

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Climate Change: Water Quality Program

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 |
|---------|---|-----------------|-----------------|----------------|----------------|
| 101 | Appraisal of Soil Resources | 10% | | | |
| 104 | Protect Soil from Harmful Effects of Natural Elements | 10% | | | |
| 111 | Conservation and Efficient Use of Water | 10% | | | |
| 112 | Watershed Protection and Management | 10% | | | |
| 133 | Pollution Prevention and Mitigation | 60% | | | |
| | Total | 100% | | | |

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

| Year: 2014 | Extension | | Research | |
|-------------------------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 1.9 | 0.0 | 0.0 | 0.0 |
| Actual Paid | 1.9 | 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 |
| 105000 | 0 | 0 | 0 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 50000 | 0 | 0 | 0 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 0 | 0 | 0 | 0 |

V(D). Planned Program (Activity)

1. Brief description of the Activity

Trained local government agency personnel, maintenance professionals, community group and non-governmental organization representatives, and volunteers to deliver information on water quality protection to their respective audiences and the general public utilizing the V.I. Home & Farm Water Quality Assessment (VI*A*Syst) program.

Developed and disseminated locally-oriented outreach materials related to water conservation, drinking water protection, wastewater disposal and best management practices for pollution prevention for delivery through the VI*A*Syst program, with particular emphasis on materials targeted towards youth and under-served audiences.

Educated homeowners and renters about residential environmental management including use of least-toxic household products and non-point source pollution control to protect aquatic ecosystems utilizing VI*A*Syst materials.

Developed publications, workshops, and presentations that relay information on the issues of watershed protection, non-point source pollution control, drinking water protection, and wastewater disposal and best management practices to reduce impacts to the general public.

Utilized the media to promote Water Quality programs through various methods, including, but not limited to, television video spots, local talk shows (radio & TV), and videotapes of workshops, presentations, and symposia.

Identified and developed technical materials related to water conservation, drinking water protection, watershed planning, and non-point source pollution control practices and systems for use by policymakers and regulatory personnel, and disseminated information related to these topics.

Provided technical assistance on a variety of topics, including but not limited to, erosion, sediment, and stormwater control; xeriscaping - incorporating native, drought-tolerant plants into the landscape; watershed planning; water quality assessment; drinking water protection; and environmental assessment, to government agencies, community groups, various areas of the private sector, and the general public.

Utilized GIS technology to investigate the effects or potential impacts of land-based activities on water quality and marine resources.

2. Brief description of the target audience

Policy-makers and regulatory personnel, community groups, teachers and students, business community, non-governmental organizations, and the general public.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

| 2014 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| Actual | 600 | 2300 | 280 | 550 |

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

| 2014 | Extension | Research | Total |
|---------------|-----------|----------|-------|
| Actual | 0 | 0 | 0 |

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Education/Classes/Training in water quality protection and VI * A * Syst Program

| Year | Actual |
|------|--------|
| 2014 | 8 |

Output #2

Output Measure

- Workshops / Presentations about water quality protection, less toxic household products and NPS BMP's through the VI * A * Syst Program, on-site wastewater treatment, cistern care, and watershed protection.

| Year | Actual |
|------|--------|
| 2014 | 10 |

Output #3

Output Measure

- One-on-one consultations with residents, government employees, students

| Year | Actual |
|-------------|---------------|
| 2014 | 160 |

Output #4

Output Measure

- Tours of VI natural areas with students, community groups and others to raise awareness about watersheds and water quality protection.

| Year | Actual |
|-------------|---------------|
| 2014 | 8 |

Output #5

Output Measure

- Educational/research publications, articles, posters, newsletters, GIS maps related to non-point source pollution, on-site wastewater treatment, watersheds, VI * A * Syst, and protection of VI native plant communities.

| Year | Actual |
|-------------|---------------|
| 2014 | 8 |

Output #6

Output Measure

- Fairs

| Year | Actual |
|-------------|---------------|
| 2014 | 8 |

Output #7

Output Measure

- TV/Media

| Year | Actual |
|-------------|---------------|
| 2014 | 7 |

Output #8

Output Measure

- PSA's

| Year | Actual |
|-------------|---------------|
| 2014 | 0 |

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|--------|---|
| 1 | Awareness of the health risks associated with water quality impairment and water and wastewater treatment systems will increase, and one hundred fifty (150) homeowners will learn how various household substances (i.e. Fat/Oil/Grease & Pharmaceuticals and Personal Care Products, etc.) can potentially negatively affect onsite wastewater treatment systems (OWTS), water resources, marine life and human health. |
| 2 | Thirty five (35) VI OWTS designers, wastewater practitioners and regulatory personnel will learn about OWTS designs and management practices recommended in CES training classes. |
| 3 | Requests for site visits and VI*A*SYST assessments and presentations will increase. 75 clients or more will each adopt at least one VI*A*SYST recommended practice such as the use of non-toxic household products, etc. |
| 4 | Fifty (50) homeowners will improve cistern water quality by following CES recommendations. |
| 5 | Over 250 VI youth will become aware of the vital connections between human activities and water quality, how land-based activities affect coastal water quality, and why watershed protection is important to them and their well-being. Youth and volunteer involvement in water quality protection and resource conservation will increase. |

Outcome #1

1. Outcome Measures

Awareness of the health risks associated with water quality impairment and water and wastewater treatment systems will increase, and one hundred fifty (150) homeowners will learn how various household substances (i.e. Fat/Oil/Grease & Pharmaceuticals and Personal Care Products, etc.) can potentially negatively affect onsite wastewater treatment systems (OWTS), water resources, marine life and human health.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|-------------|---------------|
| 2014 | 39 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nutrication and contamination of surface, groundwater and coastal waters from leaking septic systems is considered to be a major problem in the VI. Nonpoint Source Pollution from defective septic systems impacts human health and marine resources.

What has been done

During site visits, CES provided a property owner with information about septic system construction including the VI Environmental Protection Handbook and recommendations from the Onsite Wastewater Treatment System (OWTS) Training Program conducted in the Virgin Islands 2009-2012 by specialists from the University of Rhode Island OWTS Demonstration Center in partnership with UVI-CES.

Results

A St. Thomas property owner incorporated CES recommendations in the design and construction of a home septic system.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|-------------------------------------|
| 133 | Pollution Prevention and Mitigation |

Outcome #2

1. Outcome Measures

Thirty five (35) VI OWTS designers, wastewater practitioners and regulatory personnel will learn about OWTS designs and management practices recommended in CES training classes.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|-------------|---------------|
| 2014 | 71 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

To protect the V.I. environment, prevent economic loss and comply with governmental regulations, CES clients (resource managers, Public Works personnel, businesses, developers, environmental groups, property owners, etc.) need technical assistance with xeriscaping, stormwater erosion and sediment control.

What has been done

During site visits and phone consultations, CES provided property owners, engineers, resource managers and landscape architects with information about control practices that mitigate soil erosion and sediment runoff, plant selections for xeriscaping and environmental landscaping. CES provided information about drought and salt tolerant native plants to engineers, architects and developers installing landscapes on <3 acre hillside properties.

Results

A St. Thomas engineer incorporated CES' recommendations into a project plan involving the installation of solar panels on a 25-acre, forested hillside property. Magens Bay Authority implemented stormwater runoff controls recommended by CES at a coastal VI Territorial Park on St. Thomas. Property owners followed recommendations regarding specific plants to incorporate into "environmental landscapes" that preserve natural habitats. CES participation in the V.I. Dept. of Agriculture Forest Stewardship and Forest Legacy programs contributed to the preservation of large areas of native forest in targeted watersheds.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|-----------------------|
|----------------|-----------------------|

104 Protect Soil from Harmful Effects of Natural Elements

Outcome #3

1. Outcome Measures

Requests for site visits and VI*A*SYST assessments and presentations will increase. 75 clients or more will each adopt at least one VI*A*SYST recommended practice such as the use of non-toxic household products, etc.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2014 | 88 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Custodial professionals, business owners, school students, the general public and the natural environment can be exposed to negative effects caused by the use of toxic household products. Many residents rely on maintaining healthy cistern catchments for their water supplies.

What has been done

CES promoted the use of non (or less)-toxic household products through VI*A*SYST program presentations to individuals, schools, churches, scouts, businesses, housekeeping staff, government agencies, environmental groups, etc. CES constantly updates this information through various sources (webinars, etc.) CES also distributes publications (i.e. Help Yourself to a Healthy Caribbean Home, Recipes for a Non-toxic Household) and also promotes cistern care during presentations and consultations.

Results

Based on responses from the general public, VI*A*SYST program presentations continue to be very popular with all segments of the VI community resulting in many requests for additional presentations and updates about new products. After attending these presentations or viewing CES TV interviews about VI*A*SYST, many individuals indicated that they would stop using toxic household products. Several attendees have referred others to CES for VI*A*SYST information. CES clients indicate that they are following CES' instruction about the importance of reading product labels, as well as purchasing more non-toxic products. Clients also notify CES when these products have run out of stock in various local stores.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|---|
| 111 | Conservation and Efficient Use of Water |
| 133 | Pollution Prevention and Mitigation |

Outcome #4

1. Outcome Measures

Fifty (50) homeowners will improve cistern water quality by following CES recommendations.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Over 250 VI youth will become aware of the vital connections between human activities and water quality, how land-based activities affect coastal water quality, and why watershed protection is important to them and their well-being. Youth and volunteer involvement in water quality protection and resource conservation will increase.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2014 | 1275 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

VI youth and their instructors need basic scientific information about the unique connections between land and sea and how human activities affect water quality. With the rapid urbanization in the VI, the youthful population will be the most affected by land-use impacts degrading water quality.

What has been done

CES provided graduate students in marine and environmental management programs with technical assistance and information relating to research projects. Publications co-authored or co-

researched by CES continue to be used for instruction by educators and librarians. CES made presentations to students and designed educational displays that focused on land-sea connections.

Results

UVI's Marine and Environmental Management Program and Yale's Coastal and Watershed Management Program graduate students continue to utilize information provided by CES in watershed research projects on St. Thomas, focusing on water quality monitoring in impacted St. Thomas guts and watershed analysis pertaining to the effects of watershed activities on near shore resources, mainly coral reefs. Librarians in various VI schools continue to introduce CES publications focusing on critical marine and terrestrial interconnections to students and teachers.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|---|
| 111 | Conservation and Efficient Use of Water |
| 112 | Watershed Protection and Management |

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Government Regulations

Brief Explanation

Turnover is high in some VI Government agencies, mainly due to political elections and recent fiscal constraints at the governmental level. It is difficult to establish very effective long-term relationships that can result in policy changes or effective training. Employees in these agencies acknowledge the need for more comprehensive enforcement of environmental laws, but they are overextended and need additional staff support to effectively enforce existing regulations. They also acknowledge the need to produce new regulations regarding the onsite wastewater system installation and protection of various native forest communities in watersheds. Political pressures can impede enforcement and the development of new regulatory policies. However, CES maintains some long-term partnerships with individuals in VI environmental regulatory agencies resulting in client referrals and shared resource management initiatives. CES continues its productive association with the local EPA office.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

CES communicated closely with VI governmental partners, NGOs, environmental groups and the business community. These clients responded favorably to the informal, mostly verbal, evaluation methods used by CES during all stages of program implementation. Post workshop evaluations were distributed, and evaluations were favorable. Research project reports and publications are peer-reviewed.

Key Items of Evaluation

All key items of evaluation were used.