



# Roanoke County

## Draft Five-Year Stormwater Management Program

### January 6, 2014

The purpose of this paper is to present the draft proposed Five-Year Stormwater Management Program discussed by the Stormwater Advisory Committee (RCSWAC) at the December 12, 2013 meeting. The draft program is based on stormwater program gaps and needs identified through a review of the County's existing programs, activities, and regulatory commitments. Program gaps were discussed by the RCSWAC at the October 10, 2013 meeting. The next step in the process was to examine these gaps and needs against the goals and priorities identified by the RCSWAC in order to make program recommendations for consideration by the County Board of Supervisors and the Vinton Town Council. To help facilitate this discussion, AMEC and County/Town staff developed "level of service" options for addressing these gaps and needs. The Program Level of Service Options Matrix was discussed by the RCSWAC on October 24, 2013 and November 7, 2013. Alternative Level of Service Options were discussed at the December 12, 2013 meeting.

In most cases, three levels of service were identified for consideration – basic, medium, and high. The basic level of service is defined as the minimum level of effort required to address a particular gap or need and to meet minimum program expectations such as regulatory compliance. The high level of service represents an aggressive approach and typically represents a greater investment of resources. Ultimately, the RCSWAC's recommendations come down to priorities. Strategically addressing some gaps sooner than others is an inherent part of a resource limited environment.

Note that cost estimates should be considered as preliminary and subject to refinement as the process continues.

### **Draft Five-Year Stormwater Management Program**

At the RCSWAC meeting on November 7, 2013, committee members participated in an initial prioritization exercise on the level of service options presented for each program gap. Each committee member was given 10 stickers to place on program levels that they felt would best serve the County and Town of Vinton. The results of the exercise are shown in Table 1 below.



**Table 1 – Level of Service Initial Prioritization Results**

<i>Program Area</i>	<i>Basic</i>	<i>Medium</i>	<i>High</i>	<i>Total</i>
Storm Sewer System Maintenance	0.5	17.5	2	20
Information Technology Mapping/GIS	2	15	0	17
Equipment Replacement	5	11	0	16
Stormwater Project Backlog	1	7	7	15
Public Education and Outreach	7	3	3	13
TMDL Action Plans	9	3	0	12
Stream Maintenance	1	10		11
BMP Inspection, Maintenance and Enforcement	0	5	6	11
Illicit Discharge Detection & Elimination	8.5	1.5	1	11
Stormwater Regulations - Construction Inspection	10	0		10
Stormwater Regulations - VSMP Permit Administration	6	1		7
Stormwater Pollution Prevention Plans	4	2	0	6

While the prioritization exercise resulted in considerable agreement on the priority ranking for most levels of service, two areas – **Stormwater Project Backlog** and **BMP Inspection and Maintenance** – resulted in a nearly even split between medium and high approaches. To illustrate the range of potential fiscal impact, AMEC developed two program options (medium and high) that were presented at the December 12, 2013 meeting. Table 2 summarizes the costs of these program options. **The first option reflects choosing the medium level of service for both**



Stormwater Project Backlog and BMP Inspection and Maintenance. The second option reflects choosing the high level of service for both areas as highlighted in YELLOW.

*Table 2 –Initial Draft Program Costs with Medium and High Options*

<b>Program Area – Additional Program Costs</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Storm Sewer Maintenance	250,000	350,000	500,000	500,000	500,000
Mapping/GIS	70,000	70,000	70,000	70,000	70,000
Equipment Replacement	120,000	120,000	120,000	120,000	120,000
Stormwater Project Backlog	250,000	250,000	500,000	500,000	500,000
	250,000	750,000	900,000	900,000	900,000
Public Education and Outreach	21,250	21,250	21,250	21,250	21,250
TMDL Action Plans	140,000	200,000	250,000	300,000	350,000
Stream Maintenance	50,000	50,000	100,000	150,000	150,000
BMP Inspection and Maintenance	100,000	150,000	235,000	235,000	235,000
	500,000	750,000	1,000,000	1,250,000	1,500,000
Illicit Discharge Detection & Elimination	-	-	-	-	-
Stormwater Regulations – Administration and Construction Inspection	-	-	-	-	-
Stormwater Pollution Prevention Plans	14,000	14,000	7,000	5,000	5,000
Staff Training/Nutrient Management Plans	13,500	13,500	10,000	16,500	13,000
<b>Total Draft Program – Additional Costs</b>	<b>1,028,750</b>	<b>1,238,750</b>	<b>1,813,250</b>	<b>1,917,750</b>	<b>1,964,250</b>
	<b>1,428,750</b>	<b>2,338,750</b>	<b>2,978,250</b>	<b>3,532,750</b>	<b>3,629,250</b>
<b>Current Program Costs</b>	<b>1,741,041</b>	<b>1,741,041</b>	<b>1,741,041</b>	<b>1,741,041</b>	<b>1,741,041</b>
<b>Total Draft Program</b>	<b>2,769,791</b>	<b>2,979,791</b>	<b>3,554,291</b>	<b>3,658,791</b>	<b>3,705,291</b>
	<b>3,169,791</b>	<b>4,079,791</b>	<b>4,719,291</b>	<b>5,279,791</b>	<b>5,370,291</b>

Alternative options for Stormwater Maintenance and BMP Inspection and Maintenance were presented in the December 12, 2013 meeting:

- Stormwater Maintenance – Budget for a less frequent system replacement percentage (less than 1% annually).
- BMP Inspection and Maintenance – Implement a service district where Home Owner Associations (HOAs) could voluntarily join and have the County take over facility maintenance. The County would impose a service district fee that would generate revenue sufficient to make the program cost-neutral for the County.

RCSWAC members participated in a second prioritization exercise by ballot that allowed a chance for committee members to reconsider the levels of service for the non-basic program areas. The results of this exercise are provided in the Table 3 and were used to refine the draft program.



**Table 3 – Level of Service Second Prioritization Results**

<i>Program Area</i>	<i>Basic</i>	<i>Medium</i>	<i>High</i>	<i>Alternative</i>	<i>High + Alternative</i>	<i>Total</i>
Storm Sewer Maintenance	2	11	1	0	0	14
Mapping/GIS	3	11	0			14
Equipment Replacement	2	11	1			14
Stream Maintenance	5	9	0			14
Stormwater Project Backlog	3	7*	4			14
BMP Inspection and Maintenance	2	3	3**	5	1	14

\*One medium vote to include the addition of one crew

\*\*One high vote to explore the alternative of the separate service district for stormwater management facilities

The results of the second prioritization exercise were incorporated into a revised draft stormwater program presented in Table 4.



Table 4 – Draft Five-Year Program

Proposed New Program Expenditures							
PROGRAM NEED	LEVEL OF SERVICE OPTIONS		ANNUAL COST				
	BASIC	MEDIUM	Year 1	Year 2	Year 3	Year 4	Year 5
<b>BMP Inspections, Maintenance, Enforcement and Construction</b> - resources to comply with BMP inspection requirement per MS4 permit and deal with enforcement issues for residential facilities		Year 1: 1/2 FTE for attorney for service district and enforcement (\$65,000), inspector to perform facility inspections (\$50,000). Year 2: Year 1 + \$60,000 for County owned BMP maintenance and replacement (ramp up to \$120,000 in Year 3). Year 3: Year 1 + \$120,000 for County owned BMP maintenance and replacement. Years 4 and 5: Reduce attorney time to 0.25 FTE (\$32,500) + BMP inspector (\$50,000) + funds for County owned BMP maintenance and replacement (\$120,000).	\$ 115,000	\$ 175,000	\$ 235,000	\$ 202,500	\$ 202,500
<b>Public Education and Outreach</b> - additional outreach to target audience for MS4 permit compliance	Additional outreach to target audiences (\$21,250/year)		\$ 21,250	\$ 21,250	\$ 21,250	\$ 21,250	\$ 21,250
<b>Illicit Discharges</b> - additional resources for proactive program	Maintain current program		\$ -	\$ -	\$ -	\$ -	\$ -
<b>Stormwater Pollution Prevention Plans</b> - plans must be created for high priority facilities to comply with MS4 permit	Develop SWPPPs for high priority facilities (3-5 County facilities) ~ over 3 year period @ \$7,000/each. Develop standard operating procedures with current staff. Conduct biennial training and implementation ~ \$5,000/year + staff time.		\$ 14,000	\$ 14,000	\$ 7,000	\$ 5,000	\$ 5,000
<b>* Staff Training</b> - training for staff on illicit discharge identification and other water quality issues to comply with MS4 permit	Conduct biennial illicit discharge training (~420 employees every 2 years) Either purchase or prepare short 10 – 15 minute video to use for training. ~\$3,500 + staff time		\$ 3,500	\$ 3,500	\$ -	\$ 3,500	\$ -
<b>* Nutrient Management Plans</b> - must prepare these plans for County facilities with more than 1 acre of property where fertilizers are applied to comply with MS4 permit.	Hire certified planner to develop plans over 3 year period. (\$10,000/year). Implement nutrient management plans – train current staff ~ \$3,000.		\$ 10,000	\$ 10,000	\$ 10,000	\$ 13,000	\$ 13,000
<b>TMDL Action Plans</b> - must develop plans for 13 waste load allocations by July 2015 to comply with MS4 permit.	Develop TMDL Action Plans ~ \$20,000 each for bacteria and sediment TMDLs; assume that PCBs will be deferred; total for plans ~\$140,000. Cost per year to implement BMPs is unknown; depends if time constraints are included in TMDL implementation plan.		\$ 140,000	\$ 200,000	\$ 250,000	\$ 300,000	\$ 350,000



Proposed New Program Expenditures							
PROGRAM NEED	LEVEL OF SERVICE OPTIONS		ANNUAL COST				
	BASIC	MEDIUM	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Stormwater Regulation - VSMP Construction Permit Administration, Inspections and Construction</b> - The County will be required to administer the state's VSMP construction permit starting in July 2014.	Use existing staff to perform review and processing and inspections. During peak periods, may need to extend plan review time/wait for construction inspections to allow current staff to cover VSMP plan review, permitting and inspections.		\$ -	\$ -	\$ -	\$ -	\$ -
<b>Information Technology</b> - Community Development does not have staff to routinely update stormwater mapping, track inspection and enforcement data, maintain records, and to perform GIS analyses on pollutant loadings and reductions required for DEQ reporting.		Continue to obtain support as available from Communications and Information Technology. Periodically use interns to catch up with routine data entry. Add 1 FTE to allow mapping updates and analyses on a continuing basis.	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000
<b>Equipment Replacement:</b> Much of the County's existing equipment for drainage system maintenance has exceeded its planned life expectancy. The County currently does not amortize the cost to replace this equipment; rather the County must pay the full cost all at once.		Amortize equipment costs for replacement over next 10 years (\$120,000/year).	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000
<b>Project Backlog:</b> The County has a significant backlog of drainage projects that have been identified.		Detail project costs and prioritize – update the County's stormwater drainage plan. Provide two additional storm drain crews, ~ \$500,000/year .	\$ 250,000	\$ 250,000	\$ 500,000	\$ 500,000	\$ 500,000
<b>Storm Sewer System Maintenance:</b> System maintenance is currently conducted on a complaint basis rather than systematically planning for the rehabilitation based on age and condition.		Budget 1.0% of system replacement value annually for system assessment and repair/replacement of failing infrastructure (\$1,000,000); cost overlap with Project Backlog - reduced by 50% to \$500,000.	\$ 250,000	\$ 350,000	\$ 500,000	\$ 500,000	\$ 500,000
<b>Streams maintenance:</b> The County conducts maintenance as needed of streams within the County right-of-way typically based on complaints.		Develop comprehensive watershed management plan to understand overall stream conditions and identify and prioritize restoration projects Cost depends on level and detail of analysis; can be performed in conjunction with the TMDL action plans. Estimated cost ±\$500,000.	\$ 50,000	\$ 50,000	\$ 100,000	\$ 150,000	\$ 150,000
<b>Total</b>			<b>\$ 1,043,750</b>	<b>\$ 1,263,750</b>	<b>\$ 1,813,250</b>	<b>\$ 1,885,250</b>	<b>\$ 1,931,750</b>

\* Only one option presented during the prioritization exercise.



The program enhancements in Table 4 are in addition to the County’s existing stormwater management program presented in Table 5 below. This results in a total program (existing and enhanced) of \$3.67 million, annually in Year 5 of the program.

**Table 5 – Roanoke County Estimated Current Stormwater Program Costs (2013)**

	<b>Personnel Expenses</b>	<b>Operating Expenses</b>	<b>Total Stormwater Program</b>
Administration	\$ 87,090	\$ -	\$ 87,090
Development Services	\$ 511,428	\$ 146,380	\$ 657,808
MS4 and TMDLs	\$ 212,964	\$ 2,750	\$ 215,714
Infrastructure Maintenance & Improvements	\$ 515,860	\$ 264,569	\$ 780,429
<b>Total</b>	\$ 1,327,342	\$ 413,699	\$ 1,741,041

It should be noted that the costs for the enhanced program are ballpark and presented to provide the RCSWAC with a general understanding of the impact of specific policy decisions. These ballpark costs will be used as the basis to guide RCSWAC discussions about revenue generation methodologies and how these methodologies affect program cost distribution among County property owners. More detailed cost estimates will be generated once the RCSWAC has had an opportunity to review and discuss these revenue generation methodologies.

Decisions will also need to be made regarding timing and whether proposed levels of service will be supported by additional staff or the use of external resources. The right mix of new staff and external resources will ultimately depend on a number of factors, including whether there is enough work to justify a new employee and whether the nature of the work is long or short term. Often, a level of service can be met either way but for planning purposes the investment for additional resources needs to be recognized. These details, and how percentages of full time equivalents will be turned into actual people, are issues that will be addressed once County/Town staff have a better understanding of the RCSWAC’s priorities and the Board of Supervisor’s and Town Council’s willingness to move forward with recommendations.

**Per Capital Cost Comparisons**

One of the questions asked by the RCSWAC was how any proposed program compares to other stormwater management programs in Virginia. This is a complex question since many communities without a stormwater fee do not track stormwater program costs separately, and many communities that have a stormwater fee supplement their program with additional funds from the general fund. Also, what is defined for the purpose of tracking a stormwater program



varies considerably from community to community. For example, the stormwater review component of development plan review may not be tracked or covered by a stormwater fee.

Recognizing these limitations, the following tables present stormwater costs on a per capita basis based on 2012 population. It is important to note that this does not reflect the actual stormwater rate for property owners.

Table 6 presents the per capita cost of stormwater programs in other Virginia communities that have adopted a stormwater fee, but where not all stormwater program costs are covered by the fee. Rather some program elements continue to be funded through general fund appropriations. As a result, the per capita cost for these localities should be considered under-represented.

**Table 6 – Annual Stormwater Fee per Capita**

Community	Annual Revenue from Stormwater Fee (\$)*	Population (2012 estimate)	Annual Stormwater Fee per Capita (\$)
City of Lynchburg	3,200,000	77,113	41
City of Staunton	725,000	23,921	30
City of Richmond	7,793,881	210,309	37
Fairfax County (plan review and erosion and sediment control program not covered by the fee)	40,200,000	1,118,602	36
Arlington County	8,002,000	221,045	36
Prince William County	9,420,604	430,289	22

\* Not all stormwater costs are covered by the stormwater fee revenue – some general fund revenue funds portions of the stormwater program.

Table 7 presents the per capita cost of stormwater programs in other Virginia communities that have adopted a stormwater fee and where most if not all of the stormwater program is covered by the fee, or where information is available on the amount of general fund support for the stormwater program. However, direct comparisons should still be made with caution.



**Table 7 – Annual Stormwater Program Costs per Capita**

Community	Annual Program Cost	Population (2012 estimate)	Annual Program Cost per Capita (\$)
City of Charlottesville (Cost of program increases for TMDL compliance over 5 years)	2,606,200-4,081,200	43,956	59-93
City of Falls Church	1,643,000	13,229	124
City of Roanoke (Not yet final – Year 3 of proposed program)	6,400,000	97,469	66

Table 8 presents the per capita cost of Roanoke County’s current estimated stormwater program and the additional program costs associated with the program options presented in Table 4.

**Table 8 – Roanoke County Annual Stormwater Program Costs per Capita**

	Annual Program Cost	Population (2012 estimate) <sup>1</sup>	Annual Program Cost per Capita (\$)
<b>Roanoke County</b>			
<b>Roanoke County, current cost</b>	<b>1,700,000</b>	<b>84,000</b>	<b>20</b>
<b>Roanoke County, additional cost in Year 5</b>	<b>1,930,000</b>	<b>84,000</b>	<b>23</b>

<sup>1</sup> Does not include the Town of Vinton.