

COASTAL WACCAMAW STORMWATER EDUCATION CONSORTIUM: A REGIONAL COLLABORATION OF STORMWATER EDUCATION FOR COASTAL COMMUNITIES

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Keywords: stormwater, coastal, education, consortium, regional, NPDES, collaboration

INTRODUCTON AND BACKGROUND

In 2005, the Coastal Waccamaw Stormwater Education Consortium (CWSEC) began to offer communities in northeastern South Carolina a watershed approach to educating citizens about stormwater. The Consortium seeks to develop and implement effective, results-oriented stormwater education and outreach programs to meet federal requirements and satisfy local environmental and economic needs. Six regional agencies jointly serve as core education providers for six coastal municipalities.

The idea for CWSEC began in May 2004 when individuals representing two universities, a regional National Estuarine Research Reserve and a RiverkeeperTM program discussed the need for coordination of stormwater and watershed education efforts. These service providers agreed to convene a small group of decision makers from local SMS4 (Small Municipal Separate Storm Sewer System) communities to assess their need for watershed-related educational services and to evaluate the utility of a regional approach to stormwater education. Much of the urgency to form the Consortium was related to meeting new Clean Water Act requirements associated with the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program.

The education service providers of the CWSEC hosted an inaugural meeting in June 2004. Attending were six of the eight SMS4s located within our mission area, collectively known as the Myrtle Beach Urbanized Area. The participants unanimously endorsed a coordinated approach to regional stormwater education while quickly realizing the need for a broader range of stakeholders, such as representatives from environmental non-profit organizations, other citizen groups and state agencies, in order to make CWSEC a truly regional effort. During fall 2004, a formal needs assessment for the local SMS4s was conducted via an on-line survey. The survey results were used to generate a prioritized list of target audiences, priority pollutants and summaries of existing educational capabilities and available infrastructure. Following the needs assessment, a Regional Stormwater Education Strategy and a Phased Education Work Plan were finalized and a Consortium website (http://www.northinlet.sc.edu/training/stormwater_education/index.htm) was established. During the next few months, a resolution in support of a collaborative approach to regional stormwater education was developed, additional core education providers were

engaged, and an Environmental Educator position was established with partial funding provided by the SMS4 communities.

On June 1, 2005, CWSEC held a meeting and press conference featuring the public signing of a Resolution in Support of Regional Collaboration. Stormwater managers and public officials from each of the participating SMS4 communities (City of Conway, City of Myrtle Beach, City of North Myrtle Beach, Georgetown County, Horry County, and Town of Surfside Beach) were present to endorse the Resolution and to formally establish the Consortium. The Consortium's first staff member, Karen Fuss, began work as Environmental Educator in October 2005. Due to increased activities throughout the first year, Karen was appointed CWSEC Coordinator in June 2006.

The six regional agencies that jointly serve as core education providers to the member SMS4s include: Clemson University and their Carolina Clear Program; Coastal Carolina University's Waccamaw Watershed Academy; Murrells Inlet 2007; North Inlet-Winyah Bay National Estuarine Research Reserve Coastal Training Program and Community Education Program; South Carolina Sea Grant Consortium's Extension Program; and the Winyah Rivers Foundation's Waccamaw Riverkeeper™ Program. The specific contributions of each core education provider are described in Table 1. The organization structure of CWSEC is designed to result in synergies among the educational providers, with the overall educational outcome being greater than would be achieved if each provider worked separately.

Provider	Programs	Services/Foci
Clemson University	Carolina Clear Program	Public Service Announcements via newspapers, radio and Coastal Water Ways Newsletter
		Bioretention/rain garden workshops and demonstration installations
Coastal Carolina University	Waccamaw Watershed Academy	Volunteer water quality monitoring
		Development of watershed management plans
		K-12 student and public watershed education via in-class and field workshops
Murrells Inlet 2007	K-5 environmental education programs	In-class and in-field water quality and recycling programs
North Inlet-Winyah Bay National Estuarine Research Reserve	Coastal Training Program	CWSEC website
		Science-based, technical training workshops
	Community Education Program	Stormwater education and outreach programs including educational materials for public use Classroom and field experiences focusing on watershed concepts
SC Sea Grant Consortium Extension Program	Nonpoint Education for Municipal Officials (NEMO)	Stormwater education for elected and appointed officials
	Public Education	Workshops on land use and best management practices
Waccamaw Riverkeeper™ of Winyah Rivers Foundation	Public Education	Community workshops and presentations for local organizations and festivals

Table 1 Summary of Education Service Providers

GOALS AND OBJECTIVES

The Consortium's goals for stormwater education include the following: (1) maximize efficiency of stormwater education efforts by fostering collaborations among local stormwater educators; (2) promote a watershed-based approach to stormwater management; (3) ensure that a unified stormwater educational message is disseminated through the region; (4) help local SMS4s meet NPDES Phase II Stormwater Program permit requirements for public stormwater education, public involvement, and illicit discharge detection; and (5) serve as a model for collaborative stormwater education.

ACTIVITIES AND ACCOMPLISHMENTS

During the first year of the Consortium, the primary focus was delivery of customized stormwater education workshops to elected and appointed governmental officials and their staff. These workshops were modeled after the National Sea Grant Consortium's Nonpoint Education for Municipal Officials (NEMO) presentations, with special focus on stormwater issues unique to each community. Topics covered during the workshops include: (1) watershed and nonpoint source pollution concepts; (2) an overview of the NPDES Phase II Stormwater Program; (3) the communities' progress with their stormwater management plans; (4) hands-on mapping activities; (5) stormwater management options at the regional, neighborhood and site scales featuring low impact development, better site design, buffers and other stormwater best management practices (BMPs); and (6) the need for coordinating water quality monitoring on a watershed scale. Some seminars include site visits to demonstrate local examples of issues and the use of stormwater BMPs. Some conclude with a consensus-building activity in which the participants prioritize steps for implementing their stormwater management plans. In the City of Conway, these workshops have been tailored to support the development of a watershed management plan. US EPA is funding this planning activity as a pilot program to build regional capacity for watershed management in northeastern South Carolina. All workshops close with a written assessment providing constructive input from the participants for future programming. A customized web page linked to the CWSEC website, featuring the event agenda, presentations, and a suite of references and planning tools is then created for the community.

The workshops for the elected and appointed governmental officials and related staff have also been adapted for the general public, most often home/property owner associations. These presentations also use a watershed approach to focus on the specific issues and concerns of the neighborhood, while providing individual homeowner advice to improve their stormwater problems and suggestions for community projects. Requests for these programs have increased significantly during CWSEC's second year as the local citizens of northeastern coastal South Carolina have become more interested in stormwater issues.

The general public in this region is hearing and reading about stormwater and nonpoint source pollution through various methods. Under the leadership of Clemson University's Carolina Clear Program, ten radio Public Service Announcements (PSAs) have been developed and broadcast addressing regional stormwater issues, and additional written

PSAs have been published in regional newspapers. Topics range from general water quality, to managing pet waste, to caring for your lawn and garden. These PSAs are available for download at the CWSEC website. The education providers have also developed brochures for public distribution ranging in topic from an explanation of CWSEC's role and activities to ways to protect South Carolina watersheds.

A volunteer water quality monitoring program, which is partly funded by several of the SMS4s, began in the spring of 2006 in conjunction with Coastal Carolina University's state-certified Environmental Quality Laboratory. This monitoring program provides several benefits, such as (1) highly visible public involvement; (2) public access to water quality information through an interactive database (<http://gis.coastal.edu/volunteermonitoring/>); and (3) collecting data to meet the NPDES Phase II Stormwater Program illicit discharge detection requirement. In addition to volunteer water quality monitoring, other public involvement activities have involved local Master Gardener programs such as "Green Solutions to Pollution", an instructional activity that covers homeowner practices for stormwater management and involves a hands-on demonstration of rain garden construction. Local citizens from several SMS4s have also participated in the installation of a rain garden at the Town Hall of Surfside Beach. Another rain garden was installed with the help of students on the Coastal Carolina University campus and now serves as an educational demonstration site. Volunteers are also now serving as phytoplankton monitors under the Southeast Phytoplankton Monitoring program sponsored by NOAA. These volunteers consist of members of the Grand Strand Master Gardener Association and several undergraduate students from Coastal Carolina University.

Students are also among the target audiences for CWSEC, and these include precollege students (Kindergarten through twelfth grade) and college students. CWSEC's educators have been providing field trip and in-class experiences, exposing students to water quality monitoring and nonpoint source pollution information. Hands-on activities are a key component of these student workshops which are held both indoors and out in the field. They typically include mapping activities, use of an Enviroscope™ watershed model to demonstrate effects of various land uses on our waterways, water-quality testing, and the collection and identification of phytoplankton, macroinvertebrate and other aquatic organisms.

Workshops have also been delivered for K-12 teachers. During fall 2006, teachers participated in a one-day South East Portal to Ocean Research for Teachers (SEPORT) workshop, entitled *The Watershed Approach: Your Connection to the Ocean*. This workshop was sponsored by Coastal Carolina University and the Center for Ocean Sciences Education Excellence–SouthEast. Following a successful workshop, Coastal Carolina University was invited to become a permanent SEPORT site and will host a yearly teacher seminar.

Because this region of South Carolina is growing rapidly, new school construction is occurring on a large scale. To address this growth, CWSEC education providers are providing instruction to the Horry County school district construction staff in adoption of

Leadership in Energy and Environmental Design (LEED) Certified Green Building techniques which include stormwater BMPs. Information has also been provided to the school construction staff and architectural design firm on retrofitting stormwater BMPs at schools undergoing remodeling.

Under the leadership of the Coastal Training Program of the North Inlet-Winyah Bay National Estuarine Research Reserve, technical training sessions and workshops have been conducted covering topics such as (1) the use of pervious concrete,(2) constructed wetlands for stormwater treatment, (3) high performance building and low impact development, and (4) neighborhood scale stormwater management. At one event, a technology fair was held to showcase new technologies for stormwater treatment in urbanized settings. Another workshop focused on an installation of pervious concrete at the Georgetown Chamber of Commerce parking lot. These workshops were led by regional and national experts with funding assistance provided by South Carolina's Department of Health and Environmental Control – Ocean and Coastal Resource Management. At the conclusion of each workshop, topic-specific web pages have been constructed and assessments conducted.

Clemson University's Carolina Clear Program has also been instrumental in providing technical training for contractors, engineers and developers. In fall 2006, they hosted a Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) course aimed at certifying contractors, developers, and equipment operators in required soil erosion and sedimentation control activities to be used during construction. Planning is underway for a fall 2007, multi-day Watershed Academy for municipal staff and professionals, such as contractors and engineers, to be sponsored by the Carolina Clear Program and the United States Department of Agriculture Cooperative State Research, Education, and Extension Service.

CONCLUSIONS

CWSEC is working within the Myrtle Beach Urbanized Area to increase the understanding of stormwater issues among a diverse group of stakeholders using a regional, watershed-based educational strategy. In so doing, we are helping our client communities meet their NPDES Phase II Stormwater Program regulatory requirements . The core education service providers of CWSEC hope that their system for a collaborative regional approach to stormwater and watershed education will serve as a useful model for communities across the southeastern United States and beyond.

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