

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

Climate Change and Natural Resources

Reporting on this Program

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	5%			
111	Conservation and Efficient Use of Water	10%			
112	Watershed Protection and Management	10%			
121	Management of Range Resources	10%			
122	Management and Control of Forest and Range Fires	10%			
123	Management and Sustainability of Forest Resources	5%			
131	Alternative Uses of Land	5%			
132	Weather and Climate	10%			
133	Pollution Prevention and Mitigation	10%			
141	Air Resource Protection and Management	5%			
205	Plant Management Systems	10%			
213	Weeds Affecting Plants	10%			
	<b>Total</b>	100%			

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.5	0.0	0.0	0.0
Actual Paid Professional	4.3	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
144231	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
144231	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
131712	0	0	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

- Educate and partner to enable the recovery of the sage grouse habitat to avoid its listing as a threatened or endangered species.
- Conduct applied research to determine management options that slow or stop the cycle of cheatgrass and fire on previously burned areas through range rehabilitation, seeding programs and nontraditional approaches to grazing management.
- Educate property owners about managing wildfire risk through fuels reduction strategies.
- Educate producers and agency personnel on the need for continued range evaluation, monitoring, and management improvements and the role of grazing management in sustainable resource management.
- Educate the public on responsible use and the value of multiple uses on rangelands.
- Illustrate the need for management and control of pinion-juniper forests to restore watershed, wildlife habitat and forage values on rangelands.
- Partner with and educate the general public, livestock producers and agency personnel on the identification and methods of control of the specific noxious and invasive species.
- Provide educational training and collaborative problem solving to facilitate rehabilitation of degraded watersheds, protect and manage watersheds, and conserve, manage and enhance efficient water use.

**2. Brief description of the target audience**

The target audience includes agricultural producers, mining industry representatives, environmentalists, green industry professionals, small acreage owners, general public, federal and state natural resource management agencies, and other resource managers.

**3. How was eXtension used?**

UNCE faculty collaborating with other land grant university faculty launched the Rangeland Stewardship and Health Community of Practice for the eXtension project in 2012 (<http://www.extension.org/rangelands>).

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	6480	0	248	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2012

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2012	Extension	Research	Total
Actual	6	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- {No Data Entered}

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of individuals who gain knowledge about improved human, plant, and animal management systems that relate to climate change and/or natural resource use.
2	Number of individuals applying or using new knowledge to improve human, plant, and animal management systems as related to climate change and/or natural resource use.

## **Outcome #1**

### **1. Outcome Measures**

Number of individuals who gain knowledge about improved human, plant, and animal management systems that relate to climate change and/or natural resource use.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2012	4932

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

In 2012, Nevada experienced severe drought, significant wildfire damage to agricultural and range lands during the wildfire season and damage from wildfires at the urban-rural interface outside of the typical wildfire season. These natural disasters occurred during a time of sluggish economic growth, further slowing Nevada's recovery.

#### **What has been done**

The Great Basin Fire Science Delivery Program (GBFSDP), in existence for about two years, is one of 14 consortia across the country designed to increase the dissemination and application of wildfire science information on the ground. Project information delivered by the GBFSDP is distributed via multiple media, including a list-serve (newsletter), website, webinars and synthetic publications. UNCE's Living with Fire (LWF) program continued to expand its target audience through increased distribution of educational materials and teaching activities. This nationally acclaimed program is designed to help land owners/managers take steps to avoid and prevent catastrophic wildfire at the urban-rural interface.

#### **Results**

In 2012, the GBFSDP team hosted six webinars. All webinars (current and previous years) were accessed by 1,784 viewers, approximately 70% of whom were unique viewers. The website had a total of 4,608 viewers, with 53% being new visitors and 47% returnees. The high return rate strongly indicates the project is meeting the research based knowledge needs of many resource specialists who work with fire, fuels and vegetation management issues. In 2012, LWF involved all 17 Nevada counties, increased its number of partnering organizations by 24%, and increased the number of educational events statewide by 19%, and distributed 17,800 copies of 19 different LWF publications. Approximately 13,900 online visitors viewed 36 different LWF publications and educational tools (including five Spanish language publications), four states requested for program material parent files in order to customize materials, and permission granted to use LWF

content was granted to seven out-of-state entities. The LWF Nevada and Lake Tahoe websites were completely overhauled in 2012 and had approximately 10,000 visits.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
121	Management of Range Resources
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
132	Weather and Climate
133	Pollution Prevention and Mitigation
141	Air Resource Protection and Management
205	Plant Management Systems
213	Weeds Affecting Plants

#### Outcome #2

##### 1. Outcome Measures

Number of individuals applying or using new knowledge to improve human, plant, and animal management systems as related to climate change and/or natural resource use.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

<b>Year</b>	<b>Actual</b>
2012	247

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Climate change research predicts a decrease in reliable precipitation patterns for much of the US. These predictions will require a proactive natural resource management approach in a state that receives less than 9 inches of precipitation annually. Diverse, competing demands for scarce water resources are likely to increase. Efficient water use and the protection of water quality are essential to the sustainability of Nevada's rangeland health, wildlife habitat, agricultural industry, and continued economic growth. Diverse and competing interests for Nevada's water resources will exacerbate climate change issues.

**What has been done**

UNCE faculty developed and published a curriculum (Evaluating Alternative Low-Water-Use Crops for the Great Basin) to teach agricultural producers how to strategically select crops to conserve water resources. The curriculum focuses on identified needs to reduce water use and the potential benefits of utilizing alternative crops. BMP Retrofit/Environmental Improvement program taught landscape contractors best management practices to protect water quality on private properties in the Lake Tahoe area.

**Results**

Low Water Use Alternative Crops program and curriculum helped agricultural professionals work more effectively with producers in western arid states to select alternative crops. In 2012, this program was featured at the regional WSARE forum in New Mexico. In 2012, 398 BMP Site Evaluations were performed on private properties, and 551 Certificates of BMP Completion were awarded by Tahoe Regional Planning Authority.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
131	Alternative Uses of Land
132	Weather and Climate
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205	Plant Management Systems
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**V(H). Planned Program (External Factors)**

**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Grant funding available)

**Brief Explanation**

The potential for the listing of sage-grouse as threatened or endangered indicates shifting public policies and competing public priorities. Compliance with the Clean Water Act requires the education of property owners, land managers, and landscape industry

professionals.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

UNCE faculty evaluate the outcomes and impacts of programs largely through participant/stakeholder self evaluations. Evaluations of selected Climate Change and Natural Resources programs in 2012 include Low Water Use Alternative Crops and BMP Retrofit/ Environmental Improvement program. Evaluations comprise self-administered questionnaires involving pre-tests and post-tests administered immediately following the educational intervention. Six month follow-up surveys and interviews are also used frequently.

### **Key Items of Evaluation**

Low Water Use Alternative Cropsworkshops and curriculum helped agricultural professionals work more effectively with producers in western arid states to select alternative crops. Of those responding to a six month follow-up evaluation (n=23), 43% have introduced workshop curriculum and other SARE resources into producer programming; 39% have worked one-on-one with producers to evaluate the economic feasibility of alternative low water use crops on their farm/ranch; 35% assisted agricultural producers in implementing low water use crops on their farm/ranch; 35% assisted producers with the measurement of changes in water use and resulting environmental improvements such as water and soil quality; 35% assisted producers with the measurement of changes in profitability and economic sustainability of alternative crop use; and 82% have incorporated some of the material presented in the workshop into their operation/job.

As a result of the BMP Retrofit/ Environmental Improvement program and efforts of BMP Retrofit partners in 2012, 398 BMP Site Evaluations were performed on private properties, and 551 Certificates of BMP Completion were awarded by Tahoe Regional Planning Authority (TRPA). Since UNCE formed the BMP Retrofit partnership in 2000, TRPA has issued 15,803 Certificates of BMP Completion. This is a desired mid-term outcome, showing behavioral change, because every property that earns a Certificate of Completion must have BMPs implemented correctly.