

I. ABSTRACT

A 1977 study by the Arizona Water Commission stated that the major surface water quality problem in the San Pedro River is the high-suspended sediment load. The major non-point source of pollution is sediment from desert lands that have converted from grasslands to shrub-scrub communities. Improved management and erosion control practices in the Upper San Pedro Basin would reduce erosion by an estimated 1,410 acre feet per year.

The goal of this project was to reduce sediment production on 2500 acres of grazing land located immediately north of the US-Mexico Border, west of Naco, Arizona and east of the San Pedro National Riparian Conservation Area. (T 24S, R 22E, S 11,14,15,16) Overland and channel flow from the Mexican side of the Border enters this parcel on a two and a half mile expanse, flows across at a northwest angle and enters the San Pedro. The area had been overgrazed for years allowing erosion to accelerate and contribute to the degradation of the San Pedro. Vegetation at project inception was shrubby with little or no grass to slow the overland flow and trap sediment. Erosion had reached the point that soil levels were 6 to 8 inches below original levels as evidenced by the soil-shrub relationship.

This parcel is located in a key area for manual intervention through rangeland reclamation. In 1999, the land was held by a developer and was slated to be sold for residential property. Concern for the environment in the area led to the formation of a partnership between several groups and individuals that led to the conception of this project. The Hereford Natural Resource Conservation District (NRCD) facilitated the partnership process, the San Jose Ranch purchased the property and the Bureau of Land Management (BLM) purchased a conservation easement that allows grazing and restoration but excludes development for housing, industry, or irrigated agriculture.

The Coronado Resource Conservation & Development Area (RC&D) and the Natural Resources Conservation Service (NRCS) joined the partnership to bring a variety of technical expertise to the project. Funding of a Water Quality Improvement Grant from EPA/ADEQ allowed the project to move from planning to implementation. These funds were used to remove shrubs by knifing and then reseeding of the area to grass to reduce overland flow and sediment transport. Matching contributions from the San Jose Ranch provided earth work to reconstruct water spreaders that had eroded and become ineffective, and installed water systems that will facilitate livestock management. Areas of mature native trees were left throughout the area as wildlife corridors.

Education and outreach activities have centered around project methods, benefits of the Water Quality Improvement Grant program and rangeland monitoring that will benefit ranchers on both sides of the US/Mexico Border.

II. GOALS/OBJECTIVES/METHODOLOGY

a. Project Goals

The goal of this project was to reduce the sediment production on 2500 acres of rangeland adjacent to the San Pedro River.

b. Objectives

The following long term objectives were considered when the project plan was developed:

1. Reduction of sheet flow erosion through the removal of shrub vegetation and reestablishment of grass/herbaceous cover.
2. Reduce channel erosion through the repair of eroded water spreader dikes in the project area.
3. Maintain wildlife habitat integrity by leaving mature native trees for wildlife corridors
4. Facilitate livestock grazing management through the installation of water facilities.
5. Evaluate the long term impacts of this project through the installation of monitoring transects.
6. Educate the public (including neighboring ranchers), local units of Government and youth on the value of water quality improvement projects.

c. Methodology

Preliminary/background work:

1. The entire area was surveyed for archeological sites by staff of the Arizona State Land Department (ASLD) and the NRCS. No sites were found and a report was sent to the State Historic Preservation Office (SHPO) for concurrence.
2. An Arizona State Land Permit was obtained to Place Improvements on State Land to cover the section of State Land within the project boundary area.
3. Monitoring transects were established by the NRCS and San Jose Ranch for long term monitoring of vegetative changes.

d. Implementation:

The project was implemented through hiring a contractor to perform the knifing (equipment used is pictured in the photo story) The knifing began in the uplands to insure a minimum of runoff in the event of rain and continued on the contour to the lower part of the watershed contained within the project area. All mature trees were avoided along channels to allow wildlife to move through the area with cover.

The San Jose Ranch provided equipment and labor to do a portion of the knifing and to repair the water spreader dikes that had been breached. The San Jose Ranch also installed livestock water facilities to aide in livestock management. All areas that were knifed were reseeded to grass with an aerial application. Livestock have been excluded from the project area for the entire project term.

The Hereford NRCD served as an oversight group for the project and reviewed project activities each month. Their education center director led several outreach activities that involved watershed education for adults and youth in the area. The San Jose Ranch hosted a tour for representatives of the Environment Department of the Country of Mexico, The Nature Conservancy and other ranchers in the first year of project implementation. At the project close, a tour hosted by the Hereford NRCD allowed participants to see the project status.

III. RESULTS OF PROJECT

Due to lack of rain, tangible results are difficult to measure in terms of sediment captured. *The US Department of Agriculture Santa Cruz-San Pedro River Basin Report, 1977 estimated that once treatment is fully functional, the average erosion reduction would be 1,115 Acre Feet per year.* The following are visible and measurable results of the project.

1. The 2500 acre project area was treated by knifing. (This does not constitute actual areas ripped but represents the total project area size. The entire area will be impacted by the treatment. Actual acres covered by the root plow= 2,000 acres with brush removed)
2. 2000 acres of disturbed land seeded to grass
3. A livestock pipeline, windmill and drinker were installed in the project area.
4. Five water spreader dikes that had been breached have been repaired.

5. Two on the ground workshop/tours were conducted
6. Vegetative monitoring education packet developed for distribution through the Hereford NRCD Education Center.
7. Vegetative monitoring transects have been installed
8. Cross sections of water spreaders have been recorded to allow for future monitoring of sediment captured behind these structures.
9. A brochure, two fact sheets, a power point presentation and static display have been developed to inform the public about the project and the Water Quality Improvement Grant Program

IV. IMPLICATIONS AND RECOMMENDATIONS

The timeline for this project was impacted first by the requirements for the archeological survey. To conduct this survey, trained individuals must walk over the entire acreage at a spacing of 50 feet. NRCS and Arizona State Land Department staff conducted this survey over a one week time period. The NRCS State archeologist was then required to file a report with SHPO for concurrence. Due to other work load considerations, the paperwork at this stage, delayed the project for five months.

The contractor offering the lowest bid for the knifing was offered the contract. After a third of the work was done, the contractor met with the project review team and notified them that the work was much more complex and time consuming than originally estimated. The knife was hitting hard layers of soil that reduced the estimated speed in half. After reviewing the workmanship, it was determined that the work was of excellent quality and forcing the contractor to continue at the original price would be unfair. A new price was negotiated and the San Jose Ranch agreed to complete the knifing not able to be covered by the contractor under the current agreement.

Estimates are obtained from contractors or the NRCS Environmental Quality Incentives Program cost list at the time that the grant applications are written. Often it is one to two years before that phase actually gets implemented and costs rise. The sudden rise in fuel prices played a role in costs on this project also as well as the increased complexity of the job. A lack of contractors available with the proper equipment to do this type of work and their lack of experience in bidding the jobs could all be factors in cost over runs.

Southeastern Arizona has vast areas of rangeland that has shrub encroachment. Targeting areas in sensitive watersheds that are under the public eye, provides an ongoing opportunity to educate the public on the value of our grasslands in a watershed, the importance of maintaining water quality by reducing non point source pollution and the benefits of using a watershed approach to addressing water quality issues.

BORDERLANDS STORMWATER RUNOFF CONTROL PROJECT

Coronado RC&D
 MATCH REPORTING SCHEDULE-SUMMARY 10 (FINAL)
 GRANT AWARD CONTROL # 02-003
 For the Period of: 04/01/03-06/30/03

ADEQ Payments made this period: \$5,475.00

FEDERAL EXPENDITURES - (CASH)

Account Title	BUDGET	CURRENT EXPENDITURES	CUMULATIVE EXPENDITURES	BUDGET REMAINING
Salaries	\$0.00	\$0.00	\$0.00	\$0.00
Fringe Benefits	\$0.00	\$0.00	\$0.00	\$0.00
Indirect Costs (10% max)	\$12,000.00	\$2,500.00	\$12,000.00	\$0.00
Travel	\$0.00	\$0.00	\$0.00	\$0.00
Mtrl/Supp/Postage	\$0.00	\$0.00	\$0.00	\$0.00
Other svc.	\$156,000.00	\$1,979.22	\$156,000.00	\$0.00
SUB-TOTALS	\$168,000.00	\$4,479.22	\$168,000.00	\$0.00

Match Expenditures - (CASH & IN-KIND)

Account Title	BUDGET	CURRENT EXPENDITURES	CUMULATIVE EXPENDITURES	BUDGET REMAINING
Salaries	\$42,250.00	\$314.41	\$18,185.59	\$24,064.41
Fringe Benefits	\$0.00			
Indirect Costs (10% max)	\$4,000.00	\$400.00	\$4,000.00	\$0.00
Travel	\$1,600.00	\$540.75	\$1,408.10	\$191.90
Mtrl/Supp/Postage	\$8,000.00	\$6,854.59	\$14,907.50	-\$6,907.50
Other svc.	\$61,450.00	\$32,733.78	\$87,426.84	-\$25,976.84
SUB-TOTALS	\$117,300.00	\$40,843.53	\$125,928.03	-\$8,628.03

TOTAL EXPENDITURES FOR PERIOD:	BUDGET	CURRENT EXPENDITURES	CUMULATIVE EXPENDITURES	BUDGET REMAINING
04/01/03-06/30/03	\$285,300.00	\$45,322.75	\$293,928.03	-\$8,628.03

I hereby certify that this report is mathematically correct, has not been previously reported, and to the best of my knowledge and belief is a legal and proper claim against the Grant Award. I further certify that back-up documentation (including time sheets, logs, schedules, etc.) is maintained in accordance with instructions contained in the Grant Award.

Signature _____

Date _____