

Application Cover Page

WPF 0304

Fill in all information on the cover page. The project title should be short, yet descriptive of the proposal.

Application Information

Title of Project: X Diamond Ranch LCR Riparian Enhancement Project

Type of Project: <input checked="" type="checkbox"/> Capital or Other <input type="checkbox"/> Water Conservation <input type="checkbox"/> Research	Stream Type <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral	Date Submitted: 6/10/04 Date Attended an AWPf Workshop: 4/6/04, Tom Moody Date Attended an AWPf Consultation: 5/27/04
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Applicant Information: Name/Organization: Wink Crigler; X Diamond Ranch Address 1: P.O. Box 791 Address 2: City: Springerville State: AZ ZIP Code: 85938 County: Apache Watershed: Little Colorado River Tax ID No.:	Inside an AMA: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, which AMA: <input type="checkbox"/> Phoenix <input type="checkbox"/> Tucson <input type="checkbox"/> Prescott <input type="checkbox"/> Pinal <input type="checkbox"/> Santa Cruz
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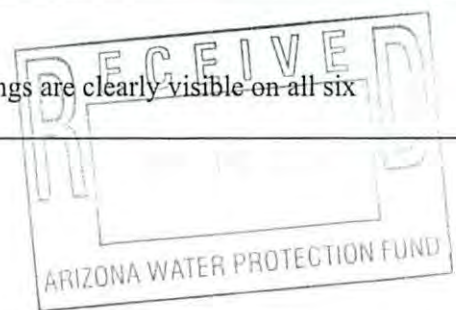
Contact Person: Name: Wink Crigler Title: Landowner/applicant Phone: 928-333-2286 Fax: 928-333-5009	Type of Application: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation	Project Start Date: 1/31/05 Project End Date: 3/31/08
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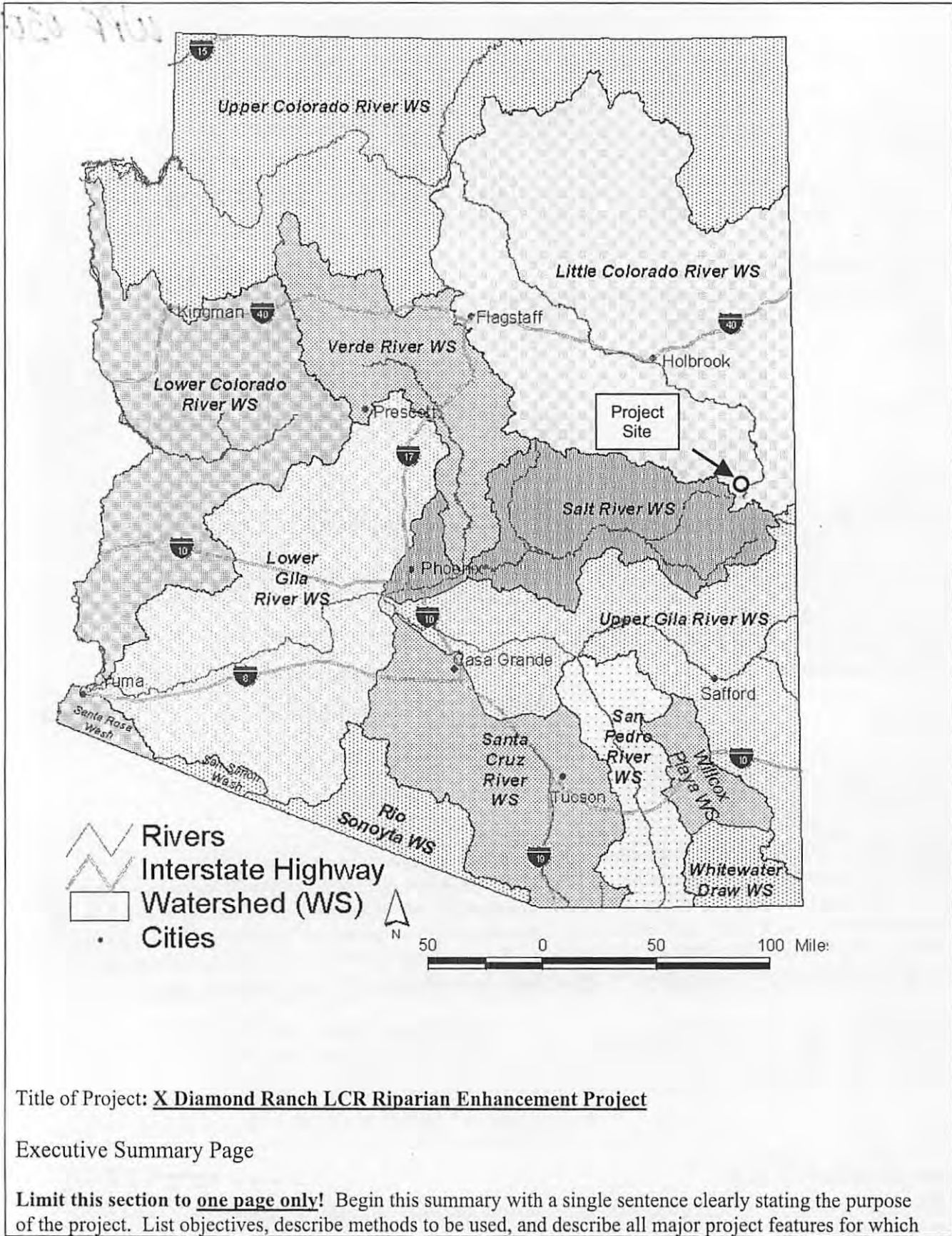
Arizona Water Protection Fund Grant Amount Requested: \$348,969.00 If the application is funded, will the Grantee intend to request an advance: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">Matching Funds Obtained and Secured:</th> </tr> <tr> <th style="text-align: left;">Applicant/Agency/Organization:</th> <th style="text-align: right;">Amount (\$):</th> </tr> <tr> <td>1. Applicant</td> <td style="text-align: right;">\$13,881</td> </tr> <tr> <td>2. Natural Channel Design</td> <td style="text-align: right;">1,470</td> </tr> <tr> <td>1.</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right;">Total: \$15,351</td> </tr> </table>	Matching Funds Obtained and Secured:		Applicant/Agency/Organization:	Amount (\$):	1. Applicant	\$13,881	2. Natural Channel Design	1,470	1.		Total: \$15,351	
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1.													
Total: \$15,351													

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.

Wink Crigler <i>Wink Crigler</i> Typed Name of Applicant or Applicant's Authorized Representative	Landowner/applicant 928-333-2286 Title and Telephone Number
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Signature Date Signed
 Arizona Watershed Map
 Indicate the location of your project on the map. Ensure that your markings are clearly visible on all six copies submitted





Title of Project: **X Diamond Ranch LCR Riparian Enhancement Project**

Executive Summary Page

Limit this section to one page only! Begin this summary with a single sentence clearly stating the purpose of the project. List objectives, describe methods to be used, and describe all major project features for which

funding is being requested. Be sure to illustrate how the proposed work will directly benefit rivers, streams and riparian habitats, including fish and wildlife resources that are dependent on the habitat.

Executive Summary:

The goals of this project are to restore and protect riparian vegetation and habitats; restore proper hydrologic conditions/functions; and restore proper stream geomorphology/channel characteristics including floodplains, wetlands, and backwater areas of the Little Colorado River. The Little Colorado River provides unique habitats for avian, terrestrial, and aquatic species within the arid southwest. In addition to a rich riparian corridor, the river provides a cold water fishery that supports trout species. The applicants believe project goals are essential to maintaining a viable, self-reproducing recreational fishery that includes healthy stocks of both native and non-native trout species. They also believe that these objectives can be accomplished within the context of a well-managed working ranch.

The properties of the X Diamond Ranch were settled in 1879. The ranch has been operated by the Butler family since the early 1900 s and today is solely owned and operated by Wink Crigler, a Butler decendent. With changing times and economics, the ranch has diversified to include tourism including the clear air, cool pines, western hospitality, horseback riding, and the opportunity to enjoy a recreational sport fishery. Currently, the stream is managed as a private, "catch and release" fishery with populations of rainbow and brown trout. The objective of this project is to enhance riparian and aquatic habitats so that the stream reach will meet three larger goals: a stable, functioning stream system, healthy wildlife habitats of native riparian plants, and a self maintaining, mixed trout fishery that includes a healthy population of native Apache trout (a federally listed species); all within the framework of a viable, well-managed family ranch.

The X-Diamond Ranch will contract with Natural Channel Design, Inc, (NCD) to assess the existing condition of the physical, biological, and aquatic components of the project area and, working closely with the applicants, prepare a design that will meet project goals. NCD is a stream engineering firm that has designed and implemented the successful restoration practices on the AWPf demonstration project (99-092WPF) on the Little Colorado River in Springerville and a variety of other projects in the southwest. The natural channel approach will be used in assessment and restoration design. The approach uses a variety of low impact structural and non-structural practices to restore system function including rock weirs, rock vanes, fish habitat structures and bioengineering with native vegetation. By implementing specially engineered practices stream stability and function is restored, water and sediment transport functions improved, and associated aquatic habitats enhanced. Final designs for the project will be based on the quantitative geomorphic, hydrologic, and vegetative data collected during an assessment process with special attention paid to quality aquatic habitat features.

This project goes beyond the traditional stream restoration project because it includes enhancements of aquatic habitats for native and non-native fish species. Despite our societal efforts to accurately quantify and protect aquatic habitats, especially for native fishes, much remains unknown. Sampling aquatic resources is not inexpensive. The success of the project will necessitate greater time and financial resources in the assessment and monitoring tasks of the project. But the results of the project will demonstrate methods to maintain a healthy native trout population within an existing trout community. The result will be a solution that benefits multiple resources instead of pitting one against the other. The applicants believe that multiple resources (ranching, recreation, abundant wildlife habitat, healthy aquatic resources, and resource protection/conservation) can be balanced to benefit all.

Project Location & Environmental Contaminant Information

All applicants must provide project location and environmental contaminant location information. If the exact extent of the project area is not completely defined at the time this form is completed, please make note of this on line #'s 8 & 10 below, and complete the form with location information as accurately as possible. **Outline the study area on a 7.5 minute** (15 minute if the project area is too large), U.S.G.S. topographic map and include a copy with each copy of the application. The Arizona Watershed Map is for general public use when reviewing your application summary, while the U.S.G.S. map is for staff use. All applicants also must provide a project schematic drawing as described on page 16 of this application package.

Project Location Information

1. County: <u>Apache</u>	2. Section: <u>18</u>	3. Township: <u>T8N</u>	4. Range: <u>R28E</u>
5. State Legislative District: <u>4</u>			
6. Land ownership of project area: <u>Private</u>			
7. Current land use of project area: <u>Agricultural/recreation</u>			
8. Size of project area (in acres): <u>80 acres</u>			
9. Stream Name: <u>Little Colorado River</u>			
10. Length of stream through project area: <u>1.0 miles</u>			
11. Miles of stream benefited: <u>1.0 miles</u>			
12. Acres of riparian habitat: <u>50 acres</u> will be:			
<input checked="" type="checkbox"/> Enhanced <input checked="" type="checkbox"/> Maintained <input checked="" type="checkbox"/> Restored <input checked="" type="checkbox"/> Created			
12. Provide directions to the project site from the nearest city or town. List any special access requirements: The project is located west of Eagar, AZ. Drive west on Highway 260 toward Greer. Turn south on the South Fork Road (CR 4124) approximately 5 miles west of Eagar. Continue two miles and cross the Little Colorado River and follow the signs to the X Diamond Ranch.			

Environmental Contaminant Location Information

For purposes of this manual, environmental contaminants are substances which pose risk of harm to human health or the environment and include hazardous substances, hazardous wastes, petroleum products or Environmental Protection Agency priority toxic pollutants (defined by CERCLA 42 USC §9601, RCRA 42 USC §6903 and the Environmental Protection Agency). Environmental contaminants do not include wastewater from a wastewater facility permitted by a local, state, or federal authority having jurisdiction over wastewater.

1. Does your project site contain known environmental contaminants? YES NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:

2. Are there known environmental contaminants in the project vicinity? YES NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:

3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? YES NO

Introduction

Give the background of the project, providing any necessary introductory information and the project area's relevant history. Identify the overall goal(s) of your project (what you want to achieve), followed by the objectives of your project. Objectives are specific, measurable outcomes of the project. List these objectives in numerical order, with the first objective having the most important outcome. List the problem(s) that you address in your proposal, the cause(s) of these problems, and the remedies or solutions to them. State the anticipated number of years of project-related benefit from the project, along with a justification for that estimate. Also, provide a statement regarding your level of commitment to maintenance of project benefits and capital improvements. The history and background of the project also must be provided for on-going projects. Describe the site prior to project initiation, tasks that have been completed and any site changes that have occurred as a result of these activities.

Background:

The applicants wish to protect and restore the riparian resources of the Little Colorado River. This effort will include the restoration of riparian vegetation and habitats; channel/floodplain morphology; hydrologic function; and floodplain/backwater areas. They also believe these objectives are essential to maintaining a viable, self-reproducing recreational fishery that includes healthy stocks of both native and exotic trout species. Finally, the project is intended to prove that these objectives can be accomplished within the context of a well-managed working ranch. If successful, the value of the project goes beyond the direct benefits to project resources. By meeting multiple resource concerns within a single system, the project provides a successful example that can be utilized in other streams.

In 1998, the Towns of Eagar and Springerville and the Round Valley Water Users Association formed the Upper Little Colorado River Partnership. A diverse group of stakeholders including local businesses, agencies, municipal/county governments, and special interest groups were involved. Technical support was provided by various state and federal agencies. The group's mission is to provide cooperative-based efforts to improve the watershed through comprehensive planning and management. One of the Partnership's goals was to promote the enhancement of riparian corridor of the Little Colorado River. To facilitate that goal, the Partnership supported a comprehensive assessment and inventory of the Little Colorado River above Lyman Reservoir and the implementation of a riparian enhancement demonstration project within the town limits of Springerville. The demonstration project was sponsored by the Apache Natural Resources Conservation District and funded by the Arizona Water Protection Fund (Grant # 99-092WPF).

Construction on the demonstration project was completed in the fall of 2003. The project incorporated a variety of successful practices to minimize bank erosion and sedimentation as well as enhance riparian plant communities. As a public outreach component, a series of two day workshops were offered to local landowners to demonstrate the successful techniques and encourage similar efforts. In the fall of 2003, the applicant attended one of these outreach workshops and decided to implement a similar project on her property.

Project Site Location

The X Diamond Ranch is located along the Little Colorado River (LCR) upstream from its confluence with the South Fork. The ranch lies at approximately 7,500 feet in elevation in a landscape of Ponderosa pine forest. The LCR is a low-gradient gravel bed stream with broad, well-vegetated floodplains. The riparian corridor is composed of willows, alders, cottonwoods, and a robust herbaceous plant community. See appendix for project location maps and aerial photos.

The X Diamond Ranch was settled in 1879 and has been an operating ranch since the early 1900 s. Today it remains in the Butler family and still maintains a livestock component. But like many ranch operations in the southwest, it has had to diversify to survive. Ranch activities now include lodging, trail rides, archeology workshops, a museum of local history, cultural and environmental education functions, and a "catch and release" trout fishery.

A series of large flood events beginning in the 1960 s created substantial alterations to the stream channel and floodplains removing most of the riparian vegetation and braiding the channel. As the channel system slowly healed into a single channel and riparian vegetation reestablished, many channel characteristics such as deep pools, sharp drops, and shallow backwaters were lost. These features add to the complexity of any stream system and provide critical habitat components for aquatic and terrestrial species. In one area, an over-abundance of beaver has created a maze of dams and shallow channels that strand fish and destabilize the channel. It is expected that, after a thorough assessment of quality and quantity of aquatic habitats, natural features such as pools and backwaters can be enhanced through structural and bioengineering practices to benefit fish.

Although livestock have been allowed to graze the riparian areas, effective management has maintained a healthy native plant community. However, unstable stream banks, lack of floodplains, and beaver activity has created a discontinuous riparian corridor. The density of riparian vegetation will be enhanced to provide improved habitat but managed to maintain recreational access to the stream corridor. Invasive, non-native plant species will be removed where possible. Stream bank erosion is common but not widespread. Stabilization of eroding banks and the reestablishment of additional native riparian vegetation will be principal project tasks.

The Little Colorado River through the project area supports a cold-water trout fishery. However, the stream must be stocked annually to maintain trout stocks despite the "catch and release" management. This suggests that natural reproduction is not sufficient to maintain even a catch and release fishery. Native Apache trout, a federally listed species, are in the stream but in small numbers. It is hoped that the restoration of critical riparian components will improve reproduction for both native and non-native species. The ranch has ponds and other facilities that can be utilized if necessary to meet project objectives. For example, if found to be helpful in enhancing river stocks, small fish could be reared in isolated pond areas for reintroduction to the river.

The recreational and livestock activities are both important economic components and have been successfully integrated into the X Diamond Ranch. Currently livestock management limits grazing of the riparian areas to short, infrequent periods. The recreational fishery is carefully managed as a limited entry, "catch and release" operation. These activities can and will be integrated into the riparian restoration and wildlife habitat objectives of the project. Proper levels of livestock and recreation management will be identified and implemented within the project. A fencing plan will be prepared that identifies fragile project areas that require temporary exclusion from damaging livestock or recreational uses for successful reestablishment of vegetation. Criteria based on the quality and quantity of riparian vegetation will be developed to guide long-term operation and management of project areas. With proper planning, management, and monitoring the completed project will provide a positive example by successfully integrating multiple uses within a riparian system.

Goal(s):

The goal of the project is to enhance the aquatic, biological, and physical resources of the riparian corridor of the Little Colorado River riparian corridor through the project area. The enhancement of these resources is expected to directly benefit habitats for terrestrial and aquatic wildlife including federally listed fish species.

Objective(s):

- 1) Increase the stability of the stream channel while maintaining the natural dynamic stream processes. These processes require proper hydrologic function, stream geomorphology, and channel/floodplain function.
- 2) Increase the quantity and quality of natural habitat features in the Little Colorado River to benefit native and non-native aquatic fish communities.
- 3) Enhance the native riparian vegetation along this reach of the Little Colorado River to increase the quantity and quality of wildlife habitats.
- 4) Maintain a recreational fishery that includes native Apache trout, a federally listed species within the framework of a viable, family ranch. Proper planning, management, and monitoring of livestock and recreation can successfully separate the activities and balance the needs of multiple uses.
- 5) Provide a positive example of riparian restoration and wildlife habitat enhancement on private properties in the Little Colorado River watershed.

Statement of problem(s):

- 1) Proper hydrology, hydraulics, geomorphology, and channel/floodplain function are limited by the lack of a variety of morphological features including scour pools, backwaters, and associated wetlands. Stream bank erosion is not uncommon. In areas over-abundant beaver populations have created a braided system and increased channel instability. While beaver are a natural and important part of the system, beaver activity must be balance with the hydrology, hydraulics, and riparian vegetation recruitment rates. Beaver populations will be managed, both short- and long-term, to return the balance.
- 2) A lack of habitat complexity within the natural channel/floodplain appears to limit habitats especially for trout species. Although recreational access to the stream is carefully controlled and the fishery managed as "catch and release", annual stocking is necessary to maintain stocks. It appears a lack of quality habitat may reduce the opportunity for natural reproduction and growth through some or all life stages.
- 3) The native riparian plant community is present within the project reach but is not at its full potential relative to project objectives. Riparian vegetation can be increased to create better terrestrial and aquatic habitat conditions and increase bank stability but not to the extent to impair access to the recreational fishery. Exotic plant species are not prevalent in the stream corridor.
- 4) In the polarized politics of the West, livestock activities and riparian health have become to be considered incompatible. There are certainly examples that support this view. However, the need exists to set aside the debate and create opportunities to test the hypothesis that, at least in some areas, multiple uses can be compatible.

5) The lack of positive, scientifically based and monitored riparian restoration projects on private lands does not encourage other landowners to undertake similar projects.

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

1) The existing condition of the stream channel/floodplain is partially due to natural forces, partly the result of human management practices, and partly due to large numbers of beaver in the system. Natural and human induced channel response to past large flood events has reduced the number of some of natural backwaters, overflow channels, and associated floodplain wetlands. High, unstable stream banks limit riparian vegetation and contribute sediment to the stream. Extensive beaver activity has produced numerous, long lived dams that split flows into many, unstable shallow channels. Flooding from persistent beaver dams has drowned significant areas of willows and other riparian vegetation. Existing channel/floodplain morphology reduces habitat complexity and limits natural reproduction of both native or exotic trout species.

2) The absence of a self-maintaining trout population suggests the lack of complexity within the natural channel/floodplain may limit one or more life stages of trout species. A number of features, created and maintained by natural stream processes, can be installed to improve aquatic habitat. These habitat features will improve natural reproduction and survival of native and non-native trout.

3) Stream morphology, invasive species, unstable stream banks, and beaver activity has created a patchwork of native riparian vegetation. The lack of willows reduces the strength of stream banks producing greater erosion and sediment supply to the river. The foundation of a healthy riparian community exists within the existing patchwork. Native vegetation throughout the riparian corridor will be increased to enhance wildlife habitats.

4) Livestock and recreational activities are both carefully managed within the project site. Through planning, management, and monitoring, the project will attempt to successfully balance the multiple objectives of enhanced stream function, improved riparian wildlife habitats, and a healthy native and non-native trout population within a viable, working family ranch.

5) Examples of projects that successfully balance healthy riparian resources with viable livestock operations are not common. This may be partly the result of the region's past economic dependence on livestock and partly due to a lack of knowledge of the composition and function of riparian communities. Many past efforts have focused on single resource management objectives to the detriment of others. This project can provide a positive example balancing multiple uses including riparian enhancement/protection, recreational access, and well-managed livestock operation.

Statement of project-related remedies or solutions:

The natural channel approach will be used in this project. That approach attempts to identify and characterize the combination of physical and biological factors that create a stable stream channel. Stream stability is defined as the ability to carry the water and sediment of the watershed while maintaining dimension, pattern, and profile without aggrading or degrading over time. A stable channel maintains the dynamics of sediment transport and support balanced amounts of erosion and deposition. The dynamic equilibrium preserves the critical elements of disturbance essential to the vegetative and aquatic resources.

Within the framework of the natural channel morphology, a thorough assessment of existing conditions of the physical and biological components within the project reaches will be undertaken. Specific aquatic habitats will be identified during sampling of the fish and invertebrate communities. The intensive sampling will be spread over three spring months to accurately capture the range of age-classes and species within the system. Sampling protocols will include hoop nets, minnow traps, and electro-fishing. With this range of sampling gear, the aquatic population can be accurately characterized before prior to the design process. The sampling will also help identify the specific habitats utilized by different age-classes. These habitats will be quantified in terms of slope, depth of water, velocity, substrate, etc. and will be used to create reference conditions for aquatic resources. The existing channel/floodplain will be evaluated against a morphologic reference condition developed from assessment surveys. The reference condition represents the full potential of the system consistent with project objectives. Specific prescriptions will be recommended to move the system towards the reference condition.

Bank stabilization will be addressed using a variety of structural and bioengineering approaches. All structural elements will be constructed of local rock or other native materials. These practices have already proven effective in the AWPf demonstration project downstream in Springerville. Revegetation will be accomplished using local native plant cuttings. Livestock, elk, and recreational access that could impair project areas will be temporarily excluded from revegetation areas to allow reestablishment.

A comprehensive monitoring plan will measure the success or failure in meeting project objectives during the project period. The physical channel/floodplain geomorphology will be measured on an annual basis to evaluate stability. Riparian vegetation will be monitored in revegetated areas to evaluate success. Fish sampling will be used to monitor the size and abundance of the life stages of the aquatic species. Finally photo point monitoring will provide qualitative measurements of project success.

Public outreach will include both local school children as well as landowners and other practitioners. School classes already visit the ranch regularly and these visits will be integrated into project activities to the greatest extent possible.

The applicants live within the project area and expect to take an active role in the project. They intend to participate in field work as well as assisting in the assessment, design, and monitoring. Their enthusiasm and deep knowledge of the area will be invaluable to the project.

Statement of project years of benefit:

Because the project attempts to restore a natural and self-maintaining equilibrium to the project area, it is expected that the benefits to riparian resources and related wildlife habitats of the Little Colorado River extend for a period of more than 25 years.

Your level of commitment to maintenance of project benefits and capital improvements:

- < 5 years
- 5-10 years
- 11-15 years
- 16-20 years

Commitment to Long-Term Operation and Maintenance Responsibilities (Capital Projects Only)

Long-term operation and maintenance of capital grant-assisted structures, human access or educational facilities, revegetation sites, and other grant-assisted improvements are a condition of AWPf grants. Information described on this page will assist in drafting an Operation and Maintenance Contract to be signed concurrently with the Grant Award Contract, if the project is selected for funding by the AWPf Commission.


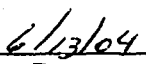
- ◆ List the operation and maintenance activities to be performed.
- ◆ In limited circumstances, the Commission may agree to hold another entity besides the grantee responsible for performing some or all of the operation and maintenance responsibilities. Notify the Commission on this form if you want the Commission to consider contracting separately with another entity for operation and maintenance. The Commission will vote on such a request at the Grant Award Meeting.
- ◆ The operation and maintenance period shall last for 20 years following completion of grant-assisted structures, human access or educational facilities, revegetation sites, and any other grant-assisted improvements, or for another, shorter period as agreed upon by the applicant/landowner and Commission. Any shorter operation and maintenance period shall be based upon either 1) the most current Fiscal Year Cost Share / Incentive Payment Schedule of the Farm Bill Program which is utilized by the Natural Resource Conservation Service or 2) another reasonable period agreed upon by the parties.

Are you requesting a transfer of operation and maintenance activities Yes No

Applicant(s): <u>Wink Crigler</u> <u>P.O. Box 791</u> <u>Springerville, AZ. 85938</u>	Landowner(s) (if different from applicant): <u>Same</u>
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Operation & Maintenance (O&M) Activities	Responsible Party: (Applicant or Landowner)	O&M Period (if other than 20 years - see terms above)
Grantees Landowners agree to manage the properties in such a manner as to limit or eliminate direct impacts to project components. Grantees are not responsible for impacts to project from post-project flood or other natural events.	Applicant	20 years

By signing below, the applicant agrees to perform operation and maintenance activities as outlined above for each specified period. The landowner's signature acknowledges that if the project is funded, the landowner will provide the applicant access to the project site to perform tasks identified in the Grant Award Contract and to operate and maintain grant-assisted structures as identified above. If the landowner is identified above as the responsible entity for any operation and maintenance, the landowner s signature acknowledges that, should the project be funded and should the Commission agree to contract separately for operation and maintenance of the project, the landowner will sign an Operation and Maintenance Contract with the Commission.

	
Applicant(s) Signature	Date
Wink Crigler	Landowner(s) Signature (if different from Applicant) Same
Applicant(s) Typed Name	Landowner(s) Typed Name

State Historic Preservation Office (SHPO) Certification

This certification is required by regulations implementing the State Historic Preservation Act (A.R.S. 41-861 *et seq.*), effective July 24, 1982. It is understood that **recipients of state funds are required to comply with this law** throughout the project period. The State Historic Preservation Act mandates that all State agencies consider the potential of activities or projects to impact significant cultural resources. 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. All projects that affect the ground-surface that are funded by AWPf require SHPO clearance, **including those on private and federal lands.**

Project Title: X Diamond Ranch LCR Riparian Enhancement Project

Please answer the following questions, which provide information about the potential of the project to impact cultural resources:

1. Does the project have the potential to disturb the surface and/or subsurface of the ground?
 YES NO
2. Are there any buildings or structures (including mines, bridges, dams, canals, etc.) which are 50 years or older within the project area that have the potential to be disturbed by the proposed activity?
 YES NO
3. Are there any known prehistoric and/or historic archaeological sites within the project area?
 YES NO
4. Are you aware of any archaeological investigations that have been performed within one (1) mile of the project area?
 YES NO

If you answered **NO** to all of the above questions, please sign on the line below certifying that the activity or project is in compliance (and will remain in compliance throughout the project period) with the State Historic Preservation Act. **YOU MUST SUBMIT THIS FORM WITH YOUR COMPLETED APPLICATION.**



Authorized Applicant Signature

6/13/04

Date

If you answered **YES** to any of the above questions, please answer the questions on the following page.

SHPO Certification

If you answered yes to question #1, specifically identify any surface or subsurface impacts that are expected.

It is likely that surface impacts in the form of bank sloping, channel realignment, or similar activities will be part of the project

If you answered yes to question #1, describe the current ground surface condition within the entire project area boundary (i.e. is the ground in natural undisturbed condition, or has it been bladed, paved, graded, used for agriculture, etc.).

The ground within the project area is in a natural undisturbed condition.

If you answered yes to question #2, list the sites, their names, and provide a brief description of the sites.

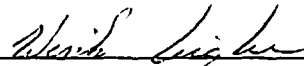
Has the project area been previously surveyed for cultural resources by a qualified Archaeologist?

YES NO

DON T KNOW

If yes, submit a copy of the Archaeologist s report with your application.

If you answered any questions on this page, please sign on the line below certifying that you will take all of the necessary steps to comply with the State Historic Preservation Act for all project activities and will remain in compliance throughout the project period. **YOU MUST SUBMIT THIS FORM WITH YOUR COMPLETED APPLICATION.**



Authorized Applicant Signature



Date

Scope of Work: Task Descriptions

Describe in detail the tasks you will perform to accomplish your objectives and achieve your desired results. These tasks must be exactly the same as the tasks listed in your task-timetable. Please use the same task numbering on each form.

- A deliverable is a product submitted to the Arizona Water Protection Fund demonstrating that work has been completed. Deliverables are often reports, photographs, data, etc. that are submitted along with receipts and invoices for materials and labor.
- Obtaining permits and conducting monitoring are potential tasks for all applications. Obtaining access agreements is another potential task, especially for research projects.
- If applicable, development of revegetation and monitoring plans must be tasks with appropriate costs assigned. Go to Appendix B for appropriate plan content outlines.
- The last task must be a final report with an appropriate cost assigned.
- Although some tasks continue throughout the contract duration, attempt to make each task discrete and payable upon completion.

Task #1: Permits, Authorizations, Clearances and Agreements

The Grantee shall obtain all permits, authorizations, clearances and agreements necessary to conduct the work described in this Scope of Work, including but not limited to:

- Cultural resource clearance (SHPO),
- Army Corps of Engineers 404 permit,
- Section 7 consultation with US Fish and Wildlife Service

Given the presence of Apache trout habitats, a federally listed species, Section 7 consultation with the U.S. Fish and Wildlife Service is expected. To anticipate this consultation, an evaluation of the impacts to biological resources will be prepared for submission with the 404 permit application. Generally, the Section 7 consultation is conducted between the Army Corps of Engineers and US Fish and Wildlife Service as part of the 404 permit process. In addition, permits may be necessary for sampling of the aquatic habitats. If necessary these permits will be obtained before any sampling begins.

A Safe Harbor agreement may be negotiated with the US Fish and Wildlife Service for this project. The agreement limits the grantees responsibility for maintaining populations of federally listed species that may populate the site as a result of the project s enhancement activities. If an agreement is signed, copies will be submitted to the AWPf project manager.

The grantee will also submit copies of all sub-contractor agreements describing all activities to be performed and delineating responsible parties for each activity.

Deliverable Description: (1) Copy of all sub-contractor agreements
(2) Copy of SHPO clearance,
(3) 404 permit from Army Corps of Engineers,
(4) private landowner access agreements

Deliverable Due Date: (1) Prior to initiation of sub-contracted work
(2), (3), (4) Prior to any ground disturbing activities

AWPF Reimbursable Cost: \$17,010.00

**Task #2: Development of Site Assessment Plan, Implementation of Site Assessment,
Development of Final Design Plan**

The grantee shall develop and submit a Site Assessment Plan. The Plan shall describe in detail, the proposed site assessment methodologies and activities, including: (1) evaluation of the hydrology, hydraulics, and morphology of the channel/floodplain, (2) evaluation of the existing riparian vegetation, (3) assessment of fish populations, and (4) local reference conditions for the resources described in (1), (2), and (3). The Plan shall be designed to provide the Grantee with critical design parameters.

The Plan shall include all methodologies, equipment needed, data to be collected and rationale for collecting the data.

The grantee will prepare a Project Assessment and Design Report. The report will describe an assessment of the existing conditions of the physical, biological components of the Little Colorado and its riparian system within the project area. A topographic survey of the project areas will be performed. The assessment will include, at a minimum, an evaluation of the condition of:

- Riparian vegetation
- Channel geomorphology
- Channel/floodplain function
- Stream bank stability
- Sediment Transport
- Fish populations
- Aquatic habitats

The Project Assessment and Design Report will include, at a minimum:

- Narrative summarizing assessment activities
- Summary of inventory and evaluation conclusions
- Design report
- Final design drawings, including design parameters,
- Construction specifications
- Revegetation plan
- Engineers cost estimate

The Project Assessment and Final Design Report will be reviewed and signed/stamped by a Professional Engineer licensed in the State of Arizona.

Deliverable Description: (1) Site Assessment Plan
(2) Project Assessment and Final Design Report

Deliverable Due Date: (1) March 31, 2005
(2) June 30, 2005

AWPF Reimbursable Cost: (1) \$3,150.00
(2) \$54,568.50

Task #3: Develop Project Work Plan

The Grantee will develop a Project Work Plan that includes a 1) Monitoring Plan, 2) Livestock management and Fencing Plan, and 3) Public Outreach Plan.

The **Monitoring Plan** will contain a description of a set of protocols to measure the success or failure of project components in meeting project objectives. Monitoring protocols will include:

- Channel stability/geomorphology
- Riparian vegetation
- Stream bank stability
- Fish Populations
- Photo point monitoring

The Monitoring Plan will include a discussion of the monitoring objectives, strategy for establishing baseline/control conditions, specific attribute(s) to monitor, specific monitoring sites, Quality Assurance/Quality Control discussion, and the expectations for measuring success.

Each quantitative monitoring protocol will include:

- Monitoring methods
- Equipment needed
- Number and rationale for choosing sampling sites
- Data collection protocols
- Monitoring duration/period
- Data analysis protocols

Qualitative monitoring (Photo point) will follow Photo-monitoring procedures outlined in the AWPf 2005 Guidelines Manual.

The Livestock Management and Fencing Plan shall describe livestock management procedures necessary to protect project components during establishment of native vegetation. Specific project areas to be fenced to exclude livestock, recreation, and other activities that could impair establishment of project revegetation will be identified. A set of criteria based on the health of the riparian vegetation will be established to guide short-term protection and long-term operation and management of project areas.

The Public Outreach Plan shall describe all activities to be performed for the duration of the Project to inform and educate the public about the Project. The Outreach Program will be designed to educate local landowners and school groups about the natural channel approach to stream and riparian restoration based on hydrogeomorphic concepts and principals. It is expected that the Public Outreach Program (Task #8) will include one or more on-site workshops for local landowners and school groups where consulting engineers and riparian specialists will discuss the project and design concepts. The Public Outreach Plan will include, at a minimum:

- Description of proposed workshop or other activity
- Each activity's target audience
- A description of each event and informational material to be produced
- Activity schedule

Deliverable Description: Project Work Plan

Deliverable Due Date: September 30, 2005

AWPF Reimbursable Cost: \$5,171.25

Task #4: Fence Construction Areas

Proper management including livestock exclusion is essential to the success of riparian revegetation projects. The majority of the project area has existing fences that allow management of livestock access. However, the final project design may recommend revegetation in specific areas not already fenced. If fencing is needed, it will be completed prior to the beginning of construction.

Deliverable Description: (1) Initial Fencing Report
(2) Final Fencing Report

Deliverable Due Date: (1) Prior to beginning of Initial Construction/Revegetation
(2) Prior to beginning of Final Construction/Revegetation

AWPF Reimbursable Cost: \$12,600.00

Task #5: Initial Construction-Revegetation

The Grantee will perform all activities as described in the approved Project Assessment and Design Report. The task is expected to be completed in the late fall to minimize disturbance to aquatic species and during the beginning of the dormant period for the riparian vegetation. The construction will take place under the supervision of the design engineer or his designated representative.

An Initial Construction/Revegetation Report will describe the construction and including a daily log of the construction and photographs of the tasks.

Deliverable Description: Initial Construction/Revegetation Report

Deliverable Due Date: November 30, 2005

AWPF Reimbursable Cost: \$121,170.00

Task #6: Final Construction-Revegetation

In the fall of Year 1, the Grantee will assess the success of the Initial Construction/Revegetation efforts and identify additional practices necessary to project success. There may be unforeseen damage from high flows, failure of some revegetation areas, or the need for installation of additional structures or bioengineering. A Final Construction Activities Design will be prepared that describes the practices planned for Task #6, Final Construction/Revegetation. Task #6 activities are expected to be much less extensive than those in Task #5, Initial Construction/Revegetation.

Final Construction/Revegetation will take place in the fall of 2006. Activities are expected to be limited to repair and/or additional activities described in the Project Assessment and Design Report. The work will take place under the supervision of the design engineer or his designated representative.

A Final Construction/Revegetation Report will be prepared and submitted to the AWPf Program Manager at the conclusion of this task. This report will describe project activities for both Task 5 (Initial Construction/Revegetation) and Task 6 (Final Construction/Revegetation) and include photographs and as-built drawings of the project area.

Deliverable Description: (1) Final Construction Activities Design
(2) Final Construction/Revegetation Report

Deliverable Due Date: (1) September 30, 2006
(2) November 30, 2006

AWPF Reimbursable Cost: \$34,335.00

Task #7: Conduct Monitoring

Monitoring described in the Project Monitoring Plan will be conducted under the task. Baseline (pre-construction) monitoring will take place in the fall of 2005. Annual monitoring will take place in 2006 and 2007 as described in the Monitoring Plan. In general it is expected that monitoring of channel geomorphology and riparian vegetation will take place in the early fall of each year. Benthic monitoring may be conducted seasonally (4 times/year) as described in the monitoring protocols.

Annual monitoring reports will be submitted to the AWPf Program Manager. A summary of monitoring data and analyses will be included in the Final Report

Deliverable Description: (1) Baseline Monitoring Report
(2) 2006 Annual Monitoring Report
(3) 2007 Annual Monitoring Report

Deliverable Due Date: (1) November 30, 2005
(2) November 30, 2006
(3) November 30, 2007

AWPF Reimbursable Cost: \$73,584.00

Task #8: Public Outreach

The Grantee will conduct Public Outreach activities as described in the Project Work Plan in Task #3. Public outreach is expected to include workshops for local landowners and school groups. At the conclusion of this task, a narrative report will be submitted to the AWPf Program Manager that includes all materials prepared for distribution, invitee list, attendance list, photographs, and copies of invoices or receipts. A summary of Public outreach activities will be included in the Final Report.

Deliverable Description: Public Outreach Report

Deliverable Due Date: November 30, 2007

AWPF Reimbursable Cost: \$10,080.00

Task #9: Attend AWPf information Transfer Meeting

The grantee may attend an AWPf Information Transfer Meeting and participate in either an oral presentation or a poster presentation about this project.

Deliverable Description: Photograph of poster to be used at the AWPf Information Meeting with an abstract, or a copy of paper to be presented.

Deliverable Due Date: To be determined

AWPF Fixed Cost: \$500

Task #10: Final Report

The grantee shall prepare and submit semi-annual progress reports describing all project activities performed during the previous 6 months.

The Grantee shall prepare and submit a comprehensive final report consistent with the Final Report Guidelines in Appendix A of the FY 2005 AWPf Policies and Application Guidelines Manual, 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 projects success measured against the objectives.

Deliverable description: (1) Progress Reports (through final construction tasks)
(2) 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: (1) May 31, 2005, November 30, 2005, June 30, 2006, November 30, 2006
(2) March 31, 2008

AWPF Reimbursable Cost: (1) \$4,935.00
AWPF Fixed Cost: (2) \$15,015.00

PROJECT TIMELINE

TIMELINE

X Diamond Ranch Project

Bold characters denote deliverable due dates

YEAR 1; 2005

Task	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
	1	2	3	4	5	6	7	8	9	10	11	12
1 Permits, Authorizations, Agreements		X				X	X	X	X	-	-	-
2 Conduct Assessment/Design			X	X	X	X	-	-	-	-	-	-
3 Develop Project Work Plan			X	X						-	-	-
4 Fence revegetation Areas									*	-	-	-
5 Initial Construction/Revegetation										X	X	
6 Final Construction/Revegetation												
7 Conduct Monitoring				F	F	F	B			FVPB	X	
8 Public Outreach												
9 Attend AWPf Information Transfer												
10 Progress reports, Final Report						X					X	

* if necessary

YEAR 2; 2006

Task	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
	1	2	3	4	5	6	7	8	9	10	11	12
1 Permits, Authorizations, Agreements					COMPLETED							
2 Conduct Assessment/Design					COMPLETED							
3 Develop Project Work Plan					COMPLETED							
4 Fence revegetation Areas									*			
5 Initial Construction/Revegetation					COMPLETED							
6 Final Construction/Revegetation									X	X	X	X
7 Conduct Monitoring	B			FB	F	F	B			FVPB	X	
8 Public Outreach												
9 Attend AWPf Information Transfer												
10 Progress reports, Final Report						X					X	

* if necessary

B Benthic monitoring

FVP Fish/Vegetation/Physical monitoring

YEAR 3; 2007

Task	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
	1	2	3	4	5	6	7	8	9	10	11	12
1 Permits, Authorizations, Agreements					COMPLETED							
2 Conduct Assessment/Design					COMPLETED							
3 Develop Project Work Plan					COMPLETED							
4 Fence revegetation Areas					COMPLETED							
5 Initial Construction/Revegetation					COMPLETED							
6 Final Construction/Revegetation					COMPLETED							
7 Conduct Monitoring	B			FB	F	F	B			FVPB	X	
8 Public Outreach										X	X	
9 Attend AWPf Information Transfer											?	
10 Progress reports, Final Report						X						X

B Benthic monitoring

VP Vegetation/Physical monitoring

Project Budget Form — AWPf Funds

On the project budget forms, break down your Scope of Work Tasks into Direct Labor costs, Other Direct costs, Outside Services costs Capital Outlay costs, Total Project costs and Administrative costs. Identify requested AWPf funding on the first form and other matching funds on the next form. A more detailed budget breakdown is required as part of the Supplemental Information (see page 16).

Direct Labor costs include the labor costs directly involved with the project (wages, salaries, and fringe benefits).

Other Direct costs include supplies and materials, paper, pencils, computer time, per diem, printing, public relations, etc.

Outside Services are consultants or subcontractors.

Capital Outlay includes any equipment or other expenditures (e.g. water purchases, sampling equipment, fencing materials) Please attach a list.

Administrative costs are management and overhead costs. By statute, the total administrative costs charged to the AWPf cannot exceed 5% of the total project costs requested from the AWPf.

TASK # and short description	AWPF FUNDS REQUESTED						
	A	B	C	D	E	F	G
Do not write in shaded areas.	DIRECT LABOR COSTS	OTHER DIRECT COSTS	OUTSIDE SERVICES	CAPITAL OUTLAY	TOTAL PROJECT COSTS	ADMIN COSTS	TOTAL AMOUNT REQUESTED
					A+B+C+D=E	E * .05=F	E+F=G
1:Permits			\$16,200		\$16,200	\$810.00	\$17,010.00
2: Assessment/design			\$51,970.00		\$51,970.00	\$2,598.50	\$54,568.50
3: Work Plan			\$4,925.00		\$4,925.00	\$246.25	\$5,171.25
4:Fencing			\$12,000.00		\$12,000.00	\$600.00	\$12,600.00
5:Initial construction			\$115,400.00		\$115,400.00	\$5,770.00	\$121,170.00
6:Final construction			\$32,700.00		\$32,700.00	\$1,635.00	\$34,335.00
7: Conduct Monitoring			\$70,080.00		\$70,080.00	\$3,504.00	\$73,584.00
8: Public Outreach			\$9,600.00		\$9,600.00	\$408.00	\$10,080.00
9: AWPf Info Transfer			\$500.00		\$500.00	-	\$500.00
10:Progress/final reports			\$19,000.00		\$19,000.00	\$950.00	\$19,950.00
AWPF TOTALS			\$332,375.00		\$332,375.00	\$16,593.75	\$348,968.75

Project Budget Form — Matching Funds

- 1) Matching administration costs are **not** limited to 5% of the total project costs
 2) Volunteer labor costs should be based on current minimum wage rates; technical volunteer labor can be based on an hourly fee comparable to consulting fees.

TASK # and short description	OTHER FUNDS (MATCHING) (4)						
	A	B	C	D	E	F	G
Do not write in shaded areas.	DIRECT LABOR COSTS	OTHER DIRECT COSTS	OUTSIDE SERVICES	CAPITAL OUTLAY	TOTAL PROJECT COSTS	ADMIN COSTS	TOTAL MATCHING FUNDS
					A+B+C+D=E		E+F=G
1:Permits	\$800.00				\$800.00	\$40.00	\$840.00
2: Assessment/design	\$1,600.00				\$1,600.00	\$80.00	\$1,680.00
3: Work Plan	\$800.00				\$800.00	\$40.00	\$840.00
4:Fencing	\$1,600.00				\$1,600.00	\$80.00	\$1,680.00
5:Initial construction	\$2,800.00				\$2,800.00	\$140.00	\$2,940.00
6:Final construction	\$2,400.00				\$2,400.00	\$120.00	\$2,520.00
7: Conduct Monitoring	\$1,200.00				\$1,200.00	\$60.00	\$1,260.00
8: Public Outreach	\$800.00				\$800.00	\$40.00	\$840.00
9: AWPF Info Transfer	\$700.00		\$1,400.00		\$2,100.00	\$105.00	\$2,205.00
10:Progress/final reports	\$520.00				\$520.00	\$26.00	\$546.00
MATCHING TOTALS	\$13,220.00		\$1,400.00		\$14,620.00	\$731.00	\$15,351.00

Supplemental Information Required

The following information must be submitted with your completed application forms:

1. **Project Schematic Drawing** for projects involving construction and/or investigation of several physical features. Include a schematic drawing showing all of the important project features located in relationship to one another, and in relationship to important site physical features, including streams and other bodies of water. All schematics must be to appropriate scale and should visually indicate all project features for which funding is being requested or discussed within the proposal (e.g. locations of nearby streams and other bodies of water, check-dams, revegetation areas, fence lines, water distribution systems, existing or planned well and gage locations, etc.). Drawings shall meet the following criteria: size: 8.5 by 11 inches; contain a north arrow; scale; and contain a project title and date of preparation. Submit as many drawings as needed to demonstrate all project features.
2. **Project Site Photographs** for all types of applications. Submit one set of standard 3 X 5 inch color photographs of the project area (or color copies) with the 6 copies of your application. Indicate and describe the location of proposed project features on each photo, including compass direction.
3. **Sampling Plans, Study or Research Designs, Revegetation Plans, Monitoring Plans (e.g. water quality, hydrology, vegetation, wildlife, etc.), and Photo Monitoring Plans:** Some applications may include baseline environmental inventories and most will contain project monitoring. Describe your monitoring and sampling objectives, and in as much detail as possible, describe the monitoring and sampling methodologies, and/or study design that will be used to accomplish those objectives. Include a description of any equipment AWPFF Funds are being requested to purchase. For water features, include information such as: water level, well schematics, USGS gage station data, well number/location, existing hydrologic reports, and recharge or recovery plans. Reference Appendix A of the FY-2004 AWPFF Policies and Application Guidelines Manual for more detailed outlines. If you receive a grant award, you must submit detailed plans as deliverables. Your application should include a task and appropriate budget within the Scope of Work to complete detailed plans and be included on the budget forms.
4. **Existing Plans,** reports or information that are relevant to the project and that the Commission should be aware of when evaluating your proposal. This might include other projects that are being performed or being planned in the area that may affect your project or local planning/zoning changes that could impact the project area. Emphasize any institutional partnerships and collaborative planning being used in your project. Identify any unsecured funds, list their amount and describe their status. If you were to obtain them, list when this would occur and how it would affect the project.
5. **Detailed Budget Information for AWPFF Request:** provide a detailed breakdown of your funding request to AWPFF (to accompany the Project Budget Form — AWPFF Funds). Identify any direct labor costs by job classification (e.g., laborer, project scientist, hydrologist, etc.); average cost/hour for that job classification; number of hours for that job classification; and total cost [Total cost = (Job classification cost/hour) x (number of hours)]. Also, identify and breakdown other direct costs, outside services and any capital costs. Please identify costs by task.

6. **Detailed Budget Information for Matching Funds:** provide written evidence of all secured funds (in-hand or committed in writing) that you are listing on the Application Cover Page (to accompany the Project Budget Form for Matching Funds). The value of volunteer labor is based on current minimum wage; technical volunteer labor can be based on an hourly fee comparable to consulting fees. An explanation of any in-kind contributions listed in your application is recommended. Please identify matching costs by task.
7. **Community Support** for your project from within the project impact area. Include signed copies of letters from community organizations or groups that support your project. Please be aware that for public support to affect your proposal criteria rating score, it must be included with your application. If you are a federal or state agency, you should attach evidence of support from those citizens who lease or hold use-permits for the lands to be impacted by your project. Letters of public support for your proposal received after the application deadline will not be considered for the criteria rating score, although they will be forwarded to the Commission.
8. **Key Personnel** associated with this project must be identified and a Project Coordinator must be designated. Detailed resumes and brief biographical sketches describing the relevant qualifications of all key personnel, including subcontractors must also be submitted.
9. **Evidence of Control and Tenure of Land:** the applicant must have legal and physical access and authority to manage the area where grant tasks are to be performed and the area to be benefited by the grant. Cooperative agreements with all parties having such access and authority, or letters of support with a plan to obtain cooperative agreements prior to grant award shall meet this requirement.
 - a. **If you own the land on which the proposed project is located,** attach a copy of the appropriate legal document showing title in the name of the applicant, including a legal description of the property.
 - b. **If you manage the land on which the proposed project is located,** attach a copy of the lease, special use permit, intergovernmental agreement or other appropriate official instrument.
 - c. **If you do not own or manage the land on which the proposed project is located,** attach documentation verifying ownership (as noted above) and attach a copy of the permit, agreement or letter of intent that allows you access to the site.
10. **Evidence of physical and legal availability of water:** If water will be used in the project the water must be physically and legally available to the applicant for the proposed purpose. Provide a projection of the total number of acre-feet per year necessary for the project.
 - a. **If your proposed project uses surface water flows,** attach the appropriate documentation of your surface water right or claim for the intended use at that location.
 - b. **If you do not have a surface water right or claim** for the intended use at that location, attach a copy of the surface water right or claim that you intend to use,

as well as a permit, agreement, or letter of intent that allows your use of the water.

- c. If your proposed project will require pumping from wells**, submit well registration numbers for existing wells and appropriate groundwater or surface water right documentation. Note: a Notice of Intention to Drill is not evidence of a water right.

Additionally, for all proposed and existing wells, state the following:

- (i) appropriate depth and borehole diameter
- (ii) pump size
- (iii) estimated depth and length of perforated or screened interval
- (iv) well drilling method, if known (e.g. hand driven well point, auger, mud rotary, etc)
- (v) use of water (e.g. water level measurement, water quality monitoring, livestock watering, revegetation)

ADWR Records Management may be able to assist you with existing well information.

- d. If the proposed project will use effluent**, attach documentation demonstrating the source of the effluent and your authority to use it (e.g. a contract with the wastewater treatment plant or municipal water provider).
- e. If the proposed project will use Central Arizona Project (CAP) water**, provide documentation demonstrating your authority to use it (e.g. CAP subcontract).

APPENDIX

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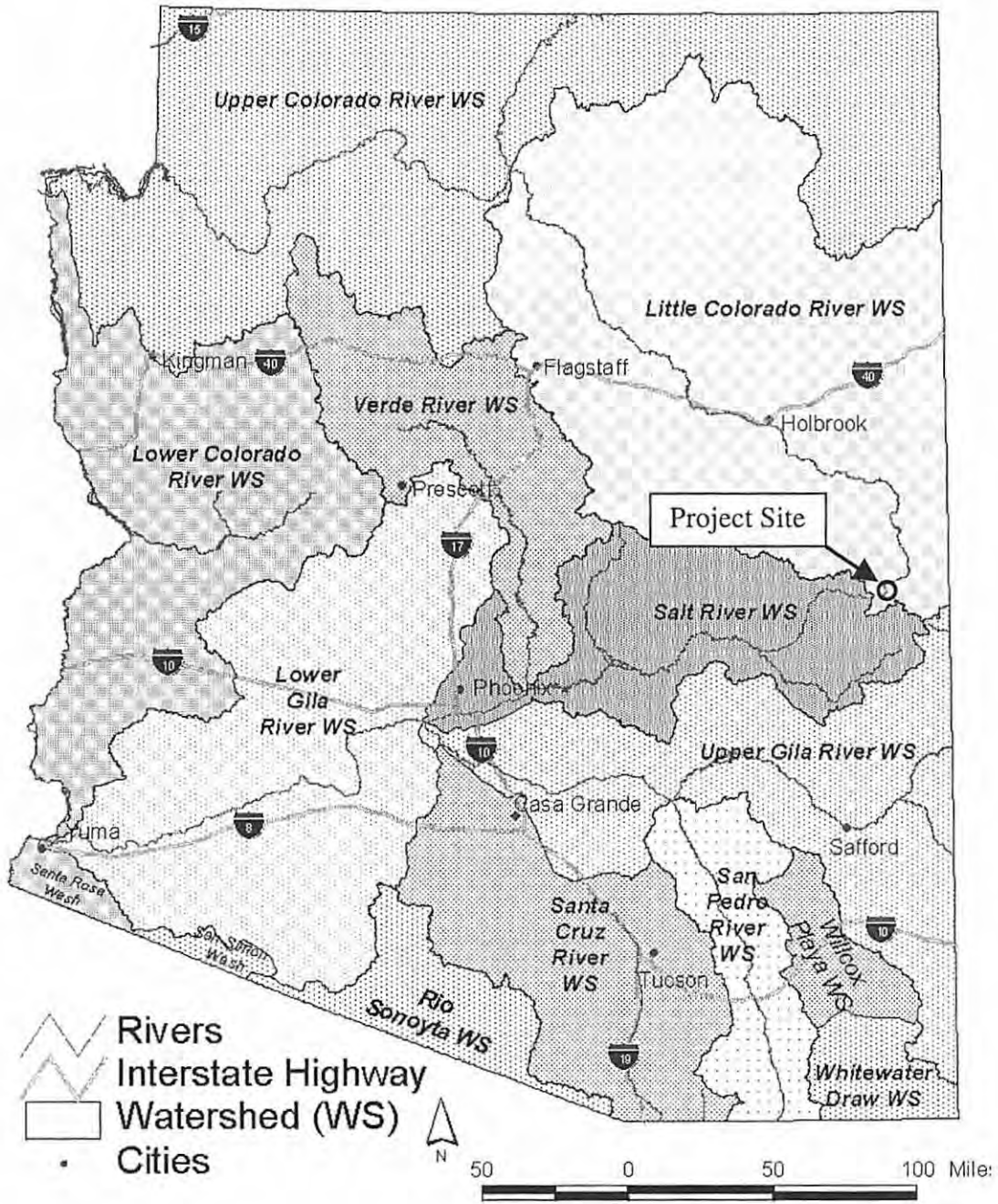
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ARIZONA WATERSHED MAP



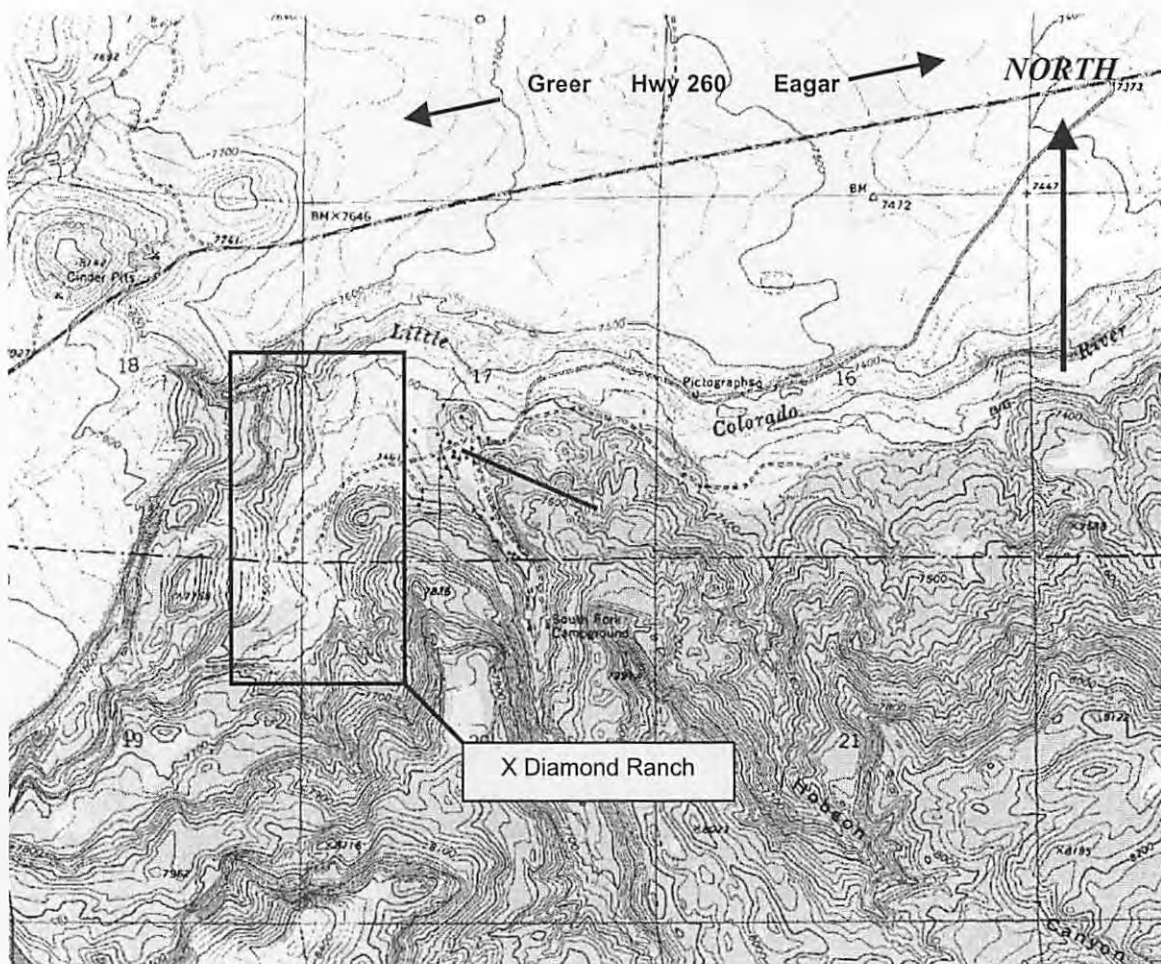


Figure 2. Project Location Map. USGS 7.5-minute quad. Aerial photo of X Diamond Ranch Project. Little Colorado River flows from bottom to top (North and East) in map.

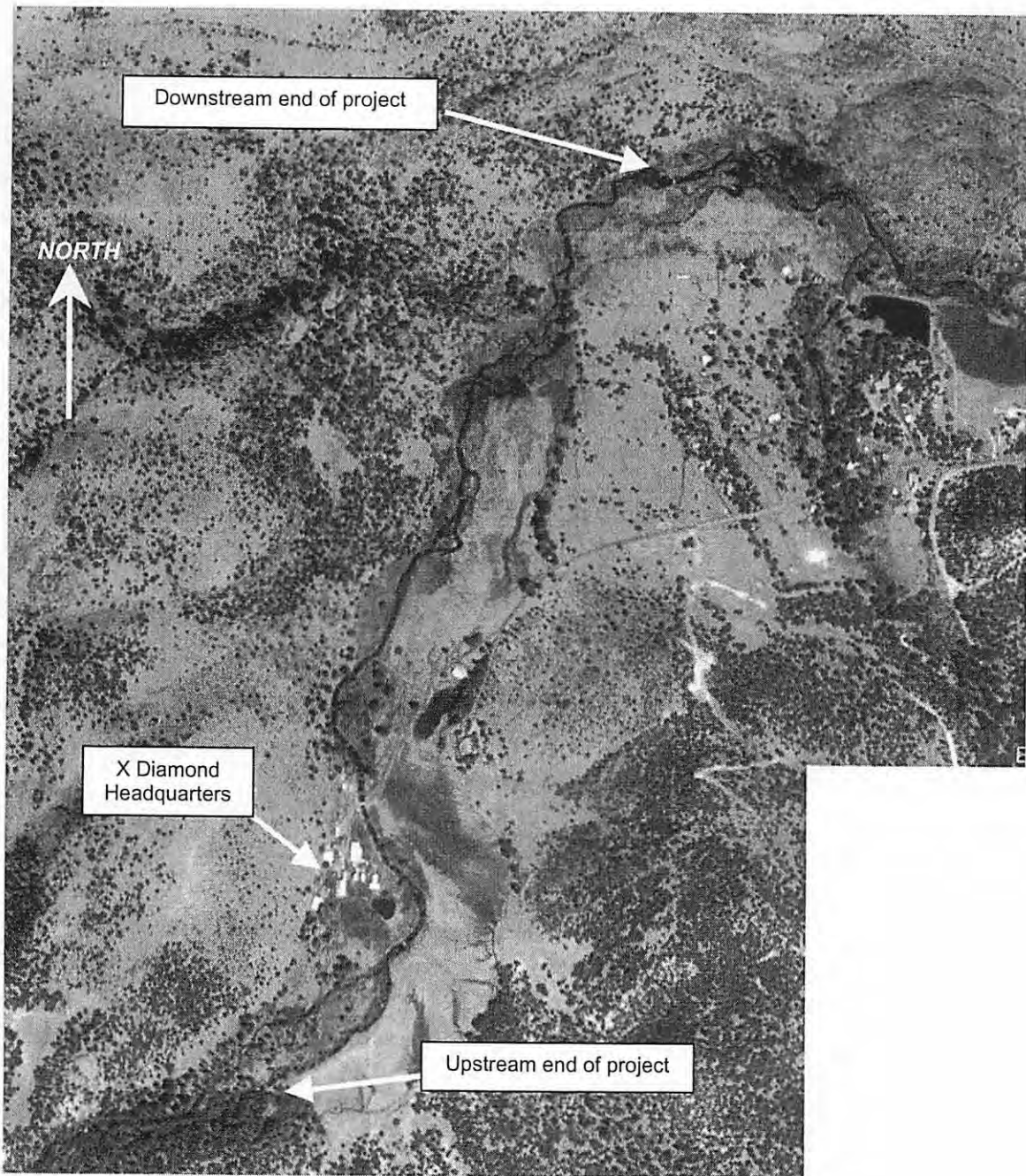


Figure 3. Project Location Photo. Project site identified on 1998 aerial photo. Project reach is approximately 5,200 feet long. Little Colorado River flows from bottom to top (North and East) in photo.

SUPPLEMENTAL INFORMATION

1. PROJECT SCHEMATIC DRAWINGS

Although specific design prescriptions will not be developed until completion of the assessment and design tasks for the project, the following schematic drawings demonstrate the types and placement of enhancement practices.

Where stream morphology is impaired realignment, reshaping, or resizing of channel/floodplain is undertaken. Backwaters, overflow channels, rock clusters, habitat structures, floodplain wetlands and other features beneficial to aquatic habitats may be constructed. Eroding banks are most effectively addressed by resloping the banks and applying bioengineering practices using native plants to strengthen the bank. Low impact rock vanes or toes can be add where necessary without affecting stream function. If channel stability is a concern, rock weirs can be used to provide grade control. These structures can also be installed to create pool habitats for aquatic enhancement without impairing stream function or fish passage. Finally all disturbed areas will be reseeded with native plants.

Management that protects the project from recreation, livestock, and wildlife impacts is put in place. Temporary fencing is installed where needed to eliminate impacts for the period necessary to ensure success of revegetation efforts.

These practices described above have been used successfully in many stream restoration projects and were implemented on the LCR Demonstration Project downstream. This project was funded by the AWP (Grant # 99-092WPF) and has similar project objectives.



Figure 5. Project Reach 1. Stream channel is fairly well contained in this reach. Project activities are expected to include bank stabilization, repair/installation of rock structures for habitat, creation of overhanging bank habitat and revegetation where necessary.



Figure 6. Project Reach 2. There is significant opportunity for creation of additional backwater and bank habitats in this reach. Eroding banks will be stabilized with bioengineering practices. Rock structures for pool habitats will be repaired/installed where needed. Backwater areas and overflow channels will be created and the reach revegetated as needed.

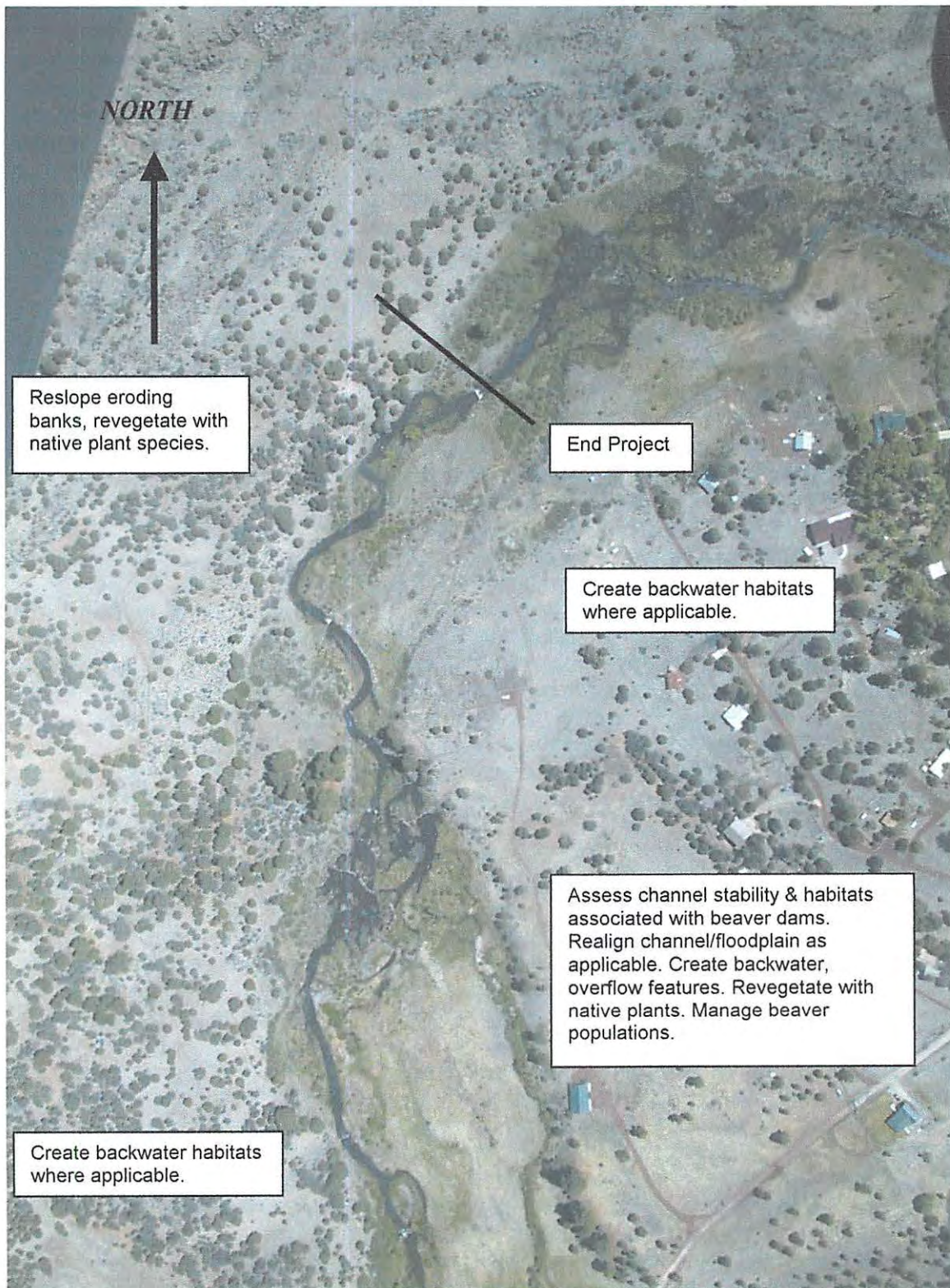


Figure 7. Project Reach 3. This reach is dominated by extensive beaver dam complex. This area will be assessed for critical habitat benefits. Channel/floodplain will be recreated as needed. There are opportunities for extensive backwater/wetland habitats in this reach. Eroding banks will be stabilized using bioengineering practices.

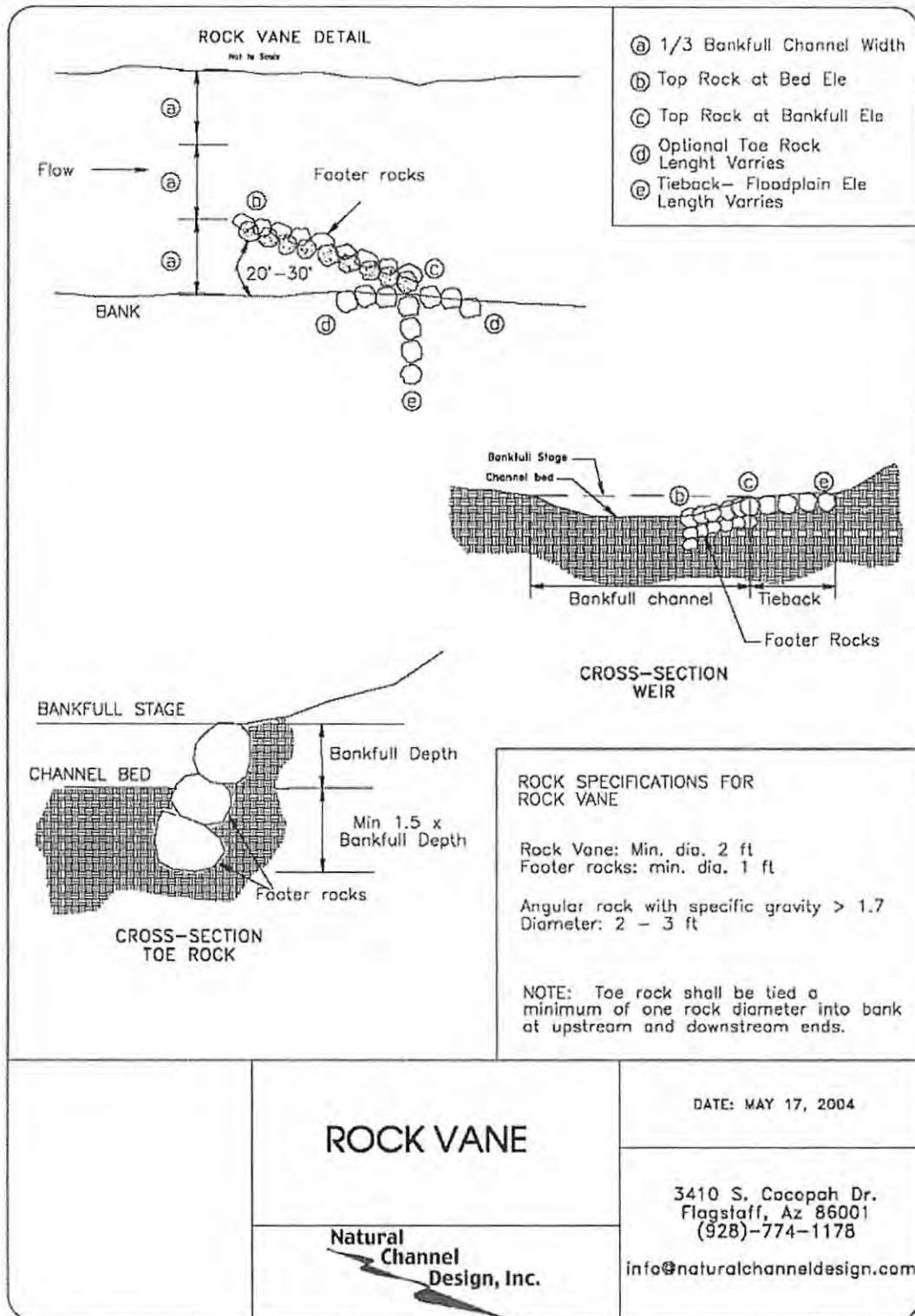


Figure 8. Rock Vane, Standard Drawing

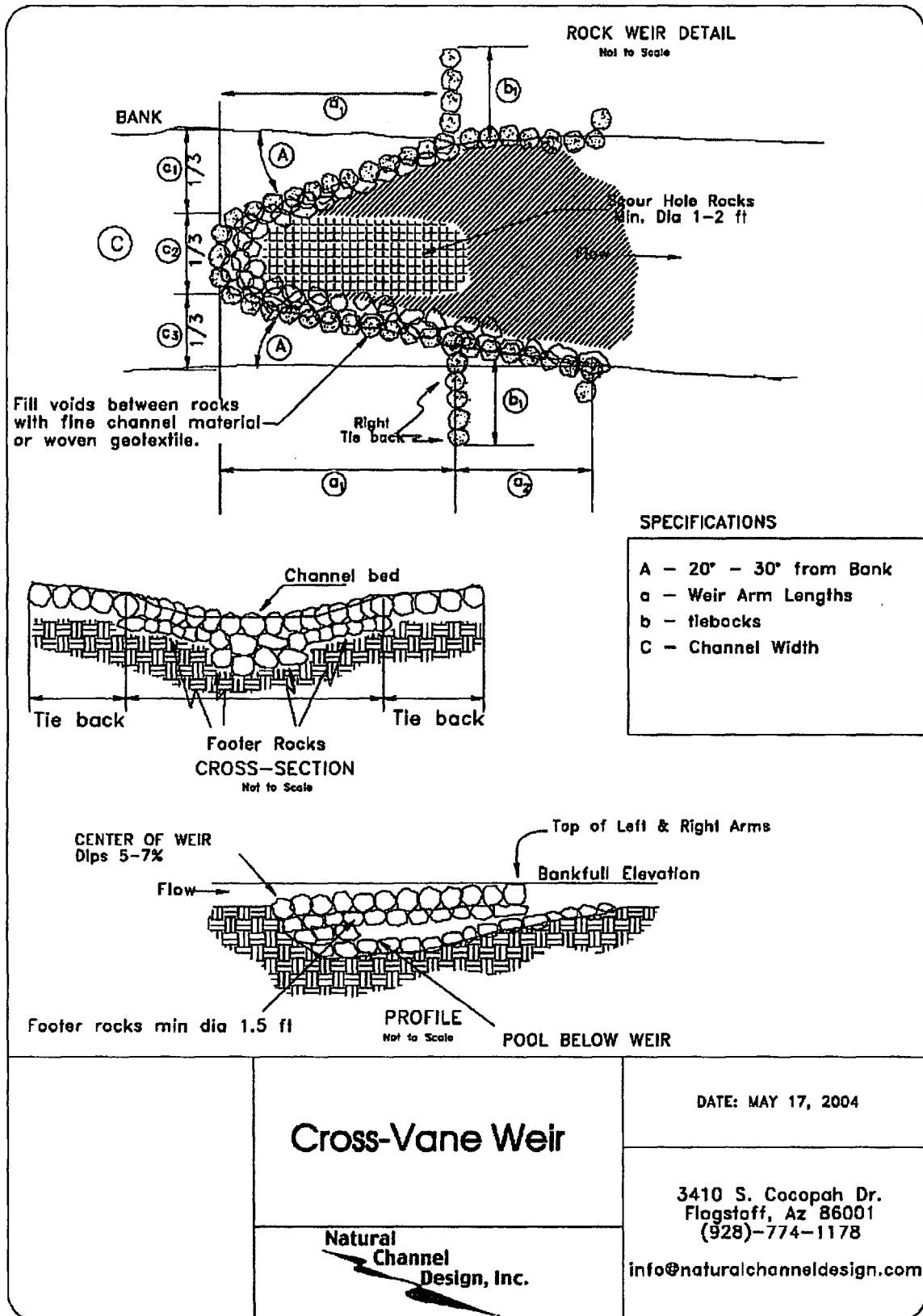


Figure 9. Rock Weir, Standard Drawing

2. PROJECT SITE PHOTOGRAPHS



Figures 11 & 12. Riparian habitats. One objective of the project is to promote livestock grazing and riparian health with proper management (upper photo; Reach 1, Looking North). Eroding banks contribute sediment to the system and impair riparian vegetation (lower photo; Reach 2, looking West).



Figure 13. Beaver activity. A large complex of beaver dams separates flow into many ponds. The inundations drown the willows and during late summer low flows many of the smaller channels dry up. Reach 3, looking South.



Figure 14. Beaver Dams. Remnants of a beaver dam create a drop. Note the loss of willows upstream from drowning. Reach 3, looking South.



Figures 15 & 16. Channel/floodplain habitats. Much of the single channel system is without complex backwater/overflow channel features or cover (upper photo; Reach 2, looking South). A natural backwater (lower photo; Reach 3, looking Southwest) provides important aquatic habitats for young fish.

3. SAMPLING PLANS

INTRODUCTION

Healthy riparian resources benefit both natural and human communities. The Little Colorado River (LCR) has long been an integral part of the Eastern Arizona community providing domestic and livestock water. Increasingly the river contributes economically to the region by providing aesthetic values and recreational opportunities. The X Diamond Ranch has successfully diversified its traditional livestock operations to include recreational and tourist activities. The X Diamond Ranch now depends on healthy natural resources for both ranching and recreational activities.

The LCR is a low gradient, meandering, gravel bed stream with a robust riparian vegetation community of willow and herbaceous wetland plants. The river's watershed is approximately 40 square miles originating high in the White Mountains. Within the natural system, riparian plants strengthen stream banks and minimize erosion. However, stream banks lacking native woody species are actively eroding, contributing tons of fine sediments to the stream bed. The fine sediments fill pools and cement bed substrates reducing habitats for macro-invertebrates and the fish species they support.

A broad assessment of the LCR in 2001 suggested that the extensive bank erosion through along the LCR was the result of a lack of woody native willows. The Little Colorado River Concept Plan (2001) suggested a suite of structural and bioengineering practices that could be implemented by landowners to reduce bank erosion, enhance riparian habitats, and improve aquatic habitats. In 2002 a riparian enhancement project, funded by the Arizona Water Protection Fund, was completed on the LCR in Round Valley. The project successfully treated 3,500 feet of stream.

The X Diamond Ranch LCR Riparian Enhancement Project is a direct result of these efforts. The goals of the project are to restore and protect riparian vegetation and habitats; restore proper hydrologic conditions/functions; and restore proper stream geomorphology/channel characteristics including floodplains, wetlands, and backwater areas of the Little Colorado River. The benefits to the physical stream and riparian vegetation are expected to benefit the terrestrial and aquatic species as well. Aquatic habitats are of special concern in this project. A specific objective is to enhance aquatic habitats to support self-maintaining populations of native Apache trout, a federally listed species, in a mixed fishery with non-native trout fisheries. An increase in woody vegetation will provide greater habitats for bird species and a reduction in fine sediments will increase the quantity and quality of aquatic habitats for native fish species.

ASSESSMENT AND DESIGN

A natural channel approach will be used in project assessment and design. This empirical approach inventories the existing condition of physical and biological components of the stream system and assesses them against a reference condition. The reference condition will be based on surveys of reaches of the LCR that are unimpaired or functioning. Stream channel stability will be one evaluation criteria for the physical system. Stability is defined as a stream's ability to carry the water and sediment of its watershed while maintaining dimension, pattern, and profile without aggrading or degrading over time.

A variety of surveys will be used to characterize the physical and biological components of the system. Longitudinal profiles and cross-section surveys will be used to characterize the physical stream morphology. These surveys will produce information on channel width, slope, channel shape (width-depth ratio), floodplain access (entrenchment ratio), pool and riffle depths, and

meander patterns (meander width/length and radius of curvature). Pebble counts will be conducted to evaluate the channel bed substrate.

The composition and density of riparian vegetation will be qualitatively described in both existing and reference conditions. The data collected and used for assessment will also be used as baseline conditions during the post-construction monitoring.

Because the enhancement of aquatic resources is a critical goal of this project, an intensive assessment of the populations and quantity/quality of habitats will be conducted. Surveys of all life stages of the native and non-native fish populations will be made over a three month period during assessment and will be continued during project monitoring. Data collection will include a variety of sampling techniques including hoop nets, minnow traps, and electro-fishing to quantify fish populations and their specific habitats. Quality habitats for different aquatic life stages will be identified and quantified in physical parameters such as slope, velocity, depth, etc. These reference conditions will be used in the design process to enhance existing habitat conditions..

The final design will be driven by the landowner objectives described above. The design will be developed on the quantitative geomorphologic, hydrologic, vegetative, water quality, benthic, and aquatic habitat data collected and assessed. Design components can include channel realignment to restore natural channel meander, floodplain lowering or widening, installation of rock structures to create pool habitats, and installation of rock clusters or overhanging banks to create low velocity, high depth habitats, creation of backwaters and other warm, shallow, low velocity habitats. All structural components will use natural materials and be designed for minimum alterations to natural stream processes. All natural channel design projects include the extensive use of bioengineering practices using native plants to strengthen stream banks and enhance riparian plant community. The practices are expected to be similar to those successfully used on the AWPf demonstration (Grant # 99-092WPR) project downstream.

The final design will include the following components at a minimum:

- Final Design Report describing assessment procedures and conclusions, design approach, critical design criteria;
- Construction sheets describing all facets of the project design;
- Construction specifications;
- Revegetation plan;
- Engineer's cost estimate
- Project timeline

The design team will be technically knowledgeable and experienced in the design and construction of stream restoration projects. All design documents will be stamped by a Professional Engineer licensed in the State of Arizona.

PERMITTING

Regulatory permitting is an essential task of every riparian restoration project. Cultural resource surveys will be conducted along all areas planned for disturbance for SHPO approval. An evaluation of the impacts to biological resources will be prepared for submittal to the Army Corps of Engineers under Section 404 of the Clean Water Act. Given the presence of the federally listed Apache trout in this reach of the LCR, Section 7 consultation with the US Fish and Wildlife Service is anticipated and budgeted. A Safe Harbor Agreement may be negotiated with the U.S. Fish and Wildlife Service to limit landowner liability for damage to listed species while voluntarily enhancing habitat.

CONSTRUCTION

Heavy equipment will be used for sloping banks and other earthworking tasks during construction. Every effort will be made to minimize the impacts of machinery during construction to the stream channel. Bioengineering practices are generally installed manually. Local willow and other species are harvested and used to stabilize banks. There are abundance local sources for plant materials. Effective pollution control and safety measures will be implemented during construction. All construction activities will be supervised by the design engineer or designated representative.

REVEGETATION

A revegetation plan will be completed that describes the bioengineering practices to be installed in the project. Instructions for application of the bioengineering practices will be included in the plan and in the Final Design Construction Sheets. Specific areas for revegetation will be identified along with the species and application rates for all plantings. All disturbed areas within the project will be reseeded using native grasses.

MONITORING

A monitoring plan will be prepared that incorporates measurements of key components of the project to evaluate the relative success in meeting project objectives. The following components will be included in the monitoring plan:

- **Stream stability:** A set of permanent cross-sections will be monitored to evaluate vertical or lateral instability.
- **Bank Stability:** The Bank Erodibility Hazard Index will be used to evaluate improvement in the reduction of bank erosion.
- **Bioengineering:** The survival and recruitment of vegetation within specific bioengineering practices will be measured.
- **Vegetation:** Photo points will be used to qualitatively monitor revegetation success.
- **Fish populations:** Annual sampling of various life stages of the native and non-native trout species will help to measure the success of project enhancements and the goal of self sustaining populations.
- **Photo monitoring** will be included to provide qualitative assessments of project success.

All monitoring protocols will be described along with equipment needs, sampling schedule, expected results, and monitoring frequency.

4. EXISTING PLANS

Two existing projects laid the foundation for this project. The first was the development of the **Little Colorado River Concept Plan**. The Concept Plan was intended to provide a road map for private landowners along the Little Colorado River. It included a broad inventory and assessment of the physical and biological resources of 19 miles of the Little Colorado River from the confluence of the East and West Forks to Wenima. The plan also identified reference conditions for each stream reach and suggested practices to improve and enhance stream function and riparian corridor condition. Finally, the plan described regulatory issues and potential funding sources. The plan was sponsored by the Upper Little Colorado River Watershed Partnership and funded by the Arizona Department of Water Resources.

The second project was the **Little Colorado River Enhancement Demonstration Project**. This objective of this project was to restore stream function and enhance the riparian habitats of 3,600 feet of the Little Colorado River in Springerville. The project utilized a variety of practices to stabilize banks, restore channel/floodplain morphology, and enhance riparian habitats. Construction and revegetation on the project was completed in fall 2002 and 2003 and initial monitoring suggests the project successfully met its objectives. The project was sponsored by the Apache Natural Resource Conservation District and funded by the Arizona Water Protection Fund (Grant # 99-092WPF).

Copies of the cover pages for these reports are attached. Electronic copies on CD of each report accompany this application.

**UPPER LITTLE COLORADO RIVER
CONCEPT PLAN**



**A ROAD MAP AND RESOURCE GUIDE
TO RIPARIAN ENHANCEMENT**

**FOR
PRIVATE LANDOWNERS**

Northern Arizona University
College of Engineering and Technology
Department of Civil and Environmental Engineering

February 2001

**LITTLE COLORADO RIVER
RIPARIAN ENHANCEMENT
DEMONSTRATION PROJECT**

**FINAL
DESIGN REPORT**



**ARIZONA WATER PROTECTION FUND
GRANT # 99-092 WPF**

March 2001

5. DETAILED BUDGET INFORMATION

	COST PER HOUR	# OF HOURS	TOTAL COST	5% OVERHEAD	TOTAL TASK COST
1 Permits, Authorizations, Agreements					
Civil Engineer	\$65	100	\$6,500		
Riparian Ecologist	\$50	100	\$5,000		
Aquatic Ecologist	\$60	20	\$1,200		
Archeologist	\$50	60	\$3,000		
Travel			\$500		
		Totals	\$16,200	\$810	\$17,010
2 Conduct Assessment/Design					
Civil Engineer	\$65	150	\$9,750		
Riparian Ecologist	\$50	150	\$7,500		
Aquatic Ecologist	\$60	212	\$12,720		
Lab Technician	\$50	200	\$10,000		
Travel-supplies			\$12,000		
		Totals	\$51,970	\$2,599	\$54,569
3 Develop Project Work Plan					
Civil Engineer	\$65	35	\$2,275		
Riparian Ecologist	\$50	25	\$1,250		
Aquatic Ecologist	\$60	15	\$900		
Travel-supplies			\$500		
		Totals	\$4,925	\$246	\$5,171
4 Fence revegetation Areas					
Outside services	\$50	200	\$10,000		
Equipment/supplies	\$100		\$0		
Aquatic Ecologist	\$60		\$0		
Equipment/supplies	\$100	20	\$2,000		
		Totals	\$12,000	\$600	\$12,600
5 Initial Construction/Revegetation					
Civil Engineer	\$65	200	\$13,000		
Riparian Ecologist	\$50	200	\$10,000		
Aquatic Ecologist	\$60	40	\$2,400		
Riparian Technicians	\$50	1000	\$50,000		
Travel/supplies			\$10,000		
Earthwork	\$150	200	\$30,000		
		Totals	\$115,400	\$5,770	\$121,170
6 Final Construction/Revegetation					
Civil Engineer	\$65	60	\$3,900		
Riparian Ecologist	\$50	80	\$4,000		
Aquatic Ecologist	\$60	30	\$1,800		
Riparian Technician	\$50	300	\$15,000		
Equipment/supplies			\$2,000		
Earthwork	\$150	40	\$6,000		
		Totals	\$32,700	\$1,635	\$34,335

5. DETAILED BUDGET INFORMATION (continued)

	COST PER HOUR	# OF HOURS	TOTAL COST	5% OVERHEAD	TOTAL TASK COST
7 Conduct Monitoring					
Civi Engineer	\$65	160	\$10,400		
Riparian Ecologist	\$50	160	\$8,000		
Aquatic Ecologist	\$60	258	\$15,480		
Field Technician	\$50	464	\$23,200		
Travel-supplies			\$13,000		
		Totals	\$70,080	\$3,504	\$73,584
8 Public Outreach					
Civi Engineer	\$80	40	\$3,200		
Riparian Ecologist	\$50	40	\$2,000		
Aquatic Ecologist	\$60	20	\$1,200		
Riparian Technician	\$50	40	\$2,000		
Equipment/supplies	\$100	12	\$1,200		
		Totals	\$9,600	\$480	\$10,080
9 Attend AWPf Information Transfer Meeting					\$500
10 Progress reports					
Civi Engineer	\$80	40	\$3,200		
Riparian Ecologist	\$50	30	\$1,500		
Aquatic Ecologist	\$60		\$0		
Riparian Technician	\$50		\$0		
		Totals	\$4,700	\$235	\$4,935
10 Final Report					
Civi Engineer	\$80	80	\$6,400		
Riparian Ecologist	\$50	80	\$4,000		
Aquatic Ecologist	\$60	40	\$2,400		
Printing	\$100	15	\$1,500		
		Totals	\$14,300	\$715	\$15,015

TOTAL PROJECT BUDGET \$348,969

6. DETAILED BUDGET INFORMATION FOR MATCHING FUNDS

		COST PER HOUR	# OF HOURS	TOTAL COST	5% OVERHEAD	TOTAL TASK COST
1	Permits, Authorizations, Agreements					
	Review documents, meet with regulatory agency staff, help acquire necessary documents					
	Applicant	\$20	40	\$800		
			Totals	\$800	\$40	\$840.00
2	Conduct Assessment/Design					
	Review documents, assist in field work, discuss/plan for design					
	Applicant	\$20	80	\$1,600		
			Totals	\$1,600	\$160	\$3,360.00
3	Develop Project Work Plan					
	Review documents, assist in field work, discuss/plan for design					
	Applicant	\$20	40	\$800		
			Totals	\$800	\$40	\$840.00
4	Fence revegetation Areas					
	Arrange, supervise fence work, lay out fencing lines					
	Applicant	\$20	40	\$800		
	Applicants Ranch hands	\$10	80	\$800		
			Totals	\$1,600	\$80	\$1,680.00
5	Initial Construction/Revegetation					
	Contact earthwork contractor, supervise construction, assist in revegetation, assist in removing trash from site.					
	Applicant	\$20	60	\$1,200		
	Applicants Ranch Equipment	\$40	40	\$1,600		
			Totals	\$2,800	\$140	\$2,940.00
6	Final Construction/Revegetation					
	Contact earthwork contractor, supervise construction, assist in revegetation, assist in removing trash from site.					
	Applicant	\$20	40	\$800		
	Applicants Ranch Equipment	\$40	40	\$1,600		
			Totals	\$2,400	\$120	\$2,520.00

6. DETAILED BUDGET INFORMATION FOR MATCHING FUNDS (continued)

		COST PER	# OF	TOTAL	5%	TOTAL
		HOUR	HOURS	COST	OVERHEAD	TASK COST
7	Conduct Monitoring					
	Review documents, assist in field work, discuss/plan for design					
	Applicant	\$20	60	\$1,200		
			Totals	\$1,200	\$60	\$1,260.00
8	Public Outreach					
	Review documents, assist in invitations/planning, arrange for school groups, attend workshop					
	Applicant	\$20	40	\$800		
			Totals	\$800	\$40	\$840.00
9	Attend AWPf Information Transfer Meeting					
	Prepare poster, presentation, travel/attend Information Transfer meeting					
	Applicant	\$20	30	\$600		
	Travel	\$100	1	\$100		
			Totals	\$700	\$35.00	\$735.00
	OUTSIDE SERVICES					
	Tom Moody (NCD)	\$65	20	\$1,300		
	Travel	\$100	1	\$100		
			Totals	\$1,400	\$70.00	\$1,470.00
10	Progress/Final Reports					
	Review documents, discuss project, process billings and deliverables					
	Applicant	\$20	26	\$520		
			Totals	\$520	\$26	\$546.00
				TOTAL IN-KIND SERVICES		\$17,031.00

X Diamond Ranch LCR Riparian Restoration Project

7. COMMUNITY SUPPORT/LETTERS OF SUPPORT (potential supporters)

DESERT FLY CASTERS

VINCE DEADMOND
6840 EAST McDOWELL RD.
MESA, AZ 85207
480 984 4888

June 10, 2004

Arizona Water Protection Fund Commission
Arizona Department of Water Resources
500 North Third Street
Phoenix, AZ 85004

Re: Letter of support for stream improvements on the X-Diamond Ranch.

I am writing this letter of support for Wink Critegier and the X-Diamond Ranch. Wink has demonstrated good land/water management skills. I have personally have witnessed improvements that were made, that improved the fishing.

Based on past experience, what ever improvements the X-Diamond is planning will make things better in the future for fish and wildlife. Makes sense to me that stabilizing the banks, and increasing the holding areas would be a plus for all of the fish in the Little Colorado.

Streams need help too.

Sincerely



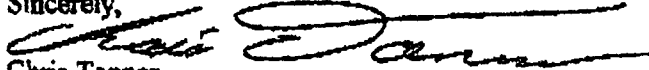
**Vince Deadmond
Board Member Desert Fly Casters**

June 10, 2004

Arizona Water Protection Fund Commission
Arizona Department of Water Resources
500 North Third Street
Phoenix, AZ 85004

I'm writing this letter in reference to the X-Diamond Ranch and the Little Colorado River. Currently I own a fly fishing retail store in Scottsdale, Arizona. We use the facilities of the X-Diamond Ranch and the incredible water of the Little Colorado River to teach a beginning fly fishing class. Over the past few years we have been using these facilities three to four times per summer. I personally have many fishing hours on this water, and can honestly say there is no other piece of water in Arizona that I enjoy to fish and guide my students on than the X-Diamond. Wink has done an outstanding job of stream improvements and trophy fish management, which has made this section of stream arguably the best small stream fly fishing in Arizona. I think further improvements to this fishery will benefit it even more. In my opinion the lower section is in need of deepening some runs that get very shallow in low water years, as well bank reinforcements and rebuilding would help this fishery immensely. As a fly fishing shop owner my staff and I full heartily support every effort Wink is making to further improve this amazing fishery.

Sincerely,



Chris Tanner
President
Shooter & Anglers Edge Inc.
dba Don's Sport Shop
7803 E. McDowell Rd
Scottsdale, AZ 85257
480-946-5313
e-mail: mail@donssportshop.com

8. KEY PERSONNEL

Project Coordinator/Manager

Wink Crigler will serve as project contact and coordinator. All contract correspondence should be directed to Ms. Crigler. All billing requests will be submitted by Ms. Crigler.

Project Technical Manager

Tom Moody, P.E. will serve as project technical manager. He will serve as the principal contact for all technical issues regarding the project. All correspondence regarding project deliverables, tasks, and other technical questions should be directed to Mr. Moody with copies sent to Ms. Crigler. Project deliverables will be transmitted to the AWPf Project Manager directly by Mr. Moody after review and approval by Ms. Crigler.

Technical Subcontractors

Natural Channel Design, Inc. (NCD) will be subcontracted to provide technical assistance with this project. NCD is a consulting engineering firm specializing in education, research, assessment, and restoration design of natural stream channels in the arid southwest. NCD combines the geomorphic approach to channel assessment and design with traditional engineering methods. The geomorphic or natural channel approach is based on 40 years of empirical work by Luna Leopold and others and includes the stream classification and assessment techniques developed by David Rosgen. The approach seeks to assess and restore stream channels by moving them toward their potential stable form. Bioengineering practices utilizing native plant and structural materials are extensively incorporated in restoration design.

Key technical personnel (see specific bios below):

Tom Moody, P.E. civil engineer. Mr. Moody will serve as project engineer and technical manager with overall responsibility for review and submittal of all technical project deliverables.

Stephanie Yard, P.E. civil engineer. Ms. Yard will serve as assistant project engineer. She will oversee field work, data assessment, and project design.

Mark Wirtanen, Riparian Ecologist. Mr. Wirtanen will serve as field coordinator and provide assistance in the data collection, assessment and design tasks.

Mike Yard, PhD, Aquatic Ecologist. Mr. Yard will oversee the design and implementation of water quality and benthic resources assessment and monitoring protocols.

Natural Channel Design, Inc.

NCD has extensive experience in stabilization and enhancement of natural stream channels in the arid southwest and has applied that expertise to design and permitting of projects for federal and state agencies, tribal entities, municipalities, and private developers. NCD staff has experience in the Little Colorado having prepared the Little Colorado River Concept Plan and the assessment, design, and construction supervision for the AWPf LCR demonstration riparian restoration project downstream.

Specific Expertise

1. Stream enhancement/restoration for riparian, aquatic, stability, and water quality objectives.
2. Stream bank protection and stability.
3. Enhancements for riparian and aquatic species.
4. Research into stream morphology and related aquatic, riparian resources.
5. Assessments of stream stability and productivity
6. Permitting for stream enhancement and transportation projects under sections 404 and 401 of the Clean Water Act.
7. Engineering design of water diversions, low water road crossings, and other transportation infrastructure relating to stream channels.

8. Professional licenses in Utah and Arizona.

Principals

- **Tom Moody, P.E.** is a licensed civil engineer licensed in Arizona and Utah and principal in Natural Channel Design, Inc. Tom has performed stream assessments and restoration designs for perennial and ephemeral channels in Nevada, Arizona, Utah, and New Mexico. He has conducted research on stream systems and watershed science in the arid regions of Arizona and New Mexico. He co-authored the subsequent reports titled: "Regional Relationships of Bankfull Discharge in Natural Channels of Central Arizona and Stream Channel Morphology in New Mexico: Regional Relationships . He served as principal investigator on a project to validate the Bank Erodibility Hazard Index, a bank erosion rate model, in New Mexico. He has conducted workshops on the geomorphic approach to natural channel morphology for the Natural Resources Conservation Service, USDA Forest Service, AZ Dept. of Environmental Quality and other agencies. Mr. Moody has a degree in Civil Engineering with an environmental emphasis from Northern Arizona University and has completed the Level I — IV workshops in the inventory, classification, assessment, and design of natural channels from David Rosgen at Wildland Hydrology. He is a third generation Arizonan and resides in Flagstaff, Arizona with his wife and 10 year old son.
- **Stephanie N. Yard, P.E.** is a licensed civil engineer and principal in Natural Channel Design, Inc. She served 12 years as a civil engineer with the Natural Resources Conservation Service practicing natural resource engineering across northern Arizona. She completed a variety of inventories and assessments on riparian systems throughout the Arizona and had statewide responsibility for riparian restoration practices. She designed and supervised construction on the Tohtso Creek stream restoration project and provided leadership for projects involving tribal lands, state and federal agencies, and private landowners. She has conducted a variety of training workshops on the natural channel approach to stream assessment and restoration. Ms. Yard has a degree in Civil Engineering with an environmental emphasis from Northern Arizona University and has completed the Level I — IV workshops in the inventory, classification, assessment, and design of natural channels from David Rosgen at Wildland Hydrology. She is a native of Flagstaff where she resides with her husband and 10 year old son.
- **Mark Wirtanen** is a riparian biologist for Natural Channel Design. Mark has served as a field biologist and manager for riparian and geomorphic studies of the rivers of the arid southwest. He has a degree in wildlife biology and broad knowledge of field methods as well as digital terrain software and CAD systems. He has completed Levels I, II, and III workshops in natural channel inventory, classification, and assessment from David Rosgen at Wildland Hydrology. Over the past five years he has conducted basic research into natural channels of Arizona and New Mexico and co-authored a report on regional relationships of bankfull stage on New Mexico streams. He has conducted training workshops utilizing the geomorphic approach and makes his home in Flagstaff, Arizona with his wife and 4 year old daughter.
- **Michael Yard, PhD** is an aquatic ecologist for Natural Channel Design, Inc. Mike has served as an aquatic researcher of native and non-native fish species in the desert southwest for over two decades. Over the past 10 years, he has worked intensively with fish issues in the Colorado River through Grand Canyon focusing on the critical habitat and feeding elements of native and exotic fish species. He has undergraduate and Doctorate degrees in aquatic ecology from Northern Arizona University and has authored numerous reports and several professional papers on aquatic resources. He makes his home in Flagstaff, Arizona.

X Diamond Ranch LCR Riparian Restoration Project

9. EVIDENCE OF CONTROL/TENURE OF LAND

Copies of property deeds

X Diamond Ranch Property

10. EVIDENCE OF WATER RIGHTS


Although no supplemental irrigation is anticipated for this project, there are water rights available.

Copy of X Diamond Ranch Water Rights

Copy
6-13-04.

WHEN RECORDED, MAIL TO:
SARAHMARGE CRIGLER
PO BOX 791
SPRINGERVILLE AZ 85938

INSTRUMENT # 1999009004
OFFICIAL RECORDS OF
APACHE COUNTY
JEANNE UDALL



REQUEST OF:
APACHE TITLE AND TRUST
DATE: 11/08/1999 TIME: 04:30 PM
BOOK: 964 PAGE: 73

COURTESY RECORDING
NO TITLE LIABILITY

WARRANTY DEED

For the consideration of Ten Dollars, and other valuable considerations, I/We,

SARAHMARGE CRIGLER, a widow who acquired title as **SARAH MARGE CRIGLER**, a married woman dealing with her sole and separate property

as Grantor(s) do hereby convey to

SOUTH FORK PROPERTIES, L.P., an Arizona Limited Partnership

as Grantee(s), the following described real property situated in Apache County, Arizona:

All that portion of the Northeast quarter of the Northeast quarter of Section 19, Township 8 North, Range 28 East of the Gila and Salt River Base and Meridian, Apache County, Arizona, lying North and West of the center of the low flow channel of the Little Colorado River.

EXEMPT ARS 11-1134 B-9

SUBJECT TO: Current taxes, assessments, reservations in patents and all easements, rights of way, encumbrances, obligations, liabilities, liens, covenants, conditions and restrictions as may appear of record.


And I or we do warrant the title against all persons whomsoever, subject to the matters above set forth.

Dated this 5TH day of NOVEMBER, 1999

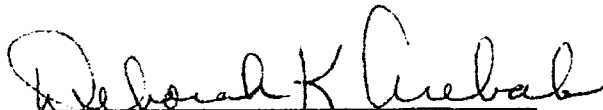

Grantor - SARAHMARGE CRIGLER

STATE OF ARIZONA)
) :ss
COUNTY OF APACHE)

This instrument was acknowledged before me this 5th day of November, 1999 by SARAHMARGE CRIGLER



NOTARY PUBLIC
STATE OF ARIZONA
Apache County
DEBORAH K. AREBALO
My Appointment Expires 10/04/02


Notary Public

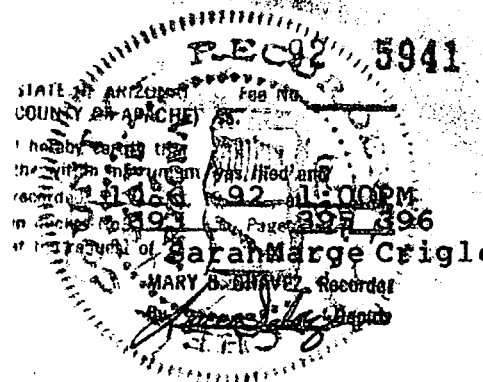
When recorded, mail to:

Name: SOUTH FORK PROPERTIES LIMITED PARTNERSHIP

Address: BOX 791

City/State/Zip Code: SPRINGVILLE

ARIZONA 85938



Space above this line for Recorder's use

QUITCLAIM DEED

KNOW ALL MEN BY THESE PRESENTS:

That I (we) HELEN BUTLER
the undersigned, for the consideration of Ten (10) Dollars, and other valuable considerations, do hereby release,
remise; and forever quitclaim unto SOUTH FORK PROPERTIES LIMITED
PARTNERSHIP

all right, title and interest in that certain Property situated in APACHE County,
State of ARIZONA, and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND MAKE A PART HEREOF

EXEMPT FROM AFFIDAVIT UNDER ARS 42-1614 B9

IN WITNESS WHEREOF, I (we) have hereunto set my(our) hand(s) and seal this 6 day of October
19 92.

Helen Butler
Releasor

Releasor

State of Arizona)
County of Apache) ss.

ACKNOWLEDGMENT

On this 6 day of October, 19 92, before me, the undersigned Notary Public,
personally appeared Helen Butler

known to me to be the individual(s) who executed the foregoing instrument and acknowledged the same to be his(her)(their) free act and deed.

My Commission Expires: My Commission Expires March 26, 1996

Marian M. Cowley
Notary Public

DOT 633 PALE 395

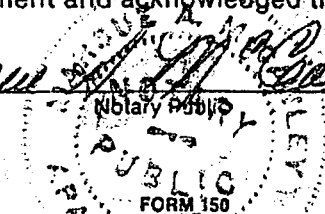


EXHIBIT "A"

PARCEL I:

Lot 1; of Section 24 Township 8 North, Range 27 East of the Gila and Salt River Base and Meridian, Apache County, Arizona.

PARCEL II:

That portion of Section 8 which lies South of Arizona Highway 260;

The Southeast Quarter, the Southwest Quarter of the Northeast Quarter, the Southwest Quarter, and the South Half of the Northwest Quarter of Section 9;

The West Half of the Southwest Quarter of Section 17;

The East Half of the Southeast Quarter of Section 18;

**Lots 5, 6 & 7, and the Northeast Quarter of the Northeast Quarter of Section 19;
EXCEPT all that portion lying North and West of the center of the low flow channel of the Little Colorado River;**

The Northwest Quarter of the Northwest Quarter of Section 20;

All in Township 8 North, Range 28 East of the Gila and Salt River Base and Meridian, Apache County, Arizona.

LITTLE COLORADO WATER RIGHT TRANSFER FORM

1. Location of water right Subsection W2 SW Sec. 17; SE SE Sec. 18; NE NE Sec. 19
Sec. _____, Township _____ 8 _____ N, Range _____ 28E _____

2. Amount of water right
_____ 20 _____ acres or _____ acre/feet

3. Present Owner - Vinson T. Butler

4. Original water right

- a. Owner - James T. Campbell
- b. Stream - Little Colorado
- c. Ditch
- d. Date - 1879
- e. Acres Irrigated - 20
- f. Location - Same as above
- g. Right Number - 1918 11E

5. Chain of Title (how right came from the original owner to you): See Court Transfer Records

6. Action requested (transfer, ~~change of use, change of place of use, division of right~~).

Transfer from: Estate of Vinson T. Butler

Transfer to: South Fork Properties
Limited Partnership

Maryhelen Peters
Owner or Transferor - Maryhelen Peters
Co-Personal Representative of the Vinson T. Butler Estate

Helen M. Butler
By: Helen M. Butler

Sylvia Wilson
Owner or Transferor - Sylvia Wilson
Co-Personal Representative of the Vinson T. Butler Estate

Sarah Marge Cragler
By: Sarah Marge Cragler

Date: 4-4-95

Date: 4-4-95

Address: c/o Brown & Brown, Attorneys
P. O. Box 3128
Pinetop, AZ 85935

Address: P. O. Box 702
Eagar, AZ 85925

Subscribed and sworn to before me this 24th day of March, 1995, by Maryhelen Peters.

Subscribed and sworn to before me this 4th day of April, 1995, by Helen M. Butler.

Janet Wilkins
Notary Public

Janet Wilkins
Notary Public

My commission expires: _____

My commission expires: _____

