

Ecological Restoration Institute

Work Plan Fiscal Year

2011 Revised to \$2,240,463

Original \$1.2M Amended to include FY'2011 end of year funds (\$950K)

Revised 8/16/11

Revised 8/19/11

Amended to include FY'2011 additional funds for A-S National Forest (\$90,463)

Revised 12/20/11

Introduction

The FY' 11 work plan is based on requests from managers, synthesis of findings from long-term restoration monitoring and research, and needs identified from current initiatives such as the 4 Forests Restoration Initiative in Arizona. The work plan is also responsive to the SWERI Needs Assessment carried out in Fort Collins, CO, on Jan. 12-13, 2010. Specific items linked to the needs assessment are indicated with a crosswalk number (e.g., {1}) linked to the assessment summary document (see appendix). The changes included herein revise our FY' 11 plan of work to comport with the final reduced allocation of \$1.2 million for the ERI. The other two institutes in SWERI were allocated \$150,000 respectively. The projects affected by the reduction of funds are Project 2 (Stewards of Place), Project 3 (Ecosystem Services) and Project 4 (Climate).

In August 2011 the Washington Office of the Forest Service, State and Private Forestry, provided end of FY' 11 funds to the three Institutes in SWERI. Direction from the Washington Office stated that the ERI should receive \$1 million, and NMFWRI and CFRI should receive \$250,000 respectively for a total additional allocation to SWERI of \$1.5 million. After considerable discussion and review of revised work plans Region 3 allocated funds as follows: ERI- \$950,000; CFRI-\$350,000; NMFWRI-\$200,000. The Institutes were directed to use this funding to address new information needs identified as a result of the 2011 fire season. The goal is to help affected entities improve management effectiveness in the face of recurring, high severity landscape scale fire.

In late 2011 the Apache-Sitgreaves National Forest requested ERI support in responding to select questions asked by the White Mountains Stewardship Contract Board. This support is funded under the "additional funding" mechanism developed by the Region 3 program office. The deliverables for this program are articulated and included in Project 2, Stewards of Place. The approved budget of \$90,463 is included in Project 2 increasing the total amount for this work plan to \$2,240,463.

Project 1: Evidence-Based Conservation

Evidence-based conservation means the application of ecological science to restoration, conservation, and management of ecosystems. Evidence-based conservation is increasingly applied worldwide to make the best use of unbiased scientific information to support stakeholders who are making conservation decisions. The paradigm of evidence-based conservation remains central to the mission of the Ecological Restoration Institute (ERI) at Northern Arizona University, providing science support for ecological restoration of fire-adapted ecosystems where frequent-fire forests are a key forest type. Our work in evidence-based conservation includes the permanent Long-term

Ecological Assessment and Restoration Network (LEARN), the longest-established and best-monitored replicated forest restoration demonstration sites in the Southwest. In FY2011, we will also continue ongoing projects that synthesize knowledge about a critical restoration issue in a systematic review, collaborate with partners in developing key information about habitat for wildlife and rare plants, and complete a multiyear project on ecosystem sustainability. Lack of well documented, objective knowledge about these issues often limits the effectiveness and efficiency of restoration treatment implementation.

1.1 The LEARN system of restoration research, demonstration, and applications sites is located in Arizona, New Mexico, Colorado, and southwestern Oregon in forests ranging from mixed conifer through ponderosa pine to pinyon-juniper woodlands (Figure 1) {8, 17}. Treatments at new sites and monitoring of existing sites have provided a substantial amount of spatially explicit scientific knowledge about forest responses to treatments {3}, effects on potential fire behavior, and changes in wildlife habitat and biodiversity-information that forms the building blocks for landscape-scale treatments. In FY2011, we will re-measure restoration treatments at the Fort Valley demonstration area—the site of the first treatments designed by the Greater Flagstaff Forest Partnership. We will also develop a publication analyzing and interpreting data from additional LEARN sites in the Southwest.

1.1 Deliverable:

a. Data analysis and submission of journal article based on FY10 and FY11 field seasons {43}. Working title: “Using a network of long-term monitoring sites to evaluate the success of forest restoration treatments in the American Southwest.”

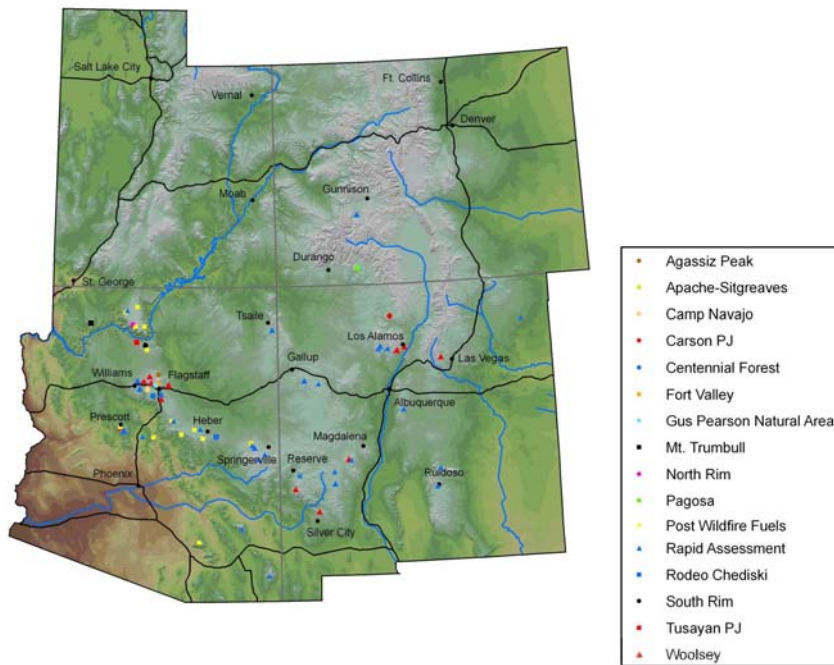


Figure1. Map of LEARN sites and other ERI field sites in the Southwest.

1.2 Wildlife responses to restoration are critical for designing appropriate management techniques and concerns about wildlife responses are often a major factor constraining restoration activities. The Arizona Game and Fish Department (AGFD) Research Branch has collaborated with ERI and the Rocky Mountain Research Station on long term studies of wildlife responses to restoration treatments in northern Arizona {10}. In FY 2011 the AGFD will synthesize information from over a decade of studies of restoration impacts on wildlife in the Southwest. Other activities include coordination with ERI, local stakeholders and others to develop, plan, and implement new research, education, and outreach activities.

1.2 Deliverables:

- a. Description of a new research initiative;
- b. One journal manuscript that synthesizes wildlife responses to restoration. Working title: “Small mammal community occupancy responses to restoration treatments in ponderosa three pine forests, northern Arizona, USA”

1.3 Rare species of plants are of high management concern. Similar to rare wildlife species, rare plants often comprise a stumbling block to advancing restoration activities simply because too little is known about their ecology. Ironically, some species are rare precisely because of degraded contemporary forest conditions and would be likely to flourish under ecological restoration. At the request of Forest Service specialists, the ERI collected data on *Astragalus rusbyi* in FY2010 and will interpret and publish that information in FY 11. {ERI/SWERI Needs Assessment 57; RMRS Needs Assessment 17}.

1.3 Deliverable:

- a. One working paper that reports on restoration effects and implications for developing landscape-scale treatments that enhance rare species’ habitat. Working title: “Population and habitat assessment of *Astragalus rusbyi*: implications for enhancing a rare species’ habitat through landscape restoration.”

1.4 Fuel treatments are increasingly incorporating restoration approaches at larger scales. In collaboration with the Kaibab National Forest, fuel treatment approaches in pinyon-juniper woodland that incorporate the natural range of variability were developed and monitored for several years. Recommendations based on this work have been incorporated into a landscape-level fuel project. The ERI will work with Forest staff to measure treatment effects and evaluate changes in the potential for severe fire behavior. This multi-year project that began in 2010 is being completed in FY2011. {8, 23}

1.4 Deliverable:

- a. One journal manuscript for publication. Working title: "Understory community responses to alternative fuel hazard reduction treatments in pinyon-juniper woodlands".

1.5 Treatment effects and the Wallow Fire. The Wallow Fire presents a new opportunity to examine how thinning, burning and thinning and burning treatments in ponderosa pine performed in extreme fire conditions. Preliminary reports from the Forest Service provide anecdotal evidence about treatment performance with respect to fire. The ERI will analyze treatments quantitatively and analyze how treatments performed with respect to fire as well as maintaining ecological conditions.

(Request by 4FRI Team, Apache-Sitgreaves National Forest)

1.5 Deliverable (December 2013):

- a. An Analysis of treatment responses to extreme fire
- b. Update on publication for journal
- c. Working paper or similar publication interpreting results for managers

1.6 Identifying treatment configuration and size that will help reduce the impact of the next high severity fire and inform planning. Future planning to reduce the probability or impact of high severity fire will benefit from a retrospective analysis of previous high impact fires. In this project we use a systematic review framework to assess what could or should have been done at the landscape scale to improve treatment effectiveness. We will synthesize and analyze existing research from the Rodeo-Chediski, Schultz, Wallow and other high severity fires to determine what configuration and size of treatments could have been used to improve treatment effectiveness.

(Requested by 4FRI stakeholders and Forest staff)

1.6 Deliverables (December 2013):

- a. Progress report on systematic review
- b. Progress report for publication in journal
- b. Working paper interpreting results for managers

1.7 Managing for Restoration of and Mixed Severity fire in Mixed Conifer-The Alpine Ranger District on the Apache-Sitgreaves National Forest reports that nearly all mixed conifer was lost to stand replacing fire this year. Unfortunately, mixed conifer is the preferred habitat for the Mexican Spotted Owl in the White Mountains. The Wallow Fire is the largest “take” of owls in one single event in the Southwest and reaffirms the conclusion of the 2011 Owl Recovery Plan that unnatural, landscape fire is the biggest current threat to owl recovery. The ERI will analyze and monitor fire effects in mixed conifer. In addition, we will assemble, using a systematic review what is known about managing mixed conifer in the Southwest. Based on this analysis we will identify knowledge gaps with an eye towards engaging the research community to fill those gaps. *(Requested by Apache-Sitgreaves National Forest, Arizona Game and Fish, U.S. Fish and Wildlife)*

1.7 Deliverables (December 2013)

- a. Completed Systematic Review analyzing what is known on management of mixed conifer in the Southwest. Particular attention will be paid to understanding what is known on dependent wildlife as well.
- b. Progress Report on analysis and journal publication describing wildfire effects in mixed conifer and how that compares in extent and condition to reference conditions.
- c. Progress Report on analysis and journal publication describing the effects of treatments such as thinning, burning and other treatments where they occur on the fire behavior and ecological conditions at mixed conifer treatment sites.
- d. Working paper interpreting the scientific information generated by a-c.

1.8 Managing for long-term recovery in fire damaged ecosystems. How to manage for desired conditions following short-term BAER recovery efforts is not well understood in frequent fire forest types that are not adapted to large scale, stand replacing fire. Given that climate predictions indicate

that the southwest can expect longer and more severe fire seasons, understanding what can and should be done to reset forests on a path of long-term recovery is needed. To begin the process the ERI will conduct a systematic review to determine what is known about post BAER rehabilitation activities and identify knowledge and research gaps that should be answered in order to restore severely damaged forests. *(Requested by Wallow Fire Stakeholders at a meeting with Secretary Vilsack and also supported by Region 3)*

1.8 Deliverable (December 2013):

- a. Systematic Review analyzing scientific literature and white papers with information about BAER treatments and their effectiveness in the Southwest.**
- b. Working paper interpreting review for managers and stakeholders**
- c. Short fact sheets that inform rehabilitation activities**

Project 2: Stewards of Place

2.1 The “stewards of place” model reflects a return to the roots of traditional regional universities as learners as well as teachers, publically engaged to tackle the myriad of challenges facing communities and regions of which universities are a part. The Ecological Restoration Institute, operating through NAU as a “stewards of place” university, has a long history of public engagement to include a wide variety of outreach activities, applied research, service learning, and collaboration with a wide range of local stakeholders to identify conservation problems, explore potential solutions and test those solutions through on-the-ground application.

The 4 Forests Restoration Initiative involving the four National Forests in northern Arizona is a featured effort that SWERI is supporting in the “stewards of place” model. The initiative began in 2008 and is focused on the Coconino, Kaibab, Tonto, and Apache-Sitgreaves National Forests. The project design to implement restoration-based treatments at the landscape scale is beginning on approximately 805,000 acres. ERI is the lead institute in this effort and the Institute’s role in this project will be conducted in collaboration with the NMFRI and the CFRI. Each institute will utilize its expertise to contribute to the successful execution of the deliverables specified here.

ERI’s role will be to work collaboratively with stakeholders to develop, synthesize, and help the Forest Service implement the best available science across disciplines (ecological, social, political, and economic) and assure that this information is readily accessible to a wide cross-section of restoration stakeholders. ERI is poised to provide that science-based collaborative support for accelerating restoration at the landscape scale.

2.1 Deliverables (December 2011):

- a. Working Paper describing design of an adaptive management approach that includes ecological and socio-economic monitoring of restoration treatments on a landscape scale that builds upon results from the 2009 SWERI monitoring workshop and is consistent with the long-term CFRP monitoring objectives**
- b. A working paper describing methodologies to achieve ecological restoration at the landscape scale**
- c. Provide services to the 4FRI Stakeholder Group. Note that the budget reduction in 5/2011 will result in reduced service to 4FRI Communications Committee.**

2.2 The Four Forest Restoration Initiative stakeholders in the White Mountains are concerned that there is a perception that restoration is no longer needed in the Wallow Fire perimeter. In reality, many places were only lightly burned or not impacted at all and are still in need of ecological restoration and hazardous fuels reduction.

The Wallow Fire also points to the urgent need to understand the relationship between restoration, high severity fire and natural resource impacts. The project proposed under 2.2c has been downsized in order to transfer funding to work requested by Region 3 under project 7.3. The purpose of the analysis proposed here is to identify and calculate the consequences of landscape scale high severity fire on natural resource values in order to motivate and build support by stakeholders for rapid action in the 4FRI project. The ERI is seeking financial support from the Salt River Project in order to eventually expand the project to include a more robust hydrologic analysis and to fund the measuring and monitoring of water quality and quantity from the 4FRI treatment area.

2.2 Deliverables (December 2012):

- a.** Map and report describing what areas within the Wallow Fire perimeter remain vulnerable to unnatural fire using GIS analysis. *(Requested by Wallow Fire stakeholders at a meeting with Secretary Vilsack)*
- b.** Produce outreach publication or media release designed to inform the Wallow stakeholders of the conclusion of the GIS analysis.
- c.** Analyze natural resource responses to the Wallow Fire. These natural resource values include values such as critical habitat, watersheds and forage. Test the natural resource responses to different restoration treatments in unburned conditions in the 4FRI landscape. Summarize the responses for 4FRI stakeholders in the form of a white paper, fact sheets and other education products designed for stakeholders and the general public.

2.3 The following items answer monitoring questions asked by the White Mountain Stewardship (WMS) Board. Items 2.3a, b, c, d are specific to the Wallow Fire and items 2.3e, f, g provide specific support to the White Mountain Stewardship Contract outside of the Wallow Fire perimeter.

2.3a-d: specific to Wallow Fire

2.3.a Question: **Is there a difference between pre-treatment crown fire potential and post-treatment desired fire behavior across selected analysis areas (WMS monitoring question 1)?** ERI will evaluate pre-burned structure and treatments implemented to determine treatment type and effectiveness in reduction of severe crown fire effect. Emphasis will be on evaluating potential fire behavior changes in treated stands on the Wallow Fire area. Method: Evaluation of areas within the Wallow fire perimeter via field evaluations, plot establishment and data collection, analysis and reporting.

2.3a deliverable: Monitoring Report

2.3.b Question: What proportion of treated acres exhibited a change in Fire Regime Condition Class (FRCC) from 2004 – 2014 (WMS monitoring question 4)? ERI will evaluate how the FRCC was altered by treatments on the Wallow Fire area. Method: Evaluation of areas via field evaluations, plot establishment and data collection, analysis and reporting. Note: correlates to question 5, below, which addresses treatment areas outside of the Wallow Fire perimeter.

2.3b deliverable: Monitoring Report

2.3.c Question: Are patch sizes of denser (i.e. untreated or lightly treated) areas connected? What is the range of areas and sizes of these patches (WMS monitoring question 8)? ERI will examine patch size of untreated sites on the Wallow Fire. Method: Evaluation of areas via GIS analysis and reporting. Note: correlates to question 6, below, which addresses treatment areas outside of the Wallow Fire perimeter.

2.3c deliverable: Monitoring Report

2.3.d Question: Are exotics/invasive species present at landings and burn piles (WMS monitoring question 11)? ERI will examine exotic/invasive species populations on WMSP sites in the Wallow Fire area. Note: correlates to question 7, below, which addresses treatment areas outside of the Wallow Fire perimeter.

2.3d deliverable: Monitoring Report

2.3e-g: Outside of the Wallow Fire perimeter

2.3.e What proportion of treated acres exhibited a change in Fire Regime Condition Class (FRCC) from 2004-2014 (WMS question #1). Utilizing FRC Modeling, ERI will review Landfire data & update as necessary. Quantitative Objective: 80% of treated acres in ponderosa pine and 60% of treated acres in mixed conifer are trending from either FRCC 2 or 3 to 1 and 2. Note: correlates to question 2, above, which addresses treatment areas inside the Wallow Fire perimeter.

2.3e deliverable: Monitoring Report

2.3.f Questions: Are patch sizes of denser (i.e. untreated or lightly treated) areas connected (WMS question #2)? And What is the range of areas and sizes of these patches (WMS question #3)? ERI will gather and analyze point-intercept data from vegetation plots ERI will analyze treatment changes through Remote Sensing methods; assess change from pre-treatment data. Quantitative objective: Dense stands include untreated areas within treatments; Higher canopy cover groups/clumps (i.e. VSS 4, 5, and 6 in PFA; MSO treatments). Use summary statistics to understand range/variability of dense patches. Note: correlates to question 3, above, which addresses treatment areas inside the Wallow Fire perimeter.

2.3f deliverable: Monitoring Report

2.3.g Question: Are exotics/invasive species present at landings and burn piles (WMS question #4)? ERI will gather and analyze pre & post-treatment presence/absence observations at sampled landings/burn piles one year post-treatment or post-fire. Quantitative Objective: 90% of landings and burn piles do not show introduction of exotic species. Exotic species occurrences are treated effectively within one growing season of observation. Note: correlates to question 4, above, which addresses treatment areas inside the Wallow Fire perimeter.

2.3g deliverable: Monitoring Report

Project 3: Ecosystem Services

Ecosystem services include clean air, clean water, cycling of nutrients, and other critical roles that ecosystems play to support populations of plants, animals, and people. Although these benefits are essential, they have historically been overlooked and undervalued. Recent federal initiatives have raised the prominence of ecosystem services and seek to develop techniques for assessing and valuing them. Ecosystem services have been important throughout the development of ecological restoration techniques and ERI seeks to support federal agencies in this arena through a systematic review of watershed impacts and investigation of ecosystem sustainability. The projects described here were initiated in FY 2010 and will be completed in FY 2011.

Ecosystem sustainability is central to maintaining ecosystem services into the future, but the sustainability of forested southwestern landscapes is threatened by severe fires, climate change, drought, fragmentation, and pathogen outbreaks. Using the pinyon-juniper forest, the most widespread forest type in the Southwest, as a model system, we will assess landscape changes and implications for sustainability. The information tools supporting this analysis include disturbance histories (fire, drought, and pathogens), modeling of fire behavior and transitions among ecosystem states, and evidence of successional patterns of recovery after disturbance. Much of this data was assembled from the existing literature or through field studies under previous work plans. {38, 49}

3.1 Deliverable (December 2011):

- a. One journal manuscript for publication of pinyon-juniper ecosystem sustainability at the landscape scale. Working title: "Historical fuels and fire behavior in ponderosa pine and pinyon juniper ecosystems on Anderson Mesa, Arizona: implications for sustainability." Despite reduced federal funds, state funds will be leveraged to complete this project.

Project 4: Climate - Eliminated as the result of reduced funding in 5/2011.

Climate Change is expected to have substantial impacts on forest ecosystem of the interior West in the near-term and throughout the 21 Century. Warming will increase moisture stress and drought-caused forest dieback, facilitate insect outbreaks, and foster increasingly large, frequent, and severe wildfires. Restoration of the naturally resilient characteristics of fire-adapted forests will significantly improve their resilience to climate change, but a variety of lines of research suggest that plant communities will have to track changing climatic envelopes and experience uncharacteristic disturbance processes. Restoration is likely to have to encompass new approaches, including facilitated shifts of species upwards on elevational gradients and perhaps ex situ conservation or translocation of high-elevation, mesic species. The FY 2011 program of works respond to needs identified the SWERI and RMRS/NFS Needs Assessment. {3, 23, 31, 38, 49}

4.1 Deliverables – cancelled

Project 5: Economies and Job Creation

With the worsening condition of the U.S. economy, forested rural communities and Native peoples have been hit particularly hard. Many of them are still struggling to address the loss of a forest products-related industry. There is a tremendous information need for how to create more employment opportunities and markets for the by-products of forest restoration in these economically depressed forested rural communities while also promoting ecosystem and social health.

Congress and OMB are very intent on lowering fire suppression costs. The most prudent action to lower costs is to invest in restoring forests and reducing fuels. Identifying the level of investment in treatments that will be required in order to realize a reduction in suppression costs will help decision makers understand the extent of the problem and also the value of investing in treatments as a solution. {11, 16}

5.1 Deliverables (December 2011):

- a.** A white paper summarizing successful approaches to job creation
- b.** A white paper analyzing the tipping point between investment in restoration treatments and realizing savings in suppression costs.

Project 6: State and Private Forestry

6.1 State and Private Forestry programs bring land management assistance and expertise to a diversity of landowners and natural resource managers, ranging from private lands to tribal and state lands. Assistance includes helping landowners, land managers, and the communities they are a part of care for their forests, strengthen local economies, and improve the quality of life.

Arizona is home to diverse forest ecosystems, spanning approximately 27% of the state (over 19 million acres), as well as extensive urban and community forests. These forests contribute to the overall functioning of ecosystems by playing a vital role in cycling water and nutrients, filtering pollutants, producing oxygen, absorbing carbon dioxide, and providing habitat for humans and wildlife.

Commensurate with the 2008 Farm Bill (section 8001), the State of Arizona Forestry Division, with assistance from ERI and other partners, completed in FY 2010, a statewide assessment of forest resource conditions, trends, and priorities on all forested lands in the state, to determine a strategic approach to respond to identified threats to these valuable ecosystems. ERI is provided leadership and support to ensure that the assessment had the best-science available. Science-based strategies are essential in restoring ecological integrity so that the goods and services that ecosystems provide are sustained into the future.

The Statewide Strategy Subcommittee of the Governor's Forest Health Oversight Council has initiated a comprehensive review of the state's major unique landscapes identified in the *Statewide Strategy for Restoring Arizona's Forests*. ERI is providing leadership and assistance to the process. This analysis will consider how to merge the 2008 Farm Bill Statewide Assessment with the *Statewide Strategy for Restoring Arizona's Forests* in FY2011. As the Arizona Statewide Forest Resource Assessment focuses on urban and rural forested ecosystems, ERI's role will be to emphasize capacity building with federal and tribal entities. Capacity building will include science synthesis, consultations, implementation strategies, and information and education of ecosystem

restoration principles {34, 36, 43}.

6.1 Deliverables (December 2011):

- a. Science and technical support to Arizona State Forestry.
- b. Science support and technical assistance to tribes.

6.2 The office of State and Private Forestry is concerned that annual allocations of \$300 million in hazardous fuels treatment dollars to the states are not optimized to address the threat of landscape scale on all lands. They have asked the Institutes to assist them to develop a prioritization scheme to help increase the effectiveness of hazardous fuels management. This may provide the opportunity to mobilize the state forest assessments required under the farm bill to inform the prioritization process. *(Requested by Jim Hubbard at State and Private Forestry)*

6.2 Deliverable (March 2012):

- a. Analysis of a range of prioritization processes to increase hazardous fuels allocation effectiveness.

Project 7: Services to the Intermountain West

The ERI provides knowledge services to managers, stakeholders, and the public concerned with restoration and conservation of frequent-fire adapted forests across the Intermountain West. We work in partnership with the other SWERI members to leverage the skills and resources of SWERI for the greatest public benefit. As far as ERI resources and funding permits, we continually leverage our skills, knowledge and ability to transfer science-based information and procedures to agencies, tribes and interested publics for local applications in ecosystem restoration.

7.1 One of the most important activities of the ERI is to respond to requests for assistance from land managers. ERI is aware of the critical need to increase outreach effectiveness, contacts, consultations, and education to provide science-synthesis support to Federal agencies. Due to the number of personnel changes within the agencies, as well as the opportunity to build upon cooperative research and assistance provided to land management agency led projects, ERI's role in support of capacity building within agencies will remain strong. We have found that as veteran staff members from the Forest Service, BLM, Park Service, and other agencies retire, the need for direct hands-on help is increasing. A cornerstone of this service is to work with local personnel to understand the historic and desired forest conditions at a proposed treatment site through preparation of Rapid Assessments (RAP's). The ERI will bring qualified field technicians to the site, where a quick inventory is performed to assess historic fire regime, forest structure and other site attributes. This work provides the ecological basis for developing comprehensive forest restoration treatments. Work to support the RAP's includes fulfilling information requests and site visits including on-the-ground training for participants. {2, 34, 43}

Because the number of requests for assistance surpasses the capacity of the ERI, we evaluate and prioritize requests based on key factors that are considered in cooperation with Agency Line Officers. These include:

- ⇒ Is the request critical to the mission of the Forest Service and is it achievable within the given time frame?
- ⇒ How will the request impact current projects?
- ⇒ Can ERI provide facilitation or help the Agency develop the capacity to accomplish the

- request in lieu of ERI accomplishing the deliverable?
- ⇒ What is ERI's ability to change deliverable commitments in the current fiscal year work plan in order to accommodate the new request?
 - ⇒ Can ERI assist the Agency meet the request through non-traditional or outsourcing options?

Requests from, or outreach development with other Federal and State Agencies and Tribal units is usually ranked lower due to funding constraints from those agencies, workload commitments, and ERI's current capacity limitations due to appropriated funding

7.1 Deliverables (December 2011):

- a.** Science support for Forest Plan Revisions
- b.** Conduct Rapid Assessments (RAPs include: field visits, consultations, training)
- c.** Provide answers to information requests
- d.** Provide field training (non RAP)

7.2 Knowledge services and public education. The ERI maintains an integrated web site that includes publications and information about the biophysical and social science aspects of restoration. Recommendations are peer reviewed and the ERI maintains the highest standards for information posted to the site. In addition, the ERI maintains the SWERI website. The Forest Service lacks the capacity to update the SWERI website, consequently we maintain the main site that describes SWERI and posts SWERI products.

7.2 Deliverables (December 2011):

- a.** Maintain ERI and SWERI websites

Occasional short summaries that compile best available information are needed by non-technical stakeholders and practitioners. These summaries are prepared as important needs are identified in response to requests.

- b.** Edit and produce two white papers (based on analyses done for Project 5)

Practitioners and stakeholders need concise, accessible descriptions of land management treatment options and the outcomes of alternative treatments. Working papers will be developed from information gained throughout ERI's program of work and in response to requests from managers and stakeholders. Fact sheets provide summaries of key findings based on restoration science to inform management and policy in a "least you need to know" format.

- c.** Edit and produce working papers (Analysis performed in Project 2) (Add working papers identified earlier)
- d.** 4 fact sheets

Direct, in-person communication of useful knowledge is preferred by conservation professionals and their stakeholders. The ERI will continue to provide in-person delivery to convey emerging scientific information on restoration treatments, community collaborations and other relevant topics.

- e.** Provide presentations as requested by affected entities

The ERI will continue to take diverse audiences to the field to demonstrate and discuss the outcomes of forest restoration on ecological health and wildfire behavior.

- f. Provide field trips as requested by affected entities

7.3 Outreach activities related to the Wallow Fire.

7.3 Deliverables:

- a. Design and deliver in cooperation with Region 3 a workshop/dialogue about desired conditions. *(Requested by Region 3—Fall 2011)*
- b. Produce 4 working papers identified in the additional program of work for FY’ 11 year end dollars *(December 2013)*.
- c. Produce articles and related information to inform the general public with respect to 2.2b and 2.2c *(December 2012)*
- d. Produce Fact Sheets that can inform rehabilitation activities *(December 2013)*
- e. In collaboration with staff of Region 3, identify the issues and topics for future dialogue workshops related to future conditions.

Project 8: Duty 5 under the ACT. Provide annual progress reports

The legislation establishing the Institutes requires an annual project reports.

8.1 Deliverable: Complete annual progress report on June 30th, 2011 and June 30th, 2012, **June 30th, 2013**

ERI 2011 Budget (\$2,240,462 Revised 12-20-11)

	Project 1: Evidence-Based Conservation	Project 2: Stewards of Place	Project 3: Ecosystem Services	Project 4: Climate	Project 5: Economies and Job Creation	Project 6: State and Private Forestry	Project 7: Services to the Intermountain West	Total
Personnel:	\$ 559,113	\$ 308,372	\$ 40,416	\$ -	\$ 80,187	\$ 128,158	\$ 221,755	\$ 1,338,001
Fringe Benefit (ERE):	\$ 204,300	\$ 100,091	\$ 16,796	\$ -	\$ 28,964	\$ 43,229	\$ 92,754	\$ 486,134
Outside Services:	\$ 40,000	\$ -	\$ -	\$ -	\$ 30,000	\$ -	\$ -	\$ 70,000
Travel:	\$ 32,771	\$ 26,897	\$ 605	\$ -	\$ -	\$ 7,091	\$ 14,041	\$ 81,405
Operations & Supplies:	\$ 30,926	\$ 10,234	\$ 968	\$ -	\$ 2,773	\$ 1,034	\$ 15,309	\$ 61,244
Total Direct Costs:	\$ 867,110	\$ 445,594	\$ 58,785	\$ -	\$ 141,924	\$ 179,512	\$ 343,859	\$ 2,036,784
Indirects:	\$ 86,711	\$ 44,560	\$ 5,879	\$ -	\$ 14,192	\$ 17,951	\$ 34,386	\$ 203,679
Total:	\$ 953,821	\$ 490,154	\$ 64,664	\$ -	\$ 156,116	\$ 197,463	\$ 378,245	\$ 2,240,463