



## Response to Questions on the 2016 LOBs

**Request By:** Supervisor Herrity

**Relevant LOB(s):** N/A

**Question:** What metrics drive efficiency in Stormwater?

**Response:**

Stormwater Services staff currently track efficiency measures relating to the cost of inspecting and maintaining both private and public facilities as outlined in the below table. Staff continues to gather additional data and track trends, as well as research any available benchmark data.

**Stormwater Efficiency Measures**

<b>Efficiency Indicator</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Estimate</b>	<b>FY 2017 Estimate</b>
Annual cost per private stormwater management facility	\$136	\$352	\$416	\$433	\$489
Costs of inspection and maintenance per public stormwater facility	\$955	\$1,356	\$1,600	\$1,791	\$1,876

Costs continue to increase based on the requirements associated with building, operating, inspecting, and maintaining stormwater facilities required as part of the County's Municipal Separate Storm Sewer System (MS4) Permit. Two of the biggest drivers to the cost increases are the level of review required and the documentation required to ensure that facilities are being adequately maintained. The amount of time spent preparing for an inspection, performing the inspection, generating and controlling the quality of the inspection report, following-up after the inspection findings (either maintenance of public facilities or enforcement of private facilities), and record keeping are all key requirements of the program. The majority of this work is performed by contractors working for the County. The number of facilities entering the inventory is also increasing. Current Stormwater standards encourage the installation of smaller facilities on individual lots so that each lot may have a stormwater management facility vs. one facility serving an entire community. This leads to a higher number of smaller facilities being constructed versus the larger facilities that were constructed in past years.

In addition, the Chesapeake Bay water quality standards are expressed as Total Maximum Daily Loads (TMDLs) and require Fairfax County to significantly reduce the Phosphorous, Nitrogen, and sediment entering the bay from urban stormwater sources. This requirement is also regulated as part of the MS4 Permit. Stormwater technologies associated with tracking water quality are still relatively new and life cycle costs and efficiency measures are still evolving. New studies are continually revising the information in an attempt to provide better data, and staff expects



significant fluctuations in the costs and benefits of the various techniques being utilized to continue over the next few years.

There are many practices that can be implemented to improve water quality and the Stormwater Planning Division is tracking the cost per pound removed for each pollutant for all projects. This information is being utilized to develop the annual work plan and to help determine the most cost-effective manner to comply with regulatory requirements. The following table includes the total facilities completed between FY 2009 and FY 2015, as well as their capital costs.

**Completed Facilities FY 2009 - FY 2015**

<b>Practices</b>	<b>Cumulative Number Installed</b>	<b>Total Capital Cost per Pound of Nitrogen</b>	<b>Total Capital Cost per Pound of Phosphorus</b>	<b>Total Capital Cost per Pound of Suspended Solids</b>
<b>Stream Restoration</b>	24	\$2,400	\$22,000	\$63
<b>Pond Retrofits</b>	46	\$4,000	\$38,000	\$49
<b>Infiltration Swales and Trenches</b>	7	\$7,600	\$67,200	\$88
<b>Dry Swales</b>	8	\$10,400	\$118,000	\$174
<b>Bioretention (Rain gardens)</b>	37	\$21,500	\$196,400	\$262
<b>Pervious Pavement</b>	12	\$54,300	\$469,000	\$611

Although the Chesapeake Bay TMDL is currently the financial driver, it is anticipated that TMDLs on impaired local streams will likely also become a major driver. Addressing the TMDLs on local streams may require different strategies and techniques, which will likely change the cost benefit relationships of various project types.

The stormwater planning staff offers a briefing to the Board of Supervisors' members each year to discuss the project implementation plan. The staff utilizes available unit cost information in developing the project list and can share this information as it relates to the project selection process. Staff continues to research and develop additional efficiency measures as this program evolves.