NACo National Association of Counties

The Voice of America's Counties

May 21, 2012

Mr. Eddie Bellamy
120 Shanklin Road
Beaufort, SC 29906-8402

Dear Mr. Eddie Bellamy:

Congratulations! I am pleased to announce that your county has been awarded a 2012 NACo Achievement Award for the program entitled, ***Beaufort County Stormwater (SWU) Runoff Volume Controls***. In this 43rd year of the Achievement Award program, NACo is extremely pleased with the high caliber of county programs and projects. NACo is proud to confer this award and recognize your county's hard work to promote quality, efficient, and responsive management and administration.

NACo greatly appreciates Beaufort County's participation in this year's Achievement Award program. In addition to giving us an opportunity to formally recognize effective and creative programs, this program enhances our awareness of county activities and allows us to share valuable information with other counties across the nation.

As you may know, NACo recognizes award winners in several ways. A list of winning programs will be available via NACo's website at http://www.naco.org. Summaries of award winning programs will also be included in our Model Programs database. In addition, selections of award winning programs will be highlighted in a *County News, Model Programs from the Nation's Counties* column.

We also offer a variety of commemorative items to reward yourself and other employees and to celebrate the county's winning efforts. A website has been created for Achievement Award winners at www.easttowest.com. Please click on the NACo logo for access to the store.

This year, NACo will host the 16th Annual Awards Ceremony during our 2012 Annual Conference in Allegheny County, Pennsylvania. This reception is scheduled for Sunday, July 15, 2012, Noon to 2:00 p.m. in Room 317/318 at the David L. Lawrence Convention Center. During this ceremony, Achievement Award winners will be collectively recognized and there will be an opportunity for photos to be taken with a NACo official. A light lunch will be served. We hope you will be able to attend. Enclosed is your official invitation to the reception. Please RSVP to Vanessa Lester at 202.942.4276 or email at vlester@naco.org by June 22nd, if you plan to attend.

Questions concerning the award program may be directed to Jacqueline Byers at 202.942.4285 or jbyers@naco.org, or Kathryn Murphy at 202.661.8806 or kmurphy@naco.org.

Congratulations on your county's accomplishment!

Sincerely,

Larry Naake

Larry Naake
Executive Director

2012
Achievement Award Winner

This Award is Presented to

Beaufort County, SC

for
its program

Beaufort County Stormwater (SWU) Runoff Volume Controls

in recognition of an effective and innovative program which contributes to and enhances county government in the United States

Lenny Eliason

Lenny Eliason, NACo President

Larry E. Naake

Larry Naake, NACo Executive Director

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NACO Achievement Awards 2012

Beaufort County Stormwater (SWU) Runoff Volume Controls

Award Category – Environmental Protection and Energy

Alternative areas – County Administration and Management

- Information Technology

Eligibility Standards

1. Became operational after January 1, 2007
2. County staff played significant role in developing the controls

Program Criteria

1. **Criteria one – must do one of six things**
   a. New SWU controls offered a new service (web-based, on-lot control program)
   b. Improved cost effectiveness by fitting SWU controls into existing county programs
   c. Enhanced level of citizen awareness and participation through outreach and workshops
2. **Criteria two – must go beyond requirements**
   Stormwater volume controls were not required by any state or federal law or regulations. The program took SWU protections to a higher level of effectiveness than required. Unique and creative approaches were developed for addressing these controls
3. **Criteria three – measurable results**
   SWU controls are now being adopted by other local government bodies and more than 50 homes have developed on-lot controls through the web-based program

Step 1 – Prepare Nomination Summary

Abstract of Program (200 words)

Beaufort County waterways are a precious natural resource that enhance the tourism sector of the economy, are essential to wildlife habitat, environmental quality and the quality of life. They are part of the County's cultural heritage. Fishing, crabbing, shrimping and outdoor recreation are vital to the lifestyle.

During Beaufort County's population boom of the 1990s, the County faced new impairments to its outstanding resource waters. The problem was traced to excess stormwater volume from recent residential and commercial projects developed to meet the demands of so many new residents (40% increase in population). Control of these impacts led to a two step process. First, in 2009, new controls were established for new developments. Then, in 2011, the County adopted controls on vacant lots in already approved and permitted subdivisions and

developments. To meet the on-lot controls, the county created a web-based program that walks homebuilders through a process to control excess runoff on their lots. These controls adopted criteria that were developed for federal building construction. They controlled runoff volume for up to 95 percent of expected rainfall events in a year. These actions catapulted our county into the vanguard of communities that are serious about protecting their natural environment.

The Problem/Need for the Program

Shellfish harvesting is a designated water-use in most of Beaufort County's tidal waters. The bacterial standards for this use are some of the most restrictive anywhere, with requirements ten times more stringent than those governing recreational uses. While the county did not have any legal obligation to take action, the loss of this designated water use in the previously pristine May River lead to a local call to action. Through County leadership, a comprehensive investigation was undertaken that lead to adoption of volume controls, since volume was determined to be a factor in the loss of this water use.

Description of Program

Beaufort County, SC is located between Charleston, SC and Savannah, GA. Due to its prime coastal location, the County has long been an attractive location for resort and other types of development. The County has been challenged by its citizens and leaders to be progressive in coastal resource management. As such, the County has recently incorporated volume control into its stormwater management ordinances. This type of progressive attitude has kept 85% of shellfish (oyster) grounds open to harvesting since water quality controls were first adopted in 1998, despite the County's population increasing by approximately 40 %.

The County has several unique coastal characteristics: 1) 50% of the County consists of open areas and salt marshes; 2) there is little upstream freshwater input; 3) shellfish harvesting and fishing are major economic and recreational activities; and 4) population growth has been rapid in recent decades. The impetus for the County's stormwater regulations came from shellfish bed closures in the mid-1990s. These closures led to heightened public awareness and political will in the County. The first round of controls began in the late 1990s and focused on maintaining water quality through the application of best management practices (BMPs) to clean and slow stormwater runoff.

After another shellfish closure in the May River in 2009, the County investigated possible causes, and the volume of stormwater came under increased scrutiny. Initially it was suspected that fecal coliform was coming from new developments, but monitoring indicated that these discharges were of low concentration. The increased stormwater volume from development projects was implicated in salinity changes, increased discharges into wetlands with increases in fecal coliform at wetland outlets, and impacts to fisheries. With direction from County Council, the County staff developed a volume-based criterion based on a 95th percentile storm event (derived from the federal facilities standard in the 2007 Energy Independence and Security Act). This 95th percentile storm event in Beaufort County amounts to 1.95 inches in 24 hours. In

developing the BMP manual to meet this criterion, it was discovered that the Equivalent Impervious Cover (EIC) concept historically used for water quality control design could be adapted for the new volume control criterion.

In 2009, the County amended its stormwater ordinance to include volume controls, and in 2010, the County updated its BMP Manual. The revised manual details volume reduction and EIC credits for six stormwater practices that infiltrate, evapotranspire, and/or reuse runoff:

1. Rooftop practices (green roofs, evaporative cooling on flat roofs)
2. Pervious pavement
3. Runoff capture and use for irrigation
4. Disconnection of impervious areas
5. Rain gardens and other devices
6. Swales for runoff from highways and roadways

The updated manual outlines EIC credits for various combinations of BMPs, soils, and ponding depth/storage. It also contains a compliance worksheet to calculate EIC resulting from using a combination of practices.

With the adoption of new development controls, there were questions raised about developments that had not been built out but had been approved for permitting before runoff volume controls were imposed. An analysis determined the extent of this un-built universe to be more than 22,000 residential lots of record that could be built without volume controls. More than 15,000 of these vacant lots were in previously approved Subdivisions (SD) and Planned Urban Developments (PUD). This was significant since the built universe of improved single family residential structures in the unincorporated county was 39,000 units. It was determined that the additional stormwater runoff from this permitted future building could make the volume problems much worse and could lead to further water use impairments.

The on-lot ordinance changes require that volume reduction BMPs be developed for individual new homes and that modifications valued at more than 50% of current assessed value be imposed on existing homes. This was only required if the volume of the lot was not being treated by a development plan or other method. This allowed the voluntary option of subdivisions and PUDs to opt for a neighborhood retrofit in lieu of only on-lot controls. These controls were approved by the County Council in June 2011

The ordinance changes also encouraged minimizing impervious surfaces to reduce the size of the BMPs. The actual wording of the key ordinance change is listed below:

Sec. 106-2865 – On-site Single Family Lot, Best Management Practices (BMP)

(a) Where stormwater runoff is not addressed in an approved community runoff volume control system, construction of new or single family homes that are renovated in excess of

50% of their taxable appraised value, will need to employ and utilize on-site stormwater run-off volume control BMPs.

(b) The actual BMPs to be utilized can be either determined from Stormwater Utility's On-lot Volume Program (Attachment in BMP Manual and web-based program) or other volume practices as described in Beaufort County Best Management Practice Manual. Both manual and web-based program will be available on the County's web site.

(c) Required practices will be sized based on impervious surface on the property and can be reduced by employing practices that reduce impervious surface like:

- *a. Pervious driveways*
- *b. Pervious walkways*
- *c. Smaller roof surface*

(d) In no case will the imposition of stormwater volume controls for lots of record result in the lots becoming un-buildable. The Zoning Administrator shall be empowered to make this determination at his or her discretion without recourse to the Zoning Board of Appeals for hardship.

One of the key directives the SWU received was to prevent a homeowner or builder having to incur cost to develop an engineered solution to the on-lot runoff control requirements. To address this, a worksheet was developed that mapped out a selection process to develop an approvable solution based on the soil and impervious surface that the homeowner planned to build. It walks a homeowner and builder through a decision and sizing process for the proposed building and associated impervious surfaces being proposed. This allows homeowner to select and size an acceptable suite of BMPs for the lot in question. It is not the only way runoff volume can be addressed but offers a simple way to develop a cost-effective solution.

This was followed by a web-based program that removed the need for calculations by the homeowner. The ordinance changes also allowed other volume reducing practices to be used and credited according to the existing BMP manual. This would require a separate calculation program to be submitted.

The worksheet is attached to this article and requires some calculations and input values from BMP performance charts. This is the official worksheet that will be included as an appendix to the next update of the BMP manual. It is compatible with new standards for new development and is designed to handle excess runoff from the 1.95 inch rain event. For this rainfall event, excess post construction runoff (i.e., runoff above what would occur in the pre-development condition) would be 1.15 gals/sqft of impervious surface (for sandy soils) and 0.82 gals/sqft of impervious surface (for clay soils).

There are three practices that are proposed in this worksheet. These practices are also described in the current BMP manual for developmental stormwater runoff control. These practices are handled in series. They are

1. **Storage and reuse/infiltration** –This was initially going to be required if there was an installed irrigation system. After workshops with homebuilders, it was decided to make this a recommended, but optional practice. Decisions regarding this practice must be made before moving to the second practice.
2. **Disconnected Imperviousness** – this will allow credits for the natural infiltration on the lot. The worksheet allows the homeowner to select, as applicable, up to two directions for the unaddressed impervious surface runoff to travel by sheet flow over the pervious surface area on the property. In many rural situations, this practice may be the only one needed and is essentially no additional cost to the homeowner.
3. **Raingardens/Bioretention** – will be sized, if needed, to handle excess runoff volume not handled by the first two practices. The result will be in square feet of standard raingarden per the BMP manual. This is a raingarden with 3 ft of planting media and 6 inch maximum surface ponding depth. Equivalent other bioretention practices can be substituted.

The three practices need to be sized in series and may require modifying storage and reuse and raingarden selections if initial sizing is not appropriate for the site. This means that storage and reuse decisions need to be made before moving to disconnected impervious and then to raingarden selections.

Beaufort County may be unique in that a zoning permit is required before a builder is able to obtain a building permit. It was determined that this process offered a vehicle to address the excess runoff volume without opening previous agreements. The on-lot web program allowed a printout that could be brought to the County's zoning department to be handled with the the permit and staff in the zoning department would help county residents utilize the web based program. The printout would then be included in the building permit and would be inspected as part of the existing building codes final inspection.

These practices and volume reduction credits were described in a presentation at the 2010 SC Environmental Conference (Wagner, 2010) and the on-lot controls at the 2011 SC Environmental Conference (Ahern et al., 2011) that have been posted on the county web site www.bcgov.net/stormwater .

Responding to Economic Downturn (optional)

The volume controls were initiated during a downturn in the county's rapid development. The County utilized this opportunity to employ local engineering firms in development of cost estimates for implementing controls. This gave the county information to present on the costs of the program and was a very good way to introduce the controls to the local firms that would be using the controls.

Use of Technology

With the consideration of adopting the on-lot controls, the county developed a worksheet to be used by homeowners and builders to address stormwater on individual lots. For this step we used a local architectural firm to develop cost estimates and this firm recommended that the county consider making the worksheet a web based program to avoid the calculations necessary in the worksheet. This was developed and after a number of versions and updates is being successfully used by owners and builders to obtain building authorizations.

The Cost of the Program

Much of the work on these controls was conducted by staff of the Stormwater Utility, Public Works and Engineering. Initial cost estimates by local engineers indicated that the new requirements would increase stormwater compliance costs by 10 percent. Subsequently, it was determined that by meeting the County's volume controls, that the previous water quality requirements were met and that there were savings in controlling peak runoff. Rather being an additional cost; it turned out to be simply a different way to handle stormwater.

The costs for on-lot controls will be additional costs and initially were approximately $2 per square foot of impervious surface. As part of the negotiations with local homebuilders associations, the county agreed to make storage and reuse an optional practice and this reduced costs to below $1 per square foot and allowed for zero cost solutions on some lots with sandy soil.

The county did expend funds on a number of professional contracts. This was necessary because there was much uncertainty with such new types if controls. The county actually adopted federal guidance (95 percentile) from draft technical documents before they were finalized by the federal government. (County adopted development controls in October 2009 and federal technical guidance was not issued till December 2009). The County partnered with five engineering and architectural firms and spent $200,000 in professional fees to develop cost estimates, update the BMP manual and provide technical opinions on proposed actions. This cost would not have to be expended in counties trying to replicate this program because these controls are now becoming more mainstream. In the long term, the program will pay for itself many times by saving our valuable water quality.

The county developed the web based program through a small contract with a local programmer. While this was a low cost solution, it took many versions and modifications to implement the on-lot worksheet correctly.

The Results/Success of the Program

These controls were a major change in direction in handling stormwater runoff and were implemented in a short time with little impact to activities in the county. The adopted controls area focused on reducing the impacts we are seeing in Beaufort County monitoring provides a measurable rate of success. The web-based program has allowed 50 new permits to be issued

with appropriate volume controls. It has also lead to some developments voluntarily looking at meeting standards on a development level rather than the on-lot controls. Three developments so far have demonstrated this compliance. The county is now implementing controls that are now only being considered as goals in future stormwater regulations.

Worthiness of an Award

Beaufort County has continued its long tradition of concern for its natural environment and as challenged in the 1990s has risen in the 2009 through 2011 to stormwater controls that place it in the vanguard of communities in protecting their water resources. The County is the first to adopt volume controls based on federal building standards and is now receiving requests to present programs at national conferences and assist other communities in addressing stormwater runoff in national webcasts.

Beaufort County Council has made the protection of its waterway a major priority and staff has complied with this mandate to the fullest extent possible using the technical and scientific resources available today.