

Arizona Water Protection Fund FY 2009 Grant Application Review

Application # WPF0380 Applicant: ARIZONA DEPARTMENT OF WATER RESOURCES
STATEWIDE PLANNING DIVISION

Title of Project: REVISION OF THE WONDERS OF WETLANDS (WOW)
EDUCATOR'S GUIDE

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, 4th Floor, Phoenix). The additional materials available are the following:

Maps
 Photographs
 Disk
 Other

- WOW! THE WONDERS OF THE WETLANDS
COPYRIGHT

COPY

Arizona Water Protection Fund
Application Cover Page
FY 2009

WPF 0380

Title of Project: Revision of The Wonders of Wetlands (WOW) Educator's Guide

Type of Project: [] Capital or Other, [x] Water Conservation, [] Research
Stream Type: [x] Perennial, [x] Intermittent, [x] Ephemeral
Your level of commitment to maintenance of project benefits and capital improvements: [x] < 5 years [] 5-10 years [] 11-15 years [] 16-20 years

Applicant Information:
Name/Organization: AZ Dept of Water Resources-Statewide Planning
Address 1:
Address 2:
City:
State:
ZIP Code:
Phone:
Fax:
Tax ID No.:

Inside an AMA: Yes [] No [x]
If yes, which AMA: [] Phoenix, [] Tucson, [] Prescott, [] Pinal, [] Santa Cruz
Type of Application: [x] New, [] Continuation

Contact Person:
Name: Marjie Risk
Title: Statewide Water Conservation Supervisor
Phone:
Fax:
e-mail:

Any Previous AWPf Grants: [] Yes [x] No
If yes, please provide Grant #(s):

Arizona Water Protection Fund
Grant Amount Requested:
\$150,000.00
If the application is funded, will the Grantee intend to request an advance: [x] Yes [] No

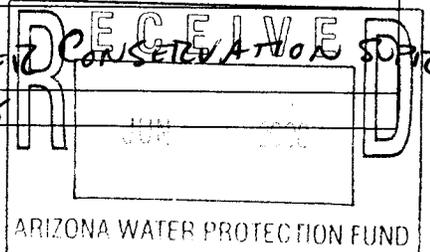
Matching Funds Obtained and Secured:
Table with 2 columns: Applicant/Agency/Organization, Amount (\$)
1. Applicant: 12,000
2. Environmental Concern: 30,000.00
Total: 42,000

Has your legal counsel or contracting authority reviewed and accepted the Grant Award Contract General Provisions? [x] Yes [] No [] N/A

Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the attached application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The Arizona Water Protection Fund Commission may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.

Karen Smith (Signature) Deputy Director, ADWR
Typed Name of Applicant or Applicant's Authorized Representative Title and Telephone Number

Mayra J. Roth (Signature) STATEWIDE WATER CONSERVATION SUPERVISOR
Date Signed 6/11/08



Executive Summary

This application is a request for funding a revision to The Wonders of Wetlands (WOW) Educator's Guide which was produced in 1995 by The Watercourse (Project WET Foundation) and Environmental Concern. Both agencies are nationally recognized leaders in water education and wetlands awareness.

The WOW guide is geared toward grades K-12 and has been used selectively in Arizona as a companion to the National Project WET Educator's Guide. The Arizona Department of Water Resources (ADWR) funds Project WET workshops throughout Arizona and provides free educational materials to formal and non-formal educators. The National Project WET guide is always provided in addition to either the WOW Guide, the Arizona Conserve Water Guide, etc. The WOW Guide is a great resource but is sorely under utilized in Arizona. Specialized workshops on the topic of wetlands or riparian areas have increased interest in the use of this Guide in Arizona; however, the Guide is outdated and should be revised to include topics such as restoration of riparian areas, riparian areas as vital resources, constructed wetlands, etc. The layout and design of the guide to include new photographs and drawings is also an important element of the revision process. A revised WOW Guide could be successfully used in Arizona to teach educators and students the value of maintaining wetlands and riparian areas as well as the need for restoration of these areas in all states.

The Guide is used in all fifty states and in at least 25 countries as a means of providing wetlands education. The Guide provides background information on wetlands and a series of classroom activities but falls short specifically in the area of riparian resources. While we propose to build upon the success of this National Guide, regionally extensions would be added to better reflect the issues tied to river and riparian resources in Arizona and the benefit of constructed wetlands.

The ADWR has experienced great success in revising existing educational materials. In 2007, the ADWR and Project WET published the Arizona Conserve Water Educator's Guide. The ADWR recognized the need for Arizona specific water conservation educational materials and sought the assistance and expertise of Project WET to accomplish this goal. The ADWR received permission from Project WET to have the rights waived to an existing national Conserve Water Educator's Guide and their assistance in making it Arizona specific. This project would be administered in much the same manner with assistance from Project WET (The Watercourse) and Environmental Concern.

Project Overview

A. Background

This application is a request for funding a revision to The Wonders of Wetlands (WOW) Educator's Guide which was produced in 1995 by The Watercourse (Project WET

Foundation) and Environmental Concern. Both agencies are nationally recognized leaders in water education and wetlands awareness. The WOW Guide has achieved the status of “the most comprehensive introduction to wetland issues and definitions” by the North American Association for Environmental Education. The WOW was developed to provide an overview of the value and benefit of wetlands with an emphasis on stewardship. An empowerment component encourages students to work within their own communities to protect and preserve wetlands that are threatened or vulnerable.

The WOW Guide is still used to teach students about the importance of wetlands and presents a good foundation of wetlands information, however, with all educational materials there is a pressing need to update and revise the resource. Funding would be used to update the existing resource in an effort to keep up with current issues and to provide more of an emphasis on protection and preservation of riparian areas.

B. Goals

The goal of this project is to update and revise the existing The Wonders of Wetlands (WOW) Educator’s Guide, to correlate the Guide to the National Science Standards and to print 3,000 copies.

C. Objectives

Objective #1: Update and enhance background information for educators

This section of the book requires updating to provide cutting edge information on wetlands issues and to keep up with the current science of wetlands research. An initial evaluation of exiting information will be completed to evaluate the validity of existing information in an attempt to identify data gaps, missing or outdated material.

The current Table of Contents pertaining to this Objective is as follows:

Background Material for Teachers:

Chapter 1: Wetlands and People: Through Time and Across Borders

Chapter 2: Defining Wetlands

Chapter 3: Wetlands Function

Chapter 4: Wetlands as Home

Chapter 5: How People Manage Wetlands

Chapter 6: Action for Wetlands

Objective #2: Provide a list of current wetland and riparian resources for educators

This section of the book will be updated to provide currently available resources to educators to include both print and on-line materials. Recent ADWR's efforts in working with environmental educators has shown that they use a whole suite of sources for supplemental materials and that web based materials are used more frequently as well as the new generation of social based communication (YouTube, etc.) .

Currently the Guide lists other curriculum guides, books, films and videos, movies, field guides/handbooks, posters, music, and maps. Information on science equipment, habitat enhancement, planting supplies, and agency assistance is also listed but all of these resources should be updated. Providing web links to applicable wetland and riparian resources will be the highest priority.

Objective #3: Review activities. Add new activities with a focus on riparian issues.

A review of all existing activities will be completed with each evaluated for relevancy to current issues and overall applicability to modern teaching topics and methods. New activities and information will be developed which outlines issues tied to the preservation and or restoration of riparian resources. Activities will be field tested and reviewed by educators in an effort to gauge ease of use, clarity of instructions and activity objectives, etc. An overview of the activity categories demonstrates the need for specific riparian activities.

Current activity categories include:

Section 1: So this Is a Wetland? (A series of activities designed to introduce general wetland concepts and definitions)

Section 2: The Wetland Community (Activities which help students understand critical wetland issues like habitat niche, plant and animal adaptations, wetland delineation, etc.)

Section 3: Drip, Drop, Dribble, Splash! (Activities that relate to the role of water within wetlands and includes topics such as filtration and erosion)

Section 4: Going Down Under (Activities that explore the role of soils in wetlands and includes topics such as filtration, percolation, and decomposition)

Section 5: Wetlands and People (Activities that identify the interactions between wetlands and humans to include social, political, historical and cultural perspectives)

Many of the activities include student pages which allow the students to collect data and provide information for further study. These pages will also be updated. An example of this resource is provided on the following page as an illustration of the existing format:



Measuring Rate of Flow

Background

What happens to a nearby stream or other body of water when it rains, or has not rained for a long time? You may have noticed a change in rate of flow.

Rate of flow is a measure of how fast the water in a stream or other body of water is moving. Most flowing bodies of water (including the water in many types of wetlands) have varying flow rates. Reasons for this variation include precipitation (or lack thereof), spring thaws of snow and ice, and changes in the use of land in the watershed. During a dry season or drought, the flow may be greatly slowed by the lack of rainfall. Some bodies of water may become smaller or narrower than usual. Small streams may stop running altogether. (These are called intermittent streams, since they do not always flow.) Some bodies of water do not flow much at all and are nearly still.

Moving water typically carries many materials, including dissolved gases and salts (e.g., oxygen and sodium chloride), soil, mineral sediments, organic materials, nutrients, litter, and so on. As water travels through an area, it may deposit materials, pick them up, or both. This action provides important metabolic building blocks for aquatic plants and animals. In bodies of water with little or no flow (e.g., a pond), wind and animals' activities help mix in these materials.

As rain and runoff wash into a body of water, the rate of flow increases. Rushing floodwaters can be dangerous to people and property and can cause damage to the water itself. Soil and other pollutants are washed from the land. This input of sediment muddies the water, choking plants and animals. As the shoreline is carved away, valuable land and habitat are lost. Moreover, animals that are adapted to slow-moving water may not survive if the flow rate is greatly increased, particularly over a long period.

The combination of moving water and human development can seriously impact local watersheds. In areas with a great deal of pavement, water cannot penetrate the ground, so there is more runoff, which increases flow rate. On the other hand, parking lots, driveways, and sidewalks covered with gravel or wood chips instead of pavement allow some rainwater to soak into the ground. Runoff can also be slowed by a human-made, plant-filled buffer zone along a shoreline or water edge. A wetland performs this function naturally, providing a place where sediments and pollutants can settle out before runoff reaches the waterway.

Materials

- 2 stakes or sticks
- string
- measuring tape

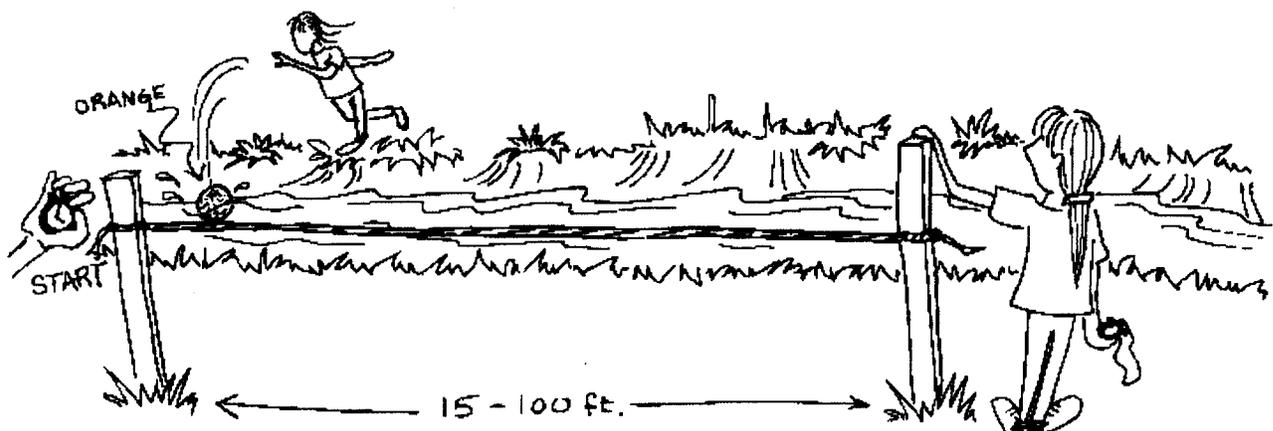
- 2 oranges of similar size and weight
- stopwatch or watch with second hand

Procedure

1. At the wetland, measure at least a 5-yard (4.5-m) distance along the bank, where the water is visible. Measure 100 feet (30 m) if possible. Mark the length by setting the stakes in the ground at each end and connecting them with string.
2. Have a timekeeper stand at the upstream stake. Toss an orange into the water upstream of this stake. Begin timing as the orange floats by the stake (record the starting time, if using a wristwatch). Move to the other stake before the orange gets there, and stop the watch just as the orange passes the second stake. Record the time (subtract from the starting time, if using a wristwatch). Recover the orange if you can do so safely; otherwise, use the second orange to repeat the test for accuracy.
3. Now calculate the rate of flow.

Rate (r) \times Time (t) = Distance (d).
So, $r = d \div t$.

Units should be expressed as feet per second, yards per minute, meters per second, etc., as appropriate. If the wetland is nearby, monitor the rate of flow at different times such as after heavy rain, as snow melts, or during a dry spell. Compare the results.



Statement of Problem:

Revision of this Guide is long overdue and would be used more widely in Arizona if updated and correlated to the National Academic Standards for Science. Funding has not been available on a National level from other agencies to revise and update the Guide. Both The Watercourse through Project WET and Environmental Concern applied for funding from the U.S. Environmental Protection Agency in 2003. This project did not receive funding and staffing changes at the National level have not provided an opportunity for re-application.

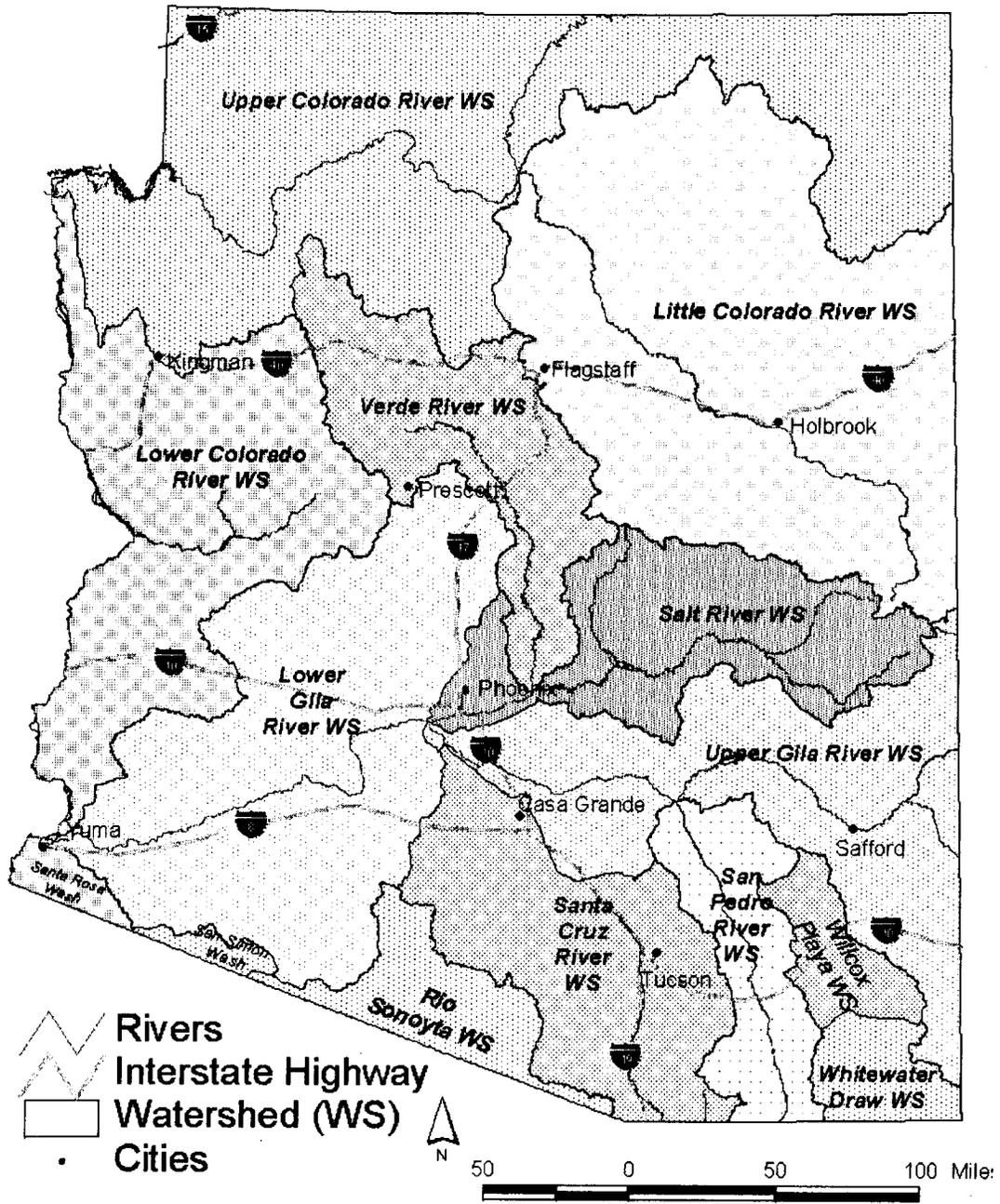
Statement of Solutions:

Since funding at the National level has not been forthcoming, this application serves to seek funding through the Arizona Water Protection Fund for work on a project with National reach but with wide application throughout Arizona.

Statement of Project Years of Benefit:

The existing Guide has been in use for over 12 years. The proposed revision is likely to be used for the next ten years.

Arizona Watershed Map FY 2009



Title of Project: Revision to The Wonders of Wetlands (WOW) Educator's Guide

Project Location & Environmental Contaminant Information FY 2009

Project Location Information			
1. County: <u>N/A</u>	2. Section: <u>N/A</u>	3. Township: <u>N/A</u>	4. Range: <u>N/A</u>
<p>5. Watershed: <u>Select One (reference watershed map)</u></p> <p>6. Name of USGS Topographic Map where project area is located: <u>N/A</u></p> <p>7. State Legislative District: <u>N/A</u> (Information available at http://156.42.40.10/mapping/default2.asp?tname=Interim.2004.Legislative.Map)</p> <p>8. Land ownership of project area: <u>N/A</u></p> <p>9. Current land use of project area: <u>N/A</u></p> <p>10. Size of project area (in acres): <u>N/A</u></p> <p>11. Stream Name: <u>N/A</u></p> <p>12. Length of stream through project area: <u>N/A</u></p> <p>13. Miles of stream benefited: <u>N/A miles</u></p> <p>14. Acres of riparian habitat: <u>N/A acres</u> will be:</p> <div style="margin-left: 400px;"> <input type="checkbox"/> Enhanced <input type="checkbox"/> Maintained <input type="checkbox"/> Restored <input type="checkbox"/> Created </div>			
<p>15. Provide directions to the project site from the nearest city or town. List any special access requirements: <u>N/A</u></p>			
Environmental Contaminant Location Information			
<p>1. Does your project site contain known environmental contaminants? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants: •</p> <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>			

Scope of Work

Introduction:

This goal of this project is to revise an update The Wonders of Wetlands (WOW) Educator's Guide to include activities and background information tied to the protection and restoration of riparian areas. A project team of personnel from each agency will be assembled to manage the progress of this project. Periodic meetings of the project team will take place in either Montana (offices of Project WET, the Watercourse), Maryland (offices of Environmental Concern) or in Arizona (ADWR). Guide revisions may be completed through the use of one or more interns and the use of educators for field testing and review of activities. The project period is estimated to be 24 months from date of a signed contract. The revised Guide will be used nationally but will better reflect the importance of riparian environments to ecosystems and provide a greater opportunity to add regional information to the existing curriculum.

Task 1: Update and enhance background information for educators

The Project Team will meet at least twice in person during the project period to review and evaluate the existing Guide. The Project Team will work with educators and experts within the wetlands and riparian communities to develop updated background information.

Task 2: Update resources available to educators

The Project Team will review existing resources listed within the Guide and consult with educators and experts to identify the most up to date resources. Educators in Arizona have expressed interest in obtaining more on-line resources. Emphasis will be placed upon on-line/web links and other sources that provide the most current information.

Task 3: Conduct review of existing activities. Add new activities with a focus on riparian issues.

The Project Team will identify information gaps that can be included in newly developed activities. Concepts such as preservation of riparian areas and habitat, stream restoration, and stewardship of riparian resources will be incorporated. Student activity pages will be updated during the revision process. Activities will be field tested by educators across the country.

Task 4: Produce and Publish Revised Guide

The Project Team will work cooperative to produce and publish a revised WOW Guide. It is anticipated that the length of the project will be 24 months. The new Guide will be correlated to the National Academic Standards for Science.

Deliverables:

The Project Team will write and submit quarterly reports detailing the progress of the project. A final report will be submitted upon project completion which will summarize all aspects of the effort.

Budget

Direct Labor and Outside Services:

The Watercourse (Project WET, 3 months)	\$18,000
Production Coordinator	\$ 3,000
Intern (18 months)	\$20,000
Field Experts to review and comment	\$ 3,000
Design and Layout	\$18,000
Cartographer	\$ 5,000
Illustrator	\$ 15,000
Photographs	\$ 2,000
Proof Reader	\$ 6,500
Web Design/WOW page	\$ 3,000
Travel (Two mtgs. for three staff)	\$12,000
Supplies	\$ 2,000
Indirect costs	\$ 6,000
Printing (3,000 @ \$15 per copy)	\$45,000
Total Estimated Cost	\$158,500

Matching Funds

Environmental Concern (50% for 24 months)	\$30,000
ADWR (10% for 24 months)	\$12,000

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: N/A
2. Project Title: Revision to WOW Educator's Guide
3. Applicant Name and Address: ADWR, 3550 N. Central Avenue, Phoenix
4. Current Land Owner/Manager(s): N/A
5. Project Location, including Township, Range, Section: N/A
6. Total Project Area in Acres (or total miles if trail): N/A
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: N/A
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: N/A

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.

Applicant Signature

/Date

Applicant Printed Name

FOR SHPO USE ONLY

SHPO Finding:

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

SHPO Comments

For State Historic Preservation Office:

Date:

**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. N/A 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: N/A

B. PERSONS – List and describe persons with an important association with the building: N/A

C. ARCHITECTURE – Style: N/A no style

Stories: _____ Basement Roof Form: _____

Describe other character-defining features of its massing, size and scale: N/A

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: N/A

DESIGN

Describe alterations from the original design, including dates: N/A

MATERIALS

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

Walls (structure): N/A

Walls (sheathing): N/A

Windows: N/A

Roof: N/A

Foundation: N/A

SETTING

Describe the natural and/or built environment around the property: N/A

How has the environment changed since the property was constructed? N/A

WORKMANSHIP

Describe the distinctive elements, if any, of craftsmanship or method of construction: N/A

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

Individually Listed; Contributor; Non-contributor to N/A Historic District

Date Listed: N/A 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: This project involves a revision to an existing Wetlands Educator's Guide

Key Personnel

ADWR- Marjie Risk, Statewide Planning

Environmental Concern Staff (TBD)

The WaterCourse (TBD)