

**Ecological Restoration Institute Work Plan:
Developing Knowledge for West-wide Application
Fiscal Year 2014**

FINAL

APPROVED BY EXECUTIVE TEAM 3.11.2014

Reduced from \$1.2M to \$1.125M April, 2014

The core mission of the Ecological Restoration Institute (ERI) at Northern Arizona University is to provide the best available knowledge about restoration and conservation to resource professionals, scientists, policy makers, and the public. There are few organizations in the nation with the unique capabilities of the ERI to synthesize existing knowledge, identify knowledge gaps, conduct research needed to fill those gaps, and educate and motivate land managers and stakeholders to incorporate new knowledge and implement science-based treatments to restore land health. The following work plan for *\$1.2 Million in Fiscal Year 2014* describes six main projects that exercise the strengths of the ERI and are both responsive as well as anticipatory to the knowledge and science support needs of the wide variety of audiences that have a stake in restoring health to ecological and economic systems of the West.

In February of 2012 The Forest Service released a report entitled, “Increasing the Pace of Restoration and Job Creation on Our National Forests.” The document identifies ecological restoration as the central strategy for solving the forest health and catastrophic fire problem plaguing the West. It recognizes that good restoration benefits the environment, generates jobs in rural America, will comprehensively address a variety of threats, and to be successful must engage all land ownerships. It also emphasizes that ecological restoration must accelerate. The document advocates for a series of actions, that when taken together will achieve the goal of accelerated restoration and improved economic health of forest-dependent communities. Out of the nine identified actions, five are supported by the research, translation and science application efforts of the ERI. These include: 1. Expanding collaborative landscape partnerships; 2. Finalizing and implementing a new forest planning rule; 3. Implementing the Watershed Condition Framework; 4. Improving the efficiency of the planning process for restoration projects under the National Environmental Policy Act; and, 5. Expanding markets for forest products from national forests (which we define to include ecosystem services).

Many challenges must be overcome before forest health is restored at scales sufficiently large that wildfires burn more naturally and resource and economic damage are minimized. Although the concept of restoration at the landscape scale is well supported by many policy makers and the public, more knowledge is needed to inform planning for treatments across forest ecosystem types. In response, the ERI is working to fill gaps in scientific knowledge for restoring frequent-fire mixed conifer. This knowledge gap exists throughout the West and providing more science-based information will help inform restoration efforts across frequent-fire landscapes. In addition, developing sound monitoring frameworks to be used in an adaptive management process will be critical. Agency commitments to monitoring and adaptive management are foundational to the new forest planning rule, the Collaborative

Forest Landscape Restoration Program (CFLRP) pilots and restoration treatments, yet understanding how to operationalize monitoring and adaptive management lags behind management projects. The ERI has 15 years of experience designing and implementing a full spectrum of monitoring approaches using robust scientific methodologies. Since creation of the CFLRP pilots the ERI has led efforts to define and coordinate affordable and effective monitoring nationally, as well as locally with the 4FRI.

Even as these hurdles are confronted, the agencies still have to fight for adequate federal budget to implement treatments. In order to solve this deficiency and other resource barriers to restoration the ERI has helped identify and support new and innovative funding mechanisms and partnerships that are designed to help achieve restoration and leverage new resources.

Finally, an all lands approach to restoration requires more than coordination of management actions. A recent study conducted by the ERI on the economic and ecologic effectiveness of restoration treatments reveals that if current development trends in the wildland-urban interface continue we will see ever increasing suppression costs—especially with a warmer and drier climate. Providing the public and decision makers with objective knowledge and understanding of the ecological, social, political, and economic consequences of restoration, inaction, or the wrong actions is crucial to craft smart and effective outcomes.

This FY' 14 draft work plan outlines a program of work for \$1.2 million to be carried out throughout the West. The program of work responds to:

- The duties outlined in PL108-317ⁱ - THE SOUTHWEST FOREST HEALTH AND WILDFIRE PREVENTION ACT;
- The USDA-Forest Service 2012: “Increasing the Pace of Restoration and Job Creation on Our National Forests”
- Requests for services identified by affected entities;
- Anticipated needs based on over 40 years of research and service in service in support of public land management; and,
- Administration, Congressional and Land Management Agency directives that include: adaptive ecosystem management, ecological restoration at the landscape scale, an all lands approach, collaboration, the infusion of the best available science in land management projects, reduction of fire risk to communities and natural resources, watershed conservation and advancing understanding of appropriate management actions in the face of rapidly changing climate conditions.

In April, 2014 the funding for the FY14 Plan of work was reduced to \$1.125 million eliminating Project 5 (State, Tribal and Private Forestry – the All Lands approach) and reducing the contribution to AZ Game and Fish in Project 3.

Project 1: Science Support for Collaborative Restoration and Conservation from the Local to the Landscape Scale

In 1994, the ERI implemented the first evidence-based ecological restoration treatments at Gus Pearson Natural Area on the Fort Valley Experimental Forest. It was a 12 acre research project designed to scientifically measure the tree, understory, soil, and hydrologic responses to a new prescription with the goal to improve forest health. The positive results were almost immediate. With such encouraging results the ERI began looking for opportunities to increase the scale of application of these treatments to

determine large area responses. That opportunity came in the form of the Arizona Strip and Mt Trumbull where the ERI, Bureau of Land Management and Arizona Game and Fish formed a partnership to treat 3,700 acres. Working in an operational setting, the BLM, ERI and Arizona Game and Fish began monitoring the impacts of the restoration of natural patterns and functions of forest ecosystems and wildlife. This experiment catalyzed one of the biggest paradigm shifts required to move forward with restoration at even larger scales. After ten years of measurements the wildlife research demonstrated that restoration had largely positive outcomes for song birds, deer, turkey, and reptiles. This work convinced skeptical wildlife professionals to support restoration. It confirmed common sense as well as evolutionary theory that animals that co-evolved with frequent fire forests over thousands of years would respond favorably to management actions that moved forests closer to their natural conditions.

Fast forward to 2013 in what can only be described as a breathtaking increase in restoration treatments moving to match the scale of the problem. The pilot projects designated under the Collaborative Forest Landscape Restoration Program (CFLRP) are collaborating with the Forest Service and propose to treat over 9.4 million acres nationally. This exponential unfolding of management action has occurred in a relatively short, yet critically urgent timeframe.

In a 2010 Congress mandated a third-party independent review of the effectiveness of the Institutes created by PL108-317. The conclusion stated: *“... we have determined that each of the Institutes warrants continued provision of Federal assistance. In our view, no other existing entity has the capacity or mandate to carry out landscape scale forest restoration. As a result of the work that has been completed with scarce resources, the Institutes have generated a high degree of demand and relevance in their States, and a common understanding among affected entities that they fulfill an important role. Interviews with affected entities indicate that their scope may need to be broadened to accomplish landscape restoration at a larger scale.”*

Project one provides west-wide assistance to help restoration advance at the landscape scale.

Project One: Science Support for Collaborative Restoration and Conservation	
Fulfills Duties under the Act: 1,2,3,4	
Action	Benefit
1.1. Provide support for the Four Forest Restoration Initiative (4FRI), an approved Collaborative Forest Landscape Restoration Program project. Actions include: support for integrating science, monitoring and adaptive management in planning and implementation; assistance in the organization and leadership of the 4FRI Stakeholder Group; assistance to develop landscape planning approaches that are scalable down to the treatment level.	<u>Affected entities:</u> The 4FRI stakeholders, Kaibab, Coconino, Tonto and Apache Sitgreaves NF. <u>Outcome:</u> Successful collaboration and implementation at the Landscape Scale
1.2. Provide support for CFLR projects and emerging projects. Share and leverage lessons learned from different projects to help build efficiency and avoid unnecessary reinvention of approaches.	<u>Affected entities:</u> The 21 Projects of the CFLR, specifically R2 and R3 and the USFS WO <u>Outcome:</u> Learning and greater efficiency across CFLRP pilots

Deliverables

1.1) Provide Support for the Four Forest Restoration Initiative (4FRI), a Collaborative Forest Landscape Restoration Act project

- a) Report on technical assistance for science and monitoring. This includes: small group leadership, assistance to help incorporate the adaptive management and monitoring plan into the final EIS, and monitoring plan implementation planning
- b) Summarize in a Fact Sheet lessons learned about leadership and administrative assistance to the 4FRI steering committee
- c) Report on IT support for the 4FRI Website and BASECAMP (an online collaborative work space), Website and Administration

1.2) Provide scientific and technical support for other CFLRP pilots and emerging projects

- a) Deliverable: Report on activities to support the national CFLRP monitoring network
 - i. The ERI will assist the CFLRP National Monitoring Network to hold (3) webinars in partnership with National Forest Foundation addressing monitoring barriers and lessons learned among all 23 funded CFLRP sites.
 - ii. ERI staff will initiate and coordinate a Region 2 and 3 CFLRP Monitoring Network (outcome from R2/R3 CFLRP workshop) with (6) conference calls planned. Goals are shared lessons learned regarding adaptive management and monitoring plans and coordination of cross-site communication with the development of ecological indicator reports.
- b) Deliverable: Report on support for the national 5-year monitoring report required by Congress under the Collaborative Forest Landscape Restoration Act.
 - i. ERI staff will participant with USFS Washington Office CFLRP Coordinator to develop and finalize a template for the CFLRP National Ecological Indicator (for 5-yr reporting) and roll out the template utilizing the CFLRP National Monitoring Network.

Project 2: Information Analysis to Assist Evidence-Based Conservation

The Ecological Restoration Institute recognizes that scientific information relevant to urgent problems in conservation and restoration can be highly technical and is often widely dispersed throughout numerous and variable sources. Thus, there is a critical need to summarize and consolidate information into forms accessible to land managers. In addition, systematic analysis of evidence concerning management practices and outcomes provides managers with sound, science-based information with which to make better informed decisions. In order to meet these needs and assist land managers in planning and implementing evidence-based practices, the ERI systematically compiles, analyzes, and synthesizes important data and information related to ecosystem conservation and restoration. Reviews, syntheses, and information summaries are conducted in response to questions identified by local land managers and stakeholder groups as well as by scientists and other professionals.

Based on the urgency of the question and the quantity and quality of the information available, the ERI produces various products. For example, rapid reviews of key information sources, produced in a matter of weeks may be needed to respond to highly urgent questions; whereas rigorous comprehensive reviews that require a greater level of effort may be needed to answer broader questions. For all review efforts, the ERI will follow a systematic, evidence-based approach to assemble, evaluate and weigh findings from scientific research, practitioner experience, and gray literature to objectively identify the best evidence for

making management decisions. This approach can help diminish the controversy over seemingly “conflicting” science by determining the “best available science” by analyzing the strength of the evidence presented in scientific studies and other sources.

Project Two: Evidence-based Conservation	
Fulfills Duties under the Act: 1,2	
Action	Benefit
2.1. Respond to critical management questions using an evidence-based framework. The responses can take the form of full reviews, synthesis of knowledge, and/or full systematic reviews.	<u>Affected Entities:</u> Authors GTR-310/USFS-R3, land managers <u>Outcome:</u> Best available science provided to inform action

Deliverables

2.1) Complete one review based on information needs identified on page 50-51 in “Restoring Composition and Structure in Southwestern Frequent-Fire Forests: A science-based framework for improving ecosystem resiliency” (RMRS GTR-310) using an established analytical framework. Topics identified for further analysis that are appropriate to the capabilities of the ERI and where an adequate body of literature and research exists to conduct a systematic review include:

- Understanding of variability in reference conditions across ecological gradients (soils, topography, climate, etc.), especially in dry mixed-conifer;
- Increasing understanding of ecosystem processes and functions as they respond to restoration of the composition and structure of frequent-fire forests;
- Increasing understanding of the efficacy of fire versus tree cutting only and cutting combined with fire at achieving the desired composition, structure, processes, and functions in frequent-fire forests at all scales;
- Identification of management strategies for restoring composition and structure in transitional zones between forest types and future directions given climate change;
- Assessment of ecological, economic and social benefits and costs (e.g., invasive species) of different restoration methodologies and implementation practices, such as methods for treating slash, tree marking approaches, spatial scales of treatment, and frequency of maintenance treatments; and,
- Effects of restoration on the frequency and severity of insect and disease disturbances at all scales.

We will coordinate with the RMRS and the RO in determining which topic to pursue and who might collaborate to get the project done

- a) Deliverable: A systematic review addressing an information need. The review will be published to the ERI web site and delivered to practitioners.

Project 3: Ecological Monitoring and Evaluation for Adaptive Management

When based on scientific methodologies, ecological monitoring can provide sound, supported information concerning long-term responses to forest restoration and hazardous fuels treatments. In addition, when used in an adaptive framework, well planned monitoring can illuminate a solution for addressing immediate management needs in the face of uncertainty. The Ecological Restoration Institute utilizes a network of statistically robust, long-term studies, located at sites throughout the Southwest, to develop new information concerning on-the-ground restoration and conservation applications. We also conduct short-term studies to address critical science questions where appropriate. Lastly, the ERI provides technical support in the design of monitoring strategies for collaborative landscape-scale restoration and adaptive management efforts. In FY'14 we will conduct and initiate projects that respond to key science needs identified by land managers and researchers. We will specifically: 1) initiate a new long-term study to test ecosystem restoration alternatives for warm/dry mixed-conifer forests; 2) continue work to quantify restoration reference conditions in warm/dry mixed conifer forests; and 3) monitor responses of key wildlife species to restoration and hazardous fuels reduction treatments.

In FY14, we will continue working to advance understanding of natural reference conditions and restoration of mixed-conifer ecosystems. Previous ERI efforts to test alternative treatments for restoring more natural structure and function produced invaluable information to help guide management. More information is desperately needed as mixed-conifer ecosystems are some of the most vulnerable in the West to destruction from uncharacteristic wildfire. To meet this need, we will establish a new long-term study to test alternative treatment approaches to restoration ecological function to degraded mixed conifer forests, and continue work to quantify spatial reference conditions for historical tree group composition and interspace opening sizes. These studies will provide highly needed information for restoration and conservation of these important ecosystems and add strength to ERI's network of long-term monitoring studies in mixed conifer forests.

Wildlife responses to environmental conditions are complex and variable. As ecosystem restoration efforts move to larger landscapes, understanding responses of key and wide-ranging wildlife species to these treatments is of high importance. The ERI has a long-standing partnership with Arizona Game and Fish to support and collaborate on wildlife studies. In FY 14, the ERI will continue to support this partnership as well as partner with US Fish and Wildlife Service to understand the effects of landscape-scale treatments on important wildlife species. This work will be done in support of science needs for 4FRI and the Flagstaff Watershed Protection Project. The ERI will pursue partial funding for this project from the City of Flagstaff.

Project Three: Monitoring and Evaluation for Adaptive Management Fulfills Duties under the Act: 1,2,3	
Action	Benefit
3.1 Develop and initiate new LEARN study in a mixed-conifer forest (Build from FY13)	<u>Affected Entities:</u> FS, related agencies, and stakeholders. Identified as high-priority science need at Regional Leadership meetings and Desired Conditions workshops. <u>Outcome:</u> Best available science to inform development of spatial aspects of treatment prescriptions.
3.2 Continue work to quantify reference conditions for spatial patterns in warm/dry mixed conifer forests	<u>Affected Entities:</u> FS, related agencies, and stakeholders. Identified as high-priority science need at Regional Leadership meetings and Desired Conditions workshops. <u>Outcome:</u> Best available science to inform development of spatial aspects of treatment prescriptions.
3.3 Wildlife responses to restoration and hazardous fuels reduction treatments	<u>Affected entities:</u> FS, related agencies, and their stakeholders concerned with wildlife management and conservation in southwestern forest ecosystems <u>Outcome:</u> Best available science provided to inform action

Deliverables

3.1) Develop and initiate new LEARN study in a mixed-conifer forest on the Coconino National Forest (Build from FY13)

- a) Work with Coconino National Forest to develop treatment alternatives and study questions
- b) Summarize baseline data and provide to agency staff
- c) Summarize reference conditions and present findings in journal article, conference, or workshop

3.2) Quantify reference conditions for spatial patterns in warm/dry mixed conifer forests on the Coconino National Forest

- a) One manuscript for peer-reviewed publication
- b) Workshop and/or field visit for agency staff and interested stakeholders (e.g., 4FRI, Salt River Project, US Fish and Wildlife Service, Arizona Game and Fish, state and local government)

3.3) Wildlife responses to restoration and hazardous fuels reduction treatments

- ~~a) To be determined in collaboration with Arizona Game and Fish Department (eliminated due to reduced funding)~~
- b) Report on pretreatment conditions and progress of the Flagstaff Watershed Protection Project (FWPP) wildlife monitoring
- ~~e) Presentation on FWPP monitoring for agency staff (Coconino National Forest, US Fish and Wildlife Service, and Arizona Department of Game and Fish) and interested stakeholders in the 4FRI and by others as requested. (eliminated due to reduced funding)~~

Project 4: Understanding and Solving the Economic, Social and Political Issues and Opportunities of Ecological Restoration

In the face of an uncertain economy and inadequate federal budgets, communities and stakeholders are exploring new ways to leverage funding to accelerate restoration. In FY 2014 the ERI will continue to work with the Salt River Project and others to develop new approaches for expanding financial and human resources to achieve restoration on federal and other land ownerships.

Building local support for hazardous fuels reduction and forest restoration is important to reducing fire risk and attracting new sources of funding to accomplish treatments. Understanding the economic relationship of treatments on real estate values can help build support for action.

Understanding and Solving Social, Political and Economic Issues Fulfills Duties under the Act: 6,7	
Action	Benefit
4.1. Increase understanding of innovative funding mechanisms for achieving restoration and wildfire risk reduction	<u>Affected entities</u> Municipalities (e.g., City of Flagstaff)/Coconino NF/Stakeholders and FS/interagency managers across West <u>Outcomes:</u> Innovative approaches to funding are developed across the West
4.2. Analyze the relationship of fuels treatment, restoration and wildfire on real estate values	<u>Affected entities:</u> Residents of the WUI, local government officials <u>Outcome:</u> Contributes valuable information for implementation of the Cohesive Strategy

Deliverables

- 4.1) Actions and a case study to increase understanding of innovative funding approaches for achieving forest restoration and wildfire risk reduction.** Partners in this effort include: the Salt River Project, National Forest Foundation, and The Nature Conservancy. Intended audience includes: Eight Arizona valley cities that benefit from water derived from Northern Arizona, Arizona legislature, Arizona counties and small municipalities
- a) Provide technical support to implement innovative funding streams.
 - i. Deliverable: Report on activities to support implementation
 - b) Compile a case study of local government and the Forest Service working together to leverage funding. In particular identify the essential components for successful partnerships including: appropriate and efficient financial instruments to transfer funds, mechanisms for establishing

and executing appropriate roles and responsibilities and other details that will assist other communities replicate successful partnerships.

i. Deliverable: Case Study

4.2) Analyze the relationship of fuels treatments and restoration on real estate values. Note: this deliverable appeared in the FY13 work plan. However, the expert identified to conduct the analysis could not do the work in that fiscal year. We have a commitment to do this project in FY14.

- a) Deliverable: Manuscript for publication
- b) Deliverable: Fact Sheet

Project 5: State, Tribal and Private Forestry – The All Lands Approach

An all lands approach is one of the foundational principles of the enabling legislation that established the Ecological Restoration Institute. Although PL108-317 is managed through the US Forest Service, Congressional intent is clear that the Institutes should provide service to all affected entities including: state, tribal and private land managers.

The ERI is a key partner with the State of Arizona Forestry Division, providing assistance in implementing the completed statewide assessment of forest resource conditions, trends, and priorities on all forested lands in the state. As directed in the 2008 Farm Bill, this assessment determines a strategic approach to respond to identified threats to these valuable ecosystems. The ERI also fills the Chairman position for the Arizona Prescribed Fire Council. The Council addresses education, coordination and support of managed fire and smoke management objectives across multi-jurisdictional lands in Arizona. This action supports the objectives identified in the Arizona Forest Resource Assessment & Strategic Plan (2011).

The ERI would like to provide greater assistance to the Tribes. Many tribal resource professionals from throughout the West graduated from Northern Arizona University and have reached out to NAU for ongoing technical assistance. The Navajo, Hopi and White Mountain Apache tribes of northern Arizona have specifically requested help to be better engaged in the 4FRI Initiative. Given adequate funding this would be an area of expansion for outreach.

State, Tribal and Private Lands—An All Lands Approach	
Fulfills Duties of the Act: 1, 3, 4	
Action	Benefits
5.1. Service to the Arizona Prescribed Fire Council	<u>Affected entities:</u> Land managers, private land owners, tribes and public in Class I air sheds and all-lands across the State <u>Outcomes:</u> Education, increased use of prescribed fire, smoke management & coordination
5.2. Provide technical assistance to the state, tribes and other	<u>Affected entities:</u> Tribes, state and other nonfederal

nonfederal land managers in order to assist implementation of restoration treatments and integrate all-lands policy initiatives such as the Cohesive Strategy.	managers Outcomes: Partnerships, science transfer and landscape resilience across all jurisdictions
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Deliverables - this project was eliminated April, 2014

~~5.1) Chair the Arizona Prescribed Fire Council. The mission and purpose of the Arizona Prescribed Fire Council is to serve as a forum for prescribed fire practitioners at all levels of government, academic institutions, tribes, coalitions, and interested individuals to work collaboratively to promote, protect, conserve, and expand the responsible use of prescribed fire in Arizona’s fire-dependent ecosystems.~~
 a) ~~Deliverable: Report on assistance~~

~~5.2) Provide technical assistance and outreach, with increased emphasis to the White Mountain Apache, Navajo and Hopi tribes and cooperating agencies. ERI contact with tribes will be coordinated with and assist adjacent USFS Units, CFLRP collaborative interests, DOI/BIA and AZ Department of Forestry.~~
 a) ~~Deliverable: Report on assistance that will include (3) actions that may include: responding to information requests, site visits/field trips, or presentations.~~

Project 6: Services to the Intermountain West

The mission of ERI is to serve as an objective leader in research, scholarship, and education in order to assist collaborative efforts to plan and implement restoration treatments for frequent-fire forest and woodland landscapes of the West. In partnership with the other SWERI members, the ERI leverages the skills and resources of all three institutes for the greatest public benefit.

The ERI proactively serves the information needs of federal land managers and other stakeholders through a variety of outreach and education strategies. In FY14 the ERI will continue to work to make the best available science “user friendly” so it can be mobilized to support treatment design and implementation. Field staff will provide technical assistance to help managers understand historic and desired forest conditions and treatment options through services such as Rapid Assessments (RAP’s), workshops, field trips and planning and monitoring support. Work to support the RAP’s includes fulfilling requests for information and site visits to provide on-the-ground training and data for land managers.

This assistance helps the federal agencies implement the many initiatives and policy’s addressing a broad range of actions designed to restore the health of the lands and waters of the National Forest System. These include: Forest Plan revisions, the Watershed Condition Framework, stewardship contracting, The Cohesive Strategy and the Chief’s plan to accelerate restoration. ERI’s emphasis in providing program support to help meet these objectives remains a high priority.

Service to the Intermountain West Fulfills Duties of the Act: 1, 2, 3, 4	
Action	Benefits
6.1. Provide support to federal land managers with technical assistance and other services such as workshops	<u>Affected entities:</u> Forest Service and partners <u>Outcomes:</u> RAP's, Workshops, Field Trips, Transfer of Best Available Science
6.2. Assist with Forest Planning and Implementation	<u>Affected entity:</u> USFS <u>Outcomes:</u> Forest plans use best available information
6.3. Maintain and transfer science through the website for land managers and all affected entities	<u>Affected entities:</u> Land Managers/Stakeholders/general public <u>Outcomes:</u> Best available science used to inform action
6.4. Translate science for land managers and affected entities	<u>Affected entities:</u> Land Managers, stakeholders <u>Outcomes:</u> Knowledge transfer and best available science used to inform action
6.5. Transfer science to affected entities using field trips, filling information requests and making presentations	<u>Affected entities:</u> Stakeholders, general public <u>Outcomes:</u> Knowledge to inform action
6.6. Educate the general public	<u>Affected entities:</u> General public <u>Outcomes:</u> Raise awareness and support for restoration

Deliverables

6.1) Provide support to federal land managers with treatment planning and implementation

- a) Deliverable: Report on actions to support project assessments, data collection, treatment design, and use of best available science by federal land managers to achieve desired conditions and outcomes.
 - i. 7 Field Trips
 - ii. 2 Rapid Assessments (RAPS) presently planned on the Apache-Sitgreaves and Prescott National Forests. We are engaged in early discussions to establish a restoration treatment demonstration area on the Coronado National Forest
 - iii. We anticipate providing a combination of 10 total services based on previous and anticipated demand that may include: workshops, technical assistance, science support and presentations

6.2) Assist with USFS forest planning and implementation

- a) Deliverable: Report on actions to support forest planning, implementation, and integration of best available science in FLMP revisions. Specific support to be provided to the Apache-Sitgreaves, Tonto, Coconino and Kaibab Forest Plan revisions

6.3) Provide Web support for ERI, SWERI, 4FRI

- a) Deliverable: Report on technical support for ERI, SWERI and 4FRI websites

6.4) Translate biophysical and social-political-economic information for affected entities

- a) Deliverable: Editorial support for 1 white paper
- b) Deliverable: Editorial support for 2 working papers
- c) Deliverable: 8 fact sheets

6.5) Initiate and facilitate knowledge services and science support through field trips, filling information requests, and presentations for affected entities. These numbers may vary based on demand.

- a) Deliverable: Report on actions to educate and support affected entities
 - i. 5 Field Trips
 - ii. 10 Presentations, this is an estimate based on previous demand
 - iii. 10 Information requests, this is an estimate based on previous demand

6.6) Use media to educate the General Public

- a) Deliverable: 2 Newspaper articles

Project 7: Duty 5 under the ACT. Provide annual progress reports

The legislation establishing the Institutes requires an annual progress report.

Deliverable

- 7.1) Complete annual progress report on June 30th, 2014 and June 30, 2015**

Budget

FY14 Budget \$1,125,000

	Project 1: Science Support for Collaborative Landscape Scale Restoration from the Local to the Landscape Scale	Project 2: Information Analysis to Assist Evidence-Based Conservation	Project 3: Ecological Monitoring and Evaluation for Adaptive Management	Project 4: Understanding and Solving the Economic, Social, and Political Issues and Opportunities of Ecological Restoration	Project 5: State, Tribal and Private Forestry - The All Lands Approach	Project 6: Service to the Intermountain West	Total
Personnel:	\$ 216,315	\$ 78,769	\$ 340,732	\$ 97,802	Eliminated 4/2014	\$ 243,858	\$ 977,476
Travel:	\$ 1,131	\$ -	\$ 8,518	\$ 967		\$ 5,164	\$ 15,780
Operations & Supplies:	\$ 1,628	\$ -	\$ 5,963	\$ 661		\$ 1,219	\$ 9,471
Outside Services:	\$ -	\$ -	\$ 20,000	\$ -		\$ -	\$ 20,000
Total Direct Costs:	\$ 219,074	\$ 78,769	\$ 375,213	\$ 99,430		\$ 250,241	\$ 1,022,727
Indirects:	\$ 21,907	\$ 7,877	\$ 37,522	\$ 9,943		\$ 25,024	\$ 102,273
Sub-Total USFS	\$ 240,981	\$ 86,646	\$ 412,735	\$ 109,373		\$ 275,265	\$ 1,125,000

Other sources of funding of existing and potential funding in 2014

The following information is provided to demonstrate how the ERI leverages state, federal and other sources of funds.

Existing

Apache-Sitgreaves National Forest /White Mountain Stewardship	Total award: \$88,573
State funding (Base plus TRIF)	Total amount: \$812,756
The Nature Conservancy (ending in Sept 2014)	Total award: \$21,951
Salt River Project (carryover, bridge)	Total current: \$158,564

Submitted or in discussion

Salt River Project- Multi-year proposal submitted.
 Joint Fire Science Program -Proposal submitted.
 In discussion: City of Flagstaff for FWPP monitoring

ⁱ On October 5, 2004, President Bush signed into law the SOUTHWEST FOREST HEALTH AND WILDFIRE PREVENTION ACT, identifying the Ecological Restoration Institute at Northern Arizona University as one of three Institutes in the Southwest established for the purpose of ensuring the best available science is used in the development, implementation and monitoring of forest restoration treatments. Congressional intent was clear, that treatments should incorporate science-based restoration approaches that will simultaneously improve forest health, reduce the threat of unnatural wildfire and

provide economic and social benefits to forest communities. To accomplish this goal, the statute outlines explicit duties that include:

1. Develop, transfer, apply, monitor, and regularly update practical science-based forest restoration treatments that will improve the health of dry forest and woodland ecosystems and reduce the risk of severe wildfires, in the Interior West;
2. Synthesize and adapt scientific findings from conventional research programs to the implementation of forest and woodland restoration on a landscape scale;
3. Facilitate the transfer of interdisciplinary knowledge required to understand the socioeconomic and environmental impacts of wildfire on ecosystems and landscapes;
4. Collaborate with Federal agencies--
 - a. to use ecological restoration treatments to reverse declining forest health and reduce the risk of severe wildfires across the forest landscape;
 - b. to design, implement, monitor and regularly revise wildfire treatments based on the use of adaptive ecosystem management;
5. Assist land managers in--
 - a. treating land with restoration-based applications; and
 - b. using new management technologies (including the transfer of understandable information, assistance with environmental review, and field and classroom training and collaboration) to accomplish the goals identified in--
 - i. the report entitled '10-Year Comprehensive Strategy: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment' of the Western Governors' Association ;
 - ii. The report entitled 'Protecting People and Sustaining Resources in Fire-Adapted Ecosystems-A Cohesive Strategy' (65 Fed. Reg. 67480); and
 - iii. The National Fire Plan.
6. Provide technical assistance to collaborative efforts by affected entities to develop, implement, and monitor adaptive ecosystem management restoration treatments that are ecologically sound, economically viable, and socially responsible; and
7. Assist Federal and non-Federal land managers in providing information to the public on the role of fire and fire management in dry forest and woodland ecosystems in the Interior West.