

FY 2019-2020 Virginia Beach Budget Response to Council Questions

Question Number: FY 20 06

Question: In terms of water quality, how do we measure the level of nutrients being removed from waterways? For projects that have been completed, how much have we improved? Do we have a model that projects decreases in nutrients? Please describe the science/methodology behind these measurements.

Date Requested: February 19th, 2019

Requested By: Councilmember Moss

Department: Public Works, Storm Water

Response:

Local water quality is measured by the Virginia Department of Environmental Quality (DEQ). There are about 33 water quality monitoring stations in the City that are managed by DEQ. Attached is a map that shows the surface water quality monitoring locations in the City. DEQ monitoring data is available on their website:

<https://www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx>

DEQ uses the water quality monitoring data collected along with various modeling tools to calculate the pollutant loads that would need to be reduced to restore impaired waterways in the City to meet swimming, fishing and drinking standards. They determine the waste load allocations that would need to be met from various regulated and non-regulated sectors. These include urban (MS4), agricultural, wastewater, and non-regulated. This is similar to the process that is used by the EPA for the Chesapeake Bay Total Maximum Daily Load (TMDL).

Water quality improvement projects are a tool for treating stormwater runoff to capture nutrients, sediment, and other pollutants to help reduce the pollutant load entering a waterway. Efforts have been underway to help inform future models about the pollutant reductions that can be achieved through these practices. Data is collected and managed in the International Stormwater BMP Database to help develop statistical data on the pollutant removal rate of various types of stormwater management facilities and the pollutant loads from urban stormwater. <http://www.bmpdatabase.org/>

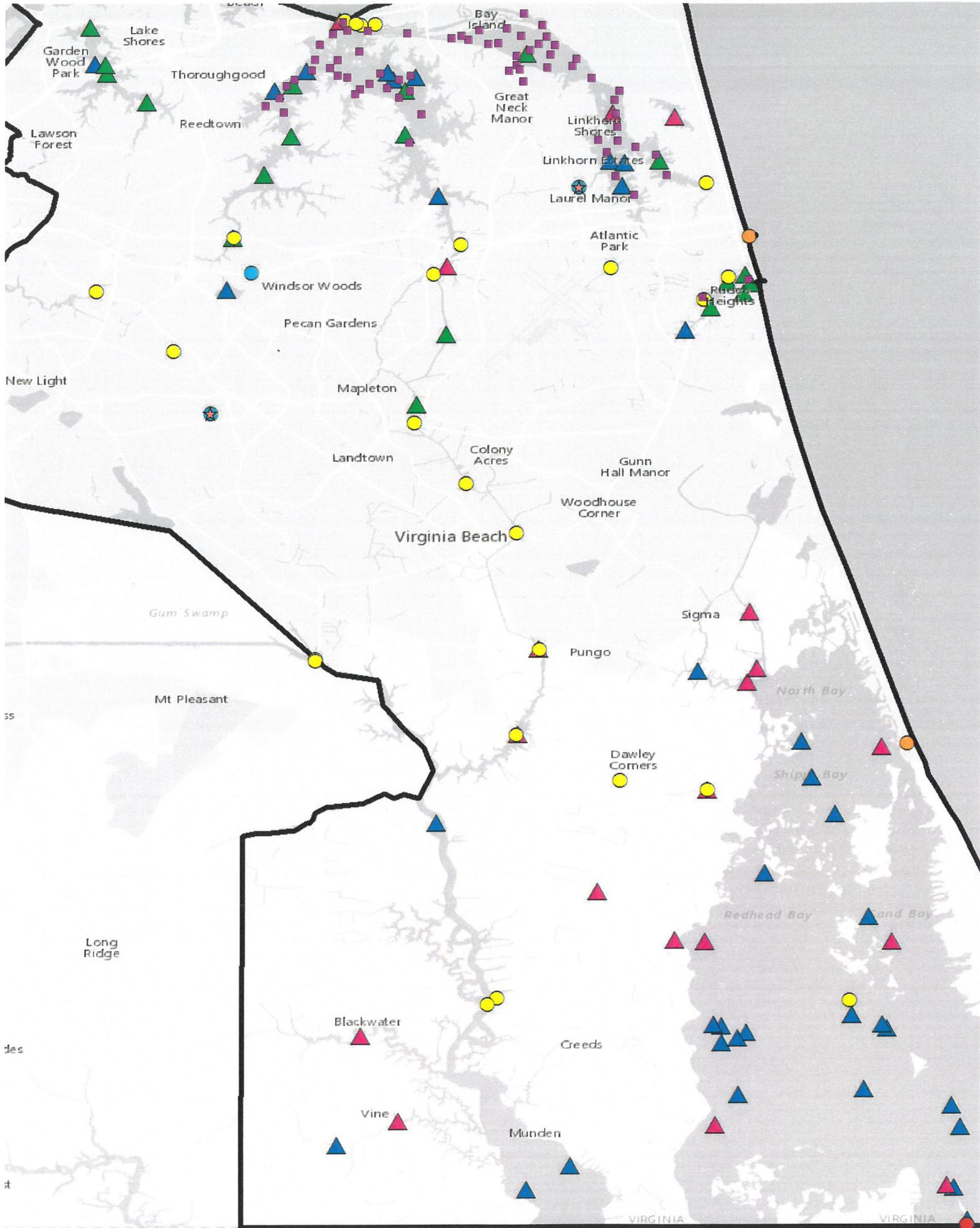
Pollutant removal efficiencies for stormwater management facilities are defined both at the national and state levels. The Chesapeake Bay TMDL uses BMP Expert Panels that are made up of subject matter expert scientists and engineers who research all available data to determine accepted pollutant reductions for various parameters for BMPs.

https://www.chesapeakebay.net/who/group/bmp_expert_panels At the state level, DEQ takes advantage of the Chesapeake Bay TMDL BMP Expert Panel data and also uses support from

Virginia Tech to develop and maintain a BMP Clearinghouse that established pollutant reductions associated with various stormwater management facilities based on scientific data. <https://www.swbmp.vwrrc.vt.edu/>

All of these activities are ongoing, outside of the City's MS4 Stormwater Permit requirements. The new MS4 Stormwater Permit was effective July 1, 2016 and included requirements to address the Chesapeake Bay TMDL and local TMDLs. To meet the permit requirements the City developed TMDL Action Plans for the First Phase of the Chesapeake Bay TMDL and the phosphorus and bacteria TMDLs for our local waterways. The City is not required to restore local waterways or the Chesapeake Bay to completely remove the impairment. These requirements are based on the responsibilities of each of the contributing land use sectors; urban, agricultural, wastewater, and non-regulated. During the TMDL development a waste load allocation is assigned to the MS4 or urban area for their portion of the responsibility of the pollutant load reductions. The City Action Plans are all posted on our website at www.vbgov.com/stormwater-programs. Progress on meeting our required actions for permit compliance will be measured by reporting progress in our annual reports located on our website. <https://www.vbgov.com/government/departments/public-works/surface-water-regulation/Pages/stormwater-regulations.aspx> To assess progress for the local water quality impairments, we will also review of the DEQ water quality monitoring station data to determine if water quality is improving as projects are implemented.

We have not completed construction of a water quality improvement project since the new MS4 Stormwater Permit was effective on July 1, 2016. We have one project in construction and several in design. We are putting significant effort into identifying projects for implementation in future permit terms. This information is reported in our MS4 Stormwater Permit Annual Reports to DEQ. Stormwater Management Facilities that are constructed with other Capital Improvement Projects and with Private Development are for the management of the quantity of stormwater and the water quality requirements of our City Ordinances to help reduce the impacts of the development or capital improvement on our local waterways. These types of projects do not address the MS4 permit requirements unless they are expanded to provide treatment of other existing urban areas that are not currently treated by stormwater management facilities.



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