement") is entered into between the Arizona Game and Fish Commission ("Commission") and Yuma Crossing National Heritage Area ("YCNHA") (collectively "Parties" and singularly "Party").

WHEREAS, the Commission is authorized to enter into this Agreement pursuant to A.R.S. § 17-231(B)(7);

WHEREAS, the Commission has statewide responsibility for wildlife management and habitat restoration under A.R.S. § 17-231(A)(2);

WHEREAS, both Parties recognize and encourage a continued commitment to wetland and riparian habitat restoration for the benefit of wildlife;

WHEREAS, the Arizona Game and Fish Department ("Department") acts under the authority of the Commission;

WHEREAS, the Commission desires to purchase the Headstream McVey Property as described herein (hereafter "Property"), but presently does not have dedicated or appropriated funds for the operation and maintenance of said Property;

WHEREAS, the Commission will attempt to purchase the Property only with the YCNHA's agreement to operate and maintain the Property should the Commission be successful in its acquisition;

WHEREAS, the YCNHA desires to operate and maintain the Property should the Commission be able to acquire it, and has funds available for such operation and maintenance.

NOW, THEREFORE, it is the understanding of the Parties that

1. **The Commission agrees to:**

A. Attempt to acquire the Property, which consists of 20.3 acres of private land on the Southwest corner of the Yuma East Wetlands project boundary

B. If the Commission acquires the Property, allow use of the Property for wetlands and riparian restoration in accordance with the Yuma East Wetlands Restoration Plan (hereafter "Plan") and the developed Restoration Plan for the Property (hereafter "Restoration Plan"), so long as these plans are consistent with Title 17, Arizona Revised Statutes, administrative rules promulgated thereunder, and Department policy

2. **YCNHA agrees to:**

A. Provide funding for restoration of the Property in accordance with the Plan, which includes:

1. Converting fallow agricultural land into sheet-irrigated cottonwood/willow habitat.
2. Restoring flows through degrading marches of cense cattail and bulrush.
3. Revegetating the riparian areas with cottonwood willows, mesquite and other native species.

B. Assume as of the date the Commission acquires the Property and maintain for the period of this Agreement all responsibility for operation and maintenance of the Property, which includes:

1. Assuring continued water flow across the Property
2. Creation of wetland, cottonwood willow/mesquite and inland salt grass flat habitats.

C. Allow the Department to review and approve the Restoration Plan for the Property

D. Not modify the Plan in any manner that conflicts with Title 17, Arizona Revised Statutes, administrative rules promulgated thereunder, or Department Policy

E. Provide annual maintenance reports for the Property

F. Indemnification. The YCNHA does hereby agree to indemnify and hold harmless the State of Arizona, the Commission and Department, and all representatives, members, and employees thereof from any and all claims, demands, liabilities and costs of what so ever kind and nature arising out of the acts or conduct of any of the YCNHA's agents, employees, and representatives or members of the general public

3. **The Parties mutually agree that:**

A. In the event that the Plan conflicts with Title 17, Arizona Revised Statutes, administrative rules promulgated thereunder, or Department policy, said statutes, rules, and policy shall govern.

B. The Commission has no legal obligation to purchase the Property, and this Agreement shall become null and void, with neither Party incurring any obligation to the other Party, should the Commission not purchase the Property

4. Effective Date and Duration. This Agreement is effective as of the last signature date below, and expires five (5) years from that date. Unless terminated earlier by the Parties, this Agreement shall be automatically renewed at expiration for an additional five (5) year term.

5. Termination Generally. Either Party may terminate this Agreement upon thirty (30) days' written notice to the other Party. Upon termination, all work performed pursuant to this Agreement shall cease and neither Party shall incur any liability to the other except as set forth in Paragraph 11

6. Notices. All written notices concerning this Agreement shall be delivered in person or sent by certified mail, return receipt requested, to the Parties as follows:

A. For the Commission:

Conservation Program Supervisor  
2221 West Greenway Road  
Phoenix, Arizona 85023

B. For YCNHA:

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

7. Non-discrimination. In carrying out the terms of this Agreement, the Parties agree to comply with Executive Order 99-4 prohibiting discrimination in employment, the provisions of which are incorporated herein by reference.

8. Audit. Pursuant to A.R.S. § 35-214, all books, accounts, reports, files, electronic data, and other records relating to this Agreement shall be subject at all reasonable times to inspection and audit by the State of Arizona for five (5) years after completion of this Agreement.

9. Arbitration. To the extent required pursuant to A.R.S. § 12-1513, the Parties agree to use arbitration to resolve any dispute arising under this Agreement, with each Party to bear its own attorneys' fees and costs

10. Termination for Conflict of Interest. This Agreement is subject to termination pursuant to A.R.S. § 38-511.

11. Termination for Non-Availability of Funds. Every obligation of the Commission and Department under this Agreement is conditioned upon the availability of funds appropriated or allocated for the payment of such obligation. If funds for the continuance of this Agreement are not allocated or are not available, this Agreement shall terminate automatically on the date of expiration of funding. In the event of such termination, the Commission and Department shall incur no further obligation or liability under this Agreement other than for payment of services rendered prior to the expiration of funding.

12. Other Agreements. This Agreement in no way restricts either Party from participating in similar activities with other public or private agencies, organizations, or individuals.

13. Compliance with Applicable Law. All work performed pursuant to this Agreement shall be in compliance with all applicable state and federal laws and regulations.

14. Integration. This Agreement constitutes the entire agreement between the Parties pertaining to the subject matter herein and accurately sets forth the rights, duties, and obligations of each Party. All prior or contemporaneous agreements and understandings, oral or written, are hereby superseded and merged herein. The provisions of this Agreement may be abrogated, modified, rescinded, or amended in whole or in part only by mutual written consent executed by the Parties.

15. Severability. In the event that any provision of this Agreement or portion thereof is held invalid, illegal, or unenforceable, such provision or portion thereof shall be severed from this Agreement and shall have no effect on the remaining provisions of this Agreement, which shall remain in full force and effect.

16. Ensuring Compliance with Federal Immigration Laws by State Employers. Illegal Immigration. The Parties agree to comply with Executive Order 2005-30, "Ensuring Compliance with Federal Immigration Laws by State Employers and Contractors," the provisions of which are hereby incorporated by reference.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date below:

YUMA CROSSING NATIONAL HERITAGE AREA



Charles Flynn  
Executive Director, Yuma Crossing National Heritage Area

*8/7/07*

Date

ARIZONA GAME AND FISH COMMISSION



Duane L. Shroufe  
Secretary to the Commission  
Director, Arizona Game and Fish Department

Date

**COPY**

**OFFICE OF THE  
BOARD OF SUPERVISORS**  
198 Main Street  
Yuma, Arizona 85364

**WALLY HILL  
COUNTY ADMINISTRATOR**



**LENORE LORONA STUART**  
DISTRICT 1  
**LUCY SHIPP**  
DISTRICT 2  
**CASEY PROCHASKA**  
DISTRICT 3  
**MARCO A. (TONY) REYES**  
DISTRICT 4  
**ROBERT J. (BOB) McLENDON**  
DISTRICT 5

**RESOLUTION NO. 01-56**

**A RESOLUTION OF THE BOARD OF SUPERVISORS IN YUMA COUNTY,  
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, and the restoration of this vital ecosystem has become increasingly important. The River has made agriculture possible, providing 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 arrow weeds for arrows; and,

WHEREAS, the Yuma East Wetlands is one of the 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; and,

WHEREAS, many wildlife populations will benefit from the increase of natural habitats; 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 RESOLVED by the Board of Supervisors, Yuma County, Arizona, as follows:

SECTION 1: Yuma County supports 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, the Yuma Crossing National Heritage Area Design Team and Board Members) are granted access to those County 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 County Administrator, or the Administrator's Designee, is authorized to execute any and all documents necessary to implement this action.

Passed and adopted this 4th day of September, 2001.

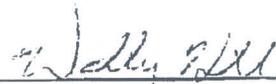
APPROVED:



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Marco A. "Tony" Reyes  
Chairman, Board of Supervisors  
Yuma County, Arizona

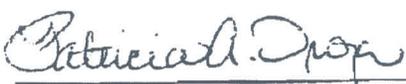
ATTESTED:



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Wally Hill, Clerk of the Board

APPROVED AS TO FORM:



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Patricia Orozco, County Attorney

**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

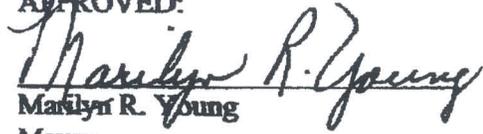
lands included in the plan for the purposes of data collection, surveying, engineering, architectural services, and approved construction.

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.

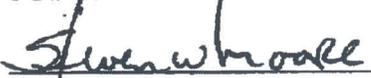
APPROVED:

  
Marilyn R. Young  
Mayor

ATTESTED:

  
Brigitta K. Stanz  
City Clerk

APPROVED AS TO FORM:

  
Steven W. Moore  
City Attorney



# United States Department of the Interior



## BUREAU OF RECLAMATION

Yuma Area Office  
7301 Calle Agua Salada  
Yuma, Arizona 85364

IN REPLY REFER TO:

YAO-7210  
ENV-4.00

AUG 12 2010

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

Subject: Avifauna and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats Grant Proposal (Proposal) – Yuma East Wetlands Project Area

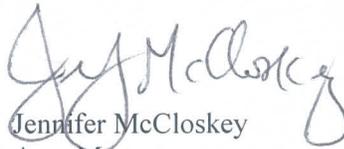
Dear Mr. Flynn:

The Bureau of Reclamation has reviewed the subject Proposal for continuing vital research in the recovery of wildlife in the restored habitats of the Yuma East Wetlands. As restored habitats mature along the lower Colorado River it is of utmost importance to continue to monitor wildlife response to these habitat improvements.

As a stakeholder in the subject project area, Reclamation supports the ongoing monitoring and research that you are proposing of these sites which could significantly contribute to the on-going effort to provide new habitat for migratory and neo-tropical birds. Birds and butterflies are important indicators of ecosystem health and should provide important insight to the proper ecosystem functioning of this system. Without this research, recovery of species in restored habitats during this project cannot be clearly declared a success or beneficial.

In summary, Reclamation believes the restoration work is supportive for various wildlife species, including endangered species and many migratory birds and butterflies associated with wetland and riparian communities along the lower Colorado River. The on-going revegetation, and proposed monitoring, research and documentation process will be helpful in determining the value and extent of those improvements. If you have any questions please contact Ms. Jill S. Dale, Environmental Planning and Compliance Group Manager at telephone No. 928-343-8127.

Sincerely,

  
Jennifer McCloskey  
Area Manager

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



THE STATE OF ARIZONA  
**GAME AND FISH DEPARTMENT**

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

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

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August 10, 2010

Charles Flynn  
Yuma Crossing National Heritage Area  
180 West 1<sup>st</sup> St., Suite E  
Yuma, AZ 85364

RE: Avifauna and Butterfly Recovery in Restored Wetland and Riparian Habitats Grant Proposal

To Mr. Flynn:

The Arizona Game and Fish Department (Department) has reviewed the Draft Avifauna and Butterfly (*Lepidoptera*) Recovery in Restored Wetland and Riparian Habitats Grant Proposal (Proposal) for continuing vital research in the recovery of wildlife in the restored habitats of the Yuma East Wetlands.

The Department supports this Proposal and similar efforts along the lower Colorado River that strive to measure the value of aquatic, wetland, and riparian habitat restoration efforts designed to benefit Arizona's wildlife and its citizens. As a stakeholder in this process, we believe that appropriate monitoring and research activities are necessary to understand the value of native habitats being created and restored for migratory and neo-tropical birds, which are important indicators of ecosystem condition and function. Without this information, the recovery of species in restored habitats cannot be adequately estimated.

We appreciate the opportunity to be involved in the early development of this Proposal, and we look forward to working cooperatively with you and other partners as this project progresses.

Sincerely,

Troy G. Smith  
Habitat Program Manager  
Region IV, Yuma

cc: Pat Barber, Supervisor, Region IV  
Laura Canaca, PEP Supervisor, Habitat Branch  
Heidi Trathnigg, Fred Phillips Consulting, LLC

AGFD #M10-08090143