V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Climate Change - Water Quality & Quantity

☑ 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	10%		10%	
111	Conservation and Efficient Use of Water	20%		20%	
112	Watershed Protection and Management	40%		40%	
133	Pollution Prevention and Mitigation	20%		20%	
605	Natural Resource and Environmental Economics	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	4.0	0.0
Actual Paid Professional	10.6	0.0	3.0	0.0
Actual Volunteer	822.0	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**
188385	0	225494	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
953146	0	835184	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
105132	0	263915	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Work with municipalities to help them meet their regulatory responsibilities on stormwater management and watershed restoration
- Perform experiments to investigate what the current nutrient loads are in NJ water
- Determine the best methodologies for developing Total Maximum Daily Load (TMDL) values for NJ waterways
- Examine the effectiveness of alternative onsite wastewater treatment systems
- Provide scientifically sound advice to state regulatory bodies on water quality issues
- Math modeling of contamination transport in surface and groundwaters
- Create a program comprising of faculty, staff, volunteers, industry partners and government officials

2. Brief description of the target audience

- Municipalities
- State Department of Environmental Protection
- Staff and students who gain valuable scientific experience
- Industry partners who learn ways to meet water quality standards
- Communities who learn watershed restoration methods
- NJAES Faculty and Staff involved in water research/outreach
- School age youth
- Residents

3. How was eXtension used?

Rutgers Cooperative Extension faculty utilized .the eXtension water conservation CoP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	19993	8940	1200	3371

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	20	20

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- A variety of strategies will be implemented to reach target audiences. This will include and not be limited to workshops, field visits, classes, newsletters, media releases, electronic communications,and publications.In addition a trained volunteer teaching base will be developed. Quantitative reports of participation will be collected.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Short term - Knowledge of nutrient loads in various NJ waterways. Find the best methodologies for determining TDMLs
2	Medium term - To identify representative pollutants and aquifer systems in New Jersey. To develop equilibrium isotherms to quantify the adsorption/desorption kinetics for the pollutant/soil/water systems. To develop breakthrough and leaching data for the pollutant/soil/water systems.
3	Long Term - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.
4	Long Term - Water Chestnut Extension Program - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.
5	Long Term - Water Quality in Nursery Production - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.
6	Long Term - Community Based Stormwater Education, Detention Basin Management, Maintenance and Watershed Restoration for Health Ecosystems - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.
7	Long Term - Green Infrastructure for Municipal Officials - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.
8	Long Term - Stormwater Management in Your Backyard: ?Build a Rain Barrel? Workshops - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

Outcome #1

1. **Outcome Measures**

Short term - Knowledge of nutrient loads in various NJ waterways. Find the best methodologies for determining TDMLs

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Medium term - To identify representative pollutants and aquifer systems in New Jersey. To develop equilibrium isotherms to quantify the adsorption/desorption kinetics for the pollutant/soil/water systems. To develop breakthrough and leaching data for the pollutant/soil/water systems.

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Sustainable Residential Landscapes in Salem and Cumberland Counties

Local landscapes include a mix of agricultural, urban, and suburban land uses. Therefore, a diversity of water users and a variety of non-point source pollutants to local waters. Several lakes and streams in the area have been designated as impacted by state regulators, and two watersheds are considered priority watersheds for restoration by the state of New Jersey. Addressing these concerns necessitates education of clientele groups not traditionally possessing a high degree of expertise in land management including homeowners and municipalities. Conserving potable water and preventing water pollution are essential to preserving agricultural productivity, and hence food security, as well as preserving water resources for drinking water, business use, recreation, and wildlife.

What has been done
In 2013 the Salem and Cumberland Counties Environmental and Resource Management Agents held three short workshops covering the topics of environmentally-friendly lawn care, soil quality

and runoff, and pond maintenance for a healthy environment. A formal presentation on environmentally-friendly lawn care was delivered in a workshop hosted by the Upper Deerfield Environmental Commission. Informal discussions were made to the Cohansey Area Watershed Association and additional outreach efforts included newsletter articles, blog posts, and poster displays at local county fairs.

Results
In 2013, fifty people attended the sustainable residential workshops. Program evaluations from these workshops indicated a knowledge gain from participants, for example with self-reported understanding of topics from the soil quality and runoff class increasing from an overall average of 3.2 out of 5.0 to 4.4 out of 5.0. Likewise, self-reported knowledge in the pond maintenance class increasing from an overall average of 3.5 to 4.7. Changes in behaviors are reported as well. In the soil quality in runoff class, 100% of participants said they would test their soil and improve their soils for environmental quality, and 80% said they would use what they learned to educate others. The work with the local watershed association is expected to have lasting results. Board members were educated on water pollution issues specific to their watershed. This science-based education is critical for the capacity-building of groups such as these that conduct wide-ranging education and outreach activities in the watershed, and ultimately reach a variety of members of the community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Long Term - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Earth-wise Lawn and Landscape Care

Unnecessary or excessive inputs to landscapes such as pesticides, fertilizers, or water use, and irrigation applications will have a negative impact on the environment.

What has been done
Middlesex County Agricultural Agent developed a three hour comprehensive class, which covers the proper selection and care of landscape plants in order to keep plants healthy and reduce the need for unnecessary pesticide, fertilizer and irrigation applications. The presentation references current research on the selection, care and maintenance of landscape plants and covers applied, renovation and pruning techniques that can help to maintain plant vigor. The presentation provides details on how to replace the majority of pesticide use with proven best management practices and biological or alternative control methods for insects, disease and weed pests. The presentation and interactive discussion with students ends with a commitment from students to make behavioral changes to enhance their stewardship and protection of the environment.

Results
A total of 280 students received training in 12 classes throughout the state in 2013. Surveys indicate a total of 70 acres of lawns and landscapes were managed by students in the program. 75% of total students of the Nitrogen Fertilizer Reduction session committed to recycling grass clippings back to 70 acres. This would reduce the need for 1 pound of fertilizer application per lawn or 1 pound of actual nitrogen per 1,000 square feet for a reduction of 2,200 pounds of Nitrogen total. Based on the energy needed to produce Nitrogen fertilizer per pounds, this results in a savings of 75 million BTU's of energy or a reduction of equivalent #2 fuel oil diesel equivalent of 520 gallons. 75% of students reported that they would now irrigate in early morning and only as needed for a reduction on 1 acre inch of water per week on 70 acres. If we estimate one less irrigation per week at 1 inch per acre during the months of July and August then we could reduce 2 ½ million gallons per irrigation or over 20 million gallons for 8 applications during July and August. 80% of participants in the Solid Waste Reduction session committed to recycling grass clippings on 70 acres of lawn and landscape. Based on an average of 75 lbs of grass clippings generated by an average 5,000 square feet lawn, participants will reduce 40,000 pounds of grass clippings or 20 tons. This could result in a savings in landfill tipping fees of over $2,500.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Long Term - Water Chestnut Extension Program - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Water Chestnut Extension Program

Water chestnut is a highly aggressive aquatic invasive species that is causing a loss of income, recreation and real estate value to stakeholders in the Lake Musconetcong area. The Lake Musconetcong Regional Planning Board estimates the impacts from Water chestnut at $2.5 million dollars.

What has been done
The Water chestnut program has two distinct components: a Volunteer Hand Pulling Program and a Seed Research Component. The Hand Pulling was developed upon request by the Lake Musconetcong Board and the Hopatcong State Park to assist with the planning and coordination in order to increase the efficacy of the hand pulling operations. The Research component was a response to the Lake Musconetcong Regional Planning Board?s multi-pronged effort to control water chestnut; including mechanical harvesting, herbicide application and hand pulls. A Fact Sheet was developed; assistance in volunteer coordination was achieved with the Americorps Ambassador Program; greater planning was involved utilizing the Fact Sheet; and a target area was determined that complimented both the mechanical and herbicide treatments while allowing for a discrete section to be pulled that would leave both the volunteers and the residents with a sense of accomplishment after the Hand Pull.

Results
The Water chestnut program has two distinct components: a Volunteer Hand Pulling Program and a Seed Research Component. The Hand Pulling was developed upon request by the Lake Musconetcong Board and the Hopatcong State Park to assist with the planning and coordination

in order to increase the efficacy of the hand pulling operations. The Research component was a response to the Lake Musconetcong Regional Planning Board?s multi-pronged effort to control water chestnut; including mechanical harvesting, herbicide application and hand pulls. A Fact Sheet was developed; assistance in volunteer coordination was achieved with the Americorps Ambassador Program; greater planning was involved utilizing the Fact Sheet; and a target area was determined that complimented both the mechanical and herbicide treatments while allowing for a discrete section to be pulled that would leave both the volunteers and the residents with a sense of accomplishment after the Hand Pull.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

Long Term - Water Quality in Nursery Production - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the USDA 2007 Agricultural Census, there were 183 nurseries located in Cumberland & Salem Counties. Cumberland County's 135 nurseries alone was the largest number of nurseries for any county in New Jersey and was the fifth largest acreage in the United States. Because of the diversity of plant material and various systems of production, growers constantly search for innovative methods of optimizing their production systems in a way that

maximizes output while minimizing environmental impact. Many nursery locations in both Cumberland and Salem Counties have nearby surface water areas. Protection of those areas is very important since nurseries require high quality quantities of water for production.

What has been done
A ?Topics in Nursery Production? educational meeting was held in 2013 focusing on water quality issues, presented by County Agricultural Agent, County Environmental Agent, Extension Specialist, NJAES Researchers and a local grower. The presentations included an introduction on water resources, an overview of remediation program support, information on water treatment, a discussion on engineering solutions, water quality enhancement practices, and a discussion on reducing the incidence of Phytophthora.

Results
As an outcome of the project, the grower who took the lead in requesting the project has now installed a tailwater recovery system that captures, with the exception of some storm water, 100% of the water moving across the nursery. That water is also recycled, reducing the need for groundwater removal by about 40%. Another nursery is completing a major project to recapture 100% of the excess irrigation water and recycle it, thereby reducing groundwater withdrawal needs by about 50%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #6

1. Outcome Measures

Long Term - Community Based Stormwater Education, Detention Basin Management, Maintenance and Watershed Restoration for Health Ecosystems - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community Based Stormwater Education, Detention Basin Management, Maintenance and Watershed Restoration for Health Ecosystems

Due to the dense population and intense development within New Jersey, stakeholders face many problems with water quantity and quality issues as well as groundwater recharge.

What has been done
Community Based Stormwater Education and Outreach Program: Camden County Environment Resource Agent increased community outreach through training and joint efforts with Master Gardeners, Cooperative Extension 4-H volunteers, AmeriCorps Watershed Ambassadors and AmeriCorps Transitional Education and Employment Management Gateway Volunteers. Focusing on water reuse through rainwater harvesting, conducted 8 workshops, training 191 participants while constructing 180 rain barrels, conducted training on community bio retention projects, including rain gardens and native plant naturalization projects, 2 community rain gardens were installed. This combined rain garden area was calculated at intercepting, treating and infiltrating 102,000 gallons per year of rain water before it becomes runoff, recharging the groundwater supply and preventing polluted runoff. These five rain gardens will remove an average of 24.7 pounds of total suspended sediment (TSS), 0.26 pounds of phosphorous (TP), and 2.72 pounds of total nitrogen (TN) from the stormwater. Detention Basin Management, Maintenance and Enhancement Program: Educational programs regarding effective management, maintenance and enhancement programs of storm water basins in New Jersey were implemented, by modifying the basin allowing water to spread beyond the typical concrete low flow channel and planting deep-rooted herbaceous vegetation. Deep roots improve infiltration and filtration (pollutant removal) of stormwater runoff. In addition, such vegetation reduces mowing frequency to once per year. Finally, this vegetation provides habitat for desirable wildlife species and provides ecological benefits. To date four genera and six species of native pollinators have been identified foraging in the study area. Watershed Restoration for Healthy Ecosystems: Focuses on the basics of stream, lake and pond maintenance and repair with the emphasis on conditions encountered in the urban environment responding to upstream changes in hydrology, sediment, and pollutant transport.

Results
To date, of the survey responders, 82% have installed their rain barrels at home and 24 % have installed additional barrels; 94% reported no difficulty installing the rain barrel; 19% have implemented additional stormwater runoff conservation practices; and 59% have adopted additional water conservation mechanisms following the training. Input will also be used to structure future workshops. Detention Basin Management, Maintenance and Enhancement Program: Cherry Hill Public Works supervisor estimates that the five basins that have been naturalized in his area, has reduced maintenance costs by $20,000 annually. Based on the success of reduce maintenance within the stormwater basins, the DPW has started implementing "no-mow" zones on other Township properties. Watershed Restoration for Healthy Ecosystems: Use of the installed aeration system at Hopkins Pond, severely reduce the occurrence of

cyanobacteria blooms during the first summer of operation. Oxygen levels were within 0.25ppm from surface to bottom (14 feet deep), demonstrating that the system is circulating water properly. There was no fish kill during 2013 as occurred in previous years. This work received two awards for the project at Hopkins Pond: the NJ American Water Resources Association ?Excellence in Water Resources Protection and Planning Award?, and the ?Environmental Achievement Award? from the NJ Association of Environmental Commissions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #7

1. Outcome Measures

Long Term - Green Infrastructure for Municipal Officials - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Green Infrastructure for Municipal Officials

Many of New Jersey?s municipalities are highly urbanized with numerous stormwater and combined sewer issues. During wet weather, the system can become overwhelmed and the combined sewage and stormwater is often discharged untreated to a local waterbody. This event is called a combined sewer overflow and poses a risk to both human health and to the water quality of the receiving waterway.

What has been done

Green infrastructure is an approach to wet weather management that infiltrates, evapotranspires, captures and reuses stormwater to maintain or restore natural hydrologies within a watershed (www.epa.gov/greeninfrastructure). An Introduction to Green Infrastructure Practices fact sheet: was written to introduce the topic of green infrastructure to the general public. Stormwater Management Techniques for Runoff Reduction: 2-hour seminars with demonstrations of permeable pavement and rain gardens were presented to municipal engineers, officials, and other interested parties. Over 80 municipal, county, and state representatives attended this event. This program helped to establish a baseline for evaluating green infrastructure needs in New Jersey. Stormwater experts from the US EPA presented research and lessons learned from installation of green infrastructure stormwater management practices. New Jersey Green Infrastructure Survey: was sent to every municipality in New Jersey in order to create a baseline for what types of green infrastructure projects are in the ground and where they are being installed. Someone from 22% of New Jersey?s 565 towns responded and of those, 70% already had at least one green infrastructure installation in their town. New Jersey Green Infrastructure Forum: an 8-hour event brought together municipal, county, and government officials to discuss the state of green infrastructure in the state. There was time for discussion and next steps for how municipalities can implement green infrastructure in their towns.

Results

Surveys given to green infrastructure workshop attendees as an online follow-up (n = 51) showed that 83% of respondents would like to have more green infrastructure stormwater management practices installed in their town/county and 72% already had at least one installation in their area. Lack of funding (69%) and lack of education (76%) were the primary reasons that more systems had not been installed. These findings have led to changes in the program to include cost analyses, presentation of available state funding sources, and increased educational efforts.77% of participants responded that installation demonstrations would also be helpful. The City of Newark has installed a new 700 sq. ft. permeable pavement sidewalk installation (Goodwin Ave.). This installation will be able to intercept and infiltrate up to 7,800 gallons of runoff per storm event. The East Orange VA Hospital installed a new 1440 sq. ft. permeable pavement sidewalk installation. This installation will be able to intercept and infiltrate up to 16,150 gallons of runoff per storm event. Passaic County recently committed to a Green Streets Initiative that includes permeable pavement and is in the beginning stages of designing permeable pavement systems for 2 locations in Paterson.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

Long Term - Stormwater Management in Your Backyard: ?Build a Rain Barrel? Workshops - A safe and secure water supply for all communities and industries in the state. An effective and efficient nutrient-trading program that meets the needs of industry and meets the standards set by the state regulatory bodies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Stormwater Management in Your Backyard: ?Build a Rain Barrel? Workshops

As stormwater runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that can adversely affect water quality if the runoff is untreated.

What has been done
?Build a Rain Barrel? workshops, offered as part of the Stormwater Management in Your Backyard program, provide information on rain barrel construction and maintenance and include a hands-on training where attendees build a rain barrel for installation at their home or business. Between January 2013 and December 2013, twelve (12) ?Build a Rain Barrel? workshops were held with 394 people in attendance.

Results
394 rain barrels were built and installed, capturing approximately 1,379,000 gallons of stormwater annually.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

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.)

Brief Explanation

External factors did not affect outcomes.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

NJAES research and extension outcomes related to this planned program were evaluated utilizing a variety of evaluation methods appropriate for each initiative to determine effectiveness on both a qualitative and quantitative level. For KASA and practice change we included the measurement of knowledge gained as measured by pre/post Likert-scale assessments. Surveys were used to measure increase in skills acquired, behavior change and practice adoption. For process evaluation we focused on program delivery, participation, relevance and timeliness. Data was collected at appropriate times for each initiative that supports this planned program. IRB approved evaluation instruments were used to collect research and extension data. Data analyses and comparisons relevant to basic and applied research and demonstration were collected and analyzed and reported utilizing a variety of data collection methods appropriate to each research question.

The major goal of evaluating is the demonstration of social, economic, behavior and environmental changes in conditions that contribute to improved quality of life as a result of participation in programs and benefits of research solutions. See state defined outcomes for detailed results of each initiative.

Key Items of Evaluation

None to report