

Building Economic Opportunity through Forest Restoration: The Alamo Navajo Initiative

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From the Track, the Pacheco Canyon and the Las Conchas fires in the northern part of the state to the Miller, Quail Ridge, and Ruidoso Downs fires in the state's southern tier, New Mexico is emerging from its most severe wildfire season ever. In order to both mitigate the potential for catastrophic wildfire and restore natural watershed functions, forest restoration and the improved use of small-diameter thinnings from restoration projects in the southwestern United States are critical (Egan 2011a, Egan 2011b). Despite widespread damage, immediate post-burn assessments suggest that efforts to restore the health of some southwestern forests, including restoration thinnings, have often been effective in cooling off some wildfires. Restoration efforts have also provided a safe and effective zone from which strategic fire suppression efforts have been successfully initiated. In addition, restoration can be used to promote the development of restoration-based employment and businesses in the context of community involvement and collaboration (Bosworth and Brown 2007; Egan 2010; Tidwell and Brown 2011).

While many watershed restoration projects in New Mexico are currently subsidized by the federal government, a sustainable restoration effort will depend on the development of local restoration-based economies, the success of which relies on a number of factors, including reliable and predictable availability of raw material, a trained labor force, local entrepreneurship, and production capacity and viable markets for small diameter thinnings from restoration treatments. Successful efforts to develop restoration-based economies can also help to provide employment opportunities for rural, often marginalized, populations.

The Alamo Navajo Community

The Alamo Navajo Reservation is located in Socorro County, NM, directly north of the Gallinas Mountains on 63,000 acres of canyon country where flat-topped mesas and volcanic plugs punctuate the expansive landscape. Juniper and cholla dot the grasslands. To the south rises the pyramidal Sierra Ladron, with the Rio Salado beyond. Looking west, the eye is irresistibly drawn to three matched peaks known as Los Tres Hermanos. Climb any rise here, and the view opens onto the vast desert plateau of central New Mexico. Named for Alamo Springs, one of several springs that bring fertility to these variegated desert grasslands, the Alamo Navajo Indians live widely dispersed on their reservation acres. According to the 2000 U.S. Census, the reservation had a population of 2,027.

For historical as well as geographical reasons, the Alamo Navajo have been isolated from and neglected by the larger Navajo communities and to some extent from encroachment by the dominant Anglo culture. A measure of the isolation of the Alamo band, who live about 140 miles southwest of Albuquerque and sixty miles west of Socorro, is the date at which the major services of the modern world entered their lives: electricity in 1967, a paved road in 1982 and the telephone in 1987. Although Alamo oral history tradition indicates that their ancestors settled in the area as refugees from Kit Carson's military campaign of the 1860s, recent archaeological work indicates that there were Navajo families in the region as early as the eighteenth and perhaps even the seventeenth century.

Shepherding and subsistence farming have supported this community for as far back as anyone can remember, and poverty has been the norm with census figures documenting Alamo as one of the poorest Native American communities in New Mexico. While Socorro County has an overall poverty rate of approximately 32 percent, the Alamo Navajo reservation has a poverty rate of 69 percent and has been experiencing negative population growth. Per capita income in 2000 was \$4,039, and in 2005 the Alamo Band of the Navajo had an unemployment rate of 36 percent.

The Alamo people knew that if they were going to make a difference in their reservation – the education of their children, the health of their community members, the economic survival of the community – they needed to find a way of doing it for themselves. The concept of self-determination found fertile ground in a community which knew it wanted a school, health services and local control, but previously had no vehicle to obtain those things. The creation of the Alamo Navajo School Board, Inc. (ANSB) in 1979 represented the political birth of the Alamo leaders. Taking advantage of the 1975 Indian Self-Determination Act, the ANSBI was able to contract for its own services, and the Alamo leaders began to

make decisions for themselves. Today the ANSB is virtually the Alamo's sole employer, administering five Divisions; Education, Early Childhood, Health, Community Services and Administration along with a public radio station, KABR-AM, through over 40 grants and contracts with federal, state, and tribal agencies.

Housed under the ANSBI, the Alamo Natural Resources Program (ANRP) manages the reservation's natural resources and, often in collaboration with other partners, provides training in natural resources-related fields, including timber marking, forest restoration monitoring, and safe and efficient tree harvesting. It is the mission of the ANRP *to provide quality natural resource services and expertise in carrying out natural resource projects on tribal, private, state and federal lands through contracting.* Strategic goals include *to develop, train, and implement an Alamo community natural resource management work force and to train and educate the Alamo community in sound ecological land restoration techniques.*

The New Mexico Forest and Watershed Restoration Institute

The Federal Southwest Forest Health and Wildfire Prevention Act of 2004 (Public Law 108-317) established the Southwest Ecological Restoration Institutes (SWERIs) *to demonstrate and promote the use of adaptive ecosystem management to reduce the risk of wildfires, and restore the health of fire-adapted forest and woodland ecosystems of the interior west.* The purposes of the Act include: *to enhance the capacity to develop, transfer, apply, monitor, and regularly update science-based forest restoration treatments that will reduce the risk of severe wildfires, and improve the health of dry forest and woodland ecosystems in the interior west.* No other agencies or organizations in the southwest US have this federal mandate nor play such a strong and unique role in fire mitigation and public safety, forest health and restoration, technical assistance and outreach, and restoration-based economic development.

One of three restoration institutes established by the Act, the New Mexico Forest and Watershed Restoration Institute (NMFWRI) is housed at New Mexico Highlands University, an Hispanic Serving Institution (HSI) that is the home of the only Bachelor of Science in Forestry program in the state. Widely known and highly regarded throughout New Mexico and the southwest region, the NMFWRI provides outreach services and technical assistance that enable watershed restoration on forest and landscape levels not available elsewhere in the state. Importantly, the NMFWRI is looked upon to fulfill the role as a neutral broker of partnerships and collaborations among multiple land management agencies, watershed interests and stakeholders to achieve restoration objectives across jurisdictions and landscapes. While other entities involved in restoration have funding and regulatory roles related to land management, the NMFWRI does not have a financial stake in any project and does not have any

authority or role related to compliance. The NMFWRI, therefore, provides neutral, practical advice and facilitation and can comment fairly and impartially on positions held by all stakeholders.

The NMFWRI professional staff brings specific expertise, education, and experience in the following areas: remote sensing and spatial data analysis, GIS/GPS, mapping, forest inventory, forest operations, social science, silviculture, and extension education. Importantly, the NMFWRI is looked upon to fulfill the role as a neutral broker of partnerships and collaborations among multiple land management agencies, watershed interests and stakeholders to achieve restoration objectives across jurisdictions and landscapes. The Mission of the NMFWRI is to *provide technical assistance and practical knowledge in forest and woodland restoration to reduce the threat of catastrophic wildfire and restore healthy and sustainable forested ecosystems and restoration-based economies*. Among its guiding principles, the NMFWRI recognizes that a strong restoration-based forest economy is central to the sustainability of forest and landscape restoration in New Mexico and the southwestern United States (NMFWRI's Strategic Plan is posted at <http://www.nmfwri.org/index.php/about-us>).

The initiative

In an attempt to both empower local citizens and develop a model for restoration-based economic enterprises and outreach, in the Fall, 2010, the ANRP developed a formal partnership with the NMFWRI to accomplish the following objectives:

- *Develop expertise and capacity in sustainable restoration-based forest enterprises at the Alamo Navajo Community.* This is being accomplished by expanding capacity and knowledge in safe and efficient timber felling (Figure 1) and primary wood processing at the Alamo Navajo Community, including the production of squared lumber and firewood (Figure 2).

In addition, the NMFWRI has provided training in restoration monitoring (Figure 3), including that related to recently developed socio-economic monitoring guidelines (Egan and Estrada in press) and GIS, and has partnered with the US Forest Service to provide training in timber marking and timber cruising.

- *Develop a model for training and outreach in watershed restoration and restoration-based economic development by the Alamo Navajo Community to other communities by developing a partnership between the ANRP and the NMFWRI.* This includes training members of the Alamo Navajo Community by the NMFWRI in the use of the timber extraction and wood processing equipment and working with members of the Alamo Navajo Community to outreach to other individuals and communities.

As part of the partnership, the NMFWRI has agreed to site small-wood processing equipment, owned and managed by the NMFWRI, with the Alamo Navajo Community, including a firewood

processor, a self-loading trailer for yarding felled restoration thinnings, and a portable sawmill. Under the terms of the agreement, the Alamo Navajo Community is responsible for all operating and fixed costs associated with the equipment, including maintenance and repair, insurance, and replacement of tires. Importantly, in partnership with the NMFWRRI, the Alamo Navajo Community plans and conducts at least two outreach efforts per year focusing on some aspect(s) of the development of watershed restoration-based enterprises. This has included, for example:

- Primary processing of harvested material from in-woods watershed restoration activity, including industrial safety related to harvesting and processing thinnings during watershed restoration activity;
- Efficient felling and in-woods transport of thinnings from watershed restoration activity;
- Ecological and socio-economic restoration monitoring and field forestry; and
- Development of entrepreneurship and business plans related to successful watershed restoration-based enterprises.

While the wood processing equipment will remain sited with the Alamo Navajo Community, lessons learned from this initiative will be extended to other communities and individuals – ultimately contributing to the development of other watershed restoration-based economies and the feasibility and sustainability of watershed restoration efforts throughout New Mexico and the southwest US.

Progress

As a result of these efforts and the vision and dedication of members of the ANSBI, trained Alamo Navajo tree fallers have developed a reputation for skill, efficiency and hard work that is unsurpassed in the region and a core group of the Alamo Navajo Community has developed expertise in forest restoration monitoring and marking. One immediate result of NMFWRRI's training of Alamo tree fallers and thinners was a halving of workers compensation rates, from \$27 to \$12.5 percent per \$100 of payroll – a critical cost reduction that helped sustain this dimension of the community's restoration-based economy. A two-minute video of the work conducted through the partnership between the Alamo Navajo community and the NMFWRRI can be viewed at: www.nmfwri.org.

During the first quarter, before the partnership, all wood was cut, brought to the wood yard, cut to length and split. The wood yard was maintained by a six-person crew with two splitters. All loading was done by hand. During the second quarter, additional NMFWRRI equipment was available in the field and in the wood yard. Learning to use the new equipment has taken some time, but productivity has already increased, more than tripling the volume and value of cordwood delivered since the program began during the first quarter of 2010 (Figure 4).

In addition, often partnering with other entities – including New Mexico State Forestry, the US Forest Service, and the BLM – the NMFWRRI has collaborated with the ANRP to identify and deliver additional

relevant restoration-related training. A lack of local capacity in timber marking within the US Forest Service, for example, led to recent training conducted by NMFWRI and USFS foresters for several members of the Alamo Navajo community. The three-day training focused on developing an understanding of stocking, estimating basal area using angle-gauges, and marking restoration thinnings using proffered USFS guidelines. Since that time, the Alamo crew has marked several timber sales, including two timber sales on the Magdalena District of the Cibola National Forest in New Mexico that total over 500 acres, and 400 acres and 4,600 hazard trees on the Gila National Forest. The crew is currently marking 150 additional acres on the Mountainair District of the Cibola.

Future progress will be tracked and documented and lessons learned shared with others, eventually leading to a sustainable, state- and region-wide restoration-based forestry sector that will enable the implementation of future restoration efforts. Training has also been extended to other tribal communities and private individuals, providing critical external forestry field capacity to public and private landowners and land managers. As part of the agreement calling for a cooperative outreach effort between ANRP and the NMFWRI, a worker from the Alamo community helped the NMFWRI conduct a four-day workshop on basic forestry field skills for members of the Ramah Navajo community and, later, was a field instructor for training provided by the NMFWRI for unemployed and under-employed residents of northern New Mexico under a contact with Santa Fe Community College. In addition, in order to help elevate the training and credentials of Alamo and other tribal and non-tribal community members, an NMFWRI-endorsed certificate has been developed and a New Mexico Highlands University credit-bearing Certificate in Watershed Restoration will be available in the fall, 2013.

Lessons learned

One of the most critical lessons learned through this initiative is the necessity to provide ongoing training for crew members. The majority of the crew members come from the Alamo community population of 18-34 year olds, 73% of whom are unemployed. Despite excellent field skills, work ethic and leadership skills, in particular, have required constant vigilance and guidance.

The second lesson learned in terms of operating the wood yard, is specifically related to mechanization. The NMFWRI provided ANRP with a pole trailer and a firewood processor. These two pieces of equipment have doubled the capacity of the crew to remove wood from the forest and have it “truck ready” to ship. It is a balancing act keeping enough wood in the yard available for shipping and still meeting other contractual obligations. The profit margin on wood yard production is small and it is critical that production quotas are met. Currently ANSBI is contemplating an additional skid steer to reduce the time to load the pole trailer. Evaluation of the cost compared to the production increase is currently being reviewed.

Overall, within the operation management decisions are not made lightly. It is important that when making a decision to accept a contract, bid a project, or make a delivery that the management meet and discuss the work necessary to meet any new project deadlines or obligations and how any new project

will fit into the current work flow. ANSBI continues to rely on the expertise of their partnership with the NMFWR and others for advice and guidance when looking at new projects. The partnership has been essential in moving this program toward being a viable business venture.

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Figure 1. Derrick Padilla, crew chief for the Alamo Navajo thinning crew, trained by NMFWR staff.



Figure 2. Angelita Apachito working with the Alamo Navajo firewood processing crew.



Figure 3. NMFWR forester, Kent Reid, teaching Alamo Navajo community members about restoration monitoring.

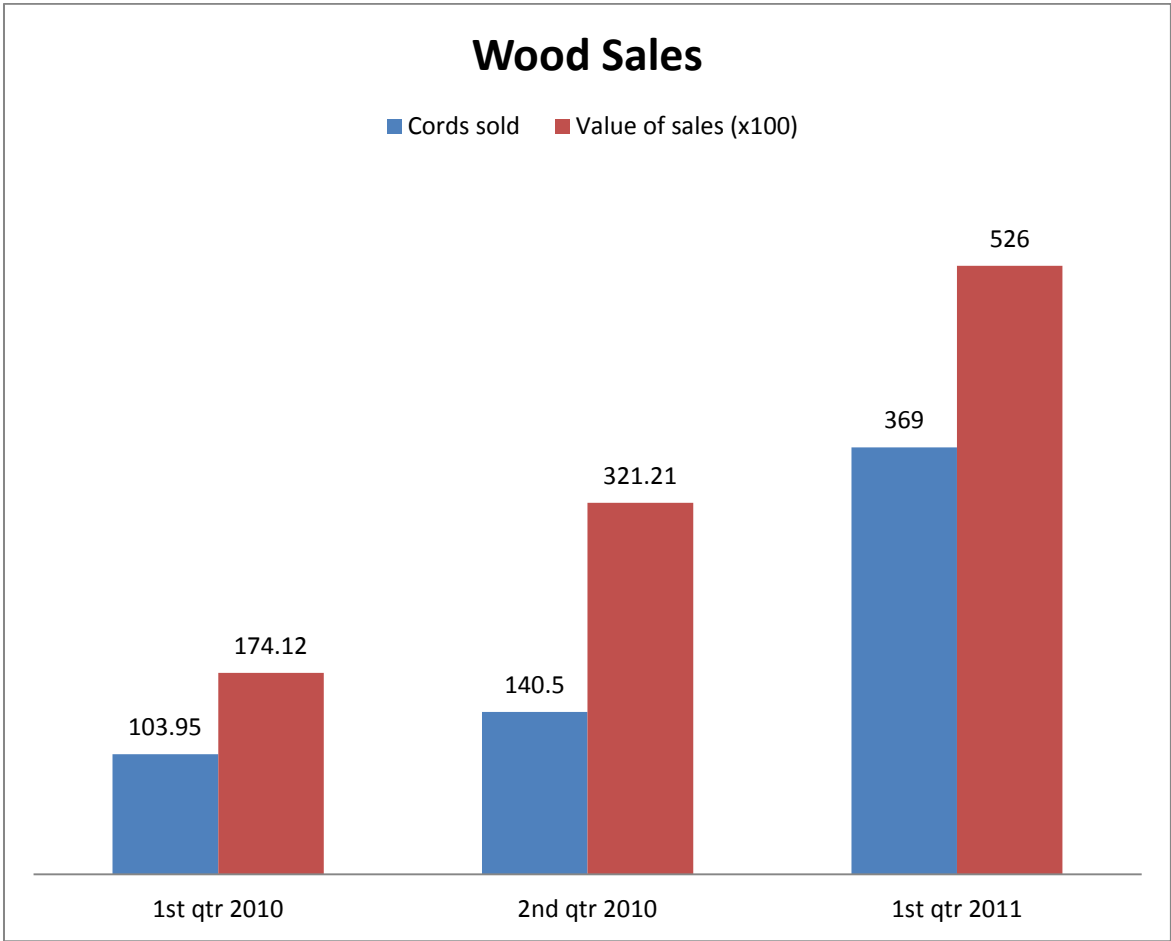


Figure 4. Initial progress – before (1st quarter 2010) and after (2nd quarter 2010, first quarter 2011) the initiation of the partnership between Alamo Navajo School Board, Inc., and the New Mexico Forest and Watershed Restoration institute.