EXHIBIT A
Project Plan
Planned Work and Cost Estimate
Altar Valley Habitat Restoration on Anvil Ranch

I. Planned Work

Background
The Altar Valley covers 610,000 acres of high desert grassland. Private ranches, Buenos Aires National Wildlife Refuge (BANWR), the Arizona State Land Department, and Pima County are the primary landowners in the valley, maintaining it as the largest watershed unfragmented by development in Pima County outside the Tohono O'odham Nation. During the early twentieth century, drought, fire suppression, overgrazing, and fuelwood cutting led to the severe entrenchment of Altar Wash, now 20 miles long, 20 feet deep, and 1,400 feet wide in places. During rains, high velocity water with heavy sediment loads surges down the arroyo and out of the valley instead of recharging aquifers and contributing to the microhabitats on which the region's native species depend. Headcutting in upland tributaries and the erosion of banks along the main wash work destructively in tandem, accounting for the loss of hundreds of acres of habitat, claiming an average of seven additional acres of land each year along Altar Wash alone (Meyer 2001).

Erosion and flooding impact private and public property, lower water tables, reduce grass cover upon which ranchers and wildlife depend, decrease biodiversity, and degrade the habitat required for the maintenance of Federal trust species. These include federally listed threatened and endangered species identified by U.S. Fish and Wildlife, and by the most recent Sonoran Desert Conservation Plan's (SDCP) Priority Vulnerable Species list.

In order to begin restoration efforts in the watershed, all ranchers in the Altar Valley joined to form the Altar Valley Conservation Alliance (AVCA) in 1995, incorporating it as a 501(c)3 organization in 2000. One of the major missions of the AVCA is to reverse historic landscape degradation by restoring small upland drainages and their ability to retain sediment and water. Low-technology rock erosion control techniques were pioneered in the southwestern U.S. by Bill Zeedyk (Zeedyk and Jansens 2006). AVCA has sponsored two successful road repair and rock erosion control installation workshops by Zeedyk, who retired after 35 years as a Forest Service Director of Wildlife and Fisheries to form Zeedyk Ecological Consulting.

Species such as the masked bobwhite quail and Pima pineapple cactus, both federally listed as endangered species, have historically occurred in this area. It is anticipated that restoring the watershed and improving grassland habitat will benefit these and other wildlife and plant species.

Local ranchers and citizen volunteer crew leaders are being instructed on the installation of erosion control structures (ECSs) on their ranch lands. ECSs, as described by Zeedyk and Jansens (2006), are comprised of one layer of rocks placed in several rows across a drainage. The rocks are less than 1/3 bankfull depth of the channel. The purpose of the structures is to reduce water flow velocity in the drainages.

An interdisciplinary team comprised of Tom Sheridan, Ph.D. University of Arizona (UA) Southwest Center/Anthropology, George Zaimes, Ph.D. (UA School of Natural Resources/Cooperative Extension), Mary Nichols (USDA/Agriculture Research Service), and

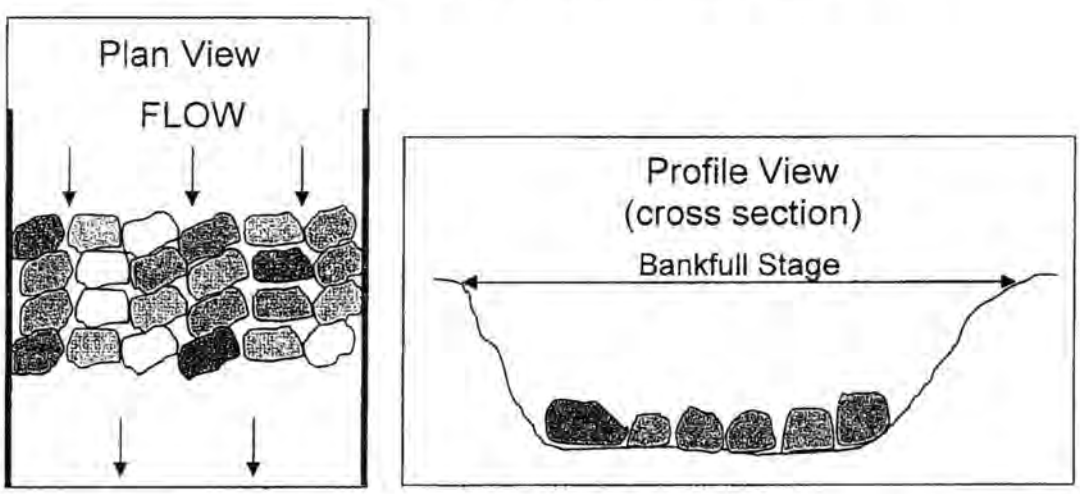
UA anthropology Ph.D. student David Seibert have been assembled to help the ranchers. Implementing projects to reduce erosion and improve watershed conditions supports the efforts of the Sonoran Desert Conservation Plan; a plan to address conservation and planning in Pima County.

Project Description

This project will install approximately 20 to 30 ECSs in drainages on both private and State Trust land. Based on summer 2007 reconnaissance conducted by Seibert, Arizona Game and Fish personnel, NRCS, and Anvil Ranch landowners, multiple upland sites were identified for erosion mitigation and habitat improvement. The 10 most critical headcutting sites on this ranch begin west of the Altar/Brawley Wash in the upslope portion of the Coyote Mountains. ECSs will be placed in drainages near a road that is used for ranch operations. The soils in this area are sandy loam with 1 to 5 percent slopes according to NRCS soil survey. The locations are ideal for habitat and rangeland improvements that benefit wildlife, working ranch operations, and local recreation interests. The ECSs will work in concert in a highly eroded area to improve the retention of rich sediments and moisture and to enhance the establishment of vegetation, in particular grass species, in and around the drainages.

Rocks from outside the area will be obtained from a near-by sand and gravel company. The area where trucks will unload rock material has been surveyed for sensitive plants and animals and none were observed. The rocks will then be loaded either into smaller trucks or into wheel barrows and hauled to the sites for placement. Disturbance to the landscape will be minimized by utilizing existing dirt roads.

The installation of each ECS in a drainage channel will first have a length of 4" PVC pipe placed at the bottom of channel so water flow will not be impeded. Several rows of rocks will be placed in parallel rows across the channel. The rocks will have minimal surface exposure to the force of moving water. Water will flow across the surface of the rocks (and/or through the pipe), decreasing the velocity of the water and reducing soil erosion. Sediment will build up behind the ECS forming an excellent seed bed for grasses to colonize the site.



The Anvil Ranch also leases State Trust Land for their ranching operations. The Arizona Land Department's State Range Resource Area Manager and Range Section Manager have been

contacted about this project. The Arizona State Land Department (ASLD) requires the landowner to submit a Land Treatment Application to ASLD that describes the project on the portion that occurs on State Land. Approval from ASLD must be received before ECSs are placed on the State leased lands.

Work will be undertaken starting in summer 2008. Local ranchers and available volunteers will be used. The volunteers are participating in the University of Arizona's Master Watershed Steward Program. The project coordinator will do most of the work. The work for this project is anticipated to be accomplished by the end of the 2008 calendar year.

The agreement term for this project is 10 years.

Project Summary	Total	Restored	Enhanced	Established
Wetland Acres:	3.2		3.2	
Upland Acres:	65.5		65.5	
Riparian Miles/Acres:				
Stream Miles/Acres:				
# of Other Structures:				
Invasive Acres:				

II. Contribution of the Parties:

The Service:

1. Agrees to cost-share in practices specified in this agreement, thus enhancing the value of the area for resident and migratory wildlife species and maintaining a viable ranching operation.

2. Agrees to inspect the work periodically during construction, if necessary, and provide technical assistance regarding management and maintenance of the works of improvement.

3. Agrees to annually evaluate the erosion control techniques that are associated with this project and provide guidance regarding their success and modify the techniques as necessary to ensure maximum benefits to wildlife.

4. Agrees to develop a monitoring plan for the project and to annually evaluate the erosion control techniques and provide guidance regarding their success to ensure maximum benefits to wildlife.

5. Assist the Cooperator obtaining the necessary permits for the project.

Cooperator A:

1. Agrees to cost-share in the works of improvement for the property.

2. Agrees to maintain the site to the maximum benefit of wildlife while supporting ranching operations for the term of this agreement.

3. Obtain the necessary permits needed for project implementation. This includes submitting the Land Treatment Application to the Arizona State Land Department

4. Agrees to work with the Service to monitor the project annually for the duration of the Agreement.

Cooperator B:

1. Agrees to cooperate with the Service and Cooperator A to implement the project in a timely manner.

III. Cost estimates*:

TASK/ITEM	Practice Cost	Cooperator Cost Share	Partners
Tools and equipment	$1,300		$1,300
Erosion control materials	$735	$235	$500
Rock material delivery	$1,480	$480	$1,000
Labor for installation of erosion control structures	$6,600	$4,300	$2,300
TOTAL	**$10,115**	**$5,015**	**$5,100**

* The total Service's and Cooperator's cost-share must remain the same; however, funding may be redistributed between practices upon prior approval by the Service Project Officer.

Under the Cooperator Cost-Share, there are no State funds that will be expended in this project.

IV. Work Schedule:

The project will not be implemented until the necessary environmental and archaeological compliance documents have been completed and approved by the Service. The project shall be completed within 1 year from the date of the last signature on the signature page. The final invoice for the project will be accepted after project inspection and approval by the Service.

The Service should be informed, in writing, of any delays in completing this project within one year. If such delays occur, an extension should be requested.

V. Signatures:

This project plan was agreed upon between the Cooperator and the Service Project Officer on the date of last signature below.

John W. King
Cooperator

5-14-08
Date

David Seibert
Project Coordinator

5-14-08
Date

Kris Randall
Project Officer, Partners for Fish and Wildlife

6/26/2008
Date

Citations:

Meyer, Walter. 2001. Altar Valley Conservation Alliance Watershed Resource Assessment: Watershed Action Plan and Final Report. Phoenix: Arizona Department of Water Resources, Arizona Water Protection Fund Commission Grant No. 97-041WPF.

Zeedyk, Bill. 2006. A Good Road Lies Easy on the Land...Water Harvesting from Low-Standard Rural Roads. Santa Fe: The Quivira Coalition.

Zeedyk, Bill and Jan-Willem Jansens. 2006. An Introduction to Erosion Control. Second edition. Santa Fe: Earth Works Institute and The Quivira Coalition.