New Mexico Forest and Watershed Restoration Institute

Annual Report 2008-2009

Executive Summary

FWRI supports forest restoration in New Mexico through four program areas: Outreach, GIS, Mechanics of biomass removal, and Monitoring. We provide information about restoration to land managers by establishing and maintaining long-term relationships with existing groups of partners that are managing landscapes, and by taking a leading role in multi-jurisdictional and watershed-based projects. In cooperation with New Mexico's Office of Forest and Watershed Health, FWRI was instrumental in establishing the state's Watershed Portal, a new website. We also helped organize four workshops during the year.

FWRI is the center of GIS and GPS expertise on the NMHU campus and in northern New Mexico. We haves become a valuable mapping resource for small government agencies, non-profit organizations, private landowners, and local field offices of larger government organizations that have little or no in house GIS and GPS capabilities. We provided maps to 21 different groups during the year.

Our contribution to the mechanics of woods operations is to support the NMFIA and the existing industry. A new activity this year was the development of a short course for restoration crews, developed at the request of the Alamo Navajo School Board, which blended safety and science.

FWRI does a wide variety of monitoring, funded from various sources, including agreements with individual CFRP grantees and our core funds. We continue to refine field monitoring and data entry procedures. The Coleman Ranch project, which is working to describe the water budget of treated and non-treated stands, is a joint effort with many partners, and is the one clear example of FWRI's involvement in research. We also worked on 15 other monitoring projects.

Formation of the Southwest Ecological Restoration Institutes

The New Mexico Forest and Watershed Restoration Institute (FWRI) was formed in 2004 after the passage of the Southwest Forest Health and Wildfire Prevention Act (PL 108-317). The FWRI is partnered with similar institutes in Arizona (Ecological Restoration Institute) and in Colorado (Colorado Forest Restoration Institute), and together, the three organizations are named the Southwest Ecological Restoration Institutes (SWERI).

In the past year, approximately 40% of our annual budget was derived from our federal base budget (to address our SWERI work plan), 40% came from the New Mexico state legislature (via Highlands University), and 20% came from project specific contracts. *It is important to note that in this annual report, we will address how we met the goals and objectives of our annual 2007 SWERI work plan. Because our personnel, students, and contractors are supported by all of these funds, most of these projects were completed with the assistance of federal and state funds as well as project specific contracts. We will make special note of projects that were supported primarily by state or project specific funds.*

Areas of Support

FWRI supports forest restoration in New Mexico through four program areas: Outreach, GIS, Mechanics of biomass removal, and Monitoring. Though our activities can be broken into these four areas, FWRI's staffing is so small that everyone works across all program areas. Before addressing accomplishments under the FY 2008-09 work plan, general efforts under each of these four areas will be presented.

Outreach

A continuous activity during the year was participation in the coordinating group for State Forestry's Watershed Health Office. The Director attended a workshop on Threats to Private Forests organized in Lakewood in March by the Western Forestry Leadership Coalition, and a Collaborative Forest Restoration Program (CFRP) Lessons Learned workshop in Albuquerque in May. He also made a presentation on SWERI as a Regional Resource to the annual meeting of the timber staff of Region 3 of the Forest Service in Albuquerque in March.

FWRI maintains a web page to provide project exposure and information sharing to the public and FWRI collaborators. While it is listed here, the web page is managed and updated by our GIS staff, and provides access to information about FWRI projects and personnel.

FWRI, on behalf of NMHU, is a collaborator on a USDA Higher Education Challenge Grant that was awarded to NM State University. This three year grant provides funding for student internships and travel expenses to provide experiential learning opportunities in the Natural Resource Disciplines to undergraduate and High School students across the state. FWRI served as Principle Investigator for the NMHU portion of this grant, overseeing all appropriate activities and fund expenditures under the grant. Highlands has funding to support 3-4 students each summer for 3 years (*total budget for Highlands is $46,399*). Students funded during summer

2009 and their internship location included; Vanetia Aragon - NM Forest and Watershed Restoration Institute; Melissa Martinez – US Fish and Wildlife Service, Las Vegas National Wildlife Refuge; and Juan Juaregui (High School Senior) – NM State Forestry, Las Vegas District.

The Director often is called upon to participate in activities that are not part of the day-to-day business of FWRI. Starting in January, the Director made several visits to the Roundhouse in Santa Fe to visit the New Mexico Legislature. Besides consulting with lawmakers, he gave testimony on a bill in committee which would have funded FWRI. That bill passed out of committee, but never came to a floor vote. FWRI ended up being funded as a line-item in the NMHU request, at a level even with 2007-08, a significant event given the state's financial problems. In addition to effort during the regular session, the Director gave testimony before two different committees during August, the Interim Legislative Finance Committee and a full hour before the Interim Water and Natural Resources Committee. 2009 was also the year of the first SWERI Five-Year Review, and a significant amount of time was devoted to that process and document.

Finally, one of the most important duties we are charged with is promoting restoration prescriptions and the underlying science. That duty has suffered this year because of the empty Forester position. Despite that, FWRI staff assisted the multi-agency group that organizes the annual New Mexico Forestry Camp for high school students in June, and has an on-going commitment to working with Project learning Tree, a collaborative effort to provide natural resource continuing education to school teachers. FWRI, especially the GIS staff, also took an active role in State Forestry's recent statewide assessment of natural resources.

GIS

FWRI is the center of GIS and GPS expertise on the NMHU campus and northern New Mexico. As such, it is seen by many federal, state, and educational agencies as the logical place to host educational and training activities. Additionally, as FWRI demonstrates the value of GIS and GPS to the many governmental and non-governmental entities it collaborates with, these organizations have requested training as they establish or improve their own GIS and GPS capabilities.

FWRI taught selected GIS and GPS lessons in natural resources courses, and various ad hoc workshops open to NMHU faculty, students, and the community. Short courses and individual tutoring and mentoring was provided for federal, state, and tribal agencies. State and Federal acquisition of new, complex GPS receivers increased the demand for this service. An Introduction to Remote Sensing workshop was developed through funding provided by the USGS and America View consortium. Table 3 provides additional information regarding those agencies served.

Additional specific GIS accomplishments are discussed under Projects 1, 2, and 4.

Table 3. GIS and GPS training and outreach provided in 2009

Entity/Activity	Number of Instances
Alamo Navajo	3
Biophilia Foundation GPS Training and Support	2
Edgewood SWCD GPS training	2
GIS and GPS lessons for NMHU courses	9
GPS training for Citizens Watershed Monitoring Team	1
Individual GPS and GIS training for NMHU students/faculty	12
Memorial Middle School GPS training	2
NMSF GIS training	1
Stand alone GPS training event at NMHU (Half Day Workshop)	1
Tierra Y Montes GIS and GPS field support	6
Tierra Y Montes GIS and GPS Training	2
United World College	2

Mechanics of Biomass Removal

To modify a statement of the former Executive Director of the NM Forest Industry Association (NMFIA), a healthy, restored forest is depends upon a healthy, restored forest industry. Processing capacity and a market for processed material are necessary, and are objectives that are being pursued by USDA-Forest Service and NM State Forestry. FWRI's contribution to the restoration of industry is to support the NMFIA, existing forest products companies, and forest workers.

When FWRI was established, we inherited extraction and processing equipment that had been used in an earlier training program. One of our staff regularly inspects this equipment to ensure that it is in good operating order for use in a possible field training partnership with the local economic development community and other partners. This work is ongoing.

Additional specific Removal accomplishments are discussed under Projects 2 and 4.

Monitoring

FWRI maintains all monitoring data it collects in electronic form in order to make it most useful and accessible to researchers and project managers. Data is provided upon request and will eventually be hosted on the NM Forest and Watershed Portal. We have worked extensively to refine field monitoring and data entry procedures. All FWRI personnel are involved in field monitoring, with the GIS staff in charge of data entry and summary report generation. We entered field data from monitoring projects to create FFI database and Microsoft Excel spreadsheet-based summary statistics. Summary reports are created for all FWRI monitoring projects.

Another way we support monitoring is by providing technical assistance to CFRP grantees and the CFRP in general. *This work is done under a separate contract with the Forest Service.* Through a contract with the Forest Guild and a local wildlife biologist, a new monitoring

guideline, Wildlife Monitoring for the Collaborative Forest Restoration Program, was drafted this year. FWRI staff is working with the contractors to field test these new guidelines before final release. A wildlife monitoring training early in the year for CFRP grantees attracted 27 participants, jointly hosted by FWRI staff and our contractors.

This same agreement between FWRI and the Forest Guild allowed site visits to 40 CFRP projects and grantees to provide technical assistance. In addition, FWRI staff cooperated with Carson National Forest Staff to plan, coordinate, and implement a monitoring workshop for CFRP clients, with 35 grantees participating.

Additional specific Monitoring accomplishments are discussed under Project 2.

Transition

This year has been one of transition, and the transition is not yet complete. In mid-December 2008, we moved from our temporary offices in the Purchasing building to our refurbished offices in the Lora Shields Science Building. In addition, Patti Dappen, one of the GIS specialists, had a child at mid-year and was on maternity leave as a result. When she came back, she requested and was granted a part-time appointment, where she continues to do an outstanding job. As a necessity to allow us to accomplish our field work, we purchased a second vehicle using state funds.

The most significant transition relates to the Director position. Shortly after we reoccupied our permanent offices, Ken Smith, who had been Director for almost two years, resigned and returned to his previous job. Kent Reid, one of FWRI's Foresters, was appointed Interim Director in mid-January. A national search for a new Director has been initiated, but a decision had not been made by the end of the year. The Forester position effectively has been vacant for nine months.

Project 1: Technical Assistance for Communities and Restoration Collaboratives

One of FWRI's significant responsibilities is to provide relevant and accurate information about restoration to land managers and other key stakeholders. One of the best ways to do this is by establishing and maintaining long-term relationships with existing groups of partners that are managing landscapes. One such group is the steering committee of the Estancia Basin Watershed Health, Restoration, and Monitoring Project. This group has a core of the three Soil and Water Conservation Districts in the Estancia Basin, with membership extending to three or four other agencies working in the area. As an outside party, we continued to chair the meetings of the steering committee during the past year, as well as providing GIS support.

Other local multi-organization management groups we have been involved with include the Sapello Watershed Group, the Sugarite Canyon Watershed Protection Project, and the Cimarron Watershed Alliance. We also participated in meetings of the Adelante Resource Conservation and Development Council held here in Las Vegas. This last group is particularly important because it serves as the primary coordination entity for the joint effort to protect the Gallinas Canyon watershed, the drinking water watershed for the City of Las Vegas. The State Forester,

the Regional Forester for the USDA-Forest Service, and the State Conservationist for the NRCS have agreed that the Gallinas is the priority watershed in the state for their agencies.

Finally, FWRI has had a role in the meetings of the Southwest Jemez Mountains Partners. This group came together to develop a strategic plan for the eastern portion of the Jemez River watershed, an area encompassing 210,000 acres with three major landowners. Besides the core land managers – the Valles Caldera National Preserve, the Jemez District of the Santa Fe National Forest, and Jemez Pueblo – the initial partners include The Nature Conservancy and staff from the Santa Fe's Supervisor's Office. FWRI has arranged and chaired the meetings for the last two years. The planning effort is at the edge of expanding the number of collaborating organizations. In addition, this strategic effort lends itself to preparation of a proposal under the Landscape Forest Restoration Act.

Deliverables

1) The coordination of multi-jurisdictional and watershed-based mapping projects to identify priority treatment areas, long-term wood supplies, and the potential for stewardship contracting.

FWRI has taken a leading role in multi-jurisdictional and watershed-based projects. We joined with the Biophilia Foundation and State Forestry's Watershed Health Office in the fall of 2009 to organize a state-wide Community Wildfire Protection Plan (CWPP) Conference at the Pritzlaff Ranch on 8 and 9 October. We have also been involved with the multi-agency effort to make habitat typing more accessible and more widely applied. This group, the Plant Association Technology Transfer Initiative (PATTI), is an interagency, informal group with the purpose of promoting vegetation and land classification issues in New Mexico and the Southwest. The participants have formed 3 sub-groups: technology development, technology transfer, and case studies. FWRI's major contribution to the overall effort has been to set up a test (demonstration) online version of the plant association guide.

FWRI also has been involved in calculating the potential current and long-term wood supply for biomass-using industries. During the summer of 2009, two different private companies approached FWRI for our estimate of the woody biomass within specified haul distances of Las Vegas. We calculated these numbers, disaggregated by biomass pool (slash, small diameter, larger diameter), from FIA data. One company is interested in generation of electricity, and the other in cellulosic ethanol. Small-scale companies which use woody biomass would enable treatment of many more acres than currently is possible through grants and operating funds.

2) The development of project maps for stakeholders throughout the state.

FWRI has become a valuable mapping resource for small government agencies, non-profit organizations, private landowners, and local field offices of larger government organizations that have little or no in house GIS and GPS capabilities. FWRI's staff expertise and GIS/GPS infrastructure has allowed it to be very responsive to *ad hoc* requests for support from these organizations, and we have developed project maps for stakeholders throughout the state. Projects included continued support to thinning project mapping and noxious weed map creation for several soil and water conservation districts, updates to a forest industry map for the NM Forest Industry Association, property and resource maps for the Biophilia Foundation (Pritzlaff

Ranch), updates to the Taos County Community Wildfire Protection Plan maps, and project maps for various Collaborative Forest Restoration Program grantees, local watershed groups, and others. FWRI has also worked to provide digital GIS datasets to federal, state, local, and non-profit agencies. Tables 1 and 2 provide greater detail as to the agencies and entities we have worked with in the last fiscal year.

Table 1. Hard Copy Map Products Developed and Delivered in Federal FY2009

Project/Entity	Number of Map Products
Alamo Navajo	4
Biophilia Foundation (Pritzlaff Ranch)	24
BLM	6
Citizens Watershed Monitoring Team	8
Claunch-Pinto SWCD	14
Cuesta CWPP	24
Dan Flinter (Private Landowner)	3
East Torrance SWCD	8
Edgewood SWCD	32
Forest Guild	8
Michael Benjamin CFRP	6
NMFIA	6
NMHU ITS	4
NMHU Students and Faculty	6
NMSF FWHO	8
NMSU Cooperative Extension	7
Sapello Watershed Group	10
Taos CWPP	45
Tierra Y Montes SWCD	16
USFS	4
Estancia Basin Forest & Watershed Health Core Team	8

Table 2. Digital GIS data sets delivered in 2009

Entity
Forest Guild
NMHU Faculty and Students
NMSF
NMSU Cooperative Extension
San Miguel County
Santo Domingo Pueblo
Taos County Emergency Services
USFS

3) The continued development of a demonstration area for restoration-based treatments in ponderosa pine at the Pritzlaff Ranch for policy makers and other local land owners.

The area at the Pritzlaff Ranch where FWRI established a restoration thinning demonstration area last year is continuing to be used. One class from the local high school spent an afternoon

on the site in the spring, and several individuals have had tailored tours during the year, including one Mexican forester to whom the area was explained in his native language.

Project 2: Ecological restoration monitoring, restoration-based prescriptions, and water savings after forest restoration

The map showing of all our monitoring projects is found in Figure 1. We do a wide variety of monitoring, and a few specific projects are mentioned here. The monitoring we do is funded from various sources, including agreements with individual CFRP grantees and our core funds. Projects discussed here were funded with core money unless identified otherwise.

We have done a significant amount of work for the NM state office of the BLM, most of that in the piñon-juniper (PJ) type. These five projects fall into two categories: monitoring related to mechanical thinning, and monitoring related to prescribed fire treatments. *This work was funded by a separate agreement between FWRI and BLM.*

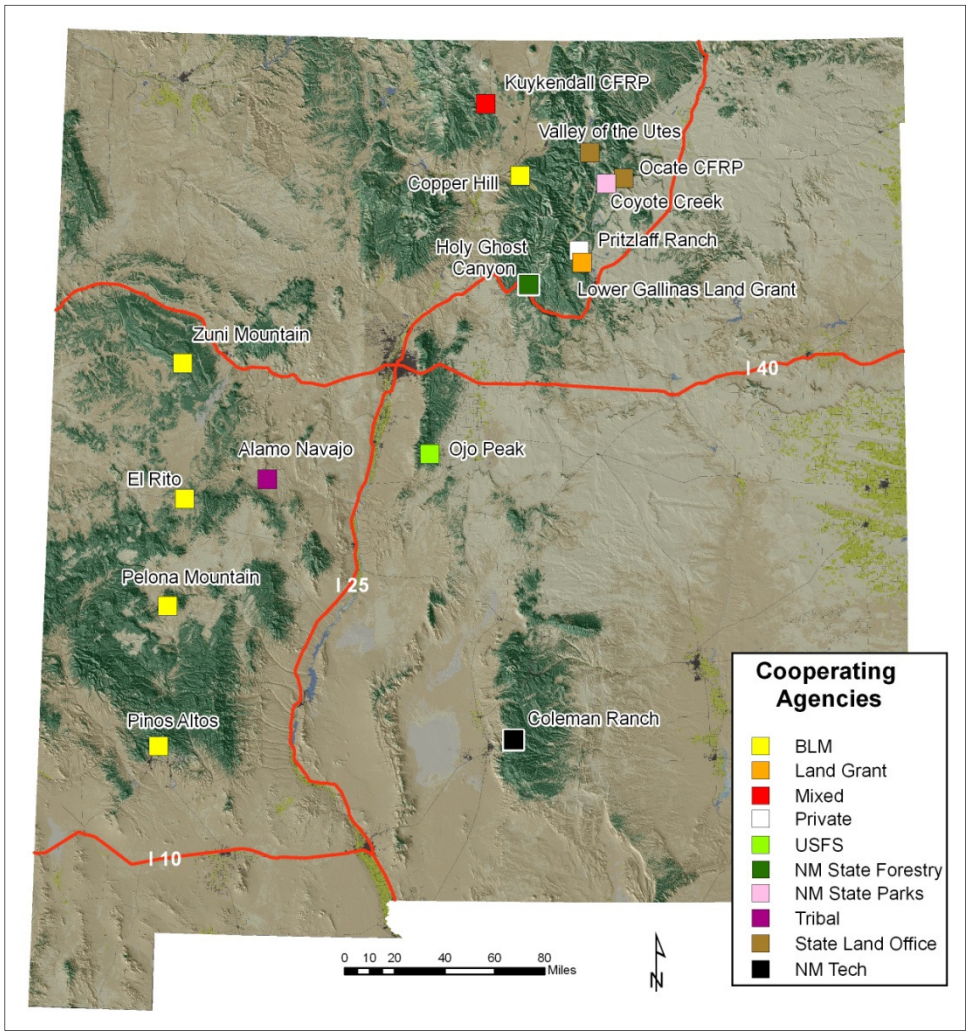

Figure 1. 2009 FWRI Monitoring Project Locations and Cooperating Agencies

BLM has requested *and provided funding* for a detailed, extensive study of vegetation types and canopy coverage within watersheds containing BLM land within the BLM Albuquerque District. This data will be used to help in detailed planning for restoration treatments on BLM land. Under this agreement, FWRI has completed project planning to identify data sources and software requirements. We have acquired software, researched methodology, met with technical experts, and produced four planning maps. The total project scope is 429 watersheds covering over 17,000 square miles.

Our continuous contact with stakeholders shows us that increasing and better organized community-level involvement in monitoring and restoration activities has resulted in the need for more consistent training, education, and outreach. We have responded to this in several ways. As mentioned above, FWRI provides direction in the development of CFRP monitoring and data analysis tutorials which are posted on our website. We provide tailored Common Stand Exam and FFI/FIREMON monitoring field collection and data entry training to CFRP collaborators and other organizations requesting this service. More in-depth community education in forestry and natural resources sciences was provided to the Alamo Navajo and other community organizations requesting this service. In addition, vegetation habitat typing guides were edited and hosted on our website as part of work done with Plant Association Technology Transfer Initiative (PATTI).

Last fall, we first became involved with the forestry program at Ramah Navajo and their project to thin PJ stands to provide firewood and reduce the risk of catastrophic fire. We prepared a draft restoration prescription last winter, and worked with their forestry staff to mark a demonstration area following our prescription. In another type in another part of the state, we have been working with the CWPP group in Questa in treating the bosque forest. We wrote a prescription that was reviewed by the CWPP group, and visited their bosque with the group to discuss our prescription and their restoration efforts. Finally, we participated in a field day during April at the Pritzlaff Ranch, organized by the Memorial Middle School Agriculture Extension and Education Center in Las Vegas, where we showed students examples of restoration thinning in ponderosa pine, why those treatments took place, and how we monitor the changes.

Deliverables

1) The development and maintenance of a New Mexico watershed portal in collaboration with the New Mexico FWHO.

Monitoring practitioners have identified the need for a common site for to access information about other projects in the state as well as technical information related to monitoring practices in New Mexico and beyond. FWRI, in cooperation with New Mexico's Office of Forest and Watershed Health, was asked to develop a watershed portal to act as a central clearinghouse of information in the state. FWRI served on the contractor selection committee and supervises the contract. We provided inputs into the design and functionality of the Watershed Portal, accessible at www.allaboutwatersheds.org. *This activity is performed under a Joint Powers Agreement and funded by NM State Forestry.*

2) Pre- and post-treatment monitoring on a minimum of 10 thinning projects across the state. Final reports will be delivered to managing entities and all partners.

The work of FWRI to monitor plant/vegetation and wildlife continued during this last year. Each FWRI monitoring project requires that monitoring sample plots be precisely located so they can be revisited for post-treatment and long-term monitoring. GIS and GPS are used to establish the planned locations of these plots and to provide the required precise plot positions.

Monitoring plot locations were selected for approximately 16 FWRI projects within project-defined parameters for 2009. Sites that were work for field monitoring activities included: Ocate; Walker Flats; Pritzlaff (Units D, B, C); Tres Piedras (Kuykendal's Units 4, 5,6); Valley of Utes (State Land Office; Pelona Mtn. (BLM Units); Ojo Peak; Coyote Creek, Johnson Mesa (spotted owl) and Gallinas (Alamo Navajo Unit). For each FWRI monitoring project, field maps and maps for project final reports were created.

3) A continuation of the post-treatment monitoring on the Sacramento Mountains water savings project.

This project, which is working to describe the water budget of treated and non-treated stands, is a joint effort with many partners, and is the one clear example of FWRI's involvement in research. Two crews spent a week in July at Coleman Ranch establishing initial plots for vegetative monitoring in the 359-acre portion of the study area that is not to receive thinning treatment.

Project 3: Pilot Landscape Project

This activity depended upon certain agreements between NAU and the Forest Service being in place in Arizona. Those agreements were not in place in time to do any work on this project during the recent fiscal year.

Project 4: Continuing education and forest worker safety trainings

FWRI help sponsor and/or organize the following conferences and workshops. The lead agency or organization is listed after each; in all cases, additional organizations also contributed.

- Watershed Forum, Albuquerque; 30 Sept – 2 October 2008; NM Environment Department
- NM Forestry and Climate Change workshop, Albuquerque; 20 Nov 2008; Forest Guild
- Jemez Mountains Climate Change workshop, Los Alamos; 21-22 April 2009; The Nature Conservancy
- Woody Biomass Thermal Energy workshop, Santa Fe; 3-4 August 2009; Forest Guild

Deliverables

1) To establish a "training of trainers" program for level 1-4 feller licenses for personnel based in New Mexico, and
2) To continue to support the development of the New Mexico Forest Industry Association.

These two deliverables are inter-related and will be discussed together.

One of the activities of past years was FWRI's work with Forest Workers' Safety Training Certification, which significantly lowered rates for workers' compensation insurance. During FY 09, we continued our involvement with the FWS program in two ways: one of our staff has been directly involved in training courses, and we support this program of the New Mexico Forest Industries Association (NMFIA) by passing through money we receive from State Forestry for this purpose.

The next logical step in this forest worker training in NM would be a course that improves skills. We have identified such a course, the Game of Logging, which certifies fallers at a level equivalent to the Forest Service Level C. In the spring of 2008, FWRI paid for the first step in training a cadre of trainers to receive this GoL training. However, an unforeseen consequence of this training was confusion within NMFIA and in the logging community that FWRI was establishing a training series of its own, independent of NMFIA. The position of FWRI has always been that we support NMFIA's forest worker training, using our own and passed-through State Forestry funds, and we do not have an independent forest worker training program. This confusion has been resolved.

In other support, NMFIA requested technical assistance in improving its internet capabilities and in building network of forest related businesses. In response, our GIS staff created and maintains an online directory and interactive map describing forest related businesses in New Mexico. We also used our core funding to develop their website.

During the five-year review of SWERI, the Alamo Navajo Forest Worker Short Course received a lot of attention, to the point the outside reviewers concluded FWRI was specializing in training. Especially from the point of view of the recipients, this training course was one of this year's unqualified successes. The Alamo Navajo School Board was interested in establishing a work crew capable of thinning and monitoring their own land and land of other agencies and individuals with whom they contract. They turned to us for this training. We initially designed and presented in December 2008 a two-week short course that covered the basics of natural resource management and incorporated the NMFIA training. Additional shorter, specialized courses have been taught since then. A total 29 participants have received training under this program. *Almost all of the marginal costs of the Alamo Program were borne by the Alamo Navajo School Board. FWRI covered the salaries of its staff that worked on the training.*