

NEW MEXICO
FOREST AND WATERSHED
RESTORATION INSTITUTE
AT NEW MEXICO HIGHLANDS UNIVERSITY

ANNUAL REPORT

2012-2013

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THE NEW MEXICO FOREST AND WATERSHED RESTORATION INSTITUTE

Background. 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, 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. The NMFWRI, therefore, provides neutral, practical advice, research, and facilitation and can comment fairly and impartially on positions held by all stakeholders.

NMFWRI areas of expertise. NMFWRI's six-person 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 and wood products, collaborative processes, social dimensions of natural resource management, and silviculture. The NMFWRI represents the state's only dedicated capability for supporting the spatial data analysis needs of external stakeholders in the natural resources sector, as well as the GIS/GPS capacity for Highlands University and for most of northern New Mexico. NMFWRI's GIS work unit also provides help with maps and other geographic information to New Mexico groups engaged in forest restoration and land management, but who are too small to maintain their own GIS capability. These groups include soil and water conservation districts, municipalities, private groups and individuals, and tribal organizations.

In some cases, the Institute's areas of expertise are unique in the state. For example, as the state struggles to create employment and rejuvenate its forest products industry, no other outreach organization in New Mexico has expertise in forest operations, wood products, and forest worker safety. The NMFWRI has provided technical assistance to individual, tribal, and collective forest industry interests – including the New Mexico Forest Industries Association. In addition, the NMFWRI has helped develop capacity, expertise, and employment in the forestry sector, perhaps most notably through its

partnership with the Alamo Navajo School Board, Inc., where the NMFWRI has been instrumental in (a) reducing the workers compensation rates of forest workers there; (b) helping to develop sustainable employment in forest restoration, including monitoring, timber marking, and timber cruising; and (c) working with the Alamo Navajo Community to develop a thriving and sustainable primary wood processing economy that is being used as a model for forest restoration-based enterprises in the state. This model has been extended to the Ramah Navajo community and Santa Fe Community College's Office of Workforce Development and forms the basis for a newly developed credit-bearing certificate in forest and watershed restoration. Moreover, the NMFWRI has also developed indicators for assessing the social and economic outcomes of forest restoration practices, including metrics for restoration-based employment, and has recently developed and published guidelines for monitoring riparian restoration projects.

FY 2012 budget and work plan. In FY 2012, approximately one-quarter of the NMFWRI's budget derived from federal appropriations; 35 percent from state appropriations; and the remaining 40 percent from contracting for restoration-related work ranging from workforce development and monitoring contracts to a grant from the BLM to investigate and refine procedures for vegetation delineation and to conduct woodland inventories. The total federal appropriation for the NMFWRI during FY 2012 was \$150,000. Due to a continued reduction in federal appropriations and a historically skewed distribution of total federal appropriations among the SWERI institutes, the NMFWRI was forced to reduce its staff during the summer, 2012. Three full-time staff members were reduced to half-time and the NMFWRI director and all staff experienced a salary reduction. However, the subsequent awarding of competitive and sole source grants, contracts and agreements during the fall/winter/spring of 2012-13, as well as an increase in state appropriations in 2013, helped to restore salaries and has allowed the NMFWRI to plan for strategic growth of its programs and staff beyond pre-2010 levels. NMFWRI growth is proceeding cautiously given both the uncertainty around 2013 Federal appropriations, with its current (2013) work plan funding level at only \$30,000 (20 percent of the previous FY's appropriation) and a change in NMFWRI leadership effective June 1, 2013.

The Institute's revised federal FY 2012 work plan was divided into three project areas:

1. Technical assistance and monitoring;
2. Restoration-based economic development; and
3. Facilitating watershed restoration partnerships.

In *Section One* of this annual report, each of these three projects is accompanied by project descriptions and specific deliverables, with side-by-side comparisons of specific work that the Institute has completed associated with each proposed deliverable. In addition, while the focus of this annual report is the Institute's commitments and work completed vis-à-vis its federal FY 2012 work plan, in order to paint a more comprehensive picture of the Institute's work during the past fiscal year, this annual report also outlines some of the work accomplished using state appropriations and contracting. Additional work accomplished by the NMFWRI that complements and/or is outside of the federal work plan for FY 2012 is outlined in *Section Two* of this document.

SECTION ONE

RECAPITULATION OF NMFWRI'S FY 2012 FEDERAL WORK PLAN AND WORK ACCOMPLISHED AND DELIVERED UNDER THAT PLAN

PROJECT 1: TECHNICAL ASSISTANCE AND MONITORING

In order to both mitigate the potential for catastrophic wildfire and restore natural watershed functions, the NM Collaborative Forest Restoration Program (CFRP) provides funding for forest restoration and the improved use of small-diameter thinnings from restoration projects. Through its involvement with the CFRP and other restoration efforts, the NMFWRI provides (a) technical assistance with fuel treatments and restoration prescriptions; (b) short- and long-term monitoring to inform adaptive management; and (c) technical assistance with Geographic Information Systems and mapping. These technical assistance efforts often extend beyond individual land ownerships and jurisdictions, including NMFWRI's management and leadership roles with the Estancia Basin Project, the Greater Rio Grande Watershed Alliance, and the Gallinas Partnership.

In addition, beginning in 2008, the NMFWRI was invited to convene the joint meetings of organizations interested in integrated management of the Jemez River watershed. This work continued through 2010 and the eventual awarding of the CFLRP funding. The NMFWRI helped convene the groups with an interest in the Southwest Jemez Mountains project, including working with the technical specialists on landscape assessment, and continues to offer technical assistance in treatment prescriptions and monitoring to this significant CFLRP effort.

Finally, the NMFWRI is the center of restoration-based GIS and GPS expertise on the NMHU campus and northern New Mexico. Additionally, as the NMFWRI demonstrates the value of GIS and GPS to the many governmental and non-governmental entities with which it collaborates, these organizations have requested training as they establish or improve their own GIS and GPS capabilities related to forest restoration. Restoration work related to NMFWRI's spatial data analysis capability includes collaborations with and services provided to several entities in the state, including Tierra y Montes SWCD, Las Vegas National Wildlife Refuge, Alamo Navajo, the Biophilia Foundation, Bureau of Indian Affairs, and New Mexico State Forestry – Forest and Watershed Health Office. A complete list is available in NMFWRI's annual reports. In addition, since the 2011 wildfire season, the NMFWRI has been asked to offer assistance in developing strategies for rehabilitation and emergency response, most recently by the cities of Raton and Las Vegas. The NMFWRI has already begun to develop anecdotal information on the effectiveness of fuel reduction treatments related to the Track Fire.

<p>1.2.2 Activities and implementation of the CFLR projects will be outlined in their annual reports and in the NMFWRI 2012 annual report.</p>	<p>project's data.</p> <p>The NMFWRI was involved in proposal preparation for several new CFRPs, notably Tusas-San Antonio proposal on the Tres Piedras Ranger District.</p> <p>Reports have been completed, submitted to USFS, and posted on the NMFWRI website.</p> <p>Data, maps, and reports for pre- and post-treatment monitoring for NMFWRI projects have been provided to collaborators. Project datasets have been assembled on CD disks and in electronic format and are available so that project data can she shared easily upon request.</p> <p>The NMFWRI participated in collaborative meetings of the Southwest Jemez CFLR throughout the year. The nature of the collaboration has changed: the collaborative group is larger (notably with the addition of WildEarth Guardians), Valles Caldera's collaboration is separate and is mostly around science, and the Forest Service has bureaucratic concerns about public involvement in their decisions.</p> <p>Achievements this year include participation in a series of public field tours associated with the NEPA process in the area, and two large public meetings focused on what condition the landscape should be in, tools to get there, and how the greater collaborative would function.</p> <p>The NMFWRI continues to chair the Vegetation Monitoring Committee for the SW Jemez CFLR.</p> <p>The NMFWRI supported the development of and is a signatory to the recently funded Zuni Mountains CFLRP. This included setting up a collaborative folder on the Forest and Watershed Health Clearinghouse, a GIS FTP site, and creating maps for the project proposal.</p>
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<p>1.3.1 The development of restoration prescriptions for stakeholders will be outlined in the NMFWRI 2012 annual report.</p>	<p>In August and October 2012, NMFWRI staff visited project areas on the Carson National Forest north of Cañon Plaza with the grantees (Rudy Jaramillo and Alfonso Chacon) and Forest Service personnel to discuss restoration prescriptions.</p>
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PROJECT 2: RESTORATION-BASED ECONOMIC DEVELOPMENT

CFRP and other programs promote the development of restoration-based employment and businesses in the context of community involvement and collaboration. While 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 and other thinnings from restoration treatments.

In response to this and the need to develop restoration-based economies to help enable CFRP, CFLRP and other restoration efforts, the NMFWRI has partnered with the Alamo Navajo Community to develop a model for business and job creation related to forest restoration by providing training in restoration monitoring, forest worker safety, harvesting processes, firewood processing, and lumber manufacturing. Importantly, the partnership calls for the development of outreach capacity in the primary processing of small-diameter thinnings within the Alamo Navajo Community so that other communities and individuals can benefit from lessons learned at Alamo Navajo. Some of this training has been extended recently to Ramah Navajo and other communities. In partnership with the US Forest Service, NM State Forestry, NM Forest Industry Association (NMFIA), and NMHU, the NMFWRI has developed a broader program to create additional restoration-based capacity. Efforts are also underway to connect with some of NM’s northern pueblos in the area of restoration-related GIS training, perhaps opening the door to additional professional relationships with some of these pueblos.

In addition, recognizing that a strong local forest economy is a necessary enabler of a sustainable forest restoration effort, the NMFWRI has played a key role in supporting the development of the NMFIA and has partnered with them on several projects, including an assessment of barriers to maintaining or expanding the state’s forestry sector. The NMFWRI has also supported and will conduct socio-economic assessments for CFRP utilization grantees, specifically with Roger Tucker (Bernalillo) and David Old (Las Vegas), following protocols that the Institute developed in 2010-11. This work will continue in 2012.

FY 2012 work plan:

<p>2.1.1 Deliver two outreach efforts. In the past, this has included engaging already trained members of the Alamo Navajo community in NMFWRIs outreach to the Ramah Navajo community. We anticipate similar intertribal cross-cultural capacity building in 2012. In addition, through the development of a credit-bearing certificate in forest and watershed restoration, the NMFWRI will provide a higher level of training to qualified members of the Alamo Navajo and other communities and individuals as a way of developing restoration capacity and leadership external to the NMFWRI, building cross-cultural and intertribal capacity in underserved communities.</p> <p>2.1.2 Produce one technical release. The NMFWRI is currently working with members of the ANSBI to prepare a technical release related to lessons learned in primary wood processing efforts by the Alamo Navajo community using assistance from the NMFWRI;</p> <p>and</p> <p>2.1.3 Prepare one manuscript for peer review in 2012.</p> <p>2.1.4 The NMFWRI will also complete the development and delivery of a broader web- and field-based educational program to create restoration-related capacity initiated with the ANSBI.</p>	<p>A member of the Alamo Navajo community, previously trained by the NMFWRI, engaged with the NMFWRI to deliver a three-week curriculum to students in Santa Fe Community College’s Workforce Development Program in February 2013. The Alamo Navajo member assisted the NMFWRI with field teaching for two days in each week of the three-week program, including in the areas of timber marking, inventory, and restoration monitoring.</p> <p>The NMFWRI helped initiate and continues to assist with cruiser training for a crew from Alamo Navajo.</p> <p>A manuscript, “Building Economic Opportunity through Forest Restoration: The Alamo Navajo Initiative” has been authored by Andrew Egan New Mexico Forest and Watershed Restoration Institute and Lynda Middleton, Gail Campbell, and Bill Ferranti, Alamo Navajo School Board, Inc., and was published in the <i>Forestry Source</i> in the April, 2013, issue (Vol. 18, No. 4) and is posted on the NMFWRI website as a technical release at: http://www.nmfwri.org/images/stories/pdfs/projects/alamo_navajo_forestrysource.pdf.</p> <p>(In addition, the NMFWRI presented a paper on our work with Alamo Navajo at the 2012 Society of American Foresters Annual Convention in Spokane, WA, in Oct. 2012.)</p> <p>A four course, 12-credit web- and field-based curriculum has been developed by the NMFWRI and was approved by faculty governance at NMHU in June 2012. Implementation was scheduled for fall semester, 2013.</p>
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<p>2.2.1 Activity related to our involvement with the NMFIA will be reported in the NMFWRI's 2012 Annual Report and on the NMFWRI website.</p> <p>2.2.2 The NMFWRI will continue to serve on the Board of the Forest Worker Safety Program administered by NMFIA. This will include continuing to develop FWS programming to tribal communities as a way to further develop restoration capacity.</p> <p>2.2.3. Work with the NMFIA to develop a curriculum in primary wood processing.</p> <p>2.3.1 Activity related to training for the BIA will be reported in the NMFWRI's 2012 Annual Report and on the NMFWRI website.</p>	<p>The NMFWRI helped to revise the NMFIA website at http://www.nmfia.net/. NMFWRI has also continued with the revision of the NMFIA contact spread sheet.</p> <p>The NMFWRI assisted with the NMFIA CFRP project by initiating training in forest inventory for a crew from Alamo Navajo and continued to partner with the USFS to provide training to this crew in preparation for the certification exam in October 2013.</p> <p>The NMFWRI continues to sit on the Advisory Board for the Forest Worker Safety program, housed under NMFIA.</p> <p>The NMFWRI facilitated the FWS training for eight students from the SFCC Workforce Development class, two of whom were from tribes.</p> <p>A Powerpoint presentation was developed by the NMFWRI and is posted on the NMFWRI website at: http://www.nmfwri.org/images/stories/pdfs/projects/Logging_and_Sawmill_Safety.pdf. It has already been used with a class of 24 NMHU forestry students on April 24, 2013.</p> <p>The NMFWRI trained members of two pueblos in GIS/GPS as part of its three-week program with SFCC's Office of Workforce Development. In partnership with the USFS, the NMFWRI also trained a timber cruising crew from Alamo Navajo, including in GPS.</p>
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PROJECT 3: FACILITATING WATERSHED RESTORATION PARTNERSHIPS

The NMFWRI is actively engaged in the facilitation and management of several multi-jurisdictional and landscape-level projects. NMFWRI's support to collaborations has created economic efficiencies in the planning and conduct of restoration activities throughout the state. Effective collaborations are able to

save money by sharing of overhead, infrastructure, and information, avoiding redundancy and duplication of effort, and providing centralized management of program activities. Collaborations also allow cash- and personnel- strapped agencies to reach more stakeholders with a smaller commitment of time and resources.

For example, through 2012 the NMFWRI facilitated the coordinated activities of the Estancia Basin Watershed and Forest Health, Restoration, and Monitoring Project, a partnership among area Soil and Water Conservation Districts, Land Grants, local governments, and federal and state agencies that is designed to reduce the threat to life and property from catastrophic wildfires and to improve watershed health on private and public lands in the East Manzano Mountains.

The Greater Rio Grande Watershed Alliance, which the NMFWRI facilitated through 2012, is *a collaboration between Soil and Water Conservation Districts, Pueblos, agencies and stakeholders working to restore riparian ecosystems in the Rio Grande Watershed in central and northern New Mexico. The Alliance connects the members' local knowledge with agencies' technical skills and resources. GRGWA's objective is to strategically deploy a landscape-scale bosque restoration project that enhances and connects previous efforts.* The NMFWRI is also actively engaged in demonstrating and testing its recently developed riparian restoration monitoring guidelines with the Alliance. Importantly, GRGWA is engaged in recent initiatives by DOI Secretary Salazar to develop a plan for conservation and water security along the Middle Rio Grande.

In addition the Institute initiated and manages the Gallinas Partnership, whose mission is to *improve the health and safety of the Gallinas and neighboring watersheds to mitigate the potential for catastrophic wildfire and to secure a more certain and sustainable water supply to the City of Las Vegas and the region through the development and implementation of a comprehensive and connected watershed plan and hazardous fuel reduction strategy.* Initiated by the NMFWRI in 2010, the Gallinas Partnership is considered a model for the development of a city, county, region, public agency (including the USFS), and private sector partnership. This model will be extended to other at risk watersheds and communities through supplemental federal funding.

The Partnership's strategic objectives are based, in part, on lessons learned from the 2011 wildfire season, especially the nearby Track Fire. Partners at the table include the US Forest Service, NM State Forestry, the City of Las Vegas, San Miguel County, Tierra y Montes SWCD, State Office of Economic Development, the Office of the State Engineer, and representatives of the local business community. Also actively participating are representatives of NM's congressional delegation, including from the office of Senators Bingaman and Udall and Congressman Lujan. The Partnership's six-person Steering Committee is comprised of representation from the NMFWRI, USFS, City of Las Vegas, San Miguel County, the Office of the State Engineer, and NM State Forestry.

FY 2011-'12 work plan:

<p>3.1.1 Activity will be reported on the NMFWR I and on project-specific websites – for example, www.nmfwri.org/estancia-basin-monitoring for the Estancia Basin project; and www.nmfwri.org/gallinas-watershed-project for the Gallinas Partnership.</p>	<p>The NMFWR I continued to facilitate the Estancia Basin project through 2012, facilitated and managed the Greater Rio Grande Watershed Alliance through 2012, and initiated and manages the Gallinas Partnership. The NMFWR I provided technical assistance to all three groups and is currently contracted to conduct ecological monitoring for all GRGWA-funded bosque restoration projects.</p>
<p>3.1.2 A technical release will be developed and posted on the NMFWR I website and hard copies produced, as needed, on lessons learned/case studies related to the development of watershed restoration partnerships based on our experiences with the Estancia Basin Project; GRGWA and the Gallinas partnership. In addition, a manuscript describing these efforts will be prepared and submitted for peer review.</p>	<p>The NMFWR I links to all information posted by the Estancia Basin project and Greater Rio Grande Watershed Alliance.</p> <p>The NMFWR I continued to maintain and revise the western San Miguel County fire history map and updated the map with new fire and treatment data from NMSF and USFS, most recently to inform the Gallinas Partnership.</p> <p>The NMFWR I developed and posted on its website the Annual Report of the Gallinas Partnership: http://www.nmfwri.org/index.php/gallinas-watershed-project</p> <p>A technical release developed by the NMFWR I Director, titled “Collaborating on Watershed Health: The Gallinas Partnership,” has been printed (100 copies) and is posted on the NMFWR I website at: http://www.nmfwri.org/images/stories/pdfs/wrroundtable/collaboration_paper.pdf. A manuscript from the technical release has been submitted for peer review as a Restoration Note to the journal, <i>Ecological Restoration</i>.</p>
<p>3.1.3 The NMFWR I will continue to chair the Education/Outreach and Economic Development Working Groups of the Gallinas Partnership.</p>	<p>The NMFWR I Director chaired the Economic Development and Education/Outreach committees of the Gallinas Partnership through</p>

<p>3.1.4 The NMFWR I will continue to participate as a member of the Steering Committee for the Gallinas Partnership.</p> <p>3.1.5 The NMFWR I will continue to maintain the website for the Gallinas Partnership.</p>	<p>December 2012. The format of the Partnership has changed and committees no longer exist in 2013, opting instead for quarterly meetings with invited speakers, which the NMFWR I has arranged and managed.</p> <p>The NMFWR I Director has been a member of and has facilitated the Gallinas Partnership Steering Committee from the initiation of the Partnership through June 2013.</p> <p>The NMFWR I continues to house and maintain the website for the Gallinas Partnership – www.nmfwri.org/gallinas-watershed-project.</p>
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SECTION TWO

OUTLINE OF WORK ACCOMPLISHED BY THE NMFWR I IN ADDITION TO THAT PROPOSED IN ITS FY '12 FEDERAL WORK PLAN

The following outlines work conducted by the NMFWR I that complements or is in addition to that outlined in the NMFWR I's federal FY '12 work plan, but not directly funded by that work plan. This section is divided into three parts: (1) activities and projects in which the NMFWR I has been involved and for which there are specific, tangible deliverables; (2) NMFWR I's role in CFRP and CFLRP projects; and (3) meetings, trainings, workshops, and conferences during the past fiscal year that the NMFWR I has participated in, conducted, and/or sponsored.

PART 1. Activities and projects in which the NMFWR I has been involved and for which there are specific, tangible deliverables.

Project	Description	NMFWR I Role/Deliverables	Comments
Estancia Basin Watershed health, restoration, and Monitoring Project (EBWHRM)	Evaluate the effects of thinning programs and other treatment options on groundwater recharge, vegetation, wildlife, and other resources within the Estancia Basin. The study evaluates four test sites in ponderosa pine and piñon/juniper forests. This is a cooperative effort among the Edgewood, East Estancia, and Claunch-Pinto Soil and Water Conservation Districts. Funding is provided by the New Mexico Water Trust Board and the US Forest Service (via NMSF).	Facilitated meetings, evaluate treatment prescriptions, provide technical inputs on monitoring project. Provided maps, GIS/GPS training, and data management support. Non-voting member of team.	Often described as a model for collaboration in natural resources management. Website: http://www.nmfwri.org/nm-watershed-collaborative-center .
Greater Rio Grande Watershed Alliance	Collaboration between Soil and Water Conservation Districts, Pueblos, agencies and stakeholders working to restore riparian ecosystems in the Rio Grande Watershed in central and northern New Mexico.	GIS and Mapping Support, POC for monitoring. Serve on technical committee that will recommend projects and procedures.	NMFWR I conducts monitoring and other technical assistance efforts through an agreement with GRGWA. Website: http://www.nmfwri.org/nm-watershed-collaborative-center .
Forest and Watershed Health Information Clearinghouse (aka "The Portal")	Provides centralized access to ecological, socio-cultural and economic information related to restoration and maintenance of New Mexico forests and watersheds. The clearinghouse functions as a library as well as a shared workspace. Shared workspace will also enhance collaboration, training, and knowledge among those involved in forest and watershed restoration.	Funded by NMSF through NMFWR I. Provide technical inputs and system administrator support.	The Clearinghouse is a joint project of New Mexico State Forestry and the New Mexico Forest and Watershed Restoration Institute, pursuant to the state's Forest and Watershed Health Plan.
CFRP Socio-economic indicators	There has been increasing interest in the social and economic dimensions of CFRP and other restoration projects.	The NMFWR I developed socio-economic indicators for CFRP projects. The journal <i>Ecological Restoration</i> has accepted for publication a peer-	Report posted at: http://www.nmfwri.org/projects . The NMFWR I is conducting the socio-economic assessment of the Roger

		reviewed paper on the socio-economic indicator development by the NMFWRI.	Tucker, Terry Conley, and Old Wood CFRPs. Reports may be found at: http://www.nmfwri.org/images/stories/pdfs/Collaborative_Forest_Restoration/tucker_fact_sheet.pdf http://www.nmfwri.org/images/stories/pdfs/Collaborative_Forest_Restoration/david_old_cfrp_3.pdf
CFRP Riparian Monitoring Handbook	2010 CFRP conference attendees identified that current CFRP monitoring protocols are deficient for assessing Bosque environments. NMFWRI received funding from USFS to develop guidelines for Bosque monitoring suitable for CFRP projects.	Published a field guide based on the report that was published during the previous FY.	Field Guide available from the NMFWRI. The NMFWRI is currently testing its newly developed riparian monitoring guidelines with the GRGWA.
SW Fire Science Consortium	Way for managers, scientists, and policy makers to interact and share science in ways that can effectively move new information to management practices. The Southwest is one of the most fire-dominated regions of the US, but limited in terms of regional organizations focused on fire research and information dissemination. In the Southwest there are many localized efforts to develop scientific information and to disseminate that to practitioners on the ground, but these initiatives are often not well coordinated or aware of all the information and resources that are available. The real need for a consortium is to help bring these parallel efforts together to be more efficient and inclusive. NMFWRI also seek to link the academic community and the management community in educating future fire professionals with up-to-date science as well as practical experience.	Serving on governing board through 2012.	Board consists of representatives from federal agencies, AZ and NM state agencies, NAU, NMFWRI, ERI, Forest Guild,

Alamo Navajo IRMP	Integrated Resource Management Plan. BIA funded project to develop natural resources management plan for Alamo Navajo lands.		
Alamo Navajo CFRP	Complex project designed to establish economic development around forestry, giving seasonal fire crew work in the off season, improve educational levels in the community,	<p>Assisted with monitoring, GIS, and reporting support. Provided inputs on new CFRP proposals.</p> <p>In addition to these efforts, in 2010 the NMFWRI entered into a formal agreement with the ANSBI to (a) develop capacity in all phases of forestry restoration; (b) develop a model for forest restoration economies; and (c) outreach to other communities and individuals to help them develop similar enterprises in order to further enable restoration efforts (see Sidebar, p. 21).</p> <p>The NMFWRI has also continued to provide on-the-ground training to members of the /Alamo Navajo Community in the extraction and primary processing of restoration thinning, timber marking, and timber inventory.</p>	

CFRP	CFRP projects around the state. Addressing ecological restoration, economic, and educational development goals.	<p>Provided mapping and data analysis support to NMFWRI monitoring activities. Also provided direct support to grantees. Maintained static and online maps of CFRP project locations.</p> <p>In addition, the NMFWRI established or re-measured plots for vegetative monitoring for CFRP projects during 2012, including the Jemez mountain salamander CFRP, Jemez Mountains and five CFRP re-measures.</p>	Bringing together diverse stakeholders such as USFS, DOD, State gov't, tribes, land grants, and private industry that often had a history of antagonism.
CFLRP	Landscape-scale collaborative projects that address ecological restoration and regional socio-economic objectives.	Provided mapping support and inputs to development of monitoring objectives. Created GIS data ftp sites for SW Jemez and Zuni CFLRPs.	<p>Bringing together diverse stakeholders such as USFS, DOD, State gov't, tribes, land grants, and private industry that often had a history of antagonism.</p> <p>NMFWRI authored and posted an paper on lessons learned from CFRP that may help to inform the CFLRP:</p> <p>http://www.nmfwri.org/images/stories/pdfs/Collaborative_Forest_Restoration/Lessons_Learned_cfrp_cflrp.pdf</p> <p>The paper is currently being reviewed for publication in a forestry journal.</p>

Biophilia Foundation (Pritzlaff Ranch)	The primary mission of the Biophilia Foundation is to support efforts that protect, restore, enhance, and preserve wildlife habitat for all species of native plants and animals. The Pritzlaff Ranch serves as a resource for the education and training of private citizens, public school students and teachers, university students, local landowners and business managers, and professional forest workers on topics of conservation and sustainable management of forests and watersheds.	Provided infrastructure maps, thinning management maps, and mapping support to prescribed fire operations. Assisted researches with maps, GIS data, and monitoring. Created a historical aerial photo study of the ranch.	Land and infrastructure will become part of the USFW national wildlife refuge system in September 2013.
Wind River Ranch	The mission of the Wind River Ranch Foundation is to conserve wild landscapes in northern New Mexico through ecological restoration, research, and education.	Supporting student research activities. Providing GIS and mapping support.	Ranch has transferred to USFW.
Las Vegas NWR	Situated on a high plateau where the Great Plains, the Rocky Mountains and the Chihuahuan desert come together, Las Vegas National Wildlife Refuge provides habitat for a diversity of plant and animal life. Established for migratory birds traveling along the Central Flyway, this 8,672 acre refuge is comprised of native grasslands, croplands, marshes, ponds, timbered canyons and streams which provide important habitat for over 254 species of birds.	Provided maps for refuge management, fire management, and visitor services. Support was also provided to MaxWell NWR, a subordinate unit to the LVNWR.	Almost all work was accomplished by student intern. LVNWR provided plotter paper and ink cartridges.
Storrie Project	The Storrie Project Water Users Association is a group of irrigators and other landowners near Las Vegas who share water from the Gallinas River through a network of ditches, pipelines, and reservoirs.	Provided image and topographic map of the project	
Gallinas fire history mapping	Comprehensive map of western San Miguel County focused on the Gallinas Watershed and adjacent watershed. Shows fire history, past, present, and future vegetation treatments, WUIs and other planning areas, and critical infrastructure.	Build and maintain map. Gather data from various entities working in the area. Has been used extensively by the Gallinas Partnership.	Build and maintain map. Continue to gather data from various entities working in the area.
NM Tech Bureau of Geology Sacramento	Multi-scale study to understand the hydrogeology of the mountain aquifers, the relationship between surface water and ground water, and the effects of	Provided forest data summaries in GIS format and various map products. Assisting with methods for vegetation	NWFRI did pretreatment monitoring in 2008 and 2009. Continuing to work on methods for deriving vegetation

Mountains Geohydrology Study	vegetation management and climatic variability on the local hydrologic balance.	mapping.	and canopy cover information from imagery.
Tierra Y Montes SWCD	Local Soil and Water Conservation District. Supporting forest and stream restoration projects in the region.	Provided maps in support of several projects and presentations. Performed GPS field work. Provided GIS and GPS technical assistance to Noxious Weed Program. Printed maps of noxious weed locations.	May collaborate on historical aerial photo study.
NMHU Student and Faculty support	NMHU Natural Resources students and faculty frequently request GIS assistance for classes and projects.	Taught classes and workshops. Assisted students and faculty with creating maps and posters. Some projects included bathymetric mapping of Peterson Reservoir, researching and downloading imagery, guest lecturing in classes, creating maps for archeology field work and classes.	NMHU now has a minor and certificate program for GIS.
IT Support	Maintain GIS/Remote Sensing software licenses, maintain plotter, provide general computer support, and submit ITS work orders when problems occur with computers.		
BLM Farmington District Vegetation Classification Project	The BLM Farmington District desires a detailed vegetation map to support various management activities on the Rosa Landscape Management Area. This study area covers over 110,000 acres	We have been contracted to develop a 1 foot vegetation classification map for the Rosa Landscape Management Area using eCognition software and 1 foot RGB and 2 foot CIR Imagery obtained from Digital Globe.	This project was completed 1-15-13.
AmericaView	Hosted a 'hands –on' one-day remote sensing workshop at Highlands funded by AmericaView.	Developed lab exercises with a focus on natural resource applications and LIDAR.	

Website Support	Update NMFWRRI website.		
BLM Albuquerque District Vegetation Delineation Project	The BLM Albuquerque District has identified a need for improved delineation between forested and non-forested lands in their district.	Developed an automated approach to delineate forest and woodland stands on BLM lands near the Malipais Region in Cibola and Catron Counties. Definiens eCognition software was used to in the analysis of 2010 SPOT imagery (Système Pour l'Observation de la Terre, French Remote Sensing Satellite). Stands were delineated within 12 digit HUC boundaries and given FORVIS codes provided by BLM. Landfire data was used to populate information on the stands providing dominate vegetation species and percent canopy cover attributes.	NMFWRRI is currently finishing up the project and are writing up the final report. Data will be provided as shapefiles with associated metadata. Additional funding was secured in 2012 and 2013 to provide more work in vegetation delineation and woodland inventory.

PART 2. NMFWRI activity related to the CFRP and CFLRP in the past year.

CFLR

The NMFWRI participated in collaborative meetings of the Southwest Jemez CFLR throughout the year. The nature of the collaboration has changed: the collaborative group is larger (notably with the addition of WildEarth Guardians), Valles Caldera's collaboration is separate and is mostly around science, and the Forest Service has bureaucratic concerns about public involvement in their decisions. Achievements this year included participation in a series of public field tours associated with the NEPA process in the area, and two large public meetings focused on what condition the landscape should be in, tools to get there, and how the greater collaborative would function.

CFRP

At the Collaborative Forest Restoration Program (CFRP) Annual Workshop on Monday 22 October, 2012, the NMFWRI (Reid) presented to the plenary on long-term CFRP monitoring.

Current CFRP project involvement includes:

- In August and October, the NMFWRI visited project areas on the Carson National Forest north of Cañon Plaza with the grantees (Rudy Jaramillo and Alfonso Chacon) and Forest Service personnel to discuss restoration prescriptions.
- We have been involved in proposal preparation for several new CFRPs, notably Tusas-San Antonio proposal on the Tres Piedras Ranger District.
- Work with the TNC Jemez Mountain Salamander project: As was the case last year, a Jemez Pueblo crew worked with me during September to establish vegetation plots on areas selected by the salamander team, including sites in the Chihuahueños area. In addition, the NMFWRI (Reid) presented a talk in October to the Highlands student chapter of the SAF on the JMS, possible listing, and fire risks. The NMFWRI (Reid) also wrote and submitted FWRI's formal comment to the US Fish and Wildlife Service on the *Proposed Rule on listing the Jemez Mountains Salamander as Endangered*.
- Socio-economic monitoring for the following CFRP grantees: Roger Tucker, Terry Conley, and David Old.
- The development, web-posting, printing and submission for peer review of a manuscript: "Informing the CFLRP: Lessons Learned from New Mexico's Collaborative Forest Restoration Program."

PART 3. Partial list of meetings, trainings, workshops, and conferences during the past fiscal year that the NMFWRI has participated in, conducted, and/or sponsored.

BLM Monitoring

- NMFWRI spent two weeks in the field with the student crew, one week on the San Juan Badlands and one week on the Elk Springs unit. Data were entered, corrected, and a preliminary analysis carried out before they were forwarded to the BLM. *This activity was with non-Forest Service money.*

Rocky Mountain Research Station

- In early February, 2012, we coordinated a get-acquainted visit of three representatives of the Rocky Mountain Research Station to the NMHU campus in Las Vegas. Over two days, this group visited with FWRI personnel and Highlands faculty, staff, and students to talk about current and future opportunities to work together.

Prescribed Fire Council

- The annual meeting of the NM Prescribed Fire Council was held in Socorro in late November, 2012. This was a joint meeting with the NM Interagency Coordination Group, funded by a grant from the Southwest Fire Science Consortium. It included a field trip to BLM land in the Chupadera Mesa area. Focus areas for the current year are: building capacity; liability; and cross-fence agreements. I serve as the organization president.

Presentations and Meetings

- Presentation for the Fire Ecology meeting in late February, 2012, based on fuel loading as measured with the Jemez Mountain Salamander work.
- Presentation on NMFWRI work to NM Seedmen's Association, in Clovis.
- SAF National Convention: Attended the convention in Spokane in late October, and presented on NFWRI work at Alamo Navajo.
- Las Vegas Tree Board: NMFWRI participated in meetings and in project development throughout the year.

- Track Fire tour: NMFWRI presented at the field tour of the Track Fire in Raton, organized by Jessi Outzs and the Southwest Fire Science Consortium. About 50 people participated. Reid presented on the pre-fire thinning, and why they weren't as effective as expected in reducing fire severity.
- Watershed Forum: NMFWRI presented in late September, 2012, on restoration prescriptions and how they relate to climate change challenges. About 40 people participated. This was a regional meeting organized by the Quivira Coalition under contract with the NM Environment Department.
- WHO-CG meetings: NMFWRI participated in quarterly meetings of the Consultative Group of the Watershed Health Office of State Forestry. Among other things, we reported on the Desired Conditions tours, and are working on addressing priority-setting as mentioned in the state Watershed Health Plan.
- Ranch Camp: In early June, 2012, NMFWRI participated in Ranch Week, sponsored by NMSU Extension for high school students and held on the Valles Caldera. Reid presented on forest conditions as they pertain to wildlife management on private ranches.
- Urban Forest Council of NM: NMFWRI participated in meetings and in project development throughout the year.

Other

- NMFWRI served as an outside member on the NMSU search committee for the Superintendent of the John Harrington (Mora) Experiment Station, which selected Dr. Owen Burney in early summer.
- Served on graduate advisory committee meeting for Will Jaremko-Wright.
- Desired Condition tours: NMFWRI participated in the Arizona Desired Conditions tour for Forest Service personnel for mixed conifer on 9-11 October. This was in preparation for a NM Desired Conditions tour, expected sometime in 2013. Facilitation and support of earlier Desired Conditions tours in ponderosa pine were a major activity in calendar year 2012.
- Monitoring for State Forestry: In cooperation with the Socorro office of State Forestry, NMFWRI crews monitored piñon-juniper sites on private land in Catron County, to determine differences among various common restoration treatments.
- NMFWRI participated in a meeting in mid-November of a meeting of the stakeholders in the state's landscape-level Lueras project in the Socorro-Catron County area.
- *319 grant applicant support.* Every year, the Surface Water Quality Bureau of the NM Environment Department awards money from the federal EPA to do in-stream restoration work; these projects are commonly referred to as 319 Grants. Three different groups asked us to be part of their 319 grant applications this past year, two on the Rio Gallinas and one on the Rio

Santa Barbara. One of the proposals on the Rio Gallinas was successful, submitted by the Citizen's Watershed Monitoring Team, with our role supporting GIS and mapping.

- *International cooperation.* The NMFWRI developed and signed a Memorandum of Understanding between the Escuela Ambiental, Jarabacoa, Dominican Republic, and both NM Highlands University and the New Mexico Forest and Watershed Restoration Institute for (a) the exchange of faculty; (b) the matriculation of Escuela Ambiental graduates at NMHU for degree completion; and (c) the placement of Escuela Ambiental students and graduates as interns with the NMFWRI, funded by the DR's Ministry of the Environment. 2010-present. Most recent discussion was December, 2012, in Jarabacoa.
- Partnering with San Miguel County, the NMFWRI proposed and organized a public forum on emergency management and evacuation planning in the event of a wildfire in the Gallinas watershed, April 10, 2013. Participants included representatives from the USFS, NM State Forestry, Homeland Security, NM State Police, and the American Red Cross.

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