

RIO PUERCO MANAGEMENT COMMITTEE
Creating a Healthy Watershed Through Collaboration

Status Report

prepared for

Senator, Jeff Bingaman

by the

Rio Puerco Management Committee

August 17, 2001

COOPERATING AGENCIES

USDA

US Army Corps of Engineers
Bureau of Indian Affairs
Bureau of Land Management
Bureau of Reclamation

Environmental Protection Agency
Fish and Wildlife Service
Forest Service
Biological Survey
Natural Resources Conservation Service
Southwest Strategy

DOI

Navajo Nation
San Juan Apache Tribe
Bureau of Reclamation
Bureau of Land Management
Bureau of Indian Affairs
Bureau of Geology and Mineral Resources

STATE OF NEW MEXICO

Water Resources Commission
Department of Mines
Department of Game and Fish
Environment Department
NMSU Cooperative Extension Service
State Engineer
State Highway & Transportation Department
State Land Office
Cibola Soil & Water Conservation District
Cuerpo Soil & Water Conservation District
Javelina Soil & Water Conservation District
Valencia Soil & Water Conservation District
Sandoval County Commission

Private

Albuquerque Wildlife Federation
Debrazon Water Pipeline Association
Center for Holistic Management
National Audubon Society
Quivira Coalition
Rio Puerco Watershed Committee
Society for Range Management
Tree New Mexico
Private landowners
Public at large

Established November 12, 1996, through Public Law 104-333



Rio Puerco Management Committee Report

Executive Summary

Section 401(c) of Public Law 104-333, the Omnibus Parks and Public Lands Management Act of 1996 established the Rio Puerco Management Committee (RPMC) to carry out a broad-based, collaborative effort to restore and manage the Rio Puerco watershed in northwest New Mexico. The Rio Puerco has gained notoriety as a severely degraded watershed where soil erosion surpasses that of any other watershed in the country, according to the Army Corps of Engineers.

Over the past four years, the RPMC has evolved into a cohesive organization focused on three primary goals: (1) Sediment reduction, (2) Vegetation and habitat improvement, and (3) Support and promotion of interjurisdictional and inter-agency cooperation, socio-economic benefits, recognition and protection of cultural values, and public awareness, education and participation.

Since 1998, the RPMC has used basin-wide scientific data to identify subwatersheds most in need of attention where restoration efforts could be most effective. The committee has launched a community involvement initiative that started with three "listening sessions" held in communities in the priority subwatersheds that has developed into training and demonstration workshops on conservation practices. The committee has also developed a Watershed Restoration Action Strategy (WRAS), a blueprint for action to address specific water quality problems. This

WRAS will be used to leverage Section 319 grants and funding from private sources. Finally, using primarily agency funding with generous in-kind contributions from our partners, the committee has initiated several on-the-ground restoration projects detailed in the body of this report.

It is important that we build the capacity of local communities to sustain this watershed restoration effort into the future. We plan to expand our community involvement activities by funding landuser training and demonstration workshops and supporting the Cuba Outdoor Classroom Project to give people the tools to take better care of the land. We want to be able to help provide range improvements such as fences and waters as well as training for livestock owners who want to practice better grazing management. In the next year, we would like to turn one or two severely degraded areas into show-cases using the conservation practices necessary to control sagebrush, piñon, and juniper invasion, repair or rebuild erosion control structures, close unneeded roads, control noxious weeds, and reintroduce fire as a beneficial part of the ecosystem. A report to Congress, as required by law, is underway by the Secretary of Interior.

Although the committee is pursuing additional sources of funding, implementing this vision for the future will require Congressional funding support of the magnitude authorized in the legislation.

Introduction

The Rio Puerco, once the "breadbasket of New Mexico," has achieved worldwide notoriety as a severely impacted and degraded watershed, the poster child for accelerated erosion. With its headwaters in the Nacimiento Mountains east of Cuba, NM, traditional villages once dotted its banks and extensive farm fields tapped its waters. Today, when the Rio Puerco flows, it flows far below the old floodplain, a victim of highly erodible soils, channelization, poor land management historically, and a complex mix of ownership. Formerly productive agrarian communities are now abandoned. The watershed is the primary source of undesirable fine sediment to the Rio Grande. The Corps of Engineers has noted that soil erosion within the watershed surpasses that of any other watershed in the country, yielding 1.36 acre feet per square mile per year. The Rio Puerco is listed as a Category 1 watershed (in need of restoration) in New Mexico's Unified Watershed Assessment (1998).

Previous Work

Through their work in the watershed, various state and federal agencies, tribal governments, local communities, private landowners, and environmental interest groups have made numerous attempts to improve ground cover and vegetation conditions, protect habitat, improve water quality and quantity, establish valid land management practices, and arrest the erosion processes. These past efforts were disjointed, disorganized, largely non-collaborative, and not holistic in their approach. For example, in recent years, the Bureau of Land Management (BLM) has invested between \$350,000 and \$400,000 a year in sagebrush control, erosion control structures, dam repair and maintenance, and riparian habitat protection on public lands within the watershed. BLM officials realized early on that they could improve conditions on the public lands that comprise 19 percent of the Rio Puerco basin. However, measurable watershed-wide improvement could not take place without the

participation of other landowners and interests working together.

Rio Puerco Management Committee

Section 401 of the *Omnibus Parks and Land Management Act of 1996* (PL 104-333), the "Rio Puerco Management Act" addresses this problem. The Rio Puerco Management Committee (RPMC), based in Albuquerque, New Mexico, is a collaborative watershed organization established by the Act. The RPMC was formed in February 1997, building on initiatives begun by the Rio Puerco Watershed Committee, a locally led stakeholders group based in Cuba, New Mexico, and an interagency taskforce organized to coordinate on-the-ground efforts to reduce sediment. Passage of the Rio Puerco Watershed Act formalized an organization to carry out a broad-based, collaborative effort to restore and manage the watershed. RPMC membership includes state and federal agencies, tribal governments, soil and water conservation districts, representatives of county government, residents from the rural communities within the watershed, environmental and conservation groups, and the public-at-large.

The RPMC has evolved from a gathering of individuals and entities with varying degrees of self-interest to a cohesive organization focused on restoring the environmental and socio-economic health of the watershed and its inhabitants. The membership has survived the growing pains that accompany attempts at consensus by such diverse interests, and matured to the point where issues can be raised and resolved by keeping the committee's goals in mind. The diversity of the RPMC's members and their collective experience in collaborative efforts have enhanced the Committee's public outreach activities. In fact, the RPMC has been recognized for collaboration by the U.S. Environmental Protection Agency with its 1998 Environmental Excellence Award and by the Bureau of Land Management with its 1999 Legacy of the Land Award.

Accomplishments Since 1998

Current Goals and Actions

The Rio Puerco Management Committee collaboratively established and has maintained its commitment to three goals (priorities) to affect beneficial change in the Rio Puerco Watershed. Projects funded by the committee shall address:

Goal 1: Sediment Reduction

- Sediment Retention
- Erosion Control

Goal 2: Vegetation & Habitat Improvement

- Appropriate Vegetative Species and Densities
- Improved Upland, Riparian and Stream Habitats

Goal 3: Support & Promotion of Other Watershed Factors

- Interjurisdictional and Interagency Cooperation
- Socio-economic Benefits
- Recognition and Protection of Cultural Resources
- Public Awareness, Education and Participation

To achieve these goals, the RPMC focuses on implementing these objectives:

- Work collaboratively using a consensus-based decision making process that includes and encourages broad participation.
- Collect and manage comprehensive data and information relating to the Rio Puerco Watershed.
- Provide public participation opportunities and educate private landowners, communities, other interested publics, and each other

in Rio Puerco Watershed history, geomorphology, concerns, problems and solutions.

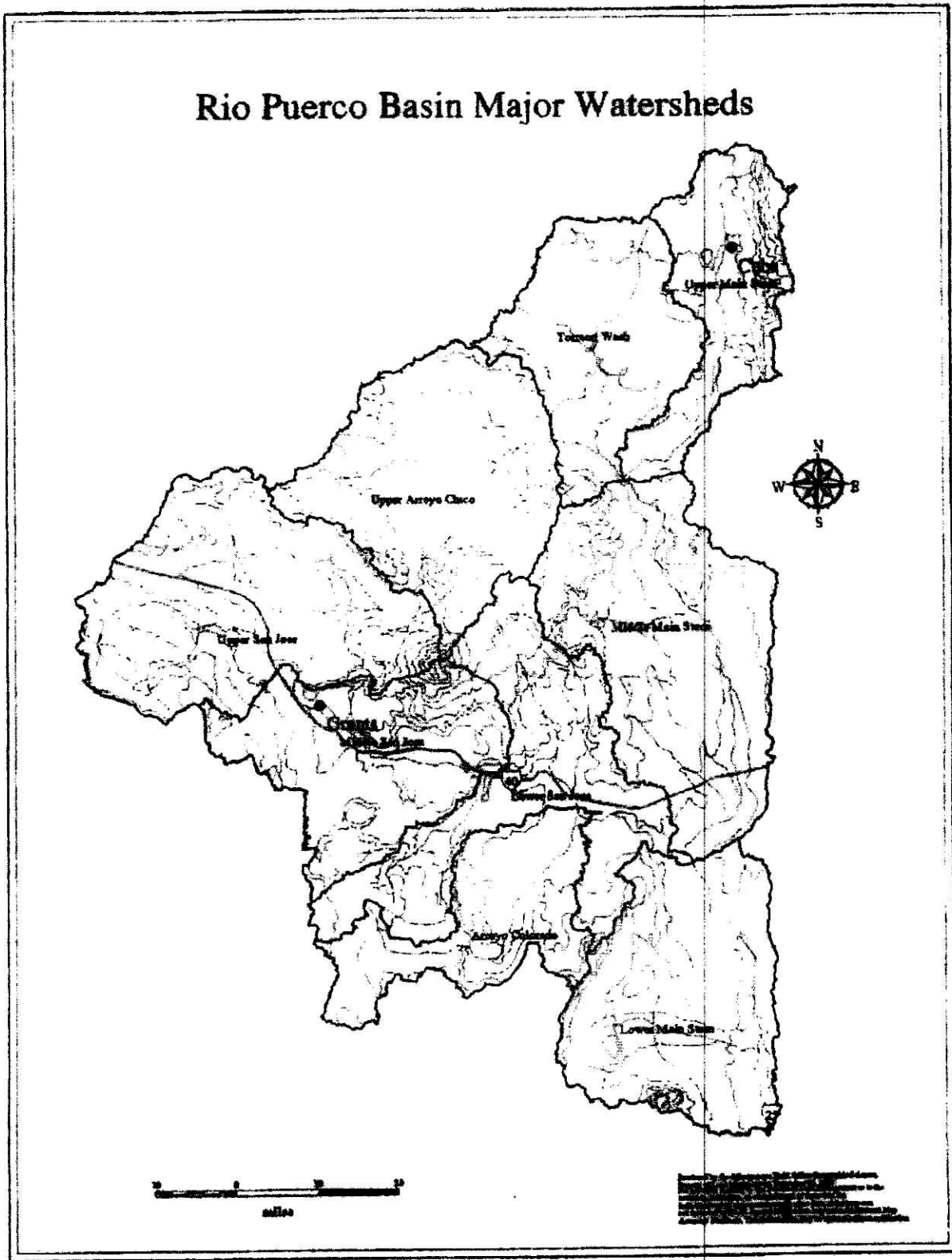
- Support and assist in the implementation of site-specific projects that demonstrate best management practices (BMPs). Projects are ranked for approval based on criteria developed by the Management Committee. Innovation is encouraged.

Based on these goals and objectives, the Rio Puerco Management Committee has accomplished the following:

Subwatershed Prioritization

After beginning with an effort to generate individual restoration projects across the entire 4,000,000 acre watershed, the RPMC was advised to concentrate efforts on a smaller, better defined, and more manageable region. The resulting prioritization has led us to focus on an area of approximately 595,000 acres comprising the Upper Main Stem and Torreon Wash subwatersheds. Taking additional steps, these two subwatersheds are being further evaluated to identify the most important sites for restoration project work in individual targeted drainage systems.

The RPMC is conducting a thorough analysis of the condition of the lands in this watershed as part of the ongoing restoration initiative. A direct effort has been put into characterizing the truly influential ambient, environmental, or land management factors affecting this watershed. This is expected to lead to a recognition and prioritization of locations, natural setting, and management practices contributing to the watershed's present impacted condition. The prioritization effort was organized by a technical subcommittee composed of staff from the USGS, NMED, BLM, NRCS, Navajo Nation, and interested residents. A comprehensive approach was taken to define the watershed's physical condition by delineating its geologic, geomorphic, and vegetative settings and the microclimatic subdivisions in the watershed for the purpose of comparing distinct subwatersheds. Land management, social, and cultural factors are being evaluated as well.



As a primary step, the RPMC researched how and where the land's natural components, past or present management practices, and current land use or development is directly contributing to the degraded watershed's condition. Data and graphic information was gathered from a wide variety of existing sources (geologic, soil, erosion and vegetation maps, professional papers, agency files, precipitation data, previous Rio Puerco studies), and new surface geology and vegetation information was generated via USGS satellite photo studies. The prioritization progressed by focusing on some or all of the following factors (with Preferred Conditions underlined):

- Dense versus sparse vegetative cover, taking into consideration the dominant type of vegetation, its appropriateness for altitude and slope aspects, high vs. low species composition, and diverse vs. limited age-class distribution;
- Presence or absence, and health of riparian habitat;
- High versus low percentage of bare ground;
- Geologic surface units (soil, residuum or bedrock) that are either susceptible to or resistant to erosion;
- High or low density, and proper or poor condition of roads;
- Favorable or degraded condition of woodlands;
- Good or poor water quality (and the types of conditions impacting streams and spring sources).

The prioritization effort incorporated consideration of additional social, political, and cultural conditions recognized by the region's residents. The process also put an emphasis on analysis of the listed impairments and causes of pollution identified in state and federal water quality documents. The greatest opportunities to protect water quality obviously occur in the headwaters

regions where perennial to intermittent streams are developed.

Locations rising to the top of the prioritization list were found to be at a relative disadvantage when compared to regions displaying some or all of the preferred conditions. As an additional intangible consideration, our prioritization was tempered by the advice and opinion of knowledgeable local residents regarding areas that are deemed likely to provide valid restoration opportunities. They suggested locations that might have an increased likelihood of gaining local consent and participation and contributed their knowledge of a landowner's current management practices and willingness to alter management styles in order to seek improvements. This information was combined with the technical determinations of where ground conditions appear to be conducive to restoration (not too far impacted to expect improvement) and areas with a seasonal precipitation regime supporting revegetation and restoration efforts. In other words, the RPMC does not believe it can support developing projects in areas where a combination of factors make it unlikely that our efforts could succeed.

In light of the area's natural conditions, the project efforts we intend to implement are expected to result in improvements to the physical setting and the management of these lands. Project efforts will focus upon improvement of water quality, vegetative diversity and soil stability. These are perceived to be vital elements to achieving measurable watershed restoration and improvement.

The Watershed Restoration Action Strategy (WRAS)

The RPMC developed and approved a WRAS in May 2001 as a logical step toward its stated goals and objectives. This document is a blueprint of actions to be taken, a schedule for implementation, and a list of the funding needs to address specific water quality problems. The WRAS is the support document that the RPMC will use to apply for watershed restoration and nonpoint source pollution control project funding under Clean Water Act Section 319 (h). In

addition, as a living, expandable and updateable watershed planning document, it may appropriately be attached to applications for other avenues of funding. This report includes the key points from the strategy document.

Community Involvement

The varied composition of the RPMC lends itself to widespread gathering and dissemination of information through its constituent agencies and organizations. The success of water quality protection programs in the watershed depends on the approval and cooperation of the local landowners and various government agencies. The RPMC is the primary mechanism through which this is accomplished. Public outreach is built into all aspects of the committee's work, from identifying problems and setting priorities to writing and carrying out a restoration plan. Input from the members, as well as from outside of the committee, was used to develop and review the WRAS.

The RPMC has made significant strides in public involvement. Actions taken to date include:

Working groups: Early on, RPMC established two geographically-defined working groups, which drew participants from the respective regions to describe the major problems faced by the watershed's residents and join the effort to restore it. One is composed of participants from the northern watershed, beginning at the headwaters of the Rio Puerco and stretching to the confluence with the Rio San Jose. The second group focused on the Rio San Jose southward to the junction with the Rio Grande at Bernardo, New Mexico.

Newsletter Publication: Feature articles introduced the RPMC to readers and described the organizational achievements that led the EPA to select the Committee as a recipient for its regional Environmental Excellence Award. One thousand copies were printed and distributed.

Contacts with Congress: The RPMC has kept the New Mexico congressional delegation informed of its progress by direct communications with the congressmen and staffers. The commit-

tee submitted a formal report to Congress in 1998.

Video production: The RPMC produced a five-minute video to supplement the 1998 report to Congress. Additional footage has been collected and archived with the intent of producing a second video geared toward the general public.

Field trips: The RPMC and several of its constituent agencies and organizations have sponsored tours of many parts of the watershed to examine existing field conditions, view locations for proposed on-the-ground activities, evaluate projects in progress, learn about innovative land management techniques, and meet with local residents on their own turf.



A resident talks about erosion problems at a listening session at the Ojo Encino Navajo Chapter

Listening sessions: A series of meetings were held in communities located in the sub-watersheds designated by the RPMC as high priority areas.

The purpose was to confirm the choice of these areas during the RPMC's sub-watershed prioritization process. This was done by soliciting the residents' views on the nature and severity of the resource concerns and associated problems within their immediate areas, and gauging their interest in solving those problems. The three listening sessions held to date in Cuba, Torreon Navajo Chapter, and Ojo Encino Navajo Chapter were so successful that more are planned for the

near future.

Public Participation Subcommittee: The subcommittee was formed to plan and carry out the activities listed above. The subcommittee's plans for this year include work days at project sites, publication of a second newsletter, and follow-ups to the initial listening sessions

On-the-Ground Projects

Rio Puerco Channel Restoration in Conjunction with the Highway 44/550 Project

In the mid-1960s, the New Mexico State Highway and Transportation Department (NMSHTD) established a new route for State Road 44 in the Rio Puerco valley. In order to eliminate the cost of at least two bridges, they redirected the river from its natural meandering channel into a 5,500 foot straight, constructed shallow ditch. The new channel was shorter but had a much steeper slope. The steeper the slope, the faster water flows and the greater the power it has to erode. The Rio Puerco immediately began headcutting through soft alluvium and sandstone to incise a channel that is 50 feet deep and more than 300 feet wide. Approximately 14.1 million cubic feet or 21.1 tons of sediment per year have been eroded during the past 35 years. This represents



The channelized segment of the Rio Puerco has eroded 50 feet deep & 300 feet laterally, sending 21 tons of sediment downstream each year.

about 20 percent of the annual suspended sediment load that the river delivers to the Rio Grande. The erosion continues with the headcut advancing upstream at an estimated rate of four feet a year. The Highway 44/550 widening pro-

ject provided an opportunity for the RPMC to work with the NMSHTD to include bridges in the design for the new highway. In January 1999, the RPMC and the NMSHTD signed a precedent-setting Memorandum of Understanding to initiate the restoration of the Rio Puerco to its original channel.

The New Mexico Environment Department (NMED) has developed three "319" grants from



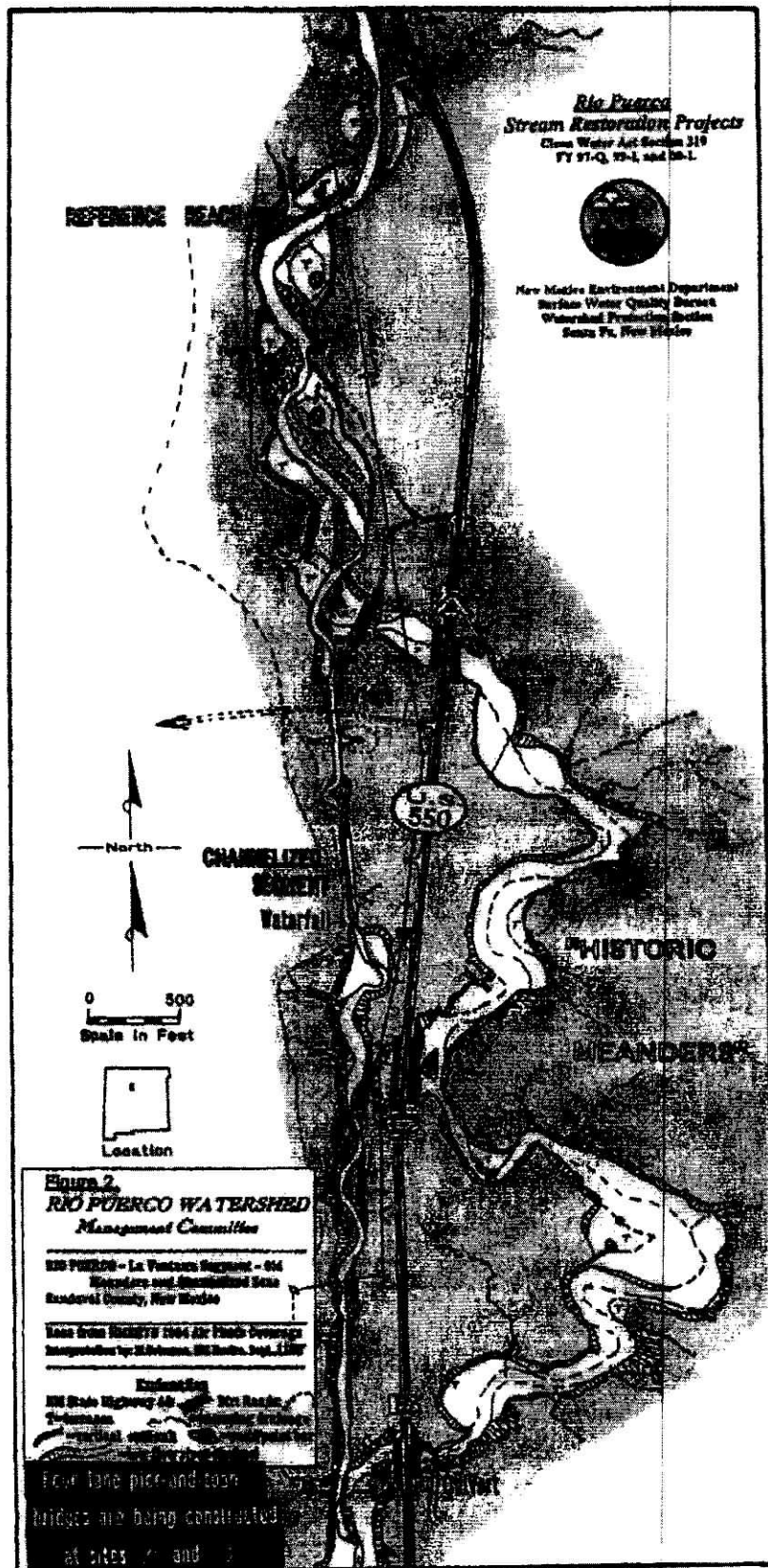
Thompson Spring range users and RPMC volunteers cover geoweb with soil to stop headcut.

the Environmental Protection Agency (EPA) to fund design and construction of the structures that will be needed. A Bureau of Reclamation design team is engineering the structures. The EPA grant will pay for 60 percent of the estimated \$1 million construction costs. NMED and the RPMC are attempting to find the required \$400,000 in non-Federal match.

The BLM with the help of RPMC plans to reestablish a healthy riparian cottonwood community along the original stream through plantings and control of livestock grazing. The project has the potential to significantly increase water quality in the Rio Puerco and Rio Grande. This project remains the number one priority for the RPMC.

The Thompson Spring Range Unit Erosion Control Project, Jemez Pueblo

The Thompson Spring Range Unit is the northern portion of the Ojo del Espiritu Santo Land Grant belonging to the Pueblo of Jemez.



It is located at the western foothills of the Sierra Nacimiento range, east of State Road 44/US 550, and just south of La Ventana, NM. This range unit is composed of 9,200 acres which drain into the Rio Puerco.

The land has been dissected by numerous arroyos that carry runoff and sediment. The sediment yield from the area ranges from 9 to 20 acre feet per year. This sediment loss robs the uplands of soil, nutrients, and soil moisture. Arroyos create scars on the landscape. The resulting drier site has led to an increase in undesirable species such as sagebrush which have begun to replace the grasslands.



Rock is placed on top to armor-plate the area.

With the help of \$44,650 from the RPMC, Thompson Spring permittees constructed 20 rock and brush dams, rock and wire dams, net-wire diversions, and gabion structures to control erosion. In addition, the Bureau of Indian Affairs surveyed and reshaped a large headcut in a major drainage tributary to the Rio Puerco. Erosion control textile and geoweb were laid over the reshaped cut. Tribal members and volunteers from RPMC covered the geoweb with earth and rock to slow down flows and provide a protective surface to capture sediment.

The range users are taking an active interest in improving livestock management. Some of the funding will be used to refit a windmill destroyed by wind with a solar submersible pump. Dependable livestock water will be piped to several drinkers to disperse cattle more evenly.

Permittees are also interested in cross fencing to implement a rotation grazing system.

In addition to funding provided by the RPMC, the Pueblo and BIA have contributed \$24,600 in labor and materials.

Gibson Ranch Holistic Demonstration Project

The work plan for FY 2001 focuses on establishing a demonstration project model using the principles of holistic decision making and resource management that can be replicated elsewhere within the Rio Puerco basin. Tree New Mexico, in conjunction with the Savory Center for Holistic Management, is working with the family of Jackson Gibson on his ranch near Thoreau, New Mexico to provide education and training in grazing and land planning and monitoring processes. Together they will develop and implement a long-term land plan and a current year grazing plan based on the family's desired future resource and economic conditions. The initial plan will be developed over a period of nine months but will be implemented over a much longer period, five to ten years or more. They will collect baseline data of current resource conditions and establish a monitoring plan to collect the same kinds of data annually. Data collected will include family history and management practices, soil stability factors such as water flow patterns, water infiltration tests, vegetation species composition and frequency, litter, cover, and wildlife species, etc.

Another important aspect of the project is working with the local community, the Thoreau and other surrounding Navajo Chapters, to transfer knowledge and skills to improve decision making and resource management on deteriorating Navajo lands. This will be done through conducting three sessions including one listening meeting and two educational workshops. The focus of the workshops will be determined by the interests of the local community members.

Watershed Restoration and Rangeland Health Workshops

The Quivira Coalition, the Navajo Nation Department of Water Resources, Water Manage-

ment Branch, and the Na' Neelzhiin Youth Program are partnering to conduct a series of conservation workshops at the Torreon/Starlake Navajo Chapter during the summer of 2001. The workshops focus on rangeland health and on-the-ground watershed restoration demonstrations. The partners are using a number of consultants with expertise in these areas, principally Kirk Gadzia, Terry Wheeler, Joanna Austin-Manygoats, and Bill Zeedyk.



Bill Zeedyk explains the principle of water harvesting using a one-rock dam.

The watershed restoration portion of the training is using the in-kind labor of landuser families and the Na' Neelzhiin Youth Program, a six-week summer program. The project's youth, their supervisors, and landuser volunteers participated in the training and are working together at four demonstration sites. At the Cactus Flat site, Mr. Zeedyk led the youth program and RPMC volunteers in installing approximately 250 low tech water harvesting structures.

In September, Kirk Gadzia will conduct a one-day class on rangeland health at Torreon. The class will cover the fundamentals of rangeland health, tools used to restore and maintain range health, the role of disturbance (e.g. fire, grazing), recovery periods, the fundamentals of progressive ranch management, and the role of monitoring. As a followup, Terry Wheeler will be available to do on-site consulting with ranchers on their ranches to determine their particular problems and possible solutions.

Cuba Grade Stabilization and Streambank Protection Project

The RPMC, the Natural Resources Conservation Service, and the New Mexico Environment Department are assisting the Cuba Soil and Water Conservation District in remediating damage caused when an in-stream tire bale structure blew out in the Rio Puerco. The Cuba SWCD has a \$27,000 grant from the New Mexico Conservation Commission. NMED is offering an additional \$20,000 in Section 319 funding and RPMC has been asked for \$5,000 and labor to clean up and prepare the site and plant vegetation. The proposal also involves redesigning a stable channel and recreating the floodplain. Tire bales which have already been purchased will be used to stabilize the banks and stop lateral erosion.



Five of the 600 loose tires removed from the Rio Puerco by RPMC and Cuba Soil & Water Conservation District volunteers

Monitoring and Evaluation

Development of a consistent methodology for baseline data collection, verification monitoring, data inventory, and compliance review has been the task of the RPMC Monitoring and Compliance Subcommittee. The intention is to use methodologies that will actually show the changes and anticipated improvements in the parameters for which restoration projects have been implemented. An aim of this review is to choose monitoring techniques that can be understood and implemented by all cooperators with

different levels of technical expertise. The overriding intent is to develop consistent and compatible data collection methods that will ultimately show watershed-wide trends and changes attributable to restoration efforts.

Monitoring

Monitoring will be directed at tracking and developing trends with regard to water quality and the condition of other natural and socioeconomic resources. Reference conditions/reaches/areas will be identified and monitored to serve as goals for restoration and protection measures. A long-range monitoring program will assure that project activities are tracked and evaluated beyond the implementation of individual projects. Milestones will keep us on track for restoring the watershed.

Technical assistance for the development of project monitoring plans will be in the form of periodic workshops conducted by the RPMC. The workshops will be open to the public and will focus on how to develop a monitoring plan. We propose to use the Quality Assurance Project Plan for Water Quality Management Programs 2000, produced by the Surface Water Quality Bureau of the New Mexico Environment Department as a basis for the training sessions.

The Committee intends to establish a cadre of trained monitoring volunteers to assist with projects and to help identify baseline and reference conditions throughout the watershed. We would like to develop an information hotline through the creation of a Rio Puerco Web page and present a regular column in the RPMC newsletter. The hotline would provide a means for stakeholders to access data and provide monitoring updates.

Compliance and Project Evaluation

A compliance review plan is being developed, with the following goals:

- To meet project objectives within a scheduled timeframe;
- To ensure the use of available funding effectively and consistently with the stated project proposal and implementation plans;
- To ensure continued suitability of Best Management Practices (BMPs) to achieve resource restoration and protection during implementation of the project;
- To guarantee maintenance of installed BMPs, and completed status and final projects.

A three-person RPMC Compliance Review Team (CRT) will be established to monitor the project proposal, goals, workplan, and implementation. The CRT and project proponent will initially meet to review compliance expectations, including completion of any National Environmental Policy Act (NEPA) and State Historic Preservation Act requirements. The CRT will set up a schedule of additional field reviews as needed. The project proponent will submit quarterly reports describing actions taken, finances, and project progress. A final report will be required at project completion.

Implementation of these monitoring and compliance plans will contribute to our meeting the goals of the Rio Puerco Watershed Act of 1996, and fulfilling any requirements associated with other funding we obtain for Rio Puerco restoration activities. Collection of these data will improve our understanding of processes that cause resource degradation, social deterioration and financial losses in the Rio Puerco Watershed.

Future Actions to Meet Goals

Implementation efforts will focus on the following categories of actions that will be necessary to restore water quality and healthy watershed function in the Upper Main Stem and Torreon Wash sub-basins. Priority actions are preceded by (*).

Public Outreach

- *Train a cadre of community volunteers to gather baseline data and assist with monitoring.
- *Provide workshops to local landowners on best management practices such as grazing