

# “Cleaning Up Our Act”: Baltimore’s New Stormwater Fee

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# Contents

•	<b>Executive Summary/Introduction.....</b>	<b>1</b>
•	<b>Why do we have the stormwater fee?.....</b>	<b>3</b>
•	<b>How was the amount of the fee determined?.....</b>	<b>7</b>
•	<b>How is the city going to spend the money generated by the fee? .....</b>	<b>15</b>
•	<b>Can property owners do anything to reduce their fees? .....</b>	<b>19</b>
•	<b>If this stormwater fee is related to cleaning up the Chesapeake Bay, what about pollution from the agricultural sector? Will cities be held accountable for agricultural pollution?.....</b>	<b>23</b>
•	<b>How are we going to know that our collective investment has made a difference? .....</b>	<b>25</b>
•	<b>Summary and Recommendations .....</b>	<b>27</b>
•	<b>References.....</b>	<b>31</b>
•	<b>About the Author.....</b>	<b>33</b>



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# Executive Summary/Introduction

Baltimore City’s newly implemented stormwater fee is, in fact, a pollution fee. After it rains or snows, water washes over the land’s surface into our waterways and causes flooding, erosion, and a significant increase in water pollution. This water is referred to as “stormwater runoff,” and as it flows over pavement toward our streams and eventually the harbor, it picks up contaminants such as trash, oil and grease, metals, bacteria, and sediment along the way. As a result, our waterways are not healthy and the Baltimore City Health Department discourages human contact with the water in general, but particularly after a rainstorm. The Health Department’s website reads:

“Swimming in the harbor watershed area is not recommended. As with many urban waterways, contaminants may be present in the water that can cause illness. Symptoms could include stomach pain, nausea, vomiting, diarrhea, fever, and headache. The risk of illness can be reduced by not swallowing any water. Individuals with weakened immune systems, the elderly, very small children, and people with open, uncovered lesions are at greater risk of potentially serious medical conditions. If you come in contact with water from the harbor or its waterways, wash the affected body part with soap soon after exposure and shower if necessary. Always wash your hands before eating. If you develop concerning skin or stomach issues, you should contact your doctor. **It is important to know that the potential for problems with water contact increases after a major rain event.**” ([www.baltimorehealth.org](http://www.baltimorehealth.org), emphasis added)

The stormwater fee will provide revenue to Baltimore City so that it can pay to “clean up its act.” The city is required by federal and state laws to make its streams, the Baltimore Harbor, and the Chesapeake Bay cleaner and healthier so that we will no longer need to worry about getting sick if and when we make contact with the water. The fee is being collected from private property owners in Baltimore City and is based on the amount of “impervious” surface that exists on that property. (Property owners can find the fee at the bottom of their quarterly water bills.) Paved roads, driveways, parking lots, and building roofs interrupt the natural flow of water after it rains and prevent water from being absorbed directly into the ground. These are called “impervious surfaces,” and they greatly increase the amount of runoff caused by storms.

Stormwater runoff currently travels through an extensive, mostly underground, storm sewer system consisting of a network of inlets, pipes, and outfalls. The system, like many systems around the country, was designed in the 19th century to drain the stormwater, untreated, into rivers or streams in order to prevent the spread of infectious, water-borne diseases. In the 1870s, the city built an elaborate underground stormwater conveyance system, and over the more than 140 years since, millions of tons of stormwater, sediment, and other pollutants have traveled, untreated, through the underground pipes into our streams, the harbor, and ultimately, the Chesapeake Bay.

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The stormwater fee is necessary because the city does not currently have enough money to pay for fixing the pollution problem. Historically, maintenance and improvements of the existing storm sewer system (sometimes referred to as “grey infrastructure”) have been funded from the city’s general and motor vehicle funds, which are made up of property and gas taxes. However, many other city programs rely on these funding sources, and the funding has not been adequate to keep up with the inevitable improvements and maintenance of our aging storm sewer system. As a result, we’ve experienced expensive incidents of broken underground pipes, sometimes leading to damaging sinkholes.

In addition to needing to fix our aging storm sewer system, “cleaning up our act” requires implementing above-ground pollution control practices that can “treat” the runoff before it even enters the underground pipes and local streams. Such “green infrastructure” practices include stream restorations, rain gardens, and tree planting, among other practices. These practices cost money to construct and—just like the rest of the storm sewer system—require regular operation and maintenance, as well as periodic upgrades and repairs, to function properly. The new stormwater fee provides funding for both grey and green infrastructure improvements—as well as for services related to trash removal such as street sweeping—through a dedicated revenue stream, or stormwater utility.

This report is intended to do two things: (1) demonstrate to ratepayers why the new stormwater pollution fee is necessary; and (2) encourage the City of Baltimore to work with ratepayers to ensure that the revenue from the fee is spent in as transparent and effective a manner as possible.

The report addresses the following questions:

- 1) Why do we have the fee?
- 2) How was the amount of the fee determined?
- 3) How is the city going to spend the money generated by the fee?
- 4) Can property owners do anything to reduce their fee?
- 5) If this stormwater fee is related to cleaning up the Chesapeake Bay, what about pollution from the agricultural sector? Will cities be held accountable for agricultural pollution?
- 6) How are we going to know that our collective investment has made a difference?

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# Why do we have the stormwater fee?

• **Federal Regulations**

• The Clean Water Act of 1972 (CWA) recognizes the role of stormwater in polluting the country’s waterways. The CWA requires states around the country to apply for a permit every five years to ensure that their stormwater is being managed appropriately. This permit, issued by the U.S. Environmental Protection Agency (EPA), is called the Municipal Separate Storm Sewer System (MS4) permit. In Maryland, the MS4 permit requires 10 jurisdictions and the State Highway Administration to operate a Stormwater Management Program and is administered by the Maryland Department of the Environment (MDE).

• The State of Maryland has translated the stormwater management requirement to “treating” or lessening the impact of impervious cover associated with roofs, roadways, parking lots, and sidewalks. Scientific studies have documented the direct relationship between impervious cover and stream health (Schueler et al., 2009). Treating impervious cover can be done through a combination of management strategies including stream restoration, permeable pavement, green roofs, tree planting, and practices that add greening components to streets and sidewalks.

• Baltimore City’s final MS4 permit, which was issued by the MDE in December 2013, requires implementation of treatment efforts on 20 percent of the city’s untreated impervious cover, or approximately 4,000 acres, within the five-year permit term (December 2013 – December 2018). The MS4 permit requires the city to develop a specific plan—called an MS4 Watershed Implementation Plan, or MS4 WIP—for how it is going to achieve the 20 percent impervious surface reduction within a year of the permit’s issuance, or by December 2014. As part of this plan development process, the city will hold three types of public outreach meetings between June and October: four public meetings, multiple “partner” meetings with private-sector stakeholder groups, and meetings with city agencies. Information about the public meetings is on the Clean Water Baltimore website ([www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)).

• The 20 percent impervious surface reduction required by the MS4 will enable the city to meet another federal requirement, the Chesapeake Bay Total Maximum Daily Load (Bay TMDL) or “pollution diet,” issued by the EPA in December 2010. The Bay TMDL established the maximum amount of nutrients and sediment allowed to enter the Chesapeake Bay. In order to meet the requirements of the Bay TMDL, each of the six states, plus the District of Columbia, that comprise the Chesapeake Bay watershed is responsible for developing plans detailing how it will meet its respective pollution load reductions by 2025. According to the city, achieving the MS4 permit requirement to treat 20 percent of untreated impervious surfaces will also achieve the 2017 interim goals of the Bay TMDL, as well as the goals of other local TMDLs that address bacteria and trash, which are at various stages of enforcement.

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These legal requirements are costly to meet and funding is not available from the state or federal government. The requirement to clean up years of water pollution from the city's vast expanse of untreated impervious cover will substantially increase the city's costs for stormwater management. Funding via the stormwater fee is intended to help the city meet these additional MS4 permit requirements. It is important to note that because the city's MS4 permit is a Clean Water Act requirement, failure to comply with its requirements could cost the city a civil penalty not to exceed \$37,500 per day, or roughly \$13.7 million per year, for each violation.

**State Legislation: HB 987**

The State of Maryland first recognized the need for local jurisdictions to establish additional, dedicated funds for stormwater management services in order to comply with federal stormwater regulations in the early 1990s. In 1992, the General Assembly enacted enabling legislation that allowed localities to develop a stormwater fee system to finance stormwater programs. The first Maryland municipality to establish a stormwater fee was Takoma Park in 1996. Other communities followed suit, including Montgomery County, the towns of Rockville and Silver Spring, the City of Annapolis, the City of Frederick, and Charles County. The idea of a locally based stormwater fee system continued to gain traction and was one of the key financing strategies recommended by the Chesapeake Bay Watershed Blue Ribbon Finance Panel to finance basinwide restoration plans.

These recommendations prompted Baltimore City to conduct the background studies necessary to develop a fee to meet the growing stormwater management requirements and to address issues related to the aging stormwater infrastructure. There were several statewide attempts to require local governments to establish utilities, but none was successful until 2012, when the Maryland General Assembly passed House Bill (HB) 987 (Stormwater Management - Watershed Protection and Restoration Program). HB 987 required Maryland's 10 most populous jurisdictions—including Baltimore City—to establish a local stormwater protection and restoration program, and implement a local stormwater fee to fund that program by July 1, 2013. The bill was signed into law by Governor Martin O'Malley, and subsequently, Anne Arundel County, Baltimore County, Baltimore City, Charles County, Frederick County, Harford County, Howard County, Montgomery County, and Prince George's County have established stormwater fees. (Carroll County elected not to establish a stormwater fee and will meet its MS4 obligation with a stormwater remediation fund made up of general funds and other revenues.)



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. In November of 2012, Baltimore City voters approved a referendum—“Question  
. J”—that established a separate stormwater utility to manage the revenue collected  
. through the state-mandated fee. By law, funds from the stormwater utility must  
. be used for stormwater management purposes only, and may be used for the  
. following purposes: capital improvements such as stream and wetland restoration  
. projects; operation and maintenance; public education and outreach; planning and  
. administration; and grants to nonprofit organizations for watershed restoration and  
. rehabilitation projects (from Baltimore City Code, Art. 27, Section 2-3, 2013).

. **Stormwater, Water, and Wastewater: Three Separate Utilities**

. The City of Baltimore also has water and wastewater utilities, but unlike the city’s  
. stormwater utility, which is exclusive to Baltimore City, the water and wastewater  
. utilities provide service to the greater Baltimore metropolitan area. The water utility  
. provides service not only to city residents but also to portions of Baltimore, Anne  
. Arundel, Howard, Harford, and Carroll counties. Baltimore City maintains the water  
. infrastructure (e.g., pipes) and sells treated water to Baltimore, Anne Arundel, and  
. Howard counties, and untreated water to Harford and Carroll counties. The rates  
. charged to each county vary according to the estimated costs for providing service  
. and system improvements for each jurisdiction.

. The wastewater utility provides service to parts of Baltimore, Howard, and Anne  
. Arundel counties in addition to city residents. The wastewater system differs from  
. the water supply system in that each county owns and maintains its own pipe  
. infrastructure. The counties served by the utility pay a share of upgrading the city’s  
. major facilities (e.g., pumping stations, treatment plants), as well as maintenance and  
. operational costs of the treatment plants, based on the total flow conveyed from the  
. county to the city’s treatment plants. Counties also add their own surcharges to their  
. respective fees to cover local operational expenses.

. Each service, therefore, now has its own utility. The funds for each of the three  
. utilities are charged separately for distinct purposes, and by law, they must be  
. expended separately. The funds are not interchangeable.



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# How was the amount of the fee determined?

Maryland House Bill 987 gave each jurisdiction the flexibility to develop a stormwater fee and protected fund that support specific stormwater needs and permit requirements. The funding philosophy of stormwater utilities is that they are like other public services, such as wastewater and electricity, and that customers should pay in relation to the demands they impose on the stormwater system. Under this “user-pays” approach, the city’s fee is based on the amount of impervious surface within each property because impervious surfaces are the most significant factor influencing stormwater runoff. Impervious surfaces are easy to identify and quantify, and are the most common parameter used in stormwater utility fee calculations. Baltimore City uses a three-tiered flat rate structure for single-family properties based on amount of impervious surface, as shown in Table 1.

**Table 1.**  
**Baltimore City Single-Family Residential Stormwater Fee Structure**

Impervious Surface	Flat Fee	Annual Fee
≤ 820 sq. ft.	\$10/quarter	\$40
>820 ≤1,500 sq. ft.	\$15/quarter	\$60
> 1,500 sq. ft.	\$30/quarter	\$120

All other properties (nonsingle-family properties) are charged based on an Equivalent Residential Unit (ERU), which is the amount of impervious surface found on a typical single-family property within the city. An ERU within the city is equivalent to 1,050 square feet of impervious surface. The fee for nonsingle-family properties is \$15/ERU/quarter. (It is important to note that this rate is lower than that initially proposed by the city; several fee reductions and exemptions resulted from the City Council process, which led to the current rate structure.)

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## Equitable Distribution of Stormwater Management Costs Among Property Owners

Municipalities that do not charge a stormwater fee typically fund stormwater management through their general revenue. A stormwater fee is a more equitable approach to paying for stormwater services because it is based on the amount of impervious surface on the property that impedes stormwater absorption. Baltimore City historically funded stormwater management through the general and motor vehicle funds. The majority of revenues in the general fund are property and income taxes collected from single-family properties. While single-family properties comprise 88 percent of all properties in Baltimore City as shown in Figure 1, they make up only 33 percent of total impervious surface area. With the advent of the stormwater fee, the revenue will be collected from property owners in proportion to the amount of impervious surface on the property. The majority of fees will be collected on nonsingle-family residential properties. These include commercial and industrial properties, as well as tax-exempt properties including those owned by the federal government.

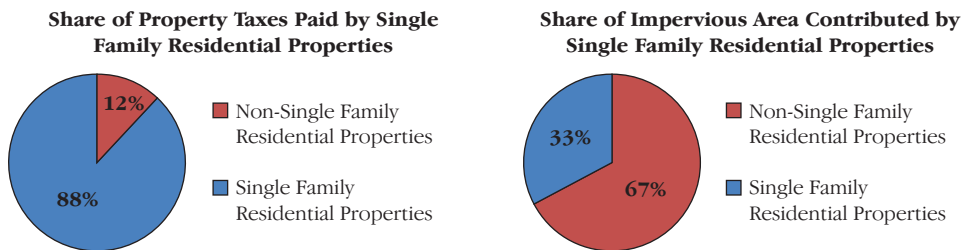


Figure 1. Distribution of stormwater management payment responsibility in Baltimore City based on property taxes (left) versus an impervious area-based stormwater fee (right). Source: Baltimore City DPW (2013a).

The structure and amount of the stormwater fees established by Maryland Phase I MS4 communities vary greatly by jurisdiction, as demonstrated in Table 2. The fees vary in part due to the differences in the total projected stormwater program costs, but also because the jurisdictions were given flexibility in determining how much of the stormwater program to support using other sources of funding, whether to charge now for future projected costs or gradually phase in the fees over time, the actual fee structure, and the role of bond revenue. This local flexibility was deemed critical in the 2012 Maryland General Assembly when the bill passed; it is still very important to local jurisdictions, and to the Maryland Association of Counties (MACO).

**Table 2.**  
**Stormwater Remediation Fees in the Maryland Jurisdictions**  
**Subject to House Bill 987**

Jurisdiction	Annual Residential Rate	Equivalent Residential Unit (ERU) or Impervious Unit (IU) Size	Annual Nonresidential Fee/ERU or IU	Nonresidential Fee Per Acre Equivalent
Anne Arundel	\$34, \$85, or \$170 depending on zoning district	ERU = 2,940 sq. ft.	Generally \$85 per ERU and capped at 25% of the property's base property tax. Fees vary for specified types of properties	\$1,259.39
Baltimore	\$21, \$32, or \$39 depending on property type	ERU = 2,000 sq. ft.	\$69 per ERU; \$20 per ERU for institutional properties	\$1,502.81
Baltimore City	\$40, \$60, or \$120 depending on amount of impervious surface	ERU = 1,050 sq. ft.	\$60 per ERU; \$12 per ERU for religious nonprofits	\$2,489.11
Carroll	None	N/A	None	None
Charles	\$43 per property	N/A	\$43 per property	N/A
Frederick	\$0.01 per property	N/A	\$0.01 per property	N/A
Harford	\$125 per property	IU = 500 sq. ft.	\$7 per IU	\$609.86
Howard	\$15, \$45, or \$90 depending on type and size of property	IU = 500 sq. ft.	\$15 per IU	\$1,306.85
Montgomery	Ranges from \$29.17 to \$265.20 depending on home size	IU = 2,406 sq. ft.	\$88.40 per IU	\$1,593.22
Prince George's	\$20.58 per property plus \$20.90 per IU	IU = 2,456 sq. ft.	\$20.90 per IU	\$371.10 (plus \$20.58 admin fee), or \$391.68

Note: This represents the fee before any phase-in occurs and reflects the actions of jurisdictions as of November 7, 2013. Source: MD Department of Legislative Services (2013).

Jurisdictions that have adopted higher stormwater fees do not necessarily have higher total stormwater management program costs. The estimated cost of stormwater services for each jurisdiction and how much the jurisdiction was already spending on stormwater management prior to House Bill 987 determine the amount of total revenue each jurisdiction needed to generate from the stormwater fee. It was

then up to each jurisdiction to determine how to distribute the fee across properties to generate the required revenue. This resulted in a unique fee structure for each of the 10 municipalities.

One of the major factors influencing the jurisdictions' estimated costs is the amount of impervious area for which treatment is required (Table 3) and the practicality of implementing management practices. There is a considerable range in both the number of acres that must be treated and the cost of treatment per impervious acre across the 10 jurisdictions (Table 3). According to the MD Department of Legislative Services (DLS), Prince George's and Anne Arundel counties have the highest cost per impervious acre, which results in estimated annualized costs over the fiscal 2014 to 2018 period of \$89.8 million and \$80.5 million, respectively. Comparatively, Baltimore City's costs are projected by the DLS to be \$33.4 million.<sup>1</sup> It is important to note that Baltimore City's DPW has not confirmed this estimate by DLS, but Table 3 is included in this report to illustrate the wide range of per-acre treatment costs.

**Table 3.**  
**Average Annual Cost Per Acre of Impervious Surface**

Jurisdiction	Acres of Untreated Impervious Surface	Acres to be Treated in Next 5-Year MS4 Permit Cycle	Projected Costs Annualized	Average Annual Cost Per Acre to be Treated
Anne Arundel	14,887	2,714	\$80,540,000	\$29,676
Baltimore	23,373	4,953	\$45,700,000	\$9,227
Baltimore City	28,983	4,180	\$33,400,000	\$7,990
Carroll	6,449	1,644	\$6,813,873	\$4,145
Charles	2,607	512	\$9,488,120	\$18,531
Frederick	6,725	1,192	\$22,400,000	\$18,792
Harford	8,308	1,573	\$18,000,000	\$11,443
Howard	11,453	2,179	\$42,000,000	\$19,275
Montgomery	21,458	3,835	\$66,580,942	\$17,361
Prince George's	22,020	4,243	\$89,800,000	\$21,164

Sources: MD Dept of Legislative Services (2013) and MDE (2013).

With respect to revenue, some jurisdictions are using stormwater fee revenue to supplement existing sources, such as general fund dollars raised through property taxes or other funds. Prince George's County, for example, has an existing *ad valorem* tax dedicated for its stormwater program, which is used to generate bond revenue, while revenue from the stormwater fees comprises only 14.6 percent of

<sup>1</sup> Baltimore has historically spent \$14.2 million annually on its stormwater management program.

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its Stormwater Management Program revenues. Baltimore City voters, on the other hand, supported a referendum to create a separate utility with dedicated funds—collected through the stormwater fee—for stormwater management. In Baltimore City, then, the stormwater fee funds will replace the previously used general funds, and will not supplement any existing sources of revenue. There are pros and cons to each approach: While using general fund dollars in addition to stormwater fee dollars might mean lower stormwater fees, it could mean higher property taxes to support the general fund. Additionally, general fund dollars can always be diverted to other uses, whereas a dedicated fund (utility) is more secure, as it must be used exclusively for stormwater management. This difference in revenue structure makes comparing fees across jurisdictions difficult.

Jurisdictions also varied in deciding what type of fee to charge. Charles and Frederick counties chose to implement flat fees that did not distinguish between residential and nonresidential properties, while the other jurisdictions varied their approaches by property and unit type. With respect to residential fees, Baltimore, Charles, Frederick, and Harford counties chose to establish a flat dollar fee per property or property unit (e.g., multifamily properties), while Baltimore City and Anne Arundel, Howard, and Montgomery counties established residential fees based on the amount of impervious surface on a property, type or size of property, or home size. Prince George’s County assesses residential properties using both a flat dollar fee and an impervious unit (IU) approach. For nonresidential properties, most counties chose to establish a rate based on the amount of impervious surface (as defined through an equivalent residential unit (ERU) or IU) (MD Dept. of Legislative Services, 2013). Each jurisdiction also had the flexibility to determine what types of properties, if any, would either be exempt from the fee or pay a reduced rate, which affects the total amount of revenue and can increase the fee for other types of property owners.

Another reason that fees vary among the 10 jurisdictions is that some of the counties opted to phase in the fees. Anne Arundel, Harford, Howard, and Montgomery counties are phasing in their local stormwater remediation fees, at least for some types of properties. In Montgomery County, the fee is phased in only for those property owners whose fees are increasing (Montgomery County already assessed a stormwater utility fee prior to House Bill 987). In Howard County, the fee is phased in only for nonresidential property owners who owe more than \$10,000. In both Anne Arundel and Montgomery counties, the phase-in period is three years. In Harford County, the phase-in period is one year with residential and nonresidential properties required to pay only 10 percent of the fee in the first year. Other counties may not have formally established a phase-in through legislation, but may informally do so by increasing their fees over time as needed (MD Dept. of Legislative Services, 2013). Baltimore City did not phase in its fee because to comply with milestones and deadlines required by the MS4 permit, the city needed to generate sufficient revenue

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immediately. Jurisdictions that have elected to phase in their rates typically have had other revenue sources from which to draw funds.

Initial estimates of revenue to be generated by Baltimore City's stormwater fee showed that funding would be adequate to cover the projected stormwater management costs. However, since the initial rate structure was developed, several amendments were made by the City Council: (1) a rate reduction is now available for tax-exempt religious institutions; (2) customers whose property tax bills and stormwater bills are each more than \$1,000 are eligible to apply for a cap on their stormwater fee; (3) state, local, and right-of-way properties were exempted from the fee; and (4) the fee for single-family residential property owners was reduced from \$18 to \$15/ERU/quarter. Because of these variances, the stormwater fee will generate less revenue than expected (Maryland Department of Legislative Services, 2013; EFC, 2013b). The city now estimates that the stormwater fee will bring in approximately \$24 to \$25 million per year for fiscal years 2 through 5 (FY2015 – FY2018), with roughly \$16.7 million anticipated for the first (three-quarters of a) year in FY2014.<sup>2</sup>

Moving forward, the city projects that of the \$24 to \$25 million it anticipates annually in fee revenue in FY15, FY16, and FY17, an estimated average of \$18 million will be spent on operations. Operating costs will include: monitoring, enforcement, and program administration; maintenance; and street sweeping. The remaining estimated \$6 to \$7 million per year will be spent in three ways:

- on capital improvement projects, using cash from the fee revenue (known as "PAYGO");
- as payment for debt service; and
- to contribute to a reserve fund, needed to give the new stormwater utility the ability to issue its own stormwater revenue bonds in the future.

Thus, the stormwater fee revenue will be used primarily for operating costs but also as debt service for its capital improvement plan. As stated above, capital improvement costs will be paid in part with stormwater fee revenue (PAYGO), but primarily with bond revenue to be repaid over time with revenue from the stormwater fee. Because the utility is a new entity, it does not yet have any credit and thus cannot issue its own revenue bonds until it has a track record and a reserve fund (similar to what's needed to take out a mortgage). In the interim, the city plans to use state transportation bonds, as well as specially permitted city general obligation bonds so that it does not have to wait to invest in capital improvements.

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<sup>2</sup> These projections and those in the following paragraph are based on a phone conversation with Kim Burgess, Chief of Surface Water Division; Ben Meli, Acting Fiscal Chief; and Berke Attila, Utility Manager of Rates and Forecasting, Baltimore DPW, May 22, 2014.



The City's Capital Improvement Plan (CIP) cost estimates are represented in Figure 2.

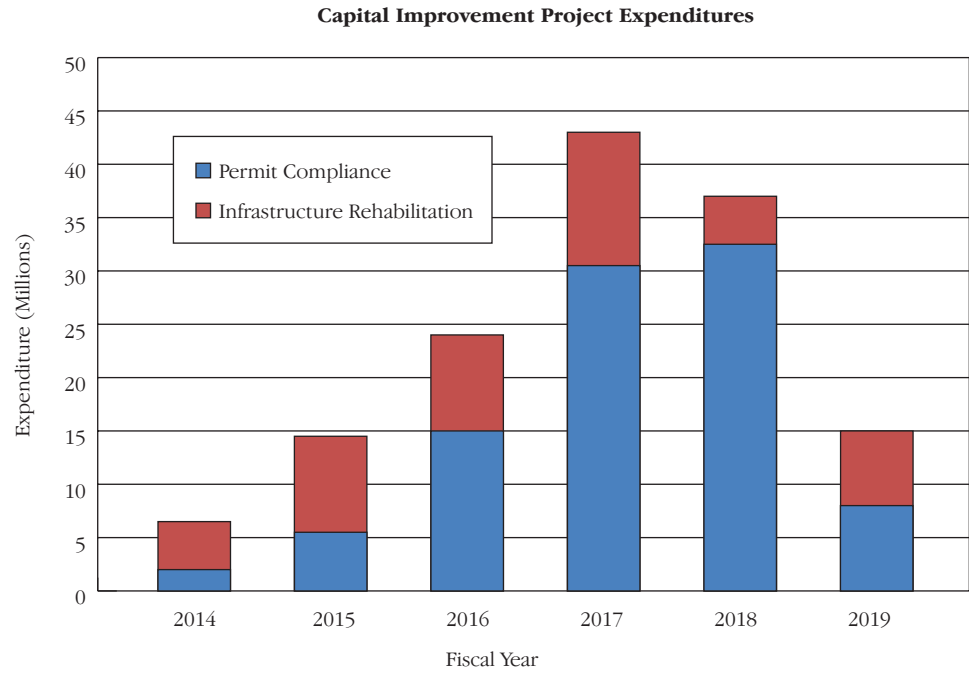


Figure 2. Projected stormwater capital improvement project expenditures in Baltimore City.  
Source: [www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org) (2014).



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# How is the city going to spend the money generated by the fee?

Baltimore DPW is currently spending money generated by the stormwater fee revenue, primarily on six capital projects that it aims to complete in 2014 (outlined in [www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)). The DPW has not yet developed a longer-term plan for capital projects that will enable it to meet MS4 permit requirements, but as mentioned above, it is required to do so within a year of the permit's issuance, or by December 2014. This specific plan is referred to as the MS4 Watershed Implementation Plan, or MS4 WIP.

As part of the MS4 WIP development process, Baltimore City DPW has launched a public participation effort that will include monthly public meetings and additional stakeholder meetings so that the public can provide input into the development of the plan. It is this MS4 WIP that will provide the public with an outline of which stormwater management practices it plans to install where, by when, at what cost, and to what end. Key components of the MS4 WIP will be impervious surface reduction, stream restoration, improvements to the conveyance system, and reduction of human sewage.

## **Impervious Surface Reduction**

The single largest capital cost associated with the fee will be meeting the 20 percent impervious cover treatment requirement.

Achieving the 20 percent impervious cover treatment target will likely require the construction of dozens of restoration projects over the course of the MS4 permit. Table 4 highlights the types of restoration projects that the city might choose to implement.

**Table 4.**  
**Typical Stormwater Management Practices**

<b>Bioretention – Green Infrastructure</b>	<b>Tree Planting</b>	<b>Stream Restoration</b>
		
<b>Street Sweeping</b>	<b>Trash Reduction Practices</b>	<b>Impervious Cover Removal/Greening</b>
		

### Repairs to Conveyance System



Figure 3. Monument Street sinkhole that occurred on August 26, 2012.

In addition to impervious surface reduction, Baltimore’s stormwater fee will also pay for much-needed repairs to and ongoing maintenance of its aging conveyance system; stormwater pollution control projects are not effective without a working conveyance system (City of Baltimore, 2013). The city currently operates 1,146 miles of storm drain pipe, 52,438 inlets, 27,561 manholes, 1,709 outfalls, and four stormwater pumping stations that require regular maintenance to function properly and can contribute to sewer overflows, flooding, erosion, and even road collapse if not repaired when needed. For example,

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the collapse of a 120-year-old storm drain tunnel under East Monument Street in August 2012 (Figure 3) resulted in a full roadway collapse and the temporary evacuation of residences and businesses.

In order to decrease road flooding and protect public safety, the city must significantly increase its level of service for stormwater management. Staying the course without additional funding from the stormwater fee would mean infrastructure maintenance is reactive, not preventive, and repairs would be deferred for years, ultimately increasing costs.

### **Human Sewage**

Finally, human sewage is the single largest controllable source of bacteria to Baltimore's harbor, according to the MDE, and the city is mandated to include in its MS4 WIP a description of how and by when it will eliminate controllable sources of sewage.

In 2006, the MDE conducted a bacteria-source tracking study as part of the development of Total Maximum Daily Loads (TMDLs) for Baltimore City streams and Baltimore's harbor (MDE, 2006a, 2006b). The bacteria TMDLs were developed because the bacteria levels (specifically *e. coli* and enterococci) in these waters are too high to safely support the waters' designated recreational uses. Sewage discharges can originate from leaks and breaks in pipes carrying wastewater or from overflows caused by clogs from grease or debris. In some cases, sewage pipes from houses and business can be directly connected to storm drains through faulty plumbing. Due to the illegal discharge of untreated sewage into the Chesapeake Bay and smaller streams and rivers via sanitary sewer overflows, the City of Baltimore entered into a consent decree in 2002 with the EPA and MDE. The consent decree is a legally binding agreement stating that the city will fund projects to repair its sewer overflows by 2016 or face further litigation. The Stormwater Management Program and Wastewater Engineering Programs share the responsibility for detecting and eliminating the various types of sewage discharges.

In addition to being a source of bacteria, sewage leaks can be a rich source of nitrogen and phosphorus, significant reductions of which are mandated by the city's MS4 Permit. The city's Healthy Harbor Plan estimates that more than one-third of the required nitrogen load reduction to the harbor can be met by eliminating dry weather sewage discharges (WPB, 2011). Studies in Western Run in Baltimore City and Sligo Creek in Montgomery County have found that the elimination of dry weather sewage sources is far more cost-effective for nutrient reduction than use of conventional stormwater practices (Lilly et al., 2012) such as bio-retention and street sweeping.

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It will be critical for the Stormwater Management Program and Consent Decree Program to work seamlessly in order to effectively give “credit” to activities that eliminate sewage discharges because in the process they are also reducing nutrients. The Chesapeake Bay Program is developing protocols that will enable the estimation of nitrogen and phosphorus load reductions associated with the correction of illegal sewage flows. These protocols will enable the city and others to compare the costs and benefits associated with eliminating sewage discharges to those of other pollution-control practices planned under the MS4 permit.






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# Can property owners do anything to reduce their fees?

Single-family residential property owners already approved for senior citizen or low-income discounts for water/wastewater bills will automatically receive a discount for their stormwater fee (Clean Water Baltimore, 2013). The DPW's Bureau of Water and Wastewater also provides "hardship exemptions" from both the stormwater fee and the Bay Restoration fee to low-income homeowners. Qualified homeowners are exempt from paying both fees for one year but must reapply for the exemption and provide documentation of income each year. Customers can also check on the city's website that the amount of impervious surface on their property is accurately calculated for the fee amount billed. If single-family property owners reduce the amount of impervious area on their properties, then they may qualify for a lower tier and their fee may be reduced.



Single-family residential property owners have several options to reduce their stormwater fee under the city's Stormwater Credit Program. These options include public participation activities and a variety of simple stormwater practices. Stormwater practices must meet basic requirements, and the customer must sign a simple right-of-entry agreement to allow the Department of Public Works to inspect the facility to be sure it is performing and maintained as designed. More complex stormwater practices that are already installed and meet the basic requirements may also be eligible for these credits. Table 5 summarizes possible best management practices that could be included as credit options for single-family property owners, but the city has not yet identified the specific practices that are eligible.

**Table 5.  
Options for Single-Family Residential Property Owners  
to Reduce their Stormwater Fee**

Option	Description
<p align="center">Public Participation</p> 	<ul style="list-style-type: none"> <li>• Customers can receive credits for participating in a public project or community event as long as the organizer registers the event through 311, receives approval from DPW 30 days prior to the event, and the event is held within city limits.</li> <li>• Examples of eligible events are stream clean-ups, tree plantings, and de-paving activities. The event organizer must provide each participant with a certification form that verifies their participation and the number of hours worked.</li> <li>• Participants are responsible for requesting that the credits be applied to their Maryland stormwater fee accounts.</li> <li>• For every eight hours of participation, a credit reduction of \$10 is applied against the fee over one year. A maximum credit of 24 hours, or \$30, may be applied against a stormwater account in any one year.</li> </ul>
<p align="center">Rain Garden</p> 	<p>A rain garden may be installed, but it must be designed to treat runoff. The credit is valid for three years, and can be renewed for additional three-year increments.</p>
<p align="center">Tree Planting</p> 	<p>At least two trees must have been planted after January 1, 2010. The customer receives an annual credit for three years. As long as the trees are healthy, the credit can be renewed for additional three-year increments.</p>





Option	Description
<p data-bbox="573 552 760 573">Rainwater Harvesting</p> 	<p data-bbox="842 636 1433 709">A rainwater harvesting system must capture stormwater runoff from impervious surfaces. The credit is for three years. Upon inspection, this credit is renewable for additional three-year increments.</p>
<p data-bbox="532 863 800 884">Complex Stormwater Practices</p> 	<p data-bbox="842 957 1425 1031">These systems require documentation that the design meets MDE standards; the credit requires a signed right-of-entry agreement to allow for periodic inspections by the Department of Public Works.</p>

Many nonresidential properties contribute the most to stormwater runoff (e.g., large parking lots), so their fees can be quite high. As a result, they potentially have the greatest to gain from the city’s credit program. Credits are available for installation of stormwater management practices such as those described above, compliance with an industrial National Pollutant Discharge Elimination System (NPDES) permit, and direct discharge to the Inner Harbor (under certain circumstances), and for sites having little or no impervious surface area (vacant and small development credits). The fee can be reduced by 50 percent or more through the credit program for these properties, and nonresidential property owners may qualify to have their stormwater fees capped at 20 percent of their combined state and local property taxes if they meet specified requirements (Clean Water Baltimore, 2013). The city’s DPW has met several times with a public-private task force to develop a working stormwater credit program.



# If this stormwater fee is related to cleaning up the Chesapeake Bay, what about pollution from the agricultural sector? Will cities be held accountable for agricultural pollution?

The largest source of nitrogen and phosphorus loadings to the Chesapeake Bay is from agricultural nonpoint sources (e.g., cultivated farm fields, pastures). Figure 4 shows the relative contribution of nitrogen and phosphorus across different source sectors (Chesapeake Bay Commission 2012). Stormwater runoff from urban and suburban communities in Maryland is estimated to contribute 16 percent of nitrogen and 16 percent of phosphorus that flow into the Chesapeake Bay, whereas agricultural pollution is estimated to contribute 42 percent and 34 percent, respectively. Other major controllable source categories include significant point sources (e.g., large waste treatment plants such as Back River) and stormwater runoff, mostly from impervious surfaces.

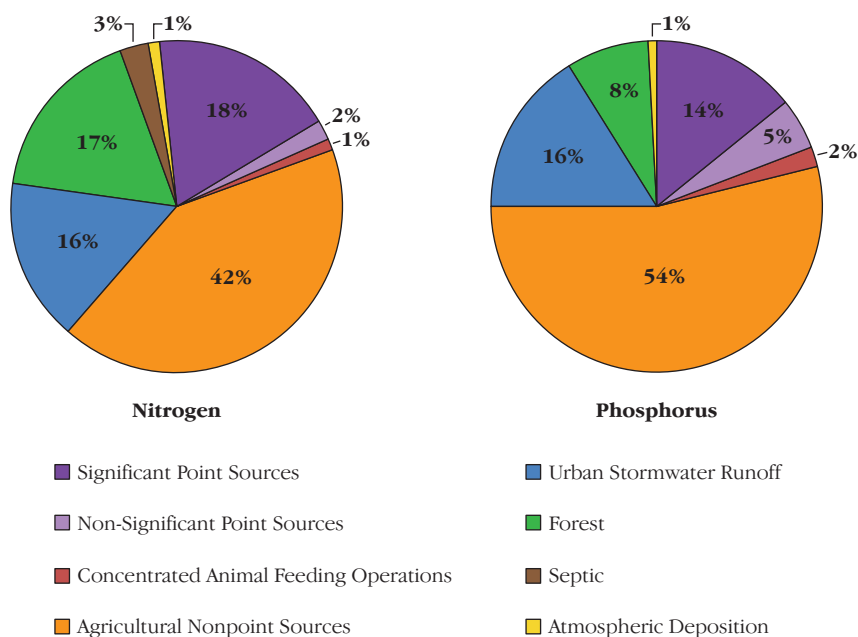


Figure 4. Contributions of nutrient loads delivered to the Chesapeake Bay from different sources. Source: Chesapeake Bay Program Phase 5.3.2 Watershed Model (2010 Progress Scenario).

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The agricultural sector is required by law to reduce its nitrogen load (the most expensive and difficult contaminant) by 23 percent to meet the Chesapeake Bay TMDL, compared to a 20.3 percent reduction from the urban sector (MDE, 2010). To date, the agricultural sector has made more substantial progress toward meeting its 2025 target load reduction requirements than the stormwater sector. According to Maryland's Phase II Watershed Implementation Plan, the agricultural sector is anticipated to almost meet its final 2025 Total Nitrogen requirement and will surpass its final 2025 Total Phosphorus requirement by 2017 (MDE, 2012). In comparison, the stormwater sector (urban and suburban areas) will be less than half way to meeting its final 2025 load reduction requirements by 2017.

The typical cost of agricultural best management practices (BMPs) is less than \$100 per acre while the typical cost for reducing the equivalent load on urban land is more than triple the cost of agricultural BMPs (Chesapeake Bay Commission, 2012). The much greater cost effectiveness of agricultural BMPs makes it unlikely that any portion of the agricultural load will be assigned to the urban sector. The more likely scenario would be implementation of a trading program whereby the unmet load reduction requirement of the stormwater sector could be offset by the agricultural sector.



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# How are we going to know that our collective investment has made a difference?

: According to the MS4 permit, Baltimore City must report annually on progress  
: toward meeting the 20 percent impervious cover treatment requirement by way of a  
: report and a series of spreadsheets that track project implementation status, project  
: costs, and estimated impervious cover treated and pollutants removed. These  
: documents will be made available to the public on the city’s website at:  
: <http://cleanwaterbaltimore.businesscatalyst.com/ms4-permit-annual-reports>.  
: Additionally, the MS4 permit will require the city to develop a monitoring strategy to  
: gauge the effectiveness of the stormwater management plan. The monitoring strategy  
: will include the collection of stream and harbor samples that will be analyzed by a  
: laboratory for pollutants of concern (e.g., bacteria, nitrogen, and phosphorus).

: The city plans to use the Cleanwater Baltimore website to inform the public on  
: an ongoing basis about progress toward meeting permit milestones, as well as  
: information about which projects are underway and which are planned.

## **Additional Benefits of Investment in Pollution Reduction**

: In addition to restoring water quality and protecting public health, the benefits  
: associated with cleaner water translate into further social and economic benefits,  
: such as healthier communities and reduced public monies spent on emergencies  
: related to flooding and other water damage. A properly funded and managed  
: stormwater program can mean more parks and open space, less flooding, cleaner  
: streams, and increased property values. A more desirable community attracts  
: residents and improves the local economy.

: The substantial investment in stormwater management in Maryland and across  
: the Chesapeake Bay region expected over the next few years has the potential  
: to contribute significantly to local economies and their associated businesses  
: and industries. Every dollar invested in stormwater management and restoration  
: activities will directly support jobs in a variety of industries and businesses (e.g.,  
: engineering, landscaping, construction), and this direct spending influences industry  
: purchases as they respond to new demands (e.g., new purchase of machinery,  
: supplies, plant stock) and spending from households that benefit directly from  
: employment or increases in business associated with restoration activities. In  
: addition, these economic impacts on employment and associated population levels  
: can affect government expenditures by changing demand for public services. These  
: are referred to as fiscal impacts.



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# Summary and Recommendations

In summary, our waterways are in terrible condition following hundreds of years of polluted runoff, and the Stormwater Remediation Fee will enable us to “clean up our act.” The fee will provide a dedicated funding source to Baltimore City to ensure that the city will be able to comply with its new MS4 permit. The new permit is much more onerous than previous permits; it requires the city to control stormwater runoff from more than 4,000 acres of impervious cover over the five-year permit cycle. The permit includes numerous milestones that should translate into measurable benefits to the citizens of Baltimore, including reductions in waterway trash; greener streets; and improved water quality in area streams, the harbor, and ultimately, the Chesapeake Bay—as well as a reduction in the number of catastrophic road collapses the city experiences. The city will have to provide detailed accounting and reporting to the MDE to ensure that the permit requirements are being met. Failure to meet the milestones and schedules in the permit could result in substantial fines and penalties, which would ultimately need to be paid by taxpayers.

It is clear that this ambitious effort to clean up our act is going to require Baltimore citizens and their government to work together. Ratepayers are needed not only to provide the funds to enable the city to fix the problem but also to defend the need for the stormwater fee against would-be detractors in the political arena. Yet ratepayers are only likely to continue to agree to pay the fee if they are convinced that the funds are being expended in an effective manner. They must be kept informed of progress toward the stormwater management program’s goals in a timely, clear, and accessible manner.

It is, therefore, within the context of the need for public-private partnership in the effort to maximize the success of our water pollution reduction efforts that we offer the following recommendations both for Baltimore ratepayers and for city government:

**For ratepayers and citizens:**

1. **Support the fee.** Rather than dispute the need for the fee, the ratepayers of Baltimore should work to defend the need for the fee and support the city in its efforts to maintain and manage the stormwater utility.
2. **Participate in the plan development process.** Ratepayers should take the initiative to provide input and feedback in the development of the MS4 WIP to ensure that pollution reduction goals are met in a way that maximizes benefit to the citizens of Baltimore. This will include attending public meetings scheduled by DPW and responding to other possible invitations for public input.
3. **Implement stormwater management practices.** Property owners should educate themselves about and implement stormwater management practices

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on their respective properties not only to get credit on their bills but also to contribute to collective pollution reduction and water quality improvement.

4. **Ensure proper credits for equitable revenue collection.** Ratepayers deserving of stormwater credits should make sure they are receiving them; low-income ratepayers should ensure that they are receiving a hardship exemption, and property owners who have implemented best management practices should ensure that they are receiving the proper credits.

**For the Baltimore Department of Public Works:**

1. **Communicate clearly, and in a timely fashion, with the public about how the stormwater fee revenue is being used.** For continued support of the stormwater fee, the city should provide more detailed information about its ongoing expenditures on its Clean Water Baltimore website ([www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)), and should make communicating with the public about the stormwater management program a top priority.<sup>3</sup>
2. **Create a public-private Stormwater Management Program Development and Implementation Committee to provide input into WIP development, as well as to monitor and track progress over time toward meeting MS4 permit goals.** The city should invite private sector input into the development of the WIP via a Stormwater Development and Implementation Committee. This Committee (perhaps a reinstated WatershedStat or a subset of the Waterfront Partnership’s Healthy Harbor Steering Committee) would work with DPW to monitor and track progress toward meeting permit goals on an ongoing basis, and would work with other jurisdictions to compare costs and strategies for implementing stormwater management improvements.
3. **Ensure that newly created jobs remain in Baltimore City.** Efforts should be made to ensure that additional jobs created through the taxpayer-funded stormwater management program benefit Baltimore City to the maximum extent possible.

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<sup>3</sup> The website should also include detailed updates about progress toward the city’s Illicit Discharge and Elimination Program in MS4 permit monitoring and tracking; now that the Chesapeake Bay Program and MDE will allow nutrient-reduction credits for the elimination of sewage leaks and other sewage discharges, MS4 permit tracking needs to include careful and ongoing monitoring of the city’s sewage elimination efforts.



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- 4. **Explore possible additional financing programs (public-private partnerships) to enhance public participation.** Baltimore City should follow the lead of jurisdictions around the country that have established creative financing programs to provide property owners with up-front capital to assist them in installing green infrastructure practices for stormwater remediation. These types of programs help property owners reduce their stormwater fees, lead to job creation, and accelerate treatment that the jurisdictions count toward their stormwater remediation goals. We encourage the city to continue in its efforts to establish a grant program and a credit program for nonsingle-family property owners. In addition, the city should explore private investment opportunities through off-site mitigation banking, low-interest loan programs for nonprofit entities to help finance stormwater management practices, and other innovative financing options.



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• Bill Stack has more than 35 years of expertise in water resource protection  
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